

DEPARTMENT TECHNICAL MANUAL

TM 5-9200

Depot
N4-52

GEREGISTREERD

27 MEI 1955

IGKL BOV

TRAILER,

FULL, LOW-BED,

16-TON,

STEEL PRODUCTS,

MODEL XBBM



MAINTENANCE INSTRUCTIONS AND PARTS CATALOG

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inspectie der genie

WAR DEPARTMENT • OCTOBER 1943

WAR DEPARTMENT
Washington 25, D. C., (8 Oct 43)

TM 5-9200, (Maintenance Manual and Parts Catalog, Trailer, Full, Low-Bed, 16-Ton, Steel Products, Model XBBM), is published for the information and guidance of all concerned.

[A. G. 300.7 (8 Sept 43)]

BY ORDER OF THE SECRETARY OF WAR:

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Chief of Staff.

OFFICIAL:

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The Adjutant General.

Combined
OPERATOR'S MANUAL
MAINTENANCE MANUAL

and

SPARE PARTS LIST

for

TRAILER, FULL, LOW-BED, 16-TON
STEEL PRODUCTS

MODEL XBBM

Manufactured for

CORPS OF ENGINEERS

by

THE STEEL PRODUCTS CO., Inc.

Savannah, Georgia

THIS BOOK COVERS:

U. S. Registration Nos. W-0194099 thru W-0194348,
W-0196958 thru W-0197308,
W-0530312 thru W-0531061

OCTOBER 8, 1943

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SECTION I

OPERATOR'S MANUAL

INTRODUCTION

PURPOSE AND SCOPE—

The data compiled herein describes a Low Bed Machinery Trailer built especially for transporting heavy mobile units of machinery, especially crawler type. It is drawn by a heavy duty prime mover and is equipped with suitable loading ramps to facilitate the loading and unloading of the various machines to be hauled. This trailer differs from many trailers inasmuch as it is a complete unit within itself, consisting of the trailer proper and the Dolly truck upon which the trailer is mounted. This feature classifies it as a full trailer as compared to a semi-trailer which mounts directly upon a truck tractor or prime mover. Its use and operation will, therefore, differ in many respects to the semi-trailer type, and this "Operator's Manual" is prepared to instruct the driver and his helpers in the proper use and operation of the vehicle.

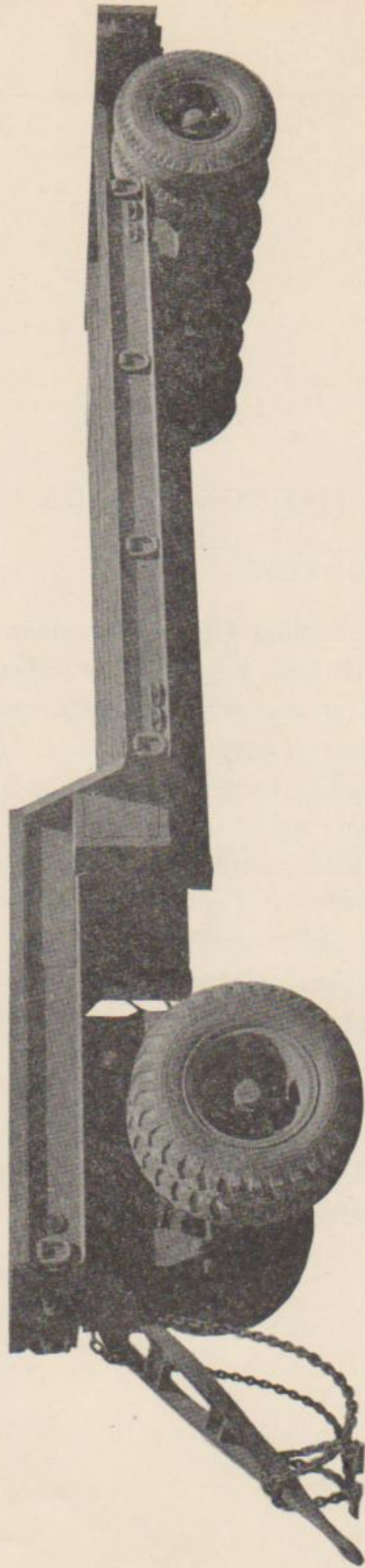


Fig. 70

GENERAL INSTRUCTIONS

Two Safety Chains are provided at front of trailer to hold trailer to truck in event pintle hook should fail to hold. Safety Chains are just what the name infers and are not to be used to tow the trailer in lieu of a pintle hook.

Do Not Exceed speed shown on nameplate. Spare tire is carried on a cable type tire carrier beneath the floor of trailer. Use rim wrench to operate tire carrier.

Keep tires inflated to recommended pressures. Tires on rear axles are on demountable rims and all rim lug nuts are righthand thread. Tires on front or Dolly axle are on demountable wheels held in place by a stud-nut which holds the inside wheel and a large nut which screws on the stud-nut to hold the outside wheel. The FRONT wheel stud-nuts and large nuts are RIGHThand thread on the righthand side when facing the front of trailer and LEFThand thread on the opposite side. The left-hand stud-nuts are marked "L" and the righthand are marked "R."

Located on bottom of air brake reserve tank is a drain cock. This is to drain any water or other liquids that may enter brake lines. DRAIN DAILY—THIS IS IMPORTANT!

This machine is a piece of MILITARY EQUIPMENT! Treat it with the same care that you would give your rifle.

OPERATING INSTRUCTIONS AND CONTROLS

1. CONTROLS—The controls are employed according to the usual trailer-truck combination practice. The driver must become thoroughly familiar with the location and use of all control devices before attempting to operate the vehicles.

a. *Hand brake*—The hand brake is located on the right side of the trailer at the drop in the frame. Turning the wheel down, in a clockwise direction, applies the brakes. The hand brake can be used as a parking brake or as a supplement to the truck brakes, when descending extremely steep grades with a heavy load.

b. *Light connection*—This vehicle is equipped with a light socket at the front crossmember of the frame.

c. *Blackout switch*—The blackout switch is located on the right or curb side of the main frame. There is no "off" position on the switch. It is either at a blackout position or at a standard light position. The switch is operated by means of a coin or screwdriver. The flow of current is controlled at the towing vehicle.

d. *Tire carrier operating nut*—The tire carrier is located on the right side of the trailer. The operating shaft protrudes through the main frame. By removing the stud nuts on the spare tire, and releasing the catch on the ratchet, the tire will fall to the ground. The tire is raised to the carrier by means of cables operated by turning the shaft nut, using the square end of the wheel wrench and handle.

2. COUPLING TRAILER TO TRUCK—a. When pulling the trailer behind a truck or another semi-trailer, the draw eye at the end of the drawbar is placed in a pintle hook and locked by means of a pin provided for that purpose.

b. *Safety chains*—Attach the hook end of the trailer safety chains to the two eyes provided on the rear end of the towing vehicle.

c. *Jumper cable*—Connect the jumper cable between the trailer and towing vehicle.

d. *Air hoses*—Connect the air hoses to the trailer. Care should be taken to be sure that the service air hose connection is hooked up with the service trailer air line and the emergency air hose with the emergency trailer air line. Both hoses and trailer connections are tagged. Switching of hoses makes impossible the release of brakes, once set.

e. *Open air valves on towing vehicle*—Release the parking brake on the trailer.

f. Caution, see that steering lock is **not locked**. See page 9.

3. DRIVING TRUCK AND TRAILER.—a. *General instructions*—The truck and trailer combination is driven in much the same manner as the straight truck. The following hints, however, should prove helpful:

(1) It is good driving practice to test the operation of the trailer brakes before stepping up to full operating speed. Check the air supply on the dash gauge. It should not be less than 60 lbs. for proper application.

(2) The operation of the lights should also be tested.

(3) When turning corners, care should be taken to allow for the fact that the trailer rear wheels turn "inside" the turning radius of the truck.

(4) When backing, the truck should be steered in the opposite direction to which it is desired that the trailer be turned.

4. BRAKING TRUCK AND TRAILER—a. *General instructions*—The trailer brakes should be applied in coordination with the truck brakes. The trailer brakes should not be expected to carry the entire braking load. Such abuse will result in rapid lining wear and greatly reduce the life of the trailer brakes. The following braking procedure is recommended:

(1) Trailer brakes should be applied easily and released when they grab, as a grabbing brake is not operating with maximum efficiency. For maximum braking efficiency, keep tires just short of the skidding point.

(2) When parking the trailer for an extended period, set the hand brake.

5. UNCOUPLING TRAILER FROM TRUCK—a. Set the hand or parking brake on trailer.

b. Disconnect safety chains, and place the chains at front of side rail of the main frame of trailer.

c. Disconnect jumper cable.

d. Shut off both air valves on the tractor truck.

e. Uncouple the two air lines at the front of the trailer. Use care not to permit hose coupling to drag in the dirt.

f. Couple the dummy hose couplers to emergency and service lines on trailer. Dummy couplers should be connected at all times when the trailer is not in use to prevent the entrance of foreign matter into the braking system.

g. Disconnect the drawbar eye from the pintle hook on the tractor.

h. Pull the towing vehicle ahead until the two units are separated.

INSPECTION — LUBRICATION — ADJUSTMENT

1. DAILY INSPECTIONS, WHEN IN OPERATION—

a. *Purpose*—(1) To insure mechanical efficiency, it is necessary that vehicles be systematically inspected at intervals in order that defects may be discovered and corrected before they result in serious damage.

(2) Cracks that develop in castings or other metal parts may often be detected upon the completion of a run, through the medium of dust and oil deposits.

3. Suggestions toward changes in design prompted by chronic failure or malfunction of a unit or group of units; pertinent changes in inspection or maintenance methods; and changes involving safety, efficiency, economy and comfort should be forwarded through technical channels at the time they develop. Such action is encouraged in order that other organizations may profit thereby.

b. *Prestarting inspection*—(1) Check brakes.

(2) Inspect tires for inflation and casing injuries, remove stones, etc. Air pressure 55 lbs. front, 65 lbs. rear.

(3) Check lights.

(4) Check tools and equipment in tool box, replace lost items.

(5) Check to see that draw eye on trailer is properly hooked and locked.

(6) Check pintle hook on towing vehicle for loose bolts, cracks, or broken spring.

(7) Check safety chains.

c. *Inspection during operation*—(1) During operation, the driver should be alert to detect unusual sounds, noises or driving characteristics which indicate abnormal functioning of the unit.

(2) Only under exceptional circumstances should a trailer be operated after indications of trouble have been observed. When in doubt, the vehicle should be stopped and assistance obtained. Inspection during operation applies to the entire vehicle and should be emphasized, throughout the driving instruction period.

d. *Inspection at the halt*—At each halt the operator should make careful inspection of the vehicle to determine its general mechanical condition. Minor defects detected during the march together with defects discovered at the halt should be corrected

during the halt, and proper disposition of the vehicle should be made so that unnecessary delay may be avoided and major failure prevented. Repeat prestaring inspection.

e. *Inspection after operation*—At the conclusion of the day's operation an inspection should be made similar to that made at halts, but more thorough and detailed. The inspection should be followed by preventive maintenance. If defects cannot be corrected, they should be reported promptly to the Chief of section or other designated individual. The following points should be covered:

- (1) Check for broken springs and cracked spring hangers.
- (2) Check axle U-bolts, tighten loose nuts.
- (3) Check wheel studs, tighten loose stud nuts.
- (4) Inspect frame for cracked welds.
- (5) Check spare wheel and tire; secure replacement if necessary.
- (6) Drain moisture from the reserve air tank, by means of the pet-cock at the bottom of the tank. **This is important!**
- (7) In freezing weather, place planks, tree brush or other material under tires when parking over-night to prevent tires from freezing to ground.

2. MONTHLY LUBRICATIONS—a. *Lubrication*—(See lubrication chart for the type of lubricant, when to lubricate, and the method to follow in lubricating the assemblies and sub-assemblies listed below.)

- (1) Fifth wheel circle plate.
- (2) Fifth wheel bolster plate.
- (3) Drawbar hinge.
- (4) Underconstruction, includes lubrication of:
 - Spring ends
 - Brake shoe cam
 - Brake anchor pin bushings
 - Cam shaft bracket
 - Slack adjuster
 - Anchor plate bearings.
- (5) Wheel bearings.
- (6) Parking brake, includes lubrication of:
 - Cross shaft journal
 - Parking brake rod clevis pins.

3. MECHANICAL INSPECTION AND ADJUSTMENT—

- a. *Bolster plate*—Examine for cracked welds.
- b. *Drawbar hinge*—Wobbly drawbar—check for excess play. Rebush.
- c. *Lights*—Check all lights and wiring for operation. Tighten loose connections and replace defective wires and bulbs.
- d. *Underconstruction*—(1) Axle: Check alignment. (See pages 26-28.)

(2) Springs and shackles: Check for broken spring leaves. Replace springs.

(3) Brakes: Check linkage and operation. Tighten loose hose line connections. Check front end couplings. Adjust brake for equalization at slack adjusters if required. Drain the moisture from the air filter about every 2,000 miles. Remove the filter cartridge every 10,000 miles and wash in gasoline.

(4) Radius rods: Check for worn bushings. Check adjustable radius rods and tighten pinch bolts.

e. *Wheels*—Tighten wheel nuts. Check bearing adjustment by removing hub cap. Adjust if necessary.

4. EVERY FOUR MONTHS—or every 5,000 miles (oftener under hard service condition).

a. *Wheels and Bearings*—Remove, wash and repack and adjust bearings.

b. *Brakes*—Check lining and drums; adjust brakes for equalization. Lubricate brake cams and rollers with **WB**.

STEERING LOCKS—(see page 10 for instructions)

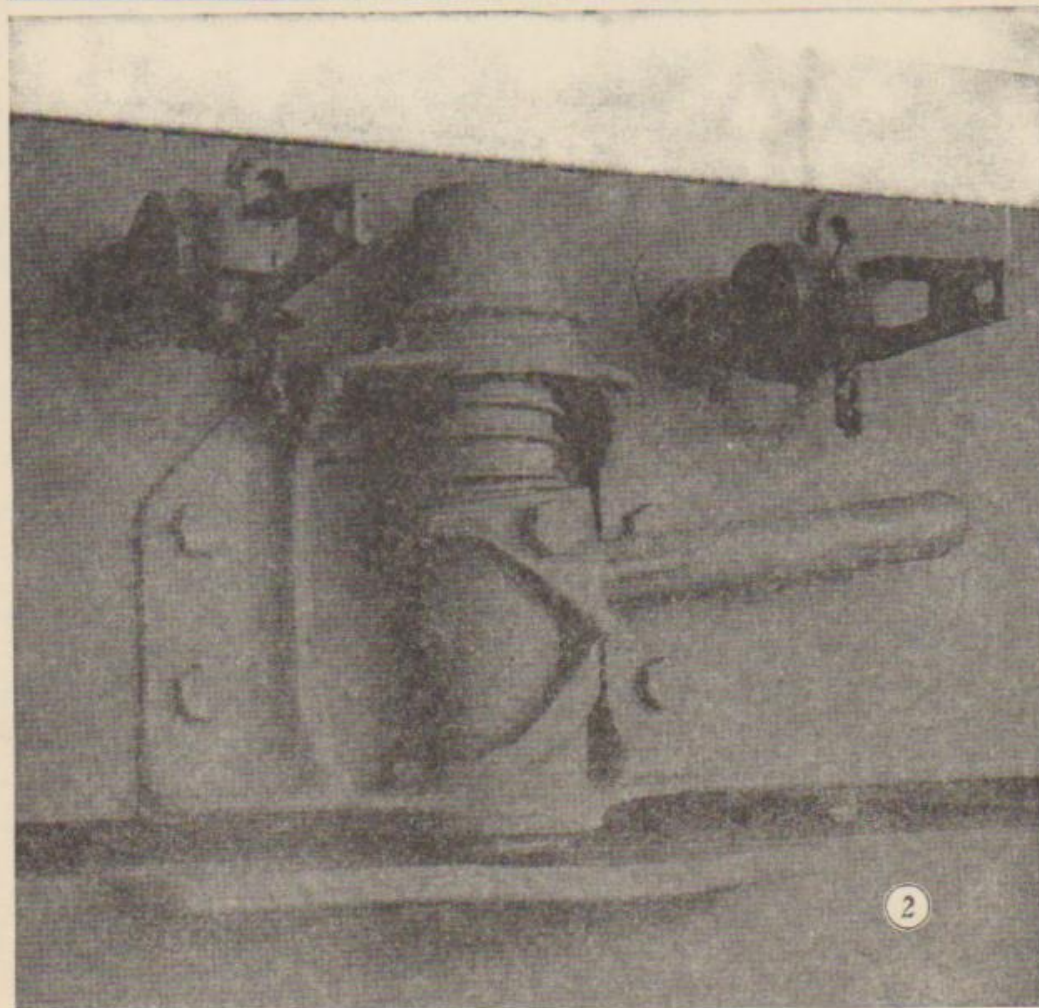
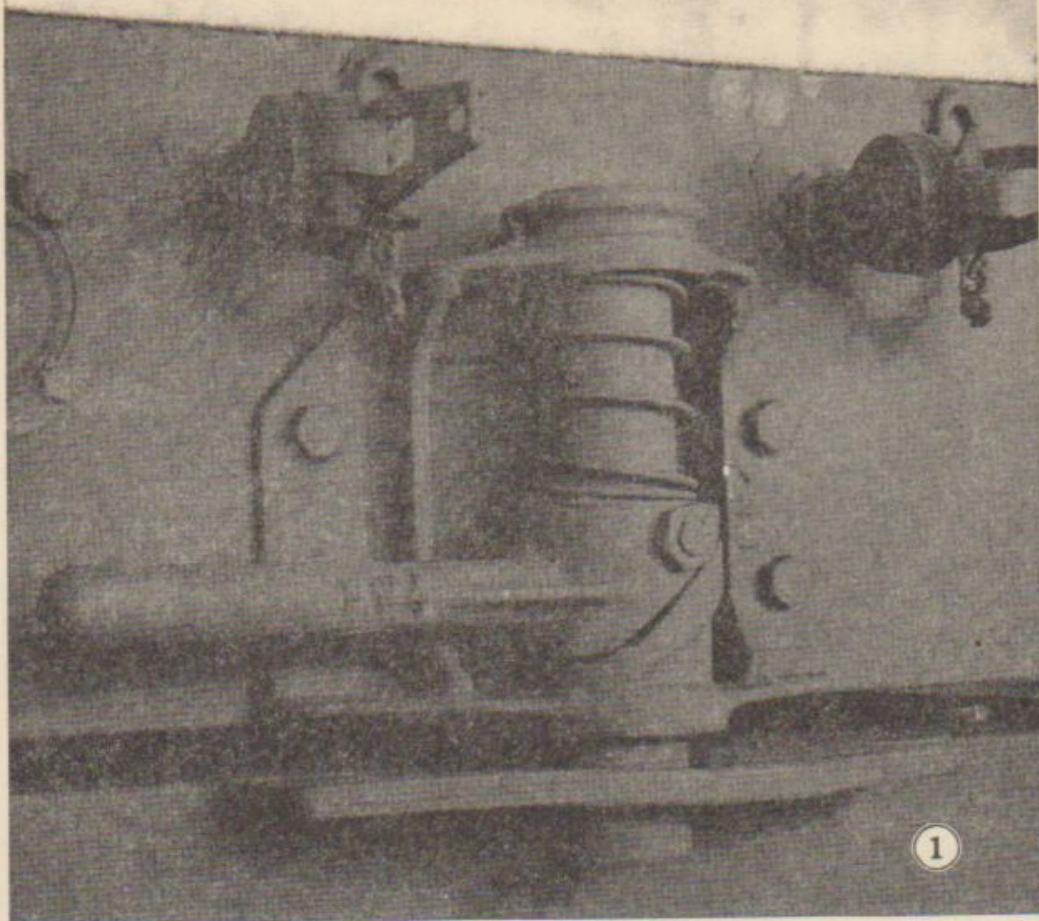


Fig. 71

Figure one on page nine shows steering lock in the locked position. The purpose of the steering lock is to make the Dolly track in a straight line with the trailer proper if for any reason this is desired in spotting the trailer when parking. DO NOT drive trailer in transport work with steering lock in locked position, as this will endanger the entire unit.

Figure two shows steering lock in unlocked position.

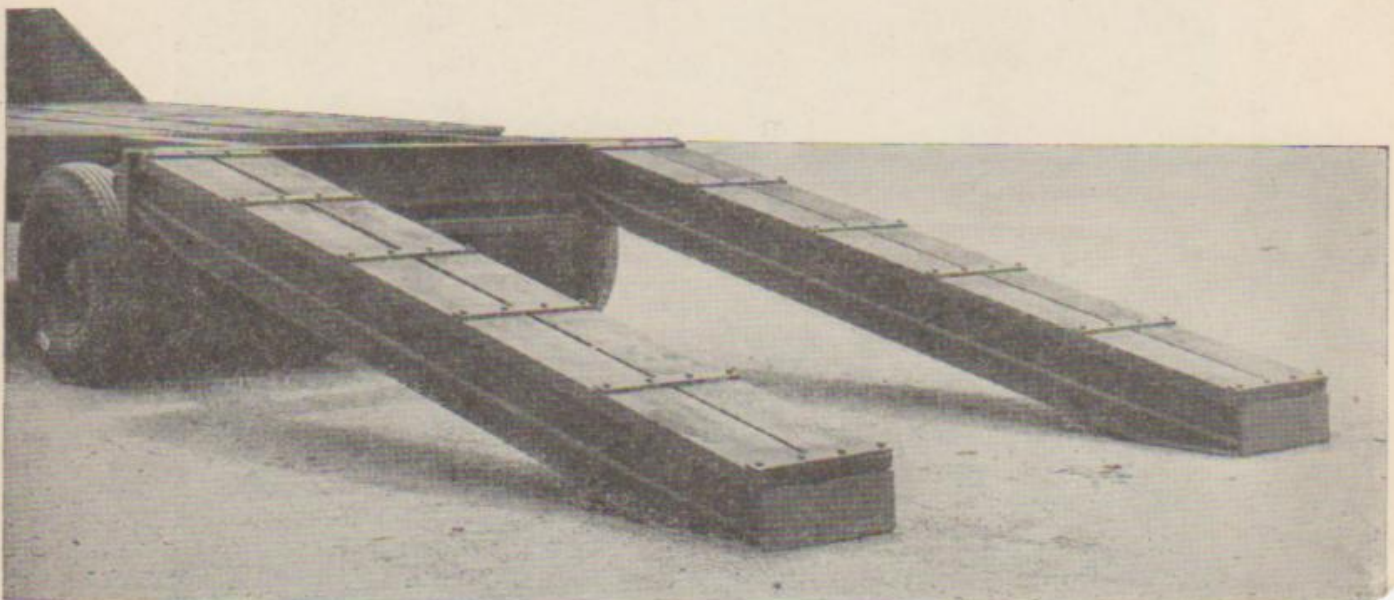


Fig. 72

Above is shown the two loading ramps in place. It will be noted that one end of the ramp has a flange to fit into a long flange at rear of trailer to securely hold ramp in position; be sure always that this end is turned to the trailer and that ramp is secure before loading or unloading cargo. Always set parking brake securely before attempting to load or unload. It is also advisable to chock rear wheels of trailer also before loading or unloading.

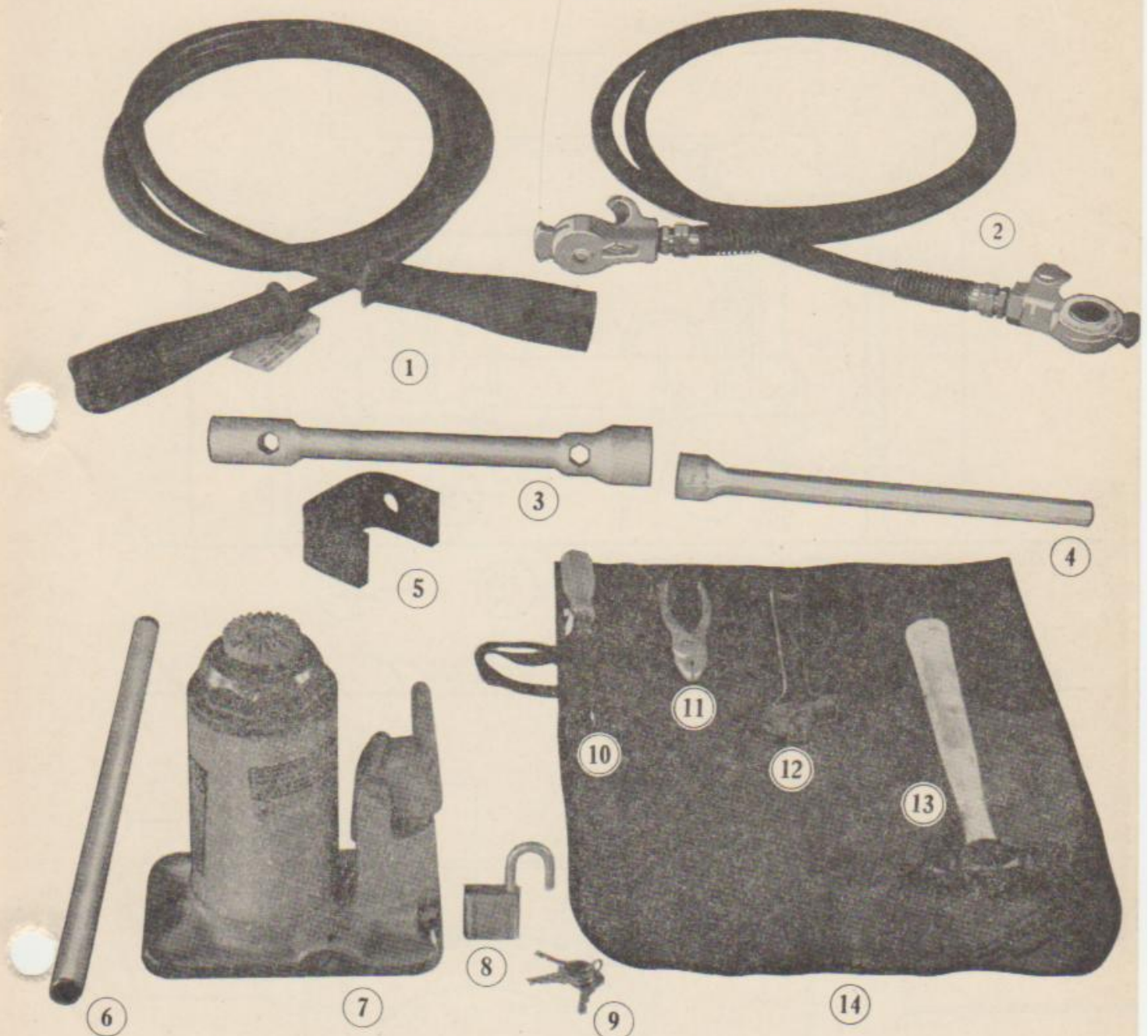
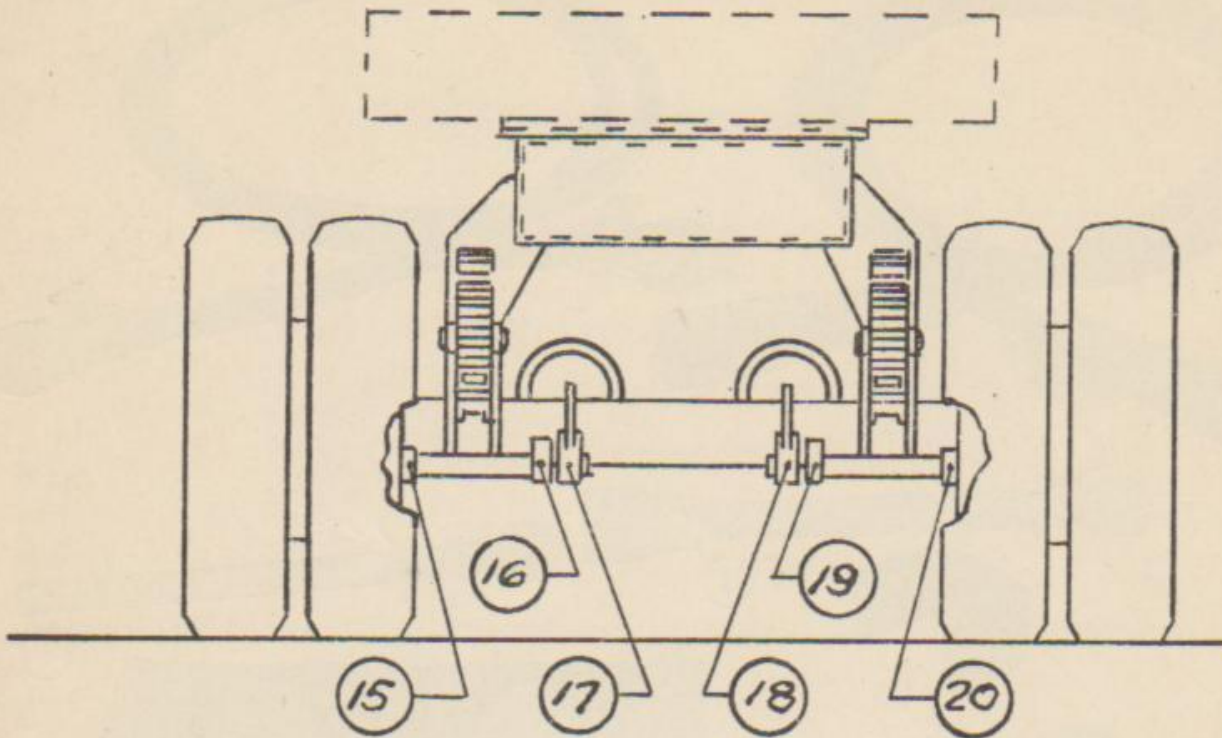


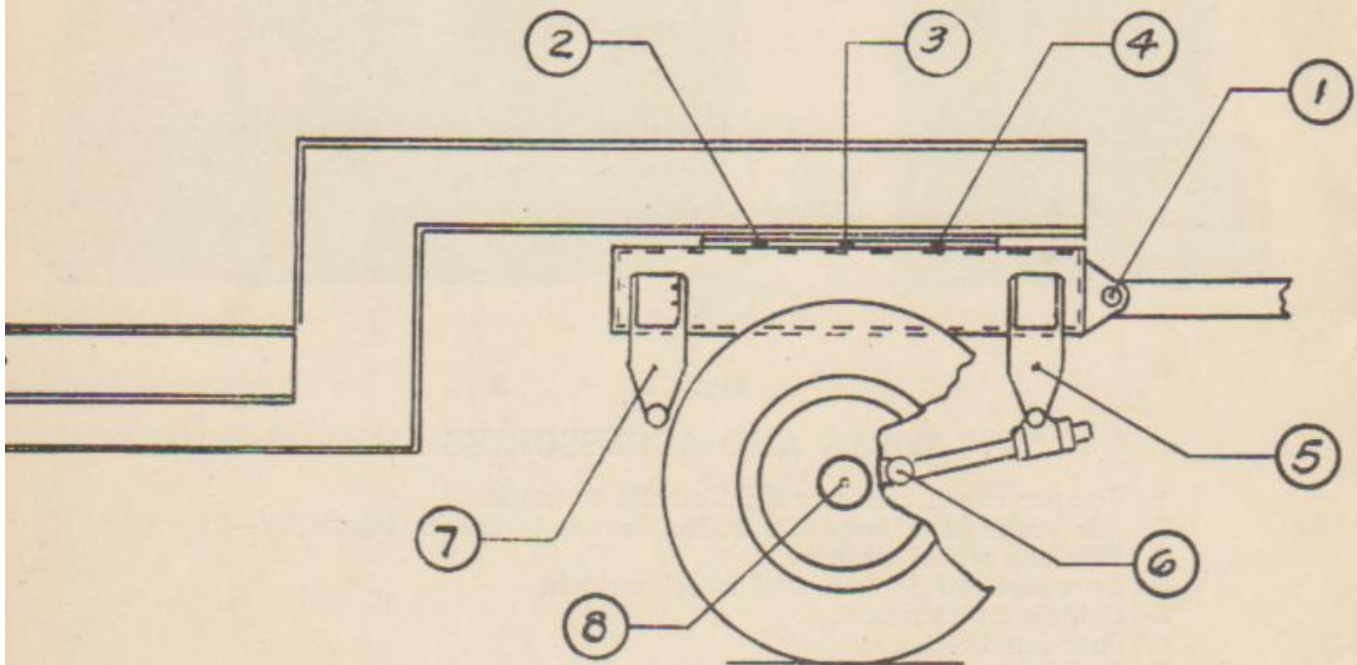
Fig. 73

TOOLS AND ACCESSORIES

1. Jumper cable, connects light circuit to truck
2. Air brake hose, connects trailer brakes to truck. (Quantity—2)
3. Rim and wheel wrench.
4. Leverage bar for rim and wheel wrench.
5. Spindle nut wrench.
6. Jack handle.
7. Jack.
8. Tool box lock.
9. Keys for tool box lock.
10. Screwdriver.
11. Pliers.
12. Crescent type wrench.
13. Ball peen hammer.
14. Tool kit roll.



REAR VIEW OF FRONT DOLLY



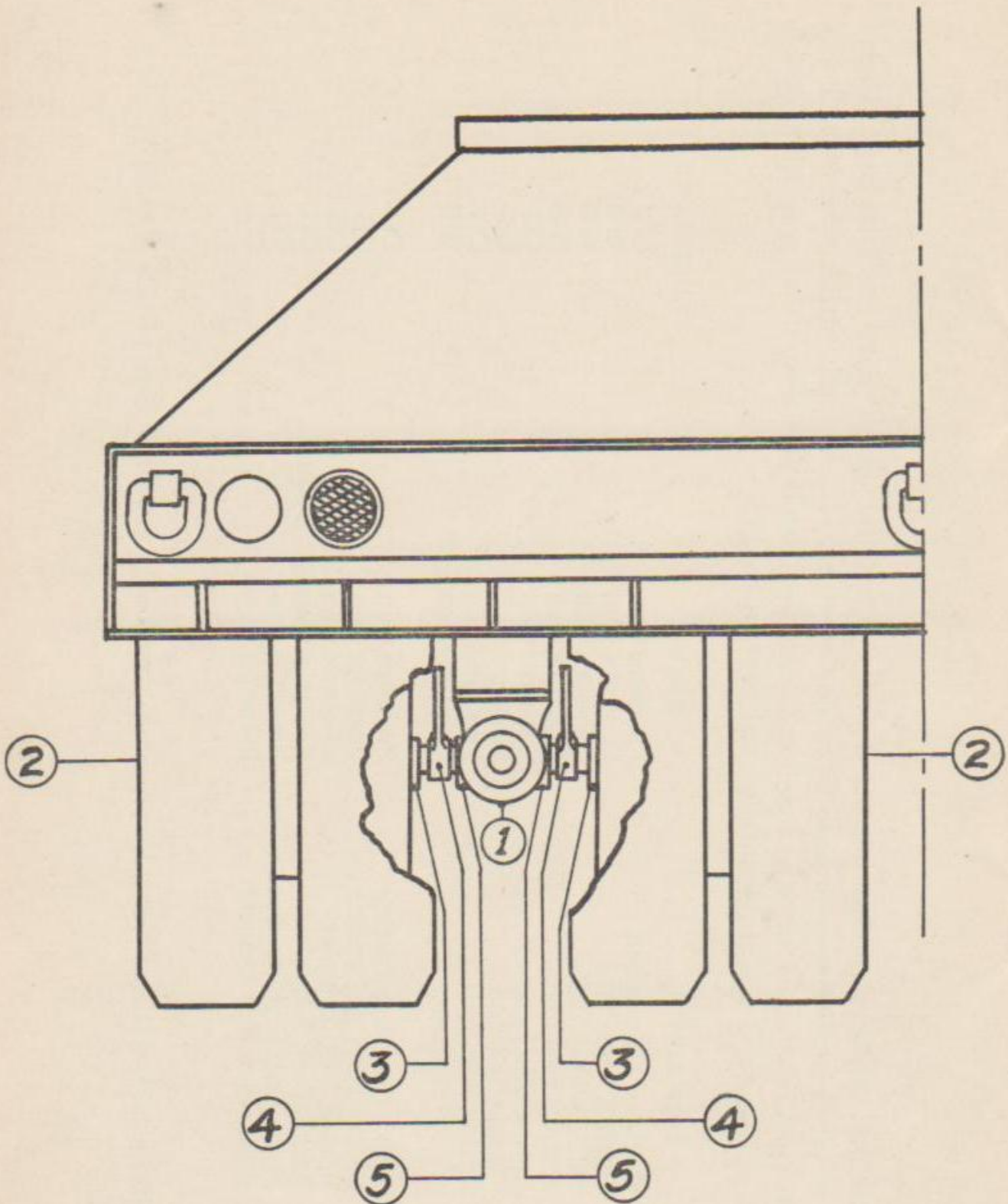
SIDE VIEW OF FRONT DOLLY

Fig. 74

All pressure gun fittings should be lubricated each 500 miles of operation or every 30 days. Under unusual dust or sandy conditions or in rainy or muddy weather, pressure gun fittings should be lubricated each 200 miles, and under extreme conditions, each day. Remember always that proper lubrication is the life of a machine and will prolong its use and prevent repairs.

KEY No.	DESCRIPTION	METHOD	LUBRICANT
1.	Drawbar Connection	Pressure Gun	CG
2.	Fifth Wheel Plate	Pressure Gun	WB
3.	Fifth Wheel Plate	Pressure Gun	WB
4.	Fifth Wheel Plate	Pressure Gun	WB
5.	Spring Slip End	Pressure Gun	CG
6.	Torque Rod End	Pressure Gun	CG
7.	Spring Slip End	Pressure Gun	CG
8.	Wheel Bearings	Hand Application	WB
15.	Brake Cam Rod Bearing	Pressure Gun	CG
16.	Brake Cam Rod Bearing	Pressure Gun	CG
17.	Brake Slack Adjuster	Pressure Gun	CG
18.	Brake Slack Adjuster	Pressure Gun	CG
19.	Brake Cam Rod Bearing	Pressure Gun	CG
20.	Brake Cam Rod Bearing	Pressure Gun	CG

Instructions on lubrication of wheel bearings are found on a following page of this Manual.



HALF REAR VIEW OF TRAILER

Fig. 75

REAR VIEW OF TRAILER

KEY No.	DESCRIPTION	METHOD	MATERIAL
1.	Oscillating Axle Bearing	Pressure Gun	CG
2.	Wheel Bearings	Hand Application	WB
3.	Cam Shaft Bearing—outer*	Pressure Gun	CG
4.	Brake Slack Adjuster	Pressure Gun	CG
5.	Cam Shaft Bearing—inner	Pressure Gun	CG

To remove wheels for lubrication of the trunnion axles on rear of trailer, it is advisable to remove the tires first as this will greatly facilitate the operation by providing much more room to work in the limited space allowed the inside wheels. It is always advisable when wheels are removed to inspect brake drums and linings. If linings are worn to or nearly to rivet heads, linings should be replaced. If drums are badly scored or broken, they should be replaced.

* Avoid over greasing by pressure gun.

— KEY —

WB—Grease, general purpose No. 2.

CG—Grease, general purpose.

No. 1 (above 32°)

No. 2 (below 32°)

To remove wheels for lubrication, raise the wheel to be removed with jack and after removing hub cap, remove cotter pin and proceed to remove spindle nut with wrench. **DO NOT REMOVE** spindle nut with hammer and chisel or punch as this will damage nut and in many cases render it unfit for further use. Likewise, do not replace or tighten spindle nut with hammer and chisel or punch.

To lubricate wheel bearings, remove wheels and clean hubs, axle spindles and bearings thoroughly with kerosene or other suitable solvent. Pack grease into bearings with the hands, leaving a liberal amount of grease on the spindle between the bearings. **DO NOT FILL HUBS WITH GREASE!** This will cause too much grease to work against the grease retainers, causing grease to enter the brake area, seriously affecting brake action and spoiling the brake linings. In replacing the wheels after repacking, great caution should be exercised not to get adjusting nut too tight—this will cause bearings to heat and burn out. Tighten nut until wheel binds, then reverse the nut until wheel turns freely, ordinarily $\frac{1}{4}$ to $\frac{1}{2}$ turn backwards will be enough. Be sure to lock the wheel nuts securely with cotter pins. Do not re-use old cotter pins unless absolutely necessary. Wheel bearings should be repacked each 5,000 miles under ordinary conditions, and under extreme conditions of mud, sand, or dust, every 2,500 miles. Repack wheel bearings each 5 months regardless of mileage.

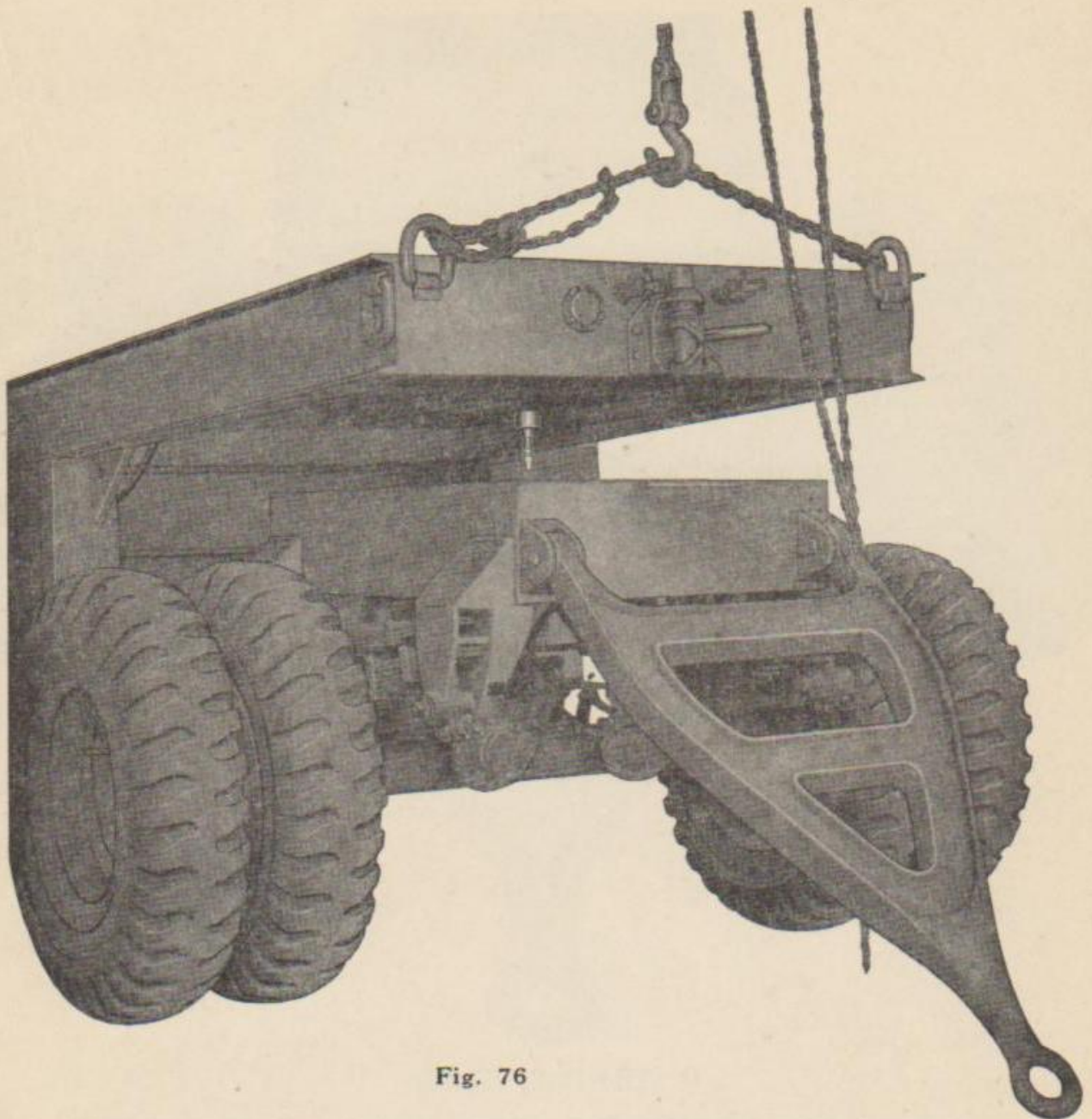


Fig. 76

To Disconnect the Dolly

In the picture shown above, the Dolly is being disconnected. A suitable hoist or crane is required to lift the heavy trailer from the Dolly. Before raising the trailer, be sure to disconnect the air brake line from the lower end of the fifth wheel king pin. Then remove the large nut on the king pin proper. Securely prop the Dolly in position before raising the trailer or it will rotate on its axle and fall, damaging the air brake connection and possibly injuring the person attempting the uncoupling. After the brake line is disconnected and the Dolly safely propped, proceed to raise the trailer with crane or hoist as shown.

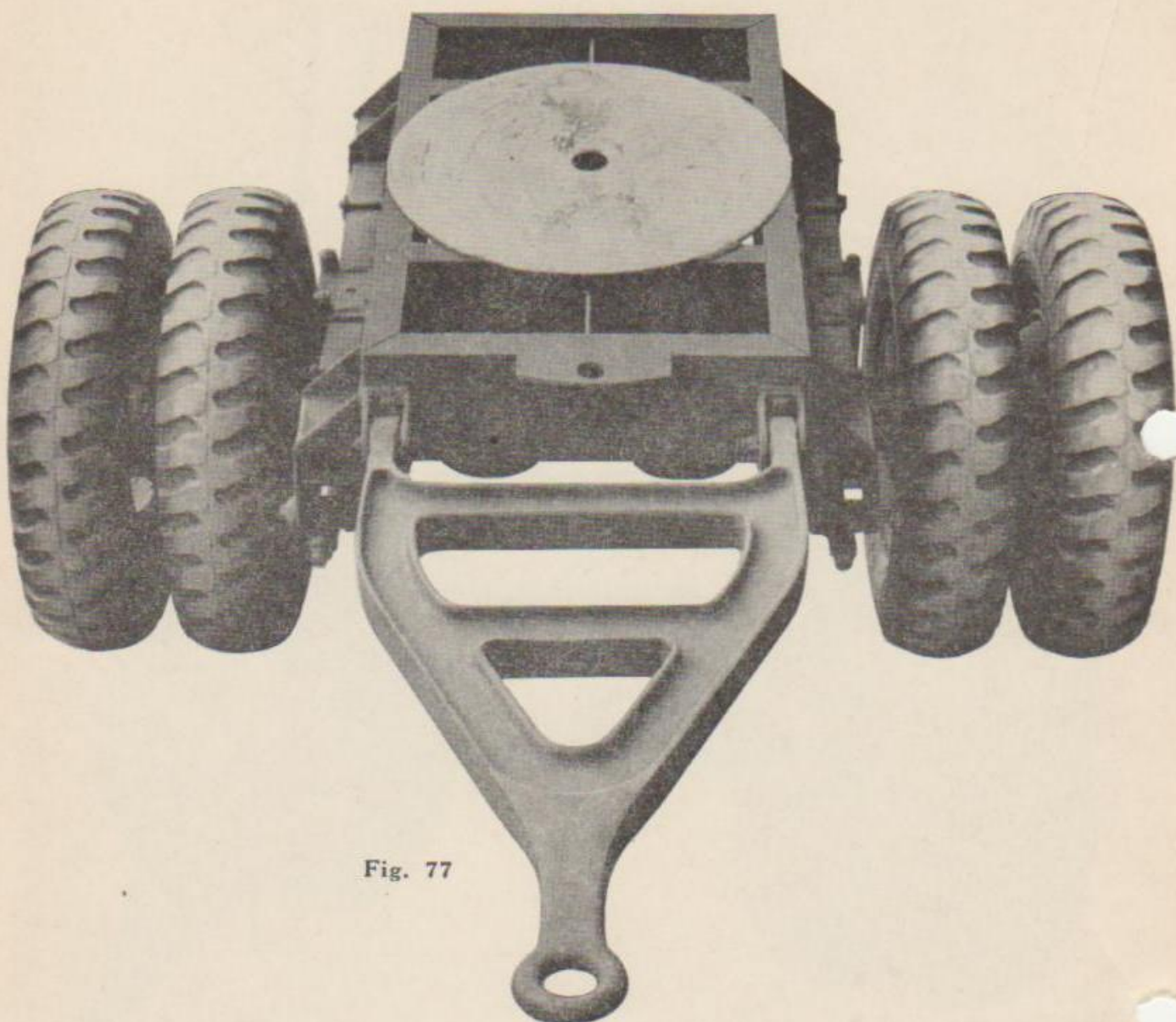


Fig. 77

The Dolly Truck

Shown above is the Dolly Truck which has been disconnected from the trailer proper. The disc in the center is the lower half of the fifth wheel which should be kept lubricated with **CG No. 2** grease. The fifth wheel should be kept well supplied with grease to prevent undue wear and to prevent a freezing action from taking place, causing the unit to be unwieldy and hard to steer in service. The fifth wheel should be washed clean with kerosene or some other suitable solvent every three months or 5,000 miles, whichever shall occur first. This is a major lubrication operation which requires that the Dolly be disconnected from the trailer proper. The fifth wheel should have a minor lubrication each 30 days or 500 miles, whichever shall occur first. This is done with a pressure gun as is shown on a previous page of this Manual.

ABB.
SC
BOC
BOT
BOS
ST
SS

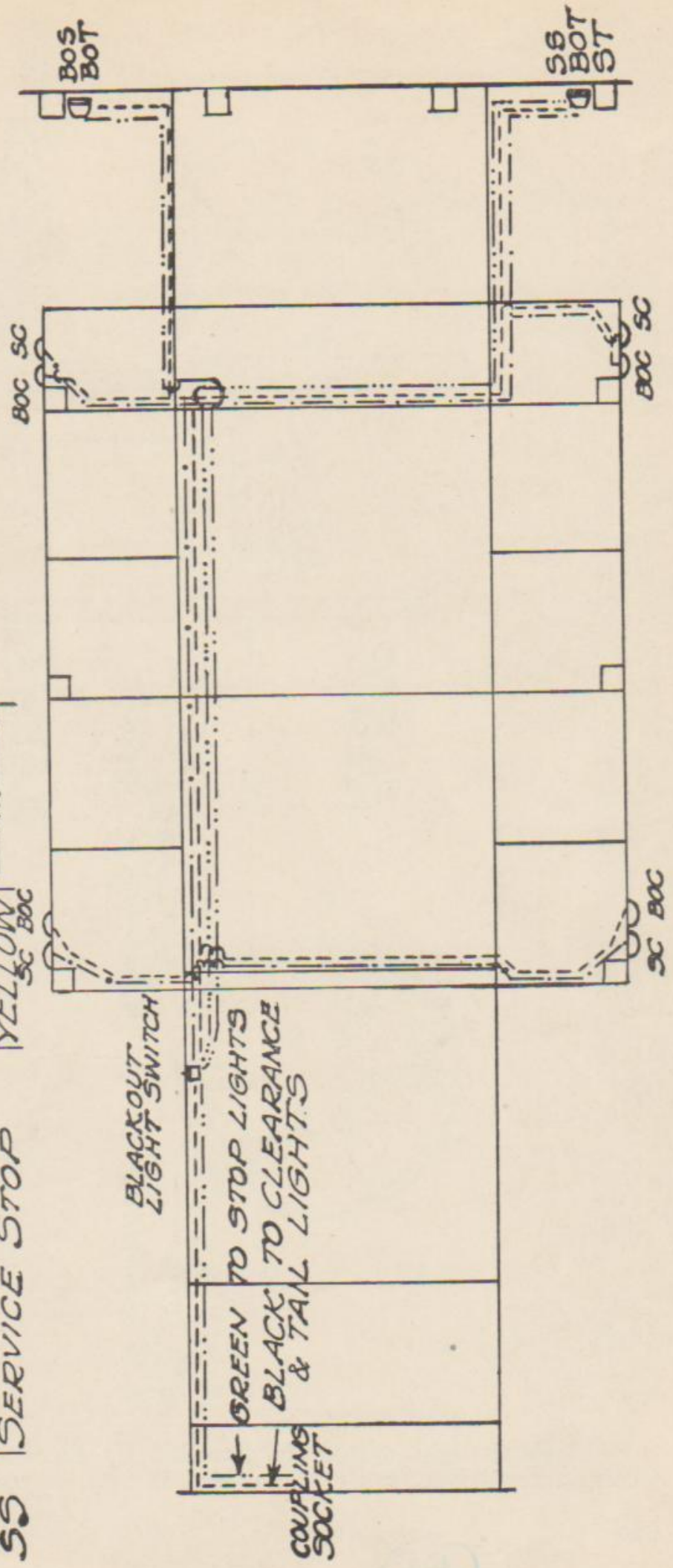
LIGHTS

SERVICE CLEARANCE
BLACKOUT CLEARANCE
BLACKOUT TAIL
BLACKOUT STOP
SERVICE TAIL
SERVICE STOP

WIRE COLOR
RED
BLACK
BLACK
GREEN
RED
YELLOW
SC BOC

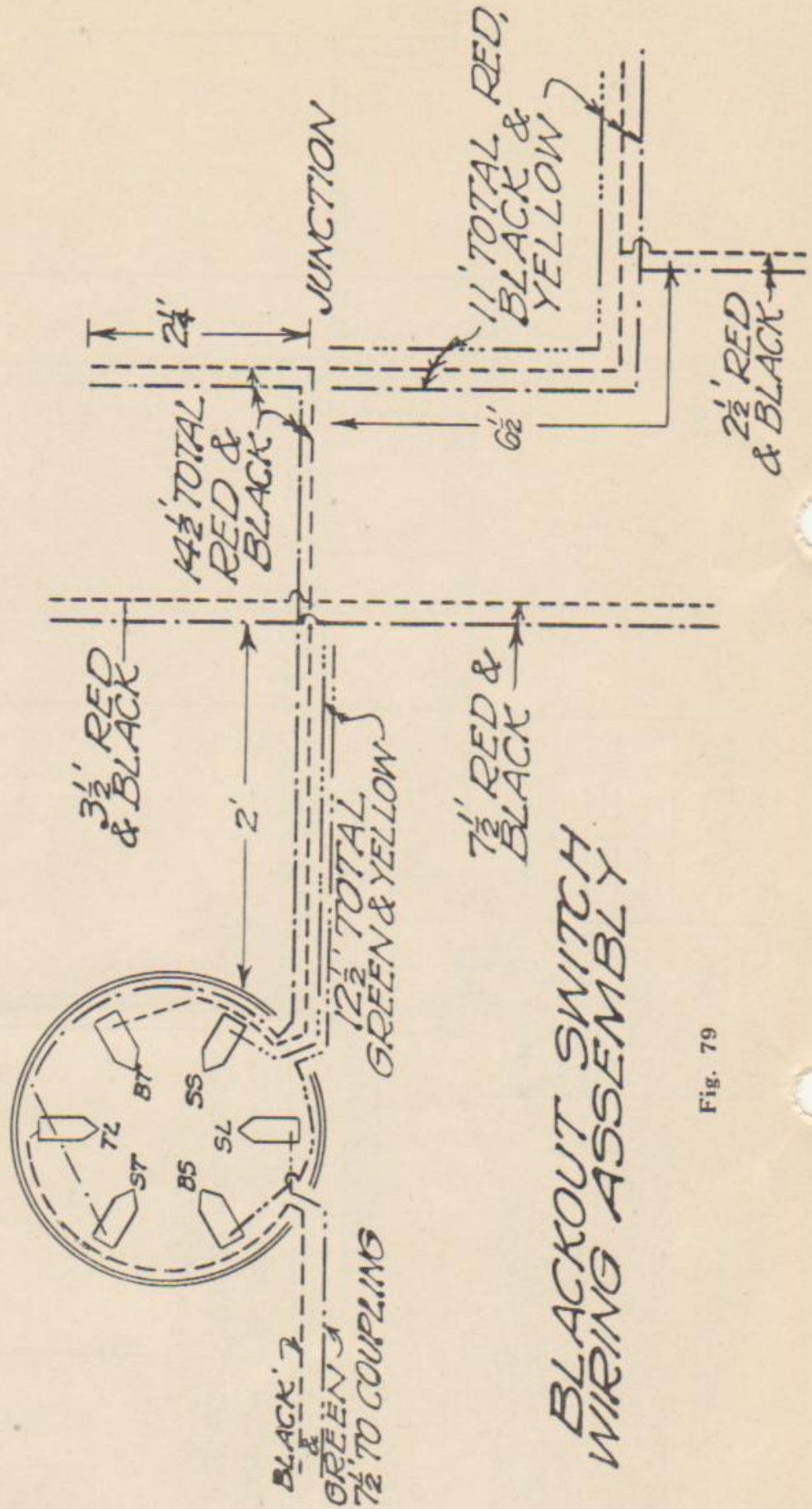
SYMBOL

Fig. 78



ELECTRIC WIRING DIAGRAM

- TL TAIL LIGHTS & CLEARANCE LIGHTS
- BT BLACKOUT TAIL & BLACKOUT CLEARANCE LIGHTS
- SS SERVICE STOP LIGHT
- SL STOP LIGHTS
- BS BLACKOUT STOP LIGHT
- ST SERVICE TAIL LIGHT & SERVICE CLEARANCE LIGHTS



**BLACKOUT SWITCH
WIRING ASSEMBLY**

Fig. 79

Blackout light system is operated by Blackout Switch. A coin, screwdriver, knife blade, etc., is used to operate switch.

SHIPMENT AND STORAGE

1. SHIPMENT BY RAIL—*a. General Procedure*—Vehicles are usually shipped on flat cars (36' to 60' long), gondolas (36' to 60' long), and these types of cars with wooden floors are most desirable because of the ease of loading and blocking.

b. Preparation of railroad cars—Transportation must be inspected to determine if the cars are in suitable condition to carry the load safely to its destination. Solid floors are required. All loose nails, debris and projections not an integral part of the car and the prescribed blocking must be removed.

c. Preparation of vehicles for loading—If troops are not traveling with their vehicles, all loose property and tools should be packed and secured in boxes.

d. Facilities for loading—Whenever possible, vehicles should be loaded utilizing permanent end ramp and platform. Movement from one flat car to another along the length of the train is made possible by cross-over plate, or a spanning platform after dismounting the car hand brake. An improvised ramp can be made from railroad ties.

e. In securing or blocking a vehicle, three motions (lengthwise, sidewise and bouncing) must be prevented.

(1) Material for blocking on wood floor cars should be not less than 2" x 4". Blocks cut from material 6" x 6" or 8" x 8" are preferable. Ordinarily straps should be placed over the axle and secured to the floor in lieu of damaging the floor by inserting hooks. Canvas, cloth or burlap should be placed between the rubber and the blocks to reduce wear. Blocking should be snug to eliminate play. In case of metal floors, blocking between the sides and end walk is required.

(2) The trailer parking brake should be set.

(3) Equipment moving from manufacturer to arsenal or proving grounds, or from arsenal or proving grounds to army post, or individual units moving from one army post to another *must* be placarded "DO NOT HUMP."

(4) Further details on loading are to be found in "Special Supplement Containing Rules Governing the Loading Mechanized and Motorized Army Equipment"; also, "Major Calibre Guns for the United States Army and Navy, on Open Top Equipment" published by the Association of American Railroads, Operations and Maintenance Department, April 1, 1941.

2. SHIPMENT BY WATER—Preparation is, with certain modifications, the same as that indicated for rail shipment if the vehicles are accompanying the troops. Special attention must be given to rust prevention, however. All exposed unpainted metal and working parts should be greased.

3. LIMITED STORAGE—Vehicles in this category are those which are ready for immediate service but not used for less than 30 days. The vehicles must be cleaned and lubricated thoroughly before they are placed in storage and the various types of nonmetallic materials must be protected according to existing regulations. Brakes will not be set.

4. INDEFINITE STORAGE—Vehicles in this category are those which will not be required for service for an indefinite period.

a. *Storage conditions*—Vehicles will be stored in closed buildings or covered sheds if available. In lieu thereof, cover by tarpaulin. Storage surface should be solid, free from crushed rock, deep dust and oil surfacing and properly drained. Vehicles should be raised and blocked to keep the tires off the ground. If not completely serviced and maintained, each vehicle is tagged to indicate what repairs are required before it is returned to service.

b. *Parts removed*—Tires are removed and stored as indicated below.

c. *Tires*—Pneumatic tires and tubes should be kept in a cool, dark, dry place. Used casing should be repaired, cleaned and wrapped in burlap, paper, or cloth, and stored vertically side by side. Tubes should be deflated, removed from the casing, cleaned, repaired, folded loosely and stored in pasteboard cartons. Care should be taken that there are no sharp folds and that a small amount of air should be left in the tube to keep creases from forming.

d. *Bodies*—All exposed metal parts of the body and chassis should be slushed thoroughly, except, of course, the wooden floor. Oil drained from a crank case, gear oil thinned with crank case oil, or oil purchased for the purpose may serve as slushing oil.

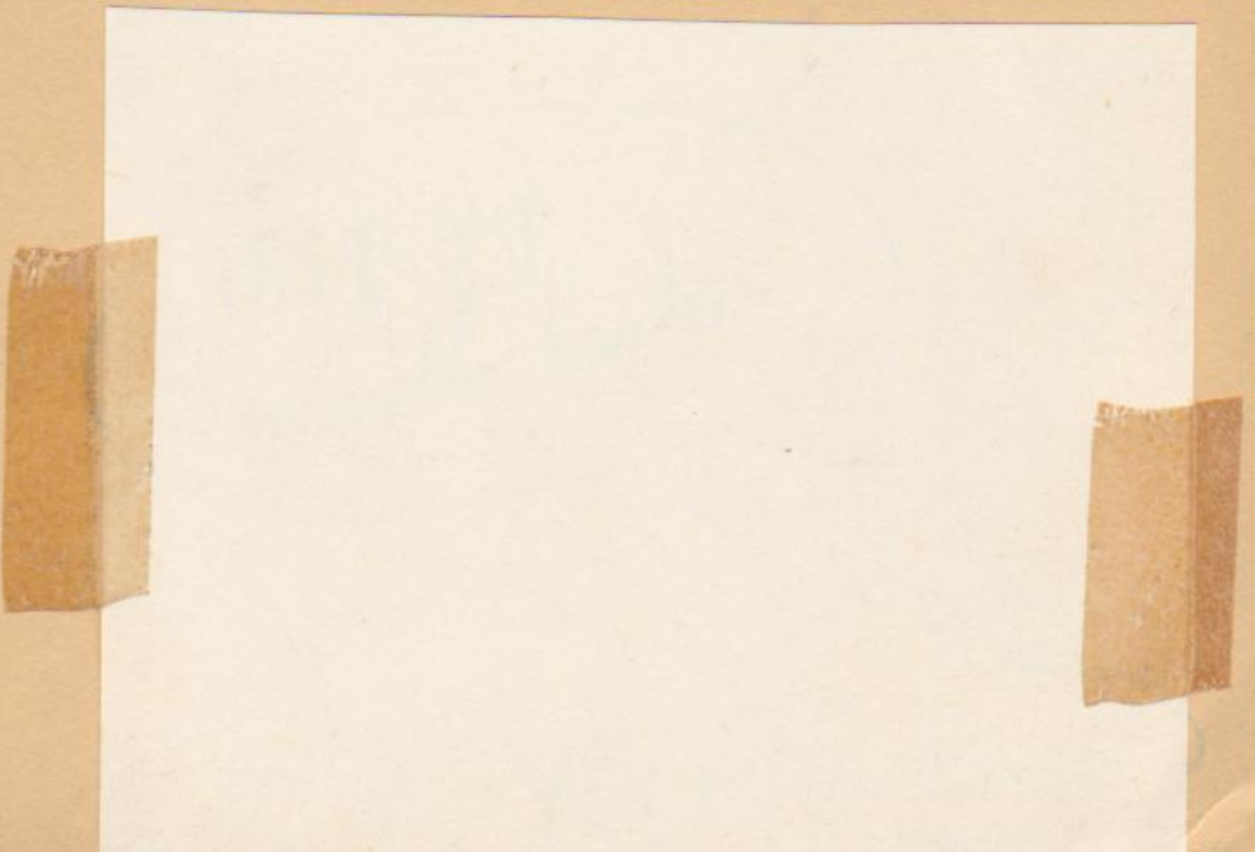
e. *Equipment*—All tools and accessories will be repainted or regreased if necessary.

f. *Inspection of vehicles in storage*—Inspection of vehicles in storage will be made not less than once each month, under the direct supervision of a commissioned officer, to see that instructions are being complied with.

This "Maintenance Manual" is prepared to instruct repair men in the essentials of disassembly, repair, and reassembly. Sections will come in order and will be listed with the most likely needed repairs first in order.

SECTION II

MAINTENANCE MANUAL



SAFETY INSTRUCTIONS

Because the trailer is a relatively unstable unit, greater than ordinary precaution must be followed if accidents are to be avoided. Therefore, before working on the wheel assembly, springs and axles of this unit, it is strongly recommended that the following procedure be followed at all times.

In changing the axle on the Dolly, put the jacks on solid wood or other material that will make a sound footing. Use four jacks, one on each corner; do not attempt to crawl under the job when jacked up unless chocking is placed under the frame to catch it in case it should drop. Follow the same procedure in changing the rear axle, but it is only necessary to use two jacks.

When raising the front end of the unit, NEVER connect the chains to the main unit frame. Rather connect them around the gear frame and lift the two units together.

However, when attempting to separate the main frame from the Dolly an exception will be made—the chains should then be fastened to the lashing rings on the front of the main frame.

Axle Alignment

Torque rods are adjustable for axle alignment of front or dolly axle. Axle must be at right angle to line of draft. To check alignment, measure from extreme front end of drawbar to a point on axle at inside edge of spring seat, then measure distance to same point on opposite end of axle. When the two measurements are the same, the axle is in line. Adjustment is obtained by removing or inserting shims on torque rod. Except in extreme cases, proper adjustment can be made by adjusting one rod only.

CAUTION — Bushings in drawbar must be tight to obtain proper measurements.

Axle misalignment is indicated by uneven tire wear.

The axles at rear of trailer are fixed and require no adjustment for alignment.

Disassembly to Check Front Axle Camber or Bent Front Axle

Remove wheel assembly.

Place jacks under both sides at the rear of the body rather than under the axle, or hoist from rear crossmember, inasmuch as a jack under the axle will interfere with checking for camber.

Checking for Bend

Place the axle gauge in position on the front side of the axle. (See below.)

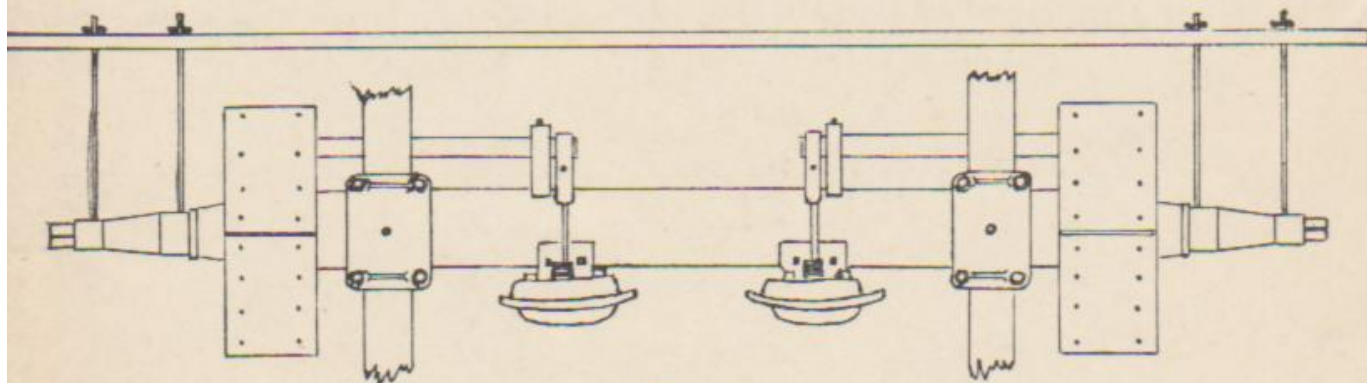


Fig. 80

With the single pronged end of the gauge held firmly against the inner bearing surface, adjust the double prongs on the other end of the gauge until they contact the inner and outer bearing surface.

Now move the gauge over to the rear side of the axle. If either of the two prongs fails to make contact, a bent spindle is indicated. Use a feeler gauge to determine the amount of the bend. If it is in excess of .002, replace the axle.

If checking both sides of one spindle reveals no bend in the axle, turn the gauge end for end and check the other spindle without disturbing the setting of the prongs.

If there is clearance at either bearing surface, check with a feeler gauge. If the prongs are in contact at both points, the axle is not bent.

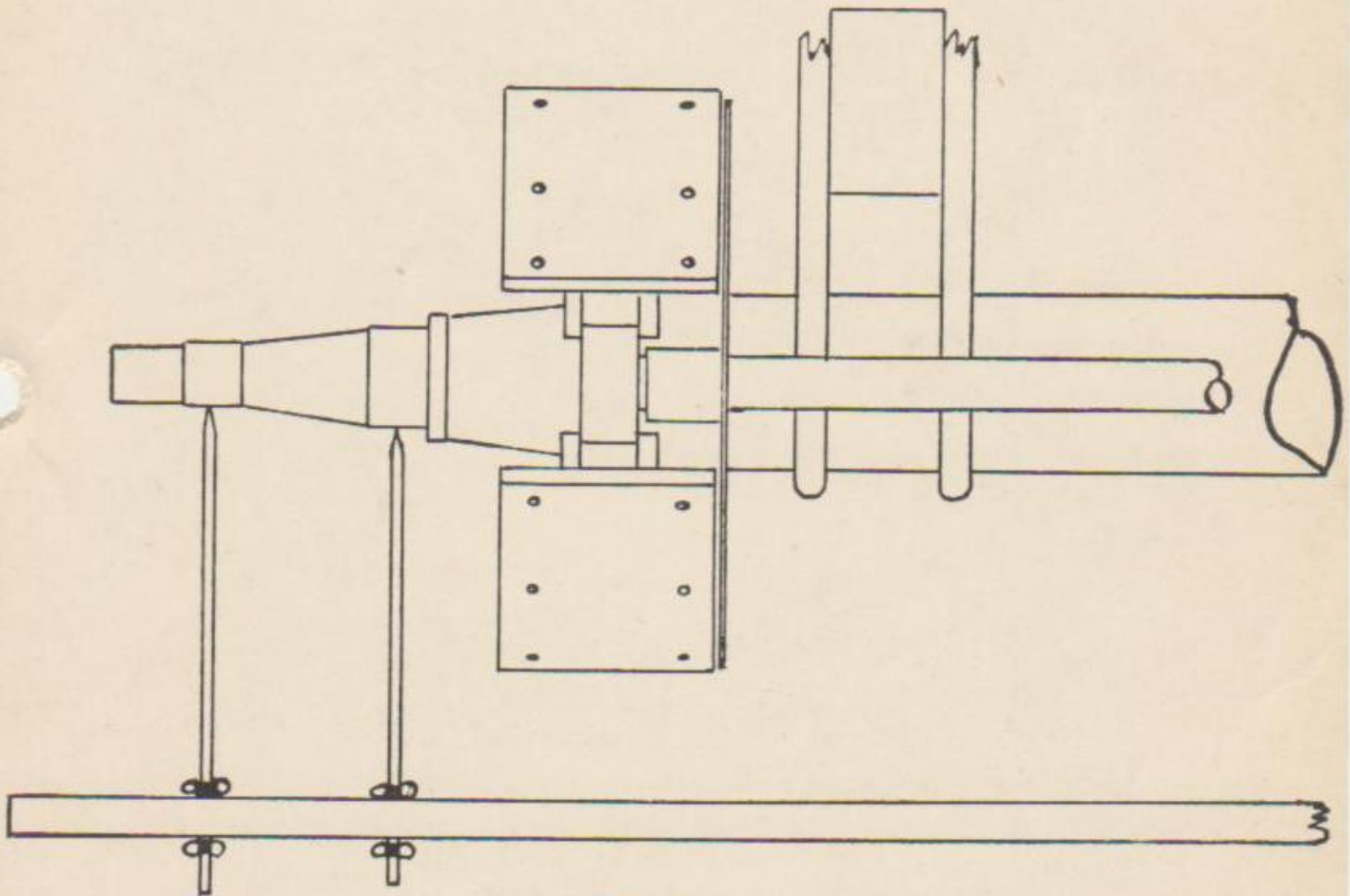


Fig. 81

Checking for Camber

Set the points of the axle gauge in exactly the same position on the axle and in the same manner as outlined in first two paragraphs of Checking for Bend.

Place the gauge directly under the axle.

Clearance will exist between the inner prong and the bearing surface. Clearance should not exceed .080 or be less than .060. If camber is not within the proper limits, replace the axle.

Rear or trunnion axles do not have any camber, which means that they are perfectly straight. Therefore, it is only necessary to inspect trunnion axle for bend only. This is done in exactly the same manner as checking front axle for bend except a shorter axle gauge is used.

BRAKES

Minor Brake Adjustment

Jack up both wheels.

Turn slack adjuster wing wrench or adjusting nut at each wheel clockwise, until the wheel cannot be turned.

Back the adjusting wing wrench off two notches, or enough more so that no drag is felt on the wheel.

Brake Relining

Visual inspection of brake shoes and linings can be made without removing wheels from the axle. Simply remove the two dust shields, which are bolted to brake adapter with six $\frac{1}{4}$ " cap screws. This exposes the assembly to check for lining thickness, grease on the lining, etc.

It is essential that all four brake blocks be replaced when relining.

If inspection reveals the necessity for new lining, proceed as follows:

Remove wheel, hub and drum as an assembly. (See pages 69 and 81.)

To remove brake linings, rivets holding brake linings to shoes must be punched out. A special brake lining machine should be used for this operation. To replace brake linings, linings should be riveted to shoes, using special brake lining machine.

Clean all foreign matter from the shoes and install new brake blocks.

Adjust the brakes in accordance with the major brake adjustment procedure.

Brake Drum Replacement on Front Axle

Brake drums should be replaced when cracked or badly scored. Heat checking, unless severe, does not call for brake drum replacement.

Remove wheel and hub assembly. (See page 81.)

If changing drum on the front wheel, block the wheel at both sides and remove the drum by removing the ten nuts holding it to the hub assembly.

Remove any rust or dirt in the drum pilot and install the new drum.

Successively tighten opposite nuts to bring the drum down evenly to prevent its cocking on the pilot.

Prick punch each nut at two opposite points to lock in position.

If necessary to replace drums on rear axle, it is necessary to replace the entire wheel, hub and drum assembly, inasmuch as this part is cast integral.

On trailers bearing serial number 0530312 and up, drums on rear wheels are replaceable in the same manner as front wheels.

Major Brake Adjustment, Rear Axles Only

The procedure which follows applies only when new linings or drums have been installed.

Loosen both nuts on both anchor pins so that the anchor pins can be moved freely.

Replace the wheel and drum assembly. If it fails to move on freely, slack off on the slack adjusters through counter-clockwise movement of the slack adjuster wing wrench and centralize anchor pin eccentrics.

With the wheel in place, turn the slack adjuster wing wrench clockwise until the shoes are tight in the drum.

Turn the eccentric anchor pin either to right or left as you tighten up on the slack adjuster until the brake shoes are centralized in the drum.

Using a feeler gauge, set the clearance at .010 at the eccentric end and .015 at the cam end of the brake shoes. (See Fig. 82.)

Tighten lock nuts on the anchor pins while holding anchor pins firmly in position with a wrench.

There is no major brake adjustment to be made on front or Dolly axle, inasmuch as the anchor pins are solid and do not move on eccentrics, the only adjustment being the slack adjuster.

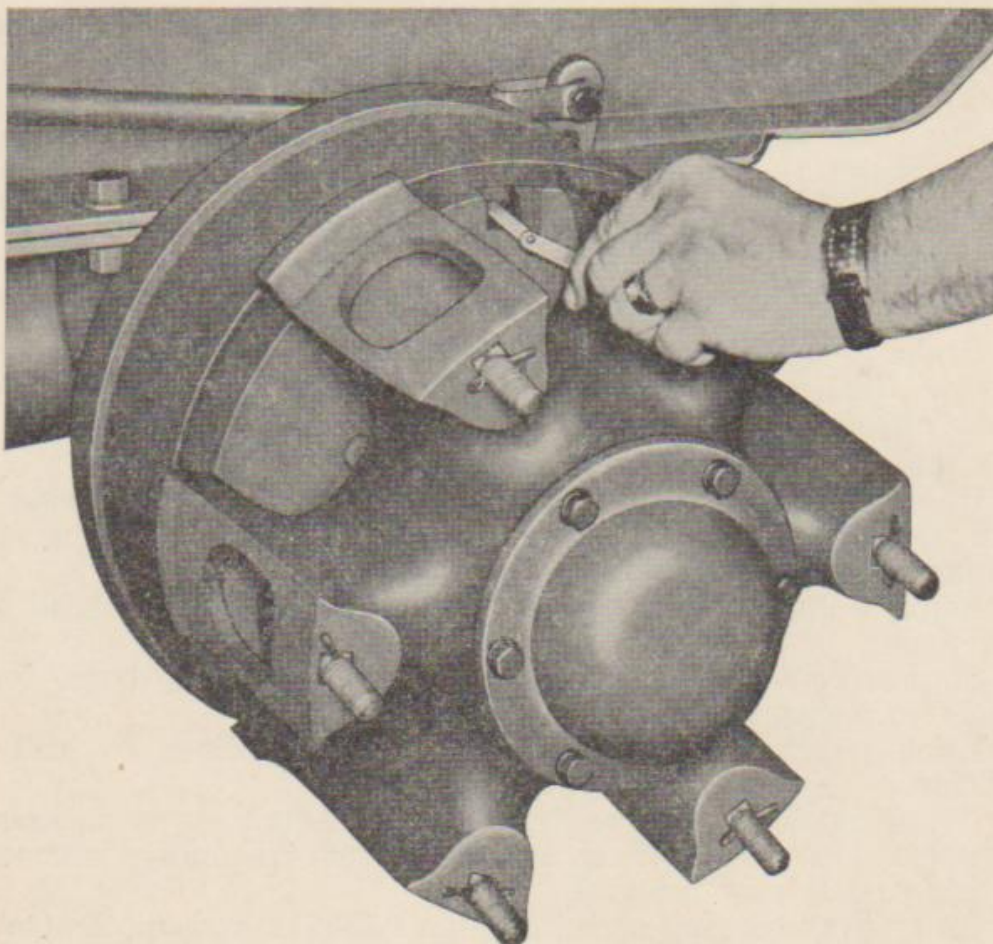


Fig. 82

SERVICE CHART

CONDITION	CAUSE	REMEDY
Slow Pressure Build Up in Reservoirs	Leaking application or brake valve.	Clean valves or replace with reconditioned unit.
	Leaking compressor discharge valve.	Clean valve or replace head with reconditioned unit.
	Leaking lines or connections.	Replace tubing and fittings or tighten fittings
	No clearance on unloader valves.	Adjust valve to .010" clearance.
	Clogged air cleaner.	Clean.
Quick Loss of Reservoir Pressure When Motor Is Stopped	Worn piston and rings, carbon in discharge line.	Replace with reconditioned unit.
	Worn and leaking compressor discharge valves.	Clean valves or replace head with reconditioned unit.
	Tubing or connections leaking.	Replace tubing or tighten fittings.
	Leaking valves.	Clean or replace unit.
	Leaking governor.	Clean or replace unit.
Compressor Not Unloading	Broken unloader diaphragm.	Install new diaphragm.
	Too much clearance on unloader valves.	Adjust to .010" clearance.
	Restriction in line from governor to unloader	Replace tubing or clean.
	Governor not operating.	Replace with reconditioned unit.
	Low brake line pressure (Brake valve to chambers).	Adjust pressure through valve.
Slow Brake Application	Brake Chamber push rod travel excessive.	Adjust brakes.
	Restriction in line.	Clean or replace tubing or hose.
	Leaking brake chamber diaphragm.	Replace diaphragm.
	Brake lining or Drum condition.	Replace or recondition.
	Leaking brake valve diaphragm.	Replace diaphragm or complete unit.
Slow Brake Release	Brake valve lever not returning fully to stop.	Adjust operating rod.
	Binding cam or cam shafts.	Lubricate and align properly.
	Brake chamber push rod travel excessive.	Adjust brakes.
	Restriction in tubing or hose.	Clean or replace.
	Improper seating of valves.	Clean or replace with a reconditioned unit.
Inefficient Brakes	Low brake line pressure.	Adjust pressure through brake valve.
	Excessive push rod travel on brake chambers.	Adjust brakes.
	Lining and drum condition.	Replace or repair.
	Brake chamber diaphragm leaking.	Replace diaphragm.

When units are to be replaced, use only Bendix-Westinghouse reconditioned units which are available in all key cities of the U. S. A. and Canada, through Bendix-Westinghouse authorized service distributors.

RELAY-EMERGENCY VALVE

The Relay-Emergency Valve serves two purposes: It speeds up brake action on the trailer, and it provides a means of applying the brakes automatically in case of trailer breakaway.

Installation

Correct Relay-Emergency Valve installation should fulfill each of the following requirements:

- (1) The Relay-Emergency Valve should be mounted right side up.
- (2) It should be securely bolted to the frame or a solid frame cross member so that it will be accessible for testing or service and free from vibration.
- (3) Both the Relay-Emergency Valve and the supply reservoir should be mounted as closely as possible to the brake chambers which the Relay-Emergency Valve is to actuate.
- (4) Tubing or hose lines leading to the Relay-Emergency Valve should be as direct as possible.
- (5) When installing the hose or tubing lines leading to the Relay-Emergency Valve, care must be taken to eliminate or minimize the danger of their being broken by spring action or other extraneous causes.
- (6) Lines connecting the brake chamber and Relay-Emergency Valve should be made of flexible hose.
- (7) Air supply lines should be so installed that they permit any condensation collected in them to drain back to the reservoir.

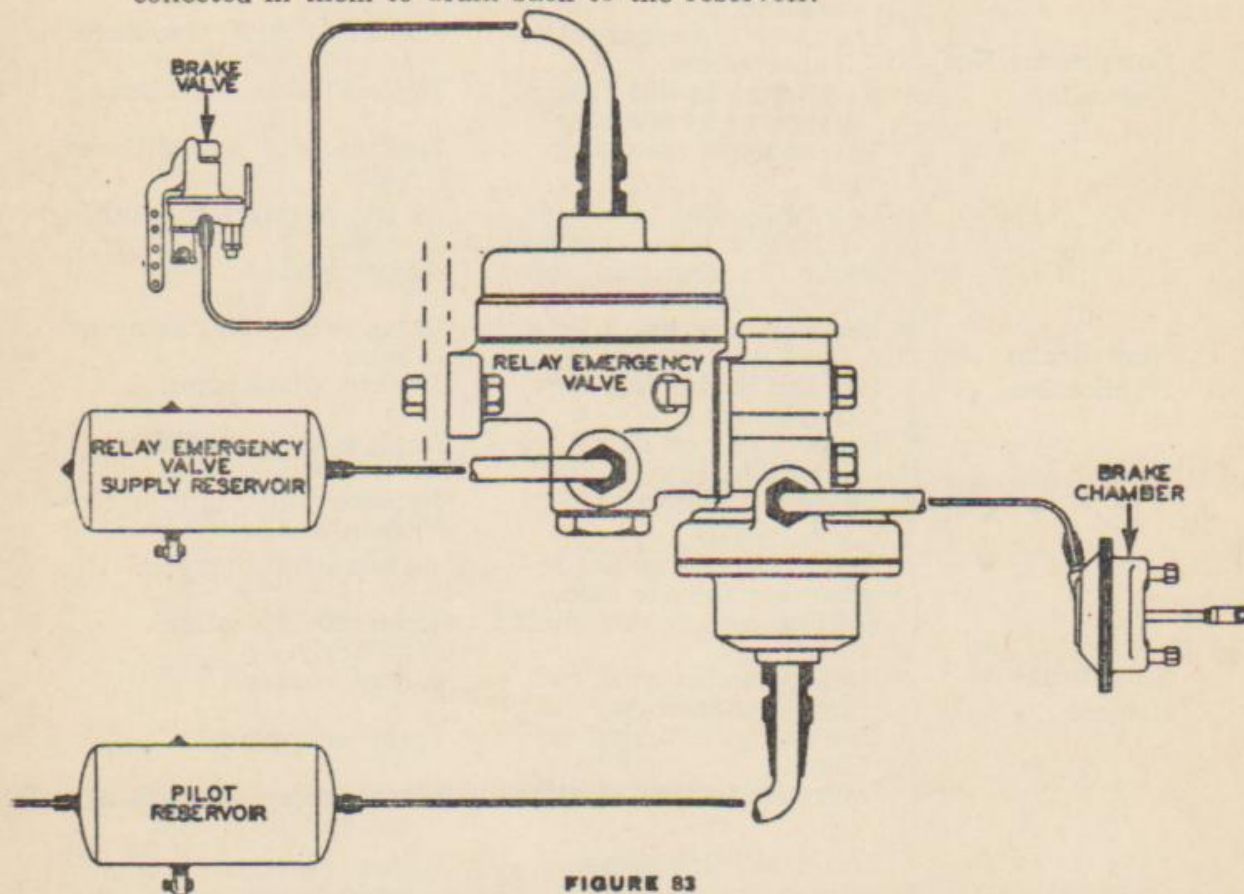


FIGURE 83

The correct method of installing tubing or hose lines to the Relay-Emergency Valve is shown in Figure 83. Two pipe taps, one on either side of the emergency portion, are provided for brake chamber line connection. Either of these ports can be used; however, if only one is used the other should be plugged. Of the four pipe taps in the relay portion of the Relay-Emergency Valve, one of the lower ports is used for connecting the relay-emergency valve supply reservoir and the other three should be closed with pipe plugs. The exhaust port should never be closed. In shipping, the Relay-Emergency Valve has a pipe plug or thread protector in the exhaust port to prevent dirt getting into the valve while in transit. This plug or thread protector must be removed when the valve is placed in service.

Operation

The Relay Emergency Valve operation falls into two classifications: the normal operation and the emergency operation. The normal operation is actuated by the driver and the regular action of the Air Brakes System. The emergency operation is induced by anything (such as trailer breakaway) that would cause a sudden and abnormal drop of air pressure in the pilot reservoir.

The following paragraphs and pictures describe the valve movements necessary to attain each of the various operations illustrated by Figure 84, 85, and 86. Figure 84 shows the valve in full application position. Figure 86 shows the valve in full emergency position. By observing these figures in conjunction with the following descriptions, it is possible to obtain a complete picture of the valve's operation.

Normal Position and Building Up of Air Pressure in Supply Reservoir

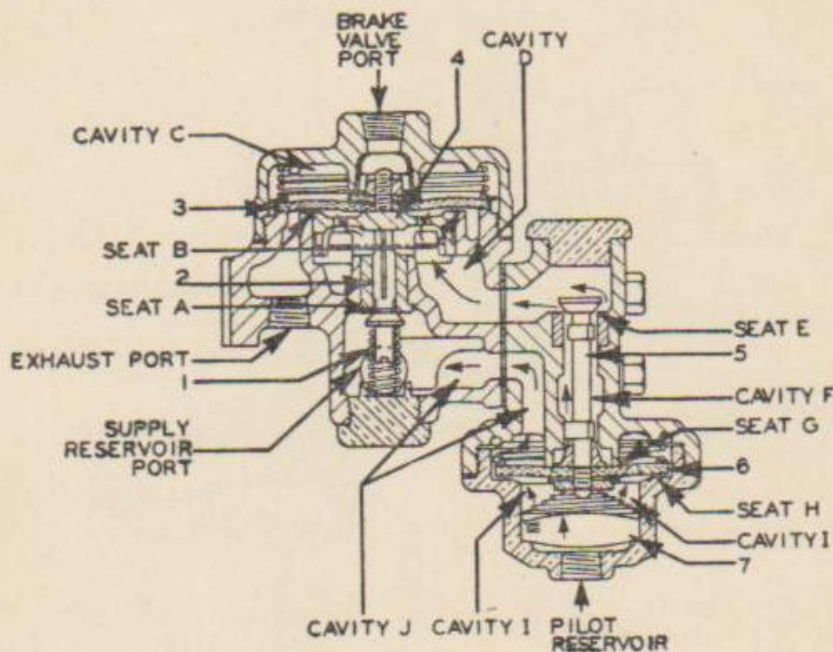


FIGURE 84

The air pressure built up in cavity I by the pilot reservoir holds the edges of diaphragm 6 above seat H, permitting the air pressure from the pilot reservoir and cavity I to pass into cavity J and out through a tubing line to the relay emergency valve supply reservoir. By this method, full pilot reservoir pressure is constantly maintained in the supply reservoir and cavity J. The air pressure in cavity I also forces the center of diaphragm 6 up against seat G, sealing the lower end of cavity F against the pressure held in cavity J. As the diaphragm is held sealed against seat G, emergency valve 5, connected to

the diaphragm, is held up off seat E so that a direct connection is established between cavity D and the brake chambers which are connected into cavity F.

Normal Application

When in regular brake application the driver depresses the brake pedal, the brake valve will deliver air pressure into cavity C, where, due to the Relay Emergency Valve's self-lapping feature, it causes the Relay Emergency Valve to deliver to the brake chamber the same amount of air pressure applied by the brake valve. The air pressure entering cavity C forces diaphragm 3 down against seat B, closing off the exhaust port. The deflection of the diaphragm 3 also causes diaphragm guide 4, connected to the diaphragm, to contact supply valve 2 and move it away from seat A.

As the supply valve is opened, the air pressure which has been restrained in cavity J is permitted to pass up into cavities D and F and out through tubing lines to the brake chambers.

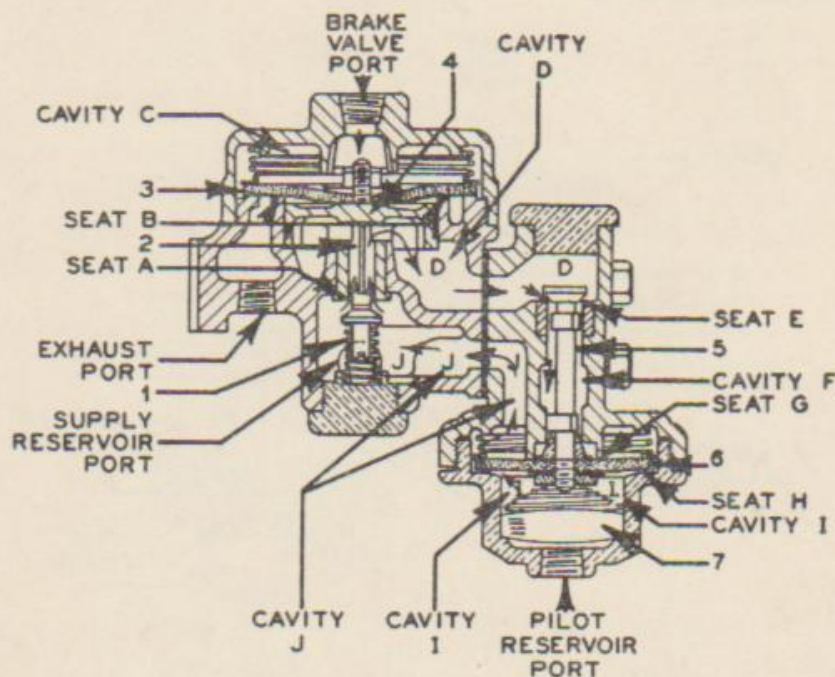


FIGURE 85

Supply valve 2 is held open until the air pressure in the brake chambers and cavity D has been built up to equal pressure applied above the diaphragm by the brake valve, then the valve automatically laps itself. This means that air pressure in cavity D is strong enough to balance the pressure in cavity C and raise diaphragm 3 and diaphragm guide 4 sufficiently to permit spring 1 to close supply valve 2, but not enough to open the exhaust port. This self-lapped position holding the air pressure in cavity D and brake chambers constant, is maintained until brake valve pressure in cavity C is either increased

or decreased. If the brake valve pressure is increased, the performance is repeated until a higher balance pressure is attained. If the brake valve pressure is decreased, pressure in cavity D is strong enough to lift the diaphragm off points B permitting the air pressure to exhaust to atmosphere through the exhaust port until a lower balance pressure is attained. If all the brake valve pressure is released, the exhaust port is held open until all the air pressure is exhausted from the brake chamber and cavity D.

Emergency Application

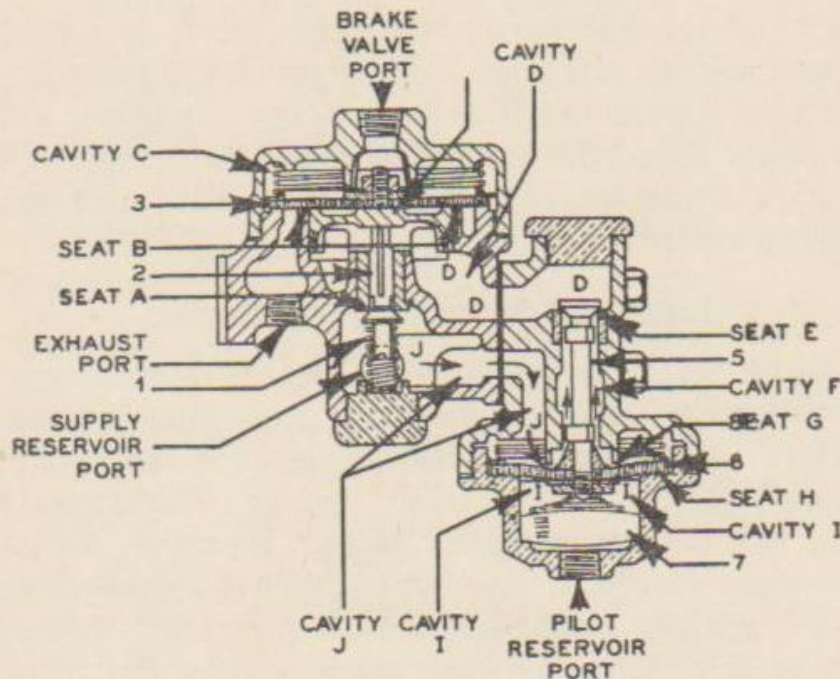


FIGURE 86

The emergency application occurs only in case an accident (such as trailer breakaway) should cause a sudden and abnormal drop of pressure in the line between the pilot reservoir and the Relay-Emergency Valve.

This sudden drop of air pressure in cavity I causes the pressure that has been built up in the supply reservoir and cavity J to force diaphragm 6 down against seat H, so that the air pressure in cavity J cannot escape through cavity I. The downward movement of the diaphragm causes emergency valve 5, connected to diaphragm 6, to move down against seat E, closing the upper end of cavity F so that no pressure can escape through cavity D to the exhaust port. The downward movement also pulls the diaphragm away from points G, opening the lower end of cavity F and permitting air pressure from the supply reservoir and cavity J to pass directly through cavity F to the brake chambers.

Releasing Brakes After Emergency Application

Two methods may be used to release the brakes after an emergency application has occurred. The recommended method is to repair and reconnect the air brakes so that all connection lines and equipment are in their original condition and then to operate the compressor to build up air pressure. As the air pressure in cavity I is built up to equal the pressure in cavities F and J, it presses up diaphragm 6 so that the valve resumes its normal operating position. In this position the diaphragm pressing against points G seals the lower end of cavity F against pressure in cavity J likewise, emergency valve 5 is held up off seat E opening the upper end of cavity F into cavity D, so that the air pressure in cavity F and the brake chambers is released through cavity D and the exhaust port to atmosphere. The other method is to drain the air pressure from the relay-emergency valve supply reservoir.

Length of Emergency Application

The length of time that the brakes will maintain an emergency application depends upon the care the equipment has been given. Without proper maintenance, the valve and various connections may be leaking freely and the emergency application time will be comparatively short. However, if the equipment has been carefully maintained, with all connections properly sealed against leakage and the emergency valve leakage held to the minimum, the emergency application will be held for a much longer time.

Inspection

The Relay-Emergency Valve should be inspected at the same periods established for the inspection of the motor vehicle by its manufacturers. The following leakage tests will give an accurate check on the valve's condition. In case leakage in any one of these tests causes a 3-inch soap bubble in 3 seconds, the entire valve should be removed and cleaned or replaced with a reconditioned unit if necessary.

Regular Leakage Tests

- (1) With brakes released, cover exhaust port with soap suds. Leakage is caused by supply valve 2 not seating properly.
- (2) With brakes applied, cover exhaust port with soap suds. Leakage is caused by diaphragm 3 not seating properly.

Emergency Tests

(3) Be sure there is pressure in the trailer reservoir. Disconnect emergency hose between truck and trailer; trailer brakes should apply automatically. This is the safety feature which applies the brakes automatically in case of trailer break-away and should be tested daily to insure proper functioning of the devices in case of an emergency.

(4) Cover emergency hose or connection on trailer with soap suds. Leakage is caused by diaphragm 6 not seating properly.

(5) Cover exhaust port with soap suds. Leakage in excess of that evident in test I is caused by valve 5 leaking.

Maintenance Service

Three parts of the Relay-Emergency Valve require periodical maintenance service:

Strainer 7 should be removed about once every six weeks, cleaned thoroughly with gasoline, and replaced.

Diaphragms 3 and 6 should be replaced once each year; more often if operating conditions warrant.

When the Relay-Emergency Valve does not meet the inspection test leakage requirements, it will sometimes be found that the trouble is caused by dirt on the valve or diaphragm seat. This condition can be remedied by removing the leaking valve or diaphragm, cleaning the valve and valve seat with kerosene, and then regrinding the valve.

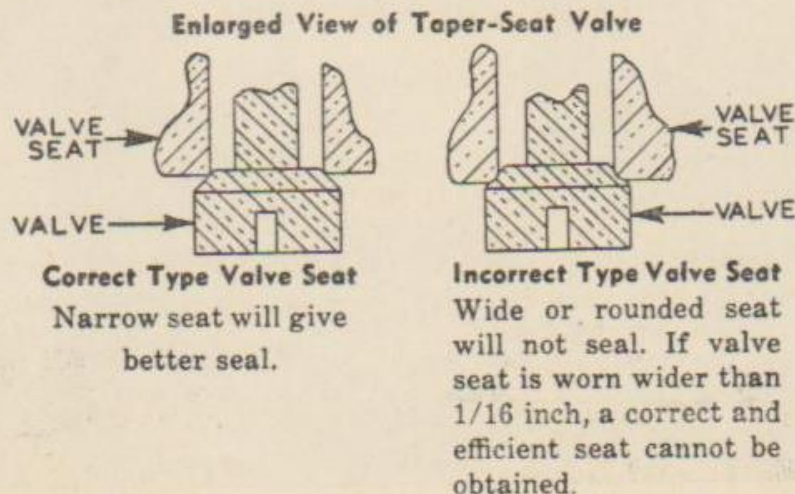


FIGURE 87

All Diaphragms Should Be Replaced Once A Year
TO CLEAN OR REPLACE DIAPHRAGM A. (Refer to Figure C):

1. With the valve held firmly in a vise, remove cover. (Figure D.)
2. Lift out the diaphragm guide ring (Figure E), remove cotter key, nut and washer holding the diaphragm to the guide. Lift out the diaphragm and replace.
3. Reassemble by reversing the procedure outlined above.

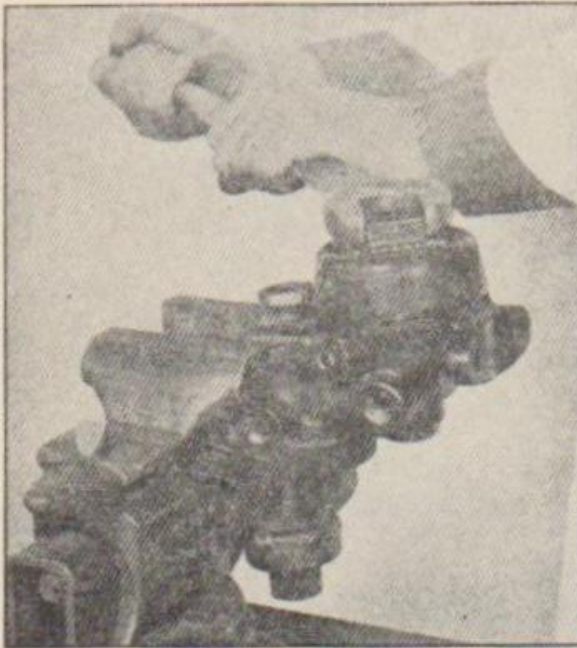


FIGURE D. REMOVING
 VALVE COVER

FIGURE C. RELAY-
 EMERGENCY VALVE

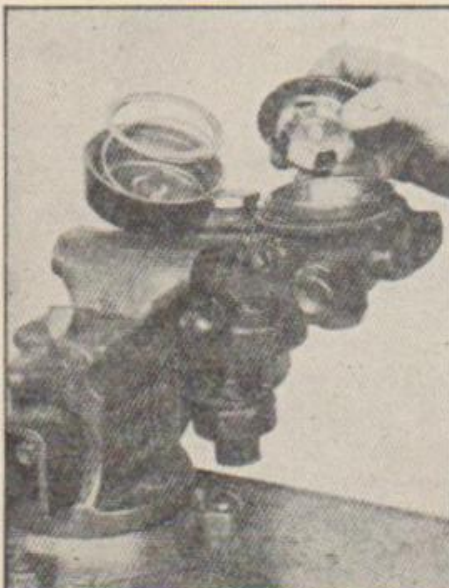
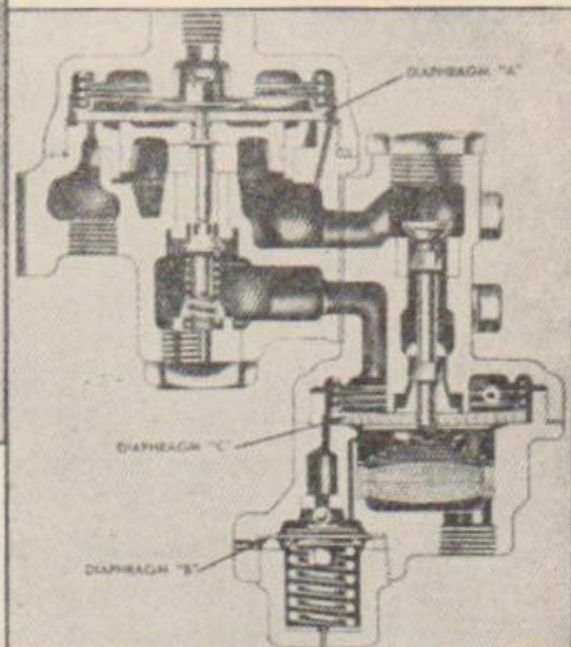


FIGURE E. REMOVING

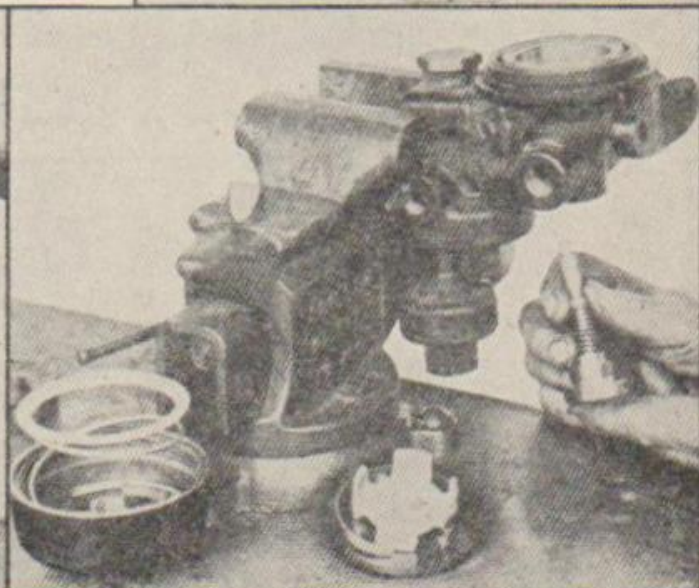


FIGURE F. REMOVING INTAKE
 VALVE GUIDE RING

CLEANING OR REPLACING INTAKE VALVE—(Refer to Figure C):

1. Remove the cap nut.
2. Extract the intake valve with a pair of long nose pliers.
3. Clean. Replace. (Figure F.)

TEST FOR LEAKAGE—RELAY VALVE DIAPHRAGM "A" AND INTAKE VALVE—(Refer to Figure C):

- a. When making leakage tests with soap suds, a 3" bubble in three seconds is permissible.
- b. Release brakes; cover port with soap suds to detect the supply valve leakage.
- c. Apply brakes; cover port with soap suds to detect relay valve diaphragm leakage.
- d. With relay valve in emergency operation, cover this port with soap suds.
- e. Leakage in excess of the first test is caused by the emergency valve not seating properly.
- f. Cleaning or Replacing Diaphragm "B" — (Refer to Figure C):

1. Remove cap, spring and diaphragm.
2. Remove stem lock nut. Lift diaphragm and diaphragm follower from stem. Clean or replace.
3. Reassemble by reversing the procedure outlined above.

TEST FOR LEAKAGE — EMERGENCY VALVE DIAPHRAGM "C" — (Refer to Figure C):

- a. With relay-emergency valve in emergency position, cover port with soap suds to detect emergency diaphragm leakage.
- b. Cleaning or Replacing Diaphragm "C"; Washing Strainer—(Refer to Figure C):

1. Remove diaphragm cover body. (Figure G)
2. Lift out spring and strainer. (Figure H)
3. Remove cap nut. (Figure I) Insert screwdriver into slotted top of valve and remove diaphragm lock nut. Pull out the valve stem and diaphragm.
4. Clean the strainer and diaphragm in gasoline. Install a new diaphragm if necessary.
5. Reassemble by reversing the procedure outlined above. (Figure J.)



FIGURE H. LIFTING OUT
SPRING AND STRAINER

FIGURE G. REMOVING
DIAPHRAGM COVER BODY

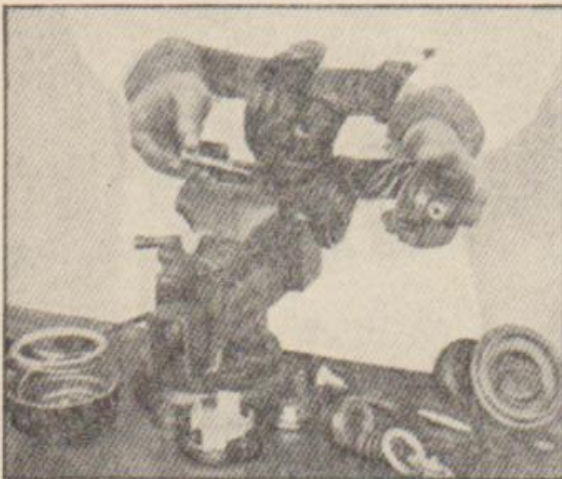


FIGURE J. REASSEMBLING
VALVE

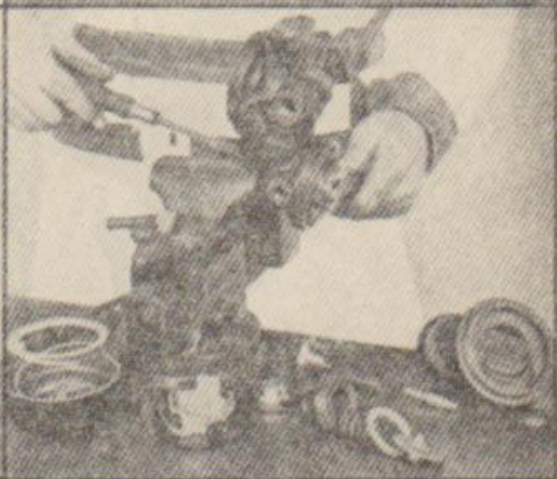


FIGURE I. REMOVING
VALVE

However, if the leakage is caused by a badly worn valve, it will be necessary to replace the worn valve with a new one. In this case, generally it will be found that the valve and both diaphragms are badly worn and the operator will likely find it more economical and satisfactory to replace the entire Relay-Emergency Valve with a genuine factory-reconditioned unit.

BRAKE DIAPHRAGM

Testing and Correcting Leaks in the Brake Diaphragm

When making leakage test with soap suds, a 3" bubble in 3 second is permissible.

1. Apply the brakes.
2. Paint the edge of the diaphragm with soapy water.
3. If leakage is detected, tighten the bolts uniformly around the diaphragm until it disappears. Never tighten the bolts to the point where the edge of the diaphragm starts to bulge inasmuch as this greatly weakens the diaphragm.
4. If the diaphragm is defective, air will escape around the rubber boot on the brake rod when the brakes are applied and the diaphragm must be replaced as follows:

(a) Remove the brake chamber from the trailer by removing the two chamber nuts which hold it to the axle mounting bracket, disconnect the hose assembly and pull the clevis pin at the slack adjuster arm.

(b) Place the chamber in a vise and draw a nail or other sharp object across the chamber edge to mark it for reassembly.

(c) Remove the bolts, replace the diaphragm and tighten bolts as outlined in step 3. (Refer to Figure A.)



FIGURE B. BRAKE CHAMBER—
REPLACING SPRING

FIGURE A. BRAKE CHAMBER—
DISASSEMBLY

Replacing Brake Chamber Springs, Pressure Plate, Rods, Boots

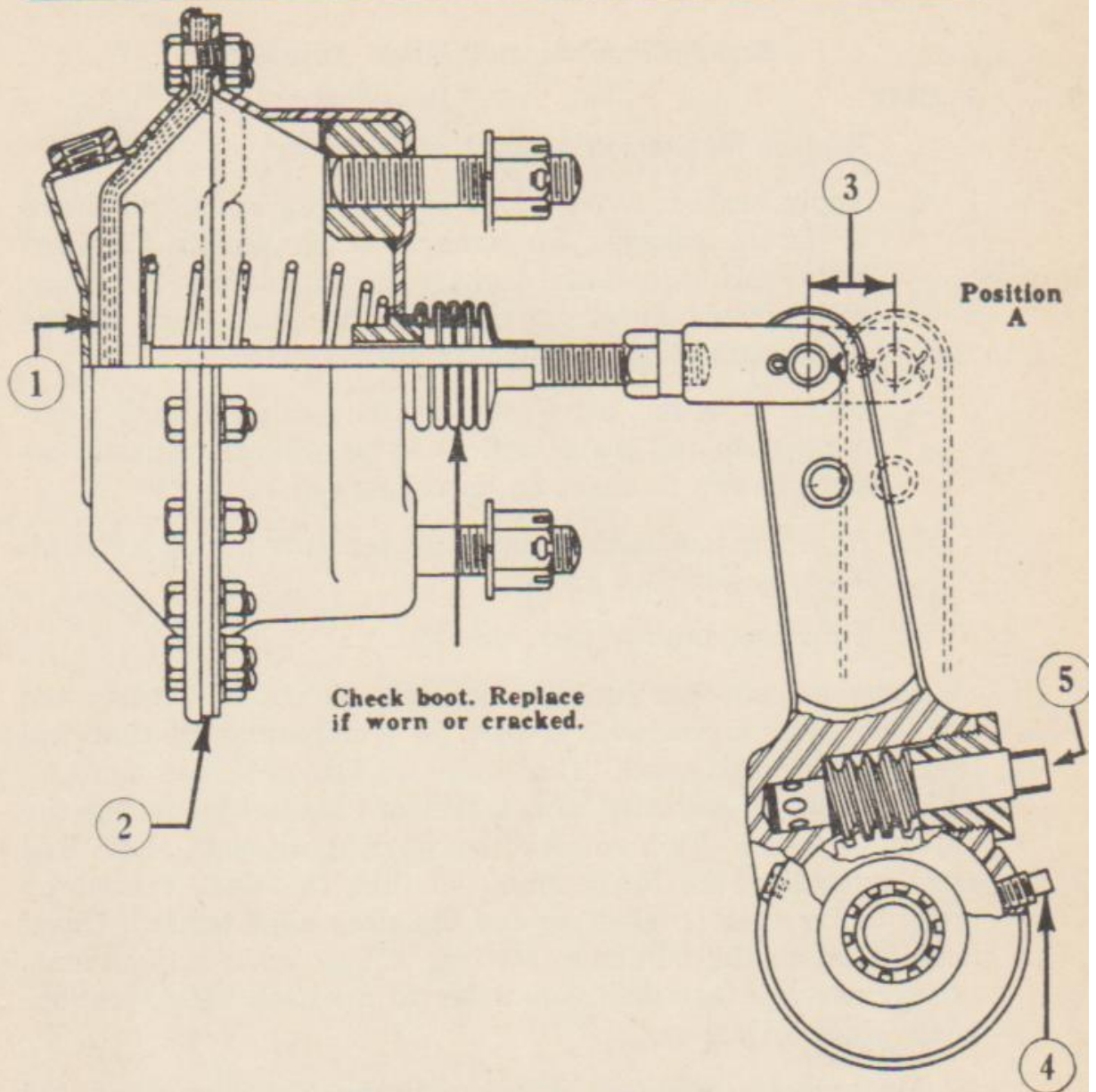
1. Follow the procedure outlined above for the disassembly of the brake chamber.

2. Remove the brake push rod and install the new spring. Make sure the spring is seated properly on pressure plate. (Figure B.)

3. Bent or worn pressure plates should be replaced.

4. Slightly bent brake push rods may be straightened; if severely bent, should be replaced.

5. Worn boots should be replaced.



Brake Chamber Data
(Dimensions given in inches)

Type	Diameter	• Maximum	Proper Maximum stroke when brakes are adjusted	Maximum stroke at which brakes should be adjusted
A, AA*	6-7/8	1-3/4	5/8	1-3/8
B	9-3/16	2-1/4	3/4	1-3/4
C, CC*	8-1/16	2-1/4	3/4	1-3/4
D, DD*	5-1/4	1-5/8	1/2	1-1/4
E, EE*	6	1-3/4	5/8	1-3/8
F	11	3	3/4	2-1/4
G	10	2-1/2	3/4	1-3/4

* The data for the double-acting AA, CC, DD and EE Brake Chambers are for one side only.

Brake Chamber and Block Adjuster

SYMBOL

1. Replace diaphragm at least once a year.
2. Apply brakes: cover edges of diaphragm and bolt holes to detect leakage. No leakage is permissible. Tighten bolts uniformly until leakage is eliminated. However, bolts should never be tightened so that edges of the diaphragm start to bulge or are distorted.
3. Check push rod travel and adjust brakes so that maximum push rod travel will be in accordance with dimensions shown in chart on opposite page.
4. Pipe plug has been removed and pressure fitting installed, use pressure gun grease.
5. To adjust brakes, turn this nut.

The most efficient brake action will be obtained when the slack adjuster arm travel is held to a minimum so that full length of lever is used. The brake adjustments necessary to maintain proper adjuster arm travel are made by turning the adjusting worm. This rotates the worm gear, cam shaft and cam, expanding the brake shoes so that the slack caused by brake lining wear is taken up and the slack adjuster arm travel is returned to the minimum setting. These brake adjustments usually average less than 5 minutes to a wheel, with Westinghouse slack adjusters.

Air pressure admitted into the Brake Chamber when the brake pedal is depressed moves the diaphragm, push rod and slack adjuster toward position A, applying the brakes. As the brake pedal is released, the air pressure is exhausted from the chamber and the spring returns the diaphragm. Push rod and slack adjuster to their normal positions, releasing the brakes.

In normal braking the entire Slack Adjuster operates as a unit, rotating bodily with the cam shaft as the brakes are applied or released.

Quick-Release Valve

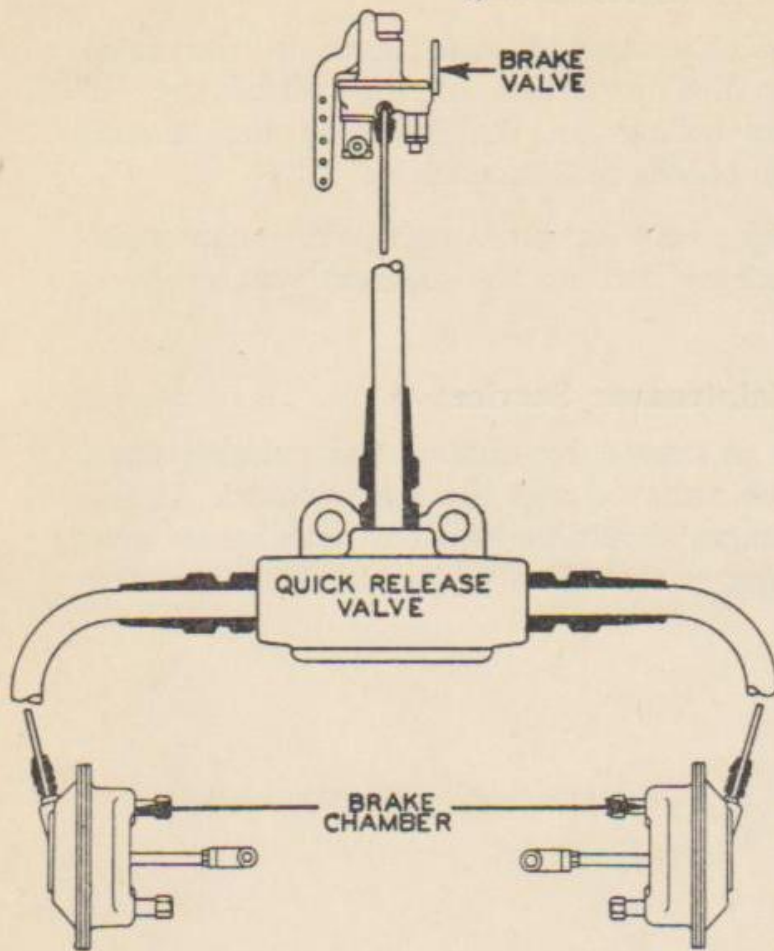


FIGURE 78

The Quick - Release Valve speeds up the release of air pressure from the brake chambers. When the brake valve is moved into release position, the Quick - Release Valve exhaust port is held open so that air pressure accumulated in the brake chambers is exhausted to atmosphere through the Quick - Release Valve. Since the Quick - Release Valve is much closer to the brake chambers than the brake valve, the brake release is naturally more expedient.

Installation

The Quick - Release Valve should be securely bolted to the frame close to the brake chambers it is to release and where it is accessible for testing or servicing. The valve must be mounted with the exhaust port down. When mounted, the port on top of the valve should be connected by a tubing line to the brake chamber port of the brake valve. The two side pipe taps are to be connected by tubing lines to the brake chambers. If only one side port is to be used, the other should be plugged.

Operation

Figure 79 shows the Quick-Release Valve in release position. The brake valve is released, there is no pressure in cavity C, and spring 1 holds the edges of diaphragm 2 against points B and air pressure holds seat E away from points A so that any air pressure in the brake chambers or in cavity D is permitted to exhaust to atmosphere through the exhaust port. As the brake valve is applied, the air pressure passed into cavity C forces seat E to move against points A, sealing the exhaust port, and forcing the edges of diaphragm 2 from point B so that the air pressure is passed into the brake chambers. This position is held until the brake valve is released and pressure is exhausted from cavity C, then the Quick - Release Valve resumes the release position.

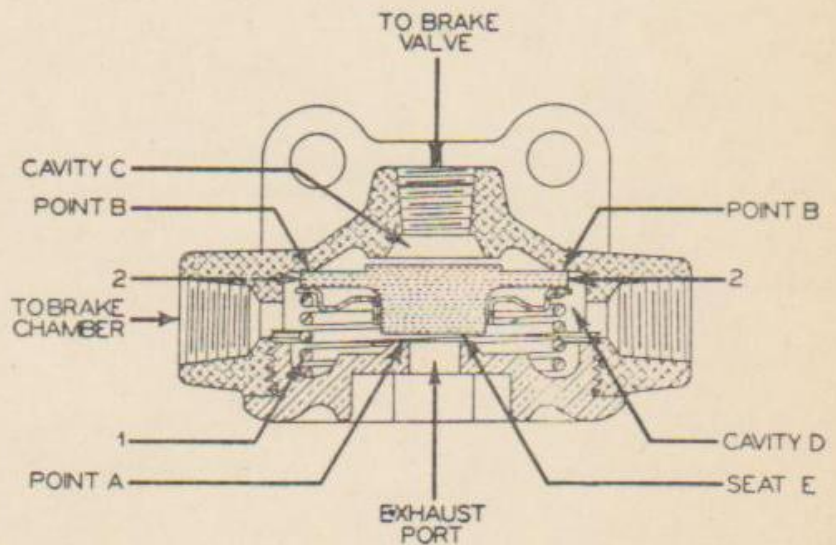


FIGURE 79

Inspection

The Quick-Release Valve should be inspected at the same periods established for the inspection of the vehicle by its manufacturers. The air leakage in the following test should not exceed a 3-inch soap bubble in 3 seconds.

With brakes applied, cover exhaust port with soap suds. Leakage is caused either by dirt on the exhaust seat or by a worn exhaust seat.

Maintenance Service

In case the leakage is caused by dirt on the exhaust seat, the diaphragm should be removed and the seat cleaned. If the seat is worn, the diaphragm should be replaced with a new one. In any event, the diaphragm should be replaced with a new one at least once a year.

Miscellaneous Devices

Reservoir

Figure 94 illustrates one of the air Reservoirs specially constructed to meet the needs of the Westinghouse Automotive Air Brake System. The shell of the Reservoir is made of drawn steel and the one longitudinal seam is electrically welded. The heads are made of pressed steel. The Reservoir is assembled by pressing the heads into the shell, rolling the shell down over the heads and then brazing the shell and heads together.

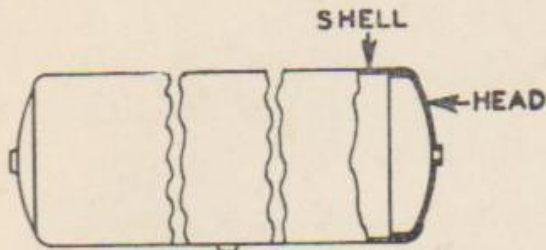


FIGURE 94

After the Reservoir is assembled it is coated inside and out with two coats of baked enamel to prevent rust and corrosion and is then tested with 200 pounds per square inch of hydrostatic pressure. This careful selection of materials and assembling methods makes a rugged Reservoir which is capable of giving trouble-free service throughout the life of the average vehicle.

Installation

Reservoirs are furnished in several sizes to meet the installation and air capacity needs of the various Air Brake Systems. A drain cock should be installed in the bottom port of each Reservoir in the air system. The Reservoir bracket (Figure 95), or the U bolt and filler block (Figure 96) are usually used to install the Reservoirs.

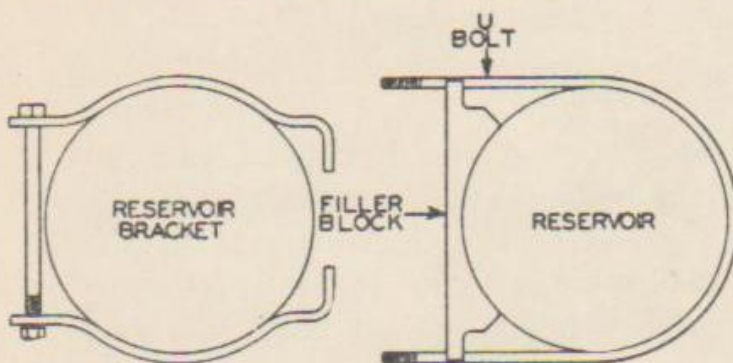


FIGURE 95

FIGURE 96

The Reservoir location will vary in accordance with the vehicle on which it is mounted. However, the following points should always be observed:

- (1) Reservoir should be mounted lower than any other unit of the Air Brake System and all tubing lines should be mounted so that any condensation will be permitted to drain back into the reservoir.
- (2) Tubing lines leading to the Reservoirs should be as direct and as short as possible.

Maintenance Service

It is imperative that each Reservoir be drained daily to eliminate any condensation collected there.

DRAIN COCK, AIR SUPPLY VALVE AND CUT-OUT COCK

DRAIN COCK

CUT-OUT COCK

AIR SUPPLY VALVE

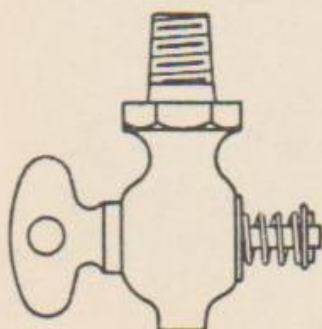


FIGURE 97

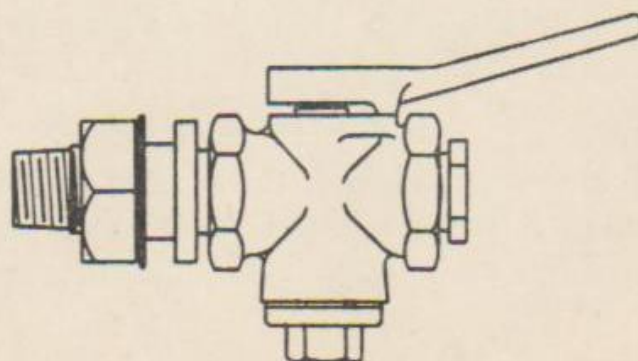


FIGURE 98

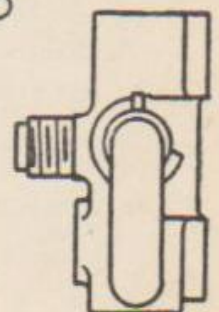


FIGURE 99

Three types of cocks are used in conjunction with the Westinghouse Automotive Air Brake System: The Drain Cock, Cut-Out Cock, and 3-Way Cock or Air Supply Valve. Each of these Cocks is of rugged design and has its key lapped to the seat in order to insure the Cock against leakage.

The Drain Cock (Figure 97) is installed in the bottom part of each reservoir in order to provide a quick means of draining off the condensation which collects in the reservoirs.

The Cut-Out Cock (Figure 98) provides a method of closing off air lines not in use.

The Air Supply Valve (Figure 99) provides a convenient means of using the Air Brake System's pressure for tire inflation or any other purpose where air pressure is needed.

This Air Supply Valve is installed in the line between governor and the reservoir, causing the compressor to operate continuously as long as the 3-way cock is open.

Installation

Care must be taken when installing one of these Cocks not to bend the key or distort the body. When connecting a Cock, the wrench should be on the end of the Cock nearest to the part being installed. If it becomes necessary to bend the operating handle, the entire key should be removed from the body before the bending is done.

IMPORTANT—To operate one of these Cocks, turn the handle with the hand. Never strike the handle with some heavy instrument.

Inspection

These Cocks should be inspected for leakage at the regular inspection periods established for the inspection of the vehicle by its manufacturer. This can be done by closing the Cock, building up 90 pounds air pressure behind it, and covering the opening with soap suds. If the leakage exceeds a 3-inch bubble in 3 seconds, the Cock should be repaired or replaced with a reconditioned one.

Maintenance Service

In some cases when a Cock fails to meet the leakage requirements, it will be found the leakage is caused by dirt on the key. This can be remedied by cleaning the key and seat with

kerosene or gasoline and then lapping the seat with Bendix-Westinghouse Grade 400 Grinding Compound. If the leakage is caused by a worn key or seat, it will likely be more economical and more satisfactory for the operator to replace the Cock with a genuine factory-reconditioned unit.

Trailer Coupling

The trailer connections are made through hose couplings (Figure 100). Figure 101 shows pin 1 upward. These couplings should be installed and connected so that when the coupling is in place it will resemble the set-up in Figure 101. This arrangement minimizes the possibility of accidental unhooking or uncoupling. The rubber seal in these couplings should be replaced at least once every six months; more often under severe service conditions.

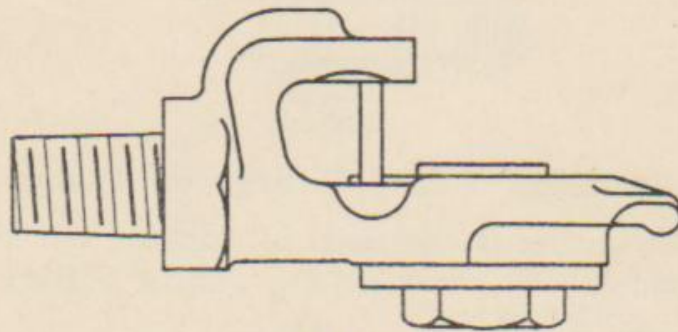


FIGURE 100

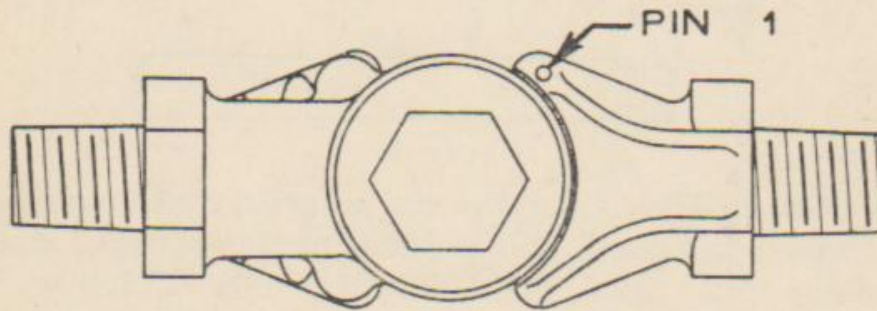


FIGURE 101

Tubing

Both copper and aluminum heavy-duty Tubing are used for connecting the various units in the Westinghouse Automotive Air Brake System. Tubing is of the drawn seamless type and is furnished in the following sizes:

Copper—sizes of $5/16$, $3/8$, $1/2$, $3/4$ and 1 inch.

Aluminum—sizes of $3/8$ and $1/2$ inch.

The materials used in this manufacturing process are carefully selected so that the Tubing will be smooth and free from scale, corrosion, etc. and will be capable of withstanding a pres-

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sure considerably greater than maximum pressure necessary for any operation. Tubing is also specially heat-treated to make it pliable enough for easy installation and flexible enough to insure the maximum service life.

Tubing Fittings

Brass Tubing Fittings used in the Westinghouse Automotive Air Brake System are of the three-piece type shown in Figure 102. These Fittings are specially designed to afford easy installation and to give long trouble-free service. They are furnished in sizes to correspond with the various tubing measurements.

TUBING CONNECTOR

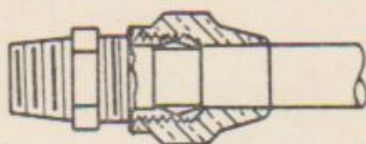


FIGURE 102

Installing Tubing Fittings on Tubing

If reasonable care is exercised in carrying out the following steps, no leakage will occur at the Tubing Fitting when it is installed on tubing line:

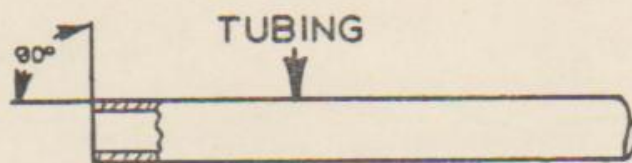


FIGURE 103

(1) Cut tubing. After the cut is made, make sure the end of the tubing is smooth and is cut squarely at right angles to the outside wall. Also, make sure the end of tubing is not crimped or closed.

(2) Blow out tubing with an air line. Remove all burrs, cuttings, or filings.

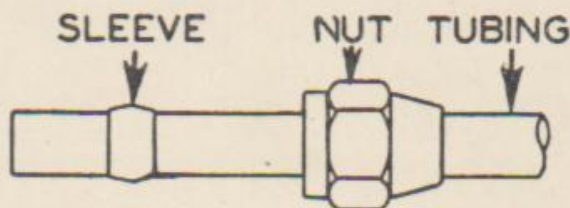


FIGURE 104

(3) Place nut and sleeve on tubing.

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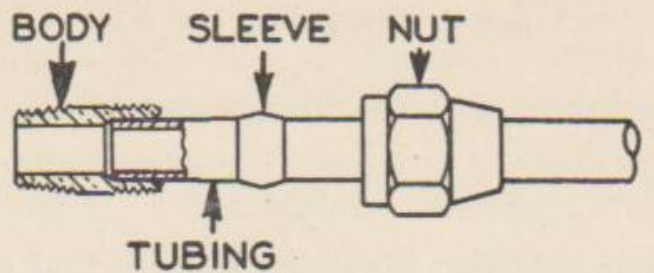


FIGURE 105

(4) Place end of tubing against the bottom of the bore in the tubing fitting body.

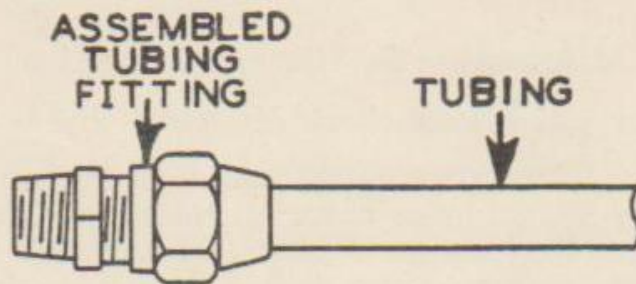


FIGURE 106

(5) Hold tubing at bottom of bore and tighten tubing fitting nut only enough to seal the joint against leakage.

Tubing Line Installations

In all tubing line installations, the following points should be carefully observed:

- (1) Use Bendix-Westinghouse tubing in all cases. This tubing is designed specially to withstand the vibration, etc. that comes with automotive uses.
- (2) Mount tubing in frame channel so that it will be protected in case of flying stone, driveshaft breakage, etc.
- (3) Be sure the tubing line is open and is not crimped or mashed.
- (4) Do not make sharp bends in tubing lines. When bending tubing the radius of the bend should be as large as possible. The following minimum bends are recommended:

Tubing Size	Minimum Radius of Bend
3/8 inch.....	3 inches
1/2 inch.....	4 inches
3/4 inch.....	6 inches
1 inch.....	10 inches

Bends in the 3/8-inch and 1/2-inch tubing may be made without filling the tubing with sand. However, it is advisable

to fill the 3/4-inch and 1-inch tubing with sand before making the bends to keep the tubing from wrinkling or crimping.

- (5) Clamp tubing to the frame at intervals of 30 to 40 inches.
- (6) Keep tubing lines straight and as short as possible.
- (7) Install all tubing lines on a slant so that any condensation in the lines will be permitted to drain back to the reservoir.
- (8) Wherever the natural action of the vehicle will cause a repeated bending or twisting of the line, flexible hose should be used instead of metal tubing.

Maintenance Service and Inspection

- (1) Every 5,000 miles check discharge line to be sure it is free from carbon.
- (2) Every 20,000 miles cover all tubing and tubing fittings with soap suds. No leakage is permitted. In case of leakage in the tubing, the leaking piece should be replaced with a new tubing. Leakage at the tubing fitting may be stopped by tightening the fitting.

Rubber Hose

Rubber Hose developed specially for use with the Westinghouse Automotive Air Brake System is constructed of exceptionally tough rubber and fibre. The special construction of this hose makes it extremely pliable and gives it sufficient strength to withstand a pressure considerably greater than maximum pressure necessary for any operation.

Installation

The rubber hose is substituted for metal tubing in places where the normal action of the vehicle would cause a repeated bending or twisting of the tubing. It is used chiefly for lines from the frame to the brake chamber and trailer connection lines.

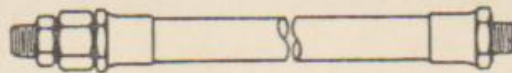


FIGURE 107

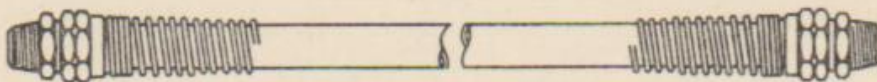


FIGURE 108

Hose assemblies are furnished by the Bendix-Westinghouse Company with either the non-detachable fittings (Figure 107), or the detachable fittings (Figure 108). The latter is furnished in two styles, with a spring guide and without a spring guide. The spring guide prevents the hose from possible chafing against the frame.

Installing Hose Fittings on Hose

The hose with a detachable fitting can be assembled in the field and no leakage will occur at the hose fitting when it is installed on the hose line if reasonable care is exercised in carrying out the following steps:

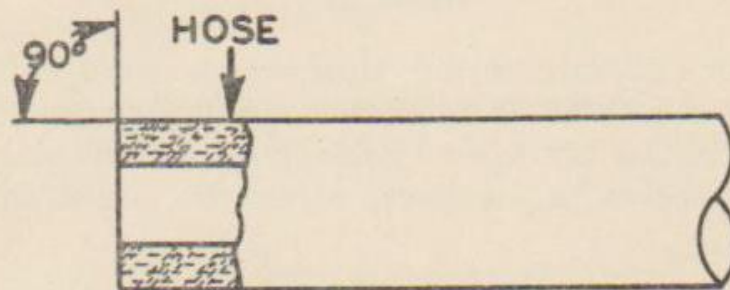


FIGURE 109

(1) Cut hose. After cutting is made, be sure that the end of the hose is smooth and is cut squarely at right angles to the outside wall. Also, be sure that the end of the hose is not crimped or closed.

(2) Blow out hose with a shop air line to remove all cuttings.

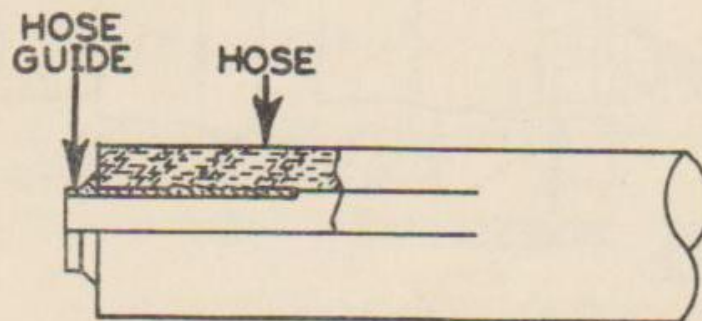


FIGURE 110

(3) Insert hose guide inside the hose until hose is against the shoulder (Figure 110).

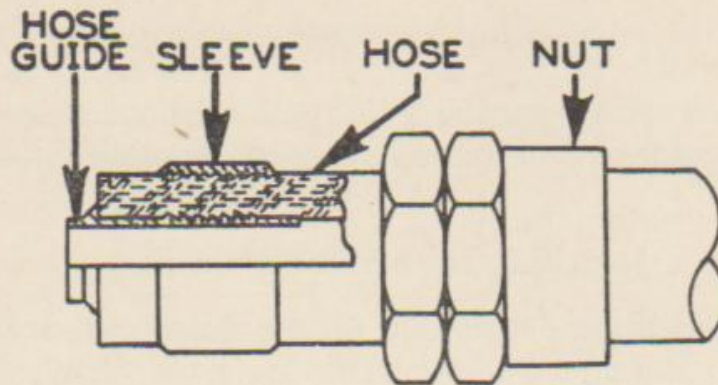


FIGURE 111

(4) Put nut on hose and then screw sleeve on outside of hose until the edge of sleeve abuts against the edge of the body when the shoulder of the hose guide is against the sleeve gasket. The short grooves in the sleeve should be placed on the hose first.

(5) Remove protector cover from sleeve gasket.

(6) Place hose and hose guide on body as indicated in Figure 112.

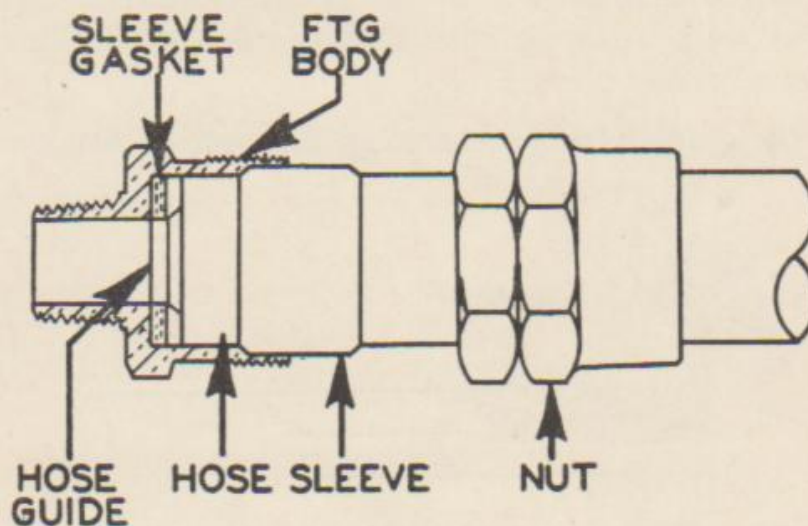


FIGURE 112

(7) Tighten nut enough to seal leakage.

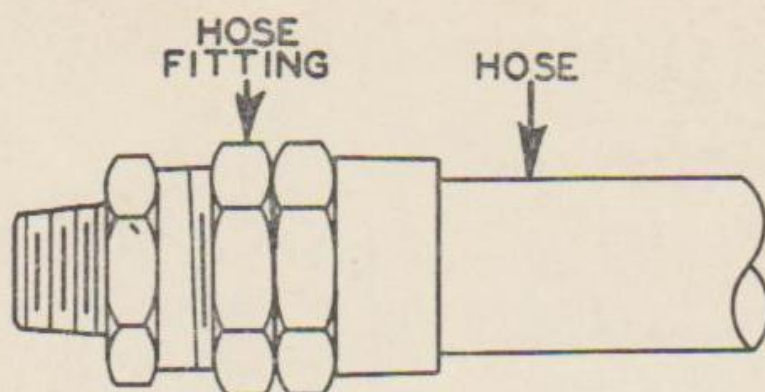


FIGURE 1

General Hose Line Installation

When installing hose line, carefully observe the following:

- (1) Allow sufficient hose so that the hose is not strained or stretched by any normal action of the vehicle.
- (2) Install hose so it will not chafe against frame, axle, etc.
- (3) When installing hose connector on trailers, follow the standard practice of installing service line on the left and emergency line on the right when facing connections.

Although the brake cylinders on the rear axles of the trailer are not connected direct to the slack adjusters as on the front or Dolly axle, the adjustment is the same. There being only one adjustment, that of the slack adjuster itself.

The Parking Brake

In figure one on the opposite page, the parking brake is set. This is done by turning the wheel clockwise and dropping the latch. To release, turn wheel clockwise enough to free the latch and then trip the latch, letting the wheel turn backwards or anti-clockwise to release the tension.

Figure two shows latch free to allow release of parking brake.

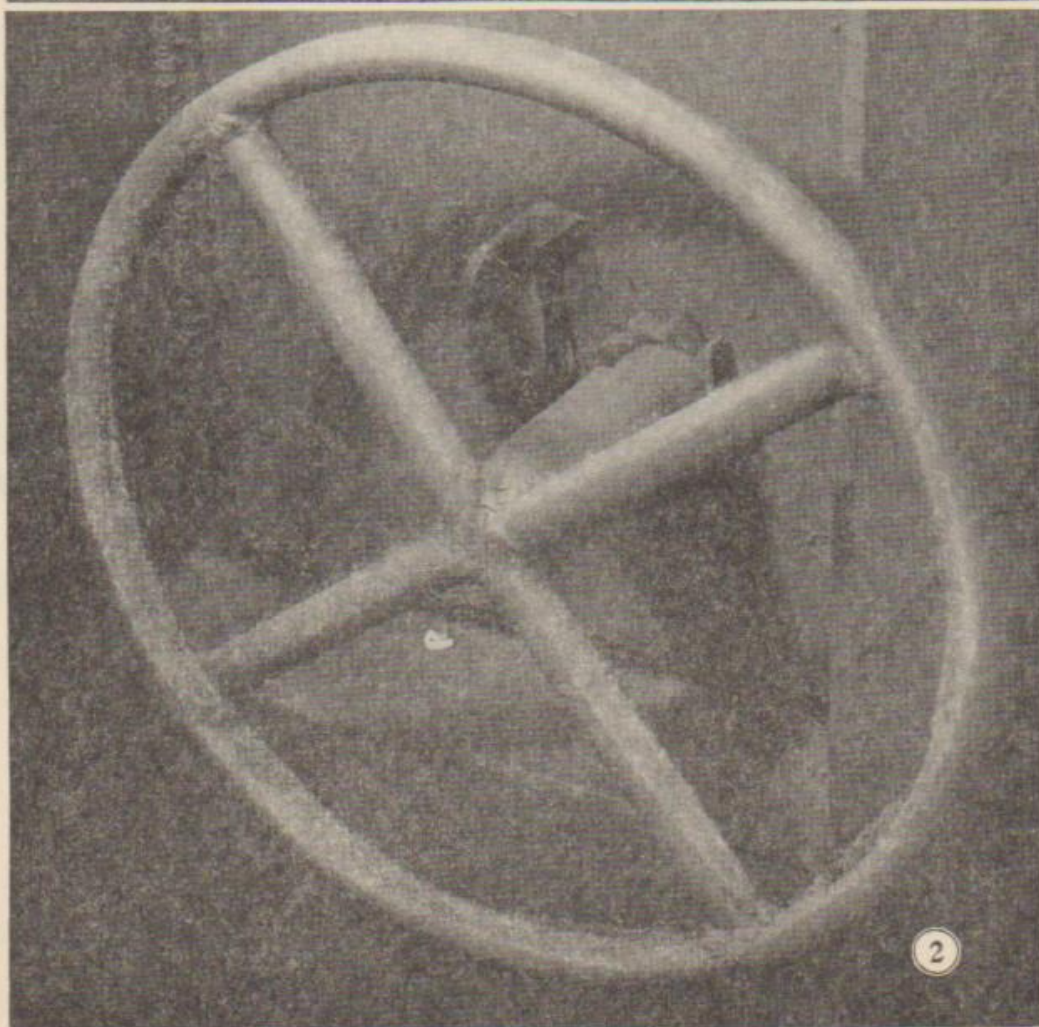
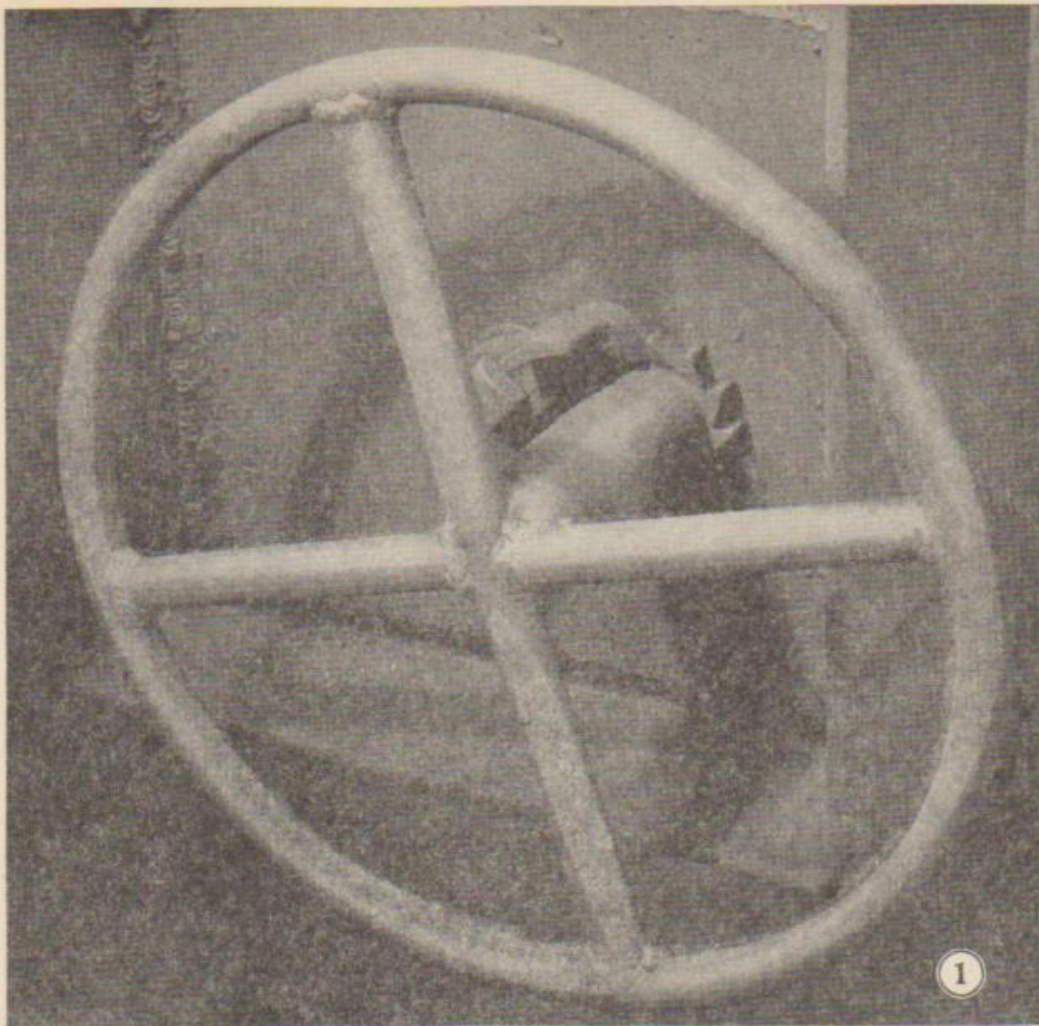
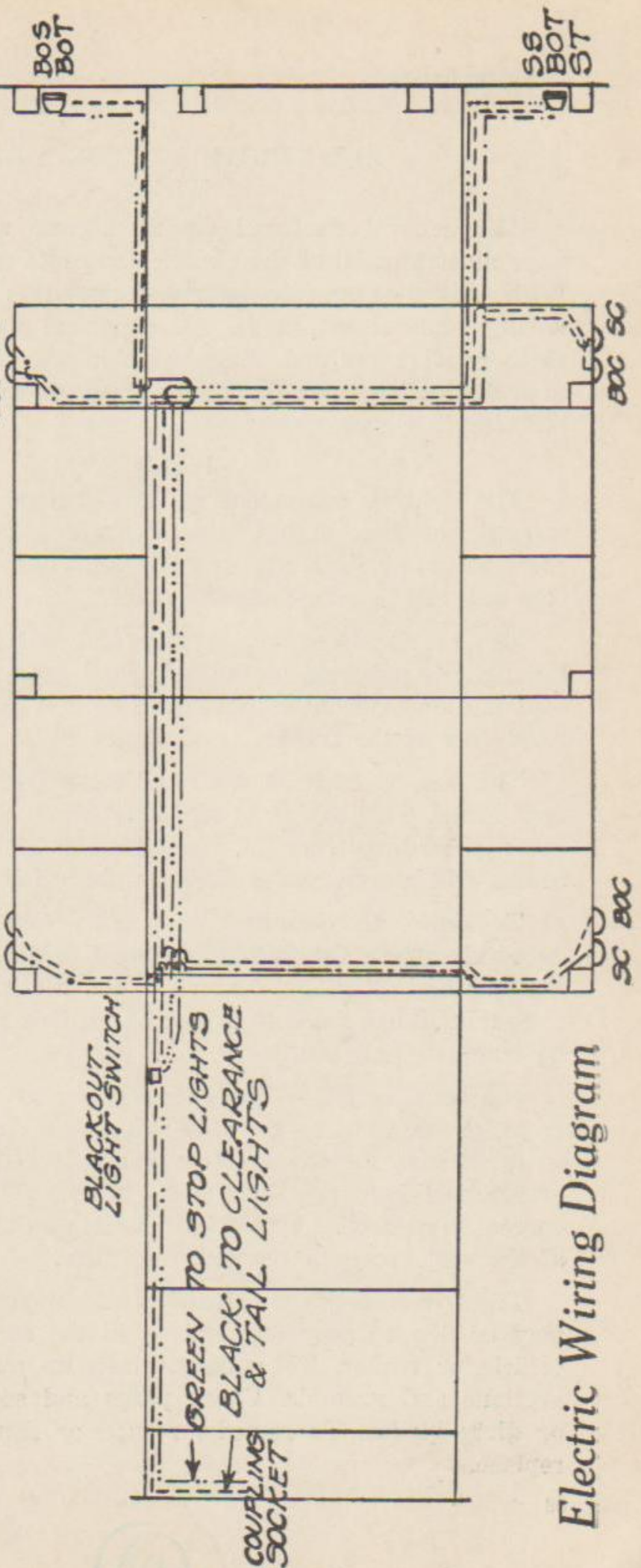


ABB.	LIGHTS	WIRE COLOR	SYMBOL
SC	SERVICE CLEARANCE	RED	---
BOC	BLACKOUT CLEARANCE	BLACK	---
BOT	BLACKOUT TAIL	BLACK	---
BOS	BLACKOUT STOP	GREEN	---
ST	SERVICE TAIL	RED	---
SS	SERVICE STOP	YELLOW	---



Electric Wiring Diagram

ELECTRICAL SYSTEM, LIGHTS

Wiring

The general electrical circuit digram shown on opposite page illustrates all of the electrical circuits used on this vehicle. With this diagram, the various circuits can be traced and wiring replacement made. All electrical units are shown in their relative position. Each wire in the electrical system is of a distinctive color. A key to these colors will be found on the circuit diagram.

Lights

The lighting equipment on this trailer includes two commercial clearance lights, two clearance blackout lights, one combination blackout stop and tail light, one combination service stop and tail light and blackout tail light.

The combination service stop and tail light and blackout tail light is mounted at the left hand rear of the trailer. The combination blackout stop and tail light is mounted at the right hand rear of the trailer.

The lens on each blackout tail lamp is designed to produce two beams. This design is such that when one truck is following a preceding truck at a specified safe distance, these two beams will merge into a single highly visible beam.

To insure the accuracy of construction necessary to produce this effect, the bulb is soldered to the lens retainer and the lens and filter are crimped to the retainer to form a complete unit. When the bulb is burned out it is necessary to replace the complete bulb unit.

Blackout switch — The blackout switch is located on the right, or curbside, of the side rail, at the front. The switch is operated with a coin or screwdriver. It is either at a service or blackout light position. There is no "off" position. Flow of current is controlled by the light switch on the truck. (Diagram of blackout switch is on following page.)

Lights not working — Insufficient current to work the lights may be due to poor connections in the socket of the towing vehicle or trailer. To remedy, clean up and tighten all connections and grounds. Check plugs and sockets for corroded or dirty blades. To remedy, scrape or sand blades clean, or replace.

Drawbar

New drawbar bushings come from the factory reamed to the proper diameter, and care should be used when replacing not to burr or damage their ends in installation.

To remove the drawbar, remove the cotter pins and castle nuts from the hinge bolts and drive out hinge bolts. Drive or press out old bushings.

To install new bushings, use a suitable press, if possible.

If bolt will not go into bushing, use a suitable reamer to ream inside of bushing to accommodate drawbar bolt.

CAUTION—Do not over-ream bushings as bolts must be a light driving fit.

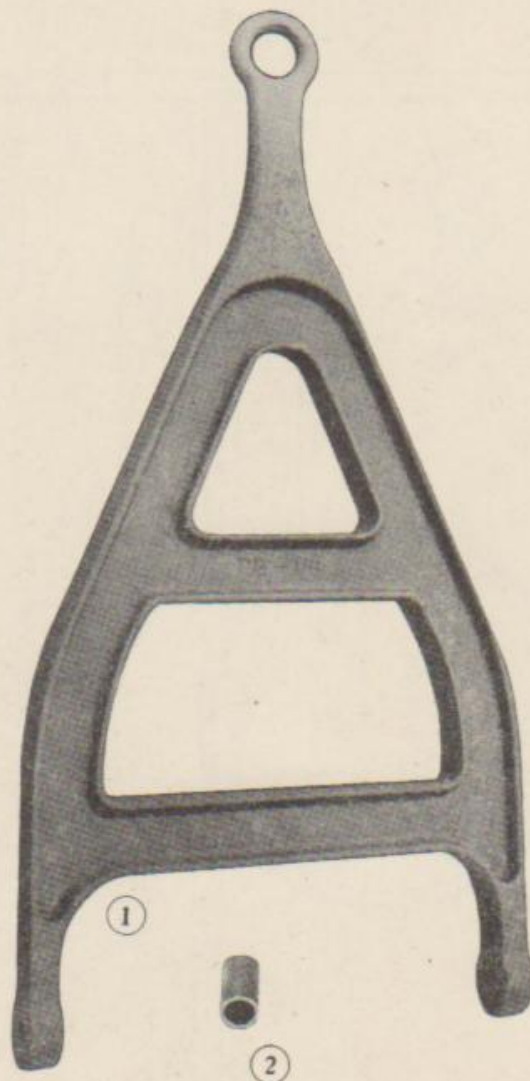
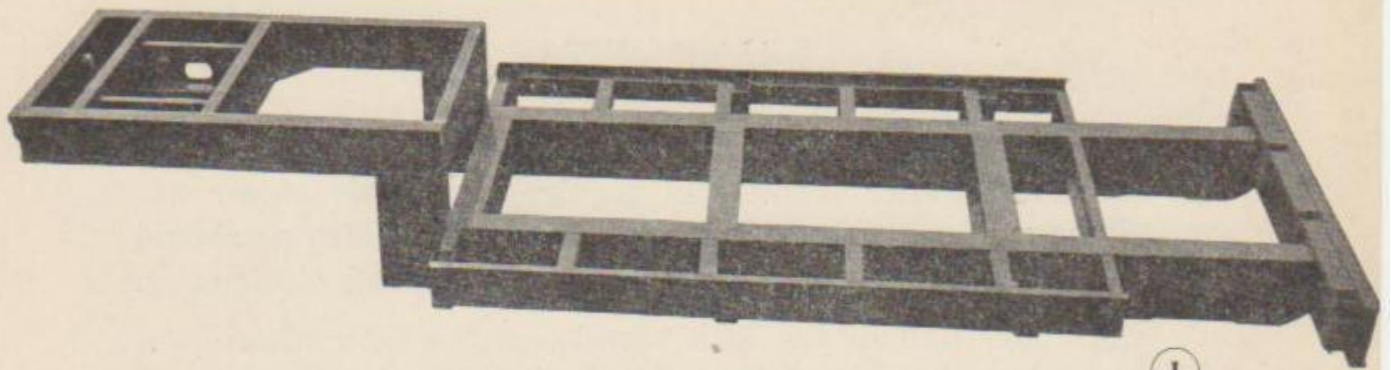
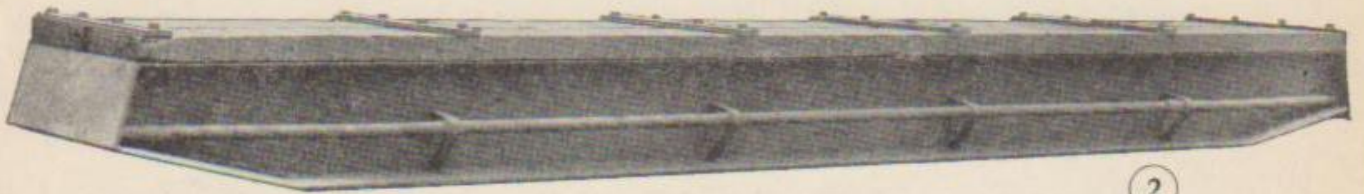


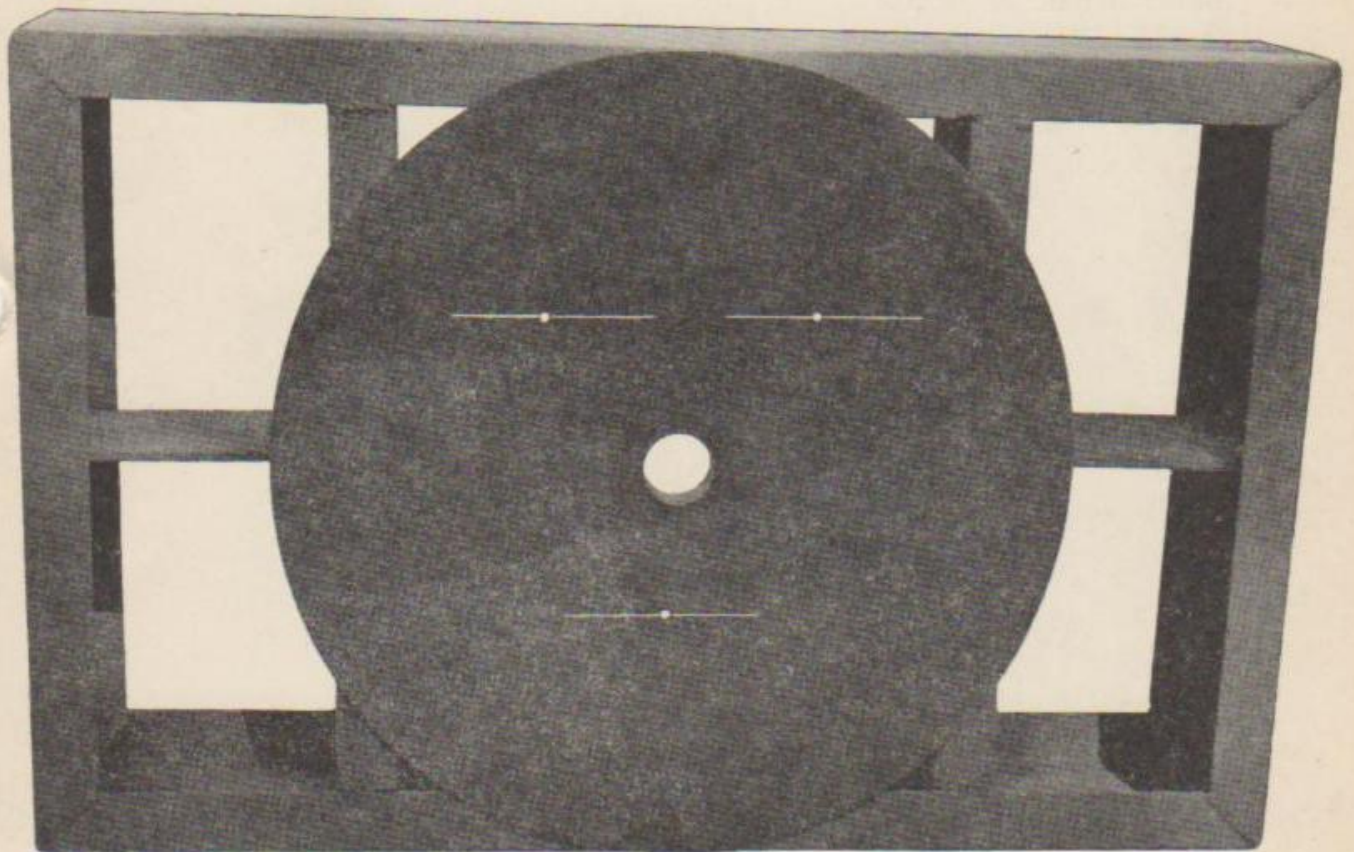
Fig. 116



①



②



③

Fig. 117

FRAME UNITS

1. MAIN TRAILER FRAME.

The main trailer frame will require very little repair unless damaged by accident. However, in the event frame should become cracked or broken, cracks may be welded electrically.

The upper half of the fifth wheel and the fifth wheel king pin are integral parts of the main trailer frame.

2. LOADING RAMPS.

Figure two shows the loading ramp. There are two loading ramps per trailer. Little or no repair shall be required to the loading ramps.

3. DOLLY FRAME.

Figure three shows the dolly frame assembly which includes the lower half of the fifth wheel. The dolly frame will, likewise, require little or no repair, but if it should become broken or cracked, it can be electrically welded to remedy any such break or crack.

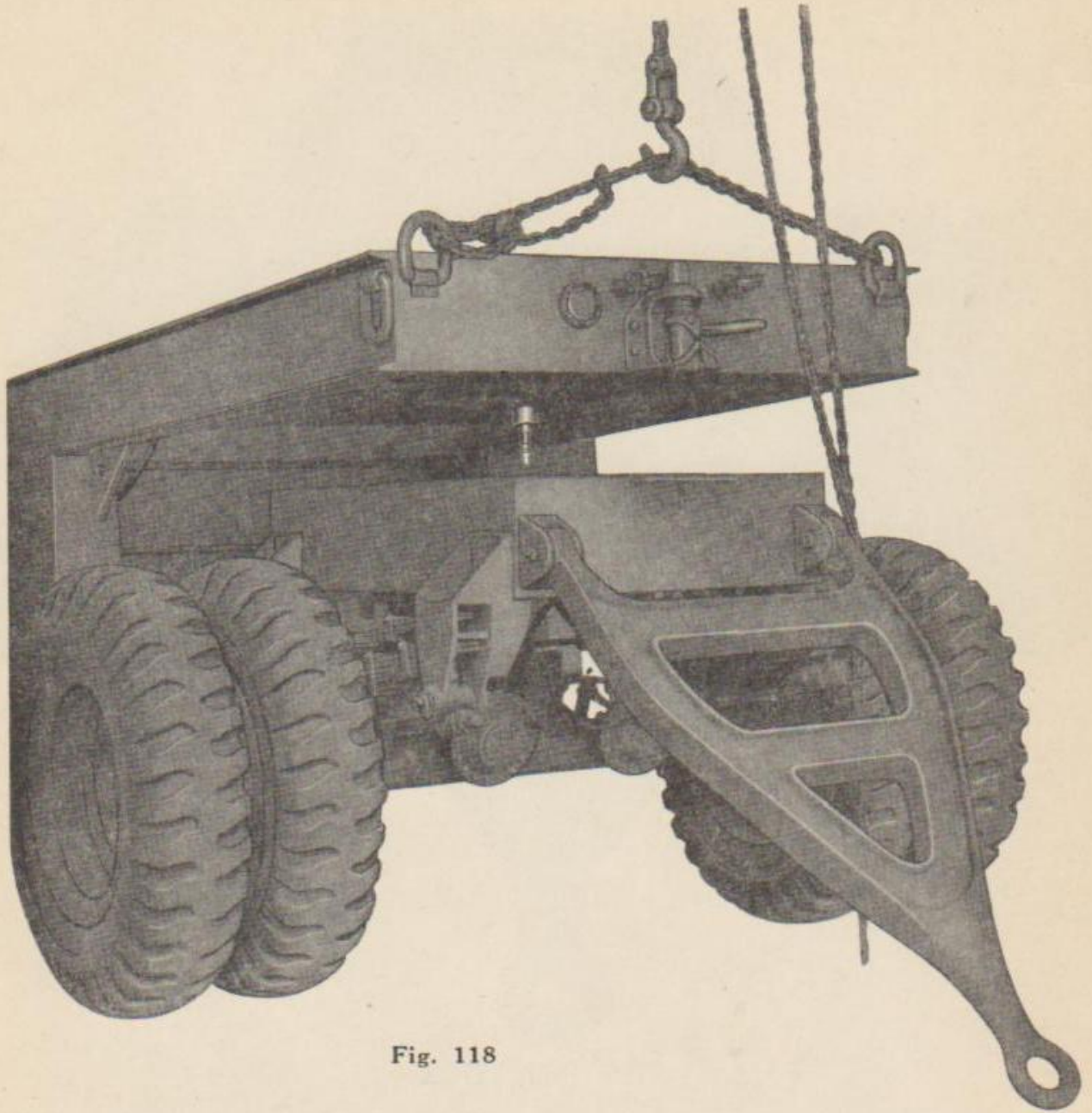


Fig. 118

To Disconnect the Dolly

In the picture shown above, the Dolly is being disconnected. A suitable hoist or crane is required to lift the heavy trailer from the Dolly. Before raising the trailer, be sure to disconnect the air brake line from the lower end of the fifth wheel king pin. Then remove the large nut on the king pin proper. Securely prop the Dolly in position before raising the trailer or it will rotate on its axle and fall, damaging the air brake connection and possibly injuring the person attempting the uncoupling. After the brake line is disconnected and the Dolly safely propped, proceed to raise the trailer with crane or hoist as shown.

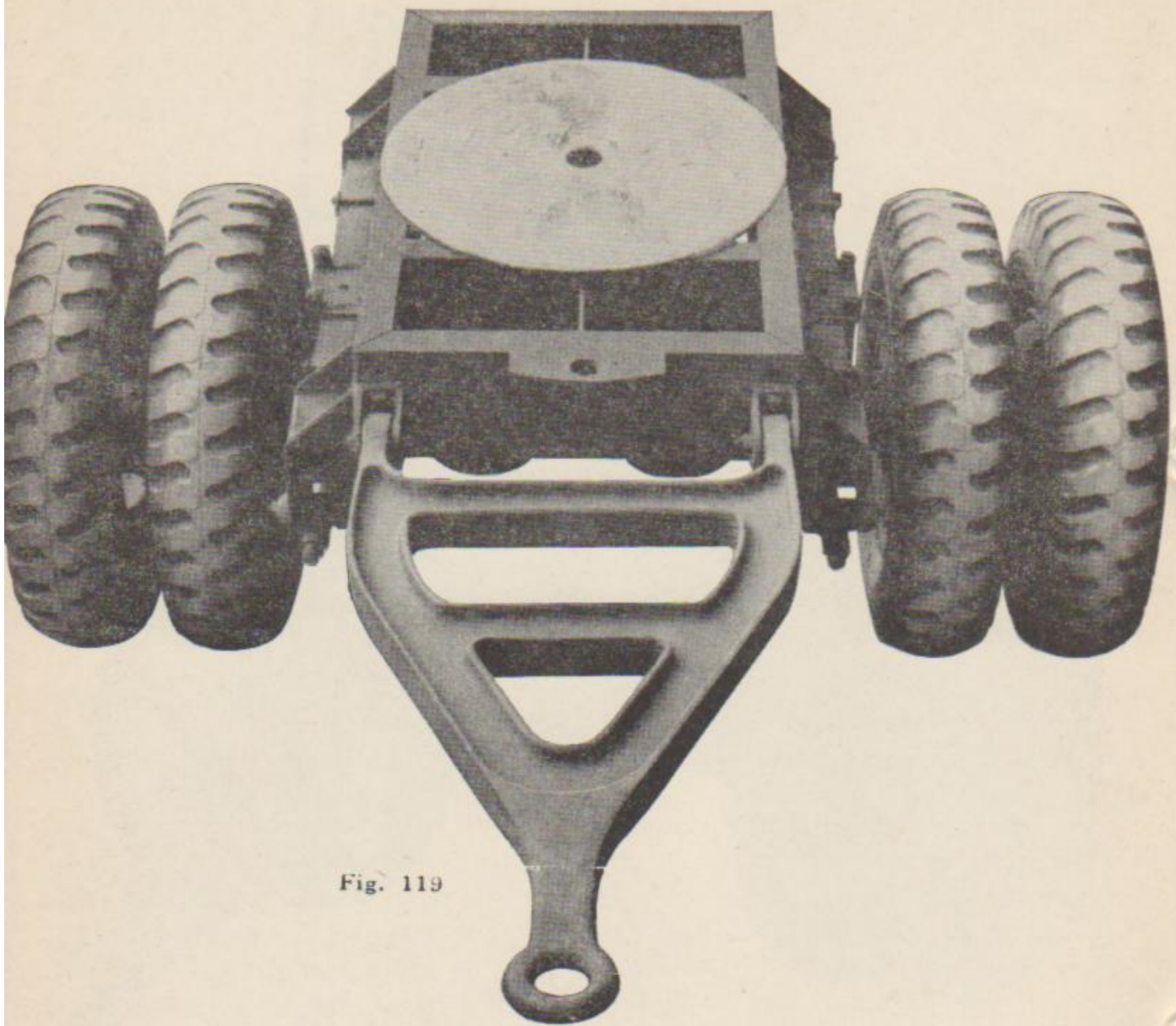


Fig. 119

The Dolly Truck

Shown above is the Dolly Truck which has been disconnected from the trailer proper. The disc in the center is the lower half of the fifth wheel which should be kept lubricated with a heavy graphite grease. The fifth wheel should be kept well supplied with grease to prevent undue wear and to prevent a freezing action from taking place causing the unit to be unwieldy and hard to steer in service. The fifth wheel should be washed clean with kerosene or some other suitable solvent every three months or 5,000 miles, whichever shall occur first. This is a major lubrication operation which requires that the Dolly be disconnected from the trailer proper. The fifth wheel should have a minor lubrication each 30 days or 500 miles, whichever shall occur first. This is done with a pressure gun as shown on a previous page of this Manual.

To Disassemble

Wheels on front of dolly axle are mounted separately, the inside with a combination bolt nut, and the outside with a nut only. On the right side these bolt nuts and nuts will be found to be marked with the letter "R," which indicates that they are for the righthand side and are righthand threads. The ones on the left are marked with the letter "L" and they are for the left hand side and are lefthand thread.

Before attempting to remove tires be sure that the parking brake is securely set. Place a suitable jack under the axle at the end nearest to the side of the trailer from which tires are to be removed. Caution: Be sure that jack is placed on a wide block of wood in order to assure a solid footing which will prevent the jack from tipping and allow the trailer to accidentally fall.

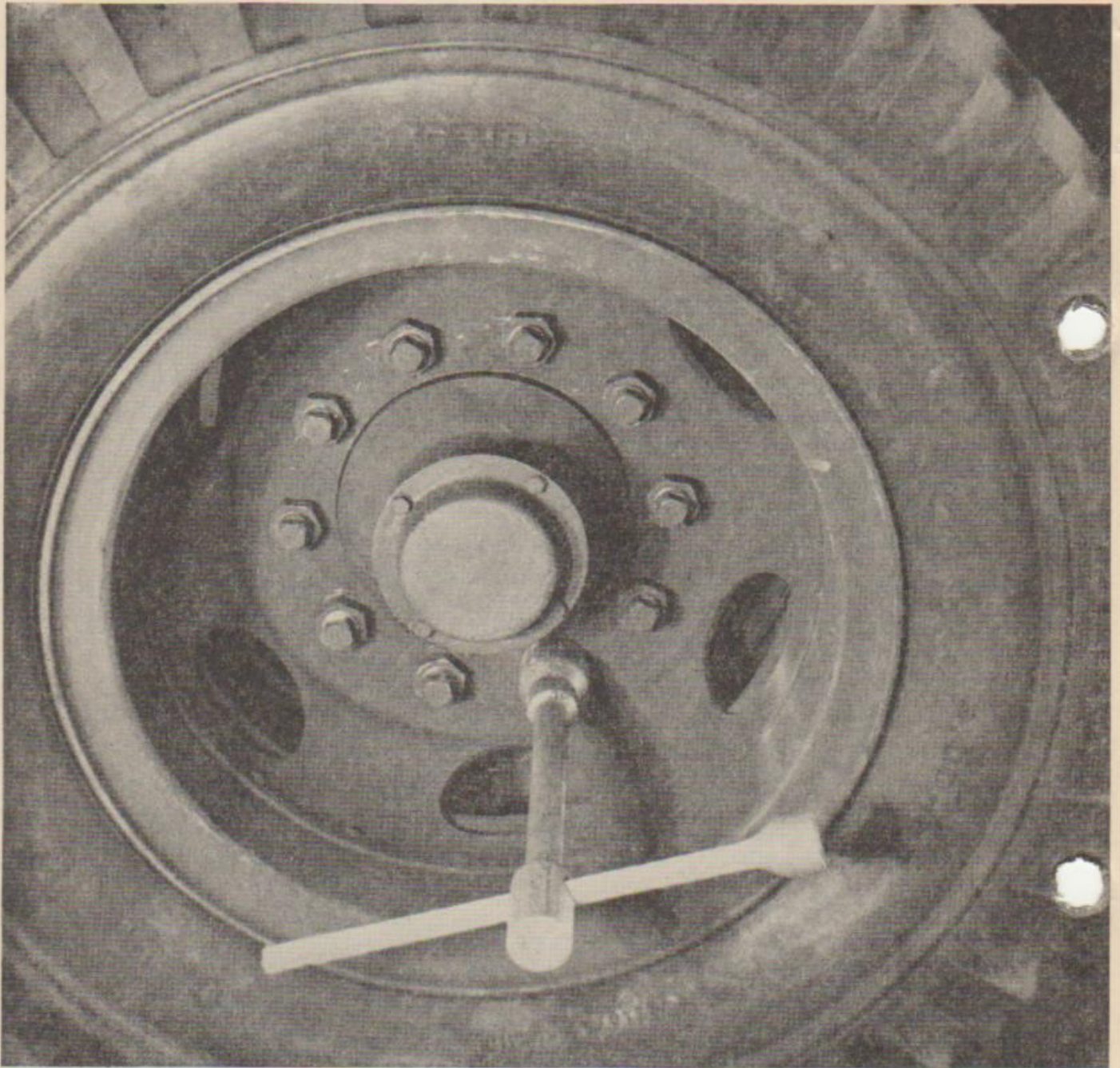


Fig. 120

REMOVING TIRES AND WHEELS

Remove nuts only to remove outside wheel as shown above, using the large or hex end of the wheel wrench. When all nuts are removed, the wheel will slip off.

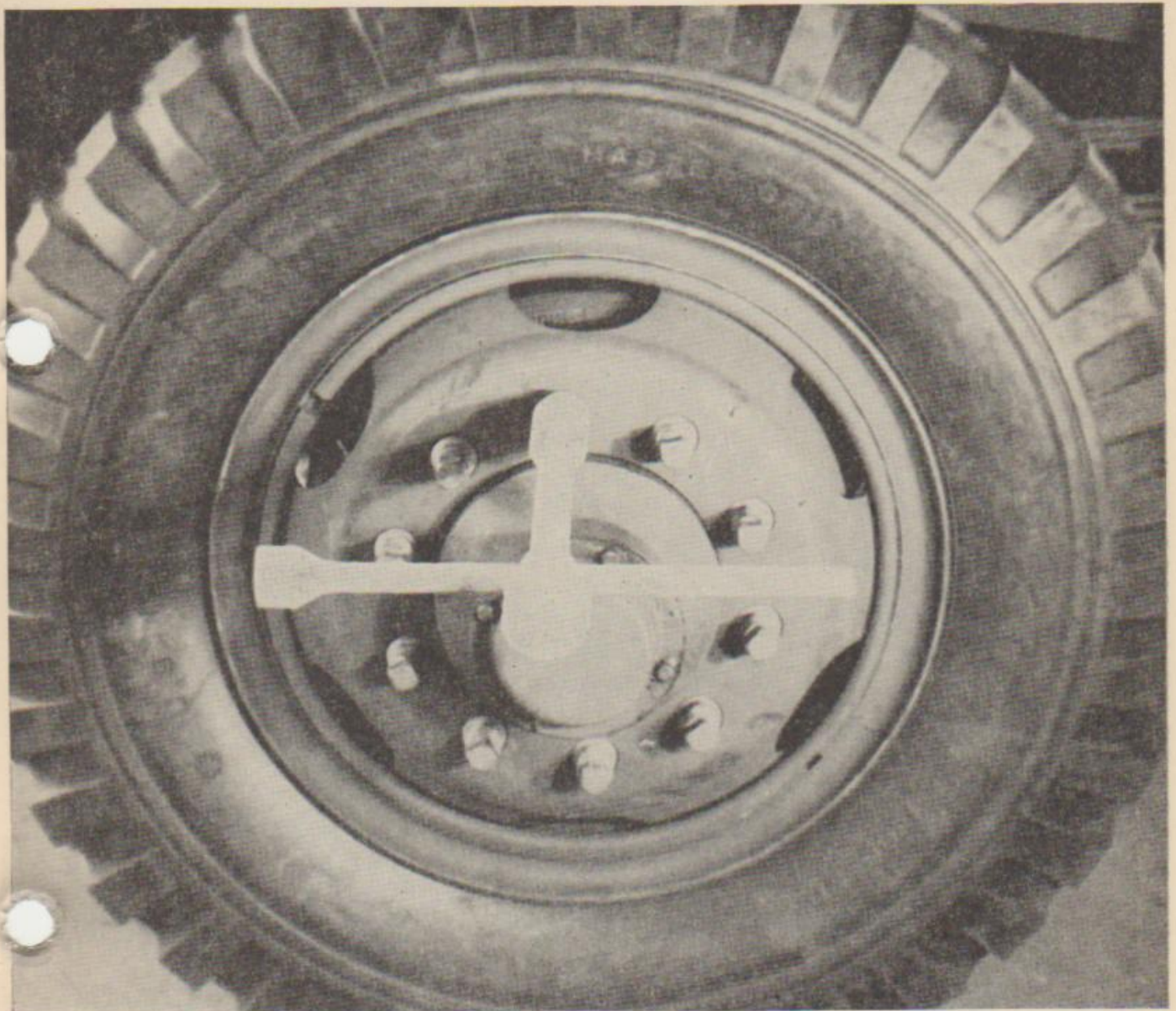


Fig. 121

REMOVING WHEELS

Here the outside wheel is off and the inside wheel is being removed by removing the combination bolt nut with the small or square end of the wheel wrench. Likewise, when all bolt nuts are removed, the inside wheel will slip off.

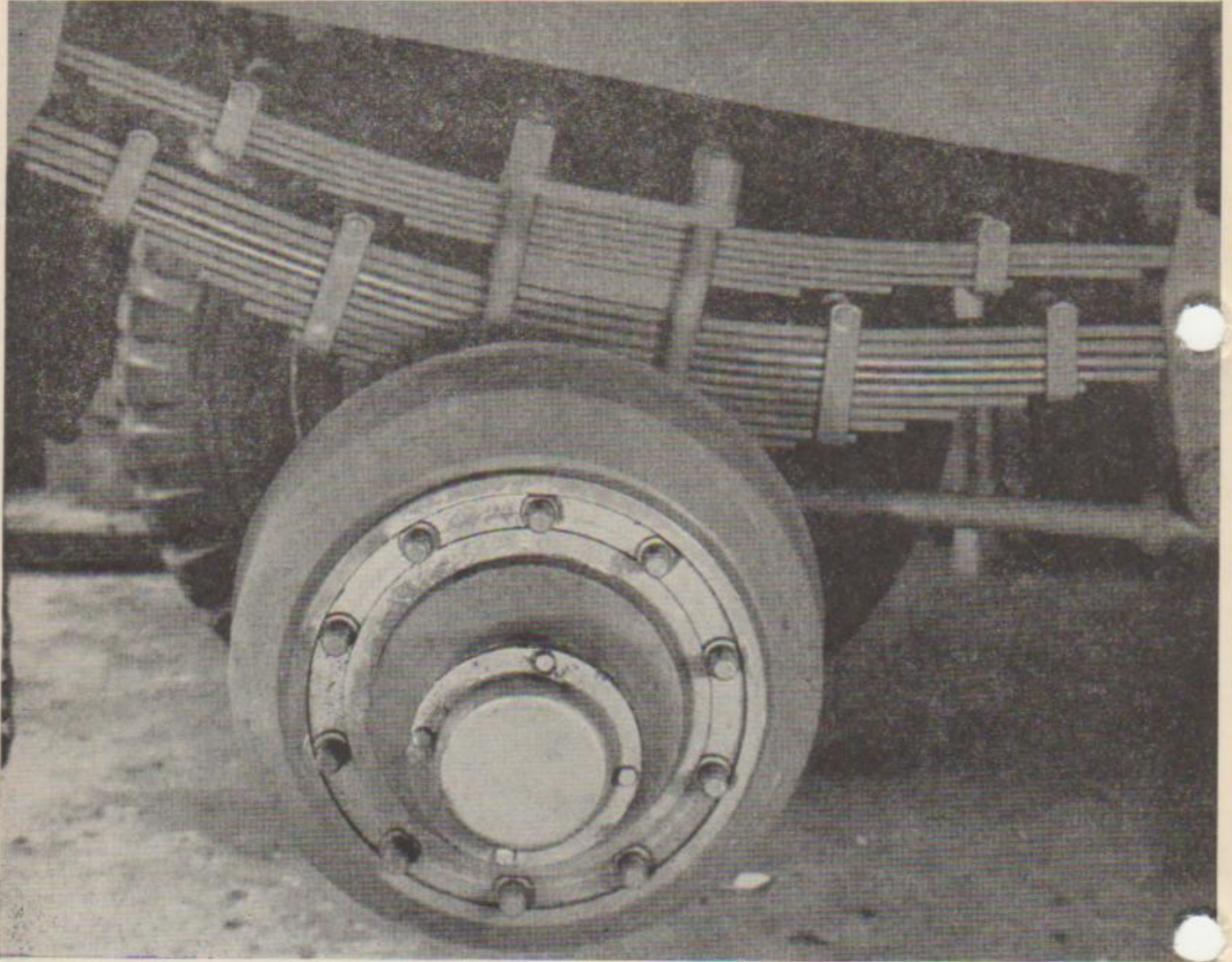


Fig. 122

REMOVING HUB CAP

Shown here is the hub with the wheels removed. Now remove the 4 hub cap bolts and the hub cap.

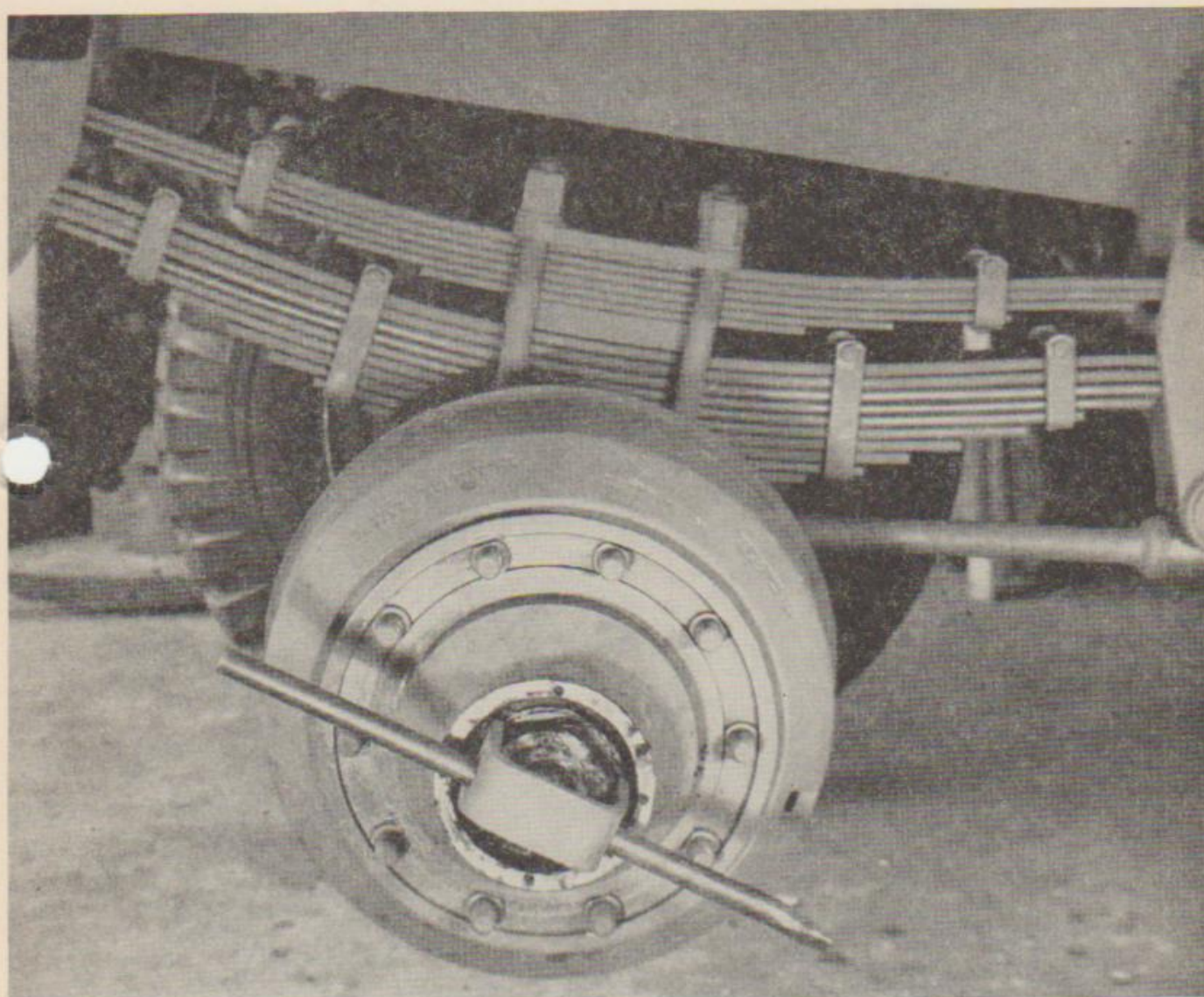


Fig. 123

REMOVING HUB

After hub cap is removed as shown in Fig. 122 it will be noted that wheel is held in place on the spindle by two spindle nuts which are locked in place by a special lockwasher which has an ear bent down over one side of the outside lock nut. Using a hammer and cold chisel bend the ear back up off of the outside lock nut and remove the lock nut with a suitable wrench. The lock washer then may be removed by hand. After removing the lock washer proceed to remove the second lock nut. After the second lock nut has been removed give the wheel and drum assembly a short sharp jerk which will cause the outside wheel bearing to start off of the spindle. The outside wheel bearing may then be removed by hand. Extreme caution should be exercised to not allow nuts, washer, or bearings to fall in the dirt. After the outside wheel bearing has been removed the wheel and drum assembly can be slipped off by hand. However, if the wheel and drum assembly shows a tendency to bind and not come off it will be caused by the brake shoes dragging on the brake drum. In which case remove the clevis pin which holds the brake chamber rod to the slack adjuster which will allow sufficient slack on the brake shoes to permit the wheel and drum assembly to be removed.

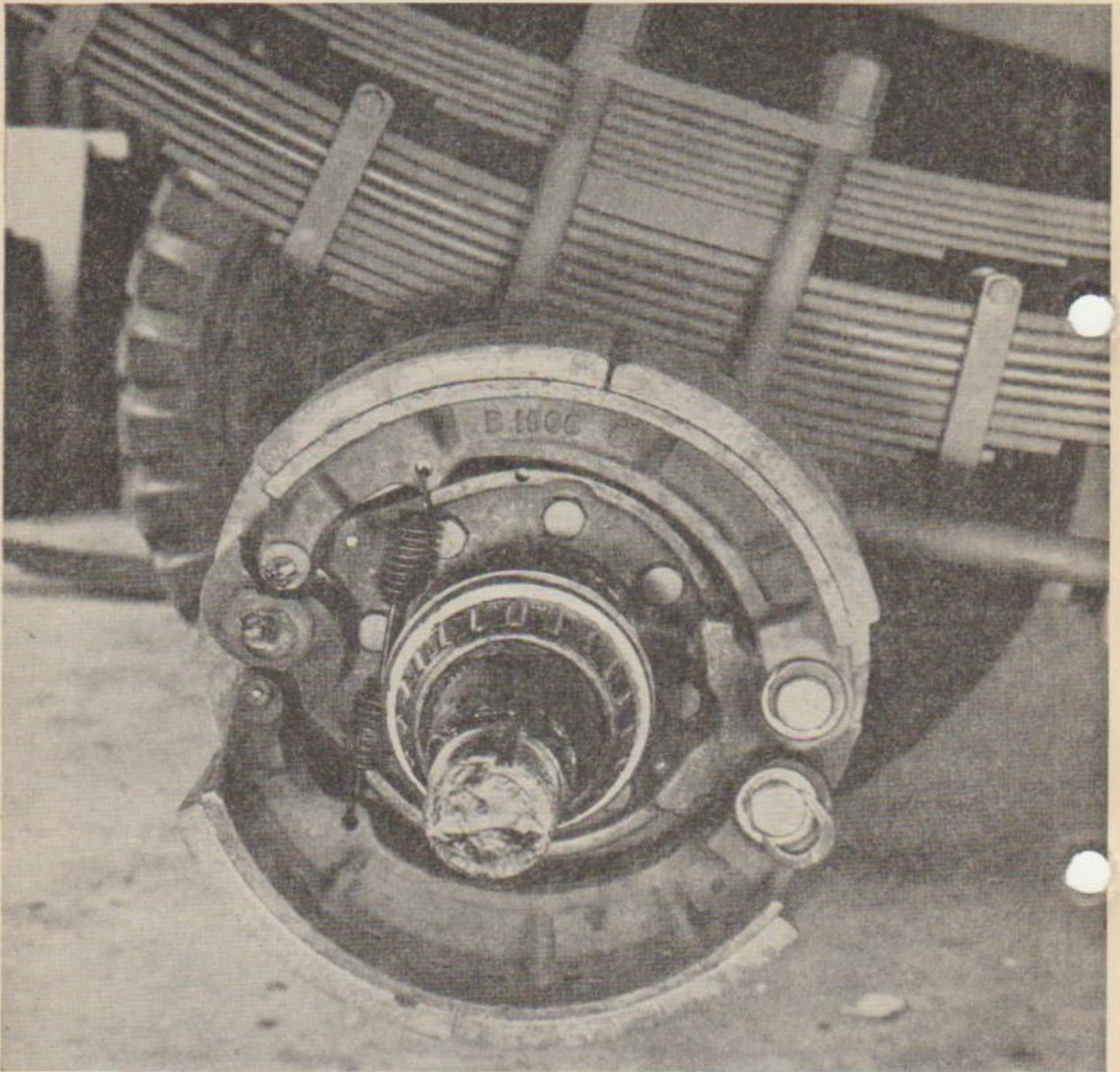


Fig. 124

REMOVING BRAKE SHOES

This shows axle with hub removed and U-washer on lower anchor pin partly driven out. Drive out both U-washers.

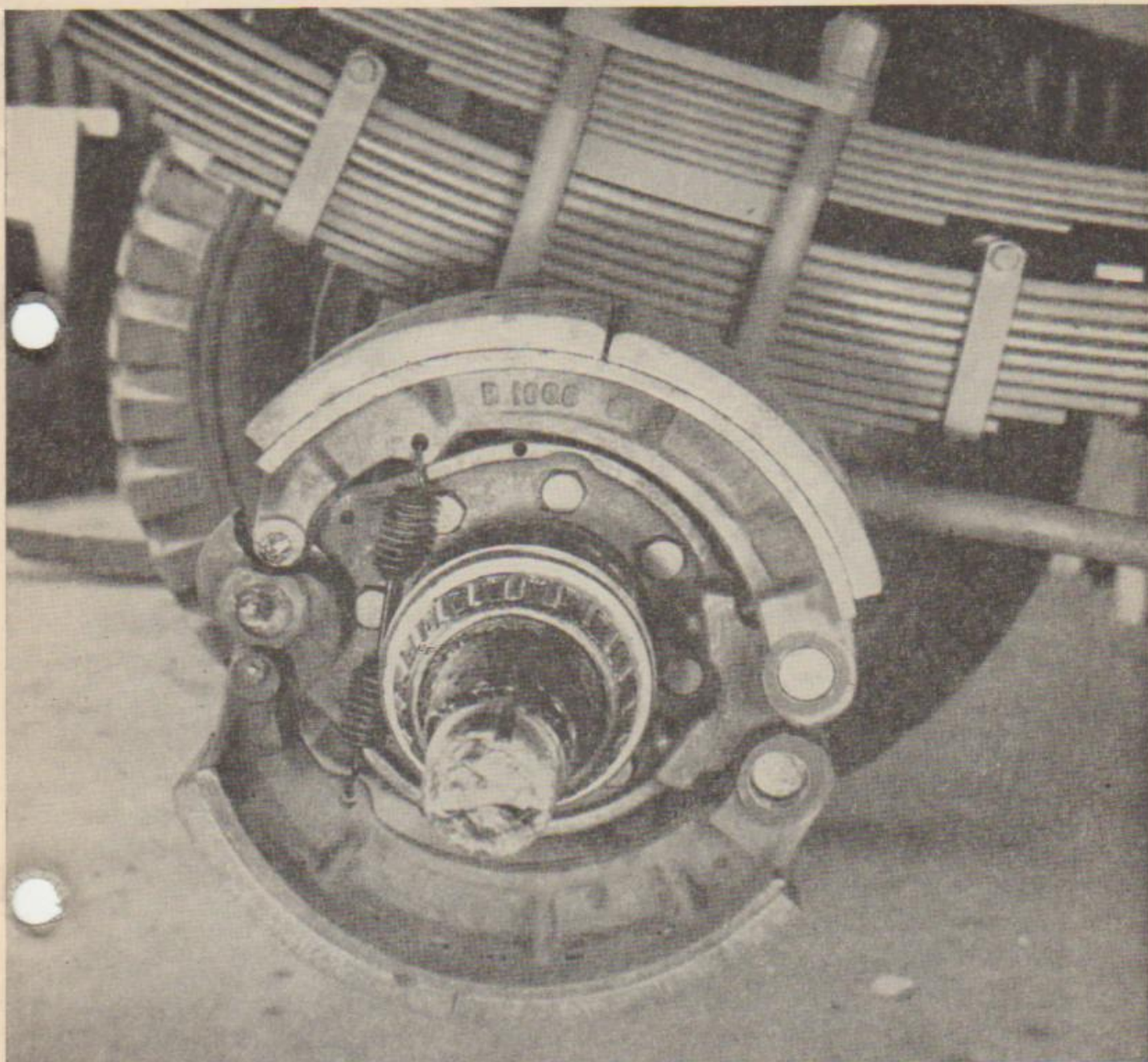


Fig. 125

REMOVING BRAKE SHOES

Then drive out anchor pins, using suitable punch and hammer. View preceding shows anchor pins partly driven out.

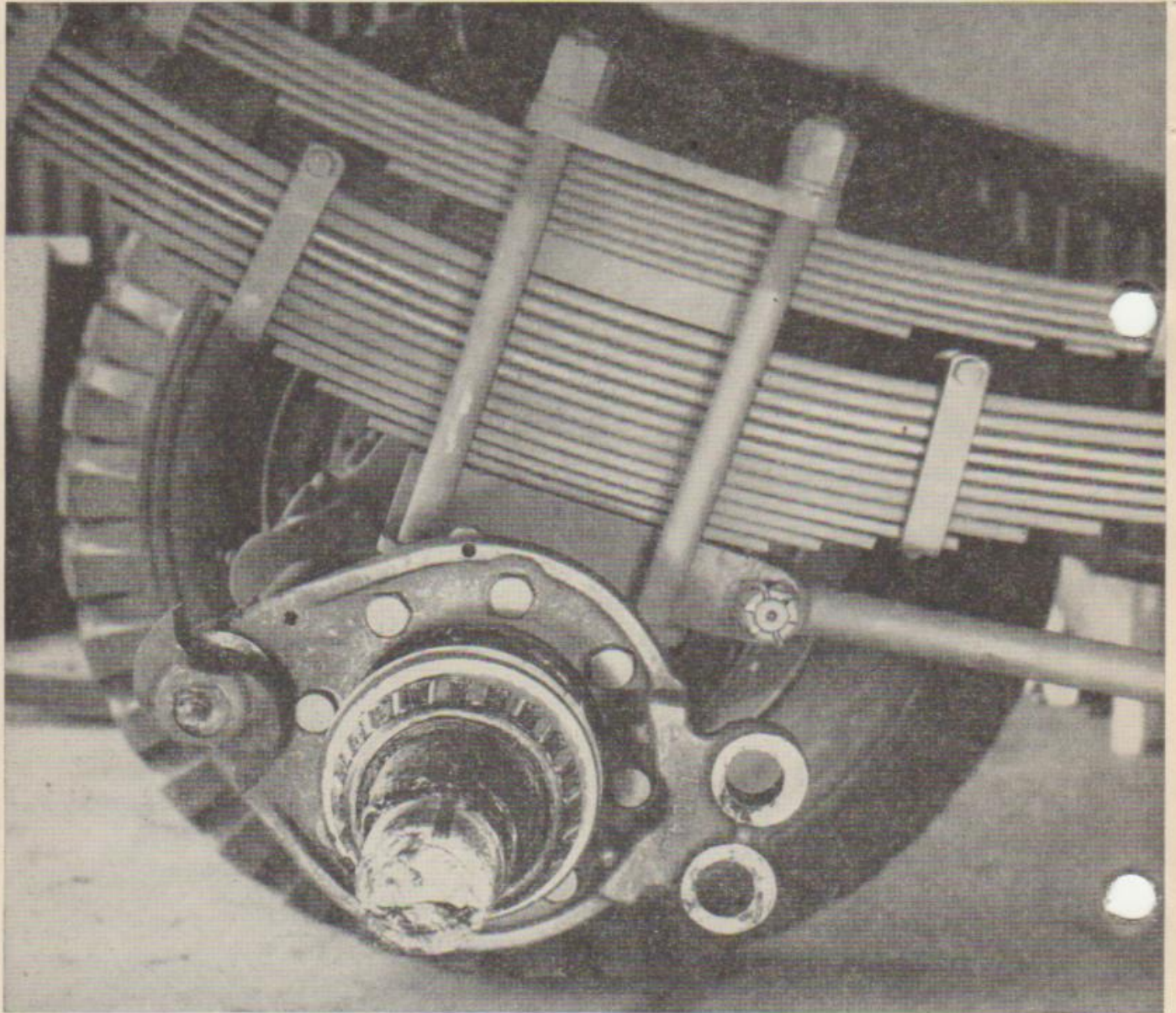


Fig. 126

ANCHOR PINS REMOVED

When anchor pins are driven out, brake shoes will be removed by hand and axle will look as shown.

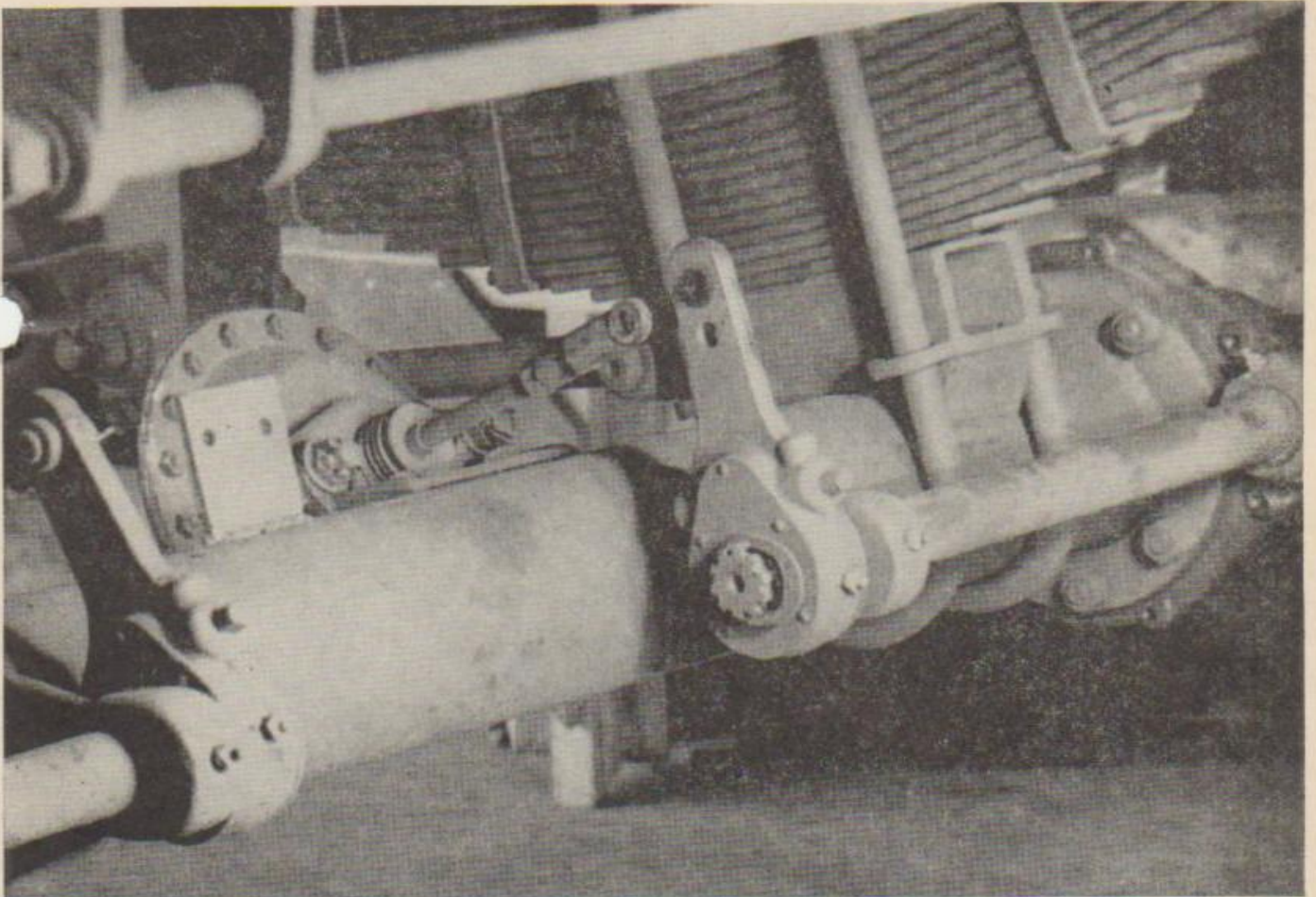


Fig. 127

REMOVING SLACK ADJUSTER

Now, go inside and remove clevis pin and disconnect brake rod from slack adjuster and remove U-washer from end of camshaft as shown. View preceding shows U-washer partly driven out.

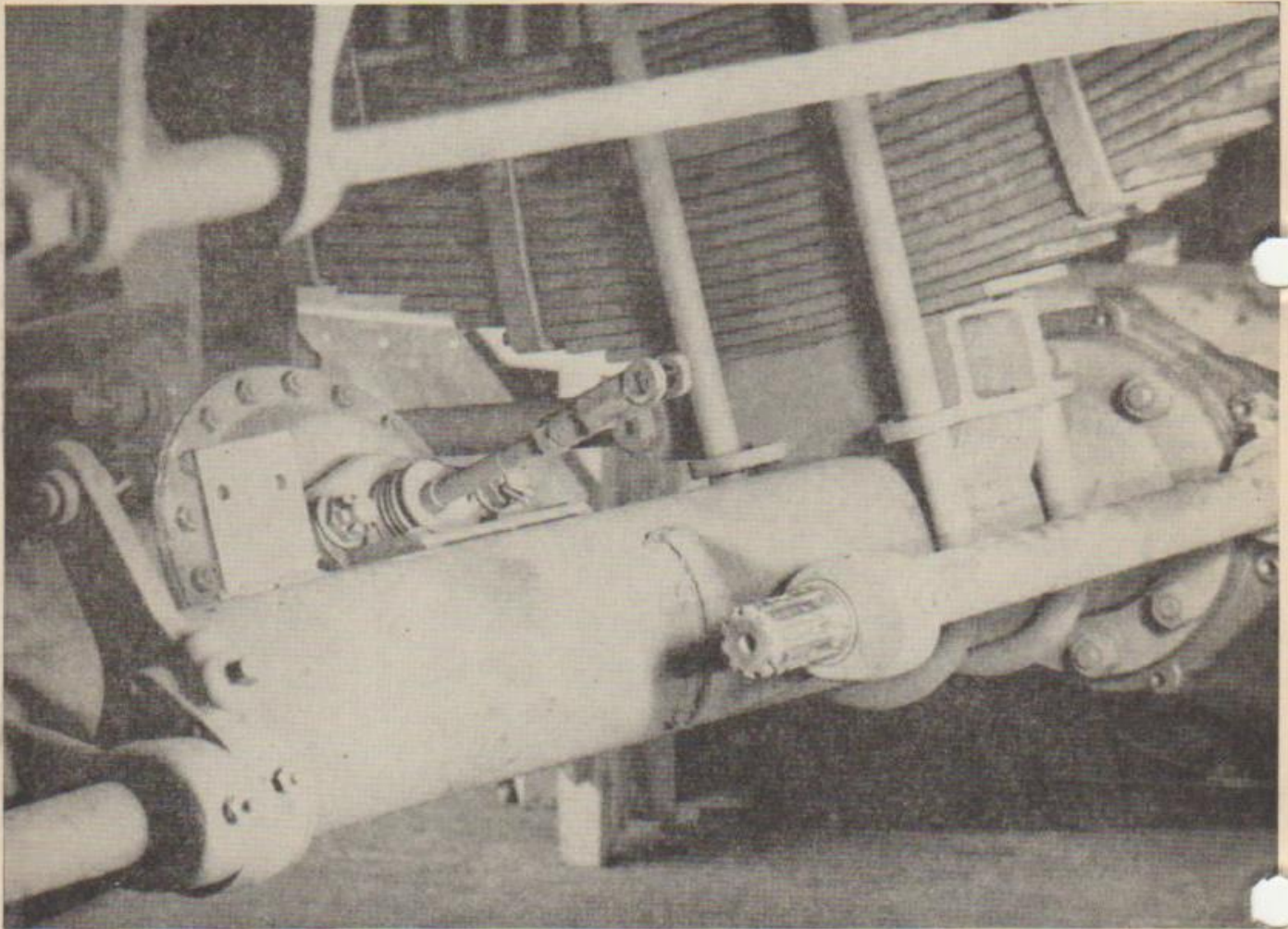


Fig. 128

REMOVING CAMSHAFT

After U-washer is removed, slack adjuster will slip off easily. View shows camshaft with slack adjuster removed.

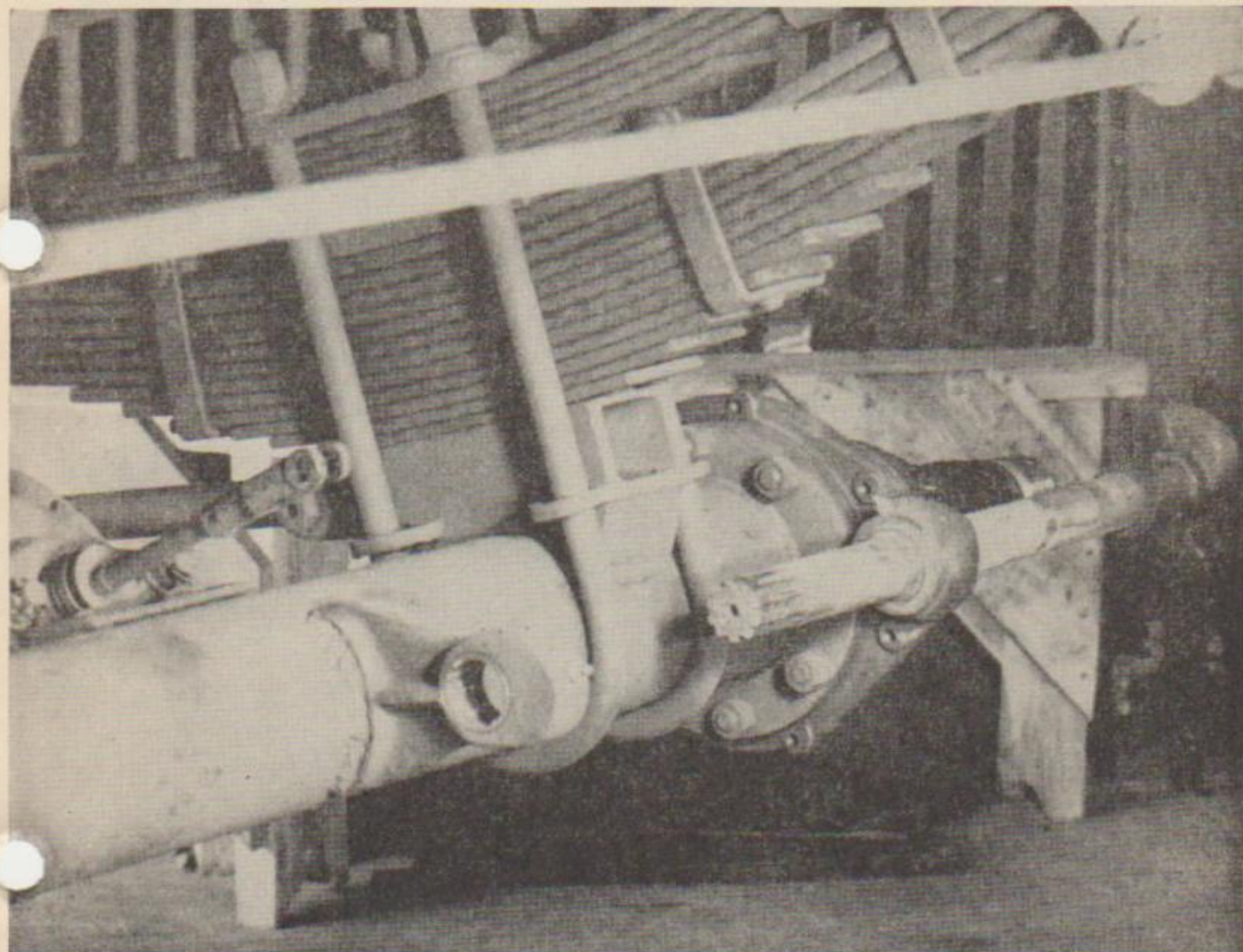


Fig. 129

REMOVING CAMSHAFT

Camshaft can now be driven out as shown.

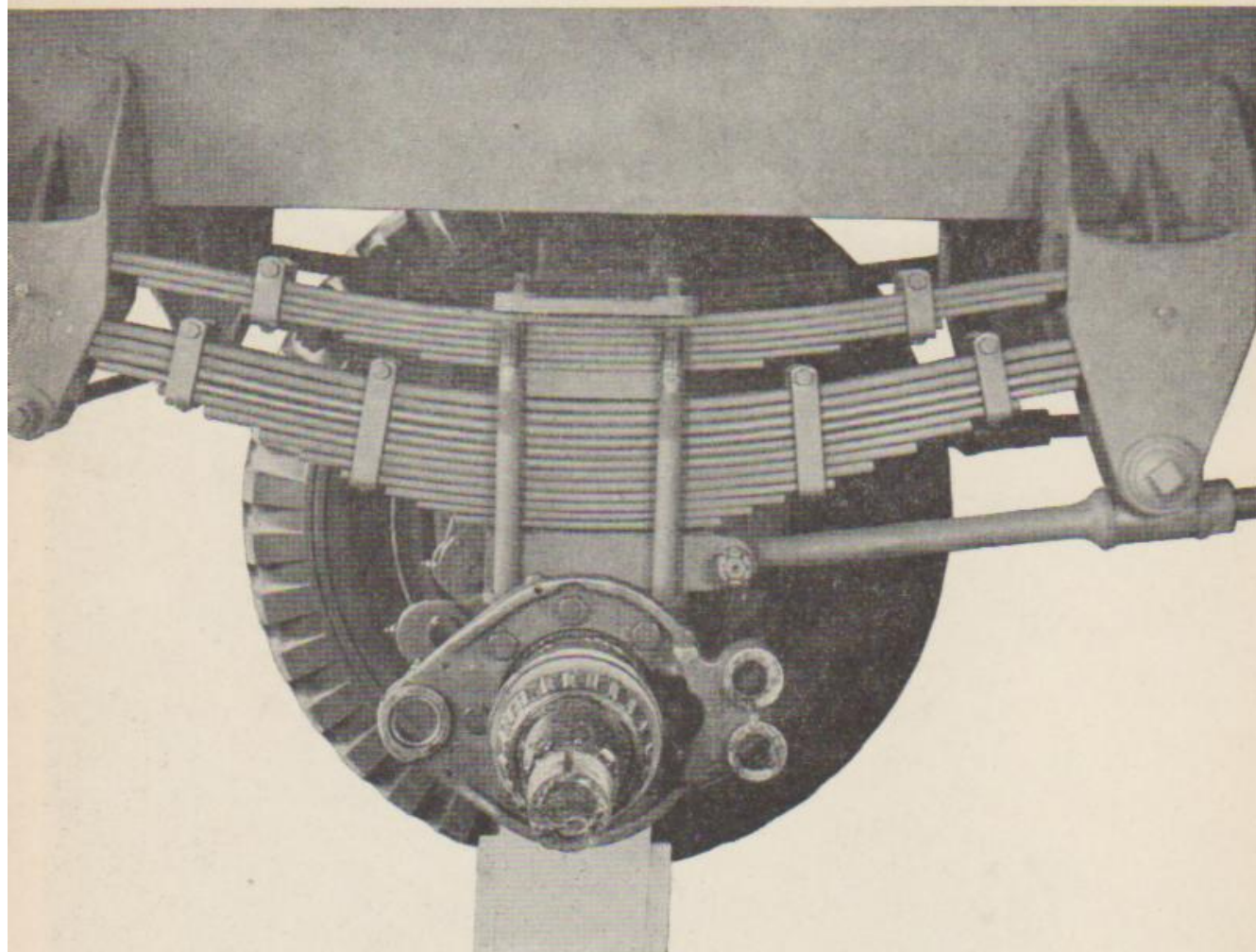


Fig. 130

REMOVING BRAKE SPIDER

Returning to the outside, it is readily seen that brake spider may be removed by removing bolts if desired. Also shown are U-bolts from which nuts have been removed. Next, drive U-bolts down and remove them.

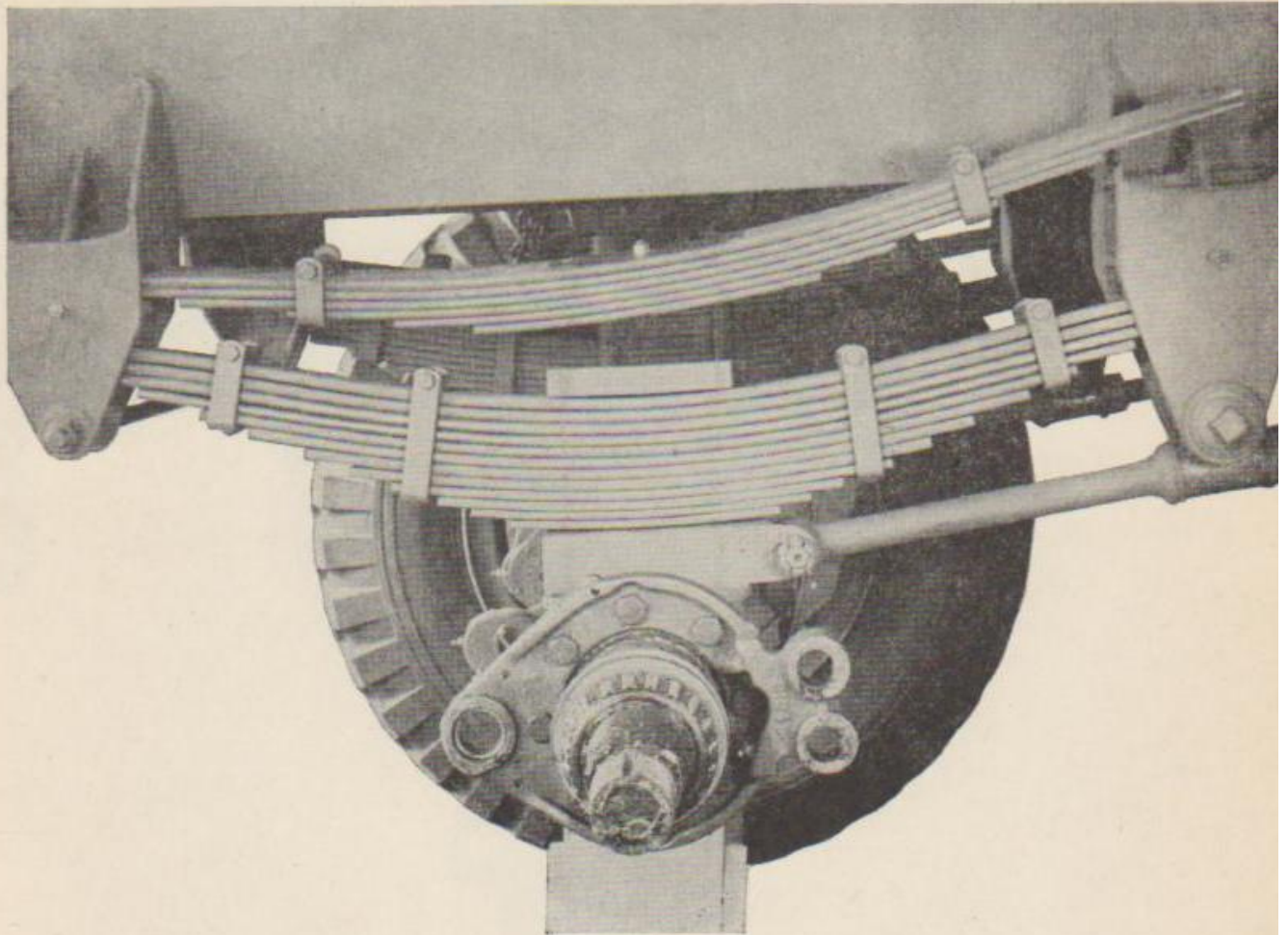


Fig. 131

REMOVING HELPER SPRINGS

U-bolts having been removed, helper spring will slip out as shown.

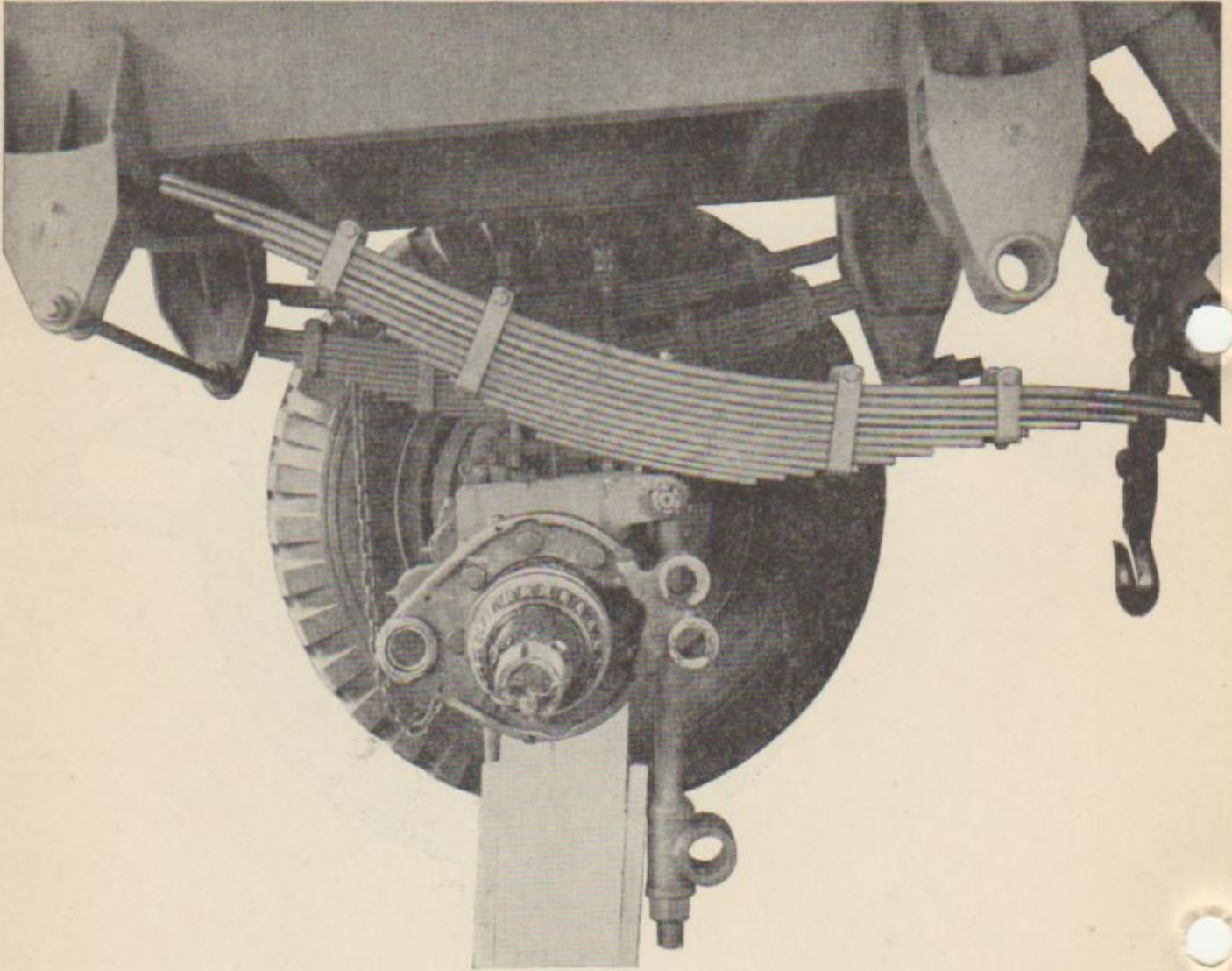


Fig. 132

REMOVING MAIN SPRINGS

To remove main spring, first disconnect front end of torque rod as shown; main spring will then come out. Repeat all the steps preceding on the opposite side of trailer, and front or dolly axle is ready to be dropped down.

TO RE-ASSEMBLE, REVERSE THE PROCEDURE.

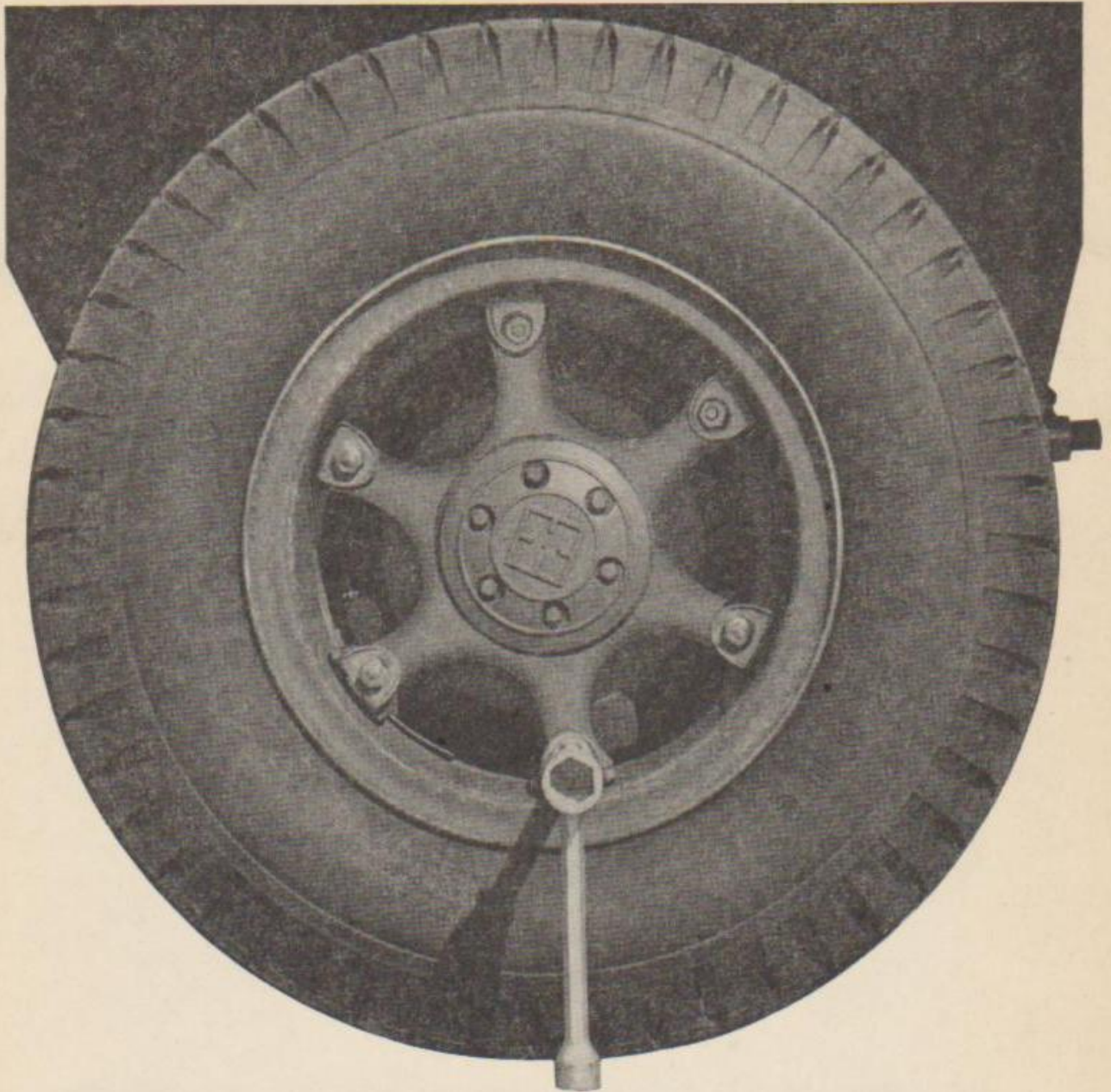


Fig. 133

ERIE WHEEL

On trailers bearing serial No. 0530312 and up Erie wheels are used on the front or Dolly axle instead of Budd. Fig. 133 shows method of removing tires from Erie wheel. Before attempting to remove tires be sure that the parking brake is securely set. Place a suitable jack under the axle at the end nearest to the side of the trailer from which tires are to be removed. Caution: Be sure that jack is placed on a wide block of wood in order to assure a solid footing which will prevent the jack from tipping and allow the trailer to accidentally fall. It will be noted by viewing Fig. 133 that rim nut wrench is in position ready to start removing rim nuts. Rim nuts will be found to be righthand thread on both sides of trailer. Proceed

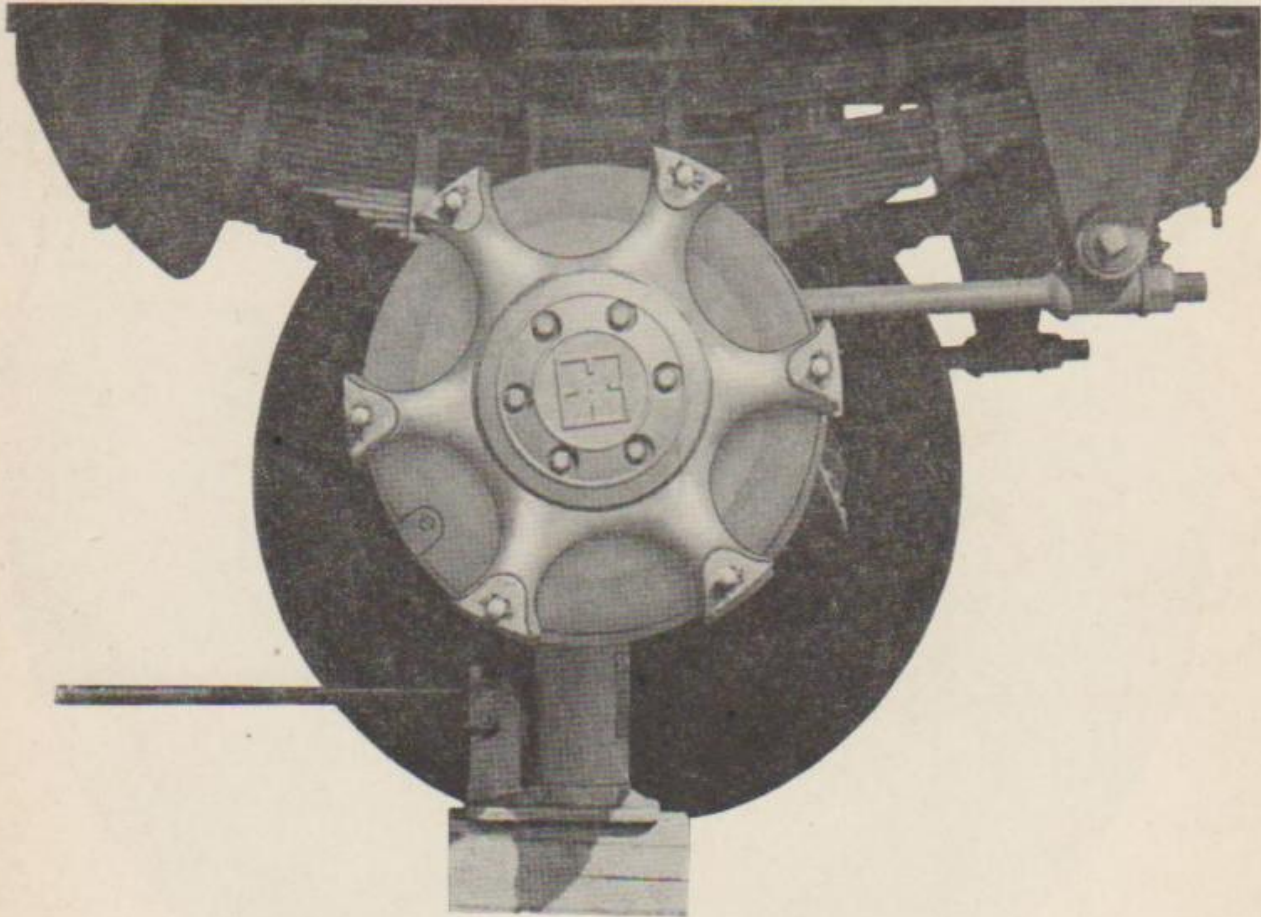


Fig. 134

ERIE WHEEL

to remove the rim nuts and after rim nuts are removed rim clamps will then come off by hand. If a rim clamp does not come off easily strike it a medium blow with the leverage bar which will loosen rim clamp and allow it to fall off easily. After rim nuts and rim clamps are removed outside tire can be easily removed by hand. After outside tire is removed a spacer ring will be found on the wheel; this is removed by hand. After spacer ring is removed the inside tire can be easily slipped off of the wheel by hand. Fig. 134 shows the wheel with both tires removed.

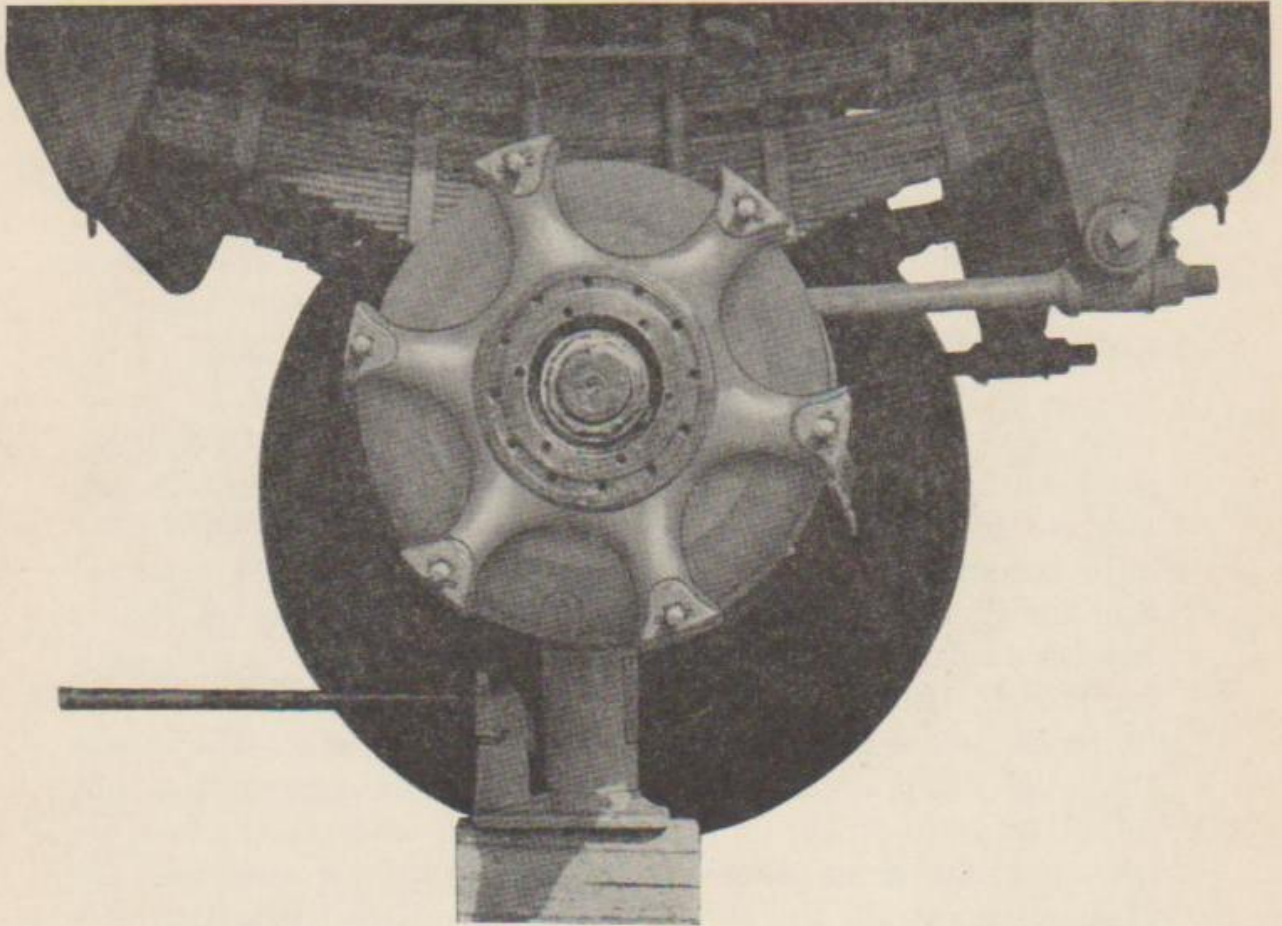


Fig. 135

REMOVING ERIE WHEEL

To remove wheel and hub assembly remove the six cap screws that hold the hub cap in place as shown in Fig. 134. After hub cap is removed as shown in Fig. 135 it will be noted that wheel is held in place on the spindle by two spindle nuts which are locked in place by a special lockwasher which has an ear bent down over one side of the outside lock nut. Using a hammer and cold chisel bend the ear back up off of the outside lock nut and remove lock nut with a suitable wrench. The lock washer then may be removed by hand. After removing the lock washer proceed to remove the second lock nut. After the second lock nut has been removed give the wheel and drum assembly a short

sharp jerk which will cause the outside wheel bearing to start off of the spindle. The outside wheel bearing may then be removed by hand. Extreme caution should be exercised to not allow nuts, washer, or bearings to fall in the dirt. After the outside wheel bearing has been removed the wheel and drum assembly can be slipped off by hand. However, if the wheel and drum assembly shows a tendency to bind and not come off it will be caused by the brake shoe dragging on the brake drum. In which case remove the clevis pin which holds the brake chamber rod to the slack adjuster which will allow sufficient slack on the brake shoes to permit the wheel and drum assembly to be removed.

Before reinstalling wheel and drum assembly thoroughly wash all bearings, nuts, washers and hub with a suitable solvent to remove all the old grease and any dirt which may have accumulated. While wheel and drum assembly is removed thoroughly inspect the grease retainer for signs of wear. Always replace any defective grease retainer before reinstalling wheel. Also inspect brake lining and brake drum. If brake lining is worn to or near the rivet heads reline the brake shoes. If the brake drum is scored or cracked report this condition to your officer in charge. Severely scored, cracked, or broken brake drum should be replaced with a new one. To reassemble reverse the foregoing process. (See lubrication section for instructions for packing wheels with grease.) Caution must be exercised in replacing the tires to see that the tires are on the wheel in true alinement. Tires which are not alined with the wheel will wobble when the wheels are rotated. To correct this condition loosen the rim nuts on the side of the tire that is farthest on the wheel and tighten the rim nuts on the side of the tire that needs to be pulled in. Keep rotating the wheel and adjusting the nuts until the tires run true when the wheel rotates. After this is done securely tighten all of the rim nuts using all of the strength an ordinary man may command on the leverage bar of the rim wrench. Never, under any circumstances will it be permissible to exert extreme pressure on the leverage bar by use of a length of pipe or any other method as this will put the rim bolts in danger of breaking.

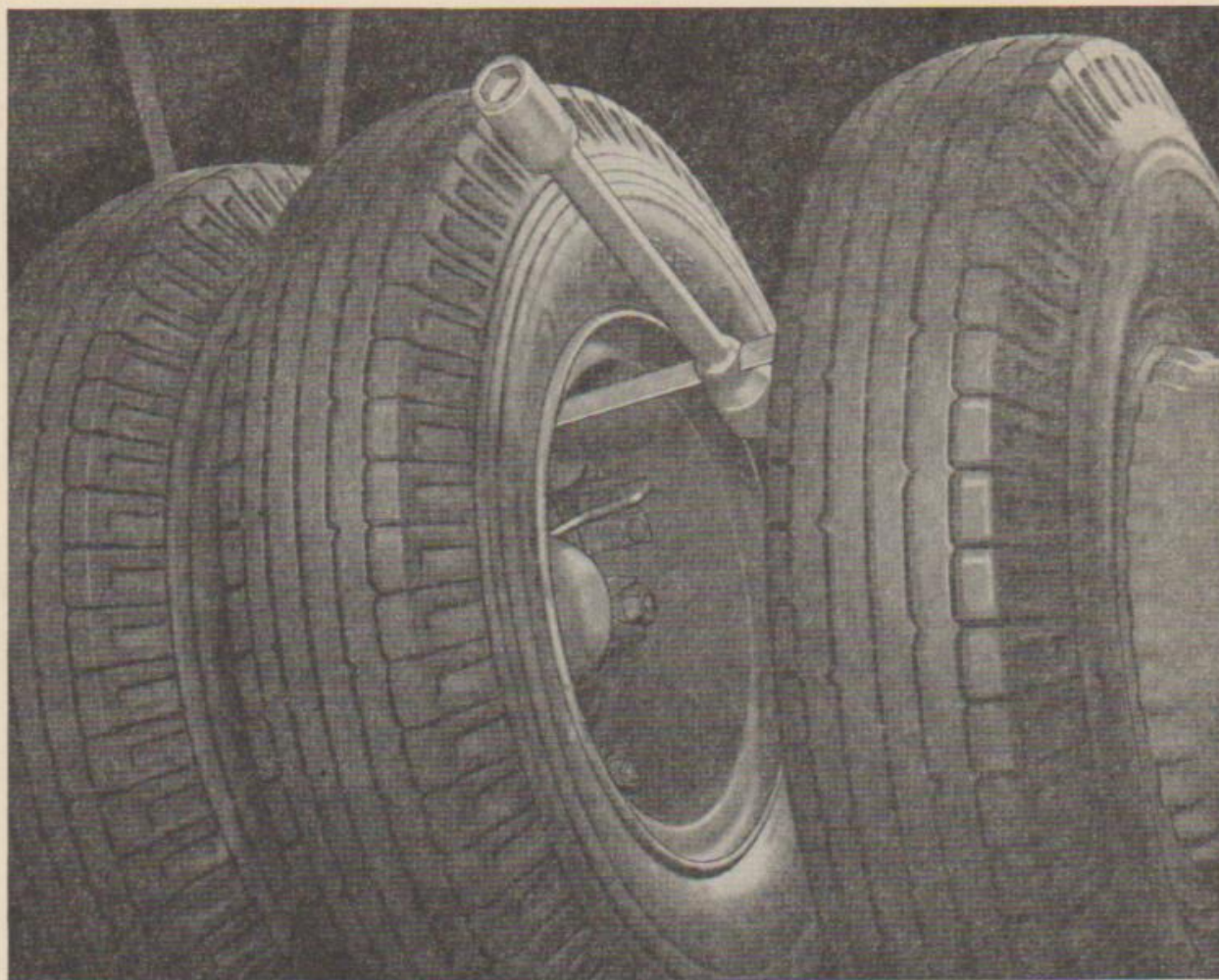


Fig. 136

To Disassemble Rear or Trunnion Axle

The first step in the disassembly of the rear or trunnion axle is the removal of the tires. To remove tires the axle from which the tires are to be removed must be raised to allow the tires to be clear of the ground. Place a suitable jack under the center of the rear trunnion axle being sure to have the jack resting on a good solid block or plank which will provide a solid footing for the jack. Then proceed to raise the axle with the jack. As soon as the tires clear the ground a few inches proceed to remove the tires on the inside end of the trunnion axle first. This is important as the axle oscillates on its trunnion and if the outside tires are removed first it will make the removal of the inside tires extremely difficult as this will cause the inside of the axle to fall down. Fig. 136 shows the rim wrench in proper position for removal of the inside tires. After the nuts and lugs are removed tires will come off easily by hand.

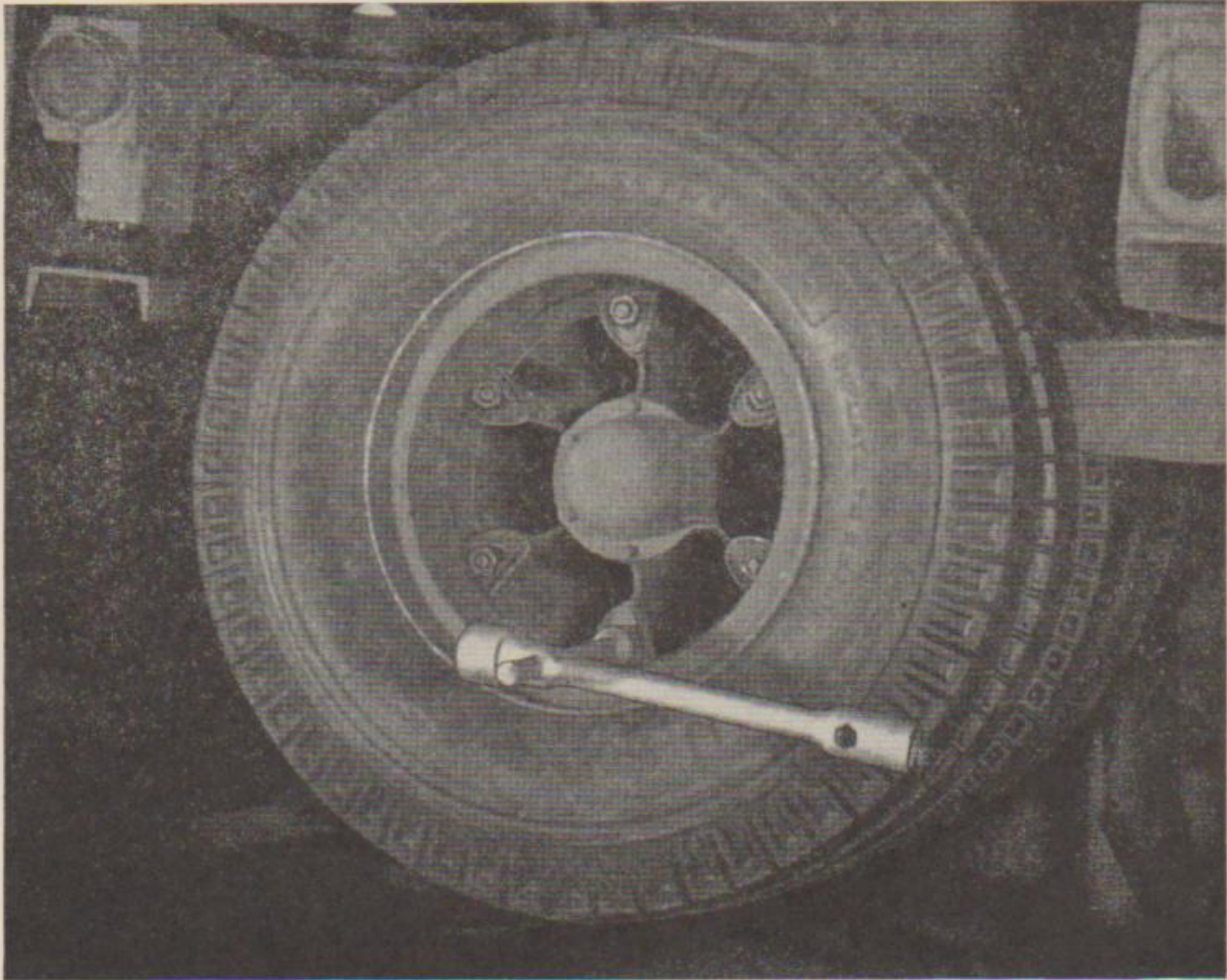


Fig. 137

REMOVING TIRES

To remove outside tires use rim wrench as shown in Fig. 137. Likewise remove the nuts and lugs and slip off the tires by hand.

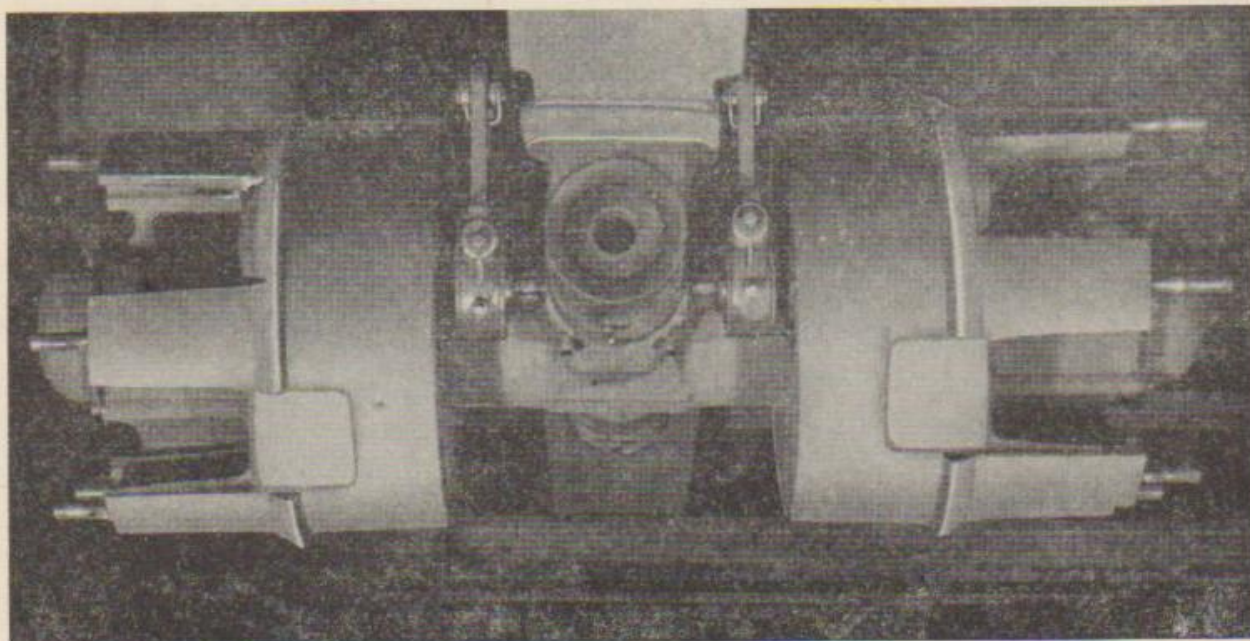


Fig. 138

TIRES REMOVED

Fig. 138 shows the rear or trunnion axle with all four tires removed. It is advisable before removing tires to securely block underneath the main frame of the trailer with suitable cribbing to insure the unit against falling in the event the jack should

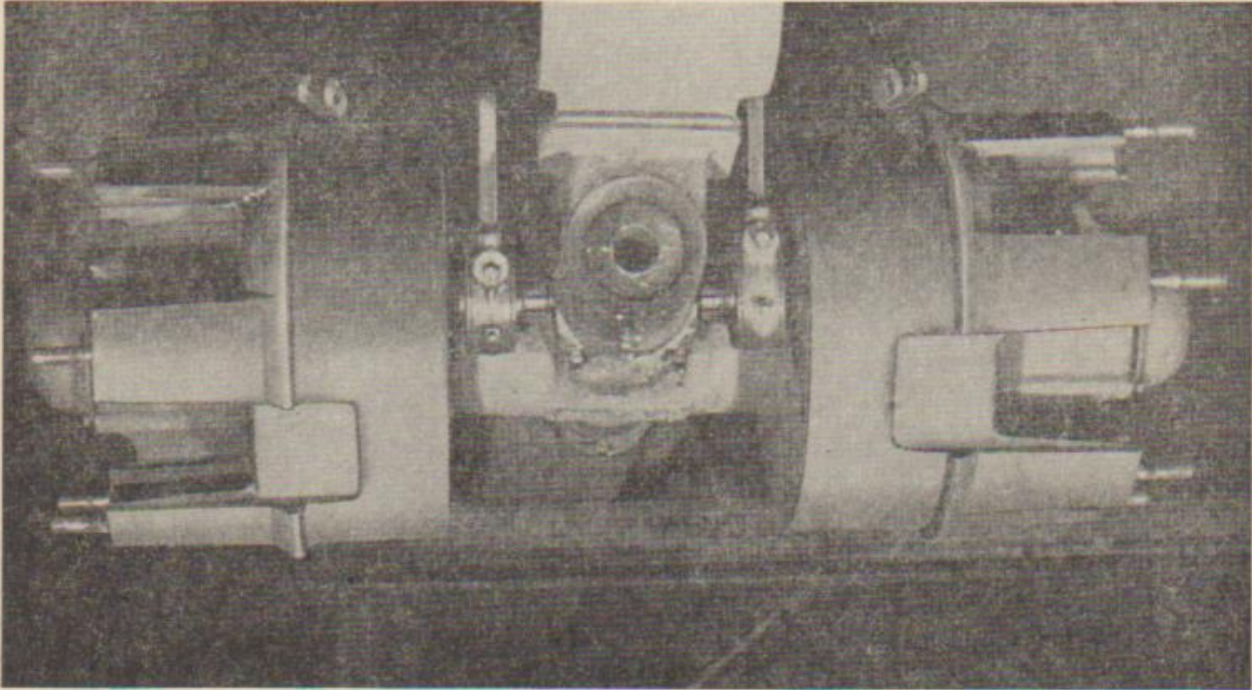


Fig. 139

TO DISCONNECT BRAKE RODS

fail to hold. The next step in disassembly is the removal of the clevis pins which attach the brake rods to the slack adjuster. Fig. 139 shows the clevis pin removed and the brake rods disconnected. To remove the wheel and trunnion assembly always remove the tires first. After having removed tires as previously described and disconnecting brake rods remove the hub cap

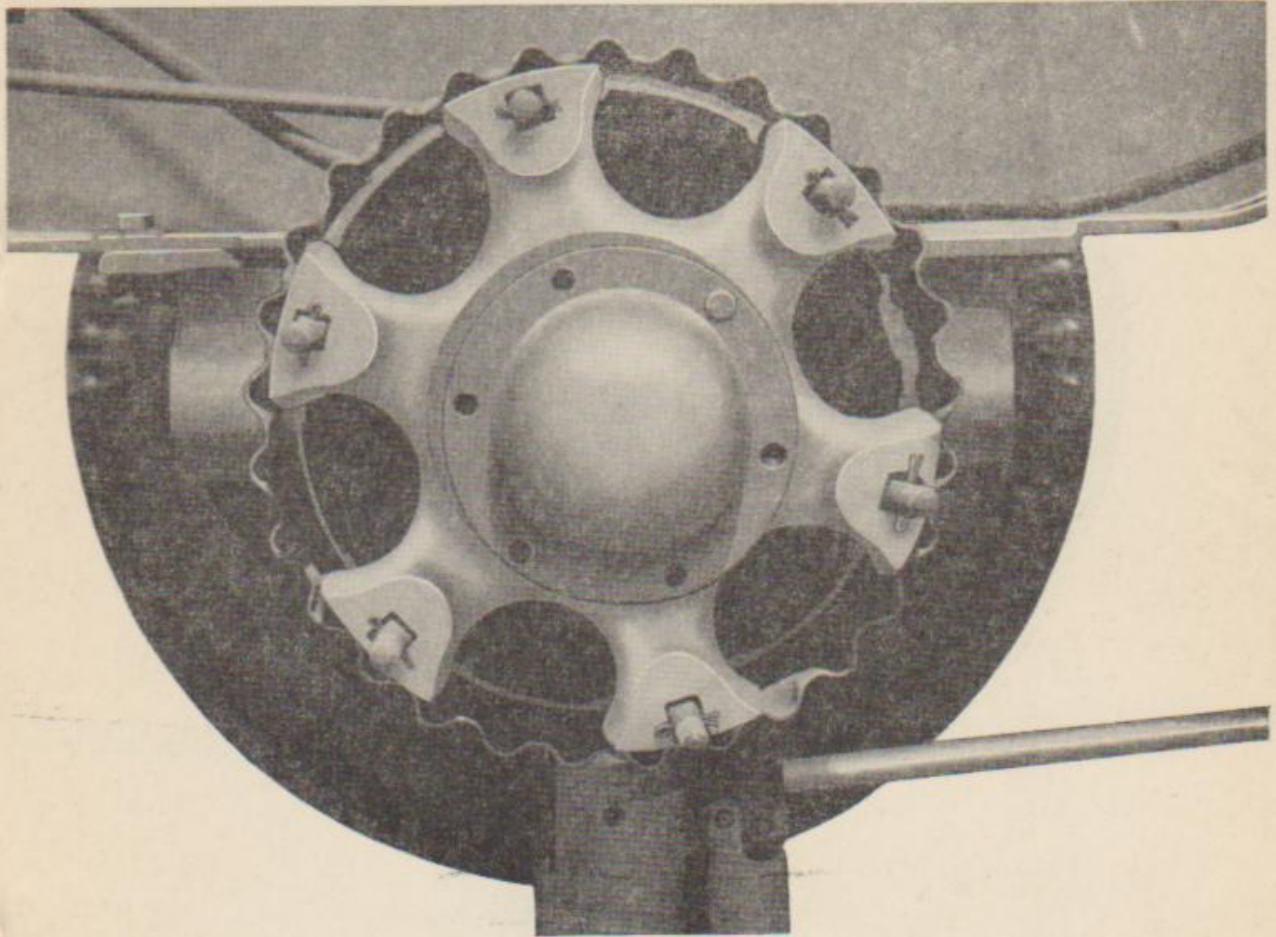


Fig. 140

REMOVING HUB CAP

to gain access to the spindle nut. Fig. 140 shows the hub cap partially removed by having removed the cap screws which

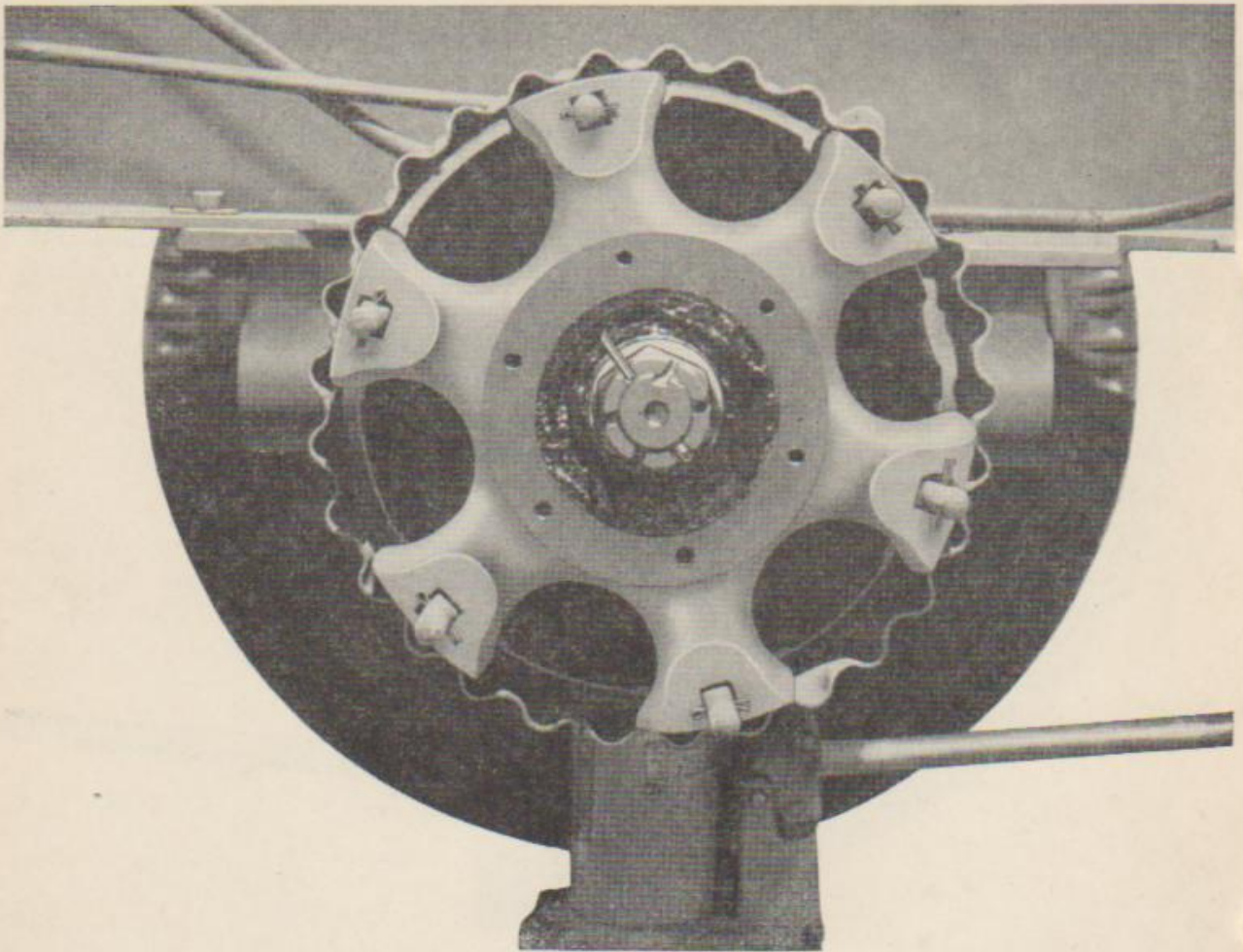


Fig. 141

REMOVING WHEELS

hold the hub cap to the wheel. Fig. 141 shows the wheel with the hub cap removed. Next remove the cotter pin which locks

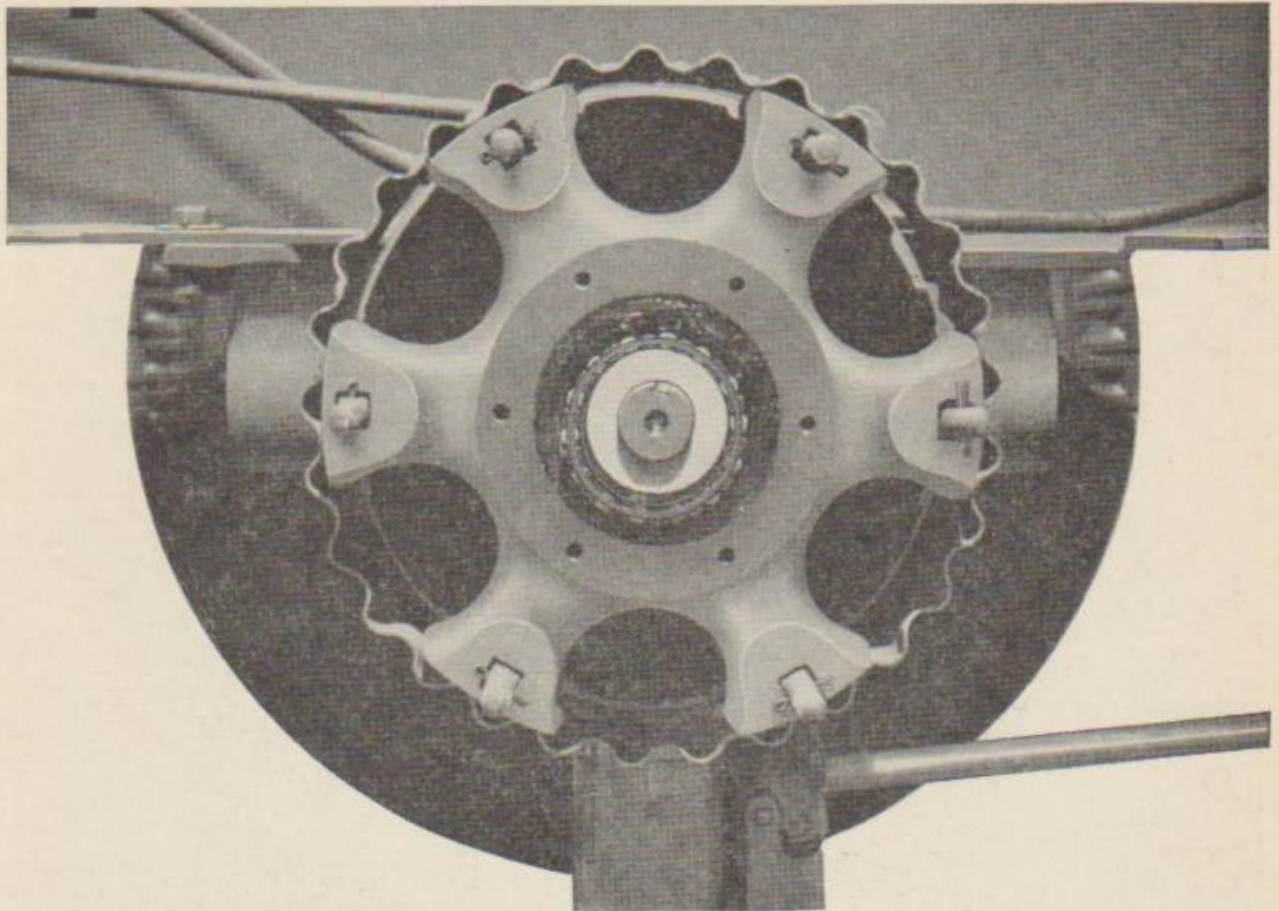


Fig. 142

REMOVING WHEELS

the spindle nut in place. Fig. 142 shows the wheel with the cotter pin and spindle nut removed. In removing, replacing, or adjusting the axle spindle nut always use a suitable wrench. Never use a cold chisel or punch and hammer. As this will damage the nut and render it unfit for use. After the spindle nut has been removed lay hold on the wheel with the two hands and give wheel a short sharp jerk which will start the outside bearing off of the spindle. Then push the wheel assembly back to its original position and remove the spindle washer and outside bearing by hand. Great caution should be exercised to not allow the axle nut, spindle, washer, bearings, etc. to fall in the dirt. After outside bearing has been removed

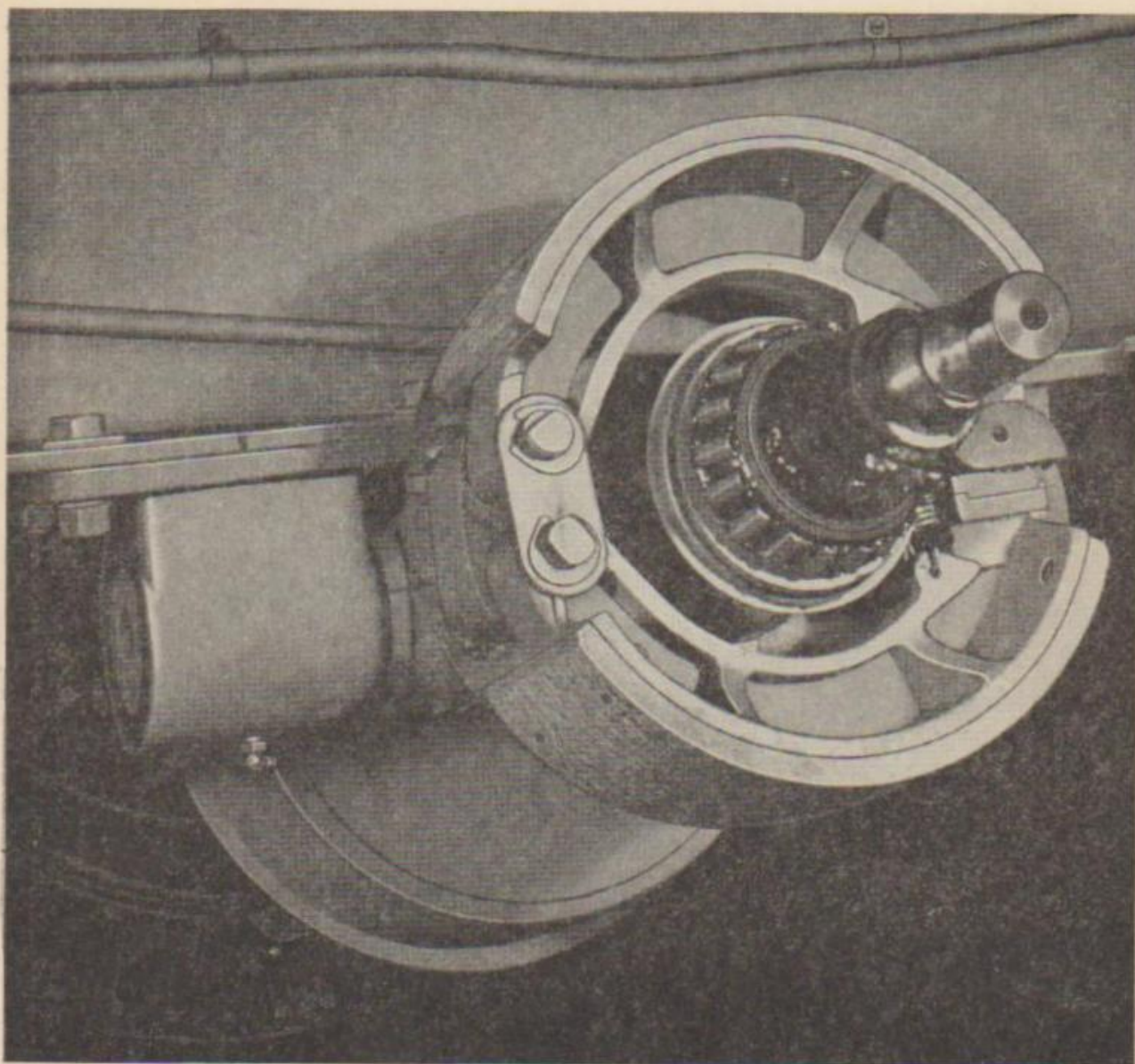


Fig. 143

WHEEL REMOVED

wheel is then ready to be pulled off by hand. Fig. 143 shows the axle with the wheel assembly removed. Next proceed to re-

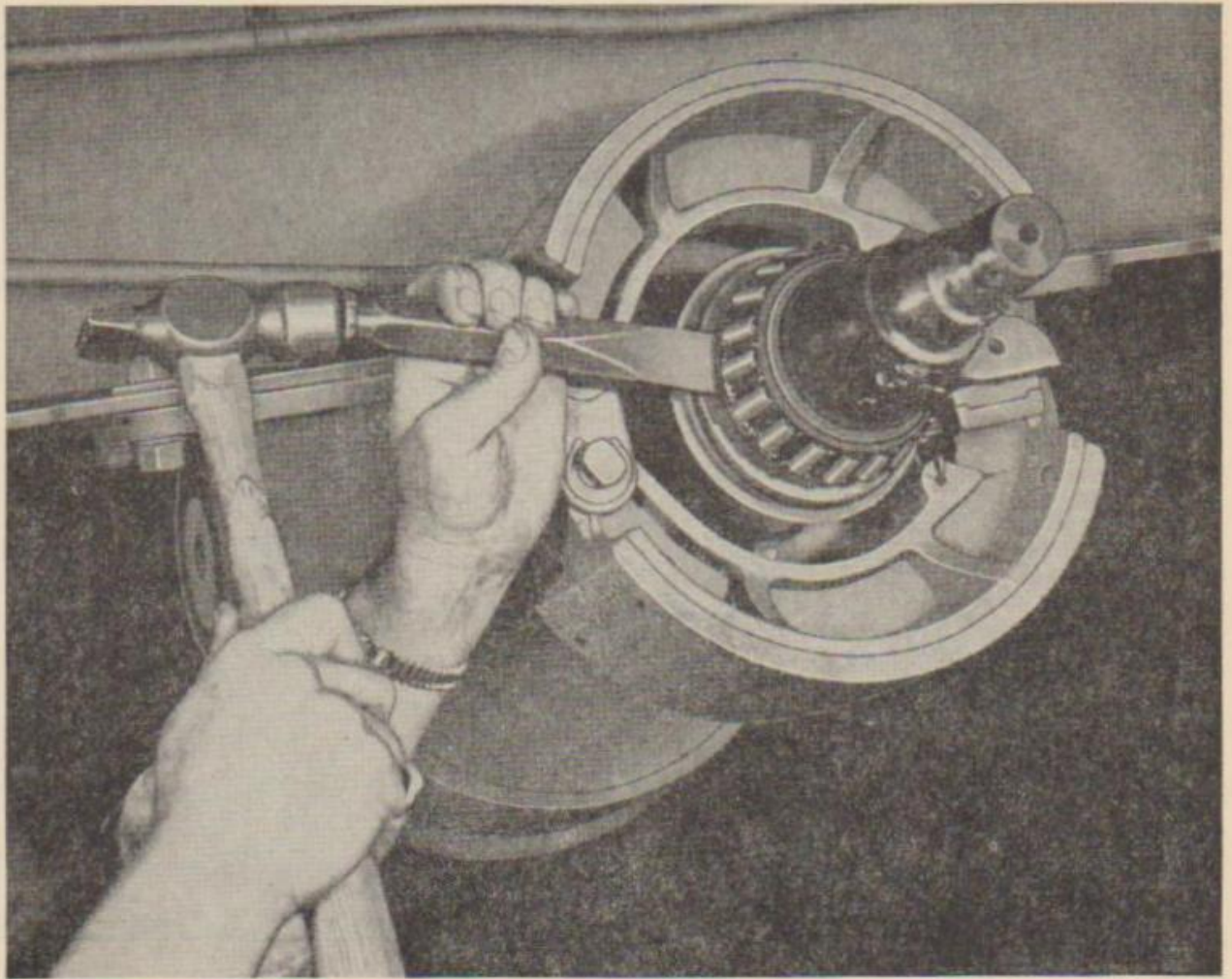


Fig. 144

REMOVING BEARINGS

move the inside wheel bearing as shown in Fig. 144 using a heavy hammer and cold chisel as shown. In performing this operation it will be necessary to drive first on one side of the bearing with the cold chisel and next on the opposite side to assure that the bearing will come off straight. The bearing will be found to be a tight drive fit and considerable patience must be exercised in performing the removal thereof. Fig. 145

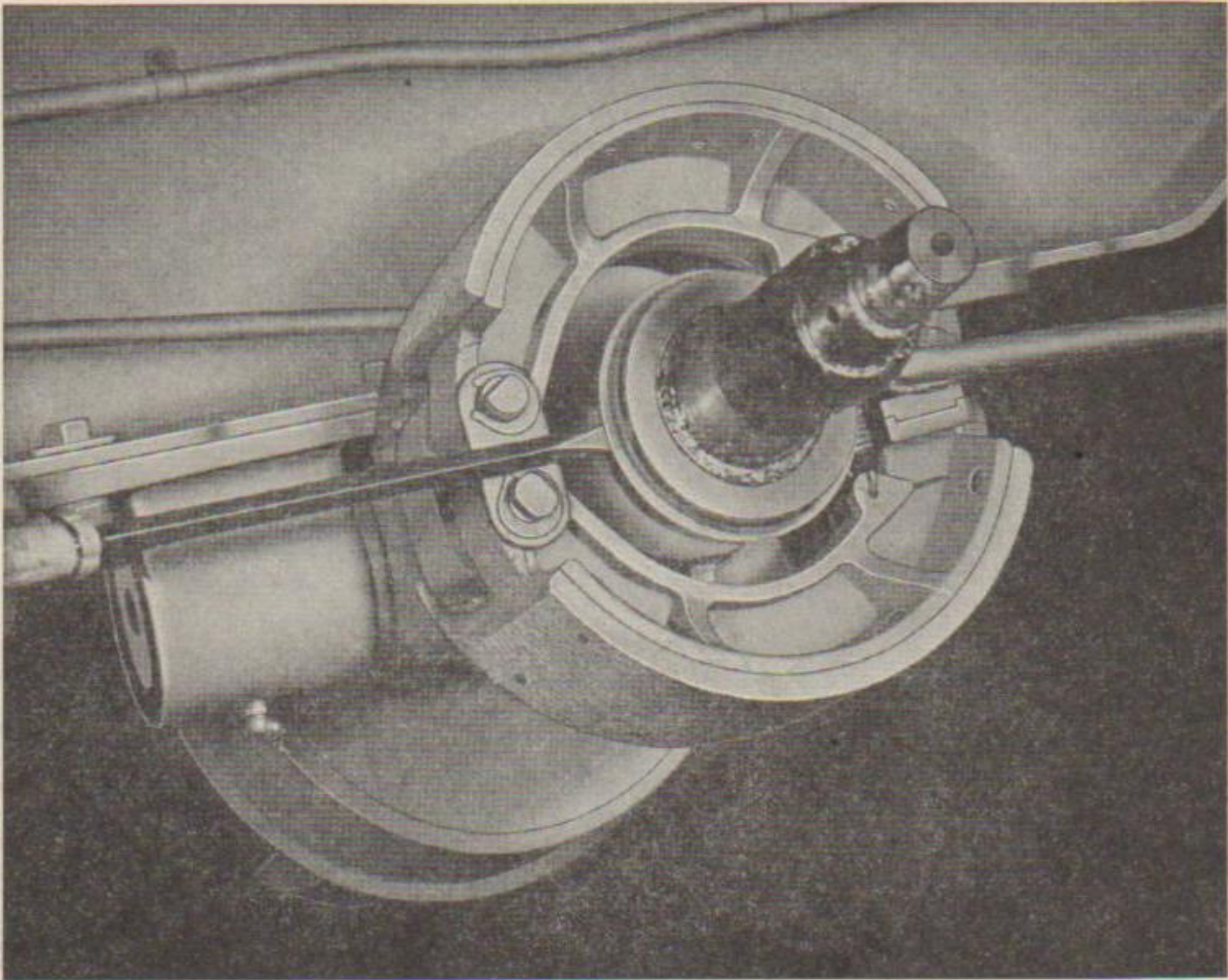


Fig. 145

REMOVING GREASE RETAINER

shows the axle with the inside bearing removed and shows the proper procedure to remove the grease retainer. As will be noted the grease retainer is pried off with a heavy screw driver working first from one side and then from the other or by using two screwdrivers on opposite sides of the grease retainer at the same time. Caution must be exercised to not damage grease retainer in removal. However, if grease retainer flange is slightly bent it may be reused by straightening the flange before replacing. Never replace worn or damaged grease retainer.

We have now removed the entire wheel assembly including the wheel and drum, hub cap, axle, spindle nut, wheel bearing, and grease retainer. Proceed now to thoroughly clean the bearing, grease retainer, spindle nut, washer and hub cap in kerosene or some other suitable solvent washing thoroughly and cleaning dry with a dry rag. DO NOT USE WASTE.

Next thoroughly clean all dirt and grease from the inside of the hub and from the axle spindle using kerosene or some other suitable solvent and wiping dry with a clean rag. In the above cleaning operations it will require a great deal of patience and work to thoroughly clean the two wheel bearings. It is suggested, therefore, that bearing be allowed to soak and repeatedly sloshed in the solvent and blown out thoroughly with compressed air. Great caution shall be exercised at all times to prevent any water from reaching wheel bearing or bearing cups as this will cause a rust pit to form which will render the bearing or cup unfit for service. It will be noted now that the wheel and brake drum assembly is removed that brake lining and brake drum may be readily inspected. In the event brake linings are worn to or near the rivet heads brake lining should be replaced before reassembly. Badly scored or broken brake drum should likewise be replaced. However, before replacing a scored drum a report of the condition should be made to your next higher authority, as in some mild cases of scoring the brake drum may be machined and made ready for additional use.

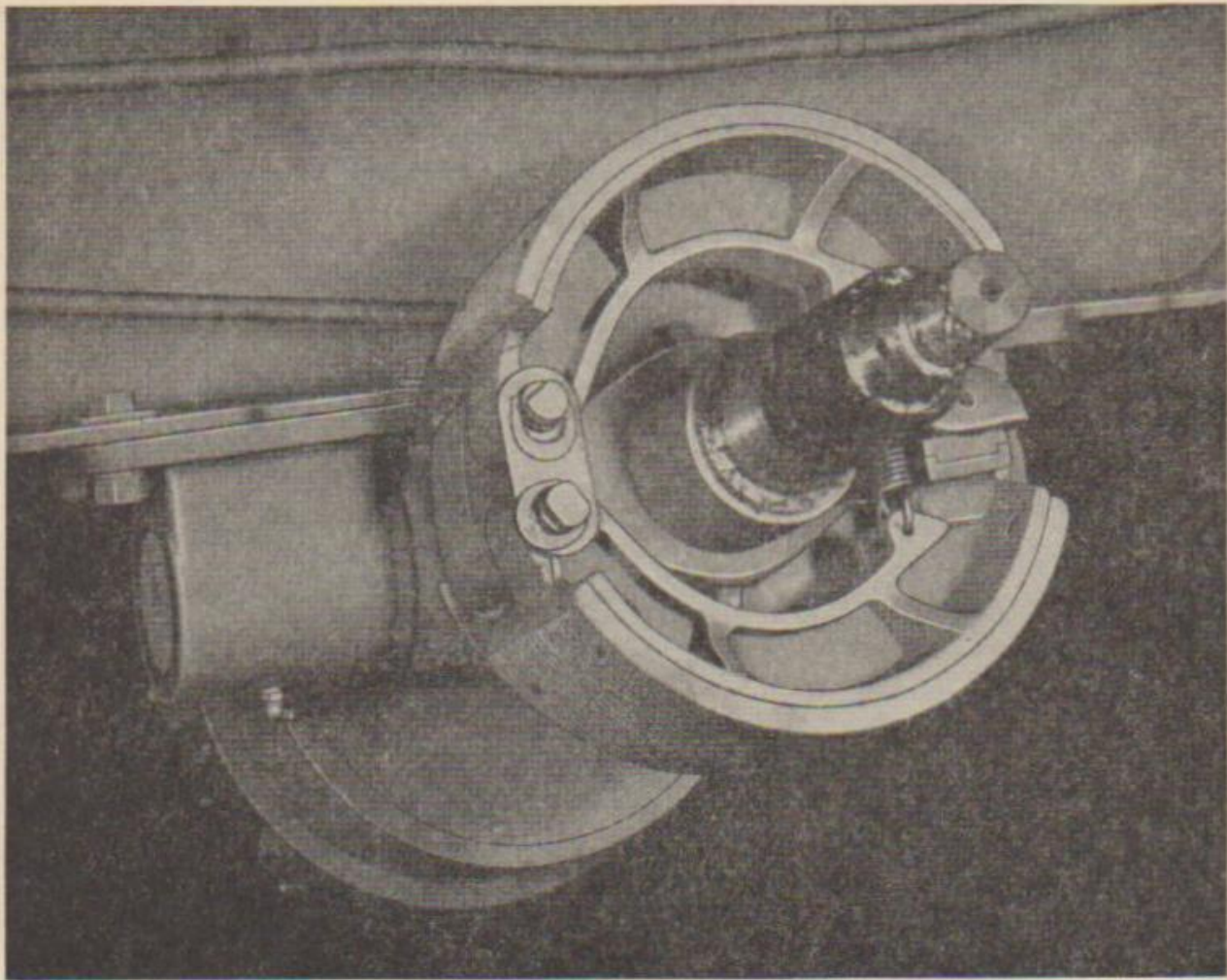


Fig. 146

REMOVING BRAKE SHOES

Next proceed to remove the U-washers which hold the brake shoe assembly in place on the anchor pins. Fig. 146 shows the U-washer partially removed. After U-washers are removed,

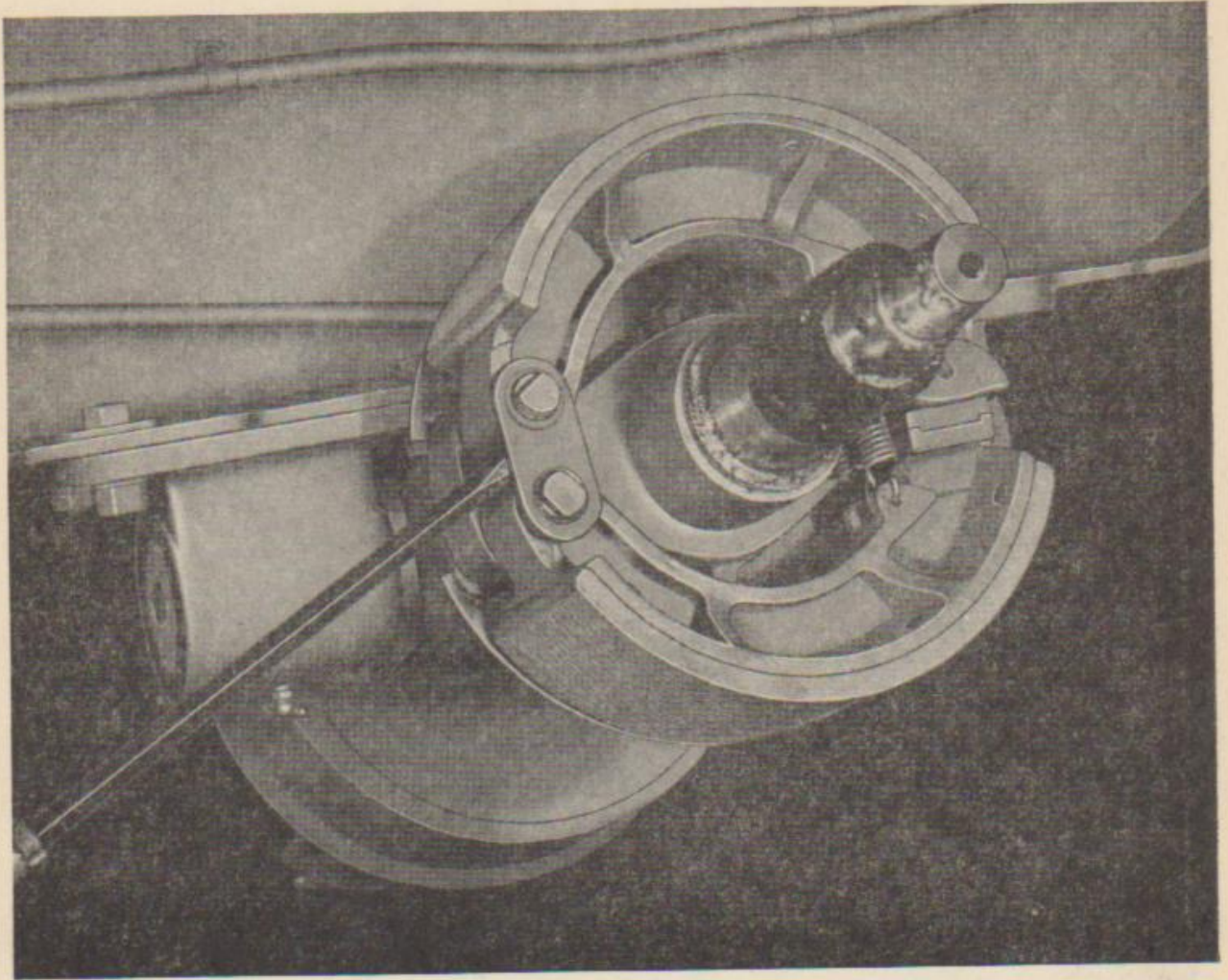


Fig. 147

REMOVING BRAKE SHOES

remove the plate from the two anchor pins as shown in Fig. 147. This plate can be readily removed with a heavy duty screw

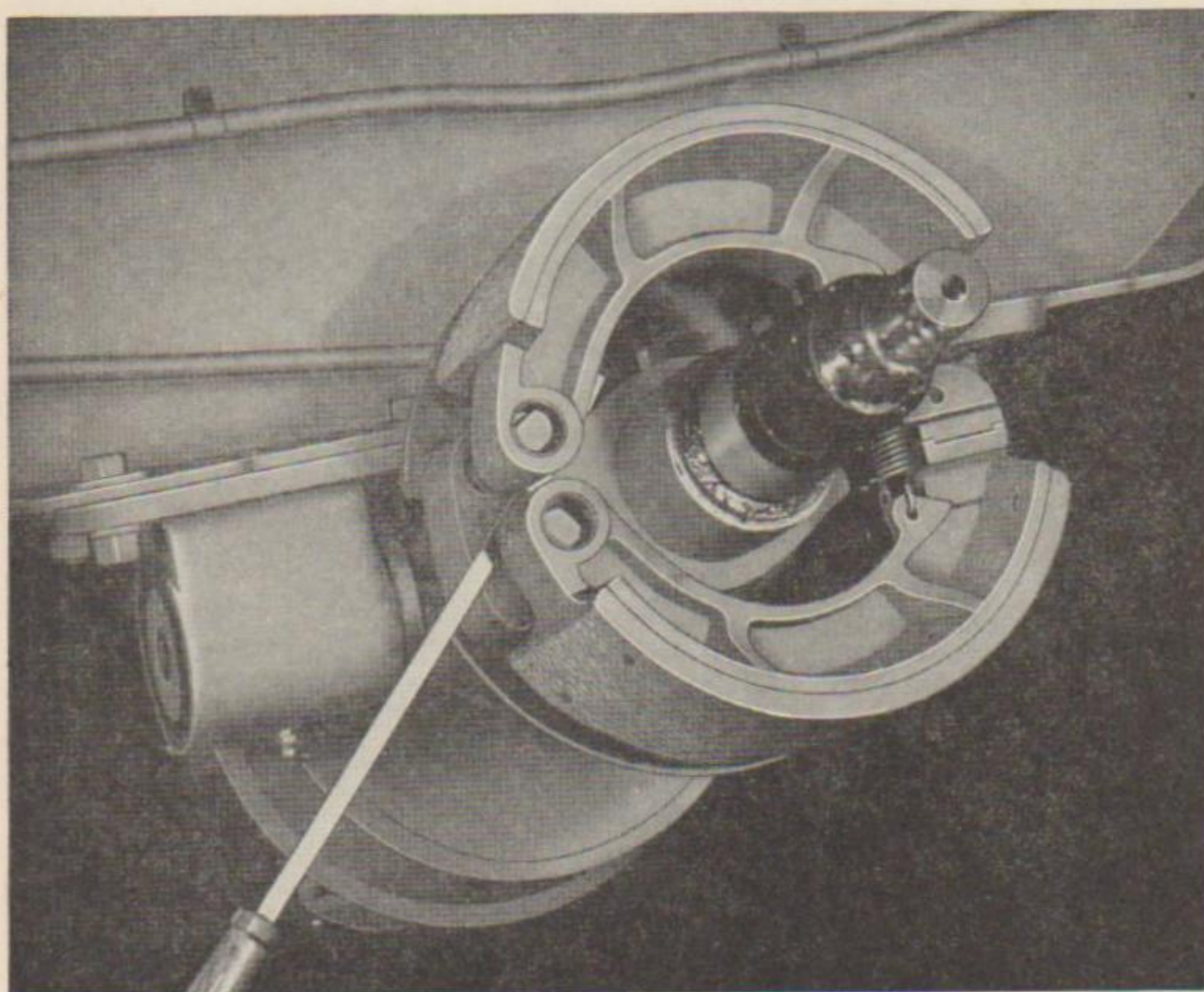


Fig. 148

REMOVING BRAKE SHOES

driver. You are now ready to remove the two brake shoes using a screwdriver as shown in Fig. 148. Pry the brake shoes off of the anchor pins. Do not remove return spring which holds the two shoes until after the two shoes have been removed as an assembly, likewise when replacing the brake shoes replace them both at the same time as an assembly with the return spring in position. This is necessary as it is practically impossible to put the return spring in place after the shoes have been installed. This instruction regarding the spring applies especially to heavy duty brakes on extra small diameter wheels such as are used on this axle. Fig. 149 shows the axle

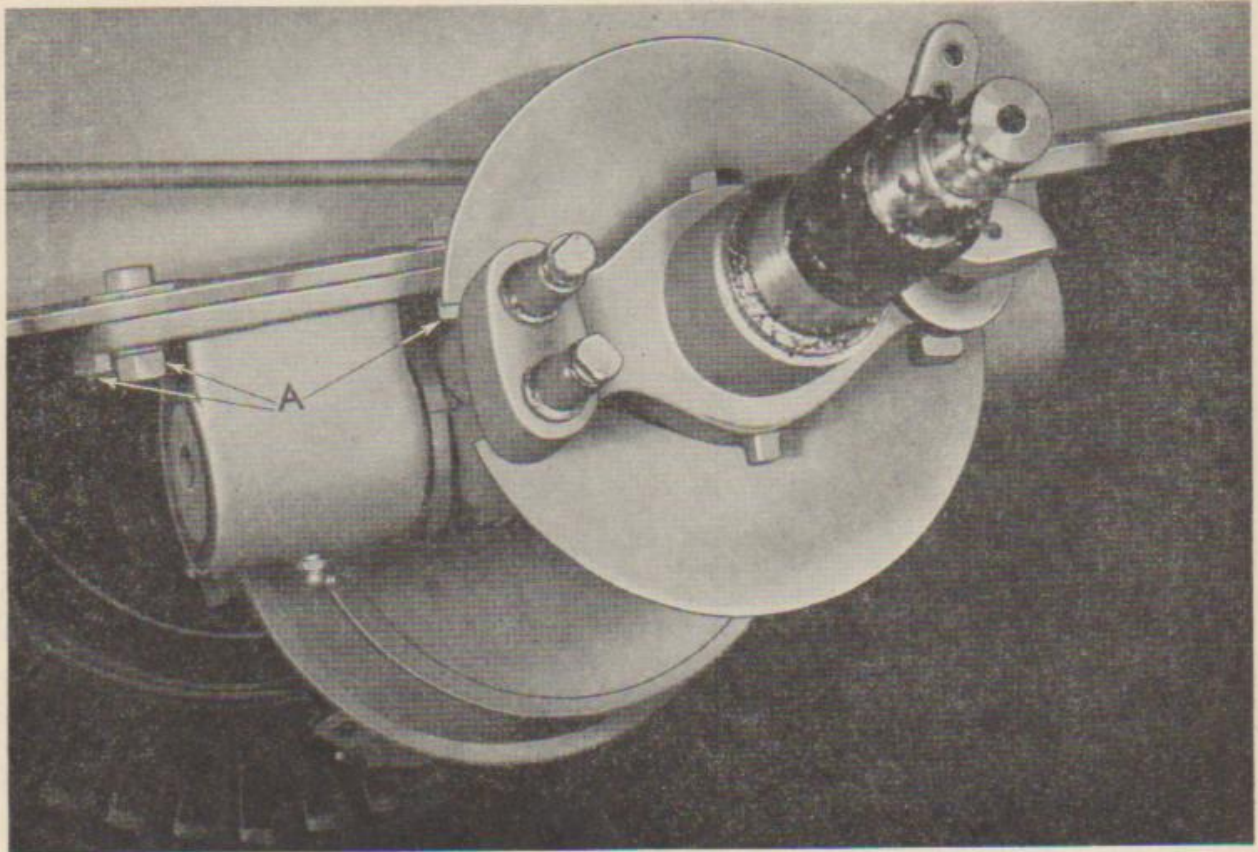


Fig. 149

REMOVING TRUNNION BRACKET

ready to be removed from the trailer. By examining Fig. 149 remove bolts A which will allow the front trunnion bracket

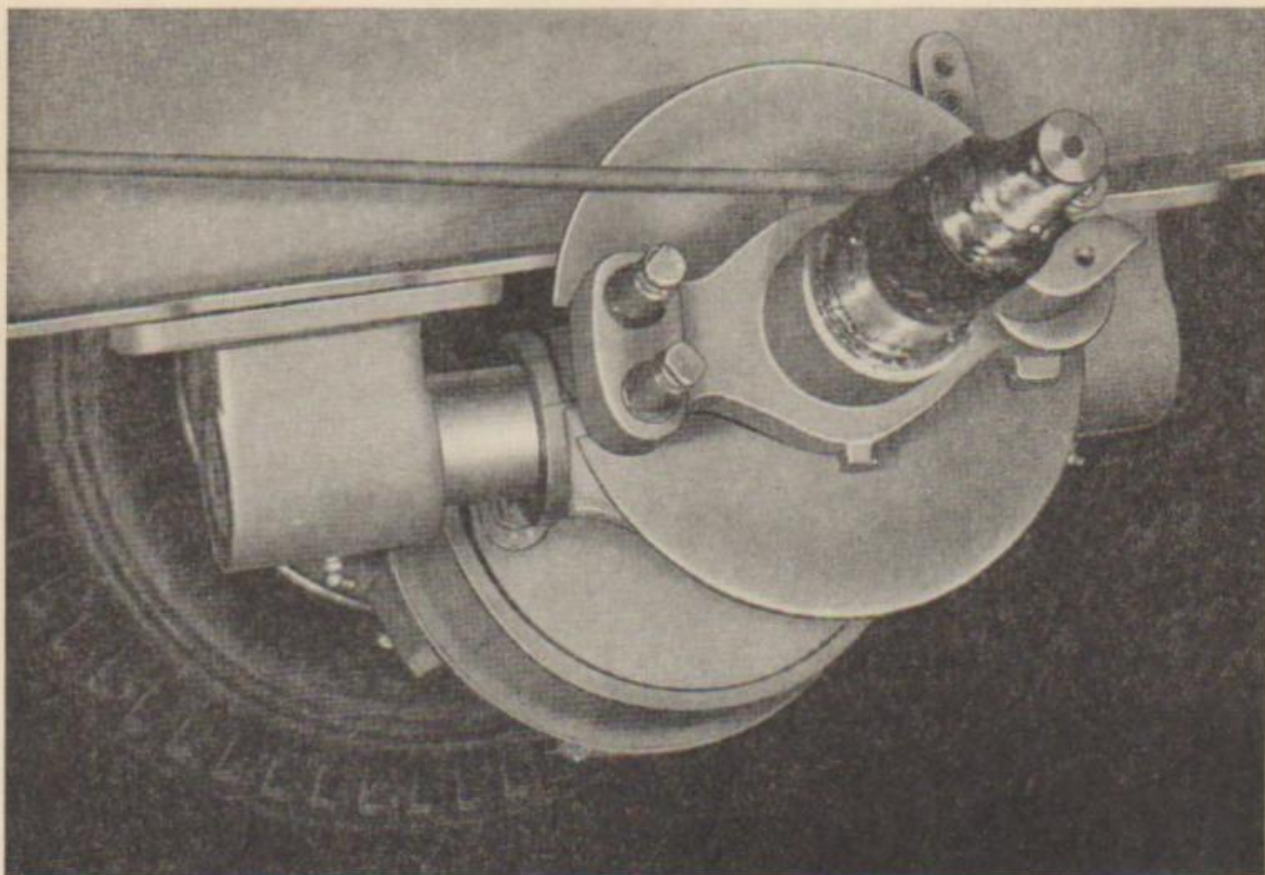


Fig. 150

REMOVING TRUNNION BRACKET

to slip off of the trunnion beam. Fig. 150 shows the bolts removed and the trunnion bracket coming off. Now note Fig. 151

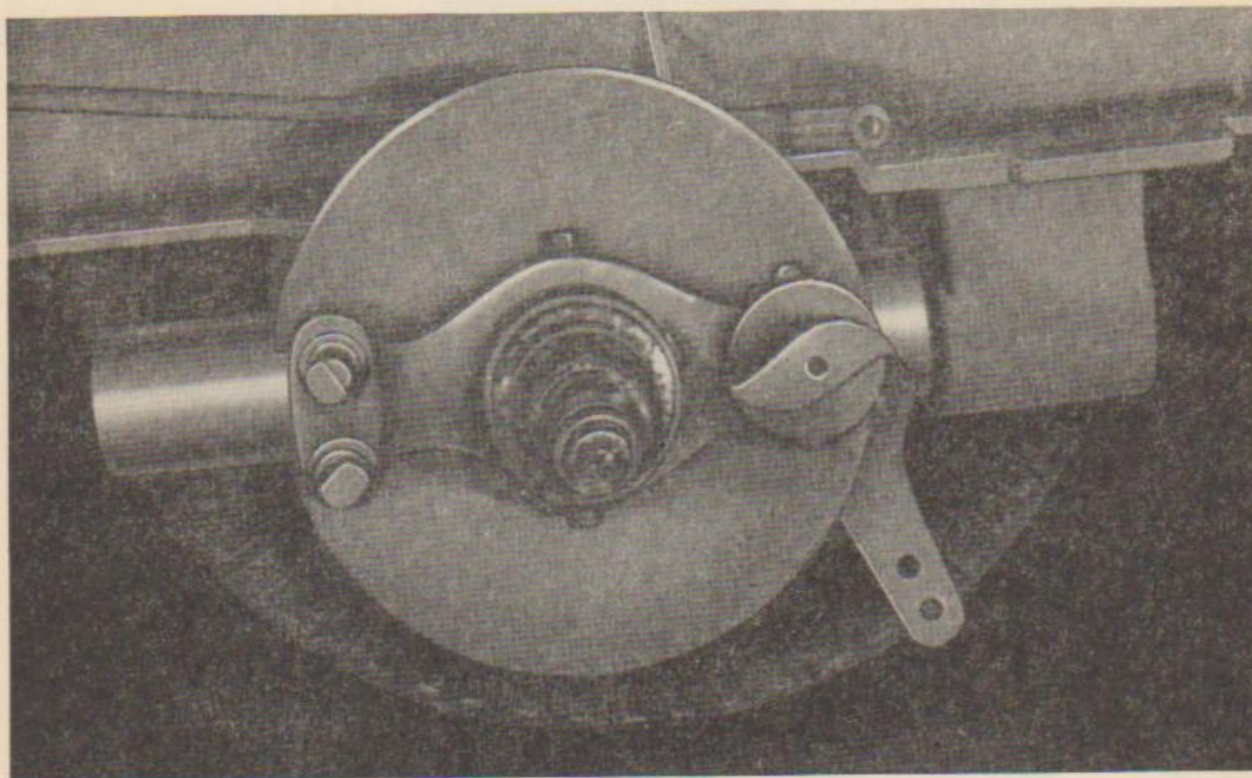


Fig. 151

REMOVING AXLE TRUNNION

which shows the trunnion axle assembly being slipped out of the rear bracket which will complete the removal of the trunnion axle. To slide trunnion axle out of the rear trunnion bracket requires the strength of two average size men, one on each end of the trunnion axle or it may be removed by one man using a good rolling type floor jack. In the foregoing instructions regarding tire and wheel removal it will be remembered that the trailer was lifted by a jack being placed under the center of the trunnion axle. Obviously before the removal of the trunnion axle itself is commenced the trailer must be securely supported by suitable blocks or cribbing placed under the main frame to permit the removal of the jack from under the axle.

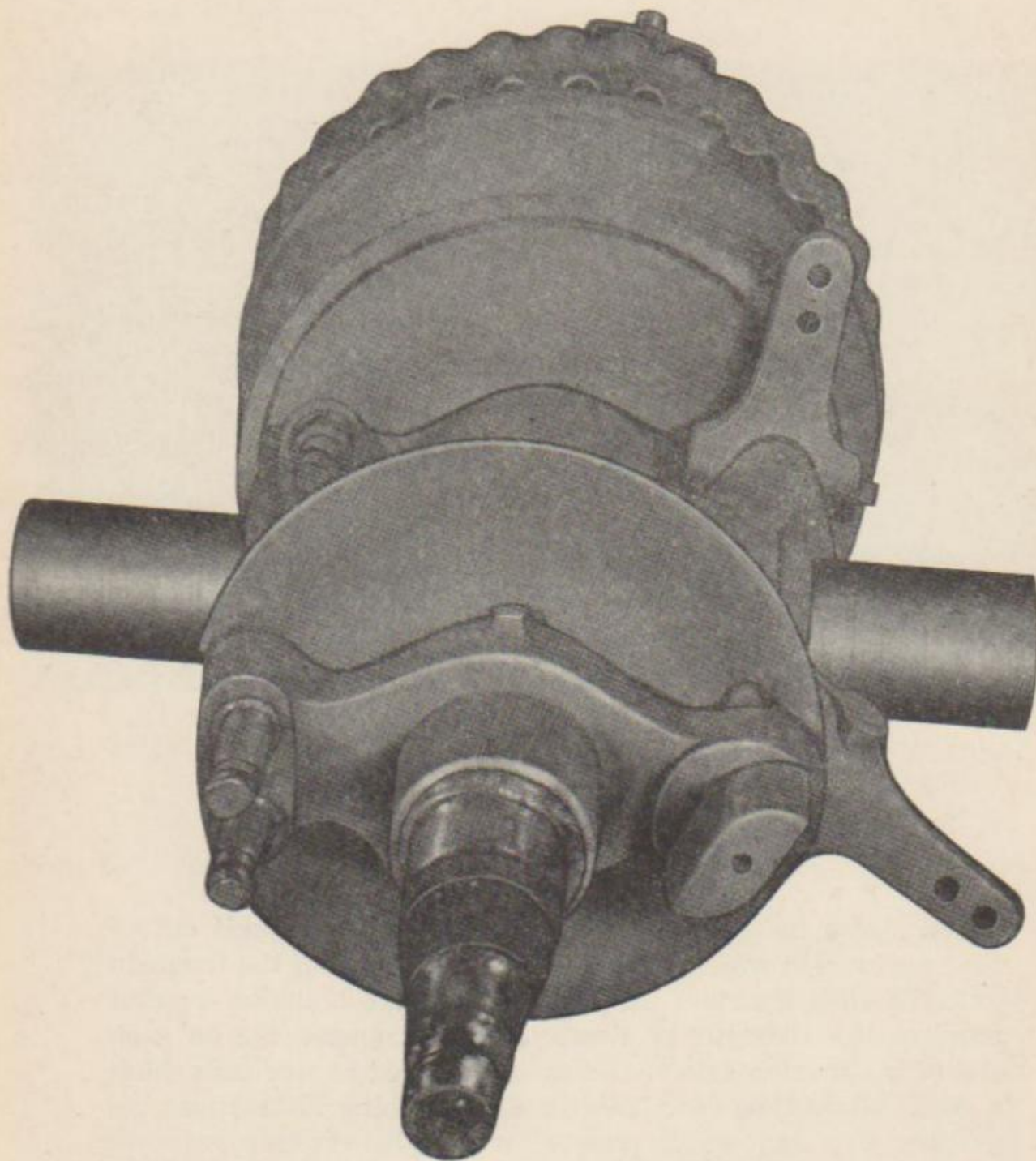


Fig. 152

TRUNNION AXLE REMOVED

Fig. 152 shows the trunnion axle removed from the trailer and lying on the floor. To complete this disassembly remove U-

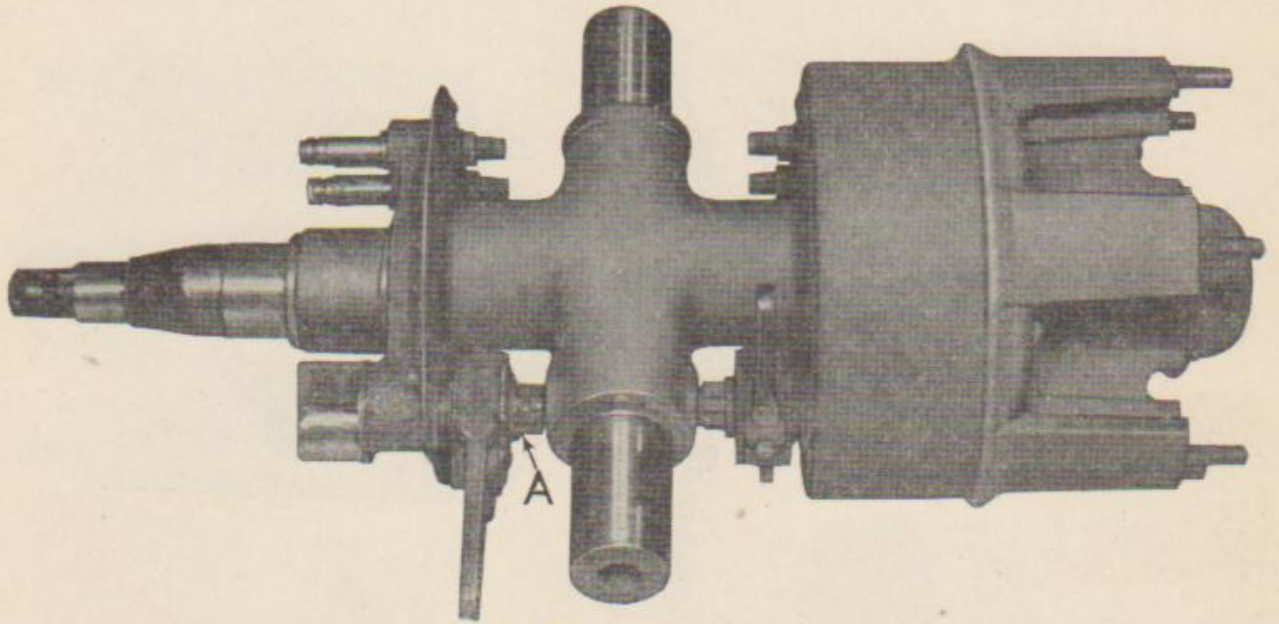


Fig. 153

REMOVING SLACK ADJUSTER

washers as indicated by Key A in Fig. 153. This will allow the cam and shaft assembly to be slipped out of the brake spider allowing the slack adjuster to fall as shown in Fig. 154. Anchor

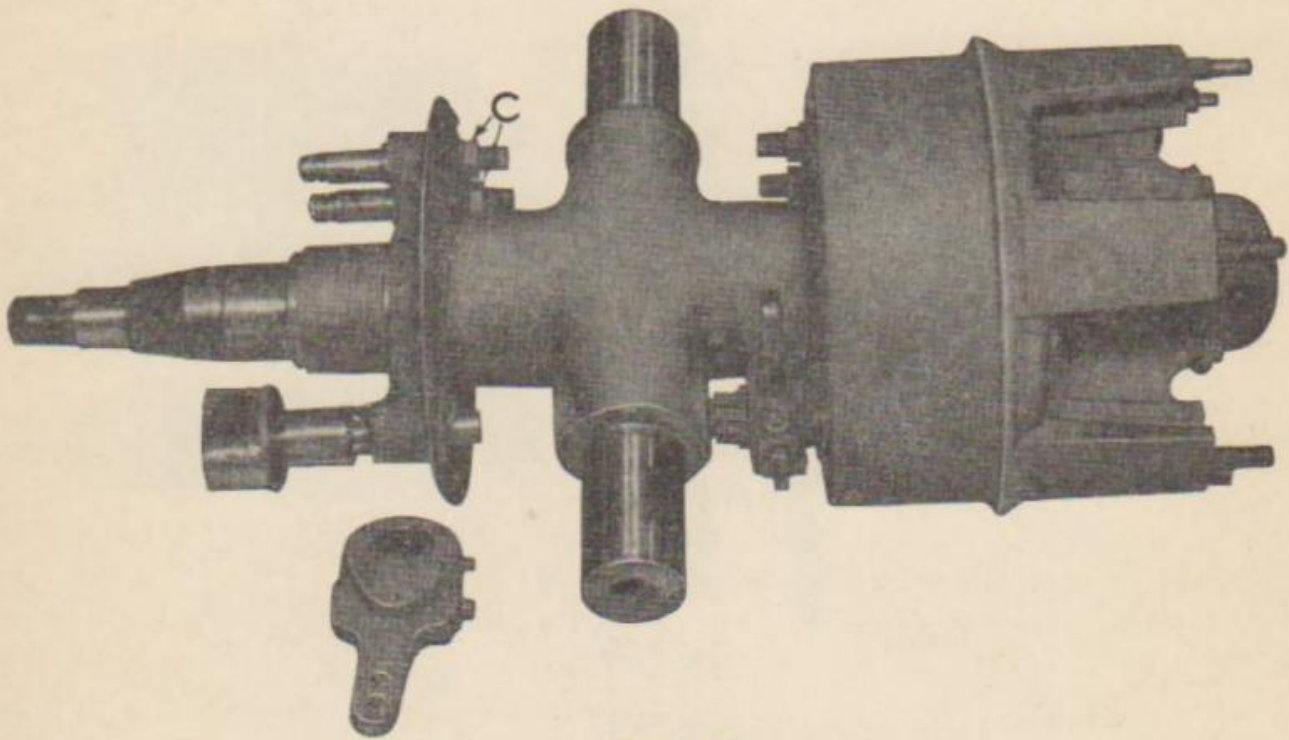


Fig. 154

REMOVING CAMSHAFT

pins may be now removed by removing nuts C and driving anchor pins out, working from the inside out. Disassembly of the trunnion axle has now been accomplished. To reassemble reverse all of the foregoing steps.

Removing Bearing Cups

Place a soft steel bar on the inside shoulder or edge of the cup to be removed. Using a heavy hammer, hit first one side of the cup and then the other. By alternating in this manner the cup will come out straight with the cup bore. Danger of wedging of the cup in the bore is minimized.

Installing Bearing Cups

With the wheel on its side, start the new cup square with the bore so that its smallest inside diameter will be on the inside when it is in place.

With a piece of hard wood or soft steel over the cup drive it in until it is flush with the outer edge of the hub.

Now place the old cup over the new one in the same manner as in first paragraph and drive the new cup in until it is absolutely tight with the cup bore flange. Be sure that the cup is properly seated because if it is not, it will alter the distance between the bearing centers and make impossible proper re-assembly of the wheel.

Loose Cups

When the bearing cup becomes loose in the hub, replace the hub.

Emergency repair of loose cups can be accomplished by using a center punch to reduce the diameter of the bore. Simply use a heavy center punch and put about 12 punch marks per square inch about the diameter of the side wall of the cup bore where the cup normally fits.

Bearing and Cup Inspection

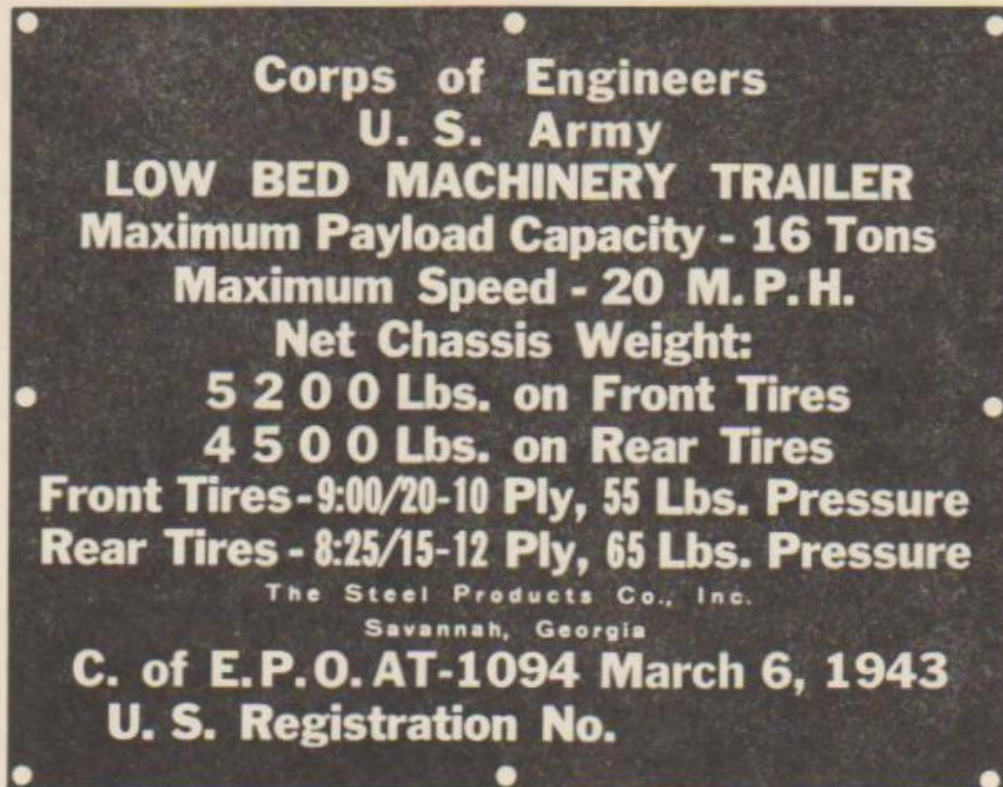
Bearings and cups should be cleaned and inspected whenever wheels are removed. Pitted or chipped bearings or cups should be replaced.

ABOVE INSTRUCTIONS APPLY TO BOTH FRONT AND REAR AXLES.

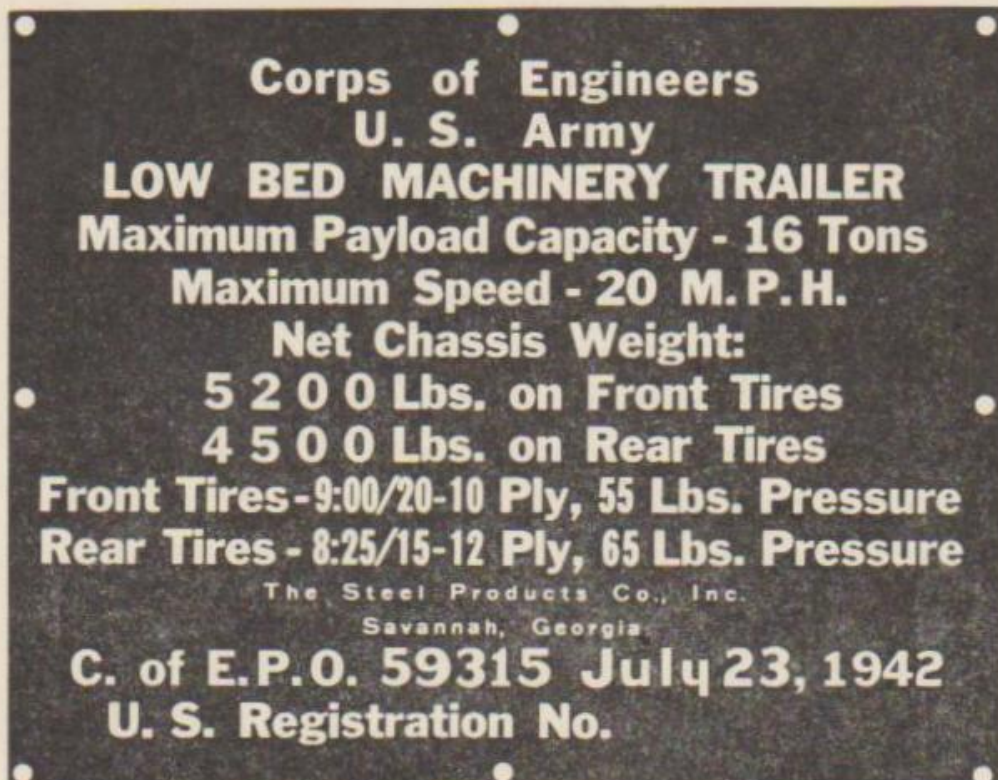
SECTION III

SPARE PARTS LIST





Name plate is located on right hand side of frame above hand brake wheel.



16T-2841—Plate, Name

PREPARATION OF REQUISITIONS

Sample Copy for Use in the Preparation of Requisitions

Revisions in QMC Form 400 for requisitioning spare parts are confined to new column headings. Until new forms are available all organizations are to continue using the present form and either type or write in corrections indicated in column headings.

Under revised heading "Nomenclature and Unit" list the article and the unit (ea for each; lb for pound, etc.). Under heading "Authorized or Maximum Level" list the authorized depot stock levels or organizational allowances given in Part III of the Corps of Engineers Supply Catalog. The total number on hand for each item is listed under "On Hand". In column

headed "Due In" enter the total quantity previously requisitioned but not delivered. For "Initial" and "Replenishment" requisitions, the sum of "Required", "Due In", and "On Hand" should equal the "Authorized or Maximum Level".

On this page is shown a sample requisition on QMC Form No. 400 which conforms to the latest revisions. The marginal notes give instructions for preparing a requisition for spare parts for Engineer equipment. Additional information on this subject is contained in section AA-1 of Part III Engineer Supply Catalog, available from the Engineer Field Maintenance Office, P. O. Box 1679, Columbus, Ohio.

- State PERIOD designation by use of one of the following terms:
- (1) "INITIAL"—first requisition of authorized allowances.
 - (2) "REPLENISHMENT"—subsequent requisitions to maintain authorized allowances.
 - (3) "SPECIAL"—requisitions for necessary repairs not covered by allowances.

Type "SPARE PARTS" in upper right hand corner of requisition.

Give complete shipping instructions. Special instructions for packing, marking, routing, etc., should be given at the end of the requisition.

State proper nomenclature of machine, also make, model, machine serial number and U. S. A. registration number.

Prepare a separate requisition for each different machine.

State basis or authority and date delivery is required, immediately below description of machine.

Double space between items.

Group parts required under group headings as shown in manufacturers' parts catalogs (Technical Manuals).

State manufacturers' parts numbers and nomenclature descriptions accurately and completely. Do not use abbreviations.

WAR DEPARTMENT
Q. M. C. Form No. 400
Revised Apr. 4, 1943

(SAMPLE)
REQUISITION

SPARE PARTS

To: Engineer Field Maintenance Office No. of Sheets 1 Sheet No. 1
P. O. Box 1679, Columbus, Ohio

Requisition No. W-531-3-44 Date 6 October 1943 Period Special

SHIP TO: Engineer Property Officer, Pine Camp, NEW YORK
Supply Officer, 147th Engineer Regiment, Pine Camp, NEW YORK

Requisitioned By (show Signature, Rank, Organization, Destination. If different from "Ship to" include address):
Robert E. Roe
Robert E. Roe
Major, C. E.
Engineer Property Officer

Approved For The Commanding Officer
John D. Doe
John D. Doe
Colonel, C. E.
Executive Officer

ISSUES MFR. NO.	ISSUES NOMENCLATURE AND UNIT	AUTH. OR MAX. M. L. LEVEL	ON HAND	REPLENISH DUE IN	REQUIRED	APPROVED
<u>PARTS FOR TRAILER, LOW BED, 16 TON, STEEL PRODUCTS CO.,</u> <u>MACHINE SERIAL NUMBER 059012.</u>						
Basis: Repair of disabled equipment Delivery requested by 20 October 1943						
<u>FRONT AXLE</u>						
16T-1058	Wheel	ea.	0	0	2	
16T-1064	Drum	ea.	0	0	2	
<u>REAR AXLE</u>						
16T-1167	Shoe	ea.	0	0	8	
16T-1192	Drum	ea.	0	0	4	

*Nonexpendable items such as tools must be accounted for, when requisitioned, by a statement that they have been placed on REPORT OF SURVEY or STATEMENT OF CHARGES.

PREPARATION OF REQUISITIONS

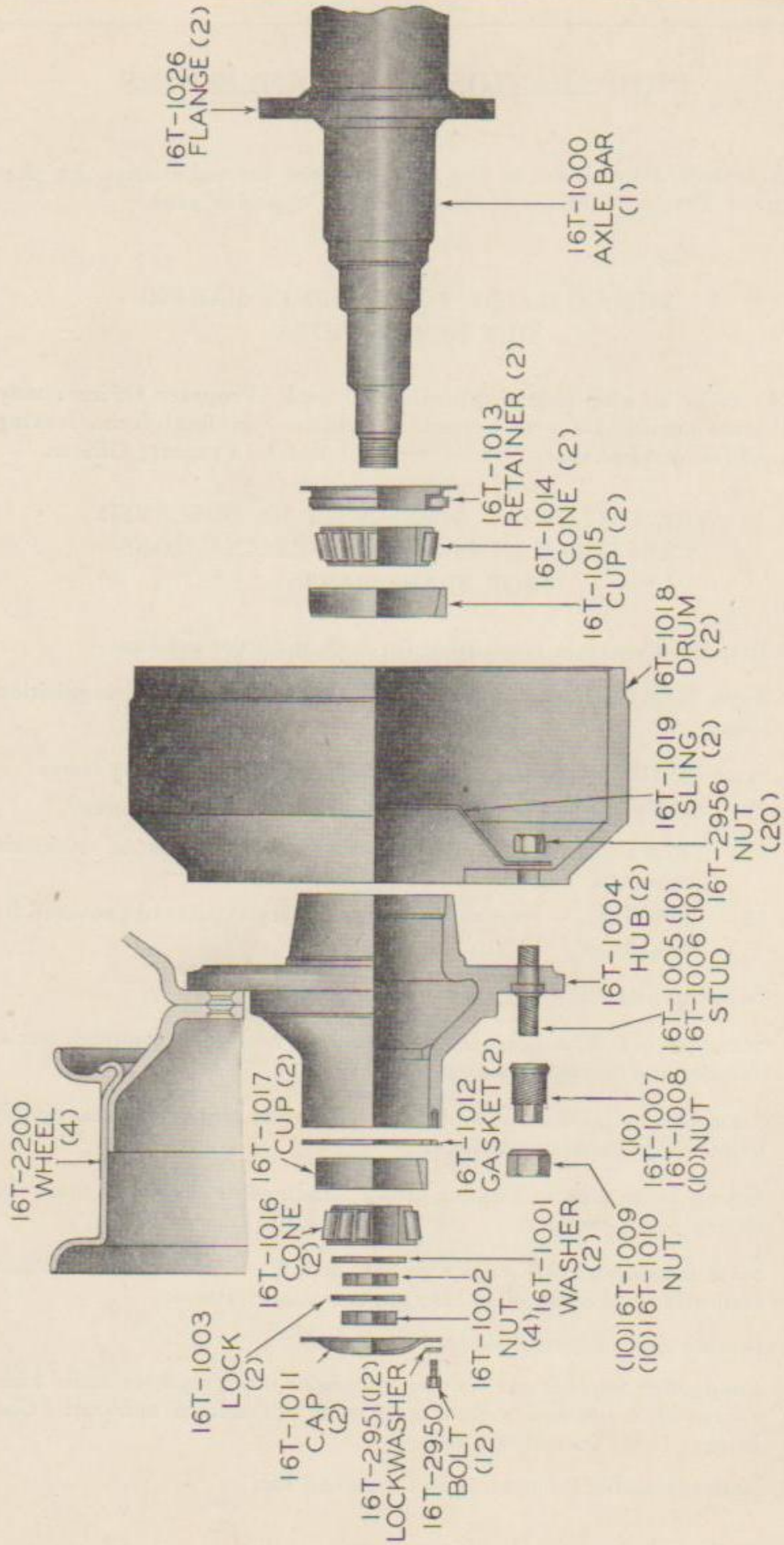
A sample requisition in the correct form for submission by the Engineer Property Officer is shown on the opposite page.

THIS SHALL BE FOLLOWED IN MAKING OUT REQUISITIONS

In order to eliminate duplication of work, Property Officers may authorize organizations to prepare requisitions in final form, leaving requisition number space blank for completion by Property Officer.

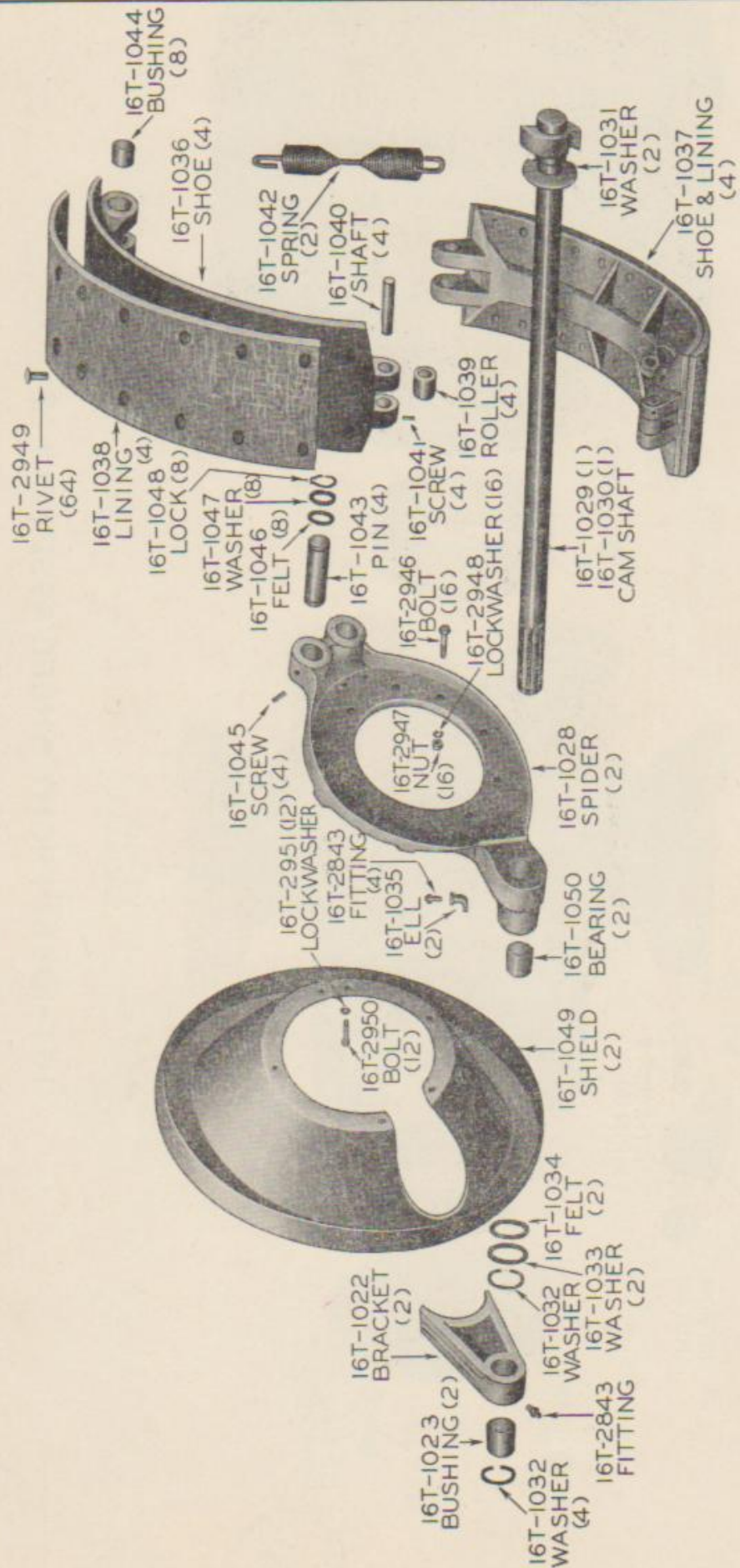
THE FOLLOWING RULES WILL BE OBSERVED CAREFULLY IN PREPARING REQUISITIONS FOR SPARE PARTS:

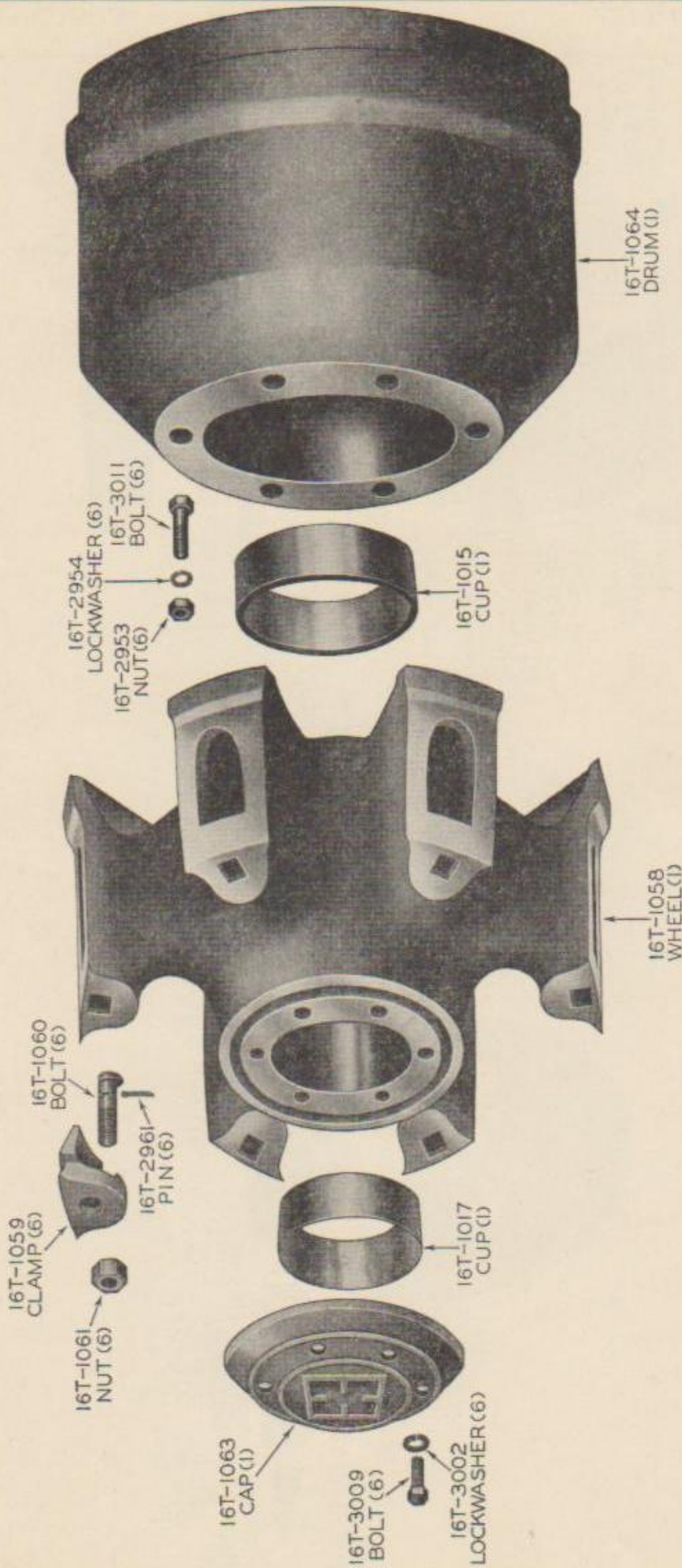
- a. Prepare a separate requisition for each different machine.
- b. Type "SPARE PARTS" in upper right hand corner of requisition form.
- c. State PERIOD designation by use of one of the following terms:
 - (1) "INITIAL"—first requisition of authorized allowances.
 - (2) "REPLENISHMENT"—subsequent requisitions to maintain authorized allowances.
 - (3) "SPECIAL"—requisitions for necessary repairs not covered by allowances.
- d. Give complete shipping instructions.
- e. State proper nomenclature of machine, and make, model, serial number and registration number.
- f. State basis of authority, and date delivery is required, immediately below description of machine.
- g. Group parts required under group headings as shown in manufacturer's parts catalogs.
- h. State manufacturers' parts numbers and nomenclature descriptions accurately and completely. Do not use abbreviations.
- i. Double space between items.
- j. Emergency requisitions sent by telephone, telegraph, or radio must always be confirmed immediately with requisition marked: "Confirming (state identifying data)."
- k. Nonexpendable items must be accounted for.



SPARE PARTS LIST

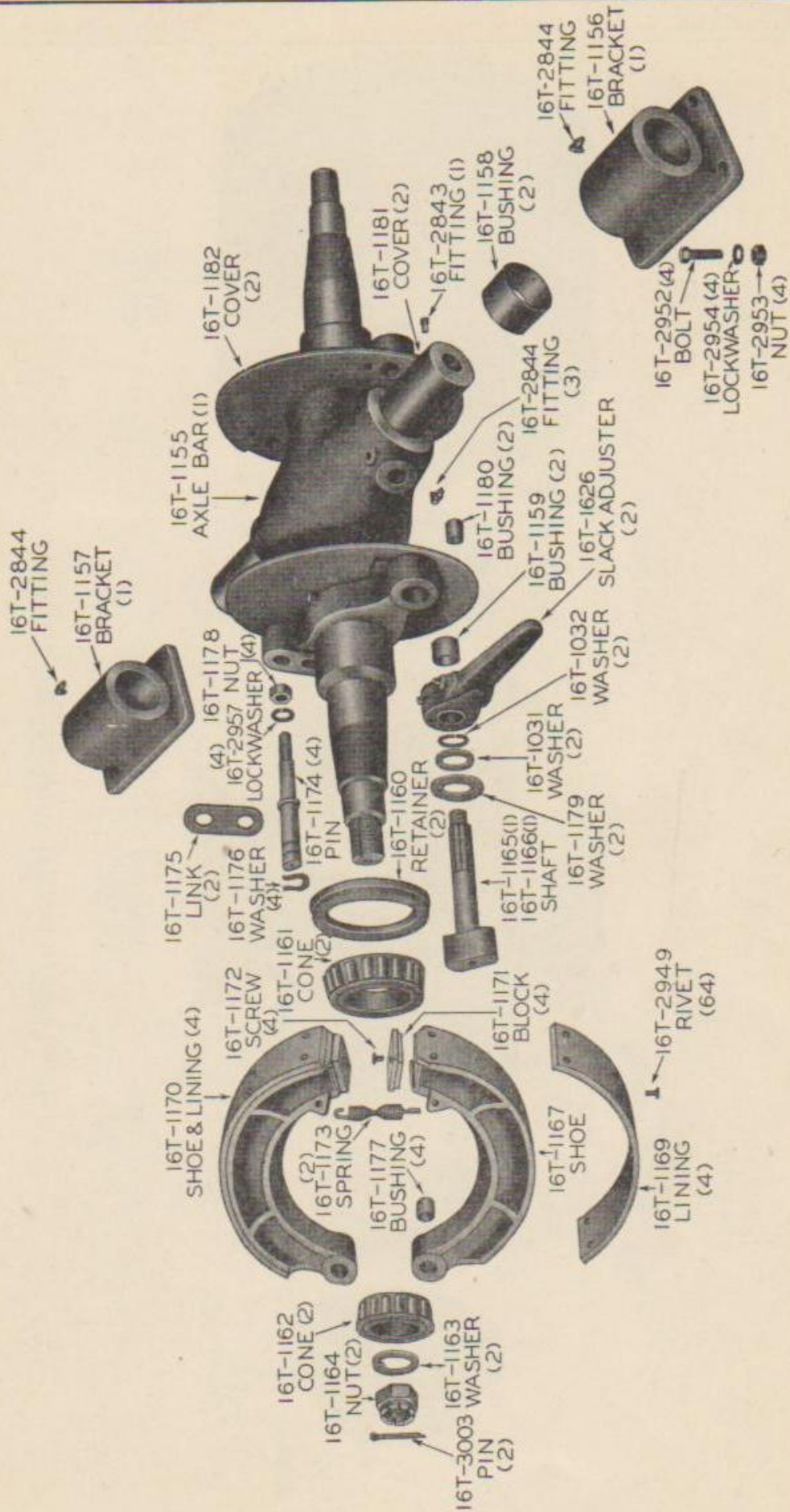
Front Brakes

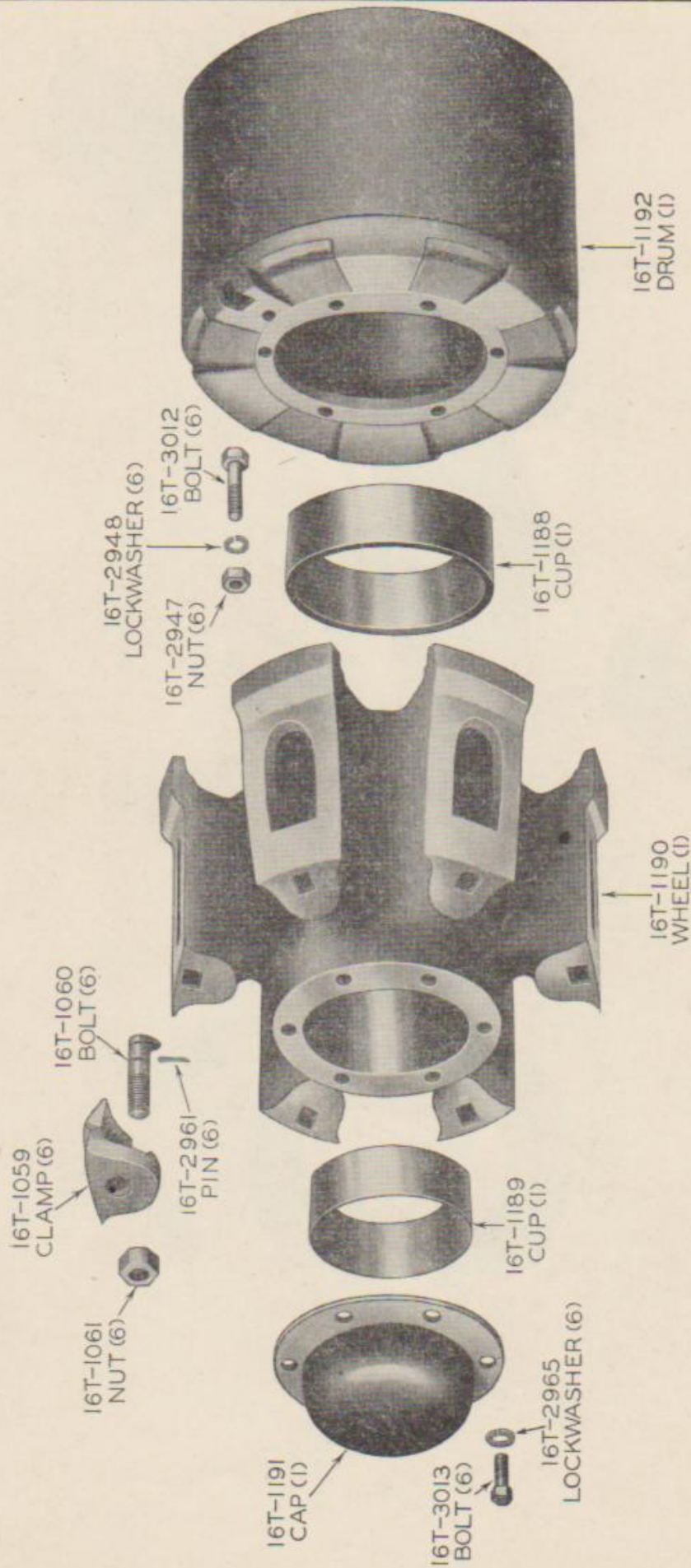




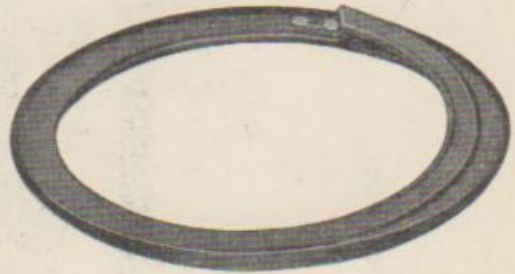
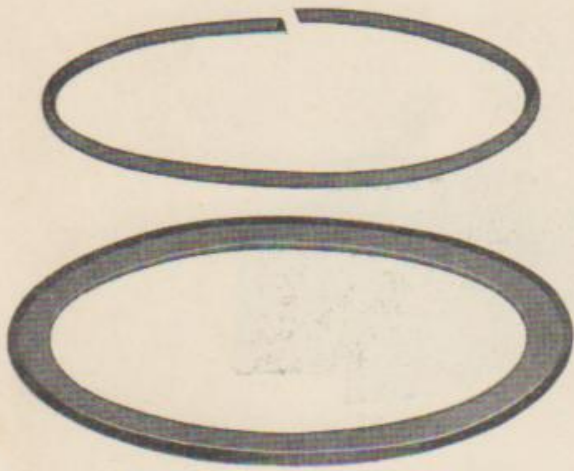
16T-1058 - FRONT WHEEL ASSEMBLY (2)

(used on serial numbers 0530312 and up)

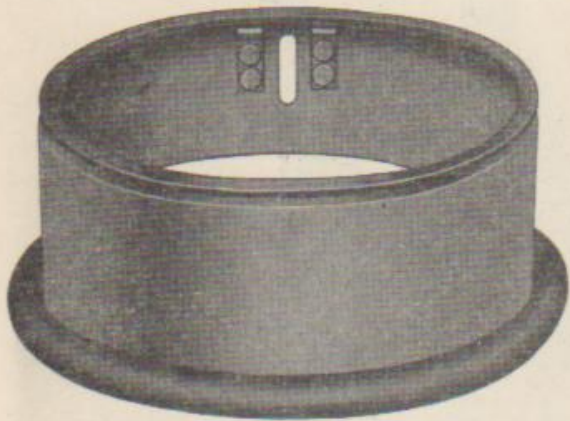




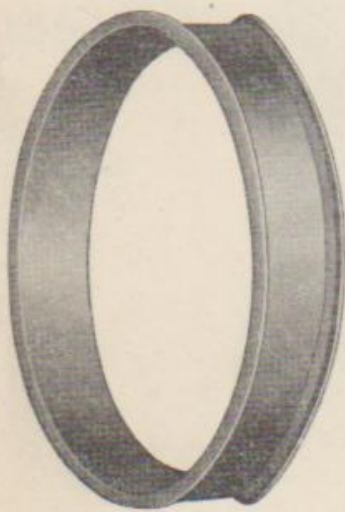
16T-1190 - REAR WHEEL ASSEMBLY (4)



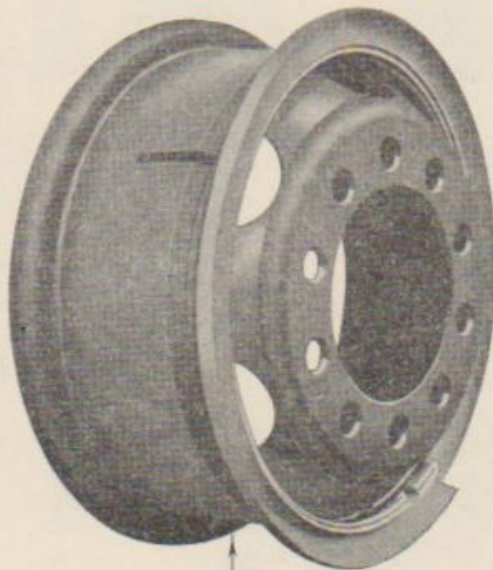
16T-1066
RIM (4)



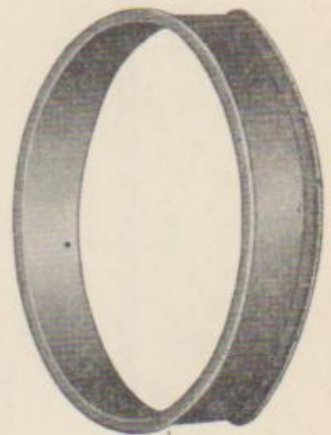
16T-2198
RIM (9)



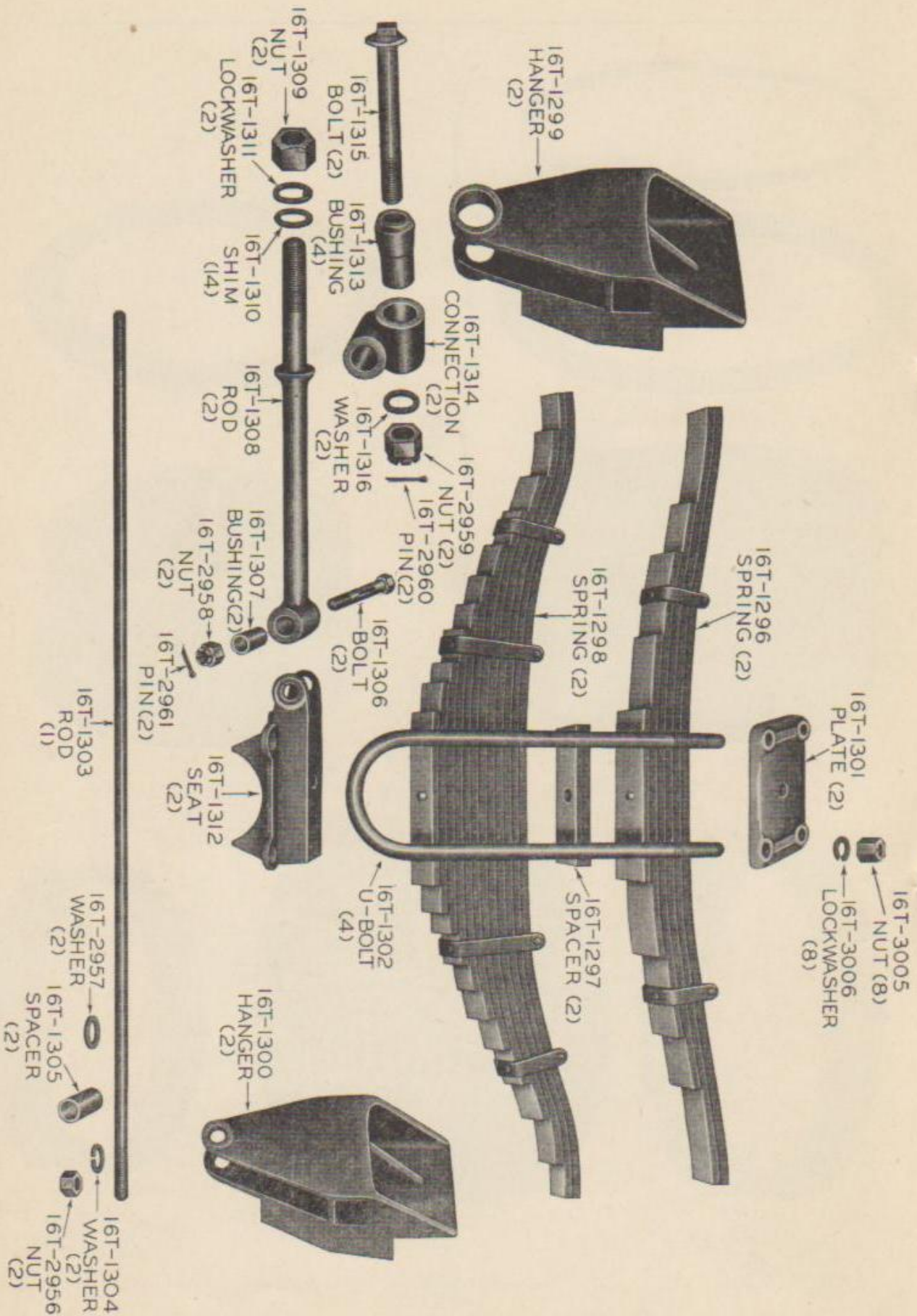
16T-1062
BAND (2)

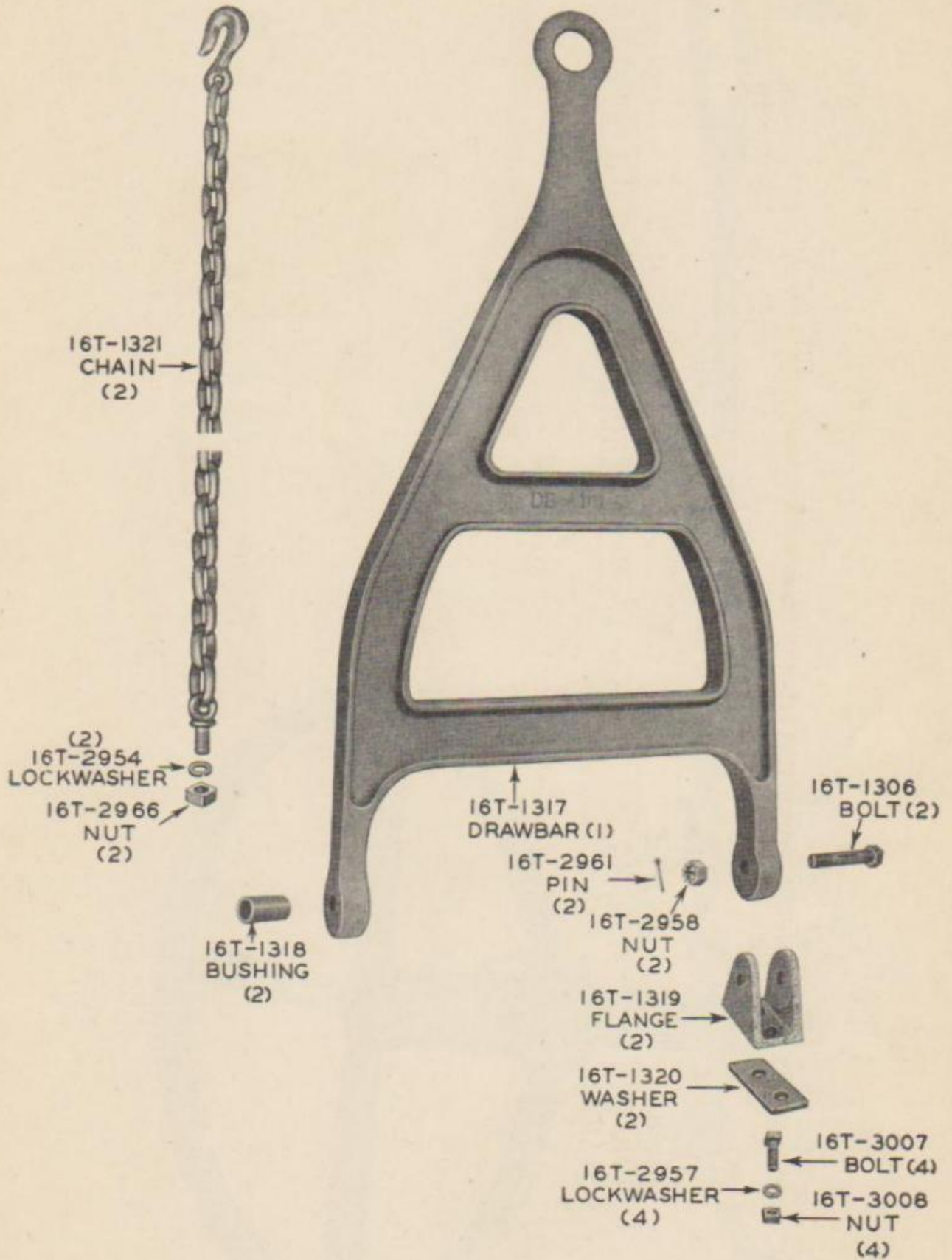


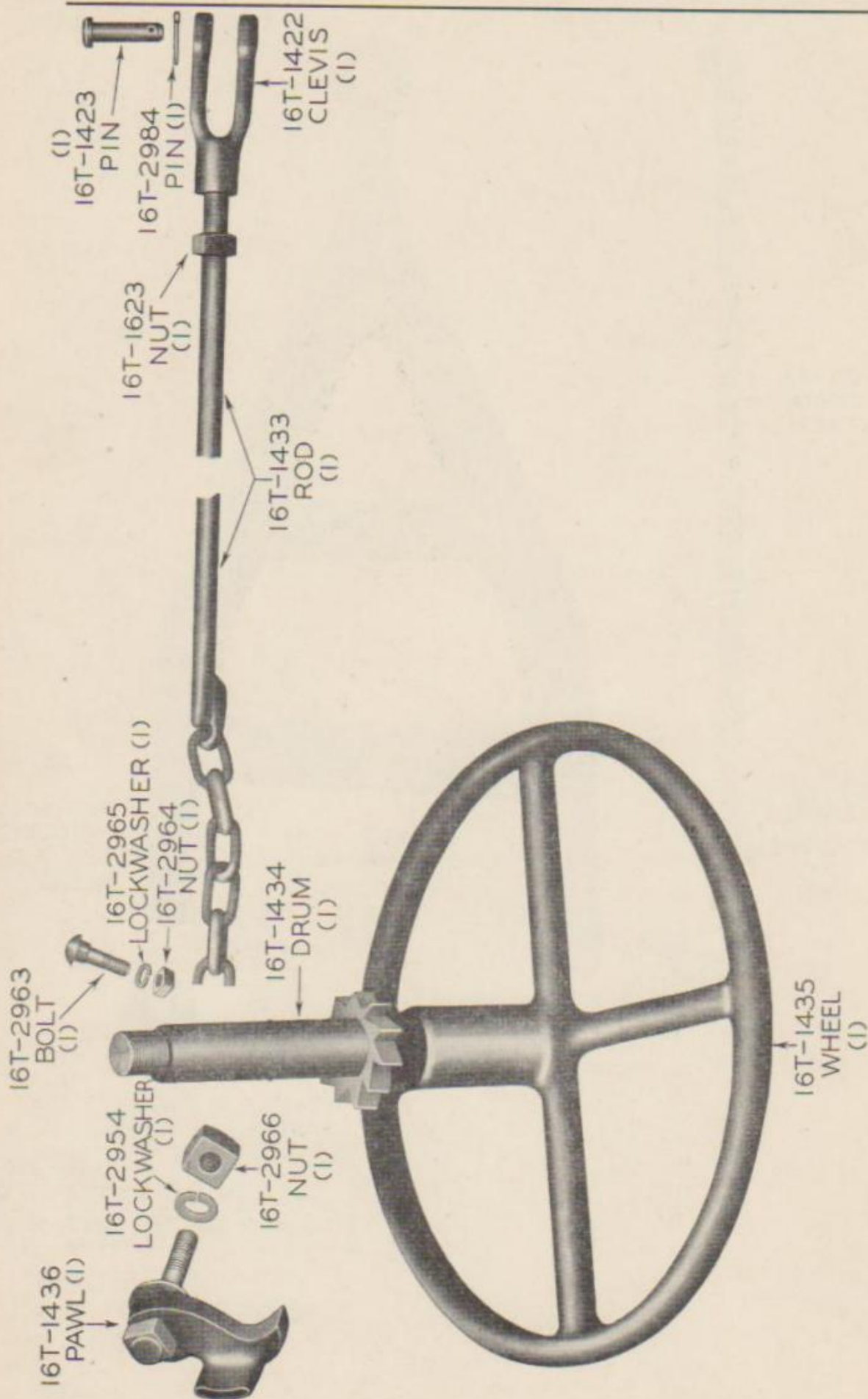
16T-2200
WHEEL (4)

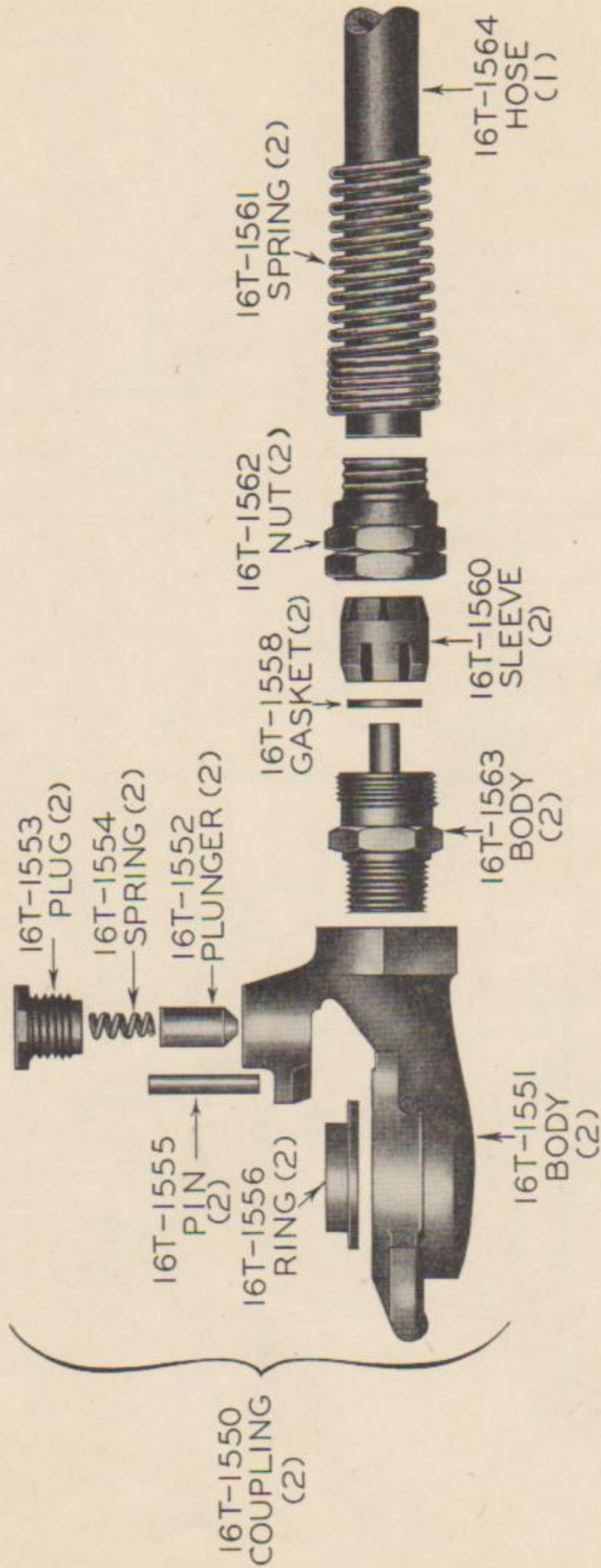


16T-2199
BAND (4)

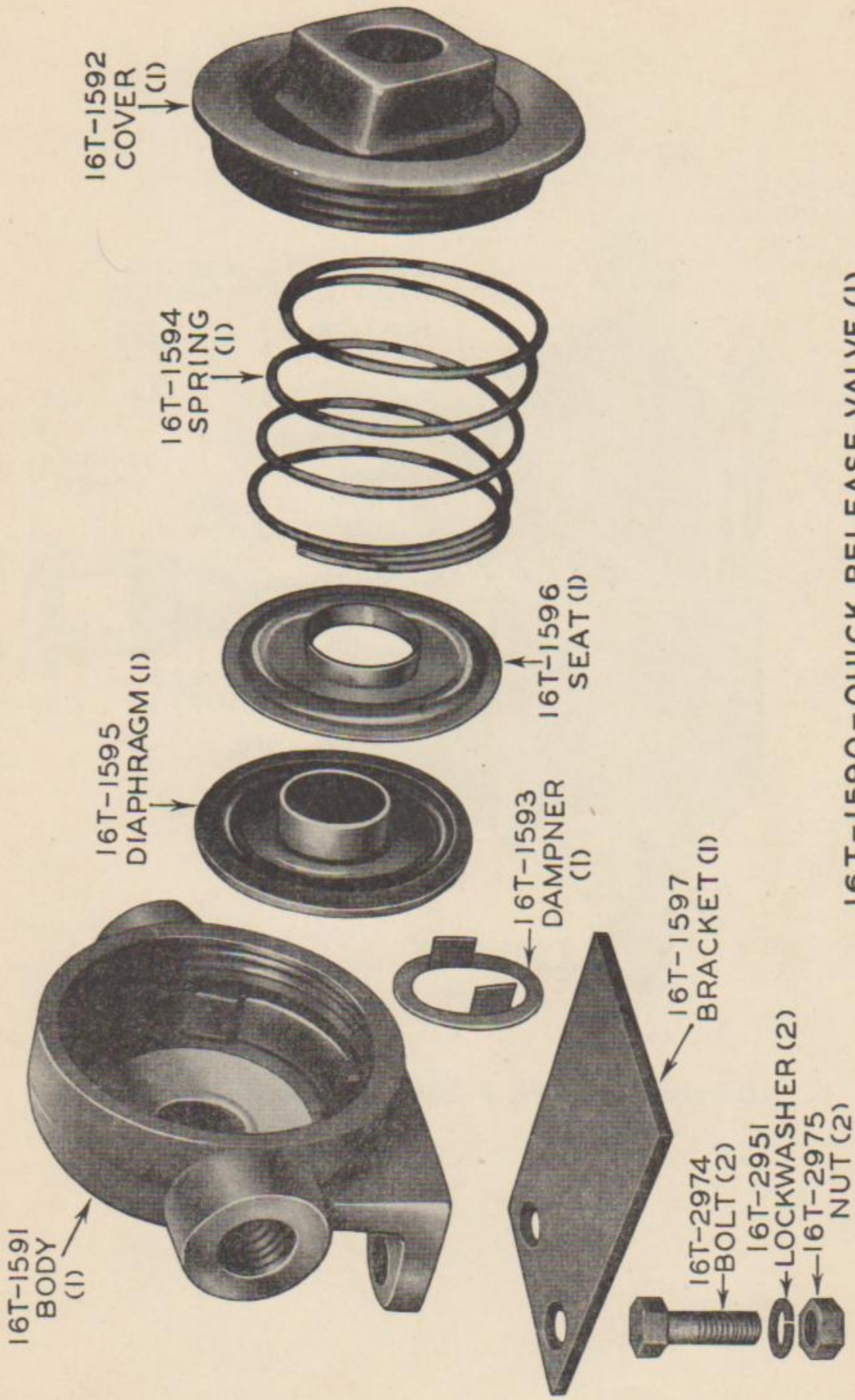


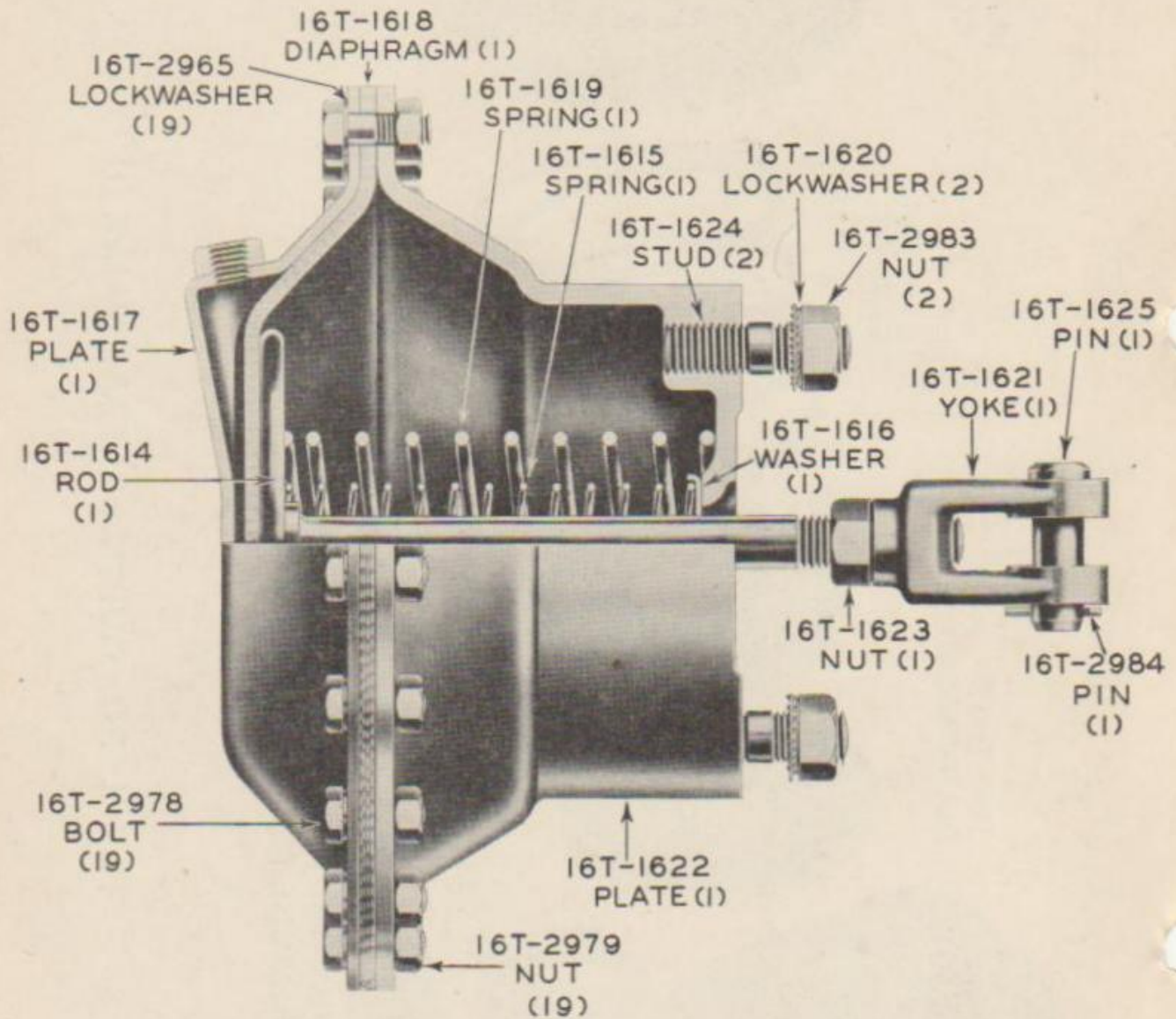




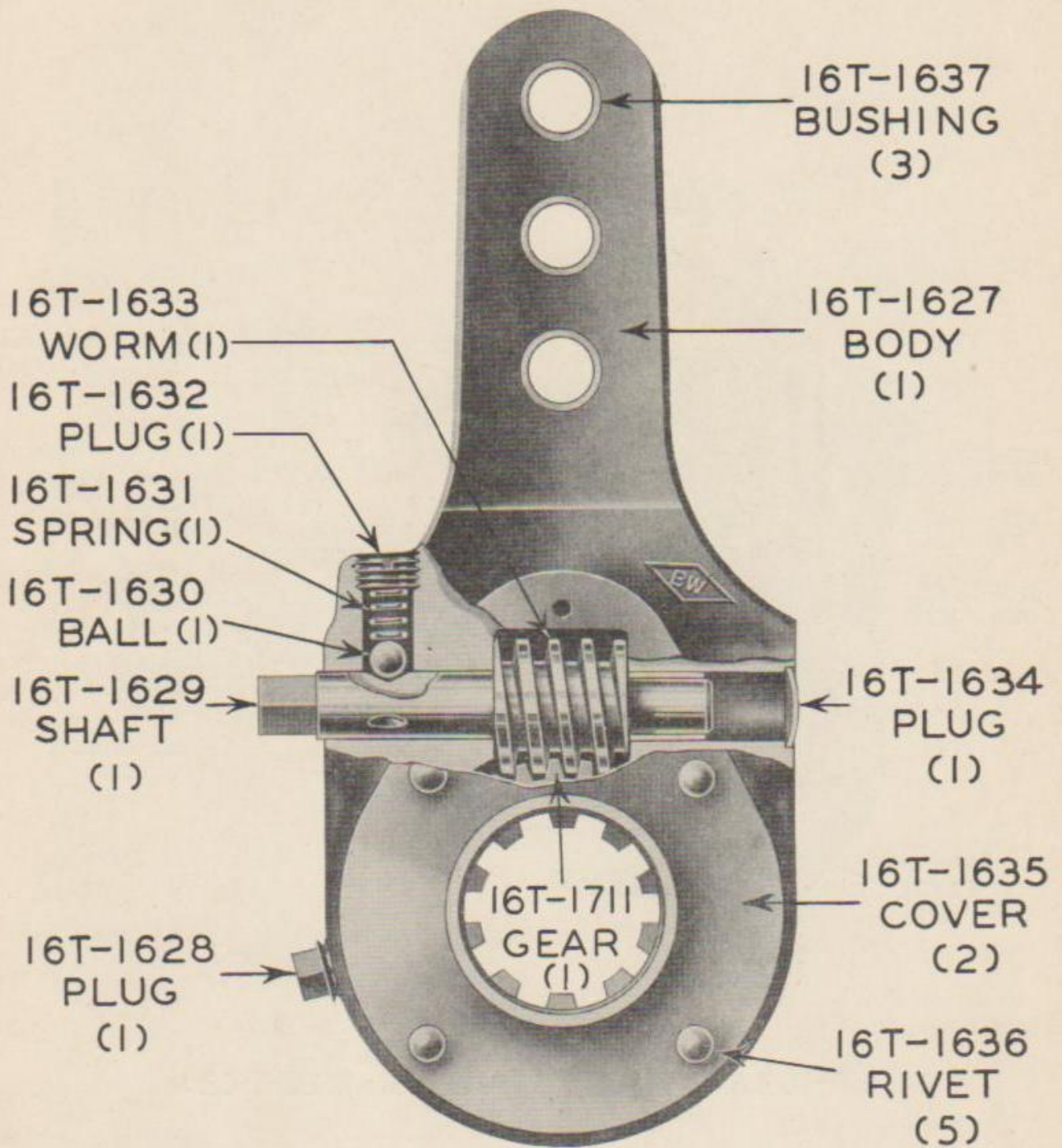


16T-1549 - HOSE ASSEMBLY (2)

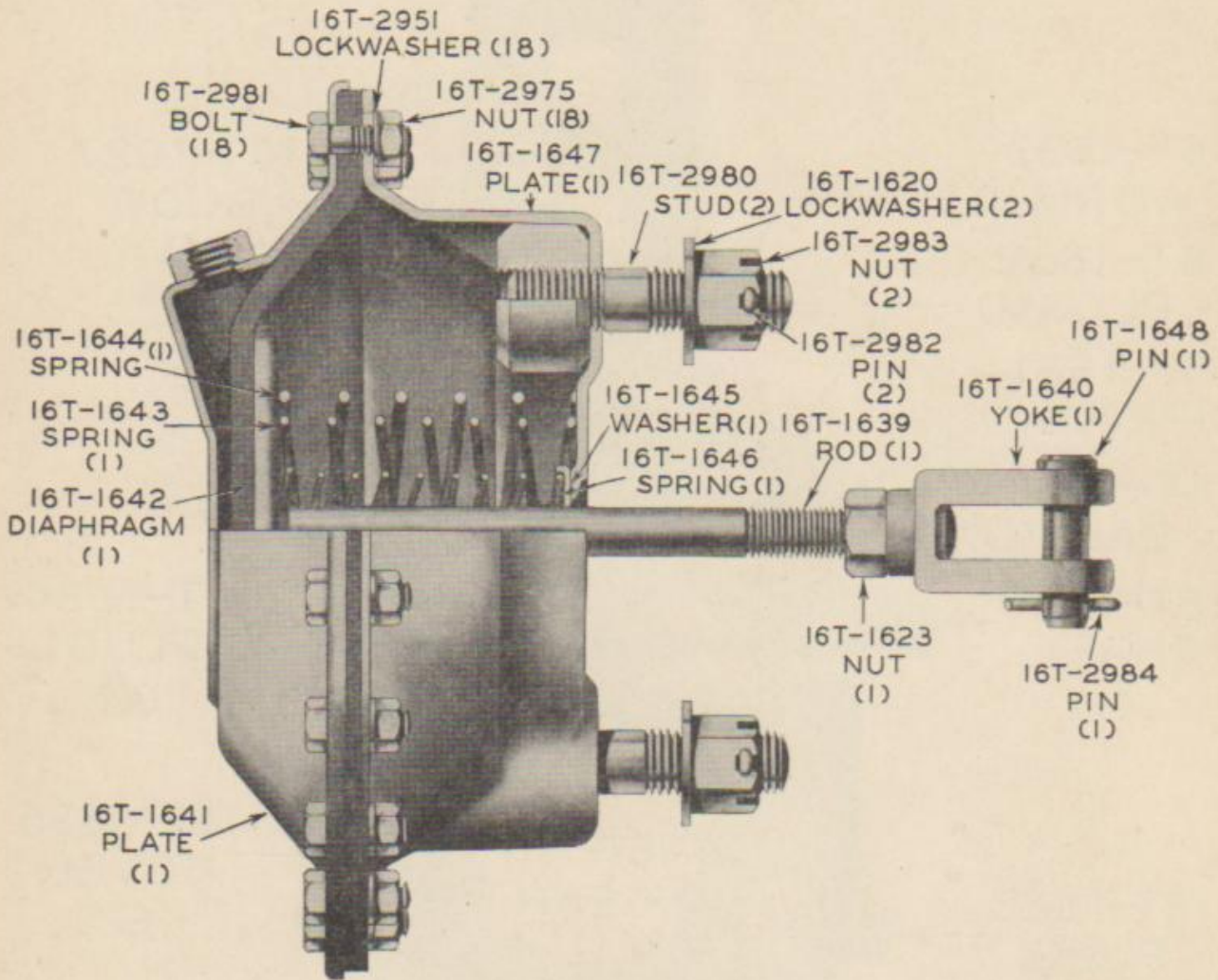




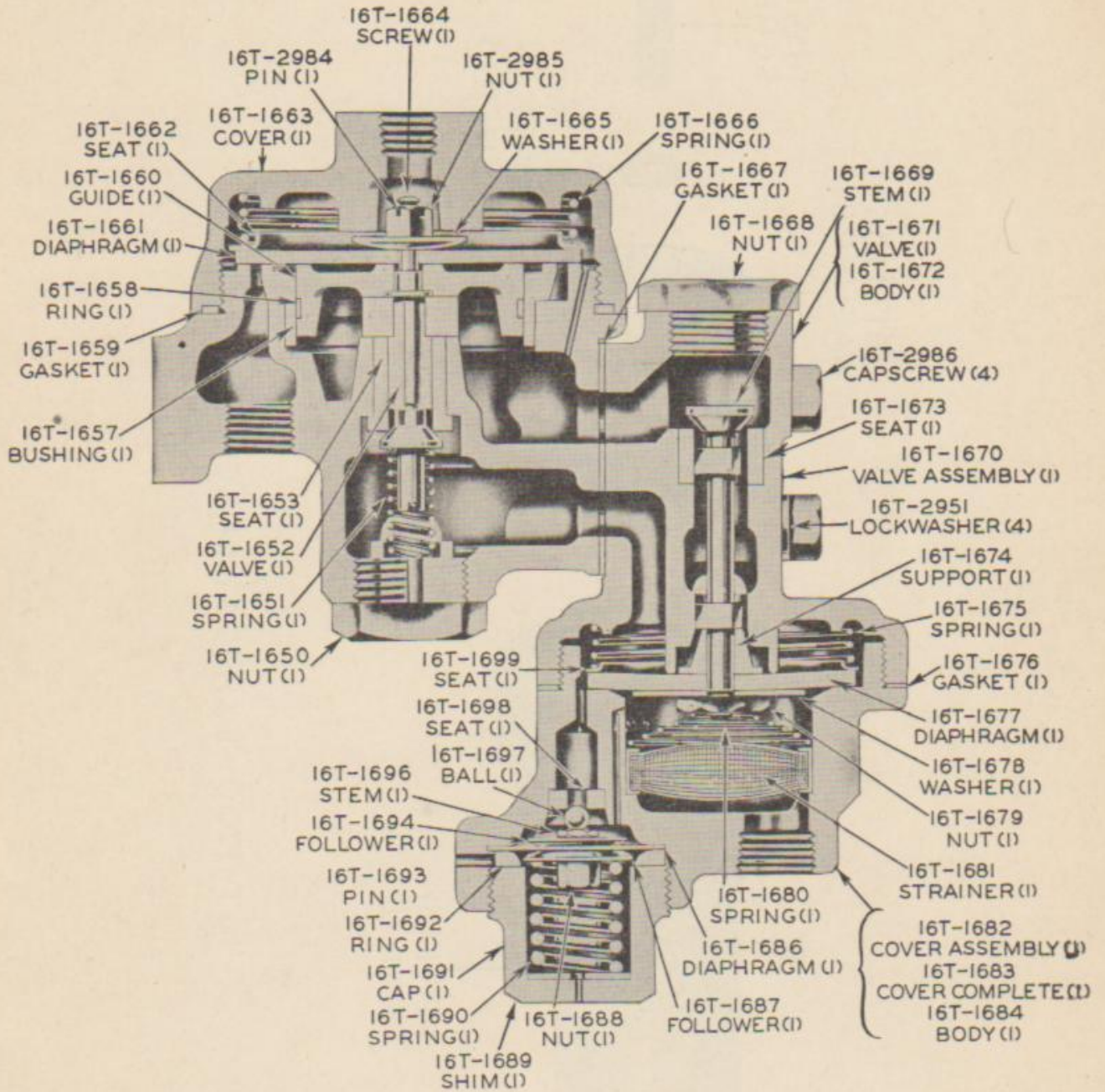
16T-1613 -TYPE F BRAKE CHAMBER (2)



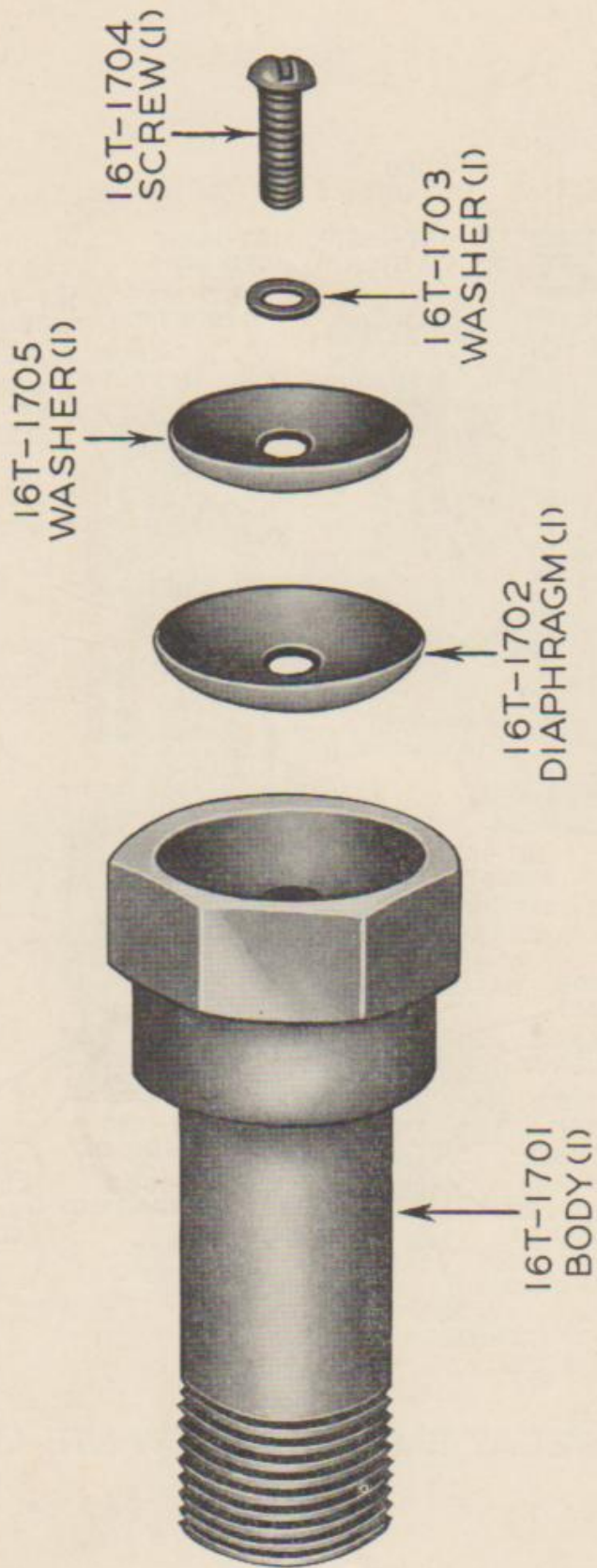
16T-1626-SLACK ADJUSTER (6)



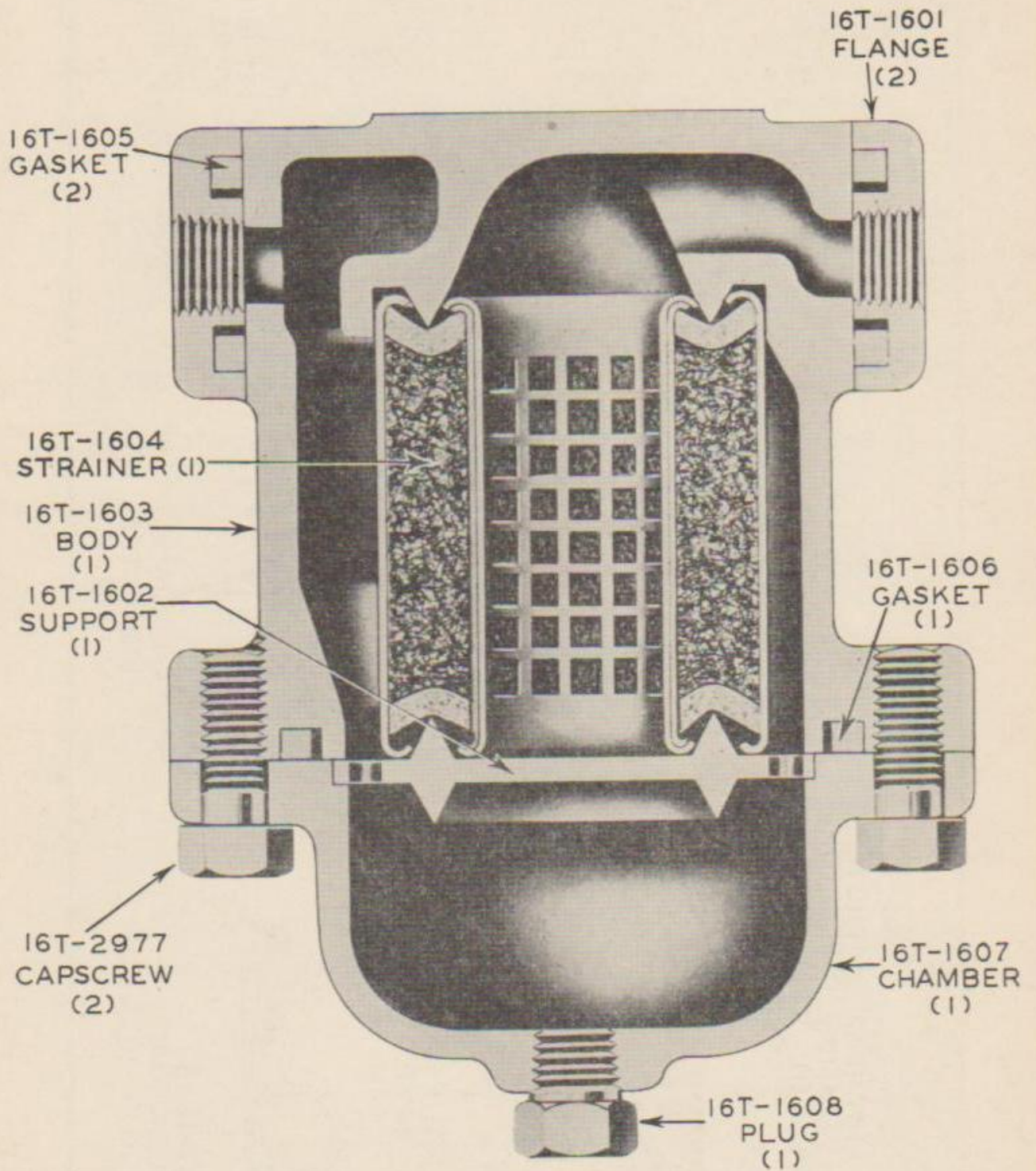
16T-1638-TYPE B BRAKE CHAMBER (2)



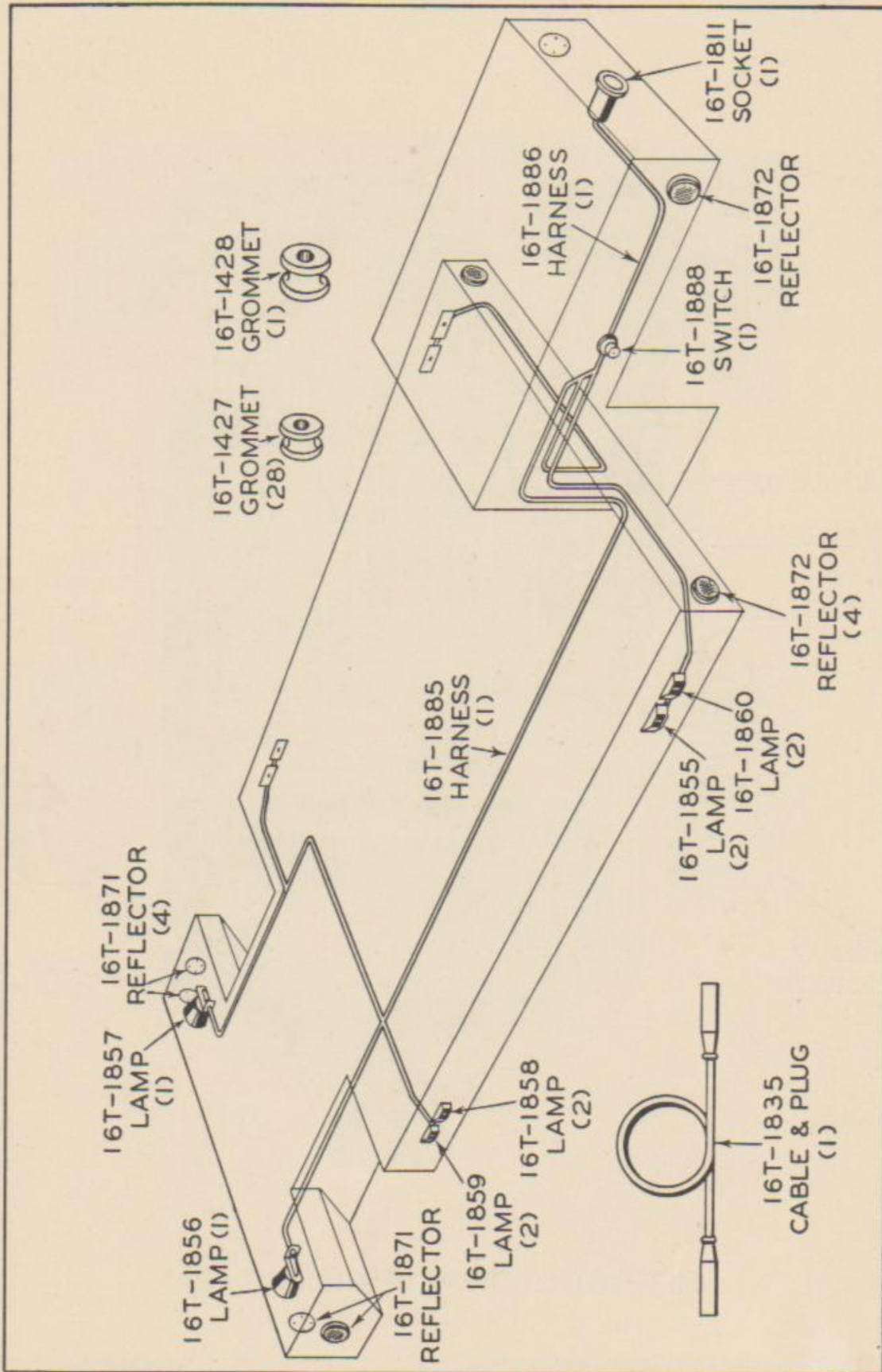
16T-1649-RELAY EMERGENCY VALVE (1)

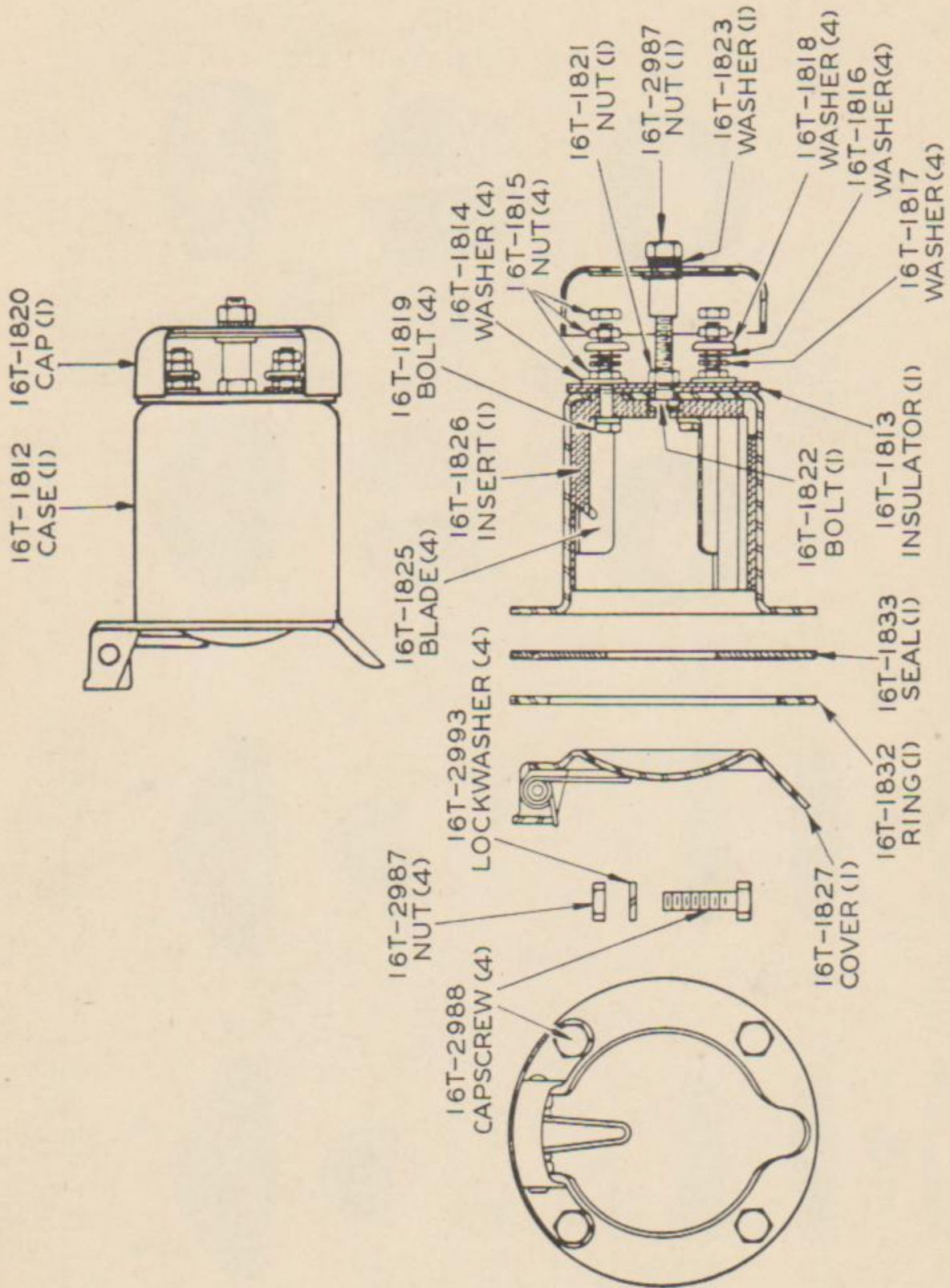


16T-1700 - EXHAUST CHECK VALVE (1)

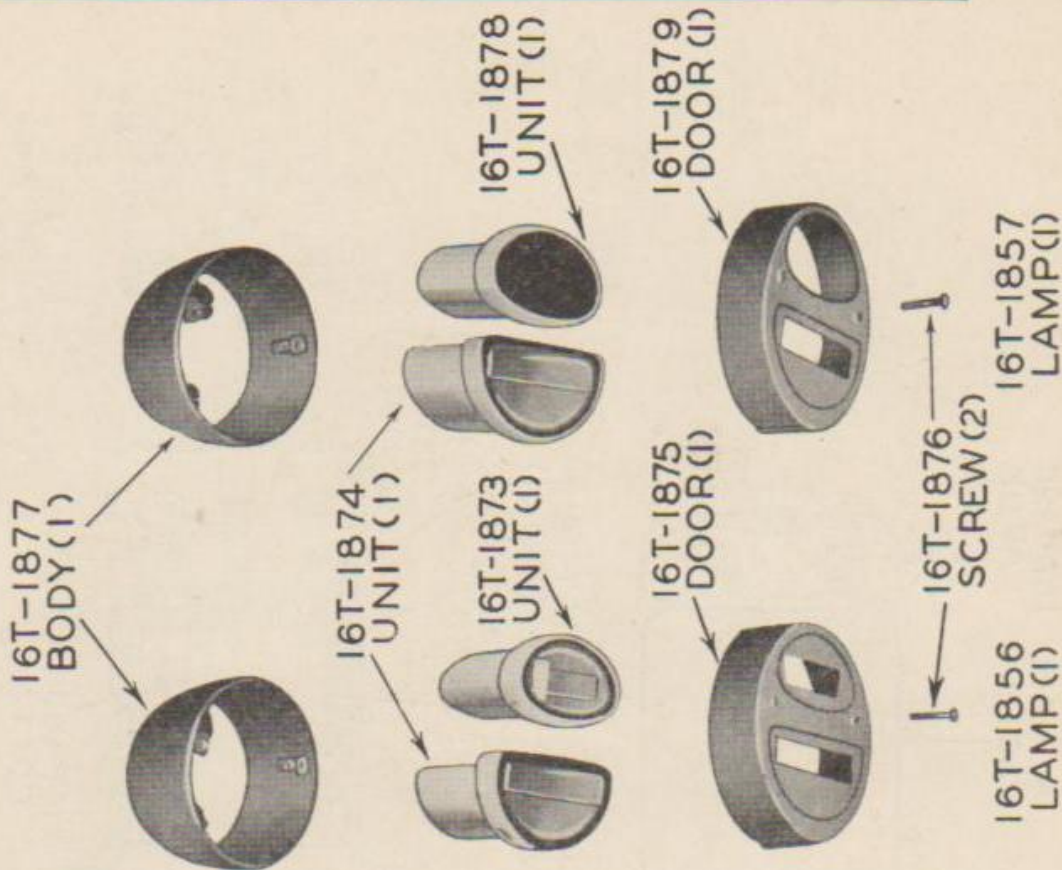
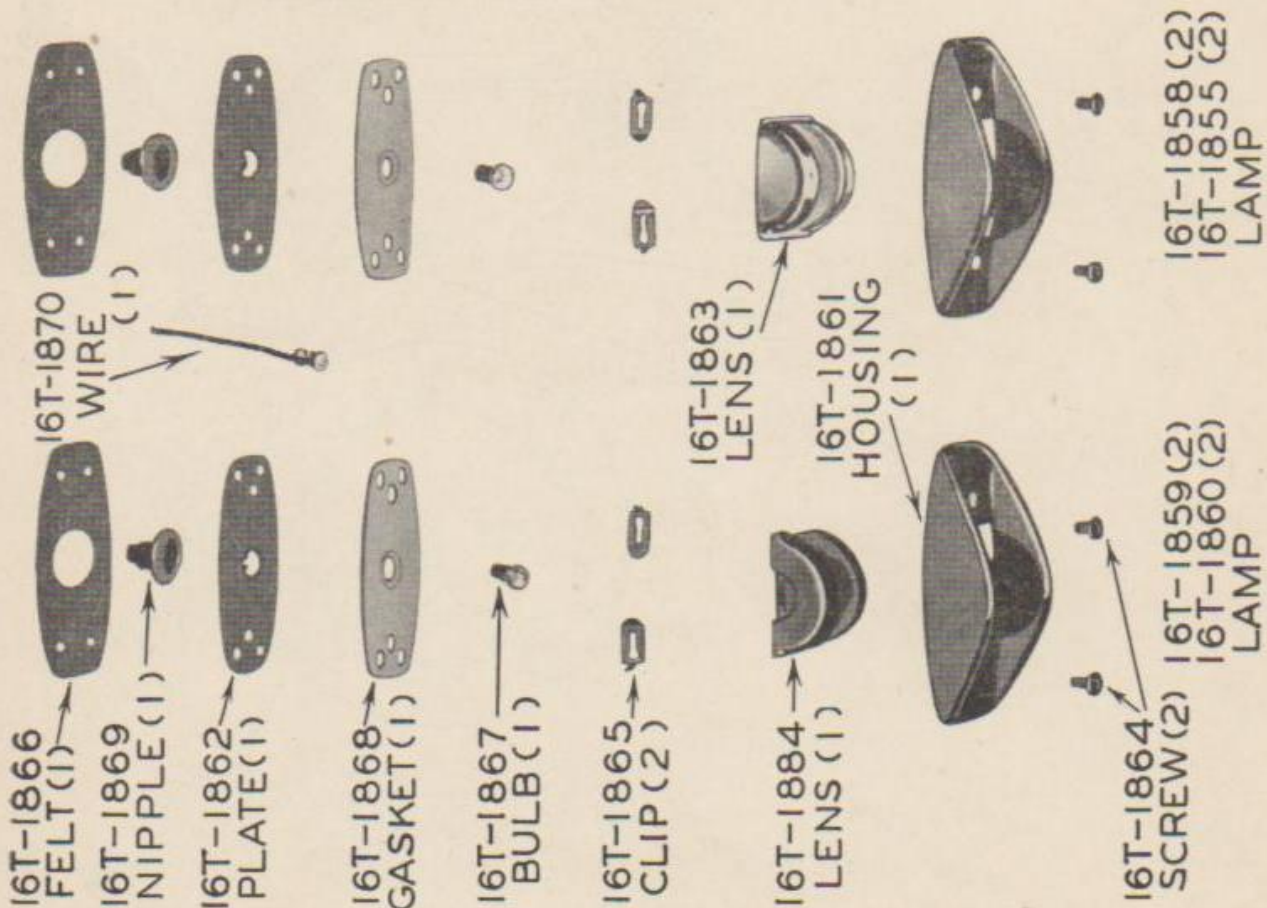


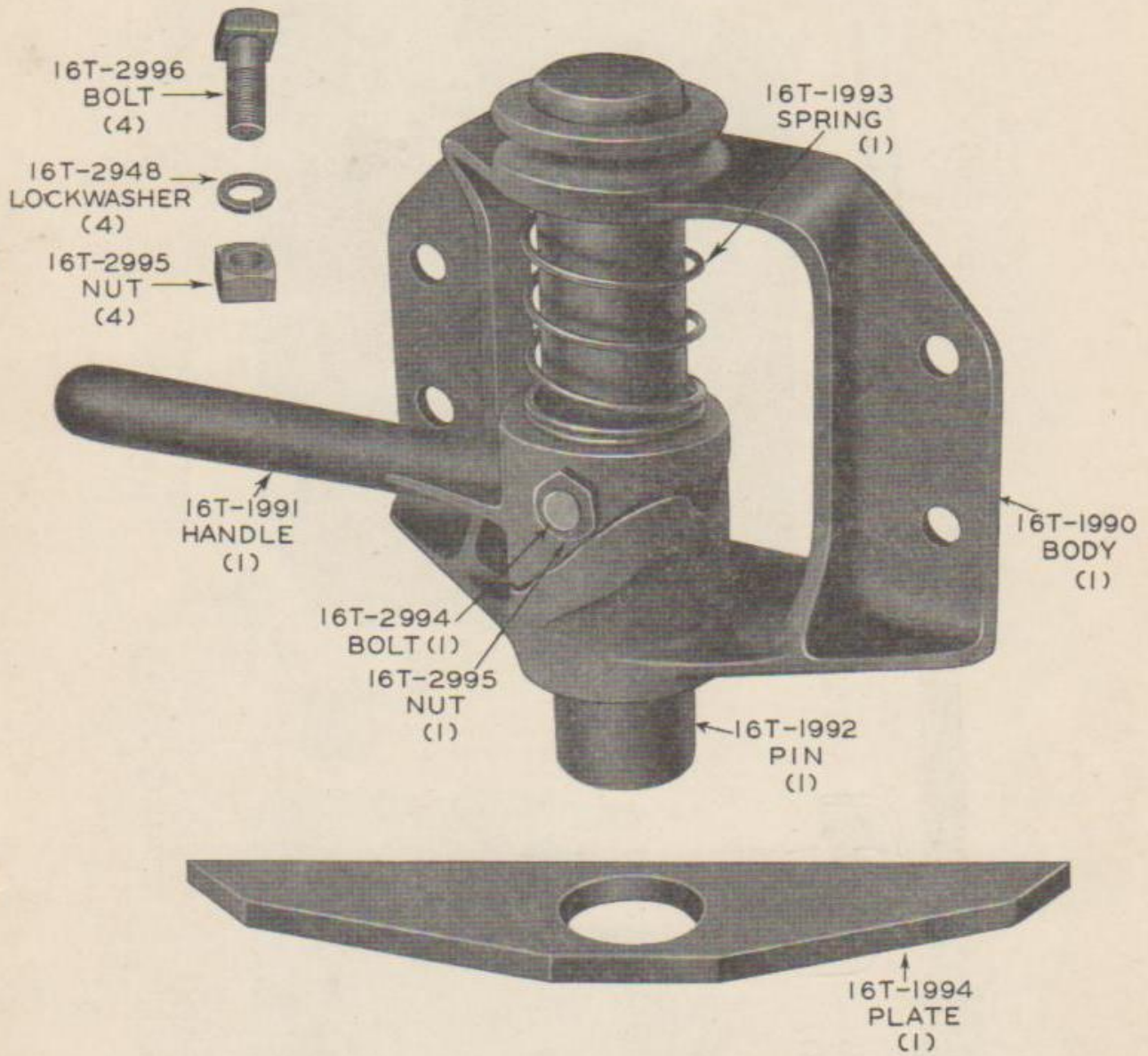
16T-1600-TYPE E FILTER (2)



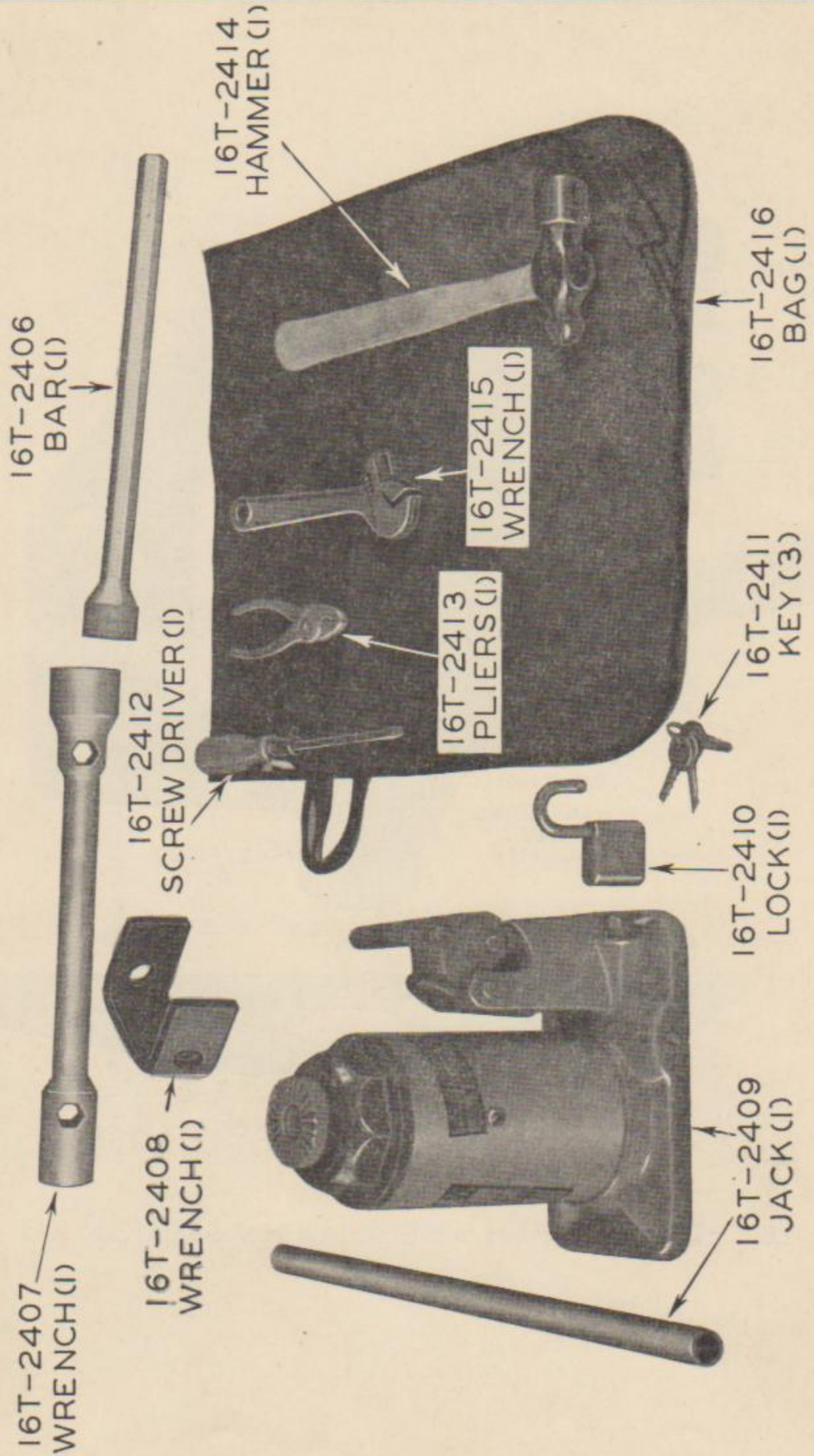


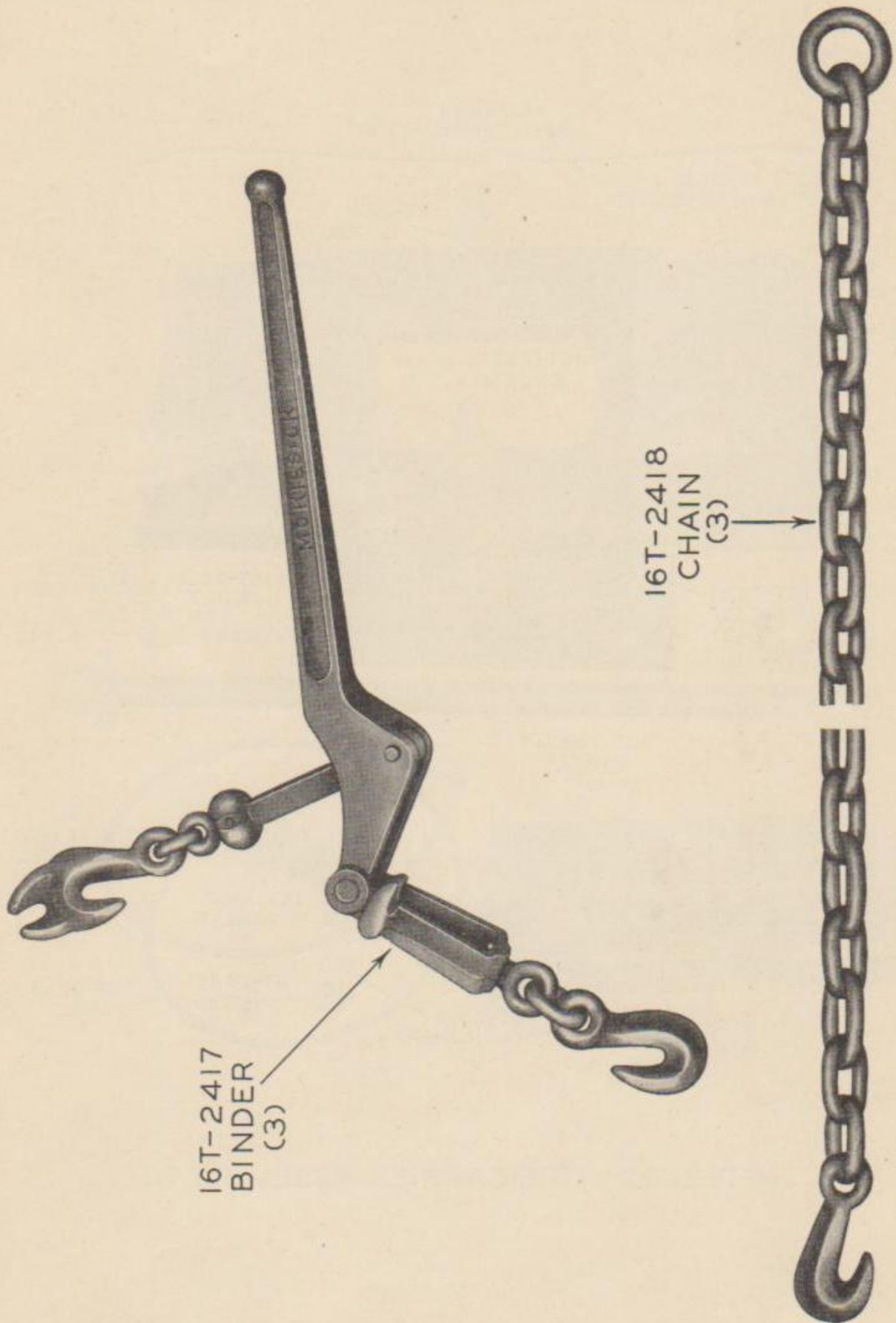
16T-1811 - SOCKET ASSEMBLY (1)





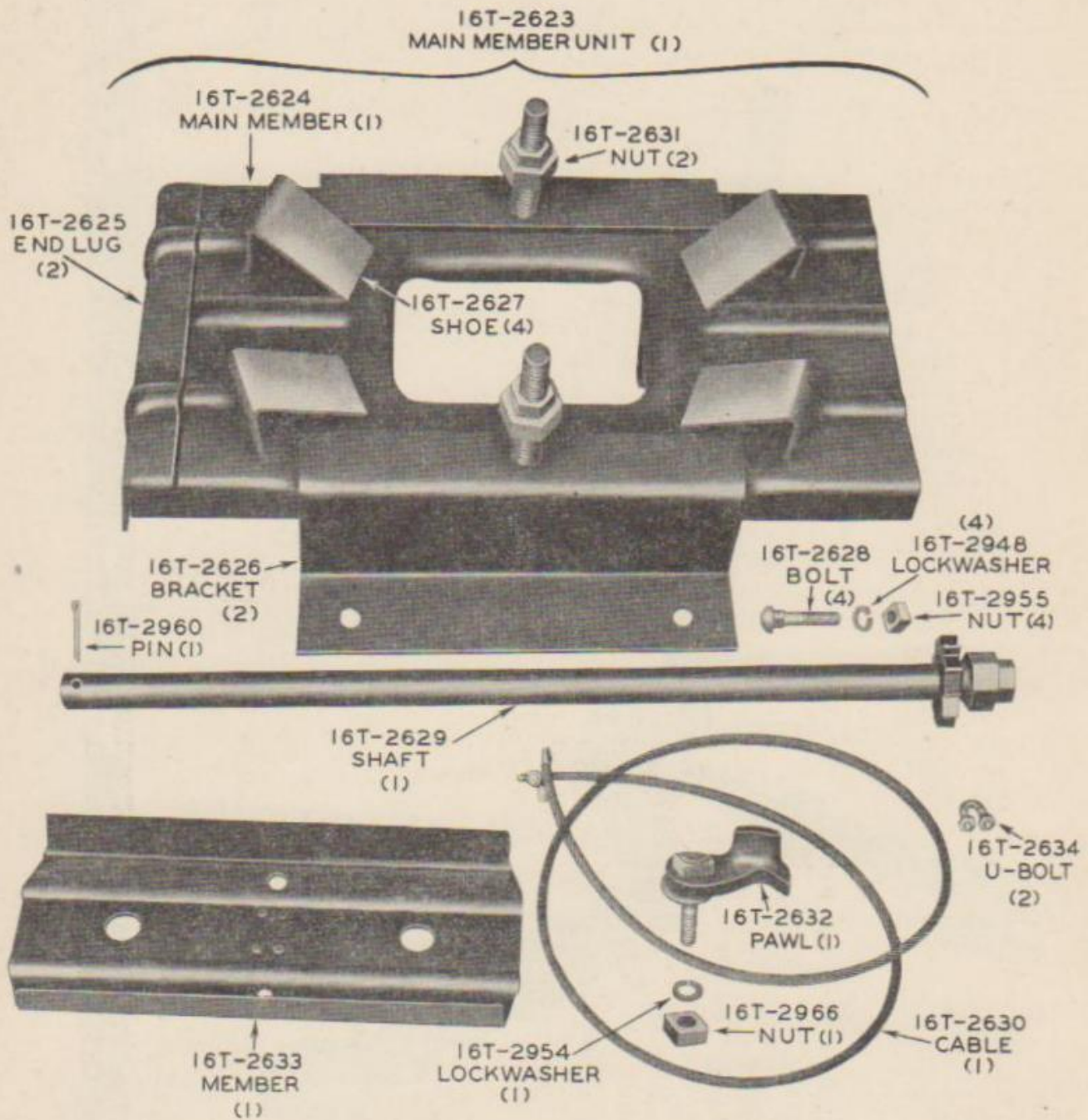
16T-1989-FIFTH WHEEL LOCK ASSEMBLY (1)





16T-2417
BINDER
(3)

16T-2418
CHAIN
(3)



16T-2622 - TIRE CARRIER ASSEMBLY (1)

MAJOR ASSEMBLIES

Part No.	Description	Quantity
Axle Front consists of:		
16T-1000	ASSEMBLY, Axle Bar	1
16T-1001	TONGUE WASHER, Axle Bar	2
16T-1002	NUT, Axle	4
16T-1003	LOCK, Axle Nut	2
16T-1004	HUB	2
16T-1005	STUD, Hub-right	10
16T-1006	STUD, Hub-left	10
16T-1007	NUT, Lug-inner-right	10
16T-1008	NUT, Lug-inner-left	10
16T-1009	NUT, Lug-outer-right	10
16T-1010	NUT-Lug-outer-left	10
16T-1011	CAP, Hub	2
16T-1012	GASKET, Hub Cap	2
16T-1013	RETAINER, Grease	2
16T-1014	CONE, Bearing-inner	2
16T-1015	CUP, Bearing-inner	2
16T-1016	CONE, Bearing-outer	2
16T-1017	CUP, Bearing-outer	2
16T-1018	DRUM, Brake	2
16T-1019	SLING, Grease	2
16T-1020	BRACKET, Power Chamber	2
16T-1021	Bracket, Cam Shaft-with bushing	2
16T-1022	BRACKET, Cam Shaft	2
16T-1023	BUSHING, Cam Shaft Bracket	2
16T-1024	BRAKE ASSEMBLY, Right	1
16T-1025	BRAKE ASSEMBLY, Left	1
16T-1026	FLANGE, Brake	2
16T-1027	LOCK	12
16T-1028	BRAKE SPIDER	2
16T-1029	CAM SHAFT ASSEMBLY, right	1
16T-1030	CAM SHAFT ASSEMBLY, left	1
16T-1031	WASHER, Cam Spacer	2
16T-1032	WASHER, Retainer	4
16T-1033	WASHER	6
16T-1034	FELT, Retainer	4
16T-1035	ELL, street $\frac{1}{8}$ " 90°	2
16T-1036	SHOE, Only, Brake	4
16T-1037	ASSEMBLY, Brake Shoe and Lining	4
16T-1038	LINING, Brake Shoe, Drilled	8
16T-1039	ROLLER, Cam	4
16T-1040	SHAFT, Cam Roller	4
16T-1041	SCREW, Roller Shaft Set $\frac{1}{4}$ x $\frac{1}{4}$ Allen Head	4
16T-1042	SPRING, Retract	2
16T-1043	PIN, Anchor	4
16T-1044	BUSHING, Anchor Pin	8
16T-1045	SCREW, Anchor Pin Set $\frac{3}{8}$ x $\frac{3}{8}$ Allen Head	4
16T-1046	FELT, Anchor Pin Retainer	8
16T-1047	WASHER, Retainer	8
16T-1048	LOCK, Retainer Spring	8
16T-1049	SHIELD, Dust	2

MAJOR ASSEMBLIES (Cont'd)

Part No.	Description	Quantity
Axle Front consists of:		
16T-1050	BEARING, Spider	2
16T-1051	ASSEMBLY, AXLE Complete with flanges, nuts, washers, cam brackets, chamber brackets & seats	1
16T-1052	HUB ASSEMBLY, with cups and studs, left hand	1
16T-1053	HUB ASSEMBLY with cups and studs, right hand	1
16T-1054	HUB ASSEMBLY with cups only	2
16T-1058*	WHEEL, Front, less drum	2
16T-1059*	CLAMP, Rim "K"	36
16T-1060*	BOLT, Rim Clamp	36
16T-1061*	NUT, Rim Clamp	36
16T-1062*	BAND, Spacer 20" x 4"	2
16T-1063*	CAP, Hub	6
16T-1064*	DRUM, Brake front wheel	2
16T-1065*	COVER, Inspection Hole	2
16T-1066*	RIM, 20" x 8"	4

**Used only on trailers Serial Nos. 0530312 and up.*

Axle Rear consists of:

16T-1155	ASSEMBLY, Rocker Beam and Axle Bar, complete	2
16T-1156	BRACKET, Trunnion, Front, Drilled	2
16T-1157	BRACKET, Trunnion, Rear	2
16T-1158	BUSHING, Trunnion, Bracket	8
16T-1159	BUSHING, Cam Shaft-large	8
16T-1160	RETAINER, Grease	4
16T-1161	CONE, Bearing inner	4
16T-1162	CONE, Bearing, outer	4
16T-1163	WASHER, Tongue	4
16T-1164	NUT, Axle 1½" SAE Castle	4
16T-1165	SHAFT, Cam, Right	2
16T-1166	SHAFT, Cam, left	2
16T-1167	SHOE, Brake	8
16T-1169	LINING, Brake 12¼" x 5" Drilled	8
16T-1170	SHOE AND LINING ASSEMBLY with Bushing	8
16T-1171	BLOCK, Cam	8
16T-1172	SCREW, ⅝" x ⅞" USS Flat Head Cask.	8
16T-1173	SPRING, Retract	8
16T-1174	PIN, Ecc. Anchor	8
16T-1175	LINK, Anchor Pin	4
16T-1176	WASHER, Anchor Pin Horse Shoe	8
16T-1177	BUSHING, Brake Shoe	8
16T-1178	NUT, ¾" Hex ⅝" High SAE Anchor Pin	8
16T-1179	WASHER, Cam Shaft	8
16T-1180	BUSHING, 1¼" x 1" x 1" long	4
16T-1181	COVER, Dust-upper	4
16T-1182	COVER, Dust-lower	4
16T-1188	CUP, Bearing, inner	4
16T-1189	CUP, Bearing, outer	4
16T-1190	WHEEL, Rear, less drum	4
16T-1191	CAP, Hub	4
16T-1192	DRUM, Brake	4

FRONT AXLE

Part No.	Description	Mfg. Part No.	Symbol	Page	Quantity	Wt.	Price
16T-1000	ASSEMBLY, Axle Bar	A-15-N	SFA	108	1	209.000	106.72
16T-1001	TONGUE WASHER, Axle Bar	A-150010	"	"	2	.125	.11
16T-1002	NUT, Axle	A-150011	"	"	4	.373	1.96
16T-1003	LOCK, Axle Nut	A-150012	"	"	2	.100	.12
16T-1004	HUB	A-150017-1	"	"	2	47.75	25.32
16T-1005	STUD, Hub-right	13988	"	"	10	.500	.40
16T-1006	STUD, Hub-left	13989	"	"	10	.500	.40
16T-1007	NUT, Lug-inner-right	10708	"	"	10	.333	.50
16T-1008	NUT, Lug-inner-left	10709	"	"	10	.333	.50
16T-1009	NUT, Lug-outer-right	37891	"	"	10	.200	.28
16T-1010	NUT, Lug-outer-left	37892	"	"	10	.200	.28
16T-1011	CAP, Hub	A-150014	"	"	2	1.000	1.08
16T-1012	GASKET, Hub Cap	A-150013	"	"	2	.016	.10
16T-1013	RETAINER, Grease	A-150029	"	"	2	1.000	5.12
16T-1014	CONE, Bearing-inner	580	TIM	"	2	3.000	11.50
16T-1015	CUP, Bearing-inner	572	"	"	2	2.250	7.00
16T-1016	CONE, Bearing-outer	560	"	"	2	2.437	8.80
16T-1017	CUP, Bearing-outer	553-X	"	"	2	1.687	6.50
16T-1018	DRUM, Brake	UB-1106-1	SFA	"	2	92.000	31.20
16T-1019	SLING, Grease	UB-1120	"	"	2	1.625	1.22
16T-1020	BRACKET, Power Chamber	UB-1119	"	"	2	3.125	1.01
16T-1021	BRACKET, Cam Shaft-with Bushing	UB-1068	"	109	2	3.312	3.18
16T-1022	BRACKET, Cam Shaft	UB-1043-5	"	"	2	3.125	2.46
16T-1023	BUSHING, Cam Shaft Bracket	UB-1066	"	"	2	.187	.72
16T-1024	BRAKE ASSEMBLY, right	UB-1000R-6	"	"	1	87.00	93.54
16T-1025	BRAKE ASSEMBLY, left	UB-1000L-6	"	"	1	87.00	93.54
16T-1026	FLANGE, Brake	UB-1048-1	"	108	2	4.750	2.04
16T-1027	LOCK	UB-1019	"	109	12	.013	.05
16T-1028	BRAKE SPIDER	UB-1002-1	"	"	2	11.250	16.12
16T-1029	CAM SHAFT ASSEMBLY, right	UB-1003-R	"	"	1	13.625	12.10
16T-1030	CAM SHAFT ASSEMBLY, left	UB-1003-L	"	"	1	13.625	12.10
16T-1031	WASHER, Cam Spacer	UB-1015	"	"	2	.250	.24
16T-1032	WASHER, Retainer	UB-1017	"	"	4	.018	.09
16T-1033	WASHER	UB-1016	"	"	6	.031	.05
16T-1034	FELT, Retainer	UB-1014	"	"	4	.001	.05

Part No.	Description	Mfg. Part No.	Symbol	Page	Quantity	Wt.	Price
16T-1035	ELL, Street $\frac{1}{2}$ " 90°	6451	SFA	109	2	.062	.30
16T-1036	SHOE, Only, Brake	UB-1026-1	"	"	4	20.000	14.40
16T-1037	ASSEMBLY, Brake Shoe and Lining	UB-1047	"	"	4	26.750	31.34
16T-1038	LINING, Brake Shoe, Drilled	UB-1046-1	"	"	8	2.625	7.12
16T-1039	ROLLER, Cam	UB-1006-1	"	"	4	.187	.62
16T-1040	SHAFT, Cam Roller	UB-1007-1	"	"	4	.250	.48
16T-1041	SCREW, Roller Shaft Set $\frac{1}{4}$ x $\frac{1}{4}$ Allen Head	6801	"	"	4	.003	.15
16T-1042	SPRING, Retract	UB-1021	"	"	2	.500	.50
16T-1043	PIN, Anchor	UB-1008-1	"	"	4	1.312	.75
16T-1044	BUSHING, Anchor Pin	UB-1024	"	"	8	.058	.18
16T-1045	SCREW, Anchor Pin Set $\frac{3}{8}$ x $\frac{3}{8}$ Allen Head	6803	"	"	4	.008	.15
16T-1046	FELT, Anchor Pin Retainer	UB-1012	"	"	8	.007	.05
16T-1047	WASHER, Retainer	UB-1004	"	"	8	.010	.09
16T-1048	LOCK, Retainer Spring	UB-1013	"	"	8	.009	.05
16T-1049	SHIELD, Dust	UB-1025	"	"	2	6.250	2.52
16T-1050	BEARING, Spider	UB-1005	"	"	2	.250	1.52
16T-1051	ASSEMBLY AXLE complete with flang- es, nuts, washers, cam brackets, chamber brackets & seats	A-150040	"	.....	1	235.000	148.36
16T-1052	HUB ASSEMBLY, with cups and studs, left hand	A-150016-L	"	.....	1	55.187	43.32
16T-1053	HUB ASSEMBLY, with cups and studs, right hand	A-150015-R	"	.....	1	55.187	43.32
16T-1054	HUB ASSEMBLY, with cups only	A-150020	"	.....	2	51.687	38.82
16T-1058*	WHEEL, Front, less drum	630-A	ERM	110	2	76.0	45.88
16T-1059*	CLAMP, Rim "K"	K	"	"	36	1.0	.47
16T-1060*	BOLT, Rim Clamp	5095	"	"	36	.2	.28
16T-1061*	NUT, Rim Clamp	538	"	"	36	.13	.18
16T-1062*	BAND, Spacer 20" x 4"	5205	"	113	2	8.5	3.75
16T-1063*	CAP, Hub	5147	"	110	6	3.6	2.85
16T-1064*	DRUM, Brake front wheel	2698	"	"	2	104.0	27.28
16T-1065*	COVER, Inspection Hole	5150	"	"	2	.1	.07
16T-1066*	RIM, 20" x 8"	530M208	STL	113	4	60.0	15.40

*Used only on trailers Serial Nos. 0530312 and up.

SPARE PARTS LIST

Numerical Index

REAR AXLE

Part No.	Description	Mfg. Part No.	Symbol	Page	Quantity	Wt.	Price
16T-1155	ASSEMBLY, Rocker Beam and Axle Bar, Complete	STA-1007	STL	111	2	167.000	141.24
16T-1156	BRACKET, Trunnion, Front, Drilled	STA-1008-F	"	"	2	18.500	26.74
16T-1157	BRACKET, Trunnion, Rear	STA-1008-R	"	"	2	18.000	26.74
16T-1158	BUSHING, Trunnion Bracket	STA-1005	"	"	8	.500	2.32
16T-1159	BUSHING, Cam Shaft-large	UB-3004	"	"	8	.038	.22
16T-1160	RETAINER, Grease	A-110016	"	"	4	.500	1.88
16T-1161	CONE, Bearing, inner	567	TIM	"	4	2.5	8.85
16T-1162	CONE, Bearing, outer	528	"	"	4	2.0	6.85
16T-1163	WASHER, Tongue	A-110020	SFA	"	4	.202	.34
16T-1164	NUT, Axle 1 1/2" SAE Castle	6313	"	"	4	.937	.94
16T-1165	SHAFT, Cam, right	UB-3024-R-1	"	"	2	4.000	10.36
16T-1166	SHAFT, Cam, left	UB-3024-L-1	"	"	2	4.000	10.36
16T-1167	SHOE, Brake	UB-3001-1	"	"	8	11.000	10.10
16T-1169	LINING, Brake 12 1/4" x 5" Drilled	UB-3002-1	"	"	8	2.250	5.00
16T-1170	SHOE AND LINING ASSEMBLY with Bushing	UB-3007	"	"	8	14.000	16.34
16T-1171	BLOCK, Cam	UB-2209	"	"	8	.437	1.04
16T-1172	SCREW, 5/8" x 7/8" USS Flat Head Csk.	6802	"	"	8	.022	.04
16T-1173	SPRING, Retract	UB-2205	"	"	8	.125	.36
16T-1174	PIN, Ecc. Anchor	UB-3303	"	"	8	1.000	2.74
16T-1175	LINK, Anchor Pin	UB-2208	"	"	4	.250	.15
16T-1176	WASHER, Anchor Pin Horse Shoe	UB-2206	"	"	8	.015	.04
16T-1177	BUSHING, Brake Shoe	UB-2212	"	"	8	.031	.09
16T-1178	NUT, 3/4" Hex 5/8" High SAE Anchor Pin	6326	"	"	8	.062	.10
16T-1179	WASHER, Cam Shaft	UB-2207	"	"	8	.281	.18
16T-1180	BUSHING, 1 1/4" x 1" x 1" long	TA-1006	"	"	4	.109	.38
16T-1181	COVER, Dust-upper	UB-3005	"	"	4	1.250	.46
16T-1182	COVER, Dust-lower	UB-3006	"	"	4	1.250	.50
16T-1188	CUP, Bearing, inner	563	TIM	112	4	1.0	6.35
16T-1189	CUP, Bearing, outer	522	"	"	4	.9	4.20
16T-1190	WHEEL, Rear, less drum	818	ERM	"	4	53.7	36.70
16T-1191	CAP, Hub	5118	"	"	4	3.4	2.00
16T-1192	DRUM, Brake	2703-4	"	"	4	38.2	19.00
16T-1290	FRAME, Main Trailer	AF-102	STL	.....	1	.....	595.00

Part No.	Description	Mfg. Part No.	Symbol	Page	Quantity	Wt.	Price
16T-1291	RAMP, Loading	LR-2	STL	.....	2	590.0	88.00
16T-1292	BODY	LRB-1	"	.....	2	437.0	41.50
16T-1293	CLEAT	P-30	"	.....	12	5.7	.60
16T-1294	DECK, Oak 1 3/4" x 9 1/2" x 10'-8"	LRD-4	"	.....	4	113.0	On Appl.
16T-1295	FRAME, Dolly Truck	DF-102	"	.....	1	81.00	
16T-1296	SPRING, Helper	13131	"	114	2	7.35	
16T-1297	SPACER, Spring	S-SP-1	"	"	2	5.7	.48
16T-1298	SPRING, Main	14341	"	"	2	118.0	16.60
16T-1299	HANGER, Spring, Front	H-4-R	"	"	2	35.0	10.22
16T-1300	HANGER, Spring, Rear	H-9	"	"	2	27.0	7.82
16T-1301	PLATE, U-Bolt	P-5	"	"	2	6.0	2.34
16T-1302	U-BOLT	SU-1S	"	"	4	7.1	1.60
16T-1303	ROD, Rear Spring Hanger Tie	HTR-1	"	"	1	5.6	1.00
16T-1304	WASHER, Tie Rod 3/4"	TRW-1	"	"	2	.11	.02
16T-1305	SPACER, Tie Rod 3/4" Pipe	TRS-1	"	"	2	.03	.10
16T-1306	BOLT, Torque Rod Rear; and Drawbar Flange	ST-6	"	114 & 115	4	1.3	1.22
16T-1307	BUSHING, Bronze, Torque Rod	EF-350	"	114	2	.26	.62
16T-1308	ROD, Torque	STA-3	"	"	2	8.5	6.00
16T-1309	NUT, Torque Rod Adjusting	STA-3-1	"	"	2	0.5	.20
16T-1310	SHIM, Torque Rod Adjusting	STA-3-3	"	"	14	.05	.04
16T-1311	LOCKWASHER, Torque Rod	STA-3-2	"	"	2	.06	.14
16T-1312	SEAT, Spring	SF-5	"	"	2	11.75	4.25
16T-1313	BUSHING, Rubber, Torque Rod	STA-3-5A	"	"	4	.29	.30
16T-1314	CONNECTION, Torque Rod, Front	T-5	"	"	2	3.5	3.50
16T-1315	BOLT, Torque Rod, Front	STA-3-4	"	"	2	1.95	.80
16T-1316	WASHER, Torque Rod Bolt, Front	STA-3-6	"	"	2	.17	.06
16T-1317	DRAWBAR	DB-101	"	115	1	226.0	60.10
16T-1318	BUSHING, Drawbar	DB-1B	"	"	2	.23	.58
16T-1319	FLANGE, Drawbar Mounting	DB-1F	"	"	2	7.5	3.10
16T-1320	WASHER, Bar 3/8 x 2 1/2 x 8 1/4	P-19	"	"	2	2.2	.25
16T-1321	CHAIN, Safety. Includes Eye Bolt	SC-1	"	"	2	29.0	7.09
16T-1422	CLEVIS	60-S-6	BX	117	9	.4	.35
16T-1423	PIN	75-S-6	"	"	13	.1	.06
16T-1424	PIN	75-S-16	"	"	1	.1	.08
16T-1425	YOKE, Slide	BK-10183	"	"	1	.6	.60
16T-1426	YOKE, END, Threaded	60-S-88	"	"	1	.2	.60

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Part No.	Description	Mfg. Part No.	Symbol	Page	Quantity	Wt.	Price
16T-1427	GROMMET	G-1204	WRC	126	28	.02	.04
16T-1428	GROMMET	G-1142	"	"	1	.02	.04
16T-1429	BAR, Equalizer, Assembly	P-42-A	STL	117	1	34.4	4.00
16T-1430	TREE, Swivel	P-44	"	"	2	1.4	.33
16T-1431	ROD, Brake	M-5-A	"	"	4	2.0	.60
16T-1432	LEVER, Brake	PB-5	"	"	1	19.8	1.60
16T-1433	ROD, Parking Brake with Chain Att.	M-2	"	116	1	6.0	1.30
16T-1434	DRUM, Parking Brake	PB-D	"	"	1	0.6	.30
16T-1435	WHEEL, Ratchet and Shaft Assembly	PB-1X	"	"	1	11.4	5.00
16T-1436	Parking Brake PAWL, Bolt and Washer Assembly	PB-2	"	"	1	.9	.60
16T-1437	Parking Brake	CT-9	"	117	1	.03	.06
16T-1438	NIPPLE, Pipe 1/4" Close	CT-8	"	"	1	.15	.16
16T-1439	TEE, 1/4" Black ELBOW, 3/8" Black Street	CT-7	"	"	1	.1	.15
BENDIX — WESTINGHOUSE							
16T-1540	CLAMP, Tubing	202639	BWE	"	12	.02	.06
16T-1541	CONNECTOR, Tubing	217525	"	"	2	.18	.40
16T-1542	BODY	211982	"	"	2	.07	.24
16T-1543	SLEEVE	203754	"	"	2	.01	.05
16T-1544	NUT	203755	"	"	2	.10	.18
16T-1545	CONNECTOR	205824	"	"	1	.1	.25
16T-1546	BODY	202651	"	"	1	.07	.16
16T-1547	SLEEVE	200361	"	"	20	.003	.025
16T-1548	NUT	200360	"	"	20	.03	.12
16T-1549	HOSE, Assembly	215604	"	"	2	5.25	12.20
16T-1550	COUPLING, Hose	220165	"	118	6	1.12	3.76
16T-1551	BODY	212953	"	"	6	1.04	3.42
16T-1552	PLUNGER	212108	"	"	6	.01	.06
16T-1553	PLUG, Spring	212107	"	"	6	.03	.12
16T-1554	SPRING	212109	"	"	6	.01	.05
16T-1555	PIN	211155	"	"	6	.02	.15
16T-1556	RING, Packing	213630	"	"	6	.01	.07
16T-1557	CONNECTOR, Hose	215535	"	117	4	.37	1.14
16T-1558	GASKET	203608	"	118	6	.001	.10

Part No.	Description	Mfg. Part No.	Symbol	Page	Quantity	Wt.	Price
16T-1559	GUIDE	203609	BWE	118	6	.02	.15
16T-1560	SLEEVE	203610	"	"	6	.03	.24
16T-1561	SPRING	201045	"	"	6	.12	.24
16T-1562	NUT	203613	"	"	6	.06	.60
16T-1563	BODY (Body includes guide)	215992	"	"	4	.15	.80
16T-1564	HOSE, $\frac{3}{8}$ " O.D. x $\frac{3}{8}$ " I.D., 8'-11 $\frac{7}{8}$ " long	BW-101-M	"	"	2	1.2	3.24
16T-1565	UNION, Tubing	205134	"	117	2	.12	.50
16T-1566	BODY	200365	"	"	2	.04	.18
16T-1567	RESERVOIR	215689	"	"	1	25.0	13.35
16T-1568	BRACKET, Reservoir	205267	"	"	2	1.56	1.25
16T-1569	BRACKET, for 7" dia. reservoir	200974	"	"	4	.7	.60
16T-1570	COCK, Drain	215310	"	"	1	.37	1.16
16T-1571	BODY	203274	"	"	1	.25	.75
16T-1572	KEY	203275	"	"	1	.11	.25
16T-1573	COTTERPIN, .0625 in. x $\frac{1}{16}$ " long	212641	"	"	1	.01	.03
16T-1574	SPRING	203277	"	"	1	.001	.05
16T-1575	LOCKWASHER, Special	203276	"	"	1	.001	.02
16T-1576	WASHER, Special	203278	"	"	1	.001	.03
16T-1577	PLUG, Pipe $\frac{3}{8}$ "	203098	"	"	2	.06	.06
16T-1578	HOSE, Rubber cored length 2'	BW-101-M	"	"	1	.2	.75
16T-1579	CONNECTOR, Hose	215536	"	"	2	.31	1.00
16T-1580	BODY (Body includes guide)	215993	"	"	2	.12	.80
16T-1581	TAG, Emergency	201499	"	"	1	.01	.15
16T-1582	STUD, Service	201500	"	"	1	.01	.15
16T-1583	STUD, Clamping	205730	"	"	2	.56	1.60
16T-1584	BODY	201945	"	"	2	.25	1.68
16T-1585	WASHER	201946	"	"	2	.02	.07
16T-1586	CONNECTOR, Tubing	205053	"	"	5	.09	.25
16T-1587	BODY	200359	"	"	5	.04	.16
16T-1588	ELBOW, Tubing	205102	"	"	12	.09	.32
16T-1589	BODY	200437	"	"	12	.03	.22
16T-1590	VALVE, Quick Release	205000	"	119	1	1.12	5.20
16T-1591	BODY	204847	"	"	1	.75	2.10
16T-1592	COVER	211028	"	"	1	.3	1.85
16T-1593	DAMPNER	203328	"	"	1	.001	.18
16T-1594	SPRING	202588	"	"	1	.03	.54
16T-1595	DIAPHRAGM	211379	"	"	1	.04	.78

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Part No.	Description	Mfg. Part No.	Symbol	Page	Quantity	Wt.	Price
16T-1596	SEAT, Spring	202587	BWE	119	1	.02	.18
16T-1597	BRACKET, Mounting	P-35	STL	"	1	.05	.32
16T-1598	BUSHING, 5/8" x 1/4"	203497	BWE	117	1	.04	.08
16T-1599	ELBOW, Street, Brass 5/8"	214253	"	"	1	.1	.78
16T-1600	FILTER, Type E	221022	"	125	2	6.75	20.35
16T-1601	FLANGE, Pipe	214134	"	"	4	.6	1.14
16T-1602	SUPPORT, Strainer	214171	"	"	2	.05	1.80
16T-1603	BODY	214169	"	"	2	4.0	11.85
16T-1604	STRAINER	221053	"	"	2	.09	3.00
16T-1605	GASKET, Flange	214174	"	"	4	.005	.42
16T-1606	GASKET, Body	214173	"	"	2	.005	.34
16T-1607	CHAMBER, Dirt	214172	"	"	2	1.1	4.32
16T-1608	PLUG, Pipe	213530	"	"	2	.2	.30
16T-1609	BRACKET, Mounting	ACB-2	STL	117	2	1.0	.55
16T-1610	COUPLING, Dummy	220636	BWE	"	2	.4	.85
16T-1611	BODY	213607	"	"	2	.3	.84
16T-1612	CHAIN	212930	"	"	2	.1	.23
16T-1613	CHAMBER, Brake, Type F	220898	"	120	2	21.5	32.20
16T-1614	ROD, Push	220894	"	"	2	2.0	4.26
16T-1615	SPRING, Seal	214845	"	"	2	.5	.30
16T-1616	WASHER, Seal	214851	"	"	2	.5	.12
16T-1617	PLATE, Pressure	211853	"	"	2	5.3	6.83
16T-1618	DIAPHRAGM	200630	"	"	2	1.25	4.92
16T-1619	SPRING, Proportional	213088	"	"	2	1.1	1.84
16T-1620	LOCK WASHER, 5/8" Shakeproof	201777	"	"	4	.05	.02
16T-1621	YOKE	216797	"	"	2	.3	1.62
16T-1622	PLATE, Non-pressure	213081	"	"	2	9.5	13.86
16T-1623	NUT, 5/8-18 Jam	204781	"	"	2	.08	.05
16T-1624	STUD	211103	"	"	2	.12	.40
16T-1625	PIN, Clevis 5/8" dia. x 2 1/8"	210797	"	"	4	.18	.24
16T-1626	SLACK ADJUSTER	217904	"	121	6	5.00	12.00
16T-1627	BODY	212708	"	"	6	4.4	6.58
16T-1628	PLUG, Pipe 1/8"	203680	"	"	6	.02	.06
16T-1629	SHAFT, Worm	212630	"	"	6	.25	.40
16T-1630	BALL, Lock 1/8"	201327	"	"	6	.005	.025
16T-1631	SPRING	212633	"	"	6	.005	.06
16T-1632	PLUG, Screw	201326	"	"	6	.005	.14

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Part No.	Description	Mfg. Part No.	Symbol	Page	Quantity	Wt.	Price
16T-1633	WORM	212628	BWE	121	6	.15	.19
16T-1634	PLUG, Welsh $\frac{5}{8}$ "	212357	"	"	6	.005	.015
16T-1635	COVER	212631	"	"	12	.16	.32
16T-1636	RIVET	212632	"	"	30	.006	.015
16T-1637	BUSHING, $\frac{1}{2}$ " I.D. x $\frac{5}{8}$ " O.D. x $\frac{1}{2}$ " long	201225	"	"	18	.001	.22
16T-1638	CHAMBER, Brake Type B (Front Axle)	217751	"	122	2	9.0	26.65
16T-1639	ROD, Push	217092	"	"	2	1.5	3.04
16T-1640	YOKE, Complete with pin and cotter	205948	"	"	2	.40	1.25
16T-1641	PLATE, Pressure	202880	"	"	2	1.87	2.17
16T-1642	DIAPHRAGM	200001	"	"	2	.75	3.10
16T-1643	SPRING, inner	212294	"	"	2	.3	.50
16T-1644	SPRING, outer	212295	"	"	2	.4	.62
16T-1645	WASHER, Seal	214848	"	"	2	.1	.14
16T-1646	SPRING, Seal	214843	"	"	2	.1	.18
16T-1647	PLATE, Non-pressure	217269	"	"	2	4.0	10.00
16T-1648	PIN, Clevis $\frac{1}{2}$ " x $1\frac{1}{4}$ "	200054	"	"	2	.093	.12
16T-1649	VALVE, Relay Emergency	220353	"	123	1	10.0	50.20
16T-1650	NUT, Cap	202692	"	"	1	.19	.84
16T-1651	SPRING	202699	"	"	1	.001	.18
16T-1652	VALVE, Supply	202693	"	"	1	.02	.58
16T-1653	SEAT, Valve	202690	"	"	1	.06	.54
16T-1654	VALVE ASSEMBLY, Relay, includes 202692, 202699, 202693, 202690, 204568, 212135, 202869, 211367, 204650, 202695, 202697, 202691, 204651, 203227, 203016, 202698, and 202696	216035	"	"	1	5.5	27.72
16T-1655	BODY COMP., Valve includes 202690, 204568 and 212135	216071	"	"	1	2.68	15.24
16T-1656	BODY	204568	"	"	1	2.62	14.20
16T-1657	BUSHING, Guide	212135	"	"	1	.001	1.08
16T-1658	RING, Guide	202869	"	"	1	.012	.30
16T-1659	GASKET, Cover	211367	"	"	1	.01	.18
16T-1660	GUIDE, Diaphragm	204650	"	"	1	.09	1.56
16T-1661	DIAPHRAGM	202695	"	"	1	.06	.42
16T-1662	SEAT, Spring	202697	"	"	1	.03	.36
16T-1663	COVER, Top	202691	"	"	1	.39	2.10

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Part No.	Description	Mfg. Part No.	Symbol	Page	Quantity	Wt.	Price
16T-1664	SCREW, Diaphragm	204651	BWE	123	1	.07	.30
16T-1665	WASHER, Diaphragm	202696	"	"	1	.01	.36
16T-1666	SPRING	202698	"	"	1	.05	.78
16T-1667	GASKET	202735	"	"	1	.01	.18
16T-1668	NUT, Cap	202741	"	"	1	.15	.66
16T-1669	STEM, Valve	203379	"	"	1	.06	1.74
16T-1670	VALVE ASSEMBLY, Emergency in- cludes 202741, 203379, 202746, 202736, 202743, 202747, 202744, 213387, 200029, 204056, 204055, 213225, 213227, 211541, 211542, 213229, 213230, 213226, 211595, 211538, 211539, 211537, and 202737, 202738, 213228	220829	"	"	1	2.06	31.12
16T-1671	VALVE, Emergency, includes 202746 and 202736	215204	"	"	1	2.37	9.45
16T-1672	BODY, Emergency	202746	"	"	1	.03	8.30
16T-1673	BUSHING, Valve	202736	"	"	1	.06	.12
16T-1674	SUPPORT, Diaphragm	202743	"	"	1	.01	.30
16T-1675	SPRING, Emergency	202738	"	"	1	.01	.36
16T-1676	GASKET, Bottom Cover	202747	"	"	1	.01	.18
16T-1677	DIAPHRAGM	202744	"	"	1	.03	.18
16T-1678	WASHER, 1 1/2" Diameter	213387	"	"	1	.04	.14
16T-1679	NUT, Lock	200029	"	"	1	.02	.14
16T-1680	SPRING	204056	"	"	1	.012	.24
16T-1681	STRAINER, Air	204055	"	"	1	.04	1.20
16T-1682	COVER ASSEMBLY, includes 213225, 213227, 211541, 211542, 213229, 213228, 213230, 213226, 213224, 211595, 211538, 211539, and 211537	220305	"	"	1	1.69	6.25
16T-1683	COVER COMPLETE, includes 213225, 213224 and 211537	220304	"	"	1	1.503	3.06
16T-1684	BODY, Cover	213225	"	"	1	1.5	2.62
16T-1685	DIAPHRAGM ASSEMBLY, includes 213227, 211541, 211542, 211538 and 211539	221135	"	"	1	.021	2.47

Part No.	Description	Mfg. Part No.	Symbol	Page	Quantity	Wt.	Price
16T-1686	DIAPHRAGM	213227	BWE	123	2	.001	.20
16T-1687	FOLLOWER, Lower	211541	"	"	1	.005	.50
16T-1688	NUT, Lock	211542	"	"	1	.005	.25
16T-1689	SHIM, .011" thick-as many as necessary to close valve at 70-lb.-80-lb. pressure	213229	"	"	.....	.001	.06
16T-1690	SPRING	213228	"	"	1	.01	.19
16T-1691	CAP	213230	"	"	1	.1	.50
16T-1692	RING	213226	"	"	1	.05	.19
16T-1693	PIN, .125" Dia. x 1 1/2" long	213224	"	"	1	.001	.04
16T-1694	FOLLOWER, upper	211595	"	"	1	.004	.50
16T-1695	BALL AND STEM ASSEMBLY, includes 211538 and 211539	221227	"	"	1	.006	1.02
16T-1696	STEM	211538	"	"	1	.001	.60
16T-1697	BALL	211539	"	"	1	.005	.42
16T-1698	SEAT	211537	"	"	1	.002	.40
16T-1699	SEAT, Spring	202737	"	"	1	.02	.19
16T-1700	VALVE, Exhaust Check	221087	"	124	1	.20	2.70
16T-1701	BODY	214231	"	"	1	.16	2.30
16T-1702	DIAPHRAGM	214232	"	"	1	.01	.10
16T-1703	WASHER	214234	"	"	1	.005	.015
16T-1704	SCREW, Machine	214235	"	"	1	.01	.015
16T-1705	WASHER, Diaphragm	214233	"	"	1	.015	.06
16T-1706	TUBING, Copper 3/8" O.D. 24' long		"	117	2	.28 Ft.	5.40
16T-1707	TUBING, Steel 3/8" O.D. 20' long		"	"	2	.25 Ft.	4.50
16T-1708	LOOM, 1/8" 64' long		"	"	1	.045 Ft.	4.00
16T-1709	TUBING, Copper 1/2" O.D. 4' long		"	"	1	.375 Ft.	1.50
16T-1710	LOOM, 3/8" 4' long		"	"	1	.05 Ft.	.35
ELECTRICAL EQUIPMENT							
16T-1811	SOCKET ASSEMBLY	3529	WEB	127	1	1.5	2.80
16T-1812	CASE, Socket	20102	"	"	1	.75	.83
16T-1813	INSULATOR	110417	"	"	1	.03	.19
16T-1814	WASHER, Socket Terminal Bolt	110346	"	"	4	.01	.01
16T-1815	NUT, Terminal Bolt No. 10-32 SAE Brass	110477-A	"	"	4	.02	.025
16T-1816	WASHER, Plain, Brass	110110	"	"	4	.005	.008

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Part No.	Description	Mfg. Part No.	Symbol	Page	Quantity	Wt.	Price
16T-1817	WASHER, Shakeproof No. 10	110334	WEB	127	4	.005	.015
16T-1818	WASHER, Terminal Cup	110242	"	"	4	.01	.08
16T-1819	BOLT, Socket Terminal	110243	"	"	4	.02	.08
16T-1820	ASSEMBLY SOCKET CAP	110634	"	"	1	.19	.23
16T-1821	NUT, Jam Hex 1/4" SAE	110638	"	"	1	.01	.025
16T-1822	BOLT, Cap	110589	"	"	1	.03	.05
16T-1823	WASHER, Shakeproof 1/4"	110335	"	"	1	.001	.015
16T-1824	NUT, No. 10 SAE	110477	"	"	8	.01	.025
16T-1825	BLADE, Socket Contact	110247	"	"	4	.03	.05
16T-1826	INSERT, Socket Bakelite	3528	"	"	1	.27	.50
16T-1827	COVER, Socket Assembly	11935-B	"	"	1	.25	.42
16T-1828	COVER*	3567	"	"	1	.20	.19
16T-1829	BRACKET	20133	"	"	1	.03	.11
16T-1830	SPRING	110552	"	"	1	.01	.08
16T-1831	RIVET	110416	"	"	1	.01	.04
16T-1832	RING, Socket Cover	20099	"	"	1	.15	.10
16T-1833	SEAL, Socket Cover Ring	20098	"	"	1	.03	.25
16T-1834	SOCKET AND COVER MOUNTING ACCESSORY	11296-B	"	"	1	.06	.25
16T-1835	CABLE AND PLUG ASSEMBLY	3398	"	126	1	3.0	10.35
16T-1836	Cable only, less plugs and terminals	20248	"	"	1	1.0	4.47
16T-1837	PLUG, only, complete assembly	3695-E	"	"	2	1.0	3.72
16T-1838	PLUG TERMINAL ASSEMBLY	110942	"	"	2	.6	1.20
16T-1839	PLUG TERMINAL	4952	"	"	2	.4	.92
16T-1840	CONTACT CLIP	110886	"	"	8	.1	.19
16T-1841	CONTACT CLIP BOLT No. 8-32 x 1 1/8	110880-A	"	"	8	.05	.05
16T-1842	CONTACT CLIP LOCKWASHER No. 8	110913	"	"	8	.005	.015
16T-1843	CONTACT CLIP NUT, No. 8-32	110912	"	"	8	.02	.025
16T-1844	PLUG HANDLE	4951	"	"	2	.5	1.10
16T-1845	SCREW, Rd. Hd. Mach. No. 6-32 x 1 3/4	110879	"	"	4	.01	.05
16T-1846	LOCKWASHER No. 6	110336	"	"	6	.001	.015
16T-1847	NUT, Hex. No. 6-32	110898	"	"	4	.005	.025
16T-1848	PLUG ACCESSORY	110944	"	"	2	.125	.30
16T-1849	TERMINAL, Wire	110907	"	"	8	.005	.05
16T-1850	INSULATOR, Wire	110919	"	"	8	.001	.05
16T-1851	SEPARATOR, Wire	110889	"	"	2	.003	.06
16T-1852	CLAMP, Wire	110884	"	126	2	.05	.06

Part No.	Description	Mfg. Part No.	Symbol	Page	Quantity	Wt.	Price
16T-1853	SCREW, Wire Clamp No. 6-32 x 3/4	110908	WEB	126	2	.04	.04
16T-1854	WASHER, Clamp No. 6	110120-A	"	"	2	.005	.015
16T-1855	LAMP, Amber Clearance	541-A	KD	128	2	.9	.95
16T-1856	LAMP ASSEMBLY, Blackout Stop and Blackout Tail	3012-B	GL	"	1	1.19	2.70
16T-1857	LAMP ASSEMBLY, Service Stop and Tail and Blackout Tail	3012-A	"	"	1	1.23	2.75
16T-1858	LAMP, Red Blackout	541-RB	KD	"	2	.93	1.50
16T-1859	LAMP, Red Clearance	541-R	"	"	2	.9	.95
16T-1860	LAMP, Blue Blackout	541-BB	"	"	2	.96	1.50
16T-1861	HOUSING	1135	"	"	8	.57	.50
16T-1862	BACK PLATE	9526	"	"	8	.17	.20
16T-1863	LENS, Amber	4393	"	"	2	.14	.28
16T-1864	SCREW	6777	"	"	16	.02	.05
16T-1865	CLIP	1996	"	"	16	.01	.05
16T-1866	PAD, Felt	5140	"	"	8	.03	.05
16T-1867	BULB, 1 1/2 Cp. 6-8 Volt	55	"	"	8	.01	.20
16T-1868	GASKET	2878	"	"	8	.03	.05
16T-1869	NIPPLE	4684	"	"	8	.02	.08
16T-1870	WIRE	7136	"	"	8	.01	.10
16T-1871	REFLECTOR, Red	408-A	GL	126	4	.35	.50
16T-1872	REFLECTOR, Amber	408-B	"	"	4	.35	.50
16T-1873	UNIT, Upper RH (Blackout Stop)	5933121	"	128	1	.22	1.00
16T-1874	UNIT, Lower RH (Blackout Tail)	5933078	"	"	2	.30	1.00
16T-1875	DOOR, RH	5933055	"	"	1	.18	.40
16T-1876	SCREW, Lamp Door	5933069	"	"	4	.02	.05
16T-1877	BODY ASSEMBLY	5933231	"	"	2	.54	.95
16T-1878	UNIT, Upper LH (Service Stop)	5933104	"	"	1	.28	1.00
16T-1879	DOOR, LH	5933056	"	"	1	.18	.40
16T-1880	PLUG AND WIRE ASSEMBLY, Service Stop and Tail	5934001	"	"	1	.04	.35
16T-1881	PLUG AND WIRE ASSEMBLY, Blackout Tail and Blackout Stop	5934000	"	"	3	.03	.33
16T-1882	LENS with red filter	8013	KD	"	2	.19	.80
16T-1883	LENS, ruby	4392	"	"	2	.14	.28
16T-1884	LENS, with blue filter	8014	"	"	2	.19	.80
16T-1885	SET, Light Wire Harness, Long	LW-2L	STL	126	1	6.1	4.90

SPARE PARTS LIST

Numerical Index

Part No.	Description	Mfg. Part No.	Symbol	Page	Quantity	Wt.	Price
16T-1886	SET, Light Wire Harness, Short	LW-1S	STL	126	1	.75	.60
16T-1887	CLIP, Wire	10824	BX	"	23	.03	.04
16T-1888	SWITCH, Blackout	2480	HC	"	1	.53	1.04
FIFTH WHEEL LOCK							
16T-1989	FIFTH WHEEL LOCK ASSEMBLY	FW-2A	KTC	129	1	18.5	13.10
16T-1990	BODY	F-1011-A	"	"	1	7.5	9.07
16T-1991	HANDLE	F-1010	"	"	1	2.4	6.08
16T-1992	PIN	F-1009	"	"	1	8.1	2.55
16T-1993	SPRING	F-1013	"	"	1	.2	.45
16T-1994	PLATE, Lower	P-28	STL	129	1	7.4	.50
16T-2095	RING, Lashing	TR-15	"	.....	15	3.3	1.50
16T-2096	CLAMP, Lashing Ring	TC-15	"	.....	15	1.0	.50
16T-2198	RIM, Demountable, 15 x 7 (Includes Ring SR96R)	96R-1X	"	113	9	37.4	.....
16T-2199	SPACER, Rim (15 x 3%)	SB-78F34	"	"	4	5.5	3.50
16T-2200	WHEEL, Demountable, 20 x 8 (Includes ring 32591-E10)	44470-D1	BW	"	4	89.0	19.80
16T-2201	RING, Side	32591-E10	"	"	4	4.5	2.68
16T-2302	KING PIN	KP-1	STL	.....	1	4.8	6.50
16T-2303	WASHER, Malleable 1 1/4" King Pin	M-20	"	.....	1	1.3	.34
16T-2304	LOCKWASHER, King Pin 1 1/4"	STA-3-2	"	.....	1	.06	.14
16T-2305	NUT, 1 1/4 SAE King Pin	STA-3-1	"	.....	1	0.5	.20
TOOLS							
16T-2406	BAR, Leverage	1150-C	"	130	1	1.9	1.50
16T-2407	WRENCH, Universal Rim	1150-A	"	"	1	4.9	2.24
16T-2408	WRENCH, Spindle Nut	SW-5F	"	"	1	1.8	.65
16T-2409	JACK, Simplex Hydraulic, 12 Ton includes handle 19"	12-H-J	TK	"	1	28.7	23.40
16T-2410	LOCK	773	YA	130	1	.4	1.94
16T-2411	KEY, LOCK	TK-5	"	"	3	.01	.....
16T-2412	SCREW DRIVER 10"	TK-4	"	"	1	.19	.38
16T-2413	PLIERS 6" Combination Pair	TK-3	"	"	1	.4	.44
16T-2414	HAMMER	TK-2	"	"	1	1.27	.68
16T-2415	WRENCH, 10" Crescent Type	TK-2	"	"	1	1.03	1.52

Part No.	Description	Mfg. Part No.	Symbol	Page	Quantity	Wt.	Price
16T-2416	BAG, Tool Kit	C-82	STL	130	1	.37	1.72
16T-2417	BINDER, Load Complete	M-42	MCK	131	3	.21	10.90
16T-2418	CHAIN, 1/2" x 18' with grab hook and ring FLOOR	7179-E	STL	"	3	52.5	11.34
16T-2517	FLOOR, 2 1/2" White Oak, Rot Inhibitive Treated						On Appl.
16T-2518	ANGLE, Floor Clip, Short	CA-1S	"		2	13.1	1.75
16T-2519	ANGLE, Floor Clip, Medium Rt.	CA-2MR	"		1	19.8	2.10
16T-2520	ANGLE, Floor Clip, Medium Lt.	CA-2ML	"		1	19.8	2.10
16T-2521	ANGLE, Floor Clip, Long	CA-3L	"		1	29.1	2.60
TIRE CARRIER							
16T-2622	TIRE CARRIER ASSEMBLY	FRA-T12-15SP	NAS	132	1	46.0	16.00
16T-2623	MAIN MEMBER UNIT, consists of following parts welded together:						
16T-2624	MAIN MEMBER	UAS-15	"	"	1	30.8	10.90
16T-2625	END LUG	T-1R-A	"	"	1	19.8	6.10
16T-2626	BRACKET, attaching	T-2	"	"	1	1.0	1.45
16T-2627	SHOE, Rim Spacer	T-1R-B	"	"	2	2.0	1.38
16T-2628	BOLT, Securing	T-3	"	"	4	1.0	.50
16T-2629	SHAFT, with ratchet welded in place	T-9R	"	"	2	1.0	.68
16T-2630	CABLE, 5/6" long	T-6 & T-8	"	"	1	7.0	2.22
16T-2631	NUT, Safety	T-5	"	"	1	.4	2.20
16T-2632	PAWL	T-10-A	"	"	2	.37	.40
16T-2633	MEMBER, Pick-up	T-7	"	"	1	2.0	.27
16T-2634	U-BOLT	T-4R	"	"	1	4.75	2.40
		T-11	"	"	2	.3	.16
TIRES							
16T-2735	TIRE, Pneumatic 8:25 x 15		USR		9	78.0	On Appl.
16T-2736	TUBE, Inner 8:25 x 15 Stem No. TR-179		"		4	9.5	"
16T-2737	TUBE, Inner 8:25 x 15 Stem No. TR-177E12		"		5	9.5	"
16T-2738	TIRE, Pneumatic 9:00 x 20		"		4	100.0	"
16T-2739	TUBE, Inner, 9:00 x 20 Stem No. TR-175E12		"		4	13.0	"
16T-2740	FLAP, 20" Rim		"		4	1.0	"

SPARE PARTS LIST

Numerical Index

Part No.	Description	Mfg. Part No.	Symbol	Page	Quantity	Wt.	Price
16T-2841	NAME PLATE	M-24	STL	105	1	.3	“
16T-2842	SCREW, Drive No. 6 x 3/8" U. Brass Plated						“
16T-2843	FITTING, Zerk 1/8"	M-29	“	.....	8	.005	.02
16T-2844	FITTING, 67 1/2° Zerk 1/8"	1610	AD	109	27	.03	.06
16T-2845	BOX, Tool	1612	AD	111	4	.03	.10
16T-2846	CAP, Valve	TB-100	STL	.....	1	37.0	10.30
			SV	.....	13	.01	.....
COMMON HARDWARE							
16T-2946	BOLT, 1/2" x 1 5/8" SAE		STL		16	.15	.12
16T-2947	NUT, 1/2" SAE		“		80	.04	.05
16T-2948	LOCKWASHER, 1/2"		“		69	.015	.05
16T-2949	RIVET, Brake Lining 3/16" x 5/8" Tubular		“		192	.01	.015
16T-2950	BOLT, 5/8" x 1/2" Hex USS		“		36	.03	.08
16T-2951	LOCKWASHER, 5/8"		“		78	.003	.02
16T-2952	BOLT, 5/8" x 2 1/4" SAE Hex		“		8	.3	.08
16T-2953	NUT, 5/8" SAE		“		12	.07	.05
16T-2954	LOCKWASHER, 5/8"		“		16	.03	.03
16T-2955	CUT WASHER, 5/8"		“		17	.08	.02
16T-2956	NUT, 3/4" SAE		“		22	.09	.08
16T-2957	LOCKWASHER, 3/4"		“		22	.03	.03
16T-2958	NUT, 7/8" SAE Castle		“		4	.18	.12
16T-2959	NUT, 1" SAE Castle		“		2	.28	.12
16T-2960	PIN, Cotter 1/8" x 1 1/2"		“		5	.01	.02
16T-2961	PIN, Cotter 1/8" x 1"		“		18	.01	.02
16T-2962	WASHER, 1/2" Plain		“		1	.05	.02
16T-2963	BOLT, 3/8" x 2 1/4" Carriage		“		1	.09	.04
16T-2964	NUT, 3/8" USS		“		9	.03	.03
16T-2965	LOCKWASHER, 3/8"		“		53	.006	.02
16T-2966	NUT, 5/8" USS		“		6	.08	.06
16T-2967	BOLT, 3/8" x 3/4" Rd. Head Stove USS		“		57	.01	.02
16T-2968	NUT, 3/8" USS		“		57	.005	.02
16T-2969	LOCKWASHER, 3/8" x 6" USS		“		57	.002	.02
16T-2970	BOLT, Sq. Head 3/8" x 6" USS		“		2	.2	.08
16T-2971	NUT, Hex 3/8" USS		“		2	.03	.03
16T-2972	BOLT, 3/8" x 1" USS		“		4	.07	.06

Part No.	Description	Symbol	Quantity	Wt.	Price
16T-2973	NUT, Hex 1"-14 Spec. SAE Thin	STL	2	.15	.18
16T-2974	BOLT, $\frac{1}{8}$ " x $\frac{3}{8}$ " SAE	"	2	.04	.03
16T-2975	NUT, $\frac{1}{8}$ " SAE	"	38	.02	.02
16T-2976	BOLT, Hex Head $\frac{3}{8}$ "-16 x 1" USS	"	4	.05	.06
16T-2977	CAPSCREW, $\frac{3}{8}$ " x 1" USS	"	4	.07	.06
16T-2978	BOLT, Hex Head $\frac{3}{8}$ " x 1"	"	38	.05	.04
16T-2979	NUT, Hex $\frac{3}{8}$ -24 SAE	"	38	.03	.04
16T-2980	STUD, $\frac{5}{8}$ " dia. x $2\frac{1}{8}$ " long	"	4	.15	.25
16T-2981	BOLT, Hex Head $\frac{1}{8}$ " x $\frac{3}{4}$ " SAE	"	36	.03	.03
16T-2982	PIN, Cotter $\frac{1}{8}$ " x $1\frac{1}{4}$	"	4	.01	.04
16T-2983	NUT, Hex $\frac{5}{8}$ " SAE Castle	"	4	.07	.09
16T-2984	PIN, Cotter $\frac{1}{8}$ " x $\frac{1}{2}$	"	1	.005	.015
16T-2985	NUT, Hex $\frac{1}{4}$ " SAE Castle	"	1	.02	.04
16T-2986	SCREW, Cap $\frac{1}{8}$ -18 USS Hex Head	"	4	.04	.05
16T-2987	NUT, $\frac{1}{4}$ " SAE	"	5	.02	.015
16T-2988	CAPSCREW, Hex Head $\frac{1}{4}$ " x 1" SAE	"	2	.02	.08
16T-2989	CAPSCREW, Hex Head $\frac{1}{4}$ " x $\frac{3}{4}$ " SAE	"	2	.015	.08
16T-2990	LOCKWASHER, $\frac{1}{4}$ " SAE	"	4	.003	.02
16T-2991	BOLT, Rd. Hd. Stove $\frac{1}{4}$ " x $\frac{3}{4}$ " USS	"	32	.02	.04
16T-2992	NUT, $\frac{1}{4}$ " USS	"	36	.005	.02
16T-2993	LOCKWASHER, $\frac{1}{4}$	"	36	.015	.02
16T-2994	BOLT, $\frac{1}{2}$ " x $3\frac{1}{4}$ " USS	"	1	.23	.04
16T-2995	NUT, $\frac{1}{2}$ " USS	"	1	.04	.04
16T-2996	BOLT, $\frac{1}{2}$ " x 1 SAE	"	4	.14	.05
16T-2997	BOLT, $\frac{3}{8}$ " x $3\frac{1}{4}$ " Carriage USS	"	129	.12	.03
16T-2998	NUT, $\frac{3}{8}$ " USS Hex Speed lock nut	"	129	.03	.04
16T-2999	BOLT, $\frac{5}{8}$ " x 2 USS	"	1	.32	.05
16T-3000	WASHER, Flat $\frac{3}{8}$	"	4	.04	.02
16T-3001	BOLT, $\frac{1}{8}$ " x $\frac{3}{4}$ " Hex USS	"	12	.1	.05
16T-3002	LOCKWASHER, $\frac{1}{8}$	"	12	.02	.02
16T-3003	COTTER PIN, $\frac{1}{4}$ " x $2\frac{1}{2}$	"	12	.03	.03
16T-3004	BOLT, Hex $\frac{1}{2}$ " x $3\frac{1}{2}$ " SAE	"	48	.29	.07
16T-3005	NUT, U-Bolt, $\frac{7}{8}$ " SAE Hex High	"	8	.2	.14
16T-3006	LOCKWASHER, $\frac{7}{8}$	"	8	.06	.03
16T-3007	BOLT, $\frac{3}{4}$ " x 2 USS	"	4	.5	.08
16T-3008	NUT, $\frac{3}{4}$ " USS	"	4	.1	.12

KEY TO SYMBOLS

- SFA—Standard Forge & Axle Co., Montgomery, Ala.
TIM—Timken Roller Bearing Co., Canton, Ohio
ERM—Erie Malleable Iron Co., Erie, Pa.
STL—Steel Products Co., Inc., Savannah, Ga.
BX—Bendix Products Corp., South Bend, Ind.
WRC—Western Rubber Co., Goshen, Ind.
BWE—Bendix Westinghouse Automotive Air Brake Co.,
Elyria, Ohio
WEB—Warner Electric Brake Mfg. Co., Beloit, Wis.
KD—KD Lamp Co., Cincinnati, Ohio
GL—Guide Lamp Division, GMC, Anderson, Ind.
HC—Cole Hersee Co., Boston, Mass.
KTC—Kingham Trailer Co., Louisville, Ky.
BW—Budd Wheel Co., Detroit, Mich.
TK—Templeton Kenly Co., Chicago, Ill.
YA—Yale & Towne Mfg. Co., Philadelphia, Pa.
MCK—McKissick Products Corp., Tulsa, Okla.
NAS—L. B. Nash & Bros., Chicago, Ill.
USR—United States Rubber Co., New York, N. Y.
AD—Alemite Division, Stewart-Warner, Chicago, Ill.
SV—A. Schrader's Sons, Brooklyn, N. Y.
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