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sgt. tirman

It Pays To Be A Little Crazy

The other day we saw an amphibious tank that had been at Kwajalein. The steering vanes were torn off, the hull was so corroded that in some places you could put your fist through the sheet metal, and spots of rust stained the electrical connections.

But open the breech of the 75mm howitzer on the vehicle: The metal is bright and shiny as sterling silver, the tube slick as a hound's tooth, and every moving part clicks and functions like a hundred-dollar watch.

Somebody explained, "The boys really take care of their guns. They're always cleanin' and polishin' them. They know their life depends on them."

You know what we're going to say next—your life depends on the condition of your vehicle, too. You'll shout Amen if you've ever played run-sheepy-run in a tank with the Jerries just up ahead—or high-

balled a 6x6 full of infantry replacements up into the line at Anzio in broad daylight with the enemy artillery zeroed-in on you, like one of our correspondents did.

Well, how come then, do we see a bright and shiny howitzer on a dilapidated vehicle? Howitzer and vehicle were both going to the same place, both operating in dangerous and unknown Japanese waters. Why was the howitzer stripped and ready for adventure—and the vehicle beat to its socks?

One scientific answer is: "A gun is a gun and y'always take care of y'gun. It's y' p'tection."

Another answer is in the heads of the men who man guns. It has got to do with psychology. It goes like this: the men on the guns are worry-warts. Their noggins are full of bad dreams, dreams of guns refusing to go back into battery, of firing-solenoid failures, of breeches not closing—all in the face of banzai charges.

The only relief is to wipe out the bad dreams of guns failing—by checking, double-checking, and triple-checking every possible point of failure. And when this is done, these failures don't happen.

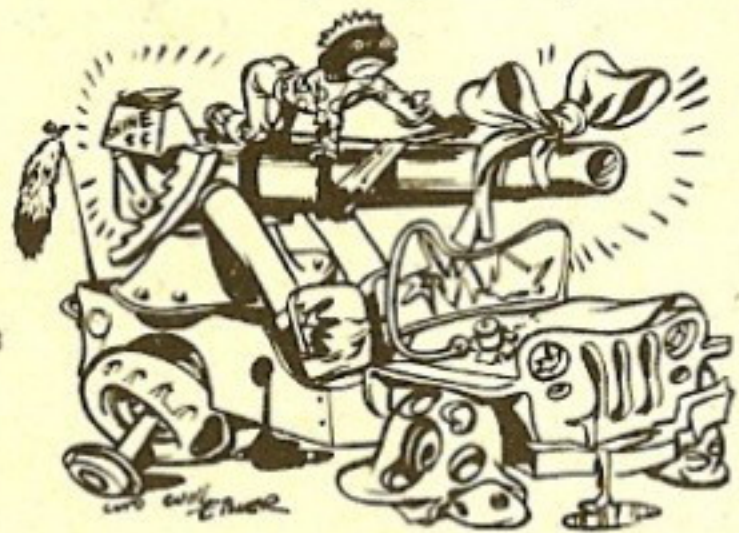
That's kind of wrapping it up in a small ball of wax, but think about it for a minute and see if it isn't true.

Well, if it's true for guns, isn't it true for vehicles? Yes, it's true for vehicles. Vehicles go where the guns go. Sometimes vehicles rush in where howitzers fear to tread.

Well, in spite of all this, why do we keep seeing beautiful guns on beat-up vehicles? Don't ask us, Brother, all we know is what we read into the psychology books. And what we read into the psychology books is this:

The man who bites his fingernails over the amount and condition of the oil in his engine will never have a bearing failure. The jitterbug who runs his nervous eyes over every electrical wire and connection will never have a vehicle ignition system poop out in the middle of Anxious Alley. The guy who is loony about lubing will never have a winch welsh on him when he's fender-deep in enemy mud.

These are the screwballs who will be brung back alive. These are the **Preventive Maniacs** . . .



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ARMY MOTORS MAGAZINE is printed monthly with the approval of the Bureau of the Budget, Executive Office of the President. It is published in the interest of organizational maintenance by the Preventive Maintenance Branch, Maintenance Division, Office, Chief of Ordnance-Detroit.

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Fig. 1—Here's what you're looking for—the pop-off in the middle of the propeller-shaft universal-joint cross.

New Pop-Off Valves Now Ready

ORDER THIS NEW RELIEF VALVE AND GREASE-GUN ADAPTER AND PROTECT YOUR PROP-SHAFT U-JOINTS

In the September issue, we told you that there was a pop-off or grease-relief valve in the middle of the cross of the propeller-shaft U-joint (Fig. 1) on your 2½-ton, 6x6 GMC's. (This relief valve is also in some Chevrolet U-joint crosses, in the winch propeller-shaft of some Dodges and maybe also in the propeller shafts of some track and other vehicles.)

The story is that the pop-offs now on your vehicles are low-pressure relief valves. You pump up 80 lbs. pressure with your hand gun and the grease pops out the valve. It doesn't work down around the trunnion bearings at the ends of the cross.

To correct this condition, we told you the Ordnancers were buying a new high-pressure relief valve you could substitute for the old low-pressure relief valve.

It gives us great pleasure to announce at this time that the new high-pressure pop-offs (Fig. 2) are ready. Requisition Valve, lubricating, pressure relief, 1500 lbs., 1/8 in. 27 NPT male, short, Fed. Stock No. 45-V-18129.

Go over your GM's, Chevies, Dodges, and whatever else you

suspect might have pop-offs in the middle of prop-shaft U-joint crosses, and order enough of the new valves to take care of them. Fig. 1 shows you what you're looking for.

Tied in with prop-shaft U-joint bearing failures is the little grease-gun adapter furnished with a lot of our vee-hicles.

This little adapter, as you well

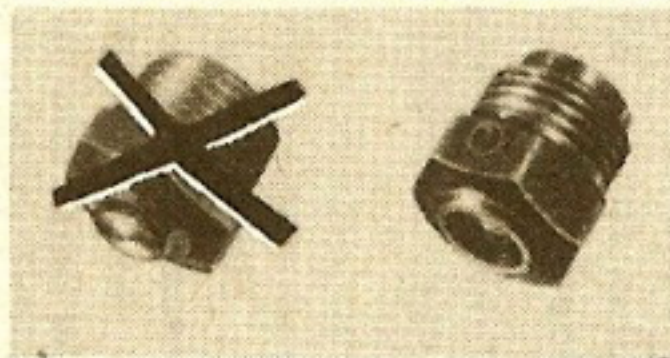


Fig. 2—X marks the old valve; at right—the new pop-off.

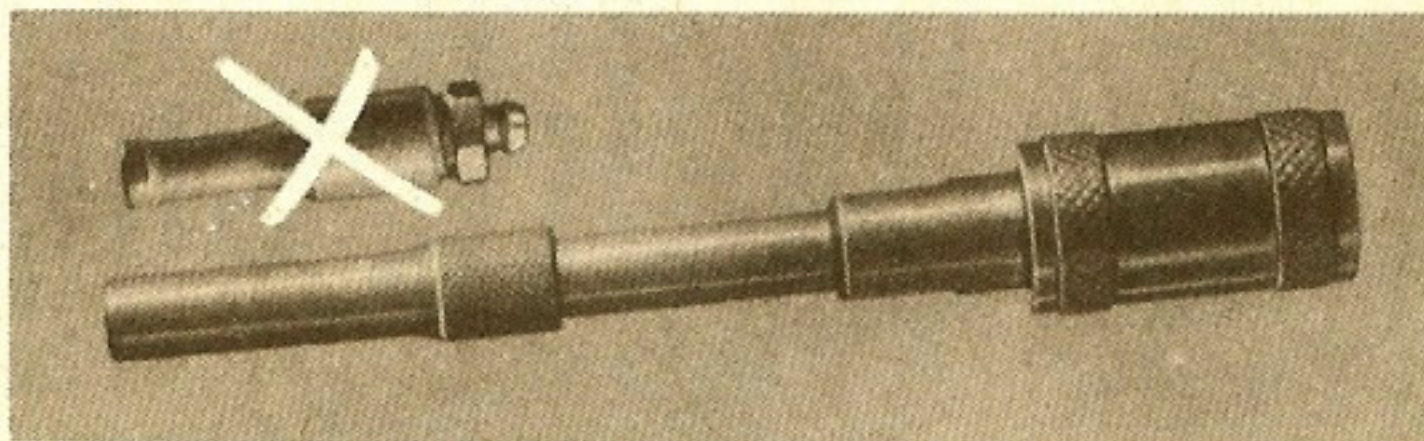


Fig. 3—As we told you in September, X marks the old grease-gun adapter; at right—the new thin-stem adapter.

know, is a nuisance to use in such places as the ¼-ton jeep prop-shaft. Furthermore, grease squirts from around the snout of the little adapter because it doesn't hold tight enough against the fitting.

Therefore, we'd like to repeat what you read in the September book: There's a new, easy-to-use, guaranteed adapter now available (Fig. 3). Order Adapter, lubricating, hydraulic-to-push type, thin stem, w/locking sleeve, Fed. Stock No. 41-A-14-825.

Jeep Frame Reinforcement

"THAT'S ENOUGH CRACKS OUT OF YOU," SAID SGT. CROCKER TO THE REAR END OF HIS 1/4-TON

When the goin' gets rough and your 1/4-ton jeep frame cracks and breaks around the rear spring-hangers, a little reinforcement will probably prevent a repeat performance. After Sgt. Cecil Crocker saw a bunch of his Signal Corps outfit's jeeps in North Africa limping home with broken frames, he knocked out a reinforcing plate to knock out the trouble.

You can do it, too, with the aid of the salon photographs on these pages (showing the job on a Willys).

Then, when the last bolt's in place, you'll have approximately the same sturdy frame reinforcement as the manufacturers (Willys and Ford) are now giving 1/4-tons on the assembly line. This recent production change reinforces the frame at the same points and with just about the same plates as those used by Sgt. Crocker. Looks like he started something.

Incidentally, some later-vintage jeeps have a reinforcing plate on the inside of the frame channel at the spring hanger—but they can stand this extra reinforcement, too, when the going really gets rugged.

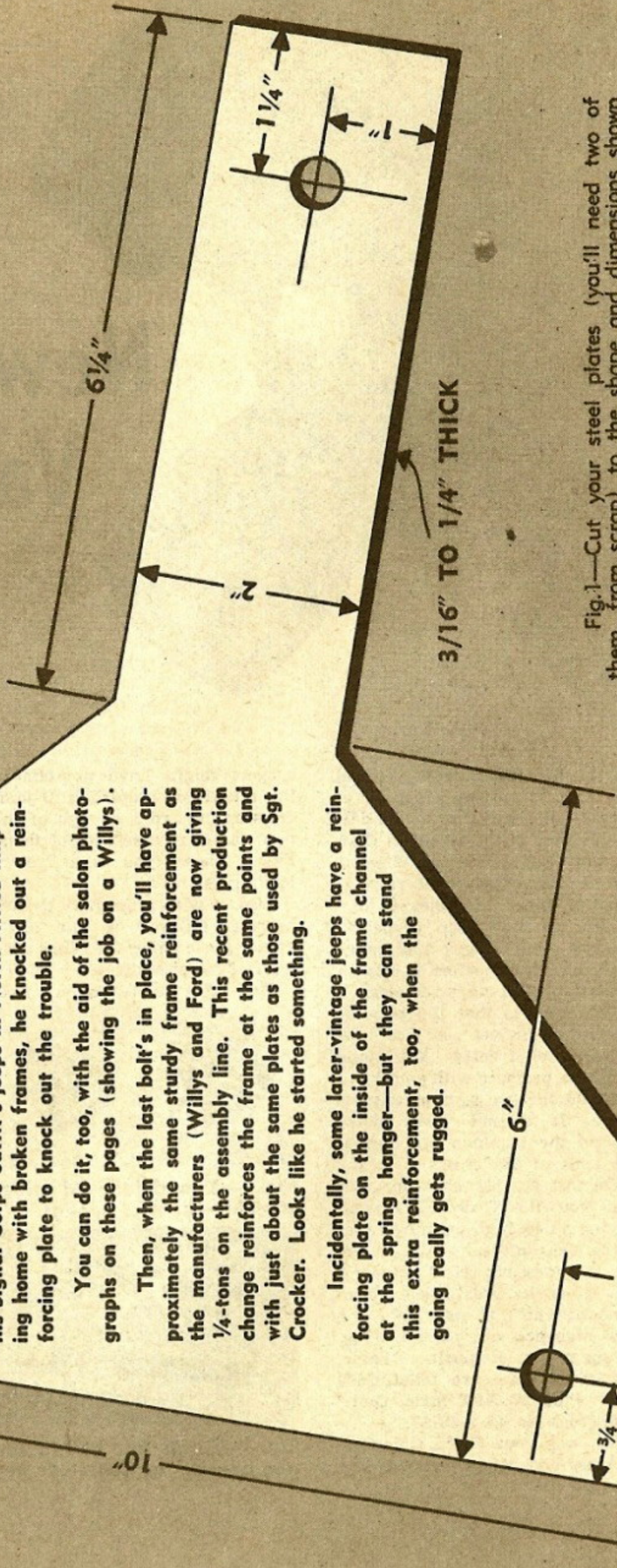


Fig. 1—Cut your steel plates (you'll need two of them, from scrap) to the shape and dimensions shown here. Make those three holes with a 3/8" drill.

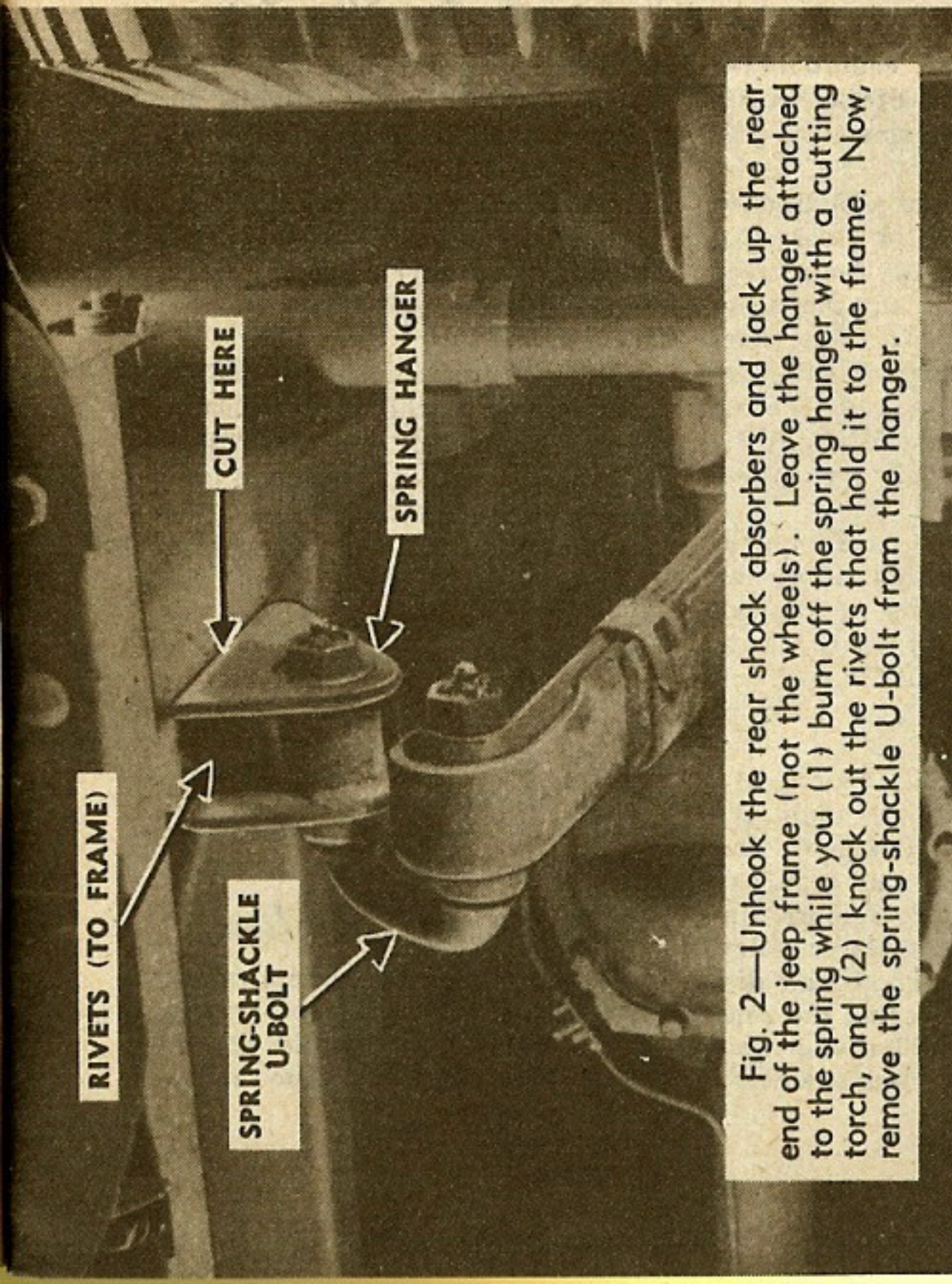


Fig. 2—Unhook the rear shock absorbers and jack up the rear end of the jeep frame (not the wheels). Leave the hanger attached to the spring while you (1) burn off the spring hanger with a cutting torch, and (2) knock out the rivets that hold it to the frame. Now, remove the spring-shackle U-bolt from the hanger.

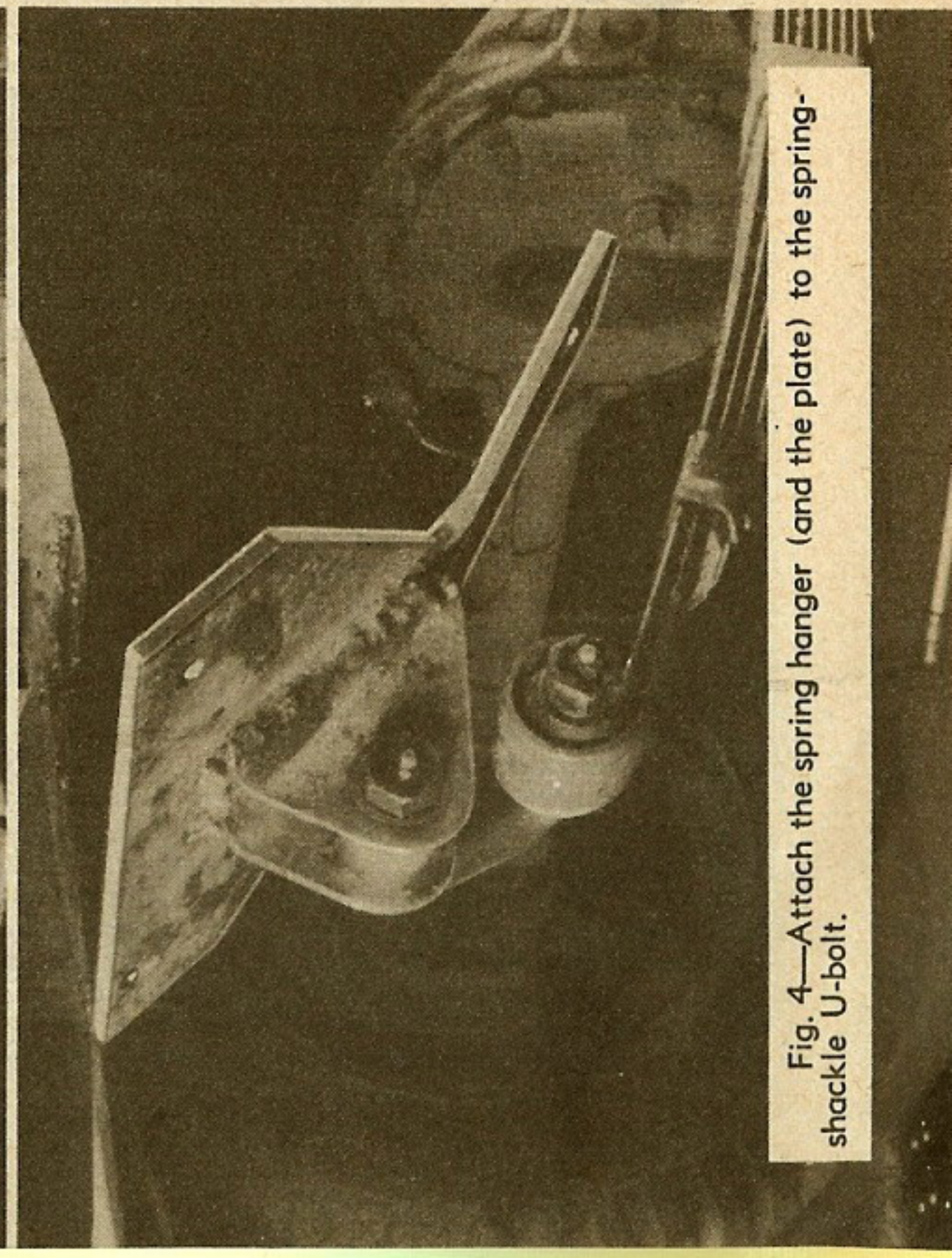


Fig. 4—Attach the spring hanger (and the plate) to the spring-shackle U-bolt.

Fig. 3—Before welding the spring hanger to the plate (as it's shown here), fit the plate snugly to the frame by bending up the tongue with a hammer. On the plate, mark the exact location of the rivet holes already in the frame. On the frame, mark the location of the holes you've drilled in the plate. Drill $\frac{3}{8}$ " holes in both the plate and the frame at the spots you've marked. Then weld the spring hanger onto the plate, as above, so the rivet holes in the hanger meet the holes in the plate.

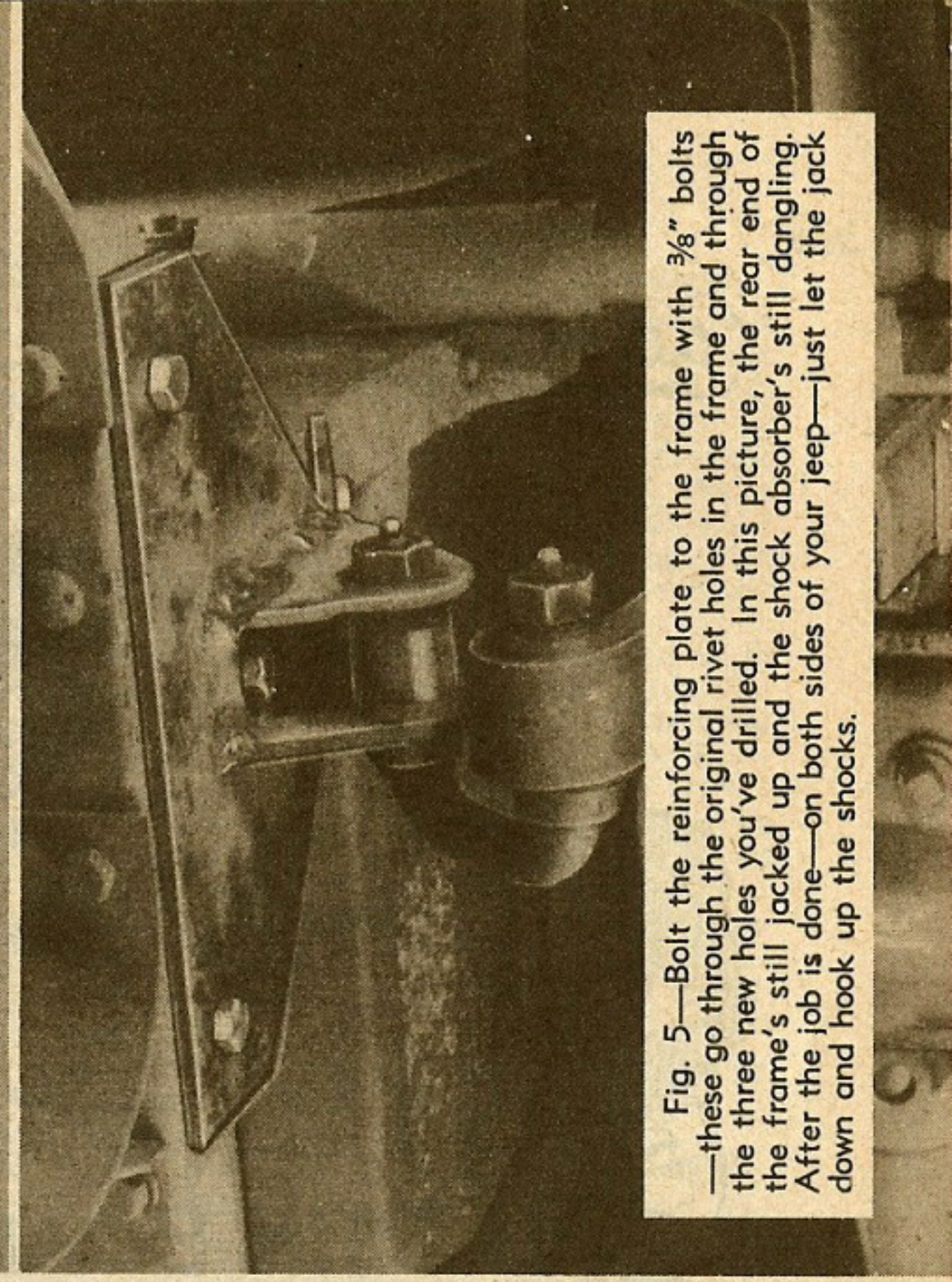
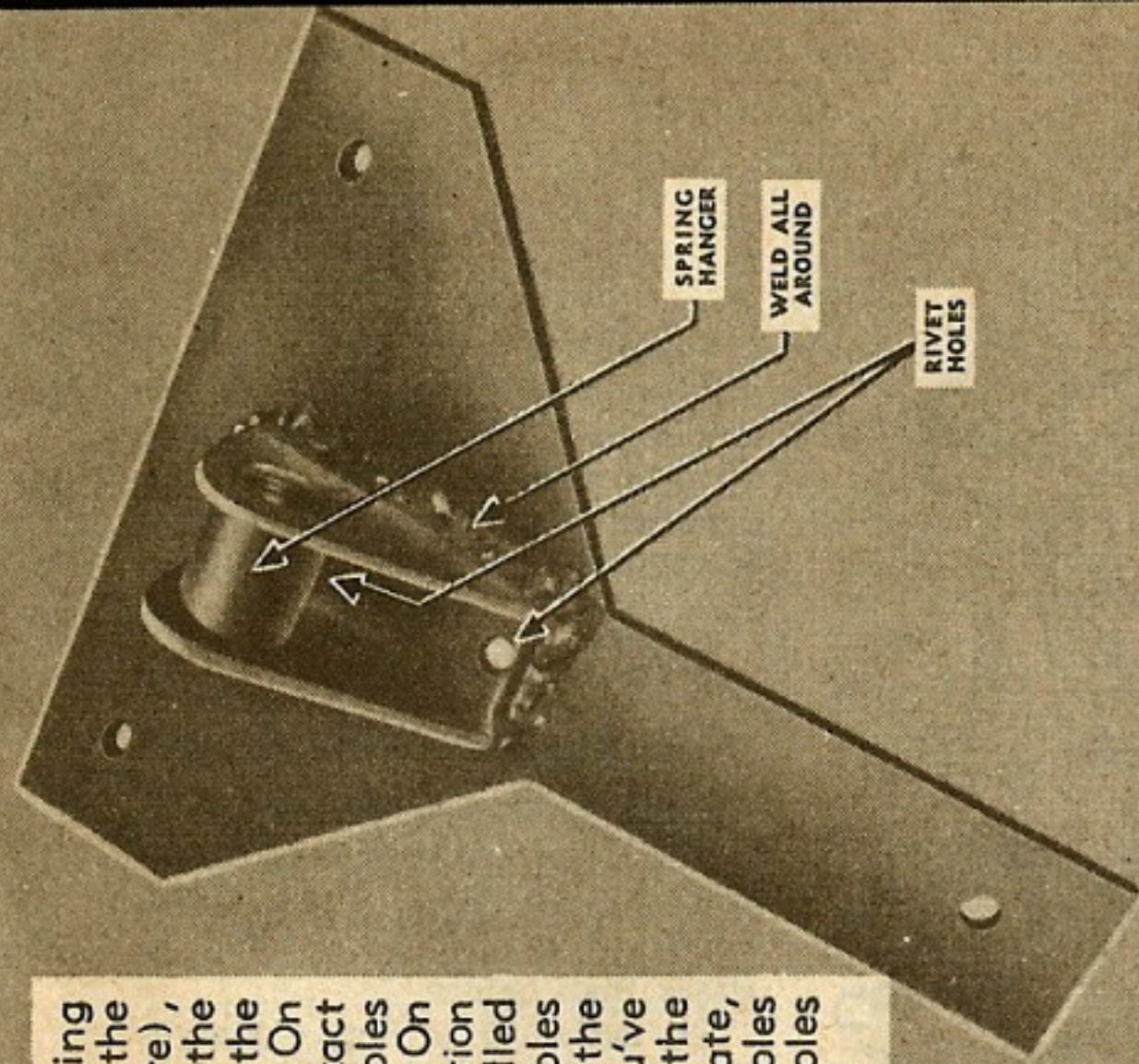
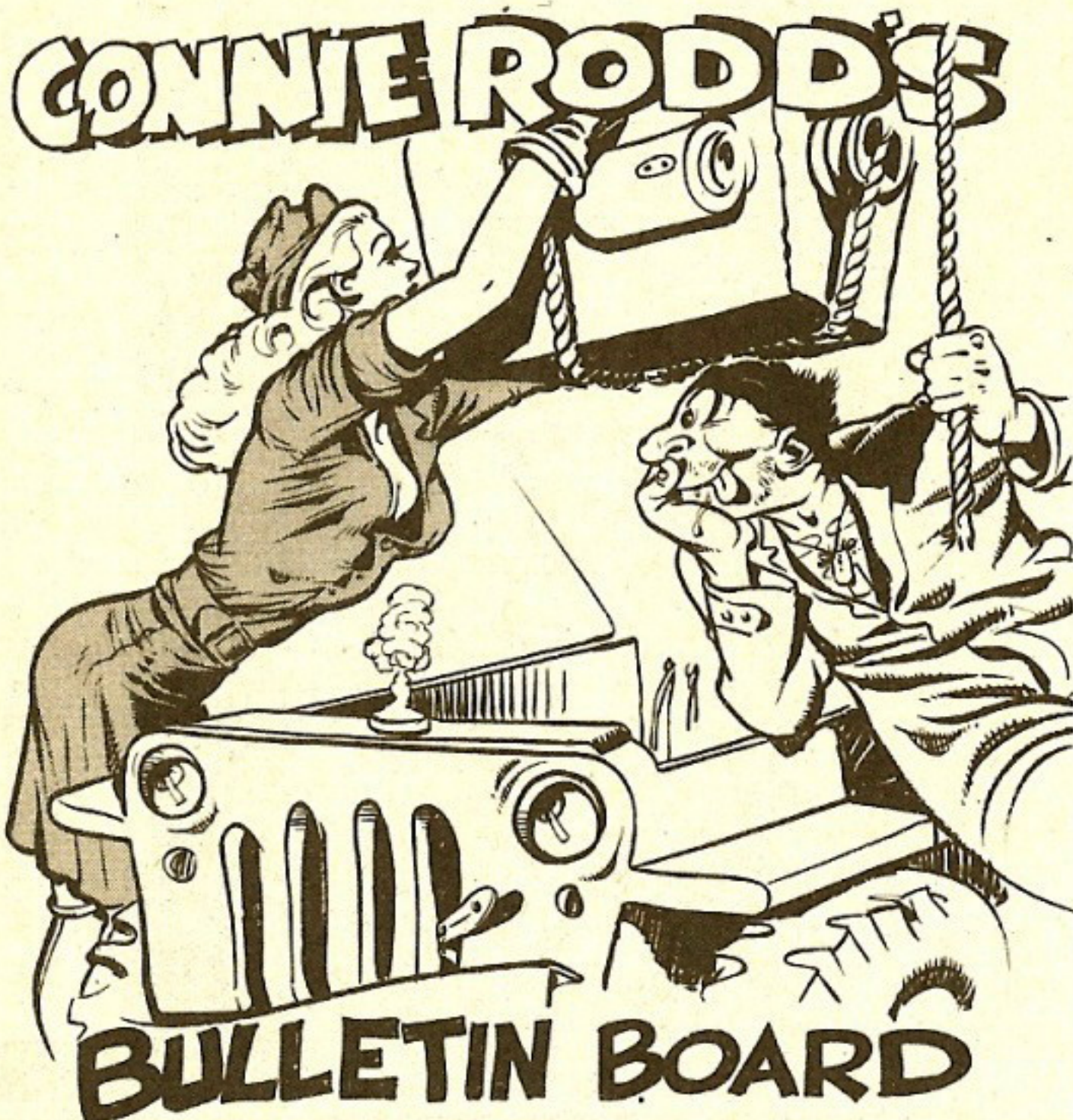


Fig. 5—Bolt the reinforcing plate to the frame with $\frac{3}{8}$ " bolts—these go through the original rivet holes in the frame and through the three new holes you've drilled. In this picture, the rear end of the frame's still jacked up and the shock absorber's still dangling. After the job is done—on both sides of your jeep—just let the jack down and hook up the shocks.



Sea-Resistant Paint

Traipsin' along the Pacific coast, I saw droves of trucks, tanks, etcetera, decked out in mottled coats of red and green. The red turned out to be red lead which the boys were using for touch-up purposes. The salty Pacific coast being so corrosive to paint, the vehicles were sporting more red than olive drab.

Now, not only is red lead no good for camouflage purposes, but also it is nowhere near as good for touch-up as a certain primer I happen to know about—which is also available overseas. This primer was specially procured for people having sea-water corrosion trouble. The primer is **Primer, zinc-chromate, Fed. Stock No. 52-P-20624**. It comes in 1-gallon cans.

Here's how to put it on: Clean the rust and corrosion off the spot or area to be retouched by wire brushing or steel wooling. Give the area a metal-conditioning treatment by mixing one part of metal-conditioner phosphoric acid to two parts of water. That's Acid,

phosphoric, metal conditioner—wipe-off type, Fed. Stock No. 51-A-1302. Likewise comes in 1-gallon cans.

Apply the metal conditioner with a wire brush or steel wool and let it soak. While the surface is still wet, loosen up the scum with your wire brush or steel wool. With the surface still wet, wipe it clean with a rag. There'll be a white film that forms as the surface dries. Don't try to remove it.

Since the metal conditioner is corrosive to paint, get rid of any that might be hiding in the spot to be touched up by dousing with water. (Leftover conditioner will "lift off" the new coats of paint you apply.)

Let the surface dry thoroughly. You're now ready to apply the zinc-chromate metal primer. Paint or spray on a fairly thin first-coat, let air-dry from 2 to 8 hours. Apply a second coat, let air-dry. Apply a third coat and let air-dry.

Finish up by covering the zinc-chromate primer with a single coat of olive-drab lusterless enamel.

You'll find the results a hell of a lot more resistant to salt water and besides, you'll be able to paint a respectable coat of OD over the zinc-chromate—which I hear you can't do with red lead.

M5 and M5A1 1000-mile Check-up

Next time you perform the 1000-mile or 100-hour services on your M5 or M5A1 light tanks, you'll have one more thing to check than before.

TB ORD 176 (5 Sep. 44) gives complete instructions for a periodic lubrication and adjustment of the turret support-bearings and hold-down rollers.

Incidentally, the support bearing is listed in the Service Parts Catalog under Item Stock No. G103-03-00255. **That's wrong**, Requisition the bearings by either Item Stock No. M5-02-02110 or H12-700234.

Trailer Stop-Lights on 5-ton Tractor

Here's the reason for your trouble if the trailer lights on your International Harvester 5-ton, 4x2 tractor truck (Model H-542-9, serial numbers 501 to 624; and Model H-542-11, serial numbers 501 to 1317) haven't been lighting when you throw on the switch.

During production, the trailer stop-lights on the models listed were connected to the "BK" terminal on the trailer coupling-socket. This is the wrong connection. The lights won't operate unless they're fastened to the terminal marked "SL" on the trailer coupling-socket.

You just switch the connection. Hook the stop lights to the "SL" terminal and leave the "BK" terminal open. It's as simple as that to make the stop lights go on again.

Color of Gasoline

You can't tell the octane rating of gasoline by its color. In the past, fuel companies did try to "label" the different octane ratings

by coloring 80-octane fuel red and coloring lower-octane fuel bronze. But with the war running all over the globe, such control isn't so easy. For instance, one outfit in England found that some British 80-octane gas was actually colored bronze.

Now, over here in the States, the Army is buying some "premium" commercial gasoline. This is colored red—but it's only about 76-octane, or lower.

I'll say it again—you can't absolutely tell the octane rating of gasoline by the color. Next time you go up to a fuel supply point, ask the man for 80-octane gasoline—don't specify by color.

Although the difference between 76-octane fuel and 80-octane doesn't sound like an awful lot to you, let me tell you it can really be murder in any of our tank engines. It can make a complete wreck of some of our radials in about 15 minutes, and it may not take much longer in other combat-vehicle engines. Lower-octane gas causes lots of detonation—too rapid a pressure rise in the cylinders and a blast of heat that'll burn the pistons up and otherwise make an engine pop its cork.

A question in your mind is, how come we buy lower-octane gasoline? The answer is that there's a gas shortage—and it won't hurt anything to use lower-grade fuel in motor-transport vehicles running around on important administrative errands (such as hauling the non-coms over to the Service Club for coffee about ten o'clock in the morning). As a matter of fact, there's an order out (SB 10-20, 23 Feb. 44) saying you gotta use lower-octane fuel for motor-transport vehicles in the States—except on maneuvers.

Anyway, keep this bit of wisdom in mind: you can't positively tell the octane rating of a gasoline by the color—after all it's only a dye. So never say dye—say, "Gimme some 80-octane gasoline for me vehicle," if it's a tank or some-such combat job.

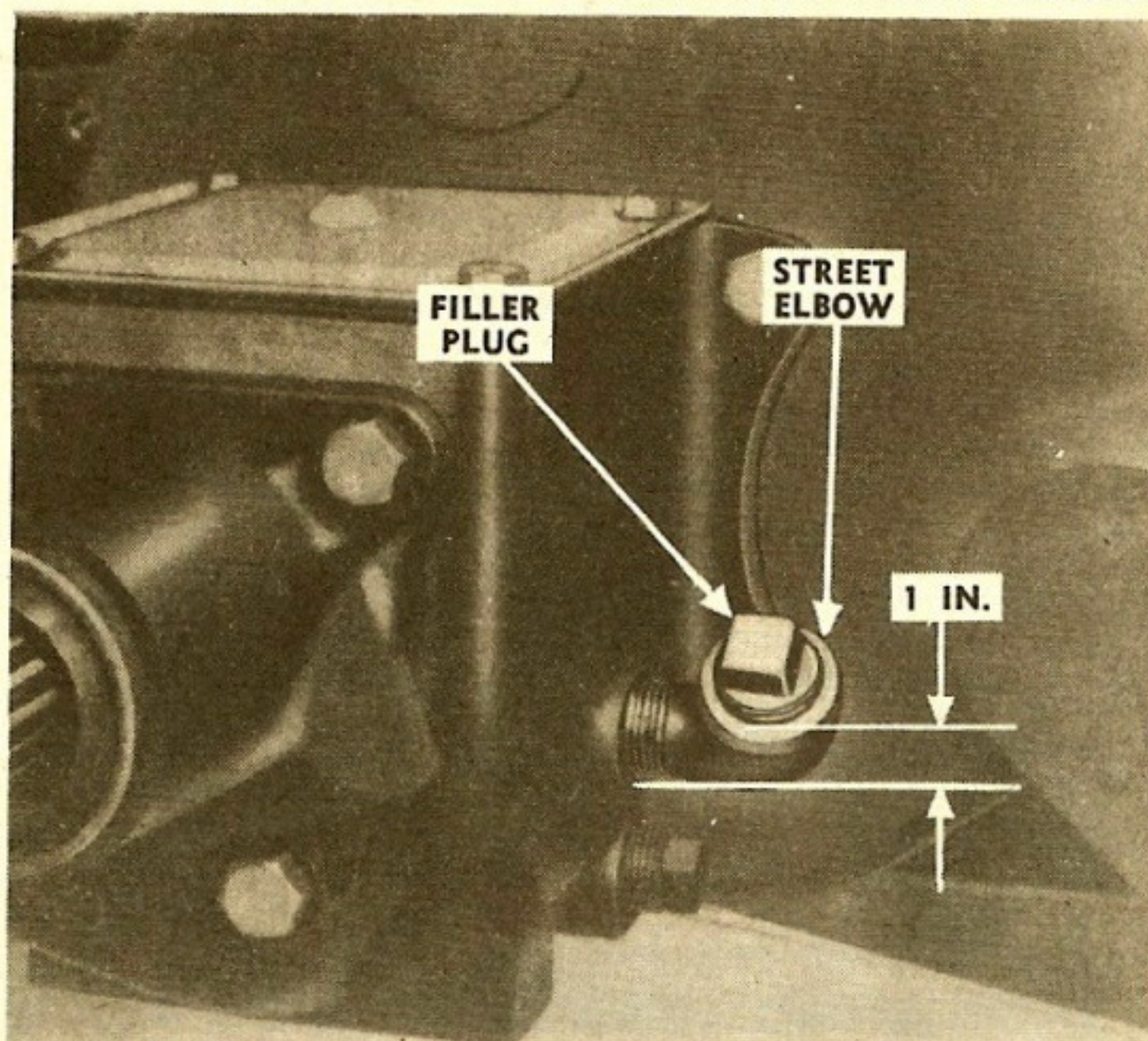
What the lower-octane gasoline does to radial and other combat-vehicle engines shouldn't happen to a dogface.

More Weasel Transmission Lube

If you have an M29 or M29C Cargo Carrier with a transmission serial number up to 4936, TB 9-772-FE 1 (7 Sep. 44) outlines a simple way to increase the amount of lubricant from a pint to almost a quart. Point is that you need more oil to get better lubrication for the bushings on the counter shaft, and to keep the transmission cooler at high speeds.

All you have to do is remove the hull floor-pan and demolition-bomb case and take out the transmission filler-plug. Get a street elbow, straight, 90° black, ½" (Item Stock No. H6-02-65615) and put it in the filler hole with the open end up. Turn the elbow slightly toward the rear of the vehicle until the lower lip is 1" above the lower edge of the filler plug (see Fig.). Now add oil to the new level and put the filler plug in the open end of the street elbow.

Don't forget to put the bomb case and floor pan neatly back in place.



This street elbow increases the amount of lube in your M29 or M29C Weasel transmission to almost a quart.

Lube-Gun Coupler

Recently in the field, I glimpsed a lever-type grease gun (the new gun now in the vehicle tool set) with the old-fashioned kind of coupler that had to be held against the fitting by brute force. This is funny—the grease gun is supposed to have the grip-type coupler with jaws that hold onto the fitting without pushing.

If you've been short-sheeted in this instance, requisition the grip-type coupler: **Coupler, Lubricating Gun, Hydraulic, ¼—27NPT, female, Fed. Stock No. 33-C-477-425.** Within the U.S., order through your Ordnance Officer who in turn will order from the depot in your area. (Our undercover agents report that 6000 of these couplers were shipped to the St. Louis Ordnance Depot.) All you optimists overseas, requisition through your regular supply channels.

Duck "A" Frames, Slings, and Hooks

There's no good reason why your GMC 2½-ton, 6x6 amphibian should fumble around when load-

ing and unloading guns and cargo. They tell me the nice, fat "A" frames, hooks, and slings you need and can get to do the job are piling up at the depot—no requisitions coming in. I'm surprised.

Here's what FSMWO G501-W22 (16 Oct. 43) says you can have: (1) Kit, 105mm howitzer sling, G501-W22-I. Order 1 for every 5 ducks. (2) Kit, cargo boom sling, assembly, G501-W22-II. Order 1 for every 12½ ducks—all right, 2 for every 25. (3) Kit, "A" frame installation and tackle, G501-W22-III. Order 1 for every 5 ducks. (4) Kit, Dirigo hook assembly, G501-W22-IV. Order 1 for each duck with serial number 352-001 through 353-2004.

Requisition through regular channels on SPOMS-W, Office, Chief of Ordnance-Detroit, Detroit 32, Mich. The serial numbers of all your ducks not having kits 1, 2, and 3 must be shown on the requisition.

All ducks are now being shipped with this equipment aboard.

Grease Seal for IHC 5-ton Dump Truck

A homemade seal for that International 5-ton dump truck that's throwing axle grease from the rear axle into the right rear-wheel hub is another little thing I've picked up for you guys.

Scout around for 7½ feet of either ⅛" dia. soft-iron wire, mild steel, or bronze welding-rod. Remove the right rear drive-shaft and starting 3" from the flanged end, coil the wire or rod in left-hand spirals around the shaft (see Fig.). The spirals should be about 2" apart. You'll finish winding 10" from the splined end.

The grease seal for your International dump truck's rear axle will look like this when you finish winding and welding.

With an electric arc, tack-weld each spiral firmly to the axle shaft (see Fig.) if you used steel or wire. If you used bronze welding rod, solder the spirals on. Don't get the drive shaft too hot when you're welding because too much heat might weaken it.

You're going to tell me maybe the shaft won't go back in the tube with the spirals around it. If it won't, grind or file the spirals down till the shaft does fit.

The seal will make your shaft look like a barber-shop pole when you're finished, but it'll keep that right rear-wheel hub clean as a whistle, M2.

Stop Beating Your Drums!

Those fifty-five-gallon drums (formerly full of gas and lubricants) that you've been kicking around could use more gentle treatment, according to the I. G. They dent easy and they don't heal quick.

And the drums are supposed to be returned to the company what sold them. That doesn't mean using them for storing or shipping other materials, either.

A simple matter of replacing the bung plugs (which are especially hard to get) when the drum has been emptied, will keep out dirt and water. You won't be doing anybody a favor by applying pressure to clean the inside of a drum, that's the oil company's job. Let them worry about it.

Bear these things in mind: The lids or leverlocks are not interchangeable; too much muscle on those bung plugs might rupture the flange threads or loosen the spud; storing under cover will help keep old man rust away.

You won't get free beer for treating your drums with that gentle touch, but the QM boys will love you.

GMC and Chevrolet Clutch Diaphragm Springs

Opened my mail the other day and got a going-over from T/4 Walter E. Richards. Wrote he: "In the July 1944 issue of ARMY MOTORS, you say not to mix Chevrolet and GMC clutch diaphragm-springs. If that is so, why do they have the same part number for the springs (GM Part No. 753930) in both the Chevrolet and GMC SNL's?"

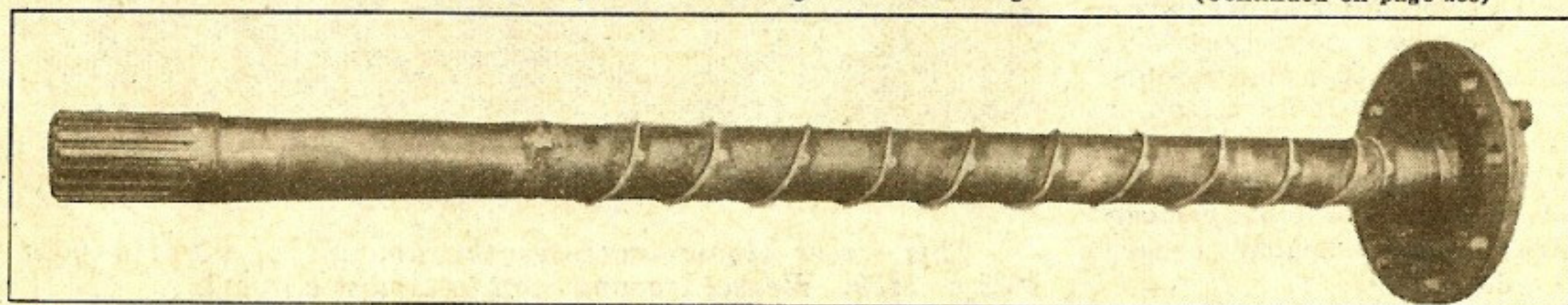
Well, all I can do is own up to a slip-up, promise never again to take anyone's word without bales of evidence, and give you dear people the straight story now.

(1) On Chevrolet 4x4's, the clutch cover and clutch diaphragm-spring are riveted together in production—you can't get the spring and cover assembly for replacement, you can't even get the same spring. What you can get is a service kit, GM Part No. 608478, that contains the GMC diaphragm-spring (GM Part No. 753930), and the bolts, nuts, and lockwashers you'll need. You remove the rivets from the clutch cover on your Chevy, remove the old spring, and bolt the GMC spring to the clutch cover.

(2) On GMC 6x6's and 6x4's, the production spring and the replacement spring are the same and both are bolted to the clutch cover. When you order a replacement for your GMC's, requisition only the Spring, clutch diaphragm, GM Part No. 753930.

What I should have said in the July ARMY MOTORS is that the Chevrolet production spring (marked ⊕) can't be used on

(Continued on page 288)



New Transmission Case for 1/4-Tons

PLUS A NEW SEAL FOR YOUR PRESENT TRANSMISSION WHEN IT GETS OVERHAULED

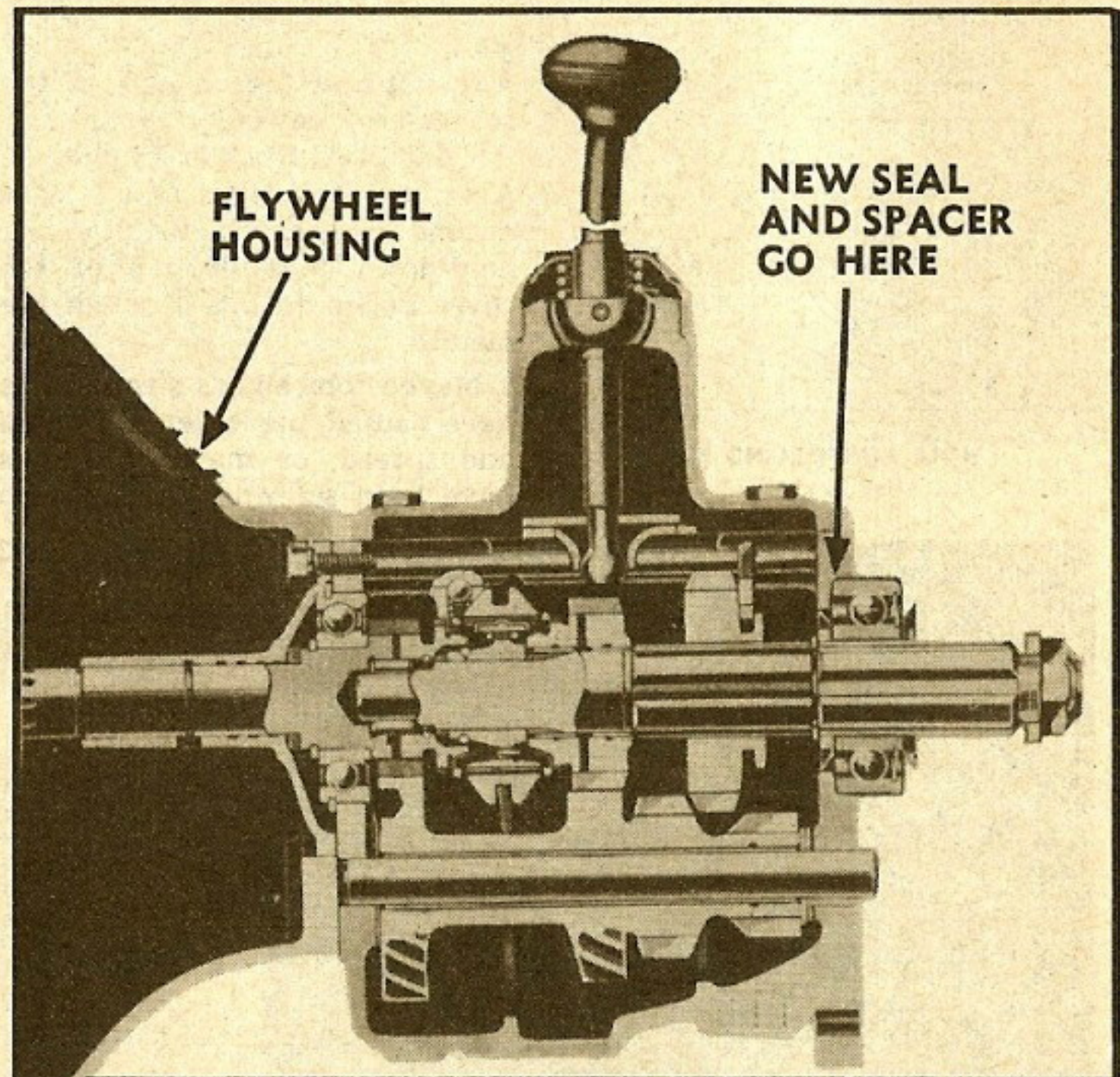
An improved transmission case is now in production for 1/4-ton jeeps. The new case holds a full quart of oil (instead of the present 3/4-quart), which helps maintain a lower oil temperature. What's more, a positive leather seal has been installed just ahead of the transmission-mainshaft rear bearing—to stop the old familiar business of oil migrating between transmission and transfer case.

Along with the new case go these other transmission improvements: Flat spots machined on the countershaft-gear shaft and reverse-idler-gear shaft. Bushings grooved differently for better lubrication. Recesses cast in the bosses of the transmission case, to make it easier for oil to get to those shafts and bushings.

The filler plug is an inch higher than before, and you can recognize the new transmission case by a big letter "H" on the left side where the filler plug used to be.

Willys jeeps with engine 489482 or higher, and Fords with engine 235470 or higher, have had the new transmission cases put on at the factory. They'll be issued as field replacements, too, as soon as the stock of present transmissions is used up.

In the meantime, don't worry about **your** jeep transmission unless you're having an overdose of trouble with oil pumping into it from the transfer case. In that case, you need a higher-echelon treatment as prescribed by TB 1803-1 (8 Dec. 43). Or, still better, if the new parts are available the next time your transmission is overhauled, you can have the new Oil Seal (Willys Part No. A-15428) and Spacer (A-15427) installed in your old transmission case. These parts **replace** the Oil Slinger (Willys Part No. A-410) and Spacer (A-738) now on the rear end of the mainshaft, ahead



The new jeep transmission wouldn't pose for its picture, but this shot of the old one shows where the new seal gets installed.

of the rear bearing.

Now, if those higher-echelon mechanics are listening, here's how to install the new oil seal and spacer in the old-style transmission case:

Remove the transmission and transfer case and put them up on the workbench. (Hold the transmission mainshaft in the transmission with a wire, so the second-high speed-synchronizing unit won't come apart and drop the synchronizer shifting-plates into the bottom of the case.)

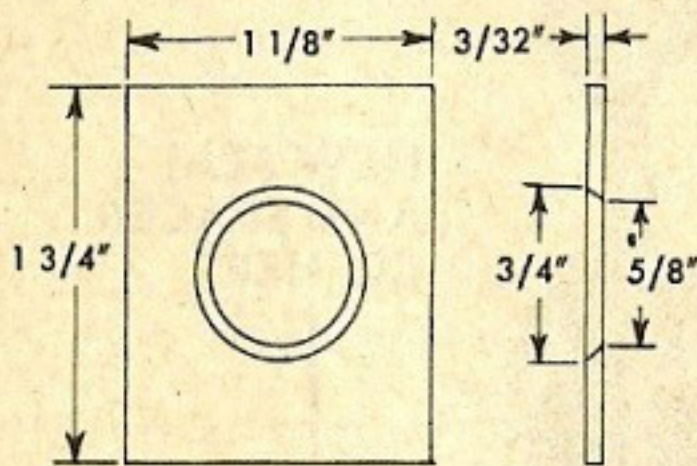
Take off the transmission-mainshaft rear bearing, remove the oil slinger and the spacer. Install the new leather oil seal first, with the lip of the seal toward the transmission. With a piece of pipe a

little less than 2 1/2" outside diameter, drive the seal through the bearing hole in the rear of the transmission until the seal is flush with the face of the case.

Install the spacer with the recessed end toward the transmission, to fit over the mainshaft snap-ring. Then slip on the mainshaft bearing with the shield toward the transmission.

Put back the transfer case and interlock pin, then the oil slinger (A-410) with the flat side toward the bearing, then the transfer case main-drive gear, washer, nut, and cotter pin—tightening the nut securely before installing the cotter pin. Finish the job by adding the transfer-case rear-cover gasket.

Strengthen Your GMC Rocker-Arm Cover



HOLE REINFORCING PLATE

Go out and take a look at the rocker-arm cover on your 2½-ton, 6x6 GMC truck or amphibian. Are there any signs of oil leaks around the gasket? Have the two hold-down nuts on top of the cover begun to bite through the metal?

Maybe somebody's strong arms have caused the cover to buckle and spread, or maybe the nuts have been screwn off and on so

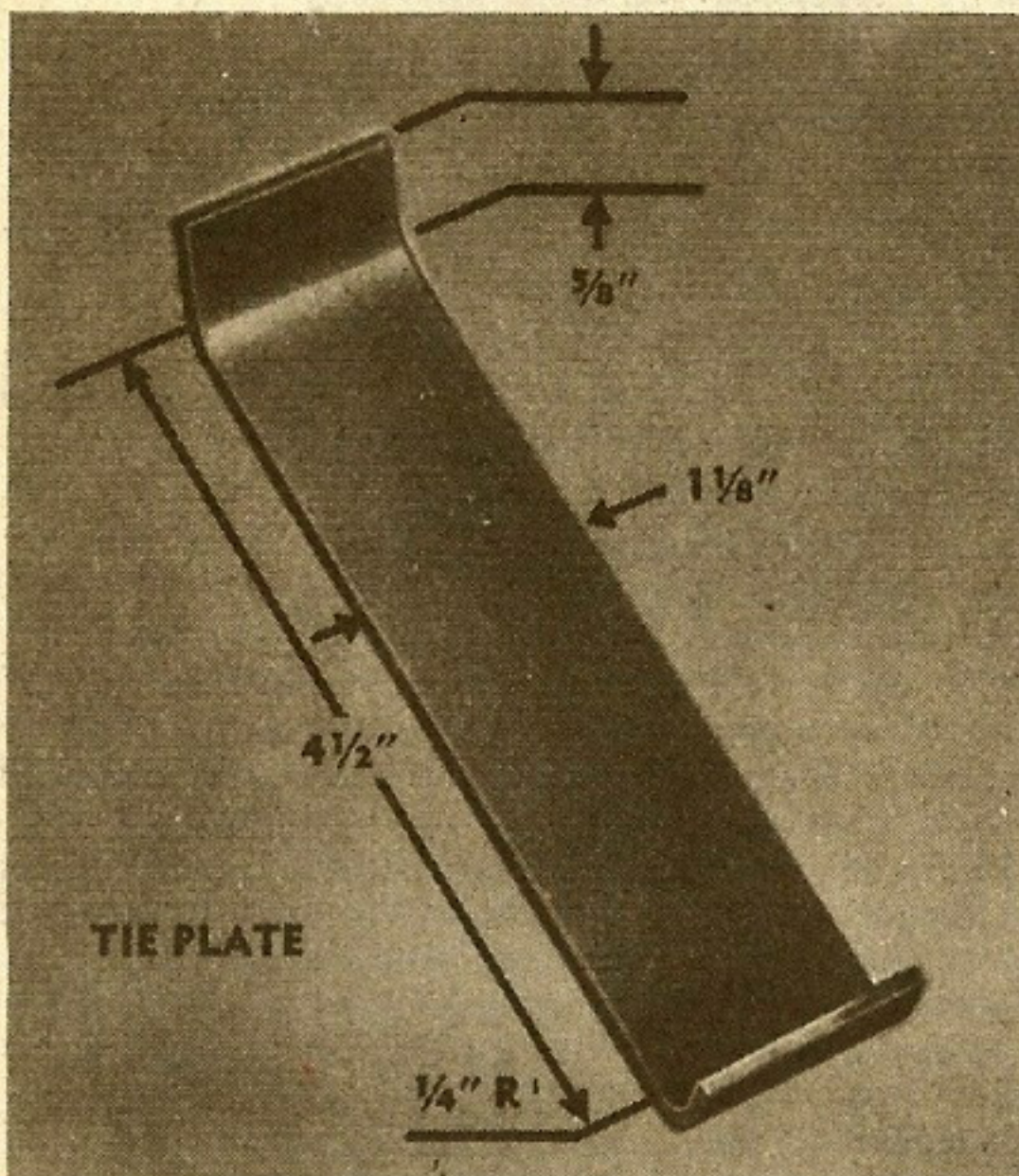
much they're beginning to chew through the thin metal of the cover.

Anyway, there's a new TB out (TB ORD FE 13, 2 Sep. 44) which shows you (1) how to reinforce the stud holes by spot-welding a couple of little plates under the cover (see Fig.), and (2) how to install a little strut or "tie plate" under the cover to brace it up.

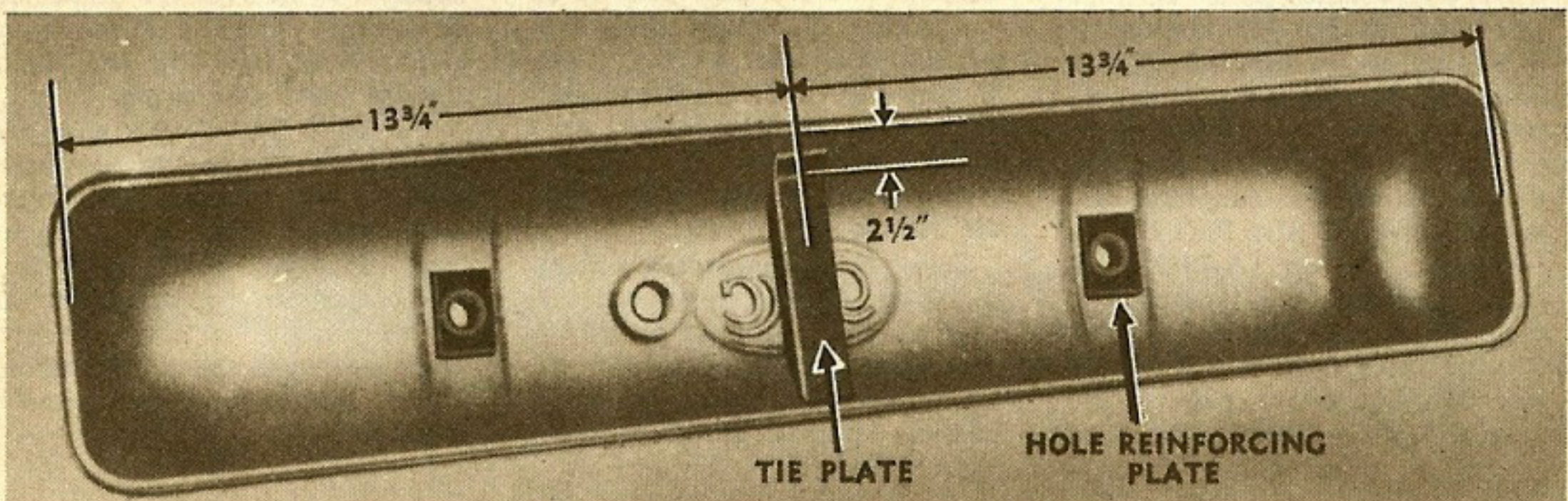
FOLLOW THE SIMPLE DIRECTIONS:

Materials: 3/32"-thick stock, cut as shown.

- How to do it:**
1. Cut two stud-hole reinforcing plates to dimensions.
 2. Drill a 5/8" hole in the center of each reinforcing plate.
 3. Chamfer the holes from 5/8" on the bottom of the plate to 3/4" on the top to follow the shape of the inside of the cover.
 4. Spot-weld plates in place.
 5. Make tie-plate to dimensions shown.
 6. Position tie-plate 2½" from bottom edge and spot-weld in place.
 7. **Warning:** the inside of the cover is terne-plated against rust. Your welding has burned away the terne-plating. Flow solder around all the welds to rust-proof the metal again.



TIE PLATE



TIE PLATE

HOLE REINFORCING PLATE

If a grease fitting is hard to get at, too often the man with the grease gun will "leave it go and get it next time." Which always leads to trouble with burned out somethin'-or-others.

This is the case with the main-shaft bearing in the clutch housing of the M4A3 Medium Tank (75mm gun, wet), on vehicles below serial number 50217. The way it is now, you have to take off the clutch-housing cover (D81139) and the propeller-shaft flange-cover (B326025) to get at the fitting underneath.

To save you this work—and encourage regular lubrication of the bearing in the clutch housing—TB 9-759-FE1 (26 Sep. 44) shows you how you can fix it so you can reach your grease gun in through

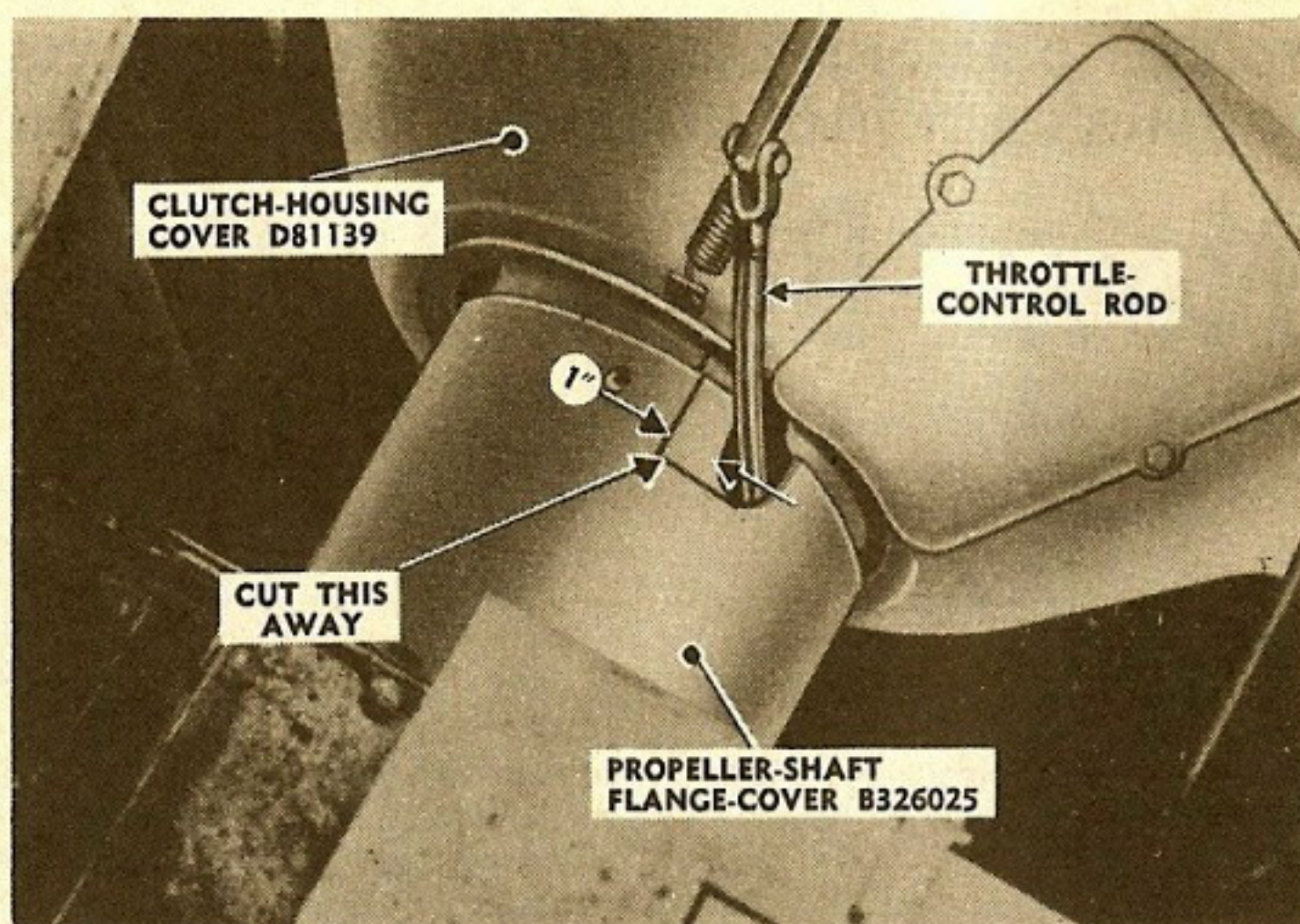


Fig. 1—There's a grease fitting under the throttle-control-rod hole. To get at it with a grease gun, first scribe lines as above.

Hard-to-Get-at Grease Fitting

the throttle-control-rod hole (Figs. 1 and 2). It's simply a matter of cutting out the hole a little wider.

By the numbers:

1. Traverse the turret until you can see the clutch-housing cover and throttle-control rod as in Fig. 1.

2. Open the door over the propeller-shaft flange.

3. Scribe the lines as shown in Fig. 1, running one inch over to the center of the propeller-shaft flange-cover (B326025) and then up to the clutch-housing cover (D81139).

4. Unscrew the capscrews from the propeller-shaft flange-cover, and take off the cover.

5. Disconnect the throttle-control rod at the top, by removing the cotter key and pin, and let the control rod fall back out of the way against the propeller-shaft housing.

6. With a knife-blade hacksaw (or an ordinary hacksaw blade with a rag wrapped around the blade to protect your hand), cut out along the scribed line that's on the clutch-housing cover.

7. Take the propeller-shaft

flange-cover (that you removed) to some comfortable place and cut out along the part of the line scribed on it.

8. Now put things back together again: Connect the throttle-control rod, using the original clevis pin and cotter pin. Reinstall

the propeller-shaft flange-cover using the original capscrews. Poke your grease gun through the enlarged hole you've cut to see if you can get at the fitting all right. Okay? Close the door over the propeller-shaft flange on your way out.

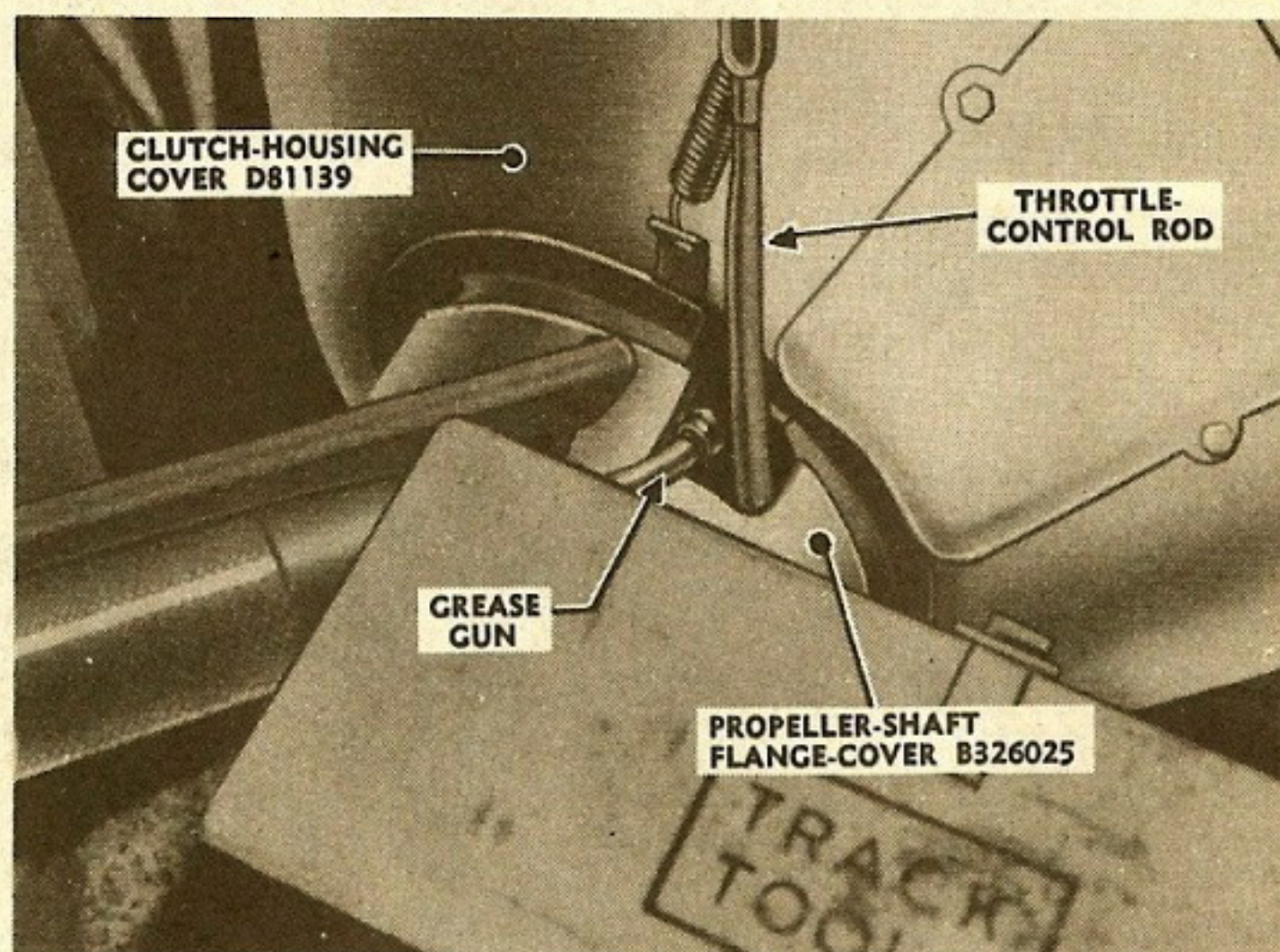


Fig. 2—Cut along the lines scribed in Fig. 1 and you have the opening above—large enough for your grease gun.

TO KEEP DIAMOND T FRAME SUPPORT-BRACKETS FROM CRACKING UNDER A HEAVY LOAD...

New Bracket Reinforcement

Trying to keep the rear frame-support-brackets on your 4-ton, 6x6 Diamond T's in one solid, supporting piece is both an old and new story: Old because the original brackets on the trucks should've been replaced long ago and a lot never were, and new because even the stronger replacement brackets should be reinforced.

In the beginning, those brackets

(above the rear-spring suspension-units) were slim and slender. Then, because they split at the bend just below the torque-rod bracket (Fig. 1), they should've been replaced by a "ribbed" bracket as shown. The greater thickness strengthened the later bracket so it wouldn't crack up so often. This ribbed bracket could be and **still can be** requisitioned direct from the Diamond T

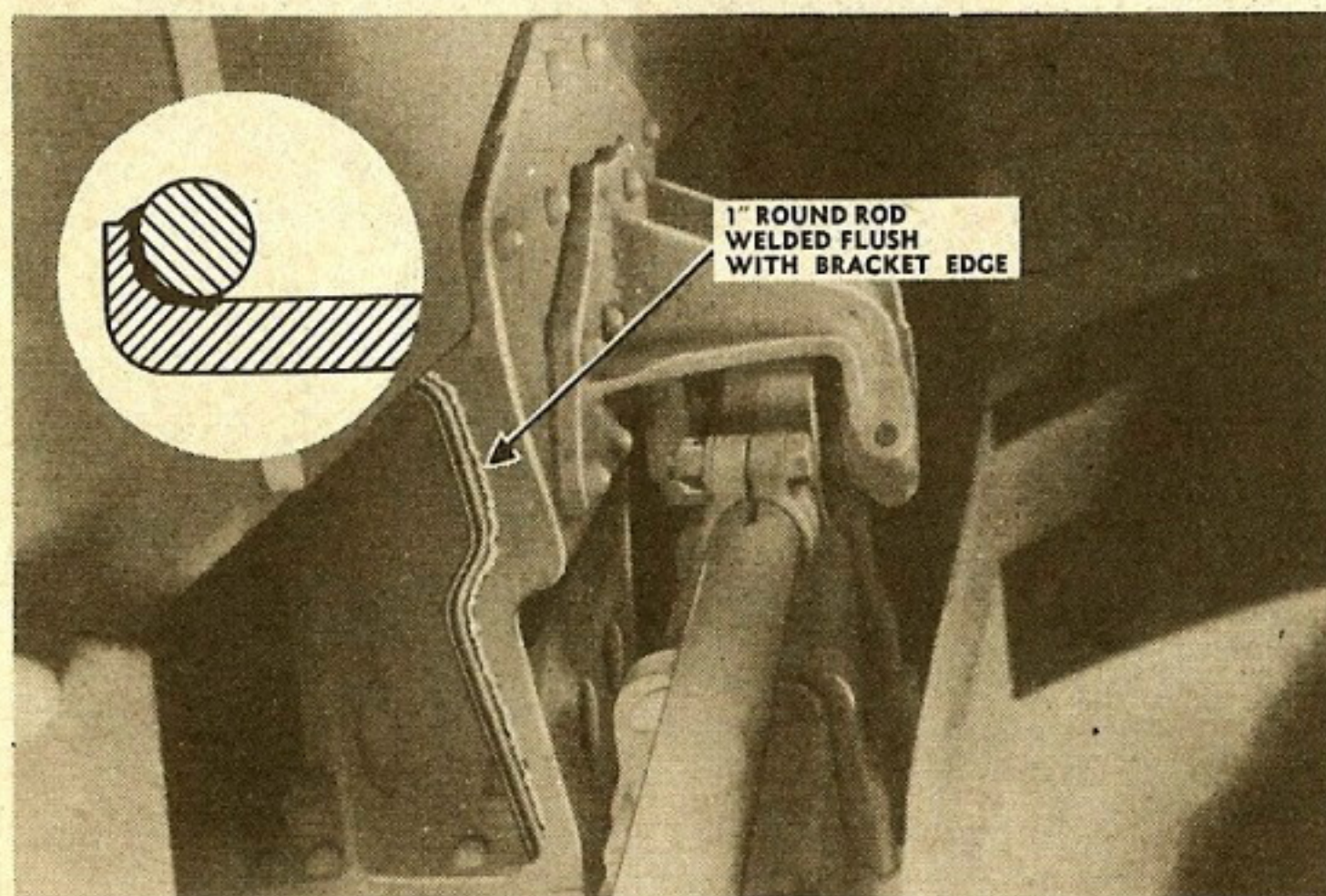
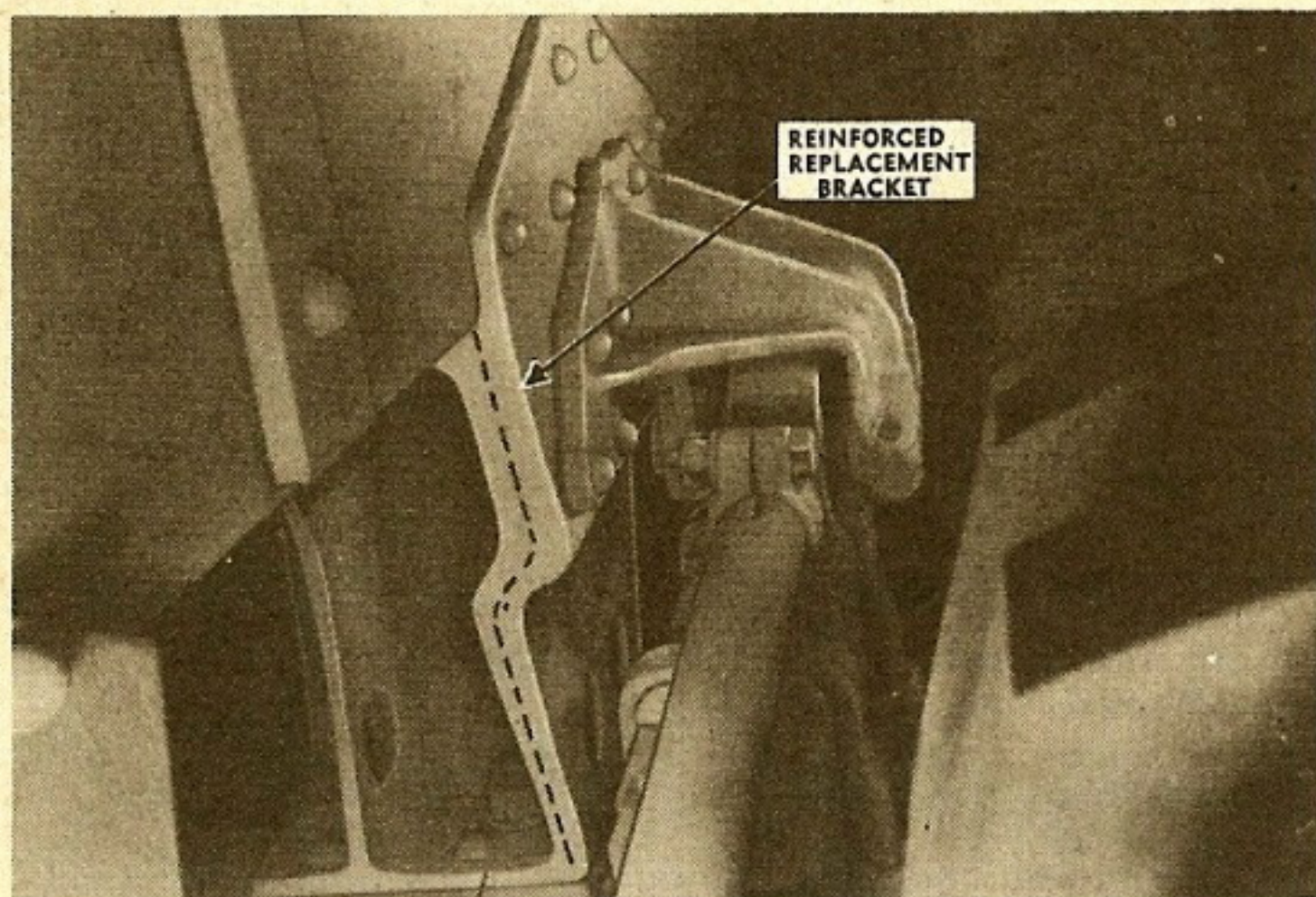
Motor Car Company, 4401 W. 26th St., Chicago 23, Illinois.

If you don't already have the replacement brackets on your D.T., requisition 1 rear-axle-unit frame-support, right, Part No. N-1450; 1 rear-axle-unit frame-support, left, Part No. N-1450; 28 rivets, Part No. DX-491; 8 rivets, Part No. DX-747-A; 16 rivets, Part No. DX-477-A; and 8 rivets, Part No. DX-492. The requisitions should carry the USA number and the chassis number of your vehicle, and should be marked, "Gratis Replacement." Cut off the old bracket, scrap it, and install the new one.

The second chapter of the story: If your truck's getting a lot of rough and tumble—especially the dump truck—the replacement bracket still may not be strong enough to stand the bumps. In this case, Fig. 2 is the solution. A 1" round, cold-roll rod is arc-welded (see your neighborhood 3rd-echelon) from top to bottom on the innerside of the bracket. The rod should be set flush with the edge of the bracket and welded with either Rod, welding, electrode (high-tensile alloy) 5/32", Fed. Stock No. 46-R-1592-10; or Rod, welding, electrode (high-tensile alloy) 3/16", Fed. Stock No. 46-R-1592-20. They're both "reverse polarity" rods.

Each edge of the right and left brackets should be reinforced—that makes four welds altogether.

One thing more: If the brackets are loose on the frame, if the rivets aren't holding tight like they should, cut 'em off and use bolts. Ream the six holes so you can use oversize bolts: Bolt, hex-hd., s-fin., alloy-S., 1/2-20NF-2 x 1 1/2, Item Stock No. H001-01-16279; Nut, regular, hex., s-fin., alloy-S., 1/2-20NF-2, Item Stock No. H001-07-19005; Washer, lock, hv., S., 1/2", 11/64 x 11/64 thick, Item Stock No. H001-15-16011.



Jig-Time Towing Hook for Tanks

No more need to fumble around under fire when your tank has to be towed out of trouble. You're out of snipers' sights in a hurry when you use this new quick-attaching tow-hook.

It fits on the front or back of any medium or light tank, or gun motor carriage with a tank chassis (Figs. 1 & 2), that has a one-piece controlled-differential housing. MWO G1-W18, in the RED group—which supersedes FSMWO G1-W7 (24 Aug. 43)—will be out soon okaying its use.

These hooks come in **Group I kit, Item Stock No. G9-5700632**, and can be requisitioned right away. Figs. show the Group I kit.

The "battlefield" towing hook (you can use it wherever you are) won't fit vehicles with a **three-piece** controlled-differential housing in the front end. There isn't enough clearance between the part of the housing that covers the final-drive gears and the lugs the hooks are attached to, so the tow cable can be installed. So for vehicles with three-piece final drives, **Group II kit, Item Stock No. G9-5700184**, should be requisitioned—but NOT BEFORE 15 Jan. 45. The front hooks in the Group II kit are offset to make clearance so the tow cable can be installed on the hook.

The new hooks replace the standard clevis and pin set-up, now used on the front and rear of your tanks. Each kit has 4 hooks, 4 pins, and 8 hair-pin locks, so you'll have enough towing hooks to completely furnish one tank. It's a good idea to have at least two hooks installed on your tank in combat areas—and to stick them on all tanks waiting to be shipped.

Don't throw away your old pins. Knock off, with a chisel, the chains that hold the pins and keep them right in your tank—you may need 'em again as extras.

A NEW, RAPID RIG DESIGNED TO SAVE THOSE MINUTES THAT SEEM LIKE HOURS

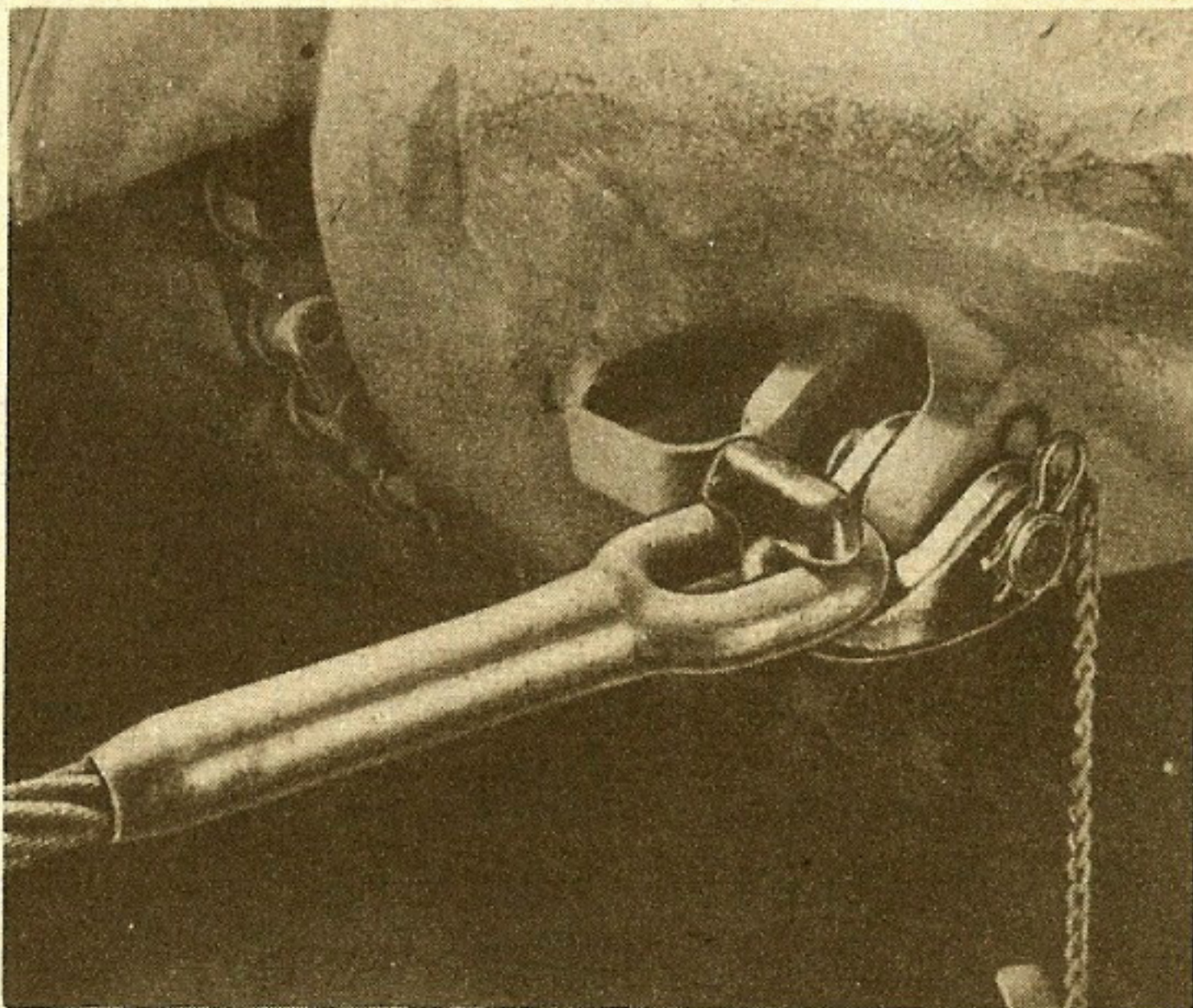


Fig. 1—The tow-hook on the front of an M4A3 tank with the tow cable attached. Knock the chain off with your chisel.

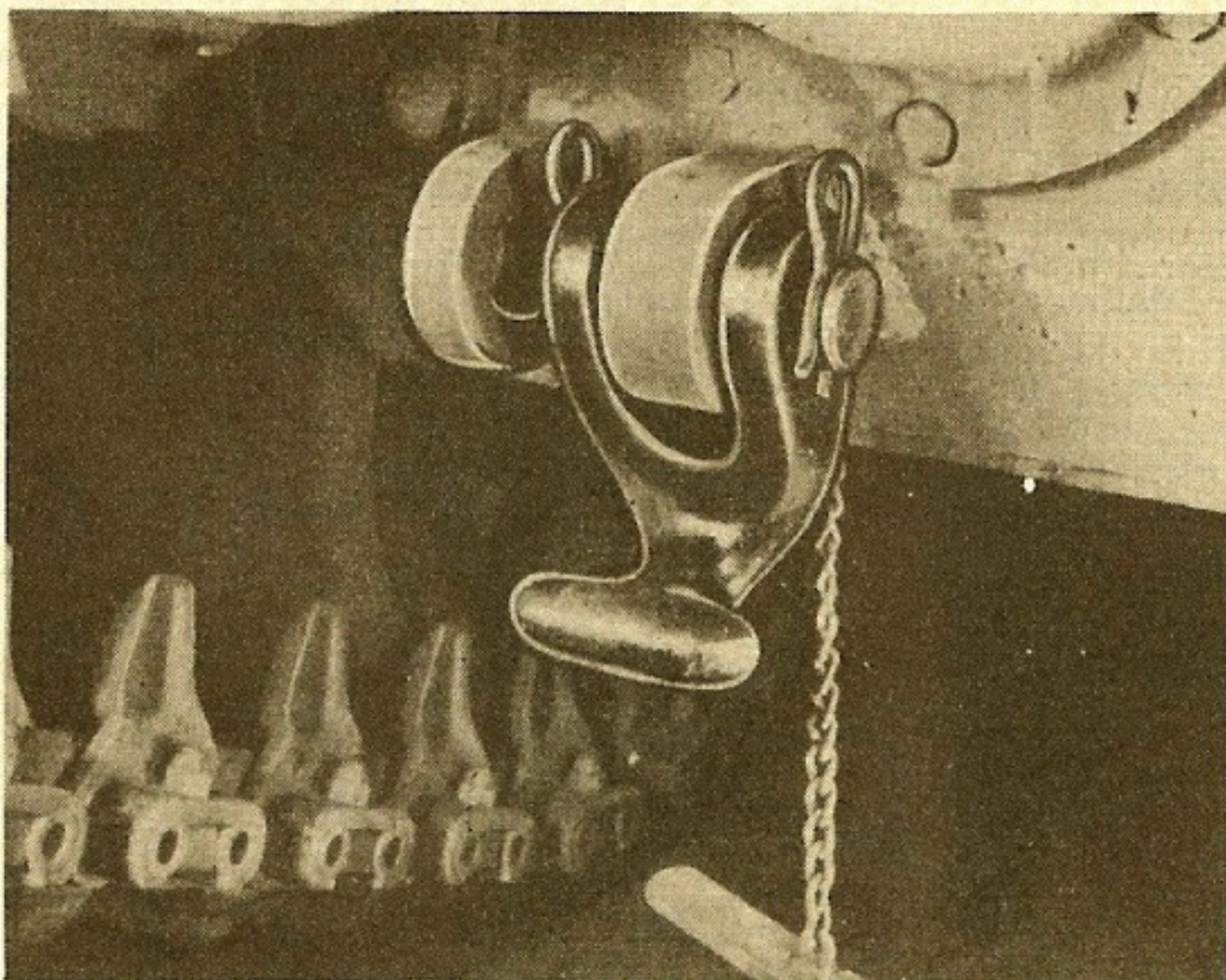


Fig. 2—The tow-hook attached to the double lug on the rear of an M4A3. Knock the chain off and keep it as an extra.

Joe Dope in **T.M. OR NOT T.M.**
© WM. SHAKESPEARE

BY **Will Eisner**

ENEMY ATTACK?
 No!... **GENERAL PINVALVE** INSPECTING

BAH!

BATT N-4

PRIVATE FONOLE FROSTOFF KIRK

DON'T "BUT" ME, CAPT. FANBELT.. THE SERVICE YOUR OUTFIT PERFORMS IS FOUL..!

I DON'T KNOW, SIR... WE'VE GOT SOME OF THE OLDEST MEN IN THE NTH ARMY!

IT TAKES YOU MEN WEEKS TO DO THE SMALLEST JOB

WELL, SIR, IT'S HARD TO GET AT THE BOTTOM OF IT UNLESS ONE IS ON THE LINE HIMSELF

HMMMM... I HAVE AN IDEA!

NEXT DAY..

HEY, JOE.. HERE'S A NEW ASSISTANT T'HELP YOU FIX UP THAT HALF-TRACK FROM THE NTH DIVISION

THANK.. ..NOW, WHAT WAS YOU SAYIN', SGT. MONTROSE?

OH, I WAS JUST REMARKING UPON THE CLEVERNESS OF YOU VEHICLE MECHANICS.. YAW KNOWLEDGE OF THOSE UNCANNY MOTORS...

OH HAW - TAIN'T NAWTHIN'

IS MY HALF-TRACK DAMAGED VERY SERIOUSLY.. YOU CLEVER MAN?

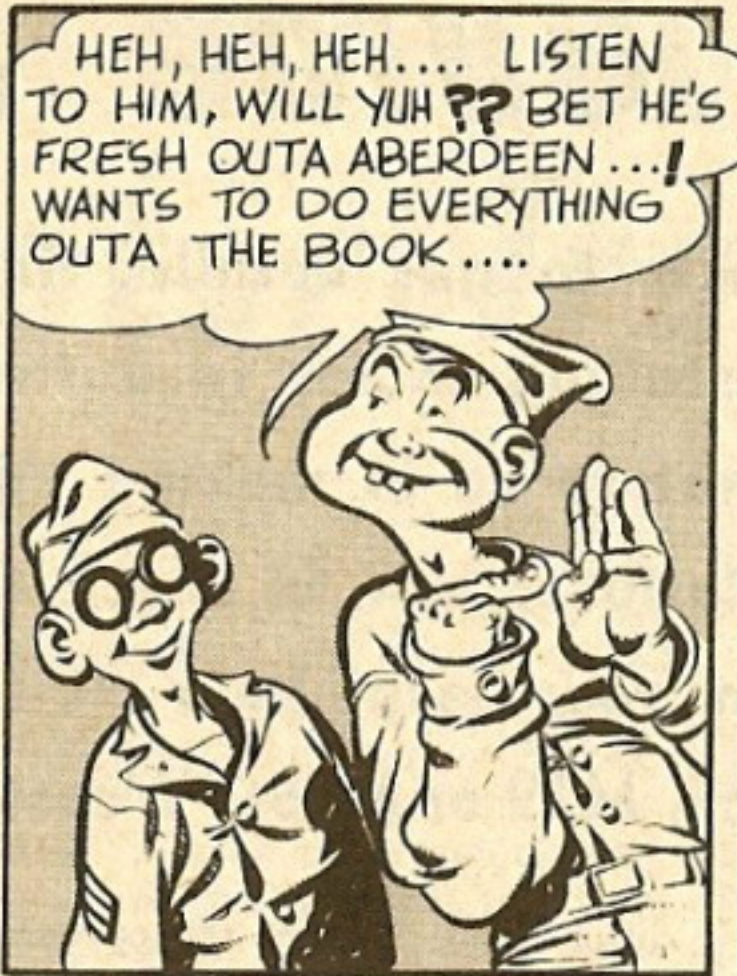
YES, QUITE, I WOULD SAY, VERY!

OH, IT'S ONLY A FUEL LINE

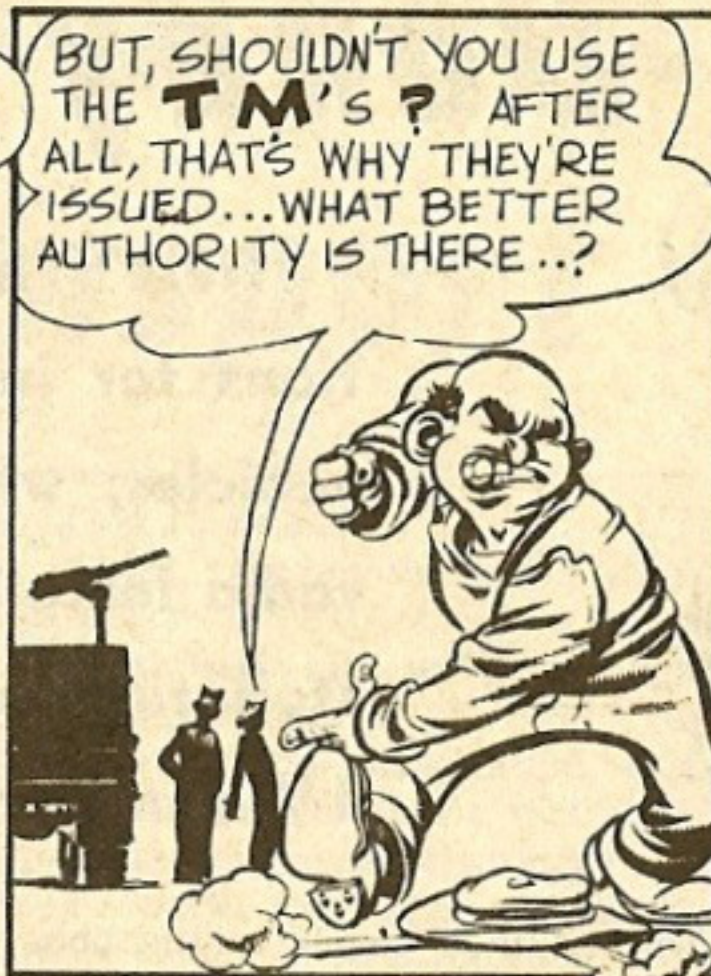
GET YOUR NOSE OUTA THIS, DOGFACE

BUT THE T.M. SAYS THAT...

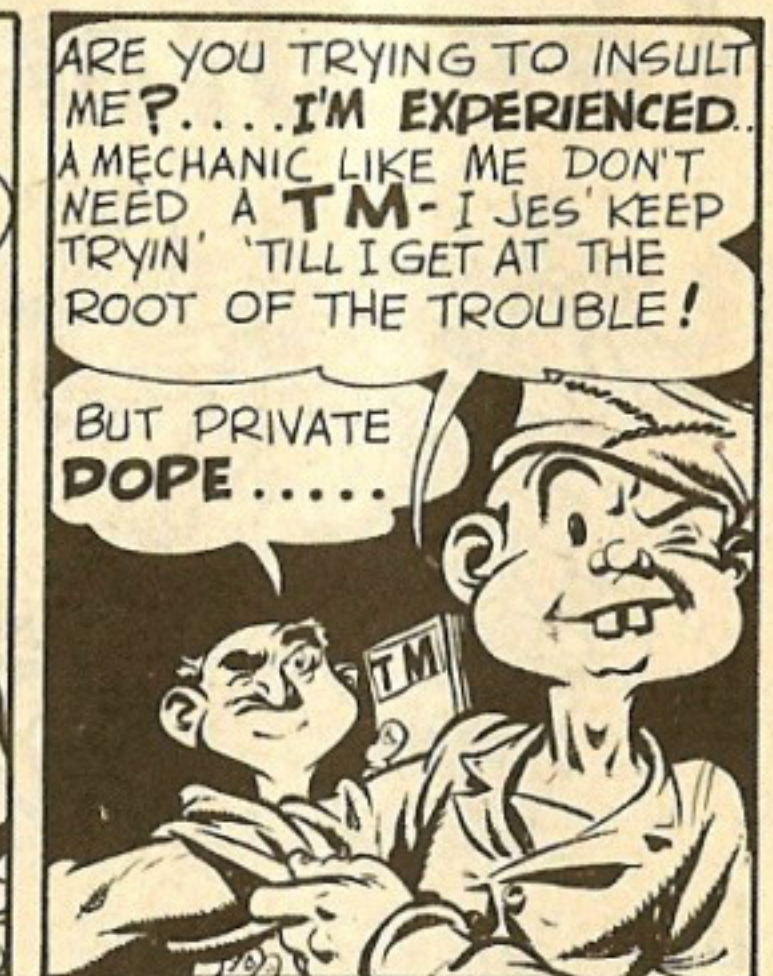
- SOB - MY POOR LI'L HALF-TRACK



HEH, HEH, HEH.... LISTEN TO HIM, WILL YUH?? BET HE'S FRESH OUTA ABERDEEN...! WANTS TO DO EVERYTHING OUTA THE BOOK....



BUT, SHOULDN'T YOU USE THE **TM'S**? AFTER ALL, THAT'S WHY THEY'RE ISSUED...WHAT BETTER AUTHORITY IS THERE..?



ARE YOU TRYING TO INSULT ME?...**I'M EXPERIENCED.** A MECHANIC LIKE ME DON'T NEED A **TM**- I JES' KEEP TRYIN' 'TILL I GET AT THE ROOT OF THE TROUBLE!

BUT PRIVATE **DOPE**.....



STAND BACK, JUNIOR...

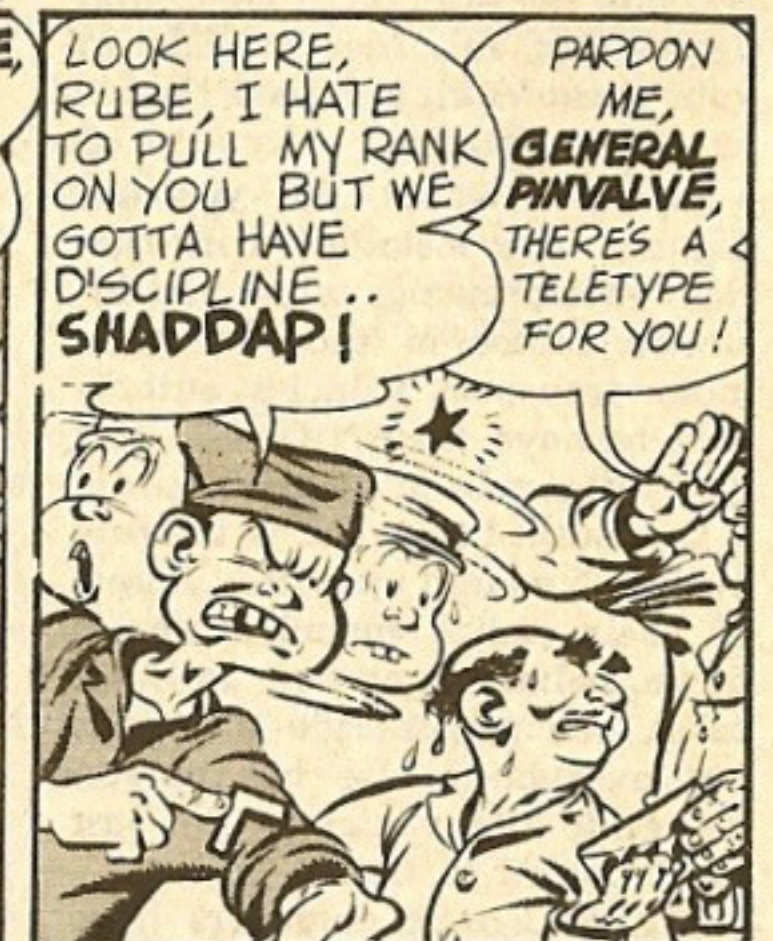
CLANK
CLANK
CLANK
CLANK



BUT, **PVT. DOPE**, THIS IS TOO MUCH....

STOP IT, I SAY

CLANK
CLANK
CLANK
CLANK
TINKLE
TINKLE
TINKLE



LOOK HERE, RUBE, I HATE TO PULL MY RANK ON YOU BUT WE GOTTA HAVE D'CIPLINE.. **SHADDAP!**

PARDON ME, **GENERAL PINVALVE**, THERE'S A TELETYPE FOR YOU!



BUT MY HALF-TRACK - LOOK WHAT HE DID TO IT... I'LL GET HELL FROM MY **C.O.**

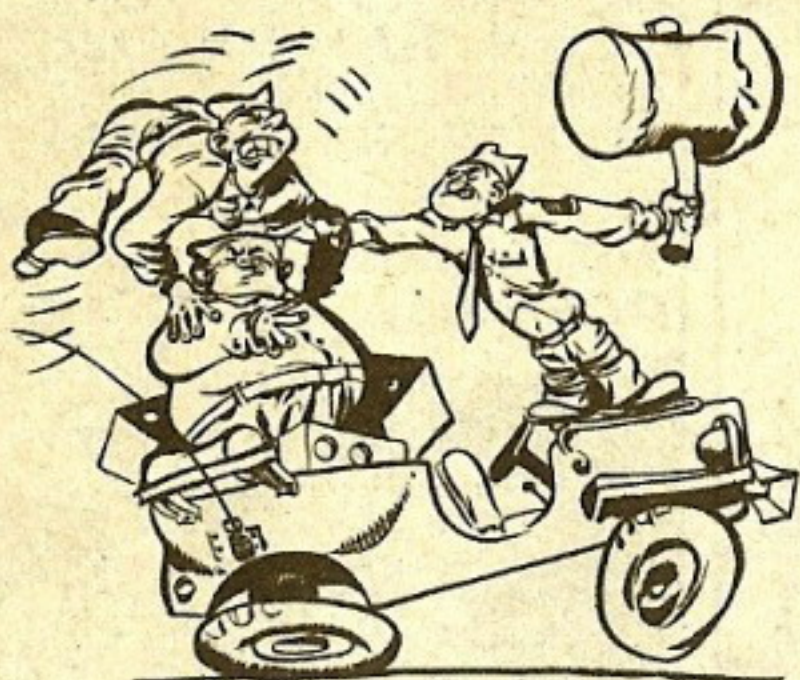
SORRY, PAL, Y'LL HAFTA TAKE IT AS IS

THE REASON FOR THE SLOPPY WORK AROUND HERE, **CAPT. FANBELT**, IS THAT YOUR MEN THINK THEY'RE TOO SMART TO USE **TM'S**. **WELL, THEY'RE NOT** ...NOT EVEN ME...

YES SIR.. I MEAN **NO**, GENERAL

JOE DOPE? NOPE.. LAST WE SAW HIM HE WUZ DIGGIN' A HOLE OVER THERE!

The Jim-Dandy Guide to



Here's how to get detailed instructions for installing radios in authorized vehicles; what to do in making unusual radio installations; how to check the installation in your jeep, your $\frac{3}{4}$ -ton or $1\frac{1}{2}$ -ton truck, M29 or M29C Weasel, etc.

Do you have to contort yourself into the position of horizontal parade-rest in order to ride in your radio-equipped jeep, $\frac{3}{4}$ -ton or $1\frac{1}{2}$ -ton Dodge?

In other words, did you use Signal Corps installation instructions and drawings when you installed radios in those of your motor-transport vehicles authorized to have them? Or did you go by the rule of thumb?

One outfit that went by the rule of thumb wound up with a couple of their radios installed upside down, believe it or not. In other cases, the radios ride all right, but everybody else has to run alongside the vehicles. It's just too crowded in there.

Signal Corps engineers have

worked their heads to the bone devising ways and means of installing radios in motor-transport vehicles so they won't get in everybody's hair. Also with an eye to such things as routing the antenna lead-ins to cut down static, and keeping the lead-in just the right length for good communication. These Signal Corps instructions on the guaranteed-best way of installing radios in motor-transport vehicles are available. Whatever radio you have—whatever motor-transport vehicle you have—if it's an authorized installation, you can get installation instructions, parts lists, and detailed drawings.* To requi-

sition same, look at the opposite page. If the Stock No. of the installation is given in the list, requisition from the **Chicago Signal Depot, 1903 West Pershing Road, Chicago, Illinois**. If the Stock No. is not given in the list, requisition from the **Commanding Officer, Storage and Issue Agency, CSigO, 128 N. Broad St., Philadelphia 2, Pa., Attention: O/C Field Service Branch, Supply Division**.

Best way to route your requisition is through the nearest Signal Officer. He may have the dope you need or may know of a closer place to get it.

Now what if you have to make an unusual or freak radio installa-

*This information is being prepared in technical manuals of the TM 11-2700 series, but until you can get them the separate instructions, drawings, etc., will do the job.

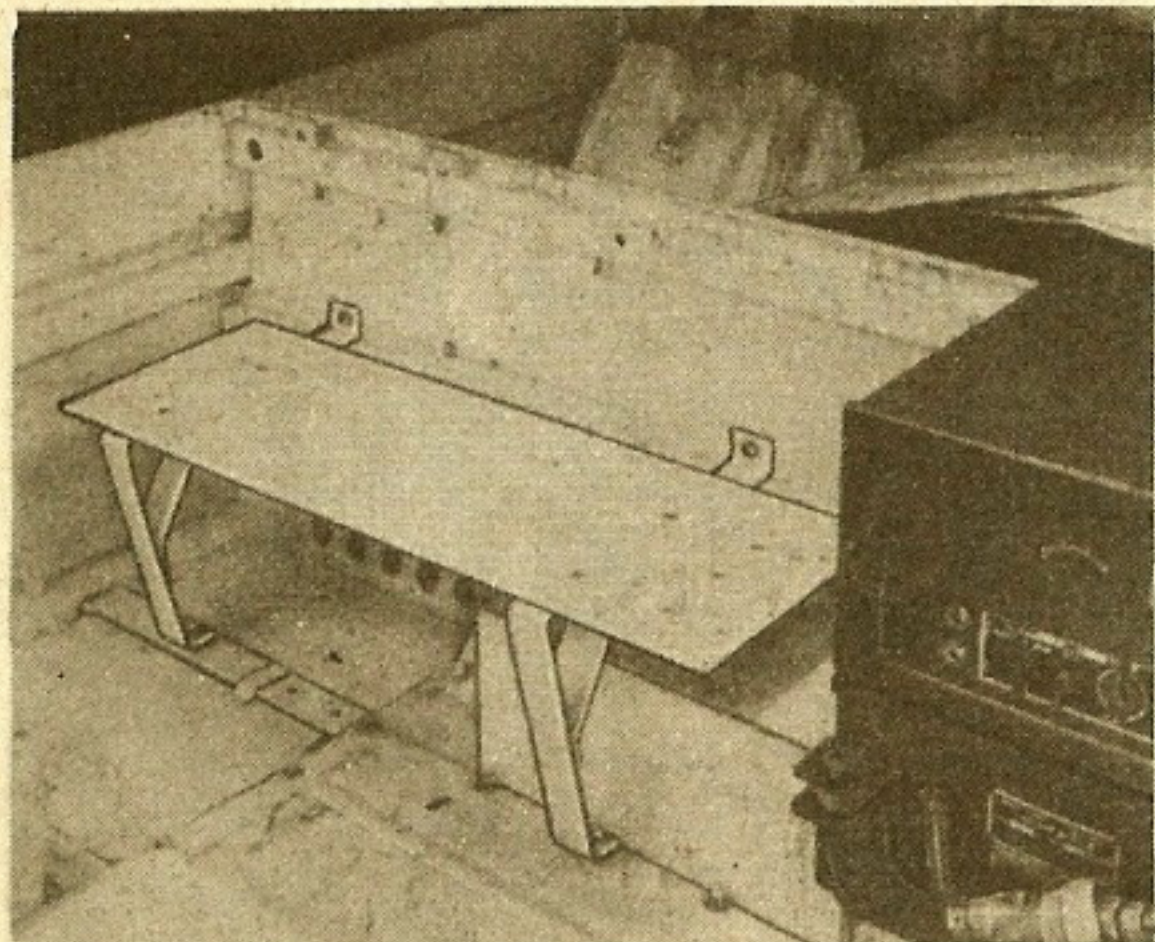


Fig. 1—Here's the mounting shelf and brackets used for Radio Set SCR-506 in combination with SCR-510, SCR-610, and SCR-508, in the M29 or M29C.

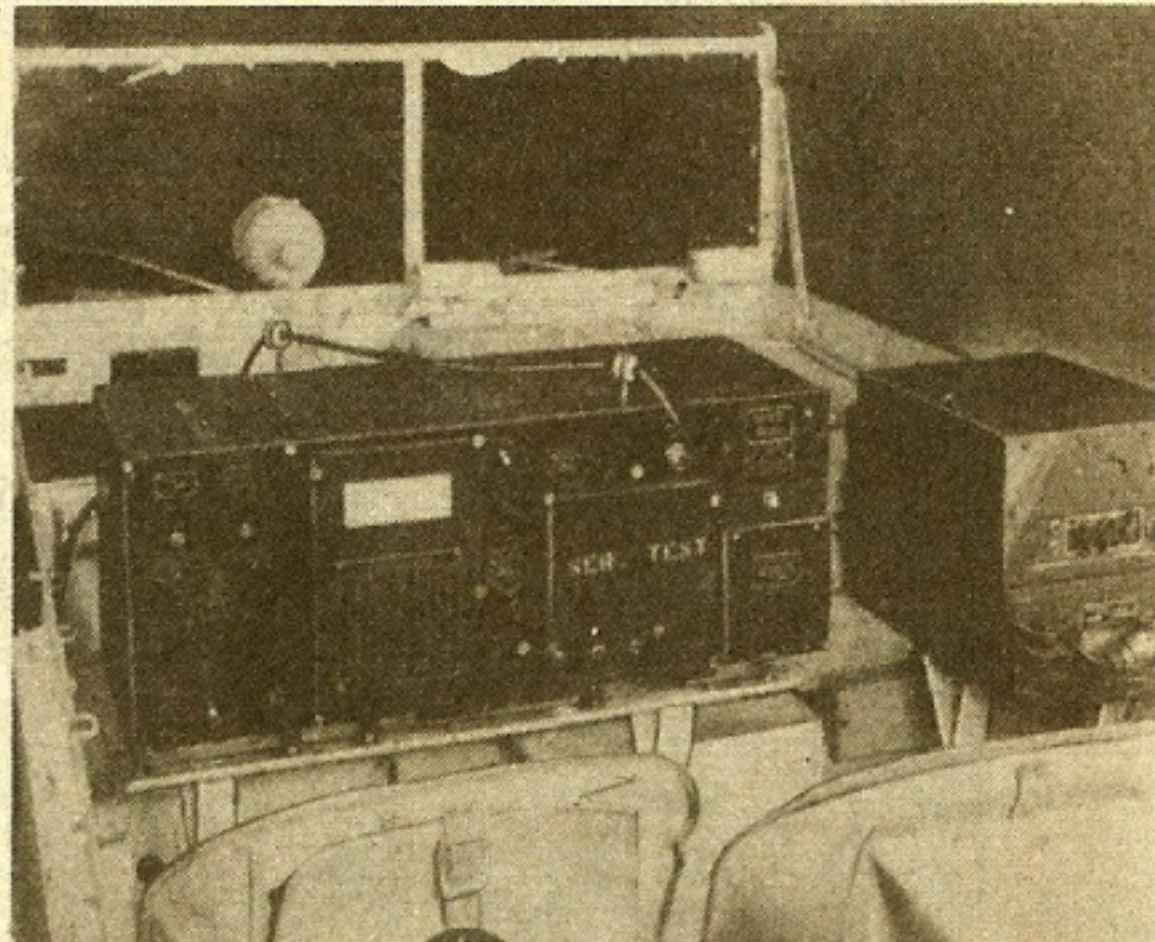


Fig. 2—Radio Sets SCR-510 and SCR-506 will ride snug as a couple of bugs in a rug if they're installed like this in your Cargo Carrier M29 or M29C.

Installing Radios In Motor-Transport Vehicles

tion for which instructions haven't been prepared? In that case, there are a couple of things you can do to keep yourself on the ball. **First**, get ahold of the nearest Signal Officer. He knows the answers. **Second**, get your hooks on instructions for installing some other radio in some other vehicle (try to get instructions that take care of an installation that most nearly

resembles the installation you're trying to make).

Third, radio equipment is shipped from the depots in two units: (a) the **basic unit** which includes the components of the radio set itself; (b) the **installation unit** which includes all the mounting brackets and materials for installing a particular radio in a particular vehicle. (WD Supply Bul-

letin SB 11-14 (15 Jul. 44) contains a table showing the stock numbers of basic and installation units for various equipment and vehicles.)

Now, since you're making an unusual installation for which no special instructions or **installation unit** is available, where are you going to get the brackets, etc., to mount your radio in your vehicle? Common sense is

Radio Sets	Truck, ¼-ton, 4x4	Stock Number of Installation Instruction
SCR-506	}	6D15424-V26
SCR-506, 528		
SCR-608		
SCR-510	}	6D14225-V26
SCR-610		
SCR-193-K		6D12193K-V26
SCR-193-KW (waterproof)		6D12193KW-V26
SCR-284		6D12284-V26
(Limited Standard, being replaced by SCR-694)		
SCR--619*		— — — —
SCR-499		— — — —

NOTE: Installation of Radio Sets SCR-506, 508, 528, 608, and 193 can only be made in the Truck, ¼-ton, 4x4, equipped with a 12-volt electrical system. (MWO Ord. G503-W7 converts 6-volt ¼-ton to 12 volts.)

Radio Sets	Cargo Carriers, M29 and M29C	Stock Number of Installation Instruction
SCR-510	}	6D14225-V33
SCR-610		
SCR-506	}	6D15475-V33
SCR-508, 528		
SCR-608		
SCR-193-S		
SCR-694-C*		— — — —

Radio Sets	Truck, ¾-ton, 4x4, Command	Stock Number of Installation Instruction
SCR-193-Q	}	6D15175-V15
SCR-506		
SCR-508, 528		
SCR-510		
SCR-608		
SCR-610		

Radio Sets	Truck, ¾-ton, 4x4, Command (Continued)	Stock Number of Installation Instruction
SCR-619*		— — — —
SCR-808		6D12808-V15
RC-58 Facsimile Equipment		6D12058-V15
Truck, ¾-ton, 4x4 Weapons Carrier		
SCR-506		— — — —
SCR-508, 528		— — — —
SCR-510		— — — —
SCR-608		— — — —
SCR-610 (for 6-V Vehicles)		6D14250-V36
SCR-610 (for 12-V Vehicles)		— — — —
SCR-619*		— — — —
SCR-808*		— — — —
SCR-193-U		— — — —
SCR-284		6D14250-V36

(Limited Standard, being replaced by SCR-694)

RC-58 Facsimile Equipment

NOTE: Installations of Radio Sets SCR-506, 508, 808, 528, 608, 193, and RC-58 can only be made in the Truck, ¾-ton, 4x4, Weapons Carrier, having a 12-volt electrical system.

Radio Sets	Truck, 1½-ton, 6x6, Personnel and Cargo	Stock Number of Installation Instruction
SCR-610		6D15425-V62
SCR-284		6D15425-V62

(Limited standard, being replaced by SCR-694)

Radio Sets	Truck, 2½-ton, 6x6	Stock Number of Installation Instruction
SCR-510		6D14225-V35

*Should be ready for issue by the time you read this. NOTE: Stock Numbers of Installation Instructions for vehicles not listed above are given in TB SIG 84 (17 Aug. 44).

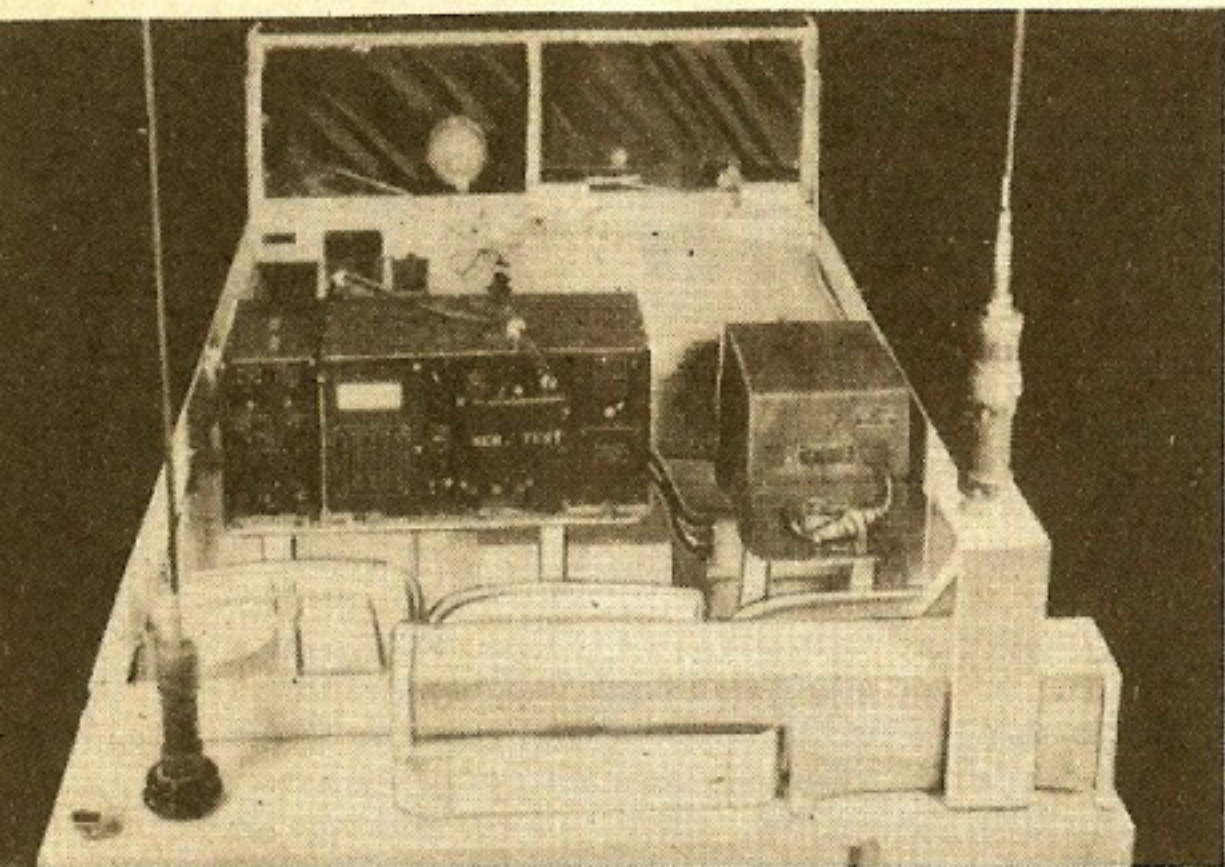


Fig. 3—Radio Sets SCR-510 and SCR-506 using Antenna Mast Bases MP-48 and MP-57 installed in your Cargo Carrier M29 or M29C.

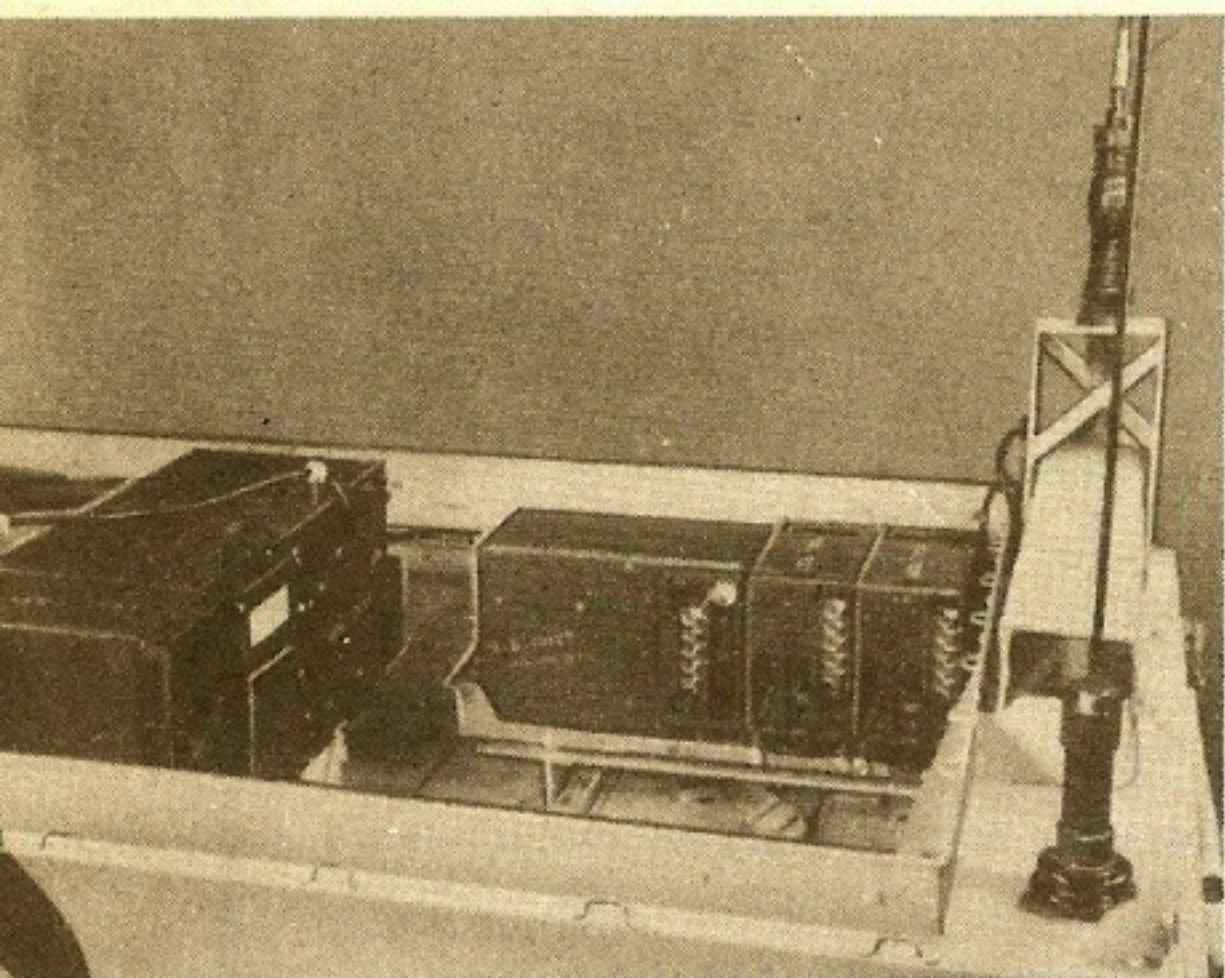


Fig. 4—Radio Sets SCR-506 and SCR-508 with Mast Base MP-48 and MP-57 in M29 or M29C.

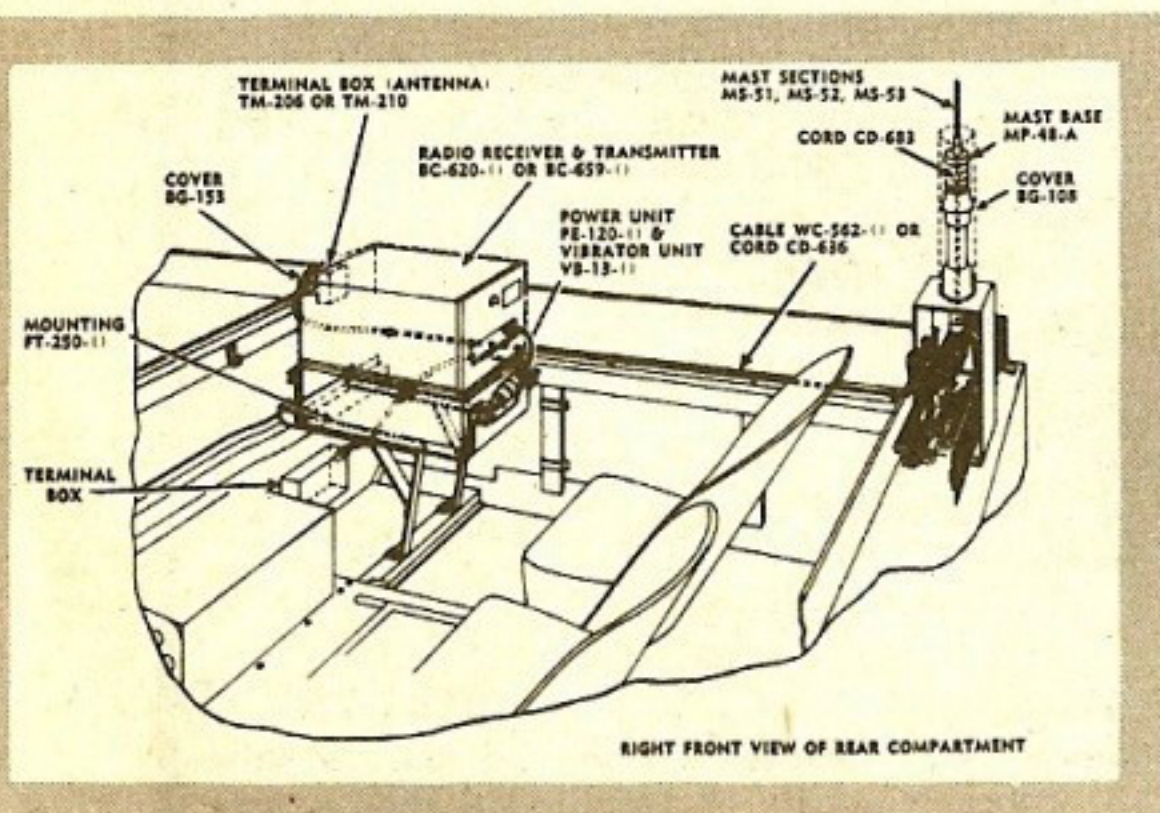


Fig. 5—SCR-510 tucked away thus in Cargo Carrier M29 or M29C, won't get in anybody's hair.

your answer. As before, figure out which installation (for which an installation unit is provided) comes closest to your case. Order this unit. Of course, you may have to rework some of the brackets in the unit, but at least you've got something to start with.

Remember that all supports and brackets—original or reworked—must be fixed strongly enough to stand up under the vehicle's rough ride. Your radio won't survive many tumbles.

Now that you're off to a flying start, here are some guideposts to keep you out of future trouble:

1. Whereabouts in the vehicle are you gonna sit the radio and antenna? Don't locate it so that sharp edges keep gouging divots out of the driver's skull or so that people have to step all over the radio operator to get from one place to another in the vehicle.

2. Locate the antenna-mast base to allow a direct route for the lead-in: (a) to keep the lead-in as far away from electrical gadgets and wires as possible (the lead-in picks up static from electrical gadgets and wires); (b) so that the mast base allows the antenna-mast sections to stand vertical. The more the antenna slants away from vertical, the less range your radio has.

3. The lead-in, as we hinted a minute ago, has to be a certain specified length for good communication. Too long or too short and you get a buzzing in the ears. So before mounting the mast base, measure the distance the lead-in will travel between the connecting terminal on the mast base and the antenna binding-post on the radio set (see chart, page 276).

4. The radio must be well grounded to the vehicle. Use tooth-type **cadmium-plated** (or equal) lockwashers under the heads of screws and nuts used for mounting the base and brackets. Use these tooth-type lockwashers to mount the brackets to the vehicle body. Pull the screws and nuts up tight so that the teeth in the lockwashers bite through the paint, guaranteeing good ground.

5. Your radio set comes com-

plete with a power cable to be connected to the radio-terminal box on the vehicle. Some of these cables are special jobs, using the outer-shield braid as a negative lead to be connected to the negative post in the radio-terminal box. The inner core is connected to the positive post in the terminal box. Power-cable connections, incidentally, must be good and tight. If the cable's too long, don't cut it. Coil it a couple times and tape it up out of the way. This cable was made to reach any radio-terminal box. (Most vehicles are now provided with a radio-terminal box already wired to the battery.

6. Before turning on the juice, make sure your radio set is designed to operate on the vehicle battery. If the vehicle battery is 12 volts, are all adjustments made in the radio set for 12-volt operation? Check the dynamotors or vibrators in the receivers and transmitter or plate supply-unit to be sure they're marked for 12-volt operation.

7. Are you getting enough juice into the antenna to call all cars and otherwise work your net? Check your antenna and lead-in system against these recommendations from Signal Corps laboratories: (As a matter of fact, even if your radio was installed at a depot, it won't hurt to make these checks):

- (a) With Radio Sets SCR-508, SCR-528, SCR-608, and SCR-808, three mast-sections are always used except when the installation includes Mast-Base Bracket MP-52, which is used with Chest Ch-74. Only two mast-sections are used with Mast-Base Bracket MP-52. When Wire W-128 is connected to the bottom connector of Mast Base MP-48, it must **not** be longer than 40 inches. You can feed Wire W-128 directly through Mast Base MP-48 or Mast Base MP-48-A. (MP-48 and MP-48-A are different but mechanically interchangeable. MP-48 comes with internal lead-assembly already installed and with connectors for wire lead-in or coaxial cable. This internal lead-assembly and coaxial con-

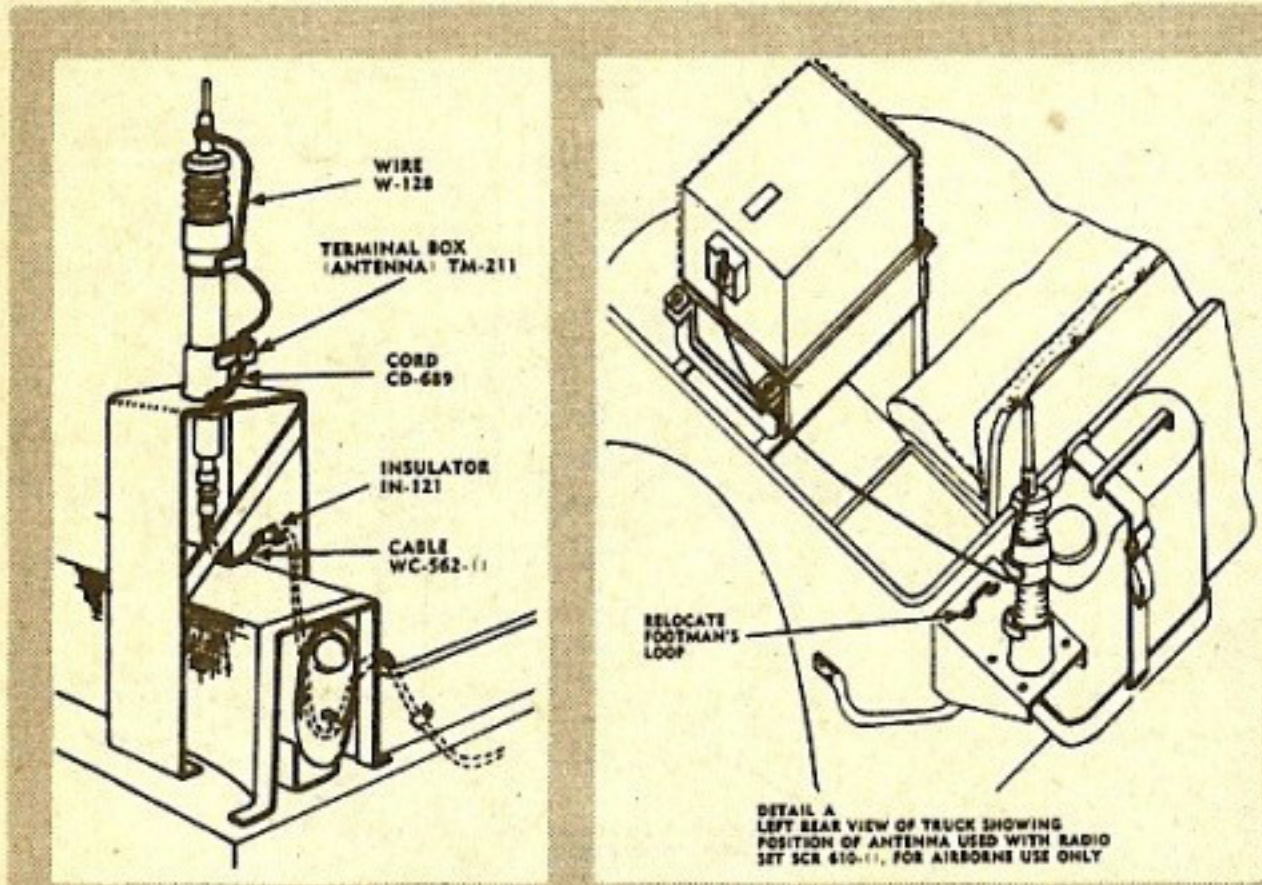


Fig. 6—Mast-base bracket and wiring in M29 or M29C with SCR-610. Fig. 7—Mast base as used in airborne 1/4-ton's with SCR-610.

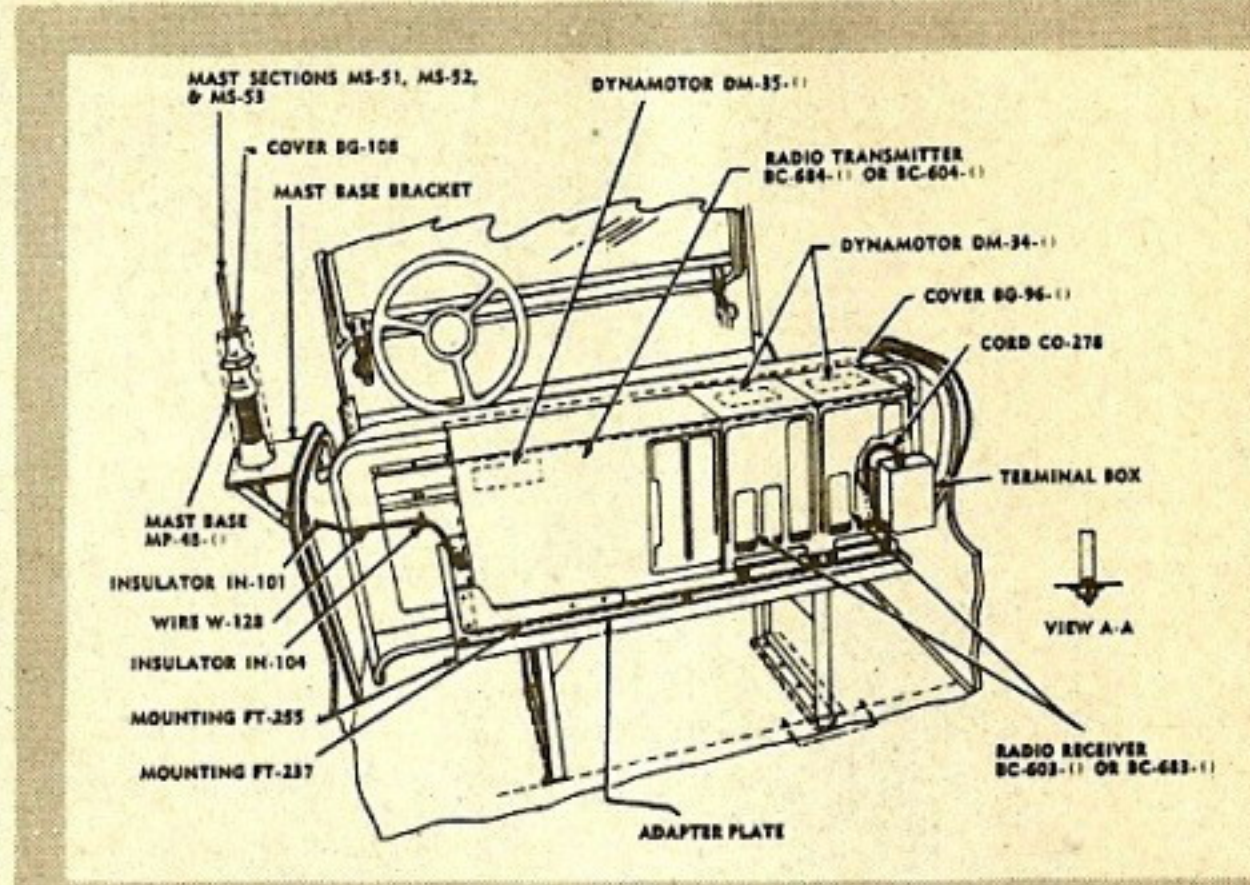


Fig. 10—The 3/4-ton Command Car, this time with Radio Set SCR-508 or SCR-608 sitting in your lap. Can't put in on the roof, y'know.

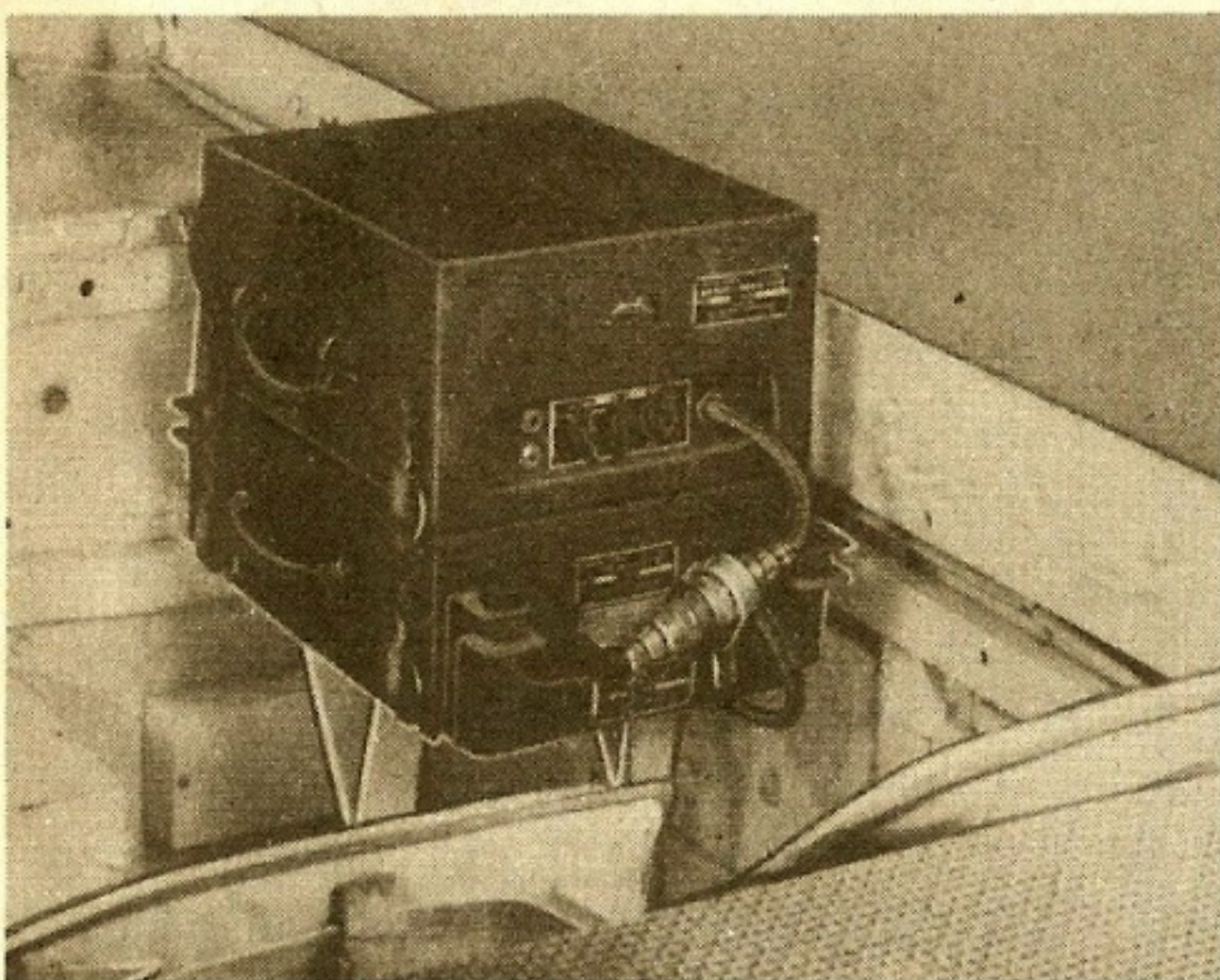


Fig. 8—Here's a view of SCR-610 or SCR-510 as the Signal Corps sees it for your M29 or M29C.

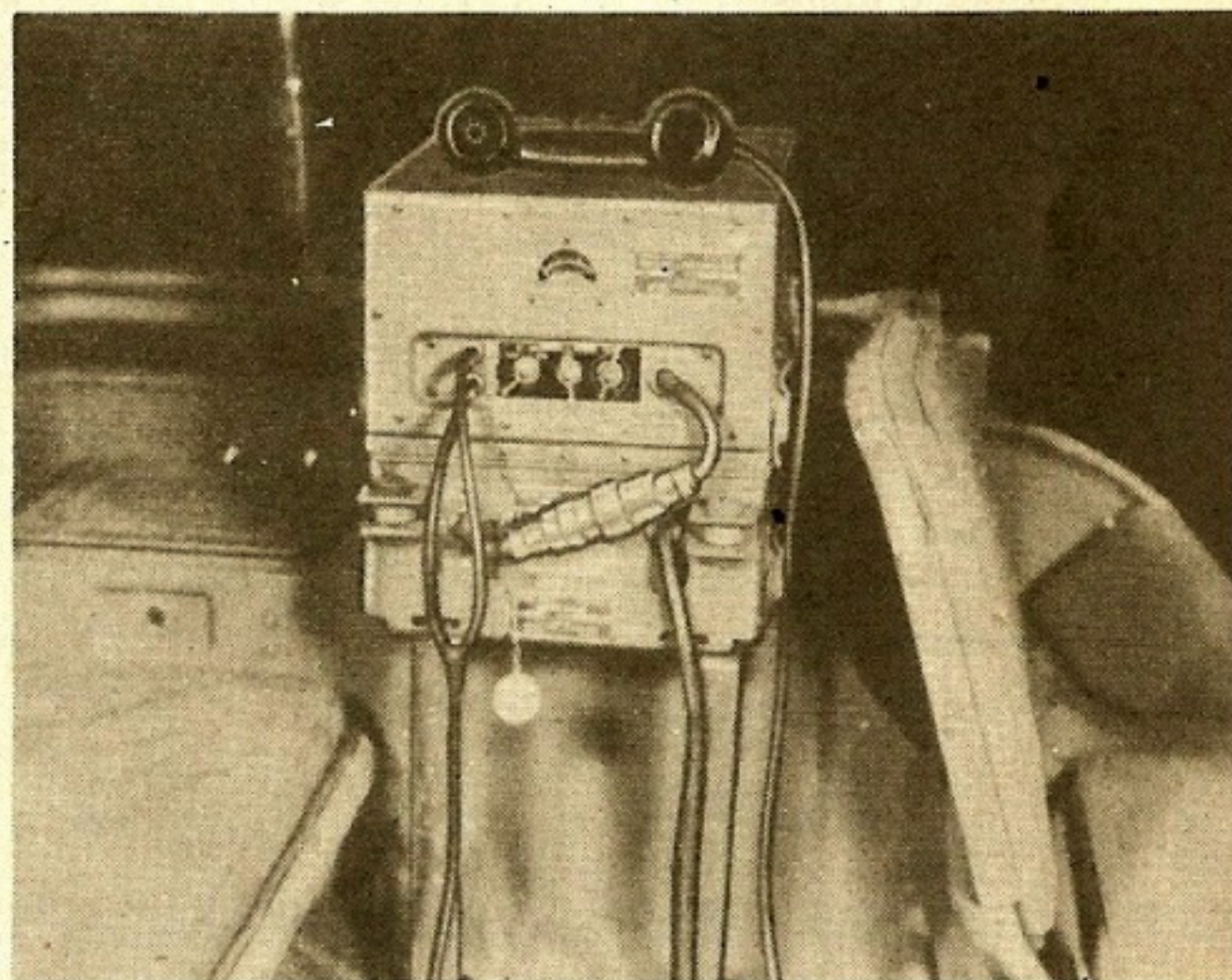


Fig. 11—Radio Set SCR-510 viewed from the right-hand side of the 1/4-ton jeep. More on this below.

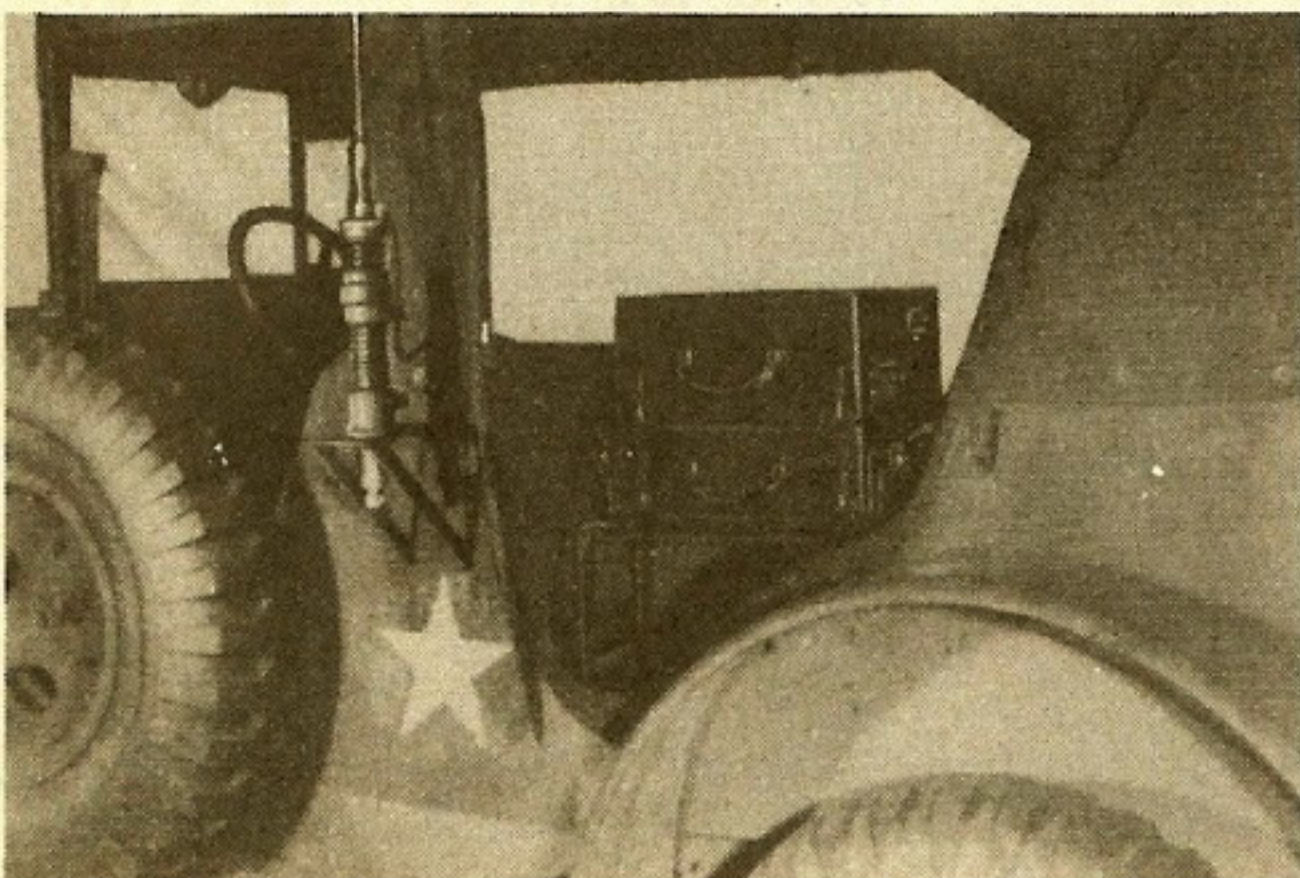


Fig. 9—SCR-510 in the 3/4-ton Command Car. Shin guards would help, but this is the best set-up.

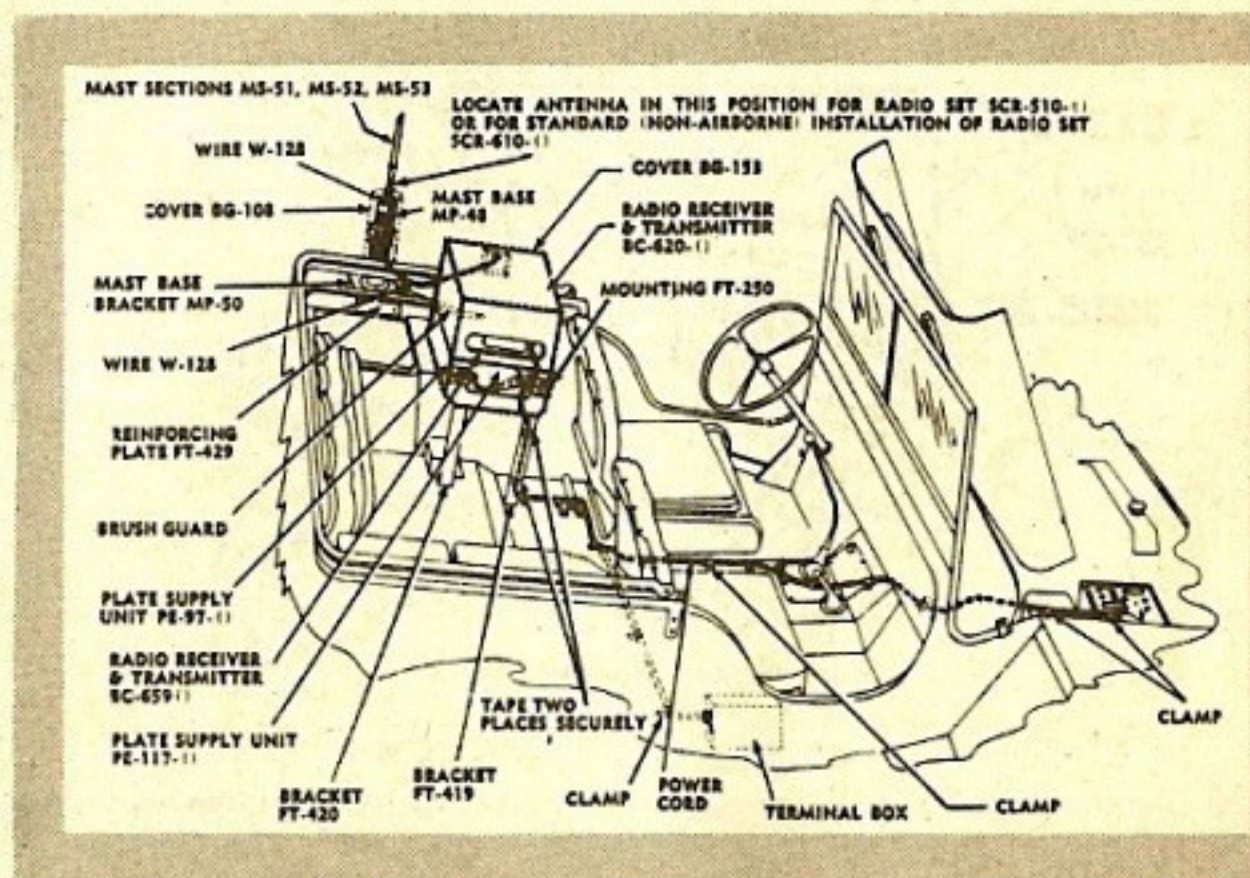


Fig. 12—Here's the grand panoramic view of SCR-510 or SCR-610 installed in the 1/4-ton jeep.

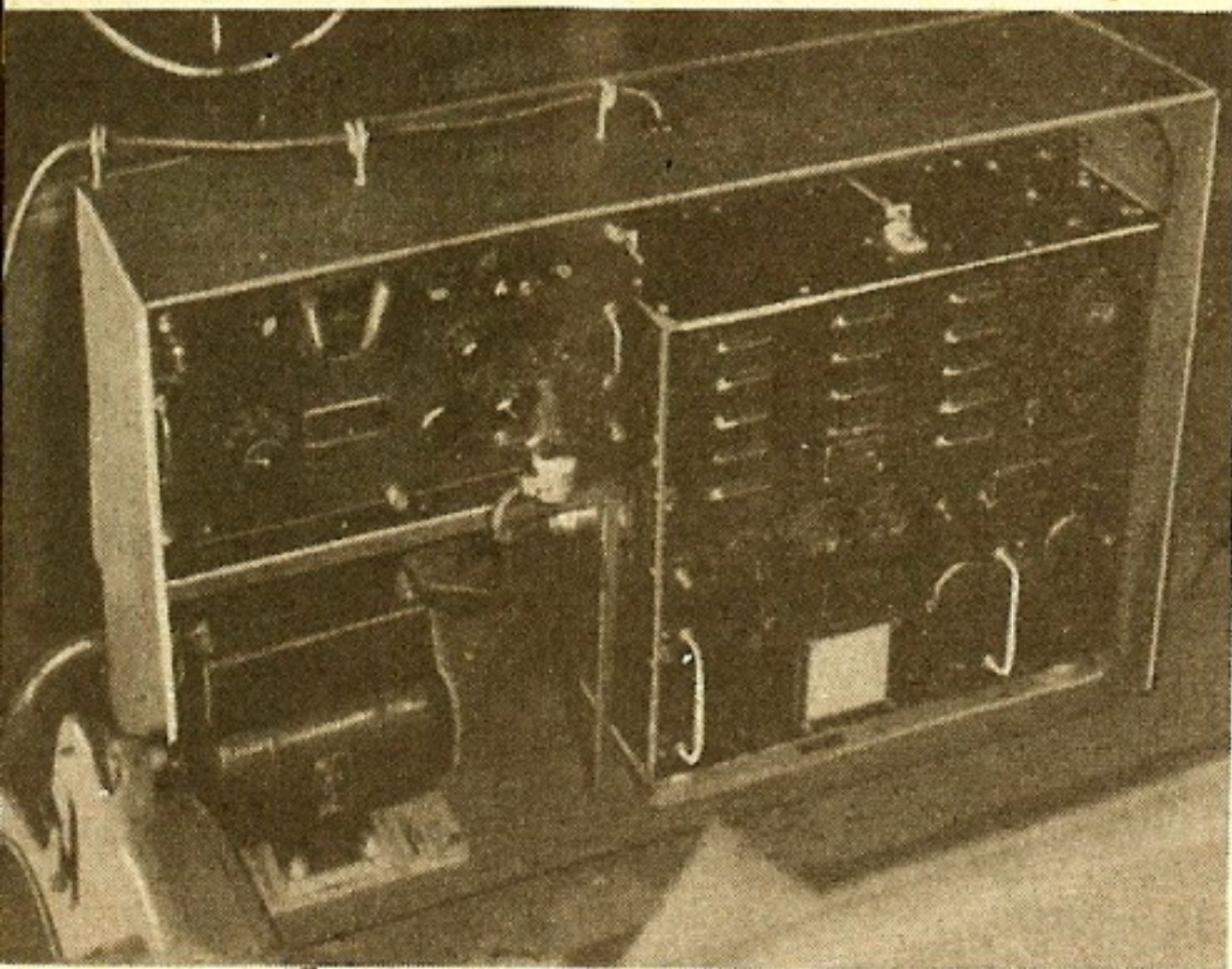


Fig. 13—Radio Set SCR-193-Q installed in the 3/4-ton Command Car. It sits right behind the driver.

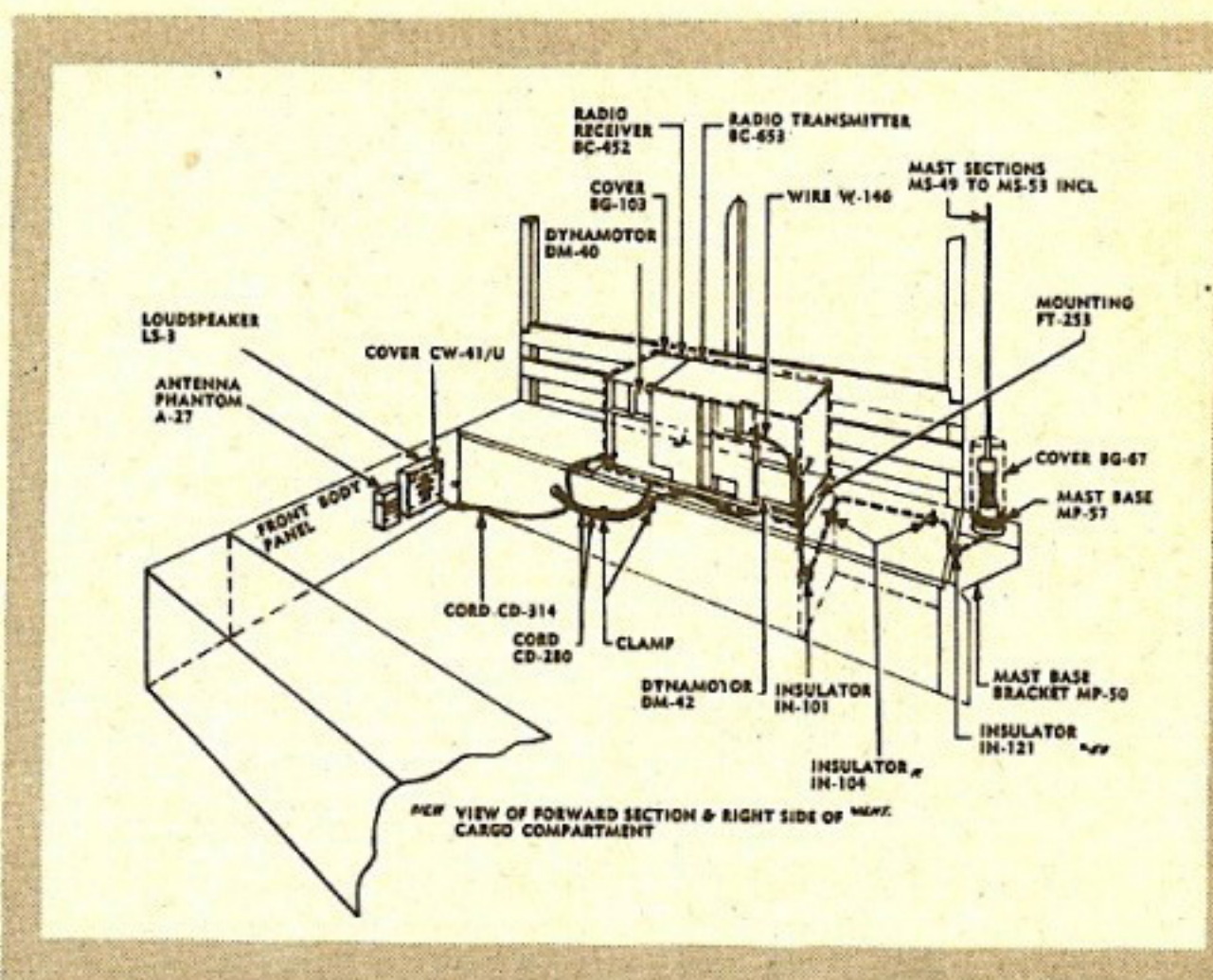


Fig. 16—Again the 12-volt, 3/4-ton Weapons Carrier, this time with SCR-506 installed in the body.

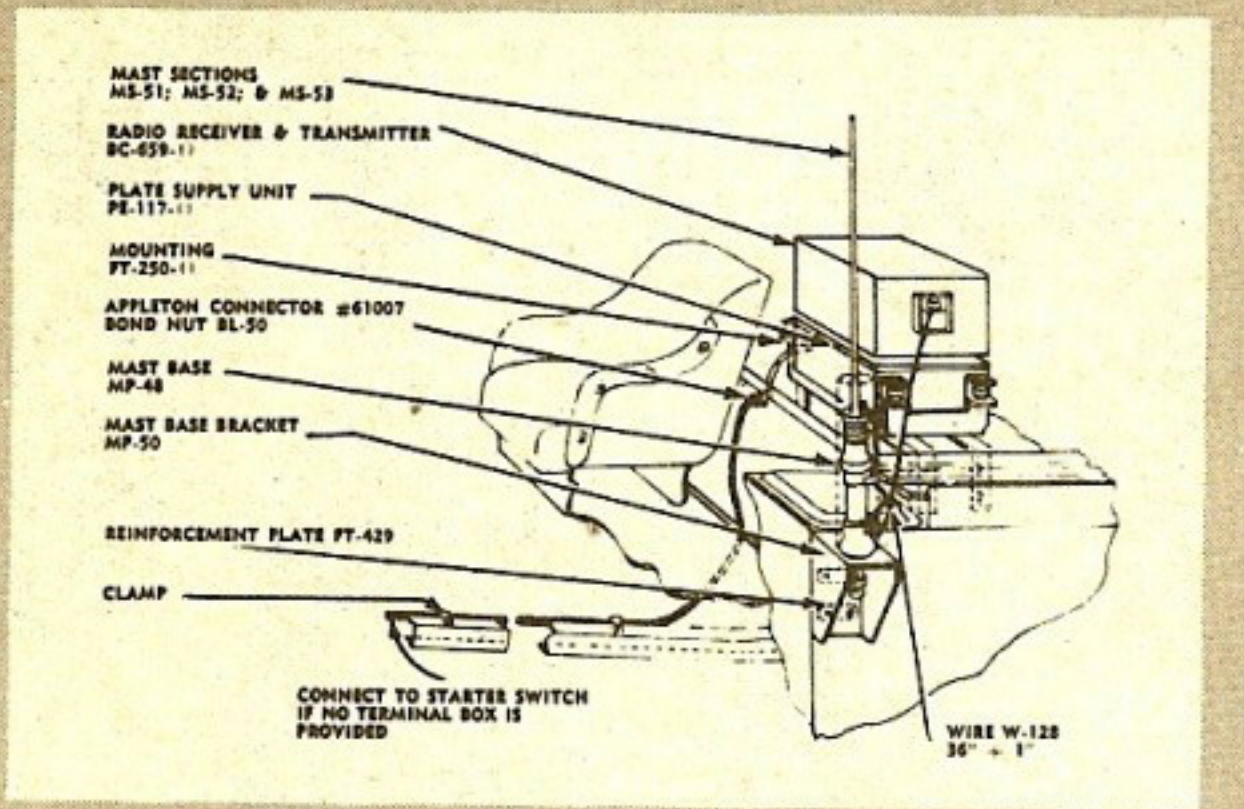


Fig. 14—Install Radio Set SCR-610 this way in the 3/4-ton Weapons Carrier (6 volts). Best by test.

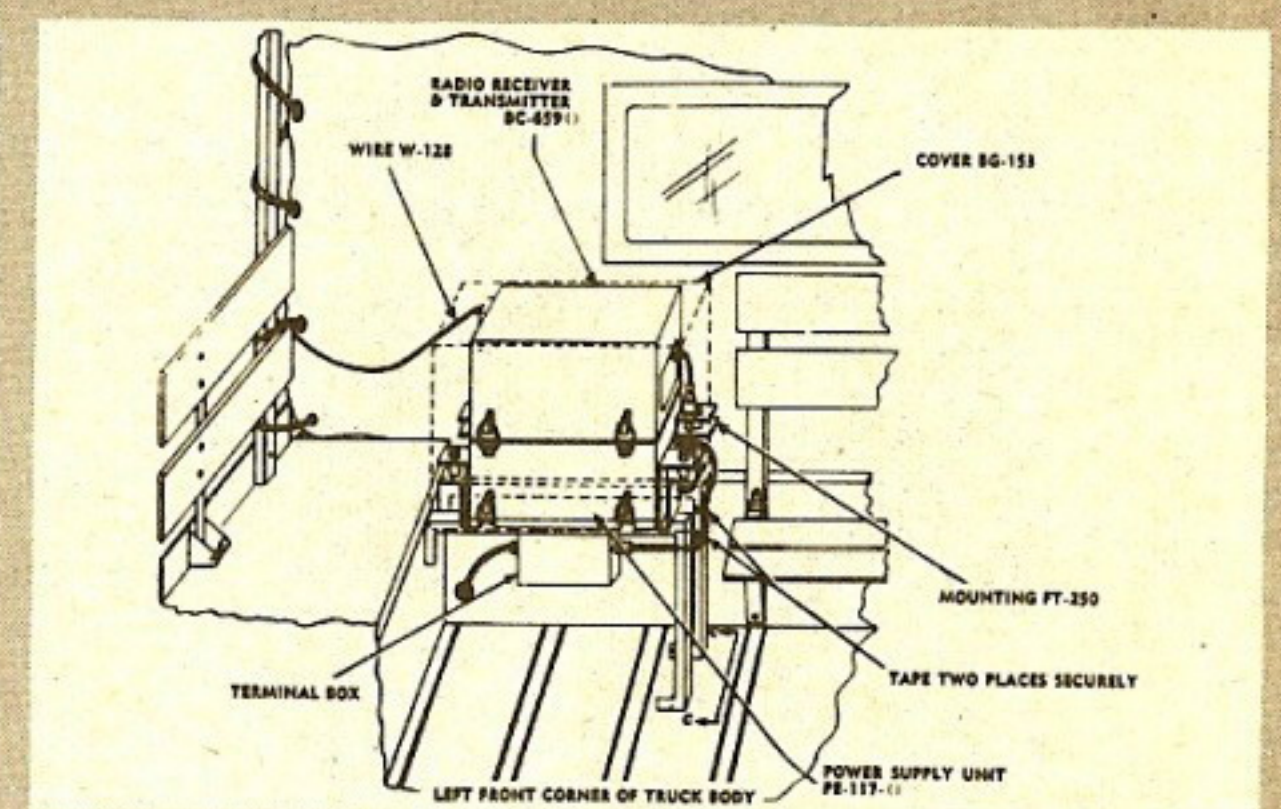


Fig. 17—Plenty of space in the 1 1/2-ton Dodge—but here's the best way to install SCR-610.

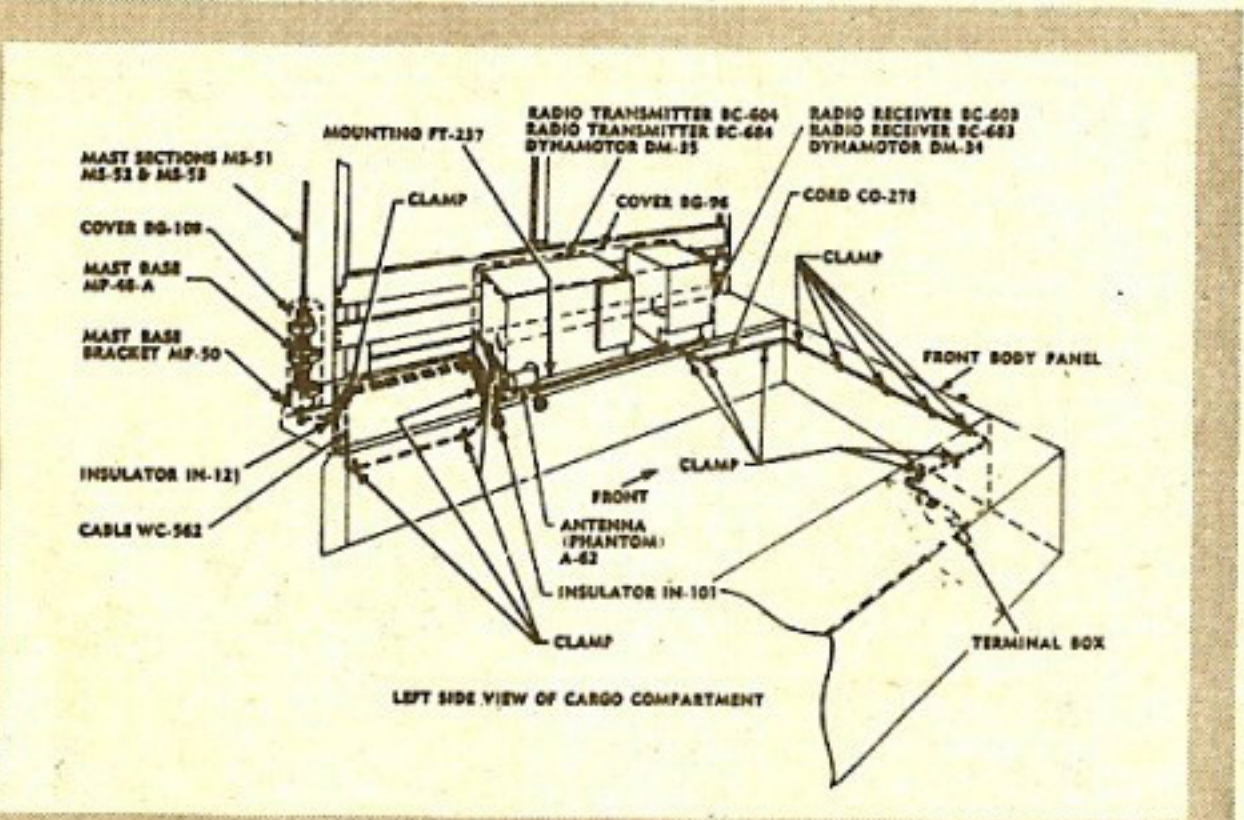


Fig. 15—The 12-volt, 3/4-ton Weapons Carrier has SCR-508, SCR-528, or SCR-608 installed like this.

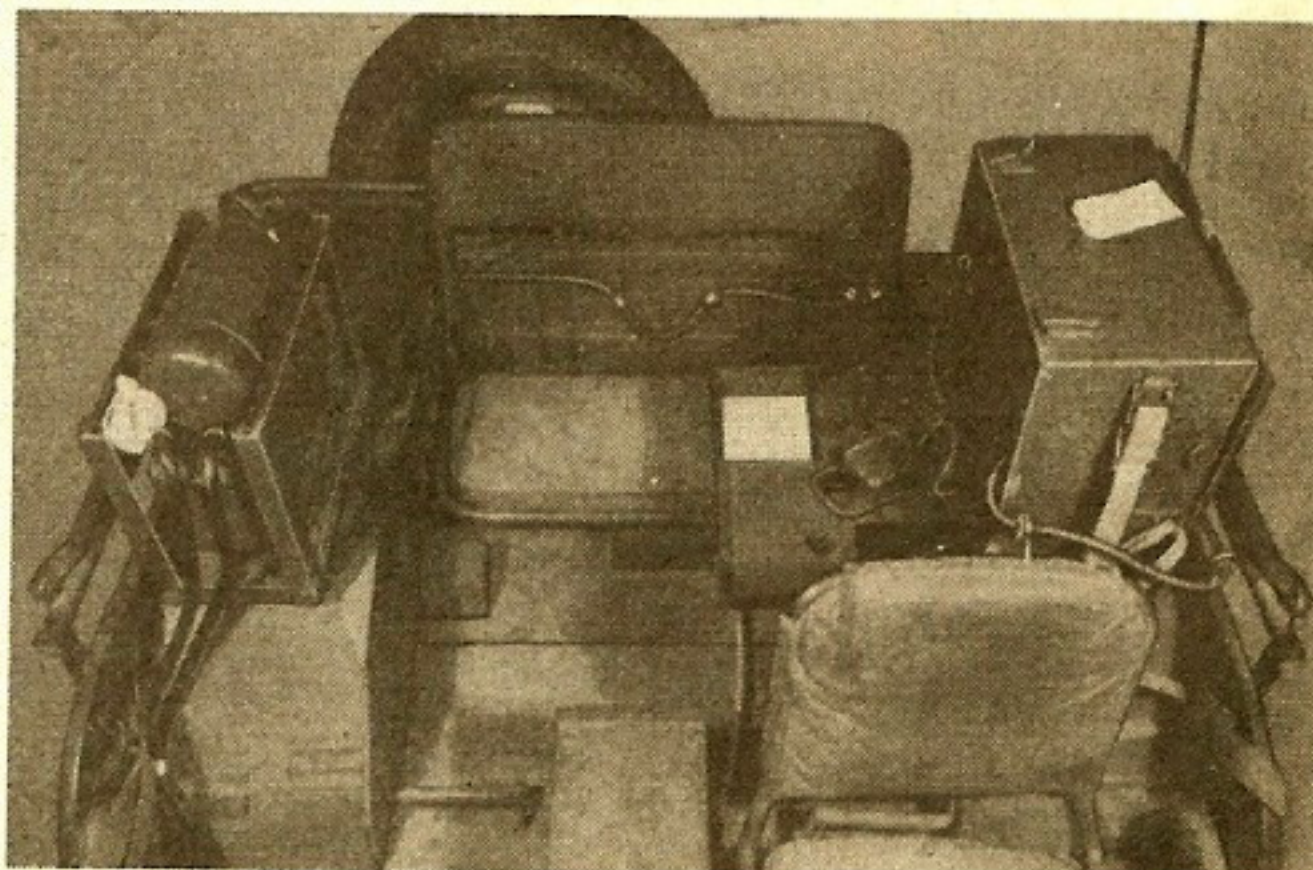


Fig. 18—Damn near standing room only, but this is the best installation for SCR-284 in the 1/4-ton.

nector must be removed when Wire W-128 is connected directly to the upper external-terminal. MP-48-A comes with Wire W-128, six feet long, connected internally to the top of the mast base. When a coaxial cable is used, replace this wire with Cord CD-689.) When Wire W-128 is internally connected directly to the top of the mast base, it must not be over 52 inches long. Some installations using Bracket MP-52 allow a length of 58 inches.

(b) When Radio Sets SCR-508, SCR-528, and SCR-608 mentioned above are positioned in the vehicle so that the lead-in is longer than 52 inches (or in exceptional cases, 58 inches) Coaxial Cable WC-562 (or CO-282) must be used. For Radio Sets SCR-508 and SCR-528, the coaxial cable must not be longer than ten feet or shorter than eight feet; for Radio Set SCR-608 not longer or shorter than six and eight feet. When these radios are installed by depots, a length of eight feet is used when possible so that Radio Sets SCR-508 and SCR-608 can be interchanged.

(c) When the length of the lead-in used with Radio Set SCR-510 is between 23 and 25 inches, two mast-sections are required. In this kind of installation, Wire W-126 or W-128 is used for the lead-in with Mast Base MP-48 or MP-48-A. On installations where the lead-in is required to be over 25 inches, Coaxial Cable CD-636, Terminal Box TM-206, and Mast Base MP-48 or MP-48-A are used with three mast-sections. When Mast Base MP-48-A is used in a coaxial-cable installation, Cord CD-689 is required in addition to the items listed above.

(d) For Radio Set SCR-610, three mast-sections and Mast Base MP-48 or MP-48-A are used in all installations where an antenna lead-in composed of Wire W-128 is used. The lead-in must be held to 36 inches, plus or minus, one inch. If the antenna lead-in requirement is over 37 inches, three mast-sections, Mast Base MP-48 or MP-48-A, Coaxial Cable WC-562 (or CO-282), and Terminal Boxes TM-210 and TM-211 are used.

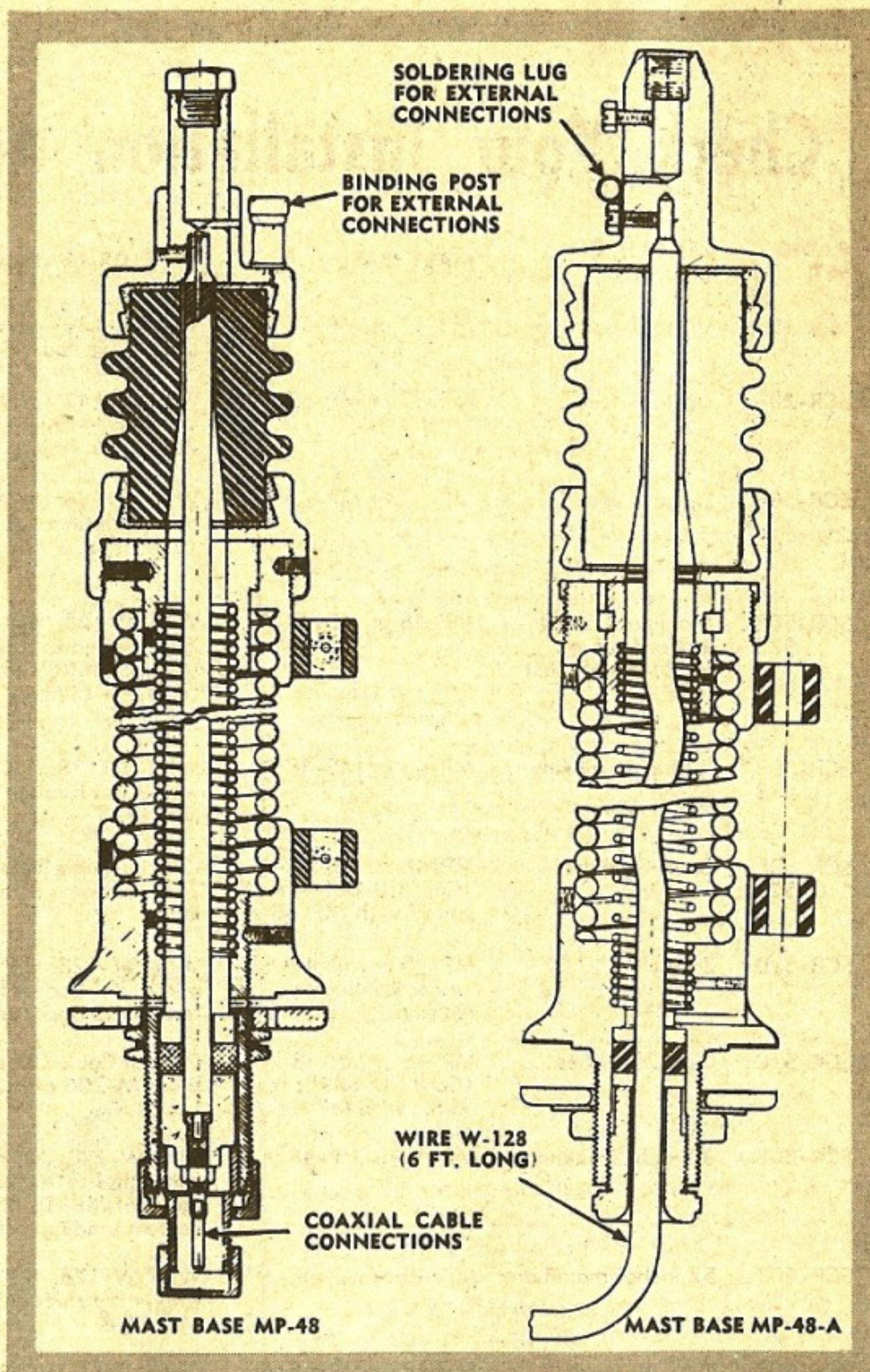


Fig. 19—Remove the inner conductor as per story or you'll cut the range of your radio set plumb in half.

Where MP-48-A is used, Cord CD-689 must be used. In this case, the coaxial cable must not be longer than nine feet or shorter than four.

Whatever the case, you've got to remove the inner conductor from Mast Base MP-48 or MP-48-A when the antenna lead-in Wire W-128 is connected to the top binding-post of Mast Base MP-48. This is absolutely necessary on

Radio Sets SCR-510 and SCR-610. Otherwise you'll find the range of your sets cut down to about 50 per cent of what they should be.

At considerable expense to the management, in blood, sweat and tears, we present (on the next page) a chart which gives you in a nutshell the recommendations for different kinds of installations. The length of the lead-in determines what shall be what.

Check Your Installation Against These

RADIO SET	LENGTH OF LEAD-IN	MAST BASE	TYPE OF LEAD-IN	MAST SECTION
SCR-193	Up to 7 feet	MP-37 or MP-57	Wire W-128—as short as possible (7 ft. max.)	MS-49 to MS-53 inclusive
SCR-284	Up to 7 feet	MP-37 or MP-57	Wire W-142 (or W-128 as substitution)—as short as possible (7 ft. max.)	MS-49 to MS-53 inclusive
SCR-506	Up to 7 feet	MP-37 or MP-57	Wire W-146 (or W-128 in emergency) as short as possible (7 ft. max.)*	MS-49 to MS-53 inclusive (3 MS-54 added for stationary operation)
SCR-508-528	Maximum of 40 inches from set to bottom of mast base	MP-48 or MP-48-A	Wire W-128. 40" max. length if connected to top external-terminal of MP-48-A, or to top or bottom binding-post of MP-48	MS-51 to MS-53 inclusive
SCR-508-528	52 inches maximum	MP-48 or MP-48-A	Wire W-128. 52" max. when wire is fed through MP-48 or MP-48-A	MS-51 to MS-53 inclusive
SCR-508-528	Over 40 inches	MP-48 or MP-48-A (Cord CD-689 is required with MP-48-A)	Coaxial Cable WC-562 (or CO-282) between 8 ft. and 10 ft. long	MS-51 to MS-53 inclusive
SCR-510	24 inches	MP-48 or MP-48-A (inner conductor removed)	Wire W-128. 24" plus or minus 1". Connect externally to upper terminal	MS-52 and MS-53
SCR-510	Over 25 inches	MP-48 or MP-48-A (Cord CD-689 is required with MP-48-A)	Coaxial Cable CD-636. Terminal Box TM-206 on Radio Set	MS-51 to MS-53 inclusive
SCR-608	40 inches maximum	MP-48 or MP-48-A	Wire W-128. 40" max. length if connected to top external-terminal of MP-48-A, or to top or bottom binding-post of MP-48	MS-51 to MS-53 inclusive
SCR-608	52 inches maximum	MP-48 or MP-48-A	Wire W-128. 52" max. when wire is fed through MP-48 or MP-48-A	MS-51 to MS-53 inclusive
SCR-608	Over 40 inches	MP-48 or MP-48-A (Cord CD-689 required with MP-48-A)	Coaxial Cable WC-562 (CO-282) between 6 ft. and 8 ft. long	MS-51 to MS-53 inclusive
SCR-610	36 inches	MP-48 or MP-48-A (inner conductor removed from MP-48)	Wire W-128. 36" long, plus or minus 1". Connected externally to upper terminal	MS-51 to MS-53 inclusive
SCR-610	Over 37 inches	MP-48 or MP-48-A with Terminal Box TM-211 attached to lower part of base (Cord CD-689 required for MP-48-A)	Coaxial Cable WC-562 (CO-282) between 4 ft. and 9 ft. long. Terminal Box TM-210 on radio set	MS-51 to MS-53

*Cargo Carriers M29 and M29C must use a slightly longer lead-in because of distance from radio set to mast base

NOTE: All nomenclature and part numbers in this article are Signal Corps, not Ordnance

Towing Device for 2½-Ton Wrecker

IF TOWED VEHICLES SWING AND SWAY AND GET BASHED-IN FRONTS, TRY THIS BEHIND YOUR GMC-WITH-SUPERSTRUCTURE

Bars aren't usually noted for their steadying effect, but that's where these bars are different. Whip up this special spacer and spreader-bar combination and say goodbye to the problem of towed vehicles (with front end up) lurching

around like crazy.

Credit for what follows goes straight to **Pfc Clarence L. Hayford**, AAF, Miami Beach, Fla. And what follows goes like this:

The combination consists of lifting chains, one spreader bar, and two spacer bars.

To make the pair of lifting chains, use one or two standard tow-chains (Fig. 1) placed in the hoist-chain hook. Whether you use one or two chains will depend on the vehicle to be towed—which should never be bigger than another 2½-ton 6x6. If you use a single tow-chain for lighter vehicles, wrap it around the upper portion of the hoist hook to prevent side-slipping.

Make your spreader bar from a piece of 2" extra-strong salvage pipe, cut 29" long. With a hacksaw, cut a slot big enough to take the tow chain in each end of the bar (Fig. 2).

Now cut two spacer bars, each 38" long, from 2" extra-strong salvage pipe, and weld a ring or loop (made from ¾" round rod and having a 3½" inside diameter) at one end of each bar (Fig. 3). As the Fig. shows, the rings should be slightly offset from the center of the pipe ends, to allow free movement when the rings are placed in the pintle hook of the wrecker.

At the other end of each spacer bar, weld a 4" piece of strap iron (1½" wide and ¼" thick) to each side to form a clevis. These pieces go at right angles to the ring on the other end. Place a ½" bolt through each clevis for fastening the spacer bars to the lifting chains when you're rigging the outfit. Be sure to drill the bolt holes far enough from the end of the pipe to make room for the chain.

You rig the device by first fastening the lifting chains (or chain) to the hoist-chain hook, and then fastening the other ends of the chains around the bumper and side-frame supports of the vehicle to be towed. Just forget about the tow hooks when you're going to raise the front end—you don't use them. Now place the spreader bar between the lifting chains at least 12 inches above the bumper of the towed vehicle and hoist the front end to towing height. Next, fasten the clevis ends of the spacer bars to the lifting chains (by sliding the bolt through a link) about 4 inches above the bumper of the towed vehicle—that's below the spreader bar. Slip the ring ends of the spacer bars into the pintle hook of your 2½-ton wrecker, and you're off to the races. Fig. 4 gives a rough idea of how the whole thing shapes up.

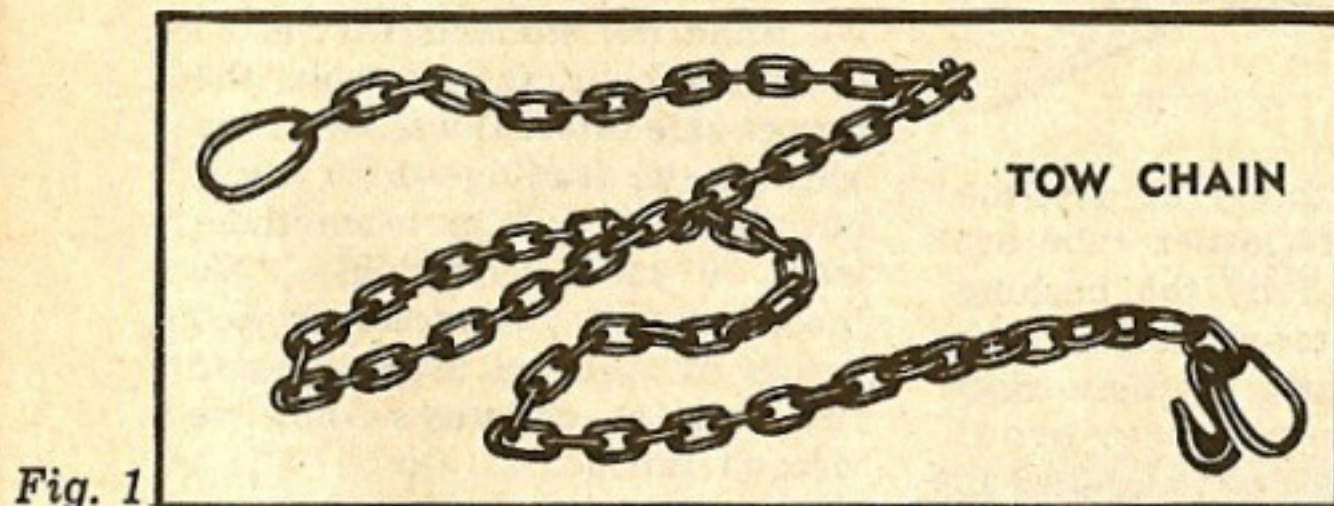


Fig. 1

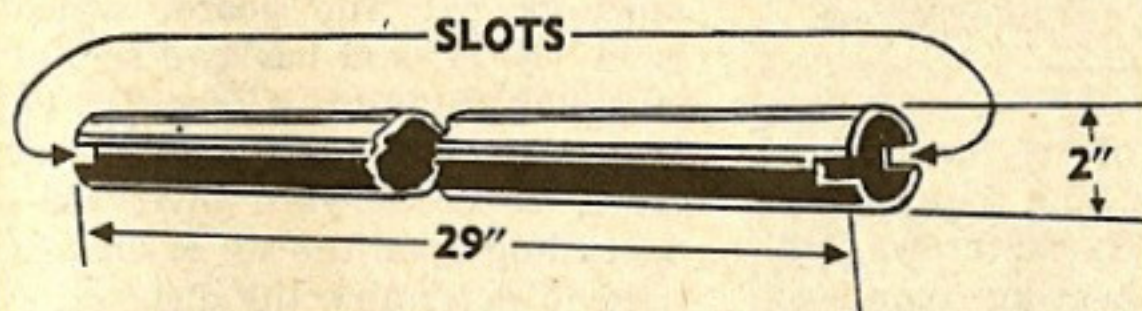


Fig. 2

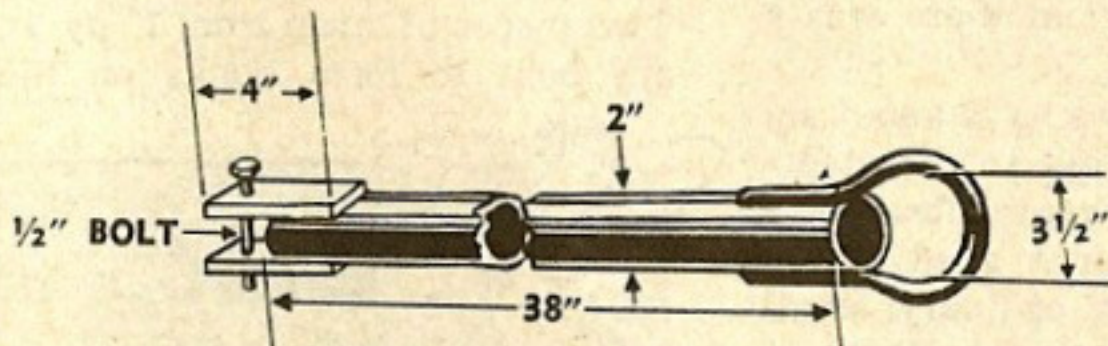


Fig. 3

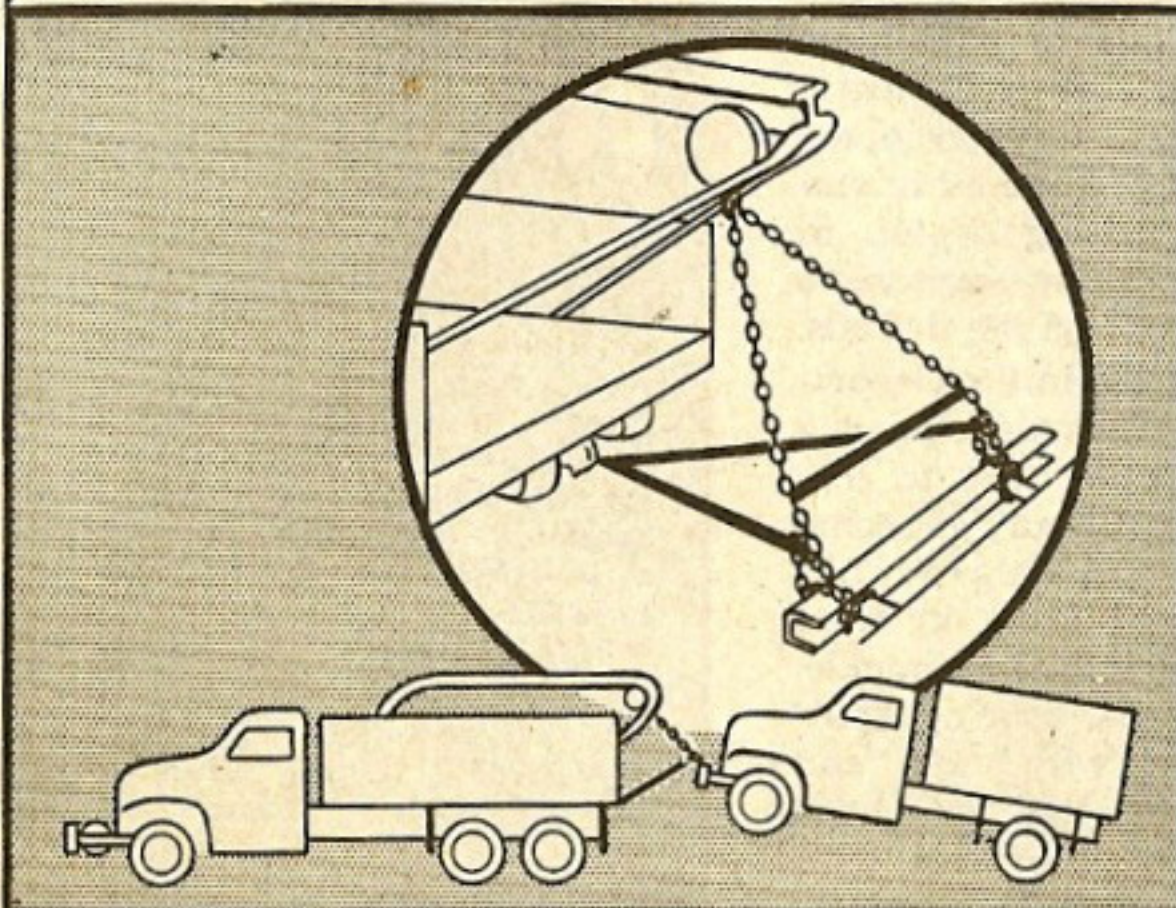


Fig. 4

CONTRIBUTIONS



Dear Editor,

In this part of the country we have lots of dust, and the results are an unusual number of $\frac{1}{4}$ -ton jeep engine failures. Some as early as 5000 miles. Most of these failures are due to air leaks in the carburetor oil-bath air-cleaner tube, hose, and air horn.

In several camps I've been in, I've noticed some of the 3rd and higher-echelon shops committing an unpardonable crime. The crime is that when replacing engines in the old $\frac{1}{4}$ -tons without the positive crankcase ventilation, they put a new engine in **with** the positive crankcase ventilation and leave the air-intake tube on the oil filler-pipe open, never connecting it to the carburetor air-cleaner tube. The vacuum-operated ventilating system will pull plenty of dust and dirt into the crankcase, and there'll be plenty more engine failures.

This is how to connect it. Find a piece of tubing the same size as the one coming out of the oil filler-pipe, drill a hole in the carburetor air-cleaner tube, and solder the piece of tubing in it. Last, connect a piece of rubber tubing between the two pipes. This will give the crankcase the nice, clean, fresh air it needs.

Don H. Holbrook
Civilian Automotive Advisor

(Ed. Note—You're right, there'll be plenty of trouble if the positive crankcase ventilation isn't connected. And TB 9-803 FE1 (17 Aug. 44) has been published, describing your way of doing it.

Here's another thing. Be sure the slots in the air-cleaner tube are entirely covered by the bushing (at the carburetor end of the connection). If parts of these slots are exposed, wrap water-proof tape around the connection to close them, otherwise sand and dirt can still get in the engine.)

Dear Editor,

What many of us have been predicting for a long time finally happened. The six capscrews that hold the wheel-bearing spindle to the steering knuckle on the $\frac{1}{4}$ -ton, 4x4, stripped right out. The front wheel came off, and there was a serious accident.

These capscrews have about six threads or $\frac{1}{4}$ " hold in the steering knuckle. Twenty lbs. on a torque wrench or a good strong Joe Dope on an ordinary small box-end wrench can strip them.

Besides the regular 6000-mile service, we've had to pack constant-velocity universal-joints pretty often here. Cavalry operates cross-country quite a bit, and we're always getting water in these joints. Taking capscrews out so often is hard on the threads.

Major Joe Carich in the Department of Motors has developed a simple and effective way to correct the trouble. Simply get some longer capscrews with threads full length and screw them in from the inside of the steering knuckle. Slip on the wheel-bearing spindle and fasten with nuts and lockwashers. In case the head of the capscrew interferes with the constant-velocity universal-

joint or hits the side of the casting, grind off to suit taste.

Capt. Dan Norton
The Cavalry School

(Ed. Note—If these capscrews loosen, you'll feel a looseness through the steering gear, too. The manufacturers are considering making this same change in production.)

Dear Editor,

Our greatest problem with student drivers was teaching safe intervals between trucks in convoy. We could tell students that at 35 miles per hour, for example, the proper safe interval was twice the speedometer reading—or 70 yards; but then we had to teach them what 70 yards looked like. We measured off distances, parked trucks at specified intervals, and ran practice convoys—but we weren't satisfied.

Finally I worked out this distance board. The board, which is 14" by 24" and has two sets of crosses painted on it (see Fig. 1), is designed to hold the trucks at either 25 or 70 yard intervals—depending upon the set of crosses used to determine the distance.

The board is mounted on the tailgate with strap iron brackets. Two pieces of strap iron, 1" by 3", are bent to form hooks on the



What DO YOU THINK ABOUT?

Okay, what else do you think about? Do you for instance think about new tricks, gadgets, or ways to make maintenance on trucks and tanks easier? When you do figure out a better way to do a job, what do you do with it? Do you leave it to gather fly-specks in the corner of your skull—or do you pass it on for somebody else's benefit?

Pass on them bright ideas. Tell 'em to the GI world by telling them to ARMY MOTORS MAGAZINE, Office, Chief of Ordnance-Detroit, Detroit 32, Michigan. You'll get a personal subscription for being sharp.

bottom of the board (see Fig. 1 again). They hook under the tailgate hinge-rod; while two more pieces of strap iron, same size, are fastened to the top of the board as swivel catches, to swing under the rolled edge of the tailgate. It'll only take about five seconds to mount or remove the board, and it doesn't interfere with letting the tailgate down.

After you've mounted the boards on the trucks (see Fig. 2), start the convoy slowly and stay at intervals of 25 yards—you'll know because the smallest cross on the truck in front of you will be an indistinct blur, while the next larger is still distinctly a cross. (While you see the two crosses this way, you'll hold an interval of 25 to 28 yards accurately.) As soon as you see the smallest cross as a cross, you'll know that you're less than 25 yards behind the next truck; and when the next larger cross becomes a blur, you're more than 25 yards behind.

Through the use of the boards, student drivers can ride along safely at 15 to 20 miles per hour and become familiar with the distance and learn not to approach any closer.

At a signal to open up, the trucks drop to an interval of 70 yards, still keeping the same speed unless there's a signal to speed up. At this interval, the third largest cross becomes indistinct and the largest one is still clearly a cross. Any change in the interval will either make the third cross clear or blur the largest cross.

With the trucks in this position, the convoy can be speeded up to 35 miles per hour—which is a safe speed for a 70 yard interval. The drivers can use other common aids in judging distance and can glance at the boards every once in awhile to check on themselves.

The instructor can check the intervals by parking beside the road and looking at the rear of the trucks. When the proper cross fades out of his vision, he should see the next truck out of the corner of his eye, or hear it rumble past him.

When a close-up signal is given, close until the second smallest

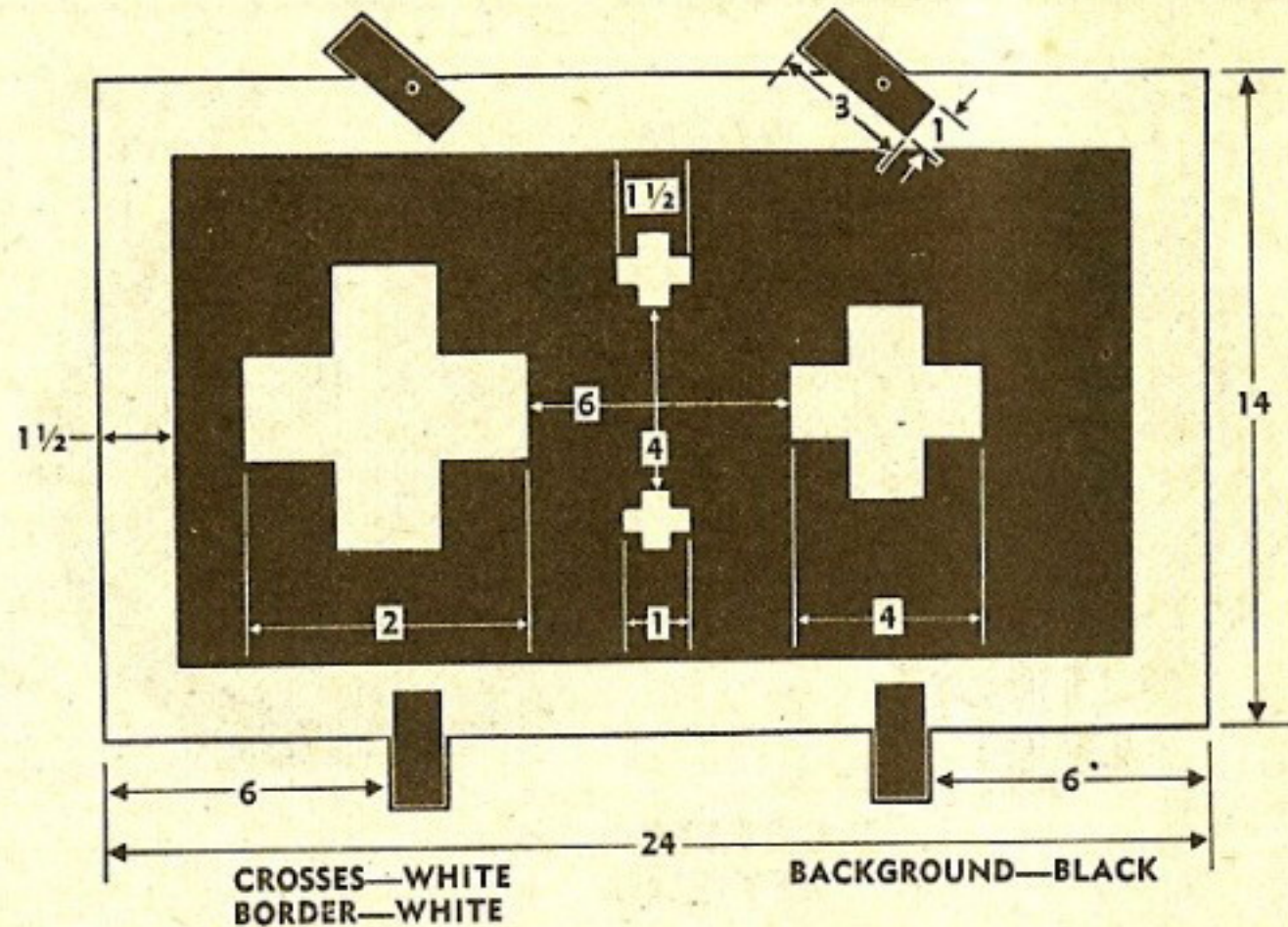


Fig. 1—Close-up of the Booth Distance Board for convoy training.

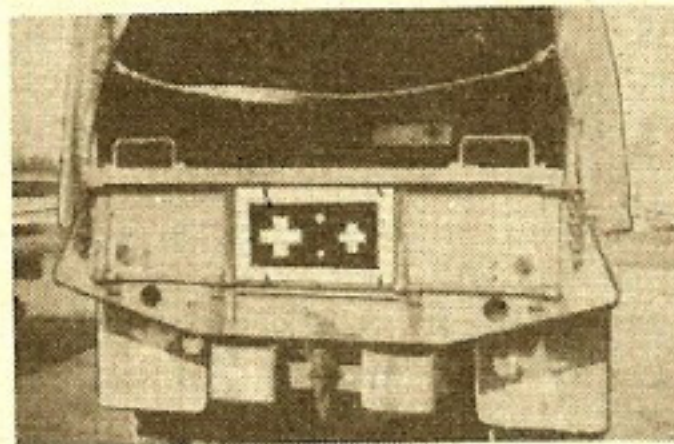


Fig. 2—Here's what the next-in-line driver sees: a tail of "whoa" on the truck ahead.

cross is distinct again. We've found that students trained this way don't depend upon the board alone as a gage; and they become more skilled at judging distance in a shorter time, than those students trained in the usual manner.

The way we use the boards is to have new drivers use them often during their first week of convoy driving. After that, they use the boards at infrequent intervals to check their judgment.

M/Sgt. Wilmer T. Booth
94th Chemical Bn. (Mtz)

Dear Editor,

I've heard several complaints about lube leaking by the outer-bearing oil seal on GMC banjo-type rear axles and thinning the wheelbearing grease. As a result, the grease goes past the inner seal and ruins the brake lining.

This is generally caused by using damaged seals. Since the prongs on the outer-seal assembly

are sometimes bent by rough handling in parts bins, make sure all prongs are straight before installing the seal.

When installing the axle shaft, be careful not to hit the seal with the end of the axle, as the blow will bend the seal so only one side will contact the axle flange and you'll have lube leakage.

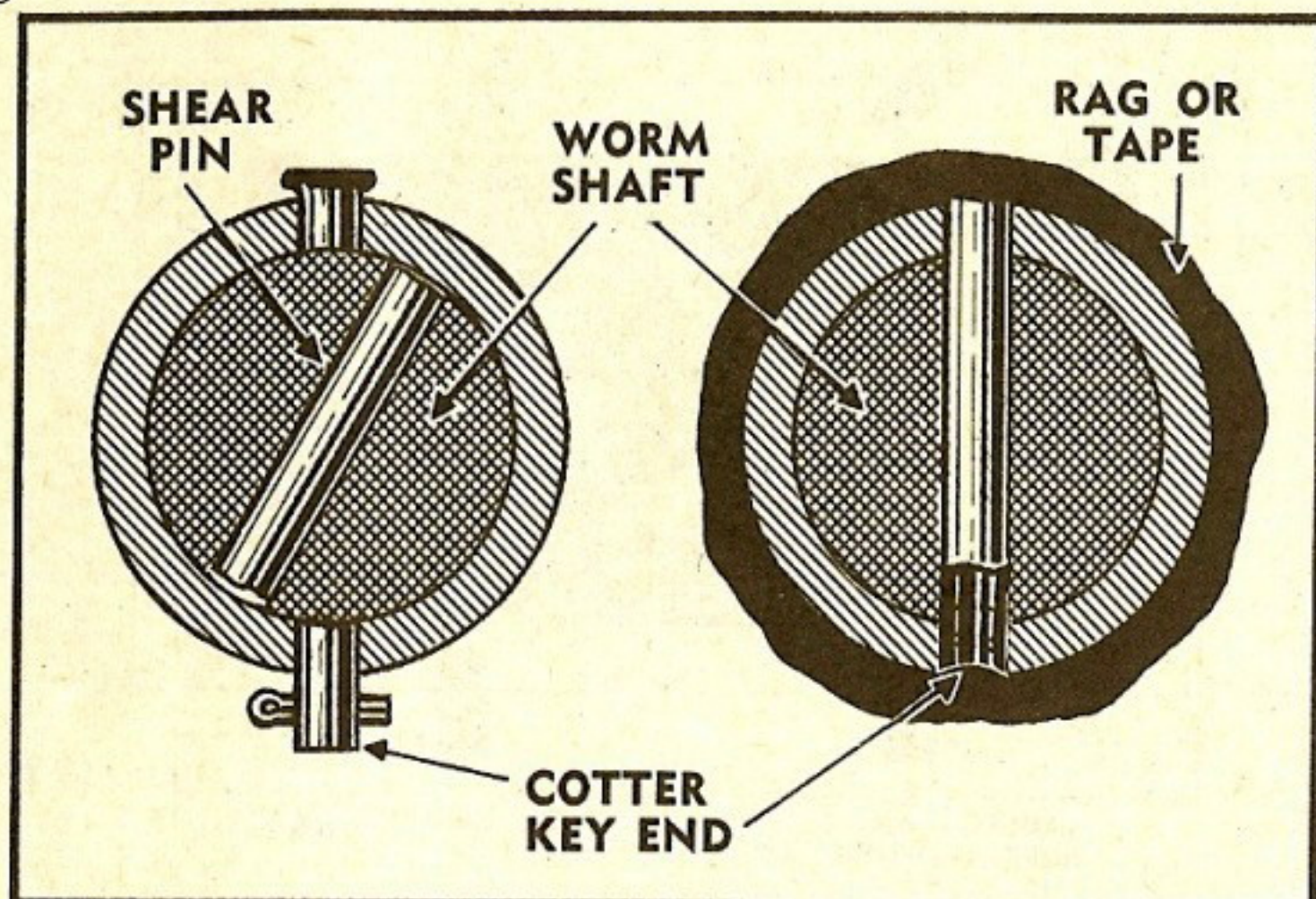
J. V. Goodbrake
GMC Service Command
Representative

Dear Editor,

In the May 44 issue of ARMY MOTORS, Sergeant R. H. Fortin contributed a suggestion for using a broken shear pin over again, by cutting the pin in two and inserting a wooden dowel between the halves of the pin. Some of our boys have conducted some experiments and found a couple of tricks to make this job easier.

In case you don't have a hacksaw handy, just line up the two shafts and drive out part of the pin that's still in the worm shaft, half way. Start the engine under the same load and the pin will be sheared without the aid of a hacksaw.

The other suggestion does away with the wooden dowel. Usually, when the pin shears, the ends are peened to the propeller-shaft yokes. Pry the head of the shear pin out and line up the pin still in the worm shaft with the hole



When your last shear pin gives way, this'll put it back to work.

in the yoke, then drive the cotter-key end into the yoke and you have the same as a new pin. All you need is enough pin to lock the worm shaft and yoke at the shearing surface. Wrap friction tape, handkerchief, or an old rag around the shaft to hold the shear pin in place (see Fig.).

S/Sgt. William E. Demitruk
The Infantry School

Dear Editor,

I would like to pass on a little advice to the boys who are getting ready to come overseas.

It is impossible to stress too much the training of Battery Motor Maintenance personnel. There are lots of times when it's up to them to keep their battery rolling without help from Battalion Maintenance. At times it would be suicide to move tools and personnel into a gun position to repair a truck. **Most of the work has to be done at night without any light at all.** I have seen mechanics replace complete axle assemblies after dark without a spark of light during the whole operation (see Fig.). So don't confine all of your train-

ing to your Battalion Maintenance Section. The Battery Mechanics are the boys who are going to need it.

Preventive maintenance is still "Priority A" on every maintenance section's work order. You can't do too much of this before you put your equipment into combat. For, after entering front-line combat operation, it's too late for any preventive maintenance. And don't let anyone tell you that it's as easy to get parts at the front as it was back at good old post, camp, and station. Every part the Army puts in your hand takes shipping space, sweat, time, and even blood to get it there.

Lt. Edward G. Caldwell
APO 302

Dear Editor,

Quite a few of the boys are pulling off Diamond T starters and bringing them into the shop to be tested. Nine times out of ten it isn't the starter that's faulty, but the switch underneath the floorboard that's dirty. It takes only a few minutes to take the switch apart and clean the copper contact washer and points, and your starting troubles are over.

Also have noticed that grease-gun adapters are often either misplaced or lost. A small clip can be made to fit onto the grease gun by attaching a wire around

the neck of the gun and forming a loop at the other end of the wire into which the neck of the adapter fits. In that way, the adapter will be carried with the gun and will be handy when the time comes to use it.

S/Sgt. L. Berger
221 Ord. Co.

(Ed. Note—Dirty switches, as you say, are often the reason for starter trouble. And if any of the boys sneak either a steam or water hose into the cab to clean it, there'll really be trouble. Switches have to be kept dry and clean.)

Dear Editor,

On the CCKWX 353, about six inches ahead and above the connection of the speedometer cable to the transfer case, there's a sharp frame cross-member the cable housing rubs against.

Upon inspection, I find a great many of our vehicles have this cable housing worn from a little to nearly through.

This condition is aggravated when vehicles are run with loose transfer cases or engine mountings.

W. D. Hemenway
Civilian Automotive Advisor

(Ed. Note.—Mr. Hemenway's letter brought results. A new 7/16" spring cable-clip has been released for production (GMC Part No. 120524) which holds the cable to the cross-member and prevents its rubbing against the sharp edge.

If the cable needs protection because of loose transfer case mounting bolts or engine mountings, tighten the mountings first, of course, then split a piece of loom lengthwise (it should be long enough to protect the cable at the frame cross-member and to allow it to be anchored on top by the cable clip). Slip it over the cable housing, and then tape it.)

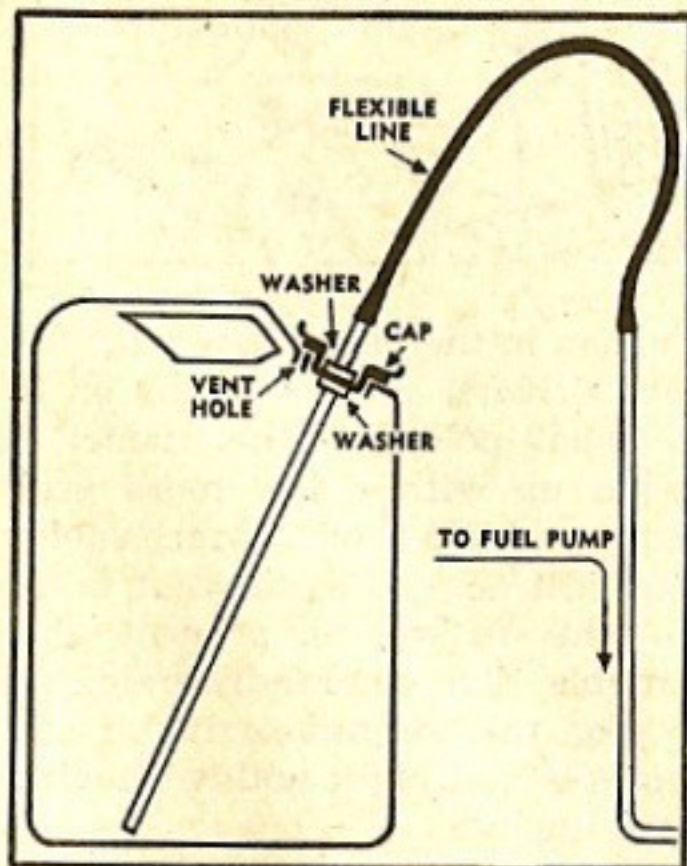
Dear Editor,

A number of small gasoline-driven units, especially electric generating plants, etc., are equipped with gas tanks so small they allow only a few hours operation.

To eliminate this situation, you can use a regular 5-gallon service gasoline can (if the unit has a

Mechanics replacing axle assembly during blackout.

fuel pump). Just take the gas tank off the unit and lead the fuel-pump suction-tube toward the mounted gas-can spout, with the tube's end in a vertical position. Then connect, or solder, about three feet of flexible fuel-line to the end, making a suction tube (see Fig.). Discard the rubber



gasket from the gas-can cap, then drill a hole in the center of the cap to fit the fuel-line. This line should be just long enough to reach within about 1/2" of the bottom of the can. Now solder two washers on the line, one above and one below the cap, leaving just enough clearance for it to swivel freely. This "tank" can be exchanged in less than thirty seconds.

Sgt. Frank Arndt
40th Eng. Regt., Co. G

(Ed. Note—Your idea is a good one, Sarge, if the operator has a memory like an elephant. It's second nature to check the oil in an engine when you check the gasoline. If you don't have to watch the gas, you may forget

the oil. The crankcase on any of those small engines isn't large enough to hold enough oil to last out five gallons of gas. There's been so much bearing failure recently that it might be a good idea to keep that in mind.)

Dear Editor,

One of the Battalion Motor Officer's toughest problems is that of keeping his list of drivers jibing with those of the 1st sergeant. And one of the sergeant's biggest headaches is the question of who has a permit and can drive a vehicle. To settle the question, it's usually necessary to have a battery formation and by process of elimination obtain drivers for that day's details.

No doubt many other motor officers and 1st sergeants are faced with this same difficulty. I think I have a solution to the problem—at least it's working out in my outfit very well.

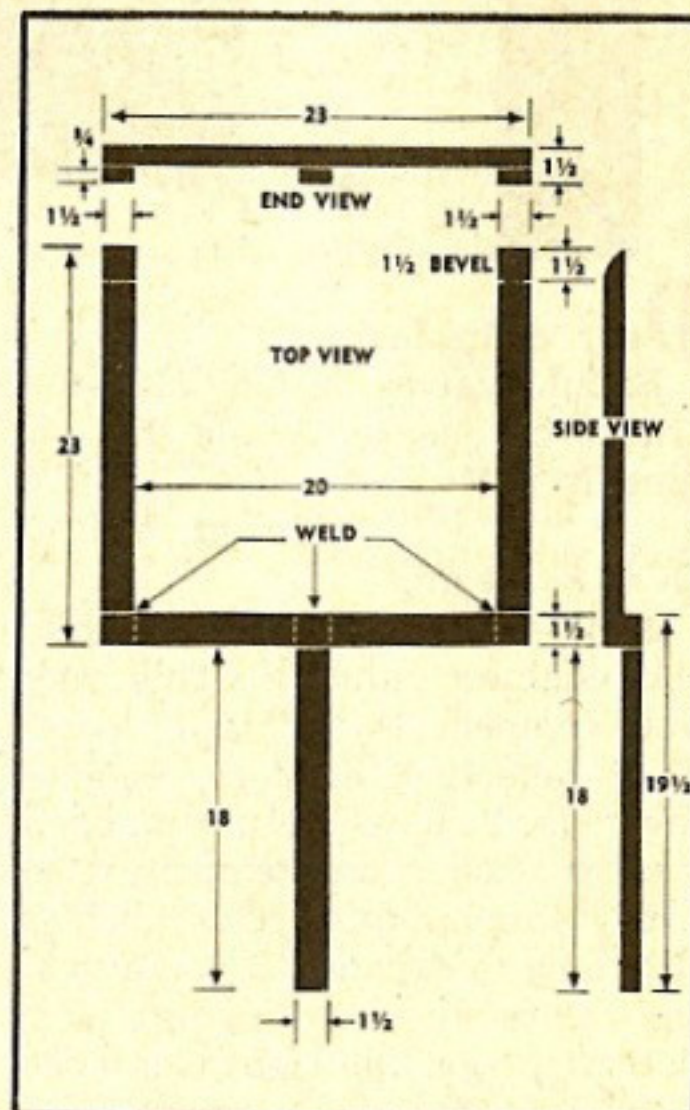
I have devised a chart on which each driver's name can be inscribed, showing his rank, serial number, license number, different types of vehicles he's qualified to drive, whether he's a regular or an assistant driver, and the number of the vehicle to which he is assigned (see Fig.).

This chart can be readily stenciled and run off on a mimeograph machine to provide enough copies for the entire battalion. The motor officer can keep one copy and the 1st sergeant can keep one copy in the battery orderly room—this keeps close tabs on the drivers and vehicles.

Here's hoping it may be useful to your readers.

Lt. Allan Sobelman
342 Armored FA Bn.

T/4 J. S. Gomes, Jr., APO 350, concocted this tool for picking up and placing a wheel on the axle from four pieces of scrap metal bar 1 1/2" wide and 3/4" thick. He welded two bars, 23" long, in an upright position on the ends of a third bar the same length (see Fig.). He then welded a 19 1/2"



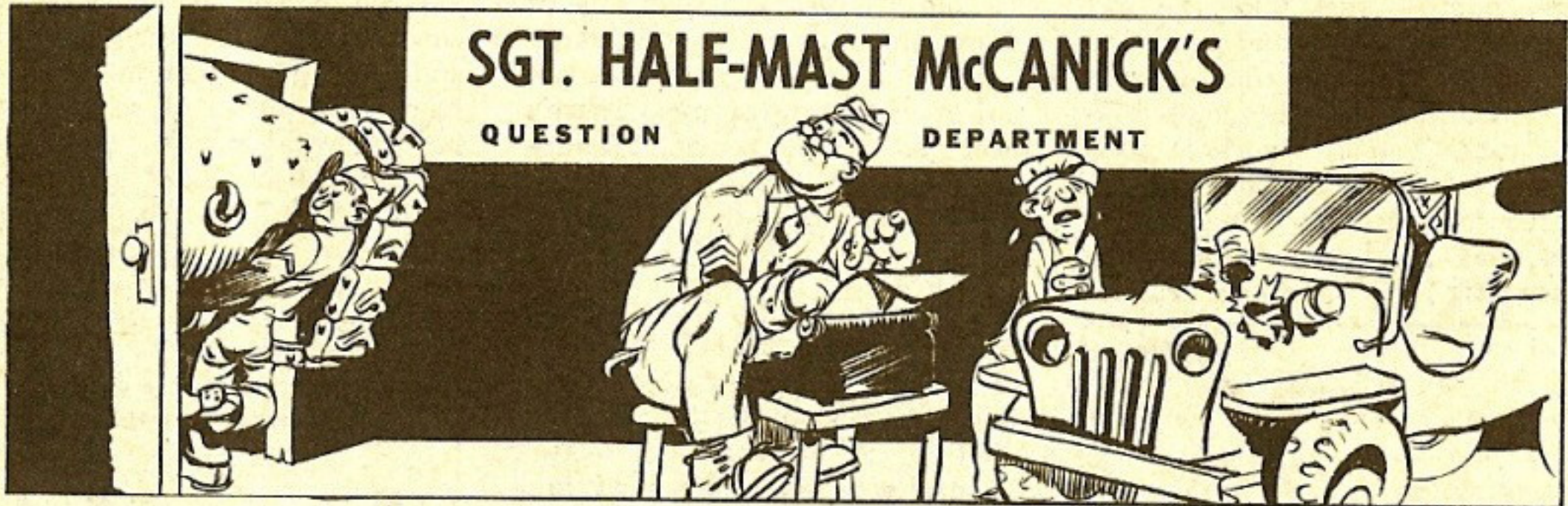
bar down from the middle of the third bar for a handle.

To use the tool, push the bar prongs far enough under the wheel and tire assembly to get a correct amount of leverage; then pull the handle upward until the wheel is on the right level with the axle, slide it on the axle, adjust the wheel bearings, and tighten the locknuts.

The wheel-lifter tool, Sergeant Gomes says, not only lessens the strain on the man doing the lifting, but also prevents damage to the rear-wheel oil seals.

MEN QUALIFIED TO DRIVE VEHICLES BATTERY 342ND ARMORED FIELD ARTILLERY BATTALION												
NAME	RANK	ASN NO.	LICENSE NO.	1/4 TON	2 1/4 TON	HALF TRACK	LGT. TNK.	MED. TNK.	REGULAR DRIVER	ASSISTANT DRIVER	TYPE VEHICLE	USA NUMBER

Lt. Sobelman's driver roster shows you who drives what.



Dear Half-Mast,

Should valves on GMC 2½-ton trucks be checked while the engine is hot?

Sgt. W. B.

Dear Sergeant,

Adjust the GM valves while the engine's running. This way you compensate for lash, looseness, deflection, etcetera. Engine must also be hot—thermostat open and oil at operating temperature so everything is expanded as much as it's going to expand. If you adjust the valves when the engine's cold, you won't get the right clearance between the valve stem and rocker arm. Clearance should be .012 intake, .016 exhaust.

Half-Mast

Dear Half-Mast,

In the past few months we've been servicing quite a few M8 and M20 Armored Cars with Hercules JDX engines. We've been running into the same trouble on practically all of them—broken timing gears. This leads to other troubles like cracked timing-gear covers and holes in the oil pans. With parts so hard to get, this adds up to one thing—DEADLINE!

Can you tell me what's causing the trouble and what's to do about it?

M/Sgt. J. M. S.

Dear Sergeant,

I got three of those busted timing gears sitting up on top of my file cabinet right now, which somebody sent me by mail from the field. The trouble is, the M8 and the M20 don't have governors—which makes it easy to over-speed the engine. Overtspeeding

busts up timing gears—by making the gears run faster than they were built to go. Not only that, but running beyond the engine's natcheral rpm's starts up a "torsional vibration" which puts a terrific strain on the timing gears. Being out of adjustment don't help the gears any, either—check 'em (see article on page 94, June 44 ARMY MOTORS). Get after your M8 and M20 drivers to read the caution plate in the driver's compartment, and don't go over the speeds laid down for each gear ratio. By the way, the factory is helping to beat this trouble by beefing up the gears some.

Half-Mast

Dear Half-Mast,

We have Signal Corps special equipment, four K-44's and eight K-43's and they're beauties. Chevrolets, 1½-ton 4x4's, and what winches! As you probably know, they're placed just back of the cab and set just over the power-takeoff assembly. You can do most anything, from dragging in that cute little blond WAC to moving a house with them, but here's my problem. As yet I have been unable to find a safety shear-pin. After first checking the winch assembly for said pin with no luck, I tried the Maintenance Manual and the SNL—but I find I'm right back where I started. No shear pin. Yet in the spare parts kit that comes with this type truck, I find I have five Winch Drive-shaft Shear Pins. Now today it happened—two of my K-43's come in with broken winch cables. Well, after a quiet little

session in the back office with the two drivers, about hitching on to a "cold" pole with their winch, I wind up with a few more grey hairs and two broken winch cables but still no idea as to what to do in the future to prevent this trouble. Can you kindly enlighten me on this subject so that I can go to bed at night without having winchmares.

Lt. J. R. S.

Dear Lieutenant,

If you've been having broken-winch-cable trouble, maybe you can find a way to modify the winch drive-shaft to take a shear pin. But the idea of this winch was for the **drive chain** to act as a shear pin. There's supposed to be a weak link in the drive chain. If it ain't letting go under too much load, maybe you'd better check the chain, and maybe rig up your own weak link. About finding them spare shear pins in the spare-parts kit—all Chevy 1½-ton get the same kit. It's easier than making up a special one for trucks with their winch amidships.

Half-Mast

Dear Half-Mast,

I wish to get straightened up on GMC rocker-arm shafts, and there's no better way than to write you.

The manual reads, "Oil under pressure is directed to a hollow rocker-arm shaft which has drilled holes indexing with oil holes in rocker arms."

I've always thought that pressure lubrication or oil under pressure came in where the friction is

the greatest. In this case, it would be on the bottom of the rocker-arm shaft. But the rocker-arm-shaft holes, if indexed with the rocker-arm holes, would be on top where the friction is the least.

On new and rebuilt motors, the holes don't index but are on the bottom. Should I follow the manual or use the new motors as models?

Cpl. T. A. W.

Dear Corporal,

You're right. The oil holes should be on the **bottom** of the GMC rocker-arm shaft. That statement you quoted from TM 9-1802A is wrong and it'll be corrected in the next edition. Page 167 (par. 74) of the same TM has it right, so you can follow that for a guide when you're assembling the rocker-arm shaft.

The chamfered hole in the shaft for the locating screw at the front rocker-arm-shaft bracket goes to the top (on the opposite side from the oil holes), and is a guide for proper assembly.

Half-Mast

Dear Half-Mast,

We have an argument which I would like you to settle. One of our flap-ears (every shop has one) says that a fuel pump from a jeep GPW will fit a GMC 353 model without changing any parts on it.

I have tried it and the cams are at a different angle and won't work. If you could settle this with a return statement I'd appreciate it a lot.

Another thing—what is the plug on the bottom of a transfer case (Timken) for? It's the plug just above the propeller shaft in the front of the transfer case.

Sgt. C. I., Jr.

Dear Sergeant,

A jeep fuel pump will fit into a GMC 353 because they're the same shape, except for the arm. But the arm on the jeep won't pump a full stroke (if any) on the GMC—so it won't work. Period.

I think you mean the plug on the declutch housing. It's there to fill the housing with oil, when the transfer case's filled, so the declutch-shaft bearing won't have

to depend on the oil bleed hole from the transfer case for lubrication. The plug is added protection.

Another reason for the plug is that when you take it out, you can get at the screws (with a screwdriver) that hold the shift fork to the shift shaft.

Half-Mast

Dear Half-Mast,

I am a mechanic in a T.D. outfit. We were on the lines here in Italy and on one M10 the oil cooler was leaking oil, on another the water pump was leaking. Now there's a tube that drains the water pump through the oil cooler. On these two jobs, I couldn't get this drain tube back in line and the M10 was needed. This tube should be soft copper. I just didn't put the drain tube back.

The way I got around it was to plug the hole in the oil cooler with a brass plug and use a half-track drain-cock assembly (A215165) and a brass reducer. I can still drain the water pump.

We just make sure the driver knows and make a note on the records of the change.

Any mechanic who has worked on these two items I've mentioned will never forget—especially if it's hot and the tank is needed.

T/4 W. H. L.

Dear Sergeant,

Well, if it was hot and you couldn't reinstall those tubes, you did the next best thing. But there's always the chance that

some drivers might not realize that the water pump has to be drained separately. If water was left in the pumps and it froze, look out. When you tried to put the drain tube back, did you try starting the nuts on the ends of the tube with your fingers before you tightened the water pump or oil cooler? This way, you'd be able to shift the parts around enough to line up the tube.

Half-Mast

Dear Half-Mast,

It does seem as if the 6-cu.-ft.-capacity air compressor allowed 2nd-echelon shops is too small for the job. While the compressor itself is okay, the engine's both too light and too small and requires constant servicing.

We're a large motor pool of about 150 vehicles, 100 of which are in active service. To keep up air for tires and grease guns as well as for paint spray guns, we oughta have a compressor that'll really stand up.

How 'bout that?

Capt. T. W. R.

Dear Captain,

I'd say get yourself another compressor, if you can.

You're operating the 6-cu.-ft. job at nearly twice its intended normal load of 75 vehicles.

Half-Mast

Dear Half-Mast,

I've noticed that a large number of M8 Light Armored Cars are

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very rich at low speed and idle very poorly. Is lowering the float level 1/16" a good idea? By the way, as a field expedient, an equal mixture of alcohol and enamel thinner makes an excellent substitute if carburetor cleaner is not available.

Sgt. E. M.

Dear Sergeant,

Better not monkey with the float level on the M8. Try adjusting the idle fuel adjustment like it says on page 121 of TM 9-743 (21 Feb. 44). If that don't work, replace the carburetor or refer it to the tender mercies of a higher echelon. Maybe it's a bent float-arm snaffing the carburetor. On some of the early M8's, the arms were kinda weak and bent easy. The factory has strongened them up since then.

A alcohol and enamel-thinner highball (1/2 and 1/2 without ice) is okay as a substitute for carburetor cleaner. For your info, carburetor cleaner is listed in the latest SNL K-1 (16 Sep. 44) as "Solvent, Carbon Remover."

Half-Mast

Dear Half-Mast,

Concerning the article, "Broken Springs," ARMY MOTORS, February 1943 . . .

Quote: "Lubrication of springs (except where specified) leads to excess bounce—excess bounce leads to breakage. Even spraying the edges of springs is considered dangerous because of bounce and also because the oil picks up dirt particles which work their way between the leaves." End of quote. This paragraph made me realize that spraying of the springs would be detrimental to our vehicles, so naturally I put out an order stopping the practice.

Since that time I've had trouble with inspecting officers. Now my question is—is there any circular out regarding spraying or not spraying springs?

M/Sgt. H. W. G.

Dear Sergeant,

We were right, and you're right—don't lubikate truck springs. Everybody in the automotive pifession knows that. Some WD

Lubrication Orders tell you not to spray springs and some just don't mention it at all. Howsomever, what Lube Orders **don't** say is also a guidepost. They tell you everything else to lubikate and when they leave out springs, I figger you'd be right in leaving 'em out, too.

Future Lube Orders'll have "no, no, 1000 times no" printed on them in letters a foot high.

Half-Mast

Dear Half-Mast,

TB ORD 93 (13 May 44) says to mount the pioneer bracket and tools on the rear tailgate of 2 1/2-ton, 6x6 GMC's. Someone didn't consider what would happen when the tailgate is dropped for mounting and dismounting troops. The tools and bracket are being damaged in that location.

Is it permissible to use a side location for mounting them, as shown in Fig. 5 of the same TB? S/Sgt. A. L. McC.

Dear Sergeant,

Sure, it's okay to mount the pioneer bracket and tools on the side of your truck—the locations in TB ORD 93 are merely "suggested." A revision of this TB will recommend the front of the body, at either side of the cab.

Half-Mast

Dear Half-Mast,

Why in 'ell are my half-tracks blowing so many head gaskets?

Capt. F. R. G., Jr.

Dear Captain,

Look for three things: (1) The cylinder head. Back about the middle of '42, White changed cylinder heads to change the compression ratio of the engine. The reason for changing the compression ratio was that the low-octane gas we hadda use caused detonation. With the original compression ratio (7.1 to 1), the detonation blew the cylinder-head. The newer cylinder heads gave a compression ratio of 6.4 to 1 and stopped head blowage. You can tell if you got one of these newer cylinder heads (which are White No. 399107, Ord. No. C85806) by

looking for the number 364132 which is stamped on the cylinder head on the machined boss to the right of the center of the head, back of the tapped breather hole.

White also changed the size and location of a couple holes in the cylinder head. These holes used to be 7/16" cored holes on the left side of the cylinder head between the No. 1 and No. 2 cylinders and No. 5 and No. 6 cylinders. White put 5/16" drilled holes there instead. The old holes used to leave water creep in under the grommet in the gasket and rot the gasket.

(2) Next thing to look at is the cylinder-head gasket itself. White used to use a "steelbestos" gasket (White No. 364106). They changed to a steel-asbestos gasket with copper ferrules and grommets, White No. 396944. Both the old and the new gaskets have got Ord. No. B184359. If you've got the older gasket (some are still in stock), get a later one.

(2) Finally, check the machined surface of your cylinder head to see if it's warped. Maybe you better check that first.

Half-Mast

Dear Half-Mast,

Is it true that on some of the 2 1/2-ton, 6x6 GMC's, the front and rear drive-shafts turn in opposite directions? I realize that most of them turn the same way, but don't some models have a different transfer case, transmission, or differential?

The motor sergeant in my unit tells me it is an optical illusion. Cpl. H. F.

Dear Corporal,

It's not an optical illusion. You know your 2 1/2-tons come with either split-type or banjo-type axles. With the split-type, the front and rear propeller-shafts turn in the **same** direction. With banjo-type axles, the shafts turn in **opposite** directions. Get your motor sergeant to look at the transfer-case cross-sections in TM 9-1801 (10 Mar. 44) if he don't believe you (and he don't).

Half-Mast

The Month's Directives

Your monthly check-list of War Department AGO and Ordnance publications affecting 1st and 2nd-echelon motor maintenance—and how to get them

WAR DEPARTMENT AGO PUBLICATIONS

AR—Army Regulations
FM—Field Manual
TM—Technical Manual
TB—Technical Bulletin

MWO—Modification Work Order
TC—Training Circular
WDC—War Department Circular
SB—Supply Bulletin

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- New York AG Depot, 1926 Broadway, New York 23, N. Y.
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WD Lubrication Orders for Ordnance materiel are requisitioned (except in the ETO) from Fort Wayne Ordnance Depot, Detroit 32, Michigan.

ORDNANCE DEPARTMENT PUBLICATIONS

FSMWO—Field Service Modification Work Order
ORD 2 OPSI—Formerly Ordnance Publications for Supply Index

SNL—Standard Nomenclature List Organizational Spare Parts and Equipment (OSPE)
Service Parts Catalog (SPC)

Distributed through Ordnance Officers by AG Depots listed above.

South Pacific Area units request on the Ordnance Publications Officer, Hq. South Pacific General Depot, APO 502, % Postmaster, San Francisco, Calif.

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NOTE: The Office, Chief of Ordnance-Detroit and the Publications Department, Raritan Arsenal, **DO NOT** distribute publications to the field.

ARMORED CARS

ALL ARMORED CARS

TB ORD 123, Hull lifting-eyes.

CAR, ARMORED, LIGHT, M8

SNL G-136, G-176, ORD 7, 8, 9, C4
(18 Sep. 44).

CAR, ARMORED, UTILITY, M20

SNL G-136, G-176, ORD 7, 8, 9, C4
(18 Sep. 44).

GUN MOTOR CARRIAGES

CARRIAGE, MOTOR, 105MM
HOWITZER, M7

MWO G1-W15, Reworking Bendix Stromberg carburetor NA-R9G.

TB ORD 180, Clutch-pedal high-idle control.

SNL G-128, ORD 7, 8, 9 (1 Oct. 44).

CARRIAGE, MOTOR, 105MM
HOWITZER, M7B1

TB ORD 180, Clutch-pedal high-idle control.

CARRIAGE, MOTOR, 75MM
HOWITZER, M8

TB 9-732B-18, Equipment list.

CARRIAGE, MOTOR, 3-IN. GUN,
M10

TB ORD 143, Equipment list.

SNL G-130, ORD 7, OSPE (25 Sep. 44).

CARRIAGE, MOTOR, 3-IN.
GUN, M10A1

TB ORD 143, Equipment list.

CARRIAGE, MOTOR, 155MM
GUN, M12

MWO G1-W15, Reworking Bendix Stromberg carburetor NA-R9G.

CARRIAGE, MOTOR, 76MM
GUN, M18

MWO G1-W15, Reworking Bendix Stromberg carburetor NA-R9G.

CARRIERS

CARRIER, CARGO, M30

MWO G1-W15, Reworking Bendix Stromberg carburetor NA-R9G.

LIGHT TANKS

ALL LIGHT TANKS

TB ORD 123, Hull lifting-eyes.

ALL SPECIAL PURPOSE VEHICLES ON LIGHT TANK CHASSIS

TB ORD 123, Hull lifting-eyes.

TANK, LIGHT, M3A1
TB 9-727-5, Equipment list.

TANK, LIGHT, M3A3
TB 9-727-5, Equipment list.

TANK, LIGHT, M22 (T9E1)
TB 9-724-5, Equipment list.

TANK, LIGHT, M24
FM 17-75, Crew drill (23 Aug. 44).

MEDIUM TANKS

ALL MEDIUM TANKS
TB ORD 123, Hull lifting-eyes.

ALL SPECIAL PURPOSE VEHICLES ON MEDIUM TANK CHASSIS
TB ORD 123, Hull lifting-eyes.

TANK, MEDIUM, M4 SERIES (EQUIPPED WITH BULLDOZER BLADE)
MWO G104-W113, Periscope-housing modification for T18 periscope.

TANK, MEDIUM, M4
MWO G1-W15, Reworking Bendix Stromberg carburetor NA-R9G.

TANK, MEDIUM, M4 (105MM HOWITZER, WET)
TB ORD 180, Clutch-pedal high-idle control.

TANK, MEDIUM, M4A1
MWO G1-W15, Reworking Bendix Stromberg carburetor NA-R9G.

TANK, MEDIUM, M4A1 (76MM GUN, WET)
TB ORD 180, Clutch-pedal high-idle control.

TANK, MEDIUM, M4A3 (75MM GUN, WET)
TB ORD 180, Clutch-pedal high-idle control.

TANK, MEDIUM, M4A3 (76MM GUN, WET)
TB ORD 180, Clutch-pedal high-idle control.

VEHICLE, TANK RECOVERY, M31
TB 9-739-3, Equipment list.

VEHICLE, TANK RECOVERY, M32B3
TB ORD 180, Clutch-pedal high-idle control.

TRUCKS

TRUCK, 1/4-TON, 4x4 (WILLYS, FORD)
TB 9-803-FE1, Positive crankcase ventilation.

TRUCK, 1 1/2-TON, 4x4 (CHEVROLET)
SNL G-85, Vol. 4, G-506, ORD 7, 8, 9, C2 (24 Aug. 44).

TRUCK, BOMB SERVICE, M6 (CHEVROLET)
SNL G-85, Vol. 4, G-506, ORD 7, 8, 9, C2 (24 Aug. 44).

TRUCK, AMPHIBIAN, 2 1/2-TON (GMC DUKW)
MWO G501-W30, Tire-pump oiling improvement.

TRUCK, 2 1/2-TON, 6x6, 750-GAL. GASOLINE TANK (GMC)
MWO G508-W13, Hose-connection fixture.

AM—TAT

ARMY MOTORS is always supposed to accompany troops. But if you want your magazines to tag along with your outfit, we've got to be told where you go. And you're the only guys who can tell us.

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- Reach a port of embarkation
- Arrive at an overseas base

Then we'll know exactly when to take your organization off our domestic station list and switch over to direct distribution. Then you'll keep getting your ARMY MOTORS—enough and on time.

TRUCK, TRACTOR, 5-TON, 4x2 (INTERNATIONAL KR-11)
SNL G-542, ORD 7, 8, 9, C1 (4 Oct. 44).

TRUCK, 5-TON, 4x2, DUMP (INTERNATIONAL KR-11)
SNL G-542, ORD 7, 8, 9, C1 (4 Oct. 44).

TRUCK, 5-6 TON, 4x4, C.O.E. (FOUR-WHEEL-DRIVE SU)
SNL G-638, ORD 9, SPC, C1 (20 Sep. 44).

TRUCK, 10-TON, 6x4, DIESEL (WHITE 1064)
TB ORD 175, Cylinder-head gaskets.

TRUCK, TRACTOR, 20-TON, 6x4 (FEDERAL 604)
TB ORD 175, Cylinder-head gaskets.

TRACTORS

TRACTOR, HIGH-SPEED, 18-TON, M4
SNL G-150, ORD 7, 8, 9 (15 Aug. 44).

TRACTOR, HIGH-SPEED, 13-TON, M5
SNL G-162, ORD 7, 8, 9 (1 Oct. 44).

TRACTOR, SNOW, M7
TB 9-774-1, Equipment list.

TRAILERS

TRAILER, MOUNT, M20
TM 9-789, Operation and maintenance (16 Sep. 44).

TRAILER, 1/4-TON, 2W, CARGO, (WILLYS MBT, AMERICAN BANTAM T3)
SNL G-529, ORD 7, 8, 9, C2 (25 Aug. 44).

SEMITRAILER, 6-TON PAYLOAD, 10-TON GROSS, 2W, 2000-GAL. FUEL TANK
MWO G678-W1, Gasoline engine, stellite-faced exhaust valve and valve-seat insert.
TM 9-891, Operation and maintenance (25 Aug. 44).

TRAILER, AMMUNITION, 8-TON, 4W, M23
SNL G-216, ORD 7, 8, 9 (1 Oct. 44).

SEMITRAILER, VAN, 11-TON PAYLOAD, 15-TON GROSS, 2W (KENTUCKY)
TM 9-895, Operation and maintenance (29 Sep. 44).

LANDING VEHICLES

VEHICLE, LANDING, TRACKED, MK IV, LVT (4)
TB 9-776-3, Equipment list.

GENERAL

TC 56, Stabilizers in armored vehicles (29 Aug. 44).

WDC 383, Ordnance field service (22 Sep. 44).

WDC 384, Motor vehicles, state law load restrictions (23 Sep. 44).

WDC 386, Automotive disability reports (26 Sep. 44).

TM 9-850, Cleaning, preserving, sealing, lubricating, related materials for Ordnance materiel (24 Aug. 44).

TM 38-220, C1, Stock control manual for posts, camps and stations (6 Sep. 44).

WD Publications list, index to general orders, bulletins, circulars (Sep. 44).

SB 9-20, C1, Ordnance spare parts requisitions (7 Sep. 44).

OPSI, ORD 2, C1 (1 Oct. 44).

SNL G-27, ORD 6, Sec. 2, C1, Automotive and semi-automotive maintenance tools (16 Aug. 44).

SNL H-14, Tires, tubes, tire valves and patches (8 Sep. 44).

SNL K-4, ORD 5, Oil filter elements (12 Aug. 44).

PERPETUAL INDEX

Your monthly reference guide to all subjects covered in the last 12 issues of ARMY MOTORS

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TIRES	247, 250, 251	219	165, 3C	134, 138, 152	97, 119, 120	75, 88	34, 52	22, 23	324, 333	303, 308, 311	282, 288	245, 247, 4C
TOOLS	2C, 230, 240, 247, 248	208, 211, 214, 215	163, 165, 167, 182, 3C	131, 132, 138, 150	121	83, 84	56	18, 22, 24	342, 350	309, 314, 315, 3C	271, 272, 277, 278, 282	230, 248
TRACK	240, 242, 3C		175, 182		104	82, 88, 89, 91	42		350	306, 315	268, 289	229
TRAILERS	2C, 225, 228, 247, 250	196, 206, 216	165, 192	144	111, 118, 120	77, 82, 93	59	7, 29	343, 352	318	286	254
TRAINING					118, 3C	2C, 94	37, 53, 57	4C	321	2C, 293, 320, 4C	2C	254
TRANSFER CASE		197, 204		150, 154		87, 91	36, 38, 3C				263	227, 236
TRANSMISSION	246, 248	204, 208		139	97, 110	69, 79, 87				311		227, 230, 235, 236
TURRET	256			152				5		295		229
VESICANTS										311		
WHEELS		3C	179, 180, 185, 186, 192		103	77, 78	38, 3C	7, 27, 3C	344	303	278, 282	266
WINCH		198	179	139, 151	103, 104		52		325	312	278	245

2C-Inside Front Cover 3C-Inside Back Cover 4C-Outside Back Cover.

CONNIE RODD

(Continued from page 262)

GMC's because it isn't heavy enough and hasn't enough tension. But the GMC clutch diaphragm-spring (marked ©) can be used on both Chevrolets and GMC's.

AR on Drivers' and Mechanics' Award

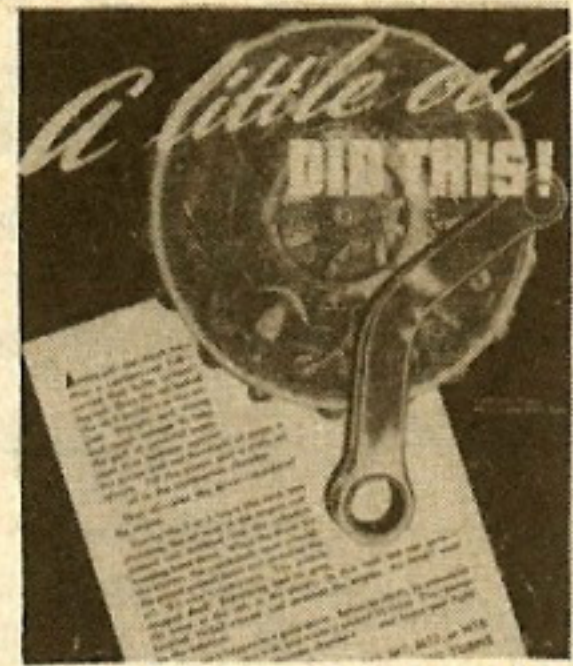
You'll be as glad as I was to learn that the whole story on Drivers' and Mechanics' Awards has been tied up in a bright red ribbon by AR 600-81 (22 Sep. 44). You can forget those old WD Circulars (248 of 1942, 119 of 1943) because the new AR supersedes them. Tells you all about who's entitled to the Awards (drivers, assistant drivers, mechanics, instructors), how they're earned, who bestows and revokes them, reasons for revocation (including "damage to vehicle because of lack of preventive maintenance"), and how to requisition (through regular QM channels). Looks to me like a lot more GI's will be wearing this number, now that the whole picture's clear.

REMEMBER THIS BACK COVER?

It brought up the rear of ARMY MOTORS last May. It painted a true and gruesome picture of what hydrostatic lock can do to a tank's radial engine. But there was just one thing wrong with it: We said that hand-cranking a radial engine 50 turns would pump out any oil in the combustion chambers.

Well, it won't—and it's about time we stood in a corner. So here we stand.

Cranking the engine is a test to find out if you have hydrostatic lock. If, after 50 revolutions of the crank (two complete cycles of the engine) it still turns freely, it's okay to start her up. But you can save yourself a lot of grief and worry over hydrostatic lock by taking one simple precaution. Just let the engine idle at 800 rpm's for 5 minutes before you shut it off. This allows the oil to drain back quietly into the crankcase.



When your tank has been sitting with the engine shut off for 3 to 4 hours or more, it's most important to use the crank. That's the only safe way to find out if a locked condition is present.

When the engine is locked, you've got to drain out the oil. This is done by removing #5 and #6 spark plugs, then winding the crank another 50 turns, and putting the plugs back. That's all it takes to save a mighty expensive hunk of machinery.

WHEN PILLOW BLOCKS RUN WILD

Underneath 2½-ton, 6x6 GMC's, the pillow block nestles peacefully on the intermediate rear axle. Normally, the pillow block goes about its business of supporting the drive line to the rear rear-axle without fuss, but once in a while an extra heavy jolt or strain throws it into a tantrum. This happens when the aforementioned jolt or strain breaks the flange on which the pillow block is mounted and lets the unit fly loose. Flying loose, the pillow block whips itself and the propeller shafts about in a way that bends the propeller shafts, may even crack the pillow-block housing itself, and does untold damage to the morale of the driver who hears the mysterious thumping under his truck.

The ounce of prevention, if you haven't already guessed, is to reinforce the mounting flange as per

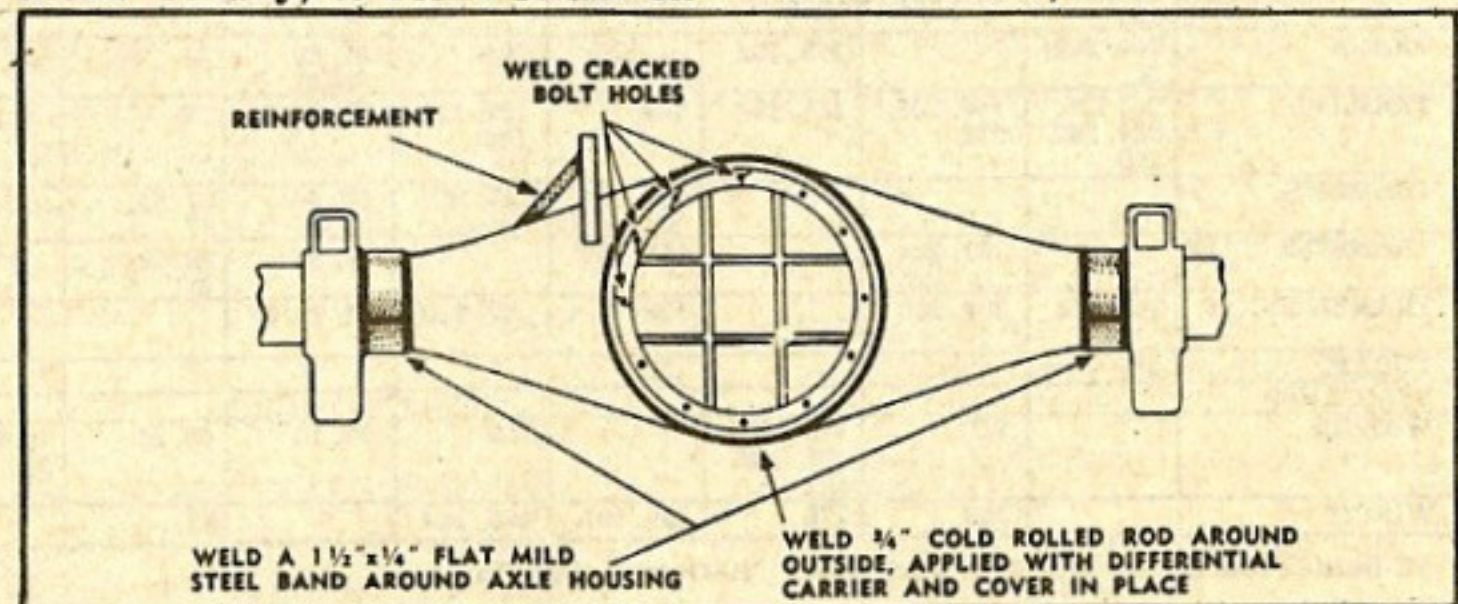
the arrow in the Fig.

• • •

The rest of the Fig. shows how Normoyle Ordnance Depot goes about reinforcing the banjo-type housing on the GM against breakage. This consists first of welding a band of 1½" by ¼" flat mild steel around the housing on both sides as shown. Second, if cracks have appeared at the bolt holes, weld them. Finally, to resist strain on

the axle, add a little more metal to the area around the openings on both sides of the housing where the housing cover and differential bolt on (see Fig.). This additional metal consists of a ¾" cold rolled rod (applied with the cover and differential carrier in place).

If you've been having breakage at the other axles, this same sort of reinforcement might be the answer there, too.



• • NEWS FLASHES • •

The items on this page include latest news, revisions, and corrections verified after the publication deadline

No more "jeep-tail"—no more "hard shells"! **TB 31-200-6** (3 Oct. 44) says you need only 30 lbs. of air in the 6.00-16, 6-ply tires on your 1/4-ton truck (and anywhere else these tires are used). It's like riding on layers of marshmallow compared to the old 35-lb. standard, as if you didn't know.

If you have any 4.00-8, 4-ply tires rolling around, air pressure for them has been cut from 60 lbs. to 35. The same TB says so.

* * *

Here's a trio of shiny new SNL's that ought to help cure your supply-requisitioning headaches: **ORD 5 SNL H-14** (8 Sep. 44) lists tires, tubes, tire valves and patches. **ORD 5 SNL K-1** (16 Sep. 44) lists cleaning, preserving, and lubricating materials, plus recoil fluid, special oils, and miscellaneous related items. **ORD 5 SNL K-4** (12 Aug. 44) lists oil-filter elements for nearly all general purpose and combat vehicles. K-1 is a revision, of course; K-4 and H-14 are out for the first time.

* * *

Automotive Disability Reports get a few slight changes in handling now, thanks to WD Circular 386 (26 Sep. 44). We quote: "Vehicles disabled for more than one report month will be listed separately in the 'Remarks' section, showing in each case the total number of days disabled. For vehicles in this category, only the number of days lost during the current report month will be reported in section A and the heading of the report."

That's different from the old story in WDC 231 of last year. So is the new procedure for forwarding consolidated reports. Better see WDC 386, yourself.

* * *

Guesswork isn't in order when it comes to deciding whether a track or a bogie tire is worn-out or not. SOP in such cases is to (1) get ahold of **TB ORD 130** (1 Aug. 44) and (2) read it hungrily.

The TB gives precise wear limits for tracks and bogies, so you'll know when they've been used just long enough—and not too long—to need replacement. It also sets up the inspection standards necessary to separate and classify the

tracks and bogies you take off. Reconditioning, packaging, marking, and disposition of used tracks and bogies are covered in the TB, too.

The instructions apply to all half-track and full-track vee-hicles in the Continental U. S., and may be used overseas where conditions permit. For the record, TB ORD 130 supersedes OFSTB's 700-17 and 700-47, and TB 700-87.

* * *

WD Lubrication Orders for materials-handling equipment are now being issued by the OQMG. They'll come in two forms: 10"x15" metal-bound Lube Orders for use in maintenance shops, and decalcomanias to be mounted directly on each piece of equipment.

The metal-bound Lube Orders will get automatic distribution—two to each maintenance shop, at home and abroad, that's responsible for materials-handling equipment. The decals will have to be requisitioned—but **don't order any till the numbers and titles are published** in either ARMY MOTORS or The QM Training Service Journal (which should be any day now).

The metal-bound Lube Orders now available are:

No. 6001, Tractor, Warehouse, International Harvester Model 1-4

No. 6002, Tractor, Warehouse, International Harvester Model 1-6

No. 6004, Truck, Fork Lift, Mobilift Model TAW (Gas)

No. 6008, Tractor, Clarktor-6, Std. & Mill Models, Clark Trutractor

No. 6009, Truck, Fork Lift, Clark "Plane-loader" (Gas)

No. 6010, Truck, Fork Lift, Clark "Utilitrac" & "Carloader"; Cleveland "6000" (Gas).

If you haven't got these yet, requisition from **Warehouse Equipment Parts Division, Columbus ASF Depot, Columbus, Ohio**. You'll order your decalcomanias from the same place when the time comes.

Future Lube Orders for materials-handling equipment will be listed in monthly changes to FM 21-6.

81.14.463

THE 1ST ARMY POINTS OUT 9 THINGS TO

WATCH ON THE RHINE

1. CHECK VALVE CLEARANCES: IN-TAKE .012, EXHAUST .016

2. ADJUST CLUTCH-PEDAL FREE TRAVEL (TO 2½")

3. KEEP FOOT OFF CLUTCH PEDAL EXCEPT TO START, SHIFT, AND STOP

4. DON'T TOW WITH JUST A ROPE OR CHAIN. USE TOW BAR TO PREVENT FRONT-END DAMAGE TO TOWED VEHICLE

5. TIGHTEN RADIATOR HOLD-DOWN BOLTS

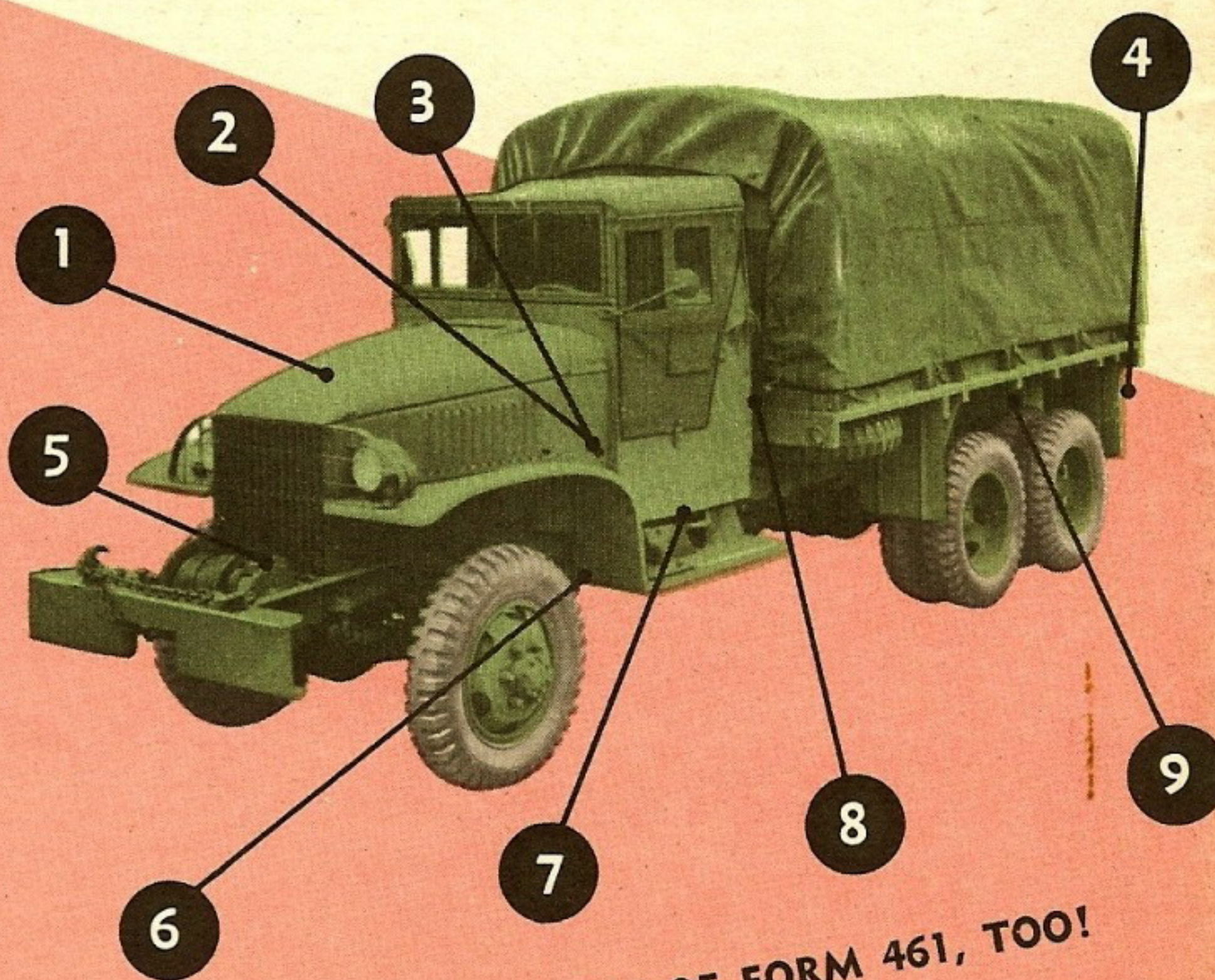
6. TIGHTEN TRANSFER CASE, TRANSMISSION & PILLOW-BLOCK MOUNTING BOLTS

7. TIGHTEN CAB HOLD-DOWN BOLTS

8. CLEAN & RE-OIL HYDROVAC AIR CLEANER

9. TIGHTEN BOLTS THAT HOLD BOGIE ASSEMBLY TO FRAME

... or anywhere else 2½-ton, 6x6 GMC's are taking a beating. Whenever overloads are authorized, wherever long hauls or tough terrain are everyday stuff, you'll do well to double-check these items—the nine "main causes of failures" reported by the 1st Army from the Western Front.



ALL THIS—AND THE REST OF FORM 461, TOO!