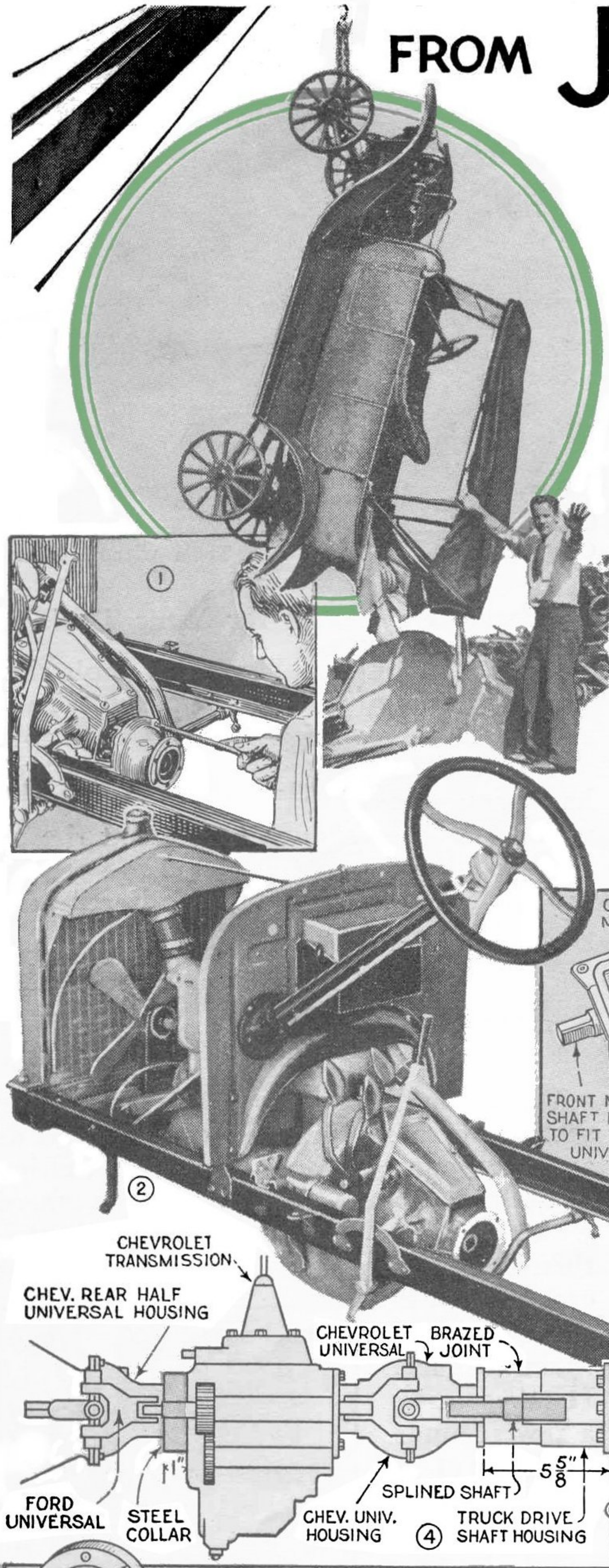
FROM JUNKPILE TO



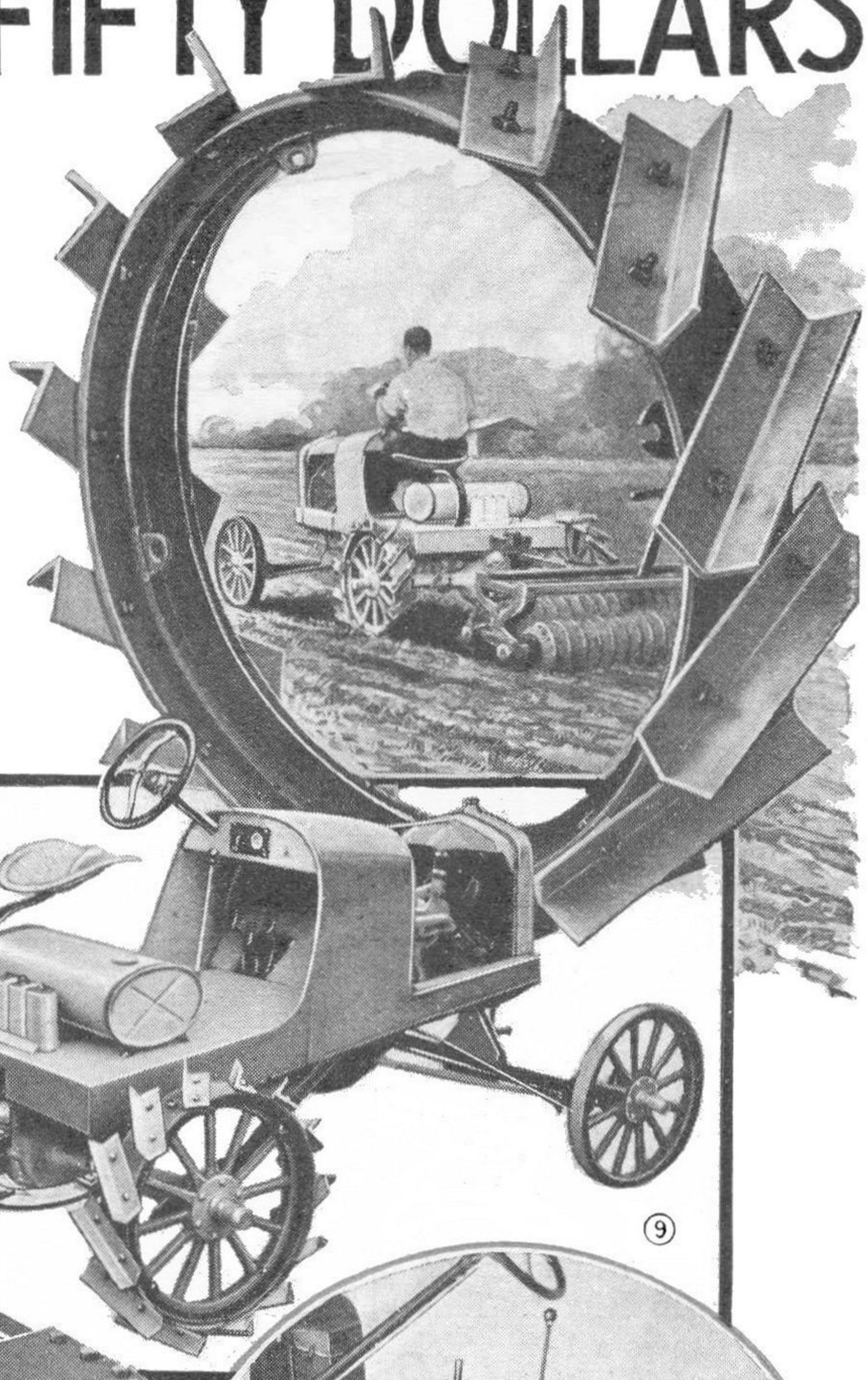
CAPABLE of pulling any two-horse load with ease, at good speed and nominal gas consumption, this homemade tractor, made from junk automobile parts, costs only about $50 to build. Although a low hitch is provided on the rear-axle housing, the high hitch, also shown, is safe for most loads, as it was found that, with the tractor anchored, in several tests to determine its turn-over tendency, the forward wheels lifted 15 in. but no more. To insure a more efficient cooling and lubricating system than that provided on a Ford model-T motor, which is used in this tractor, a water pump and an oil pump may be added, but these details are left entirely to the discretion of the builder.

Starting out, you will need an old Ford passenger car. If you already have one, well and good; if not, your local junkyard or wrecking establishment will supply one at low cost. Stripped of unnecessary parts, the car will take on somewhat the appearance of Fig. 2. From this picture, you can readily see that the car purchase should be made with an eye to a good radiator, a fair motor and an unsprung chassis. The front-wheel unit, too, although not

TRACTOR FOR FIFTY DOLLARS

shown, should be in good condition as this forms a part of the finished tractor. All in all, parts from three cars—a Ford passenger, a Chevrolet passenger and a Ford truck—go into the making of the new unit.

With the chassis stripped, the first job is to install the new shaft. This consists of a number of pieces, including a Chevrolet transmission to step up the power supplied by the Ford motor, as shown in Figs. 3 and 4. Start building up the shaft by fitting a rear-half universal housing from a Chevrolet over the Ford universal. As can be seen in Fig. 1, the holes must be enlarged a little with a rat-tail file in order to get a neat fit. The Chevrolet transmission comes next, which must be partly disassembled, as



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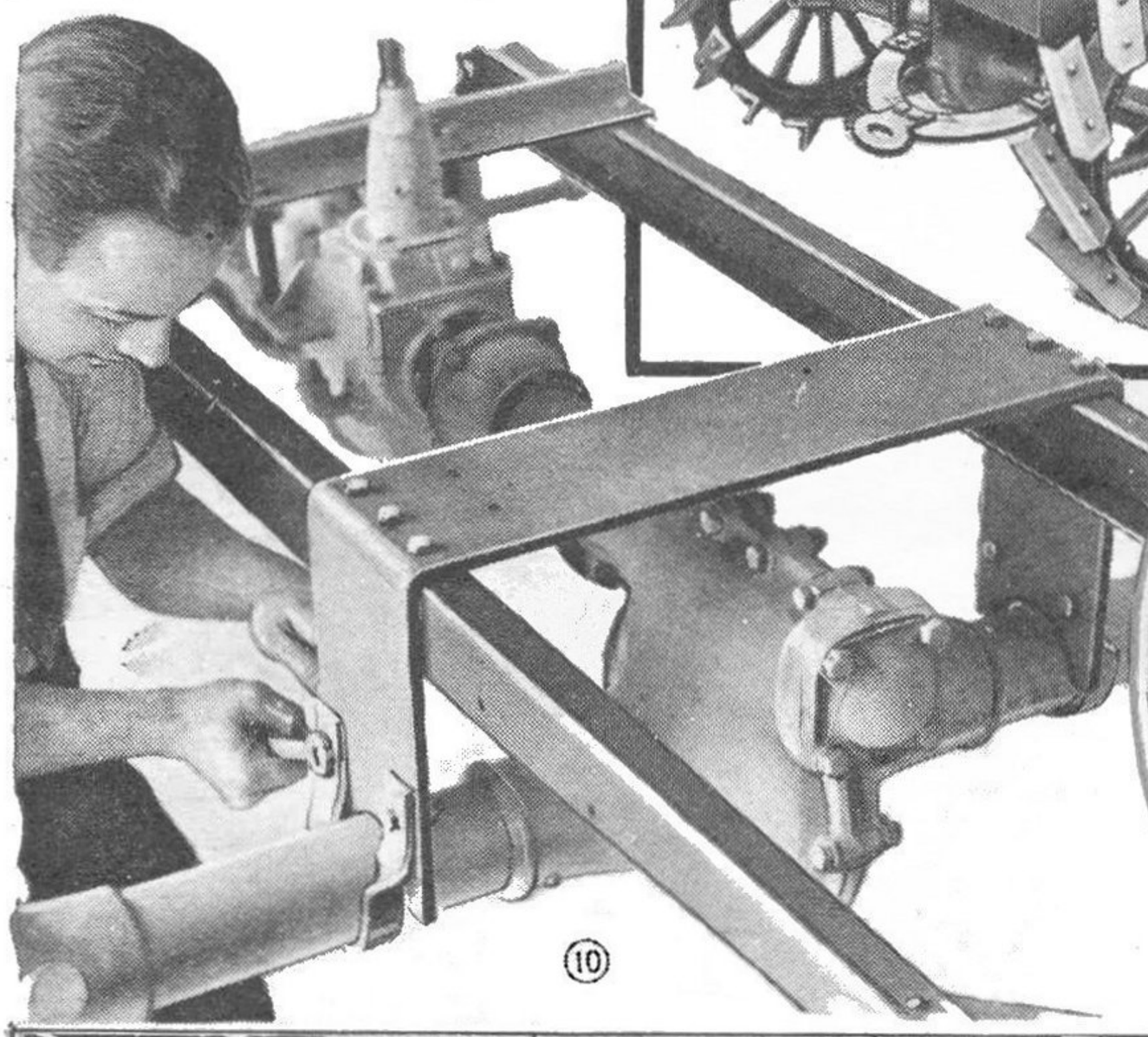

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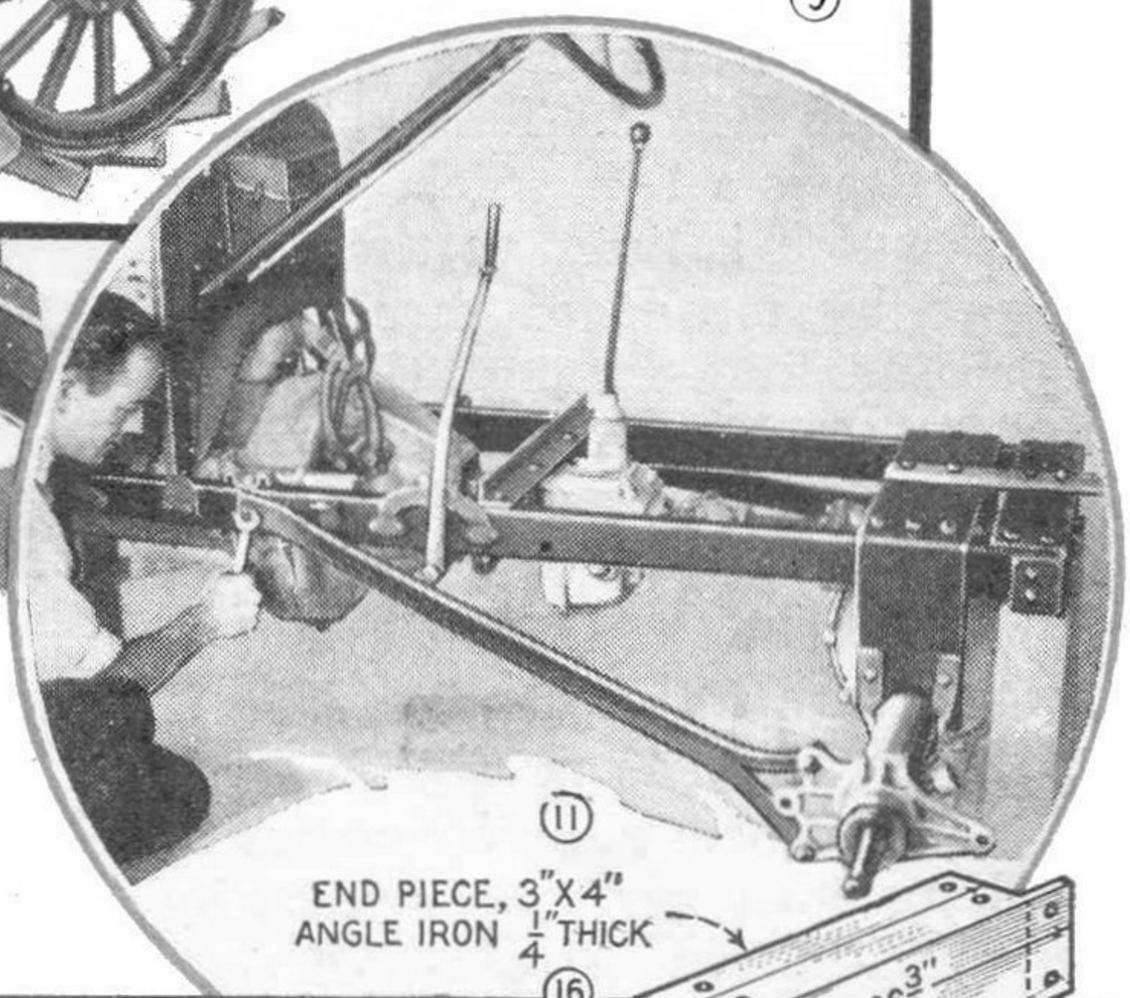

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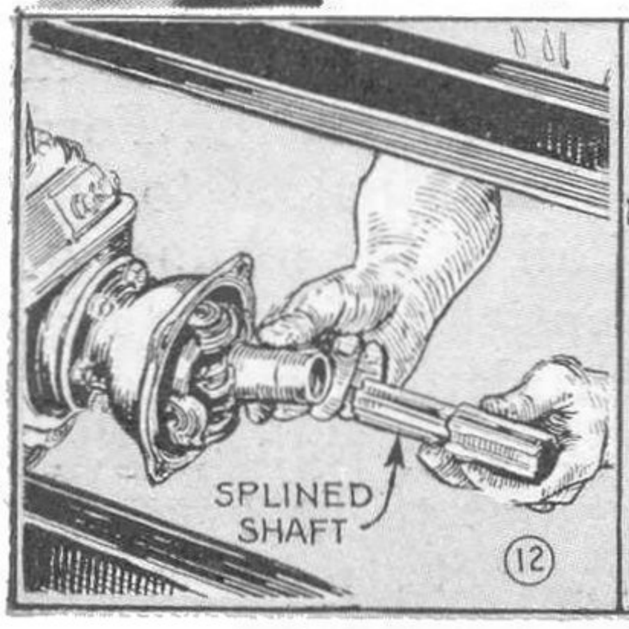

SPLINED SHAFT

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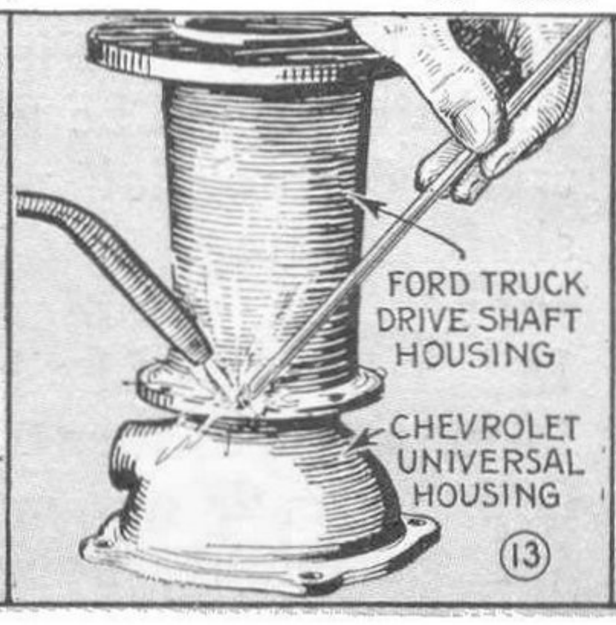
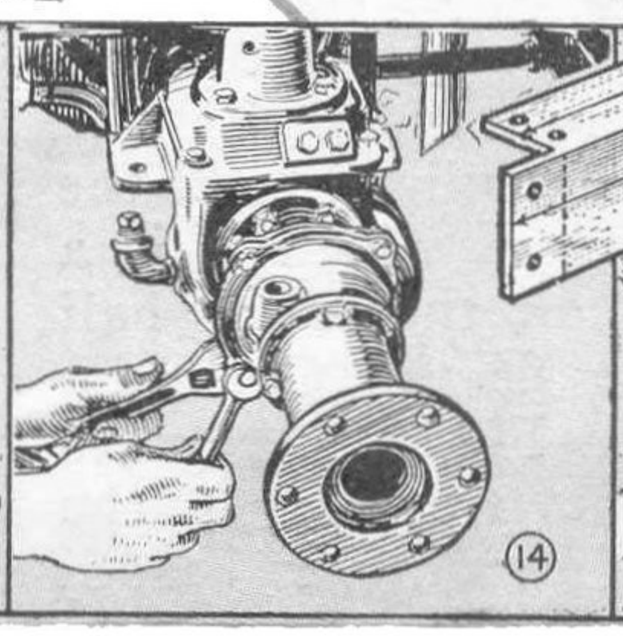


FORD TRUCK DRIVE SHAFT HOUSING

CHEVROLET UNIVERSAL HOUSING

⑬



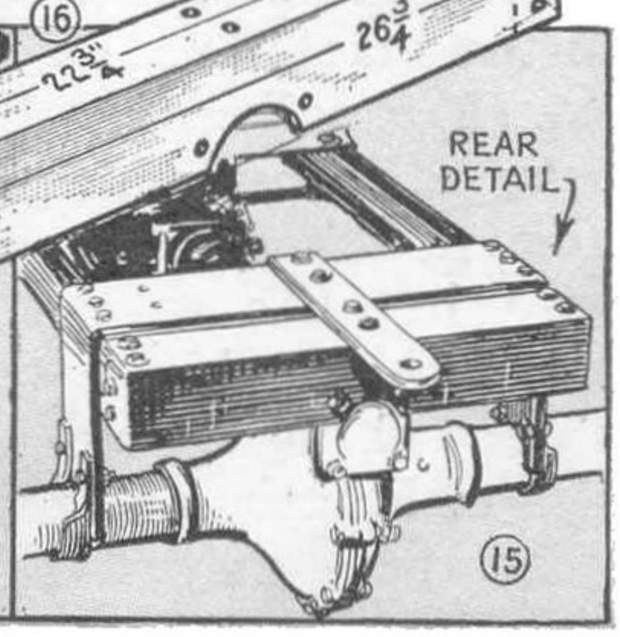
⑭

END PIECE, 3"X4" ANGLE IRON $\frac{1}{4}$"THICK

⑯

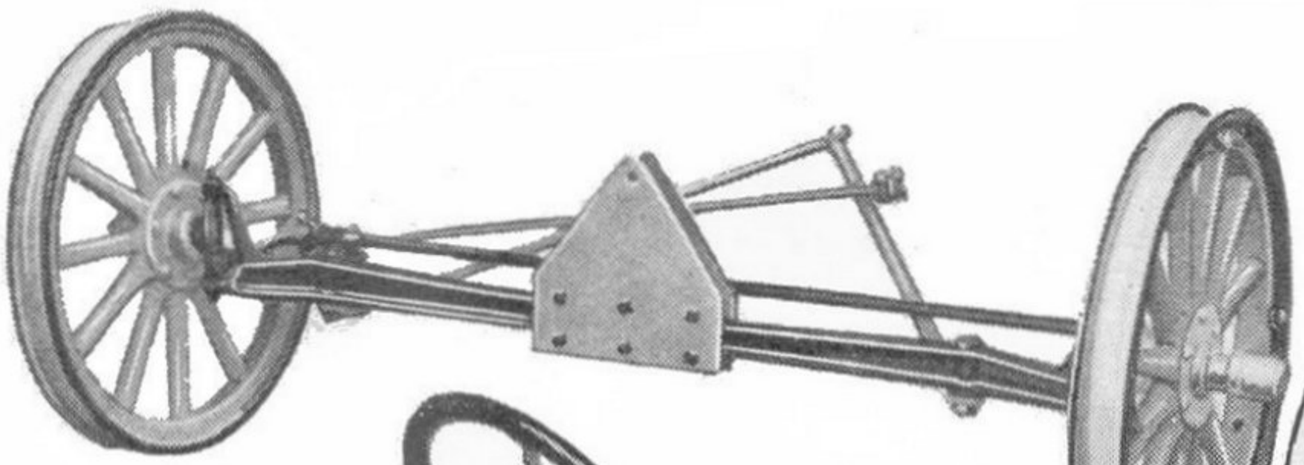
$22\frac{3}{4}$"

$26\frac{3}{4}$"



REAR DETAIL

⑮



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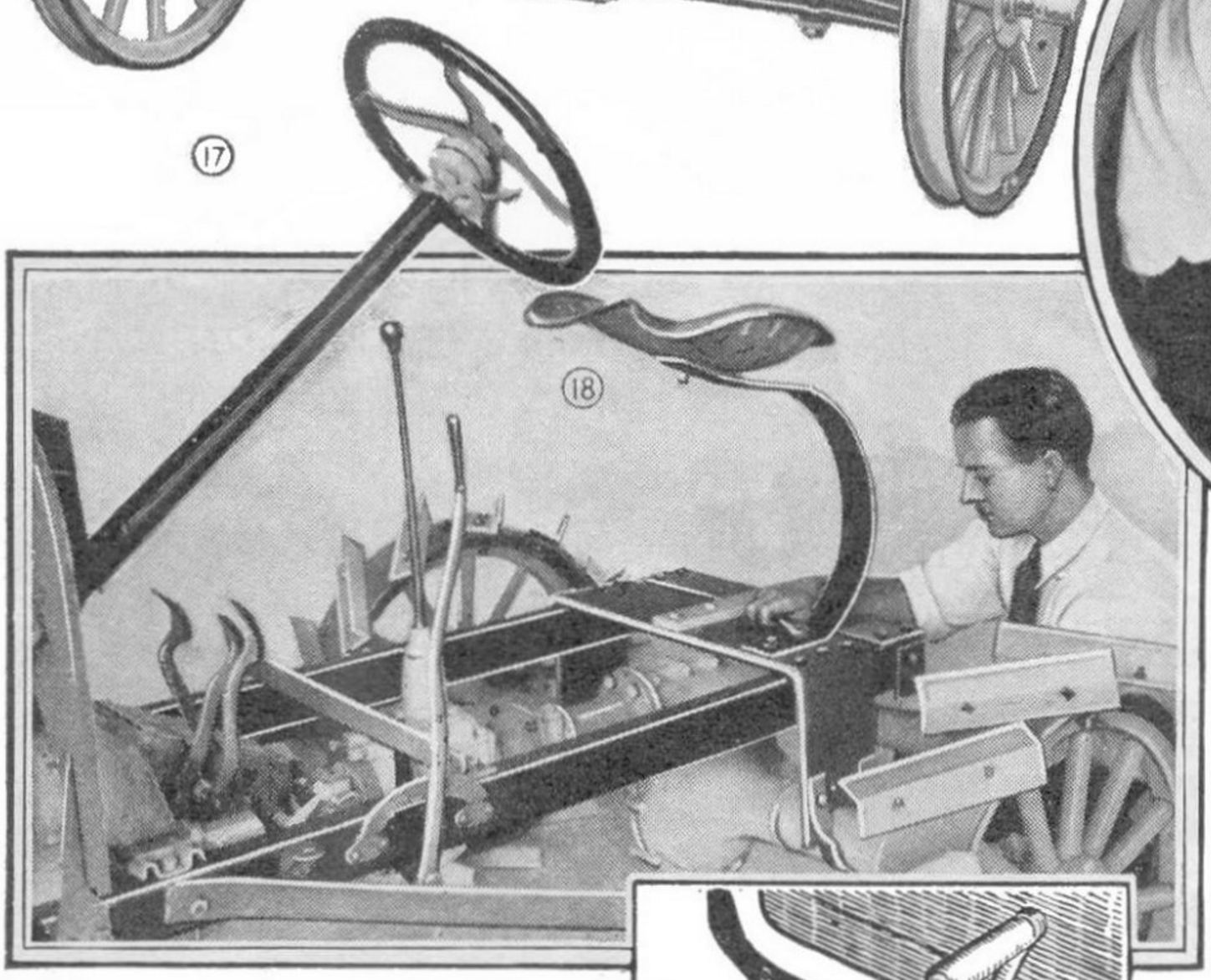

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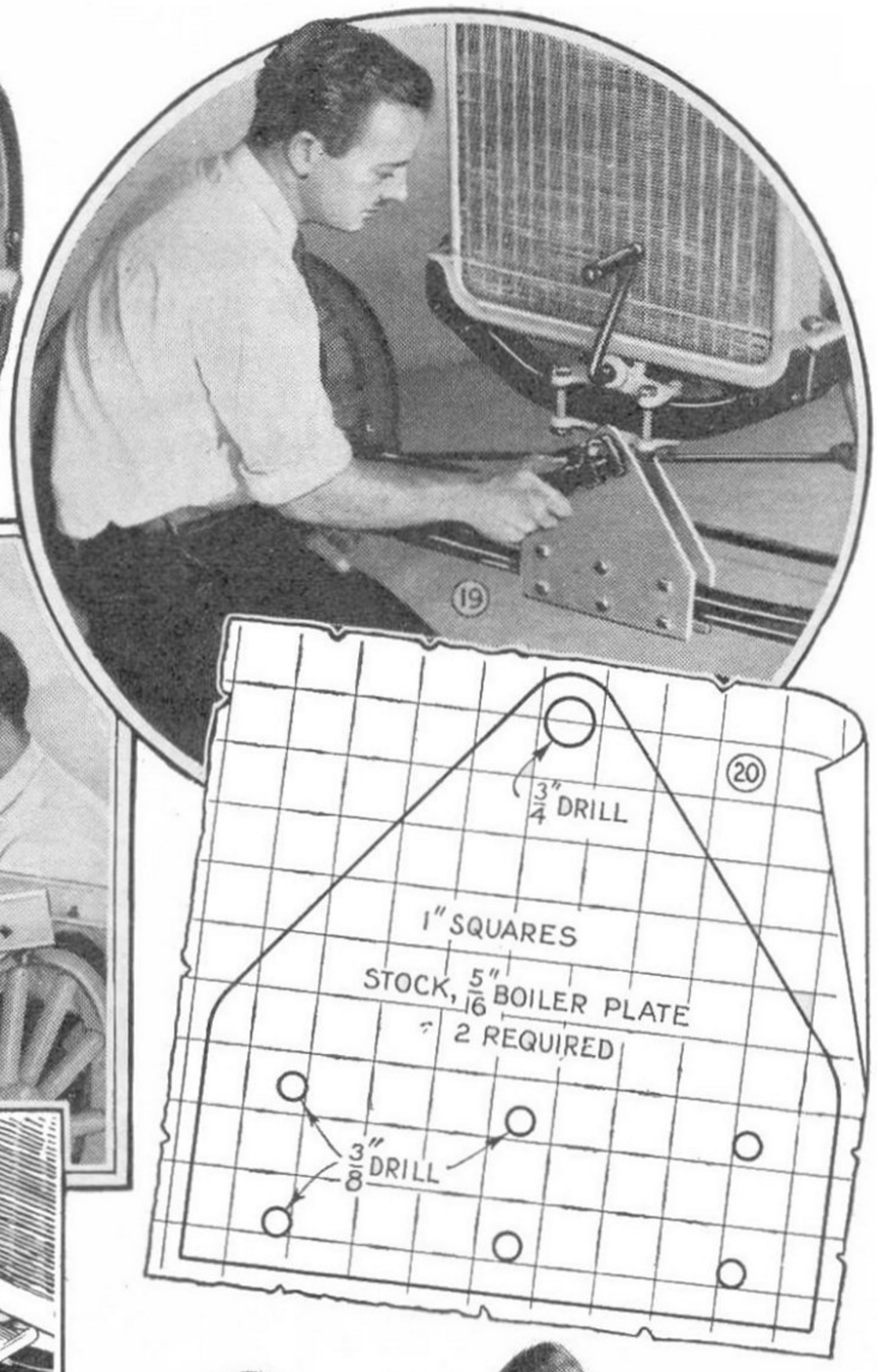
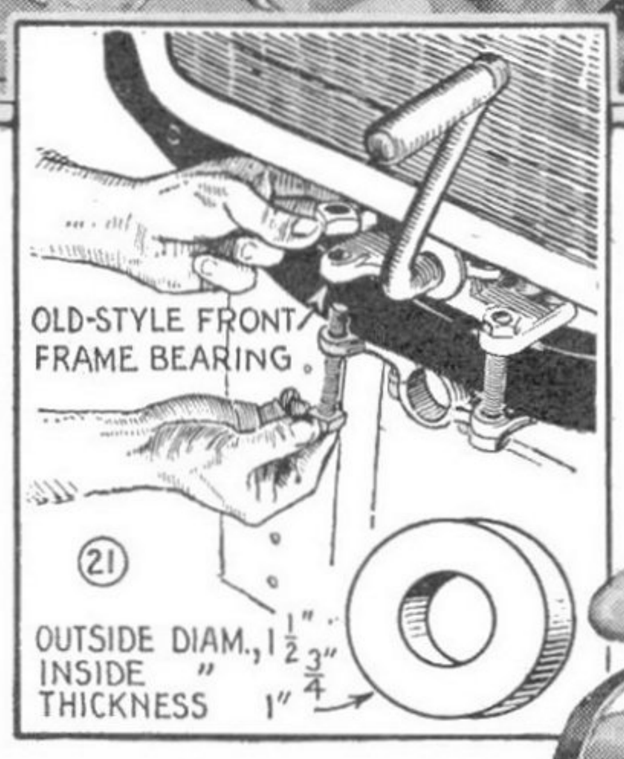
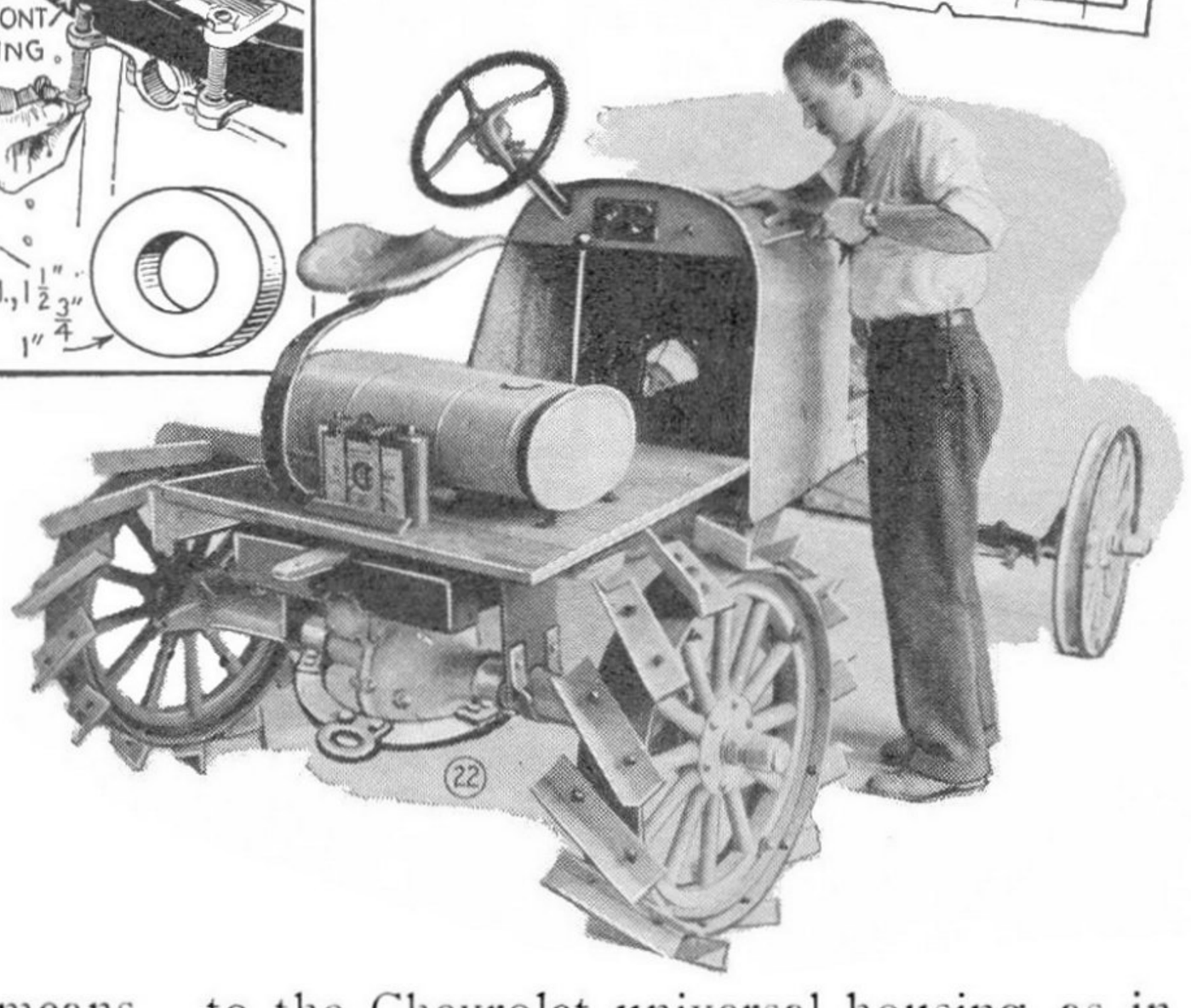


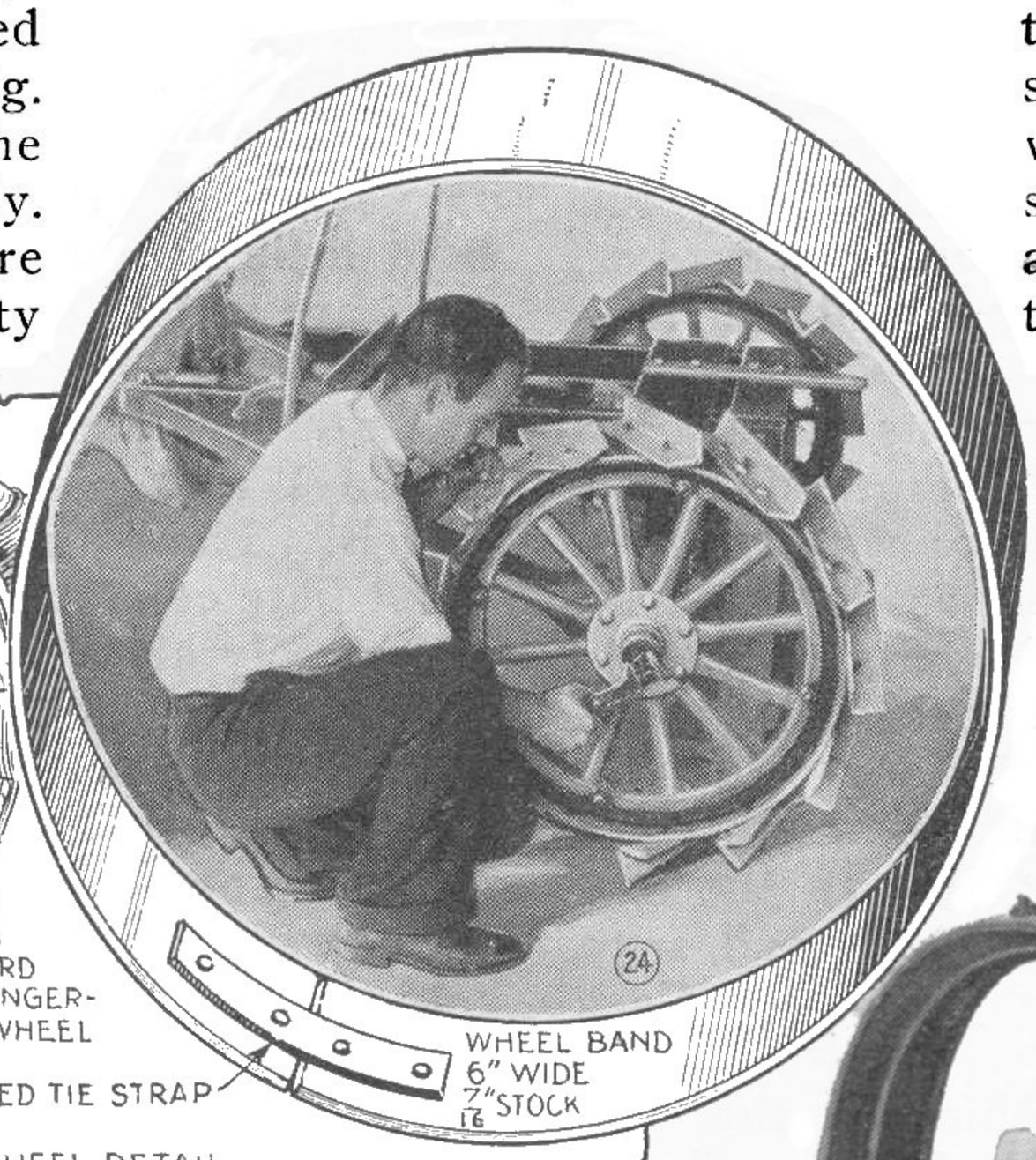


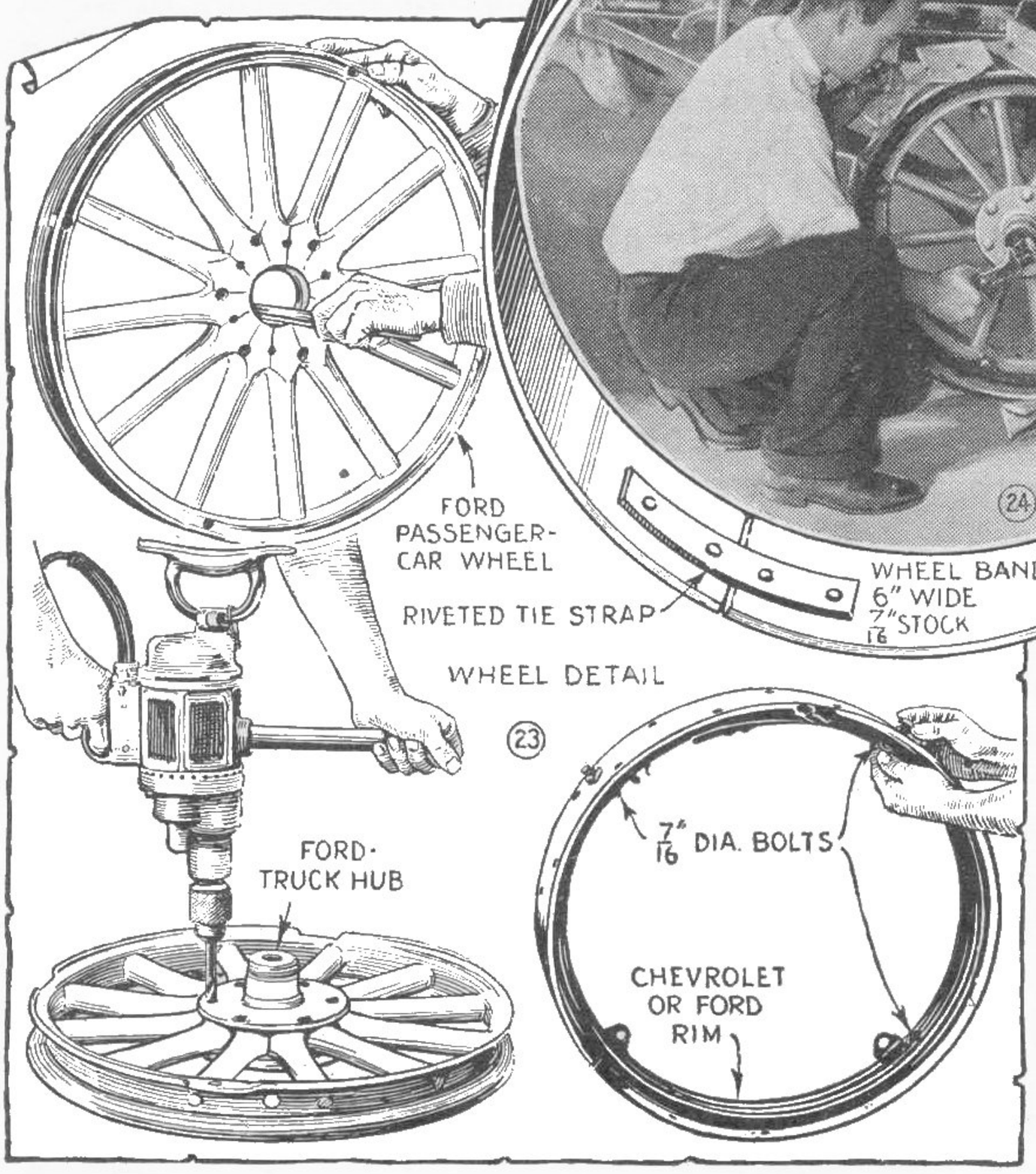


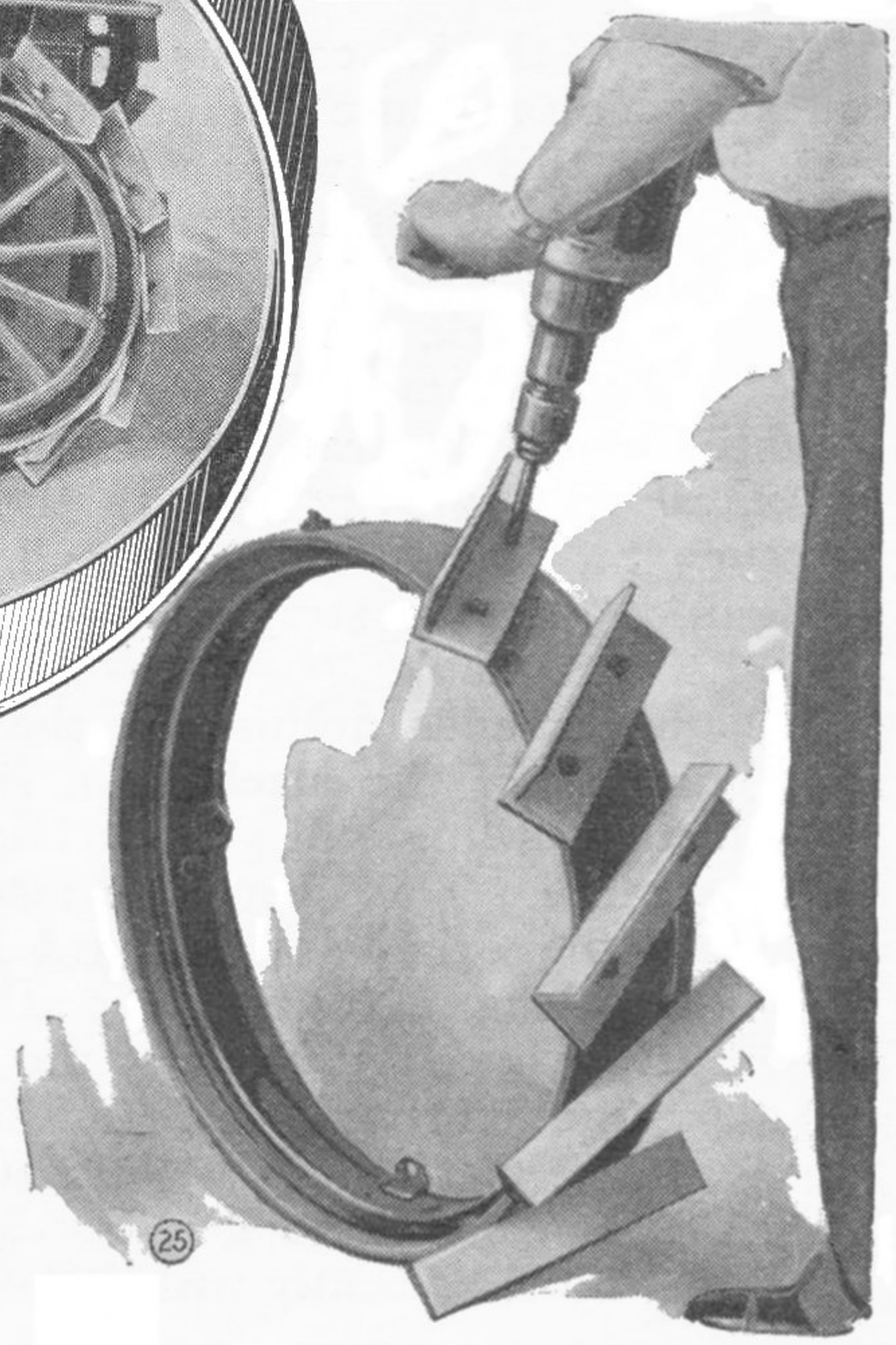
(22)

in Fig. 3, in order to remove the front main driveshaft. This shaft is to be taken to a machine shop and tooled down slightly to fit within the Ford universal. The reassembled transmission is shown in Fig. 5. This sketch shows a 1-in. steel collar, which is fitted to the transmission by means of three ⅜-in. studs extending through the collar and into the holes in the Chevrolet universal housing, as in Fig. 6. The coupling alone is not sufficient to properly brace the transmission, so a crossframe truss of angle iron is fitted into place as in Fig. 7. This holds the transmission by means of two long bolts, properly spaced by means of two ½-in. pipe nipples. A second trip to the machine shop is necessary to have the shaft splined as shown in Fig. 8. The heavy portion is already splined to fit the Ford truck differential of which it is a part, but the splines on the lower half must be machined to fit the Chevrolet universal, as shown in Fig. 12. Next, a 5⅝-in. length, cut from the rear of the Ford truck driveshaft housing, is brazed to the Chevrolet universal housing, as in Fig. 13. The jointed parts are then bolted into place, as in Fig. 14, with the splined shaft inside. The final piece is the Ford truck differential, which is bolted to the shaft housing. A detail of the manner of supporting the differential is given in Fig. 15. A length of boiler plate, 6 in. wide by ½ in. thick, is turned over at right angles, and the ends are cut out to fit over the axle, fastenings being steel straps twisted

to shape and bolted into position (Fig. 10). Fig. 16 shows the endpiece. The exact line on which to cut off the chassis is determined by this piece, the cut being made so that the endpiece can be bolted to the rear of the differential, as shown. Additional bracing is provided by the original truck trusses, which are cut to suitable size and bolted to the frame, as in Fig. 11. This completes the driveshaft assembly. The universal joints are not used for flexibility







angle iron. Fitting is best done by drilling the cleats first, then drill thirteen evenly spaced holes around the rim, and, finally, use a fit-and-try method to locate the remaining holes, as shown in Fig. 25. The cleats are fastened at an angle of about 45°.

The forward-wheel assembly includes the original Ford passenger-car axle, with wheels and rims, as shown in Fig. 17. The addition consists of two triangular wedges of boiler-plate stock, cut to the dimensions given in Fig. 20. The holes for the six bolts that hold these plates to the axle must be drilled very carefully so that the bolts will be tightly wedged into position. The slight swelling of the axle at this point will be sufficient to keep the plates firmly in place. Fastening the front wheels to the frame is accomplished by using two old-style front-frame bearings (Ford), which are bolted on either side of the frame as in Fig. 21. Such bearings can only be found on models up to and including the 1921 Ford. The opening in the lower bearing is fitted with a bushing, to take a ¾-in. bolt, passing through the top of the triangular plates. The unit is

but only to insure simple and satisfactory couplings.

Now for the rear wheels. Each of these is made from a Ford passenger-car rear wheel, the original hub being removed and the hole for it enlarged with a file so that a truck hub may be substituted, as in Fig. 23. The latter should be placed so that the bolt holes of the hub will come between the old ones, in order to assure sufficient holding qualities. The outer part of each wheel is made from a 7/16 by 6-in. iron band, bent to fit a Ford or Chevrolet rim and fastened with three bolts as shown in the right detail of Fig. 23. Each wheel is fitted with thirteen cleats which are 11 or 12-in. lengths of 2 by 2½-in.

assembled as in Fig. 19, using lock washers under the nuts. As a tractor has a decided tendency to set nuts spinning, it is a good idea to use lock washers wherever possible throughout the entire assembly. One other thing about the front wheel assembly: For light truck farming, the original steering-gear tie-rod can be left in place, but if you anticipate heavy duty, you may as well remove this now as later and substitute a heavier rod. The strain on the rod, especially when the wheels are tipped in and out of a furrow, is considerable, and a light rod will usually buckle.

The rest of the job consists of finishing touches. You may use a standard tractor seat, fitting this into place with a fairly flexible length of steel, as in Fig. 18. Wood flooring is nailed over two lengths of 2 by 4-in. stock, preferably hardwood, bolted to the frame. The gas tank is mounted under the seat, and, in this position, allows a gravity feed to the carburetor. Starting is done by hand, with an ignition battery strapped into place behind the gas tank.

Although it adds nothing to the running qualities of the machine, a simple sheet-metal cowling will greatly improve its appearance. This should be made to run from the original dashboard back, with lighter lengths turned over at right angles, fitting over the frame at the front and along the flooring at the rear, as can be seen in the picture of the finished job. With this cowling, a wooden instrument board may be fitted neatly within the metal hood, as shown in Fig. 22. The original Ford hood can be used over the motor.

Two examples of hitches are shown in Figs. 9 and 22. The higher one is used for light loads, while the lower hitch is best for heavy loads. The upper one consists of a piece of heavy iron plate securely bolted to the rear crosspiece as shown in Fig. 15, while the lower one comprises several individual pieces, riveted or welded together, and is attached to the rear-axle housing. Running the tractor may be a little puzzling at first, especially if you have had no experience with a model-T Ford. With both transmissions in high, the tractor is simply a Ford truck with a 7½ to 1 ratio between motor and rear wheels. There are, however, several intermediate combinations of gearing which will readily allow even the slowest plowing speed without stalling the motor. Normal tractor speed is obtained by putting the Ford transmission in high and the Chevrolet in first. One hour at the wheel will show what this tractor will do.

If the instructions given in this article are carefully followed, no difficulty will be experienced in building the tractor. You might question the fact that passenger-car wheels were used on a truck rear end, but this arrangement was found most practical as truck wheels were too small, being 3 in. less in diameter than the passenger-car wheels. When you have completed this tractor, you may be assured that it has plenty of power for average work, and will be found especially suitable for truck farming.