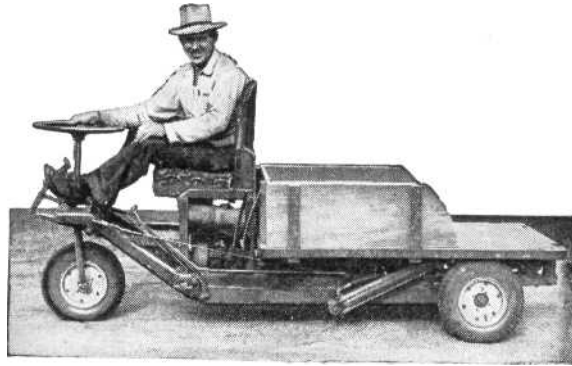


# FEEJEE

## An All-Purpose Dump Truck

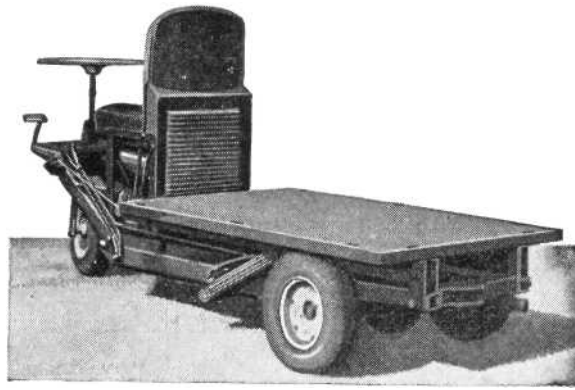
Feejee—Built by Don W. Street, a California poultry rancher, takes its name from a contraction of the words Feed and Jeep.



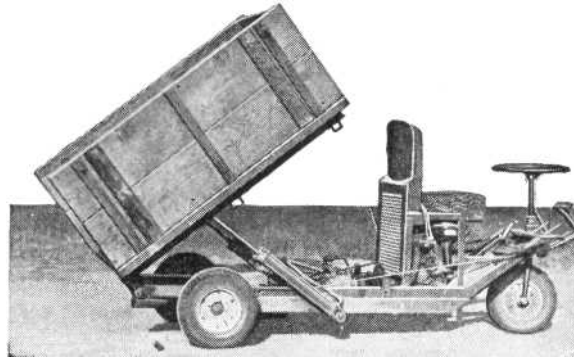
Comparative size of truck is shown by man in seat. Half-body is used for hauling sacked grain and items not in bulk

**H**ANDY around the poultry farm, the dairy barn, in the feedlot and in industrial plants, this capable midget dump truck has the capacity for half-ton loads, weighs 600 lbs. empty and has a tread width of only 31 in. A 3-hp. air-cooled engine drives through two standard automobile transmissions hooked up in tandem, thus giving a wide variation in gear ratios for the heavy pulls. A power-driven hydraulic lift, separate foot brakes on the rear wheels and a foot accelerator combine to give a degree of control equal to that of any standard dump truck. The narrow width lets the midget through small gates and feed-bunk alleys and its ability to turn in its own length gets it around square corners and into and out of narrow driveways with a full load.

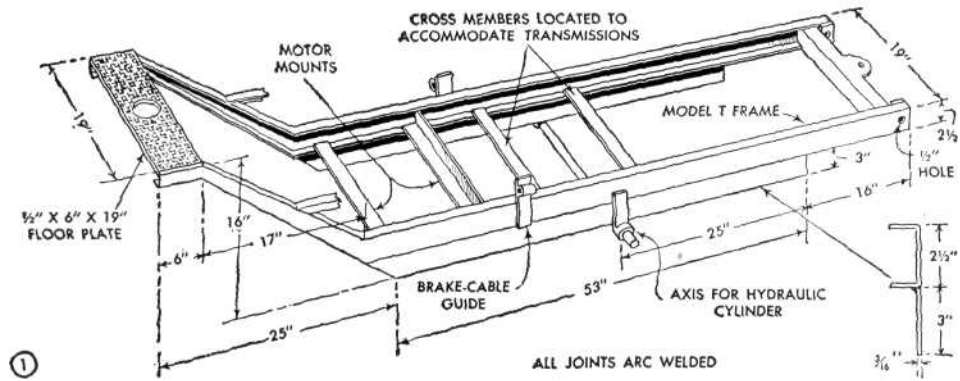
Some departures from the design as detailed are possible. A 3 or 5-hp. engine equipped with integral clutch will save building the spring-loaded clutch arrangement shown. Where the going is fairly level and there are no steep grades to negotiate regularly, a 3-hp. engine driving through a single transmission will give satisfactory performance. Two types of side panels are fitted to the platform to provide three body types: a half box, a flat bed and a deep double



With the sides removed the flat bed can be used to haul bulky articles such as baled hay, lumber or large crates



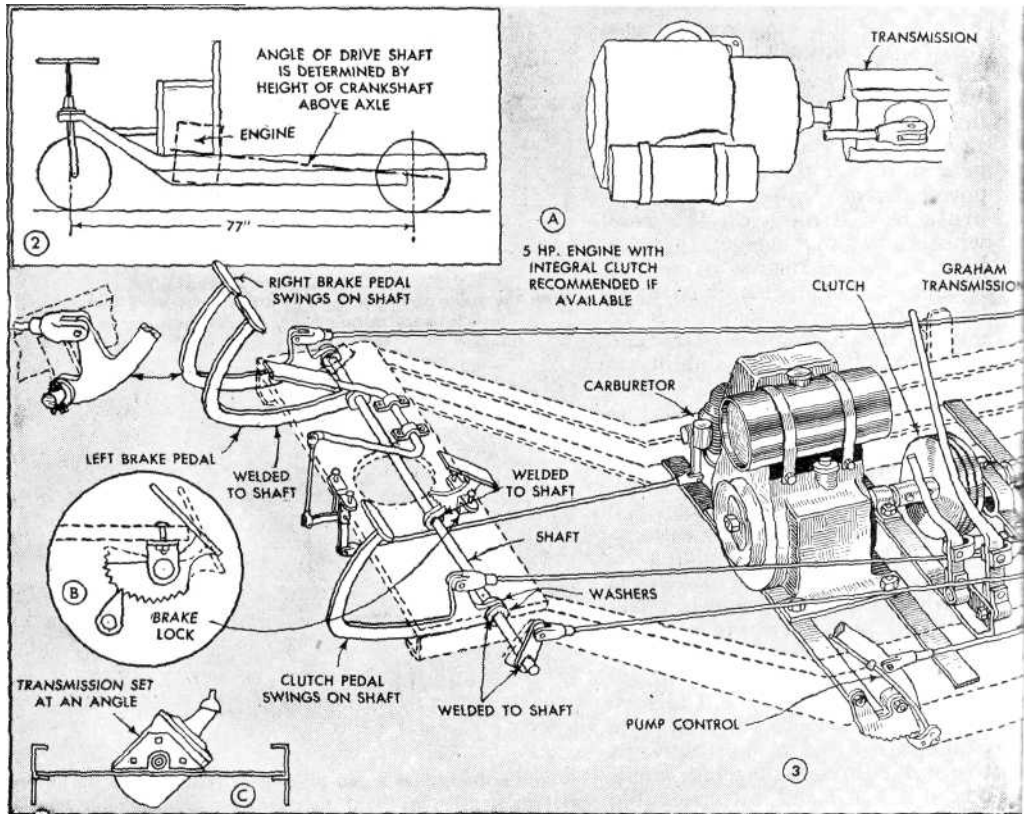
With box-body half a ton of feed or fertilizer can be hauled. Hydraulic cylinders hoist the body to the dumping position



box, with, endgates, for small grains, ensilage or ground feeds. Side panels are made of white pine or waterproof plywood and fitted with hardwood cleats and stakes spaced to fit openings in the platform. Both cleats and stakes are riveted to the panels for extra strength. Endgates are of the same construction, and wagon-box, rods cut down to the proper length are provided to hold the endgates in place.

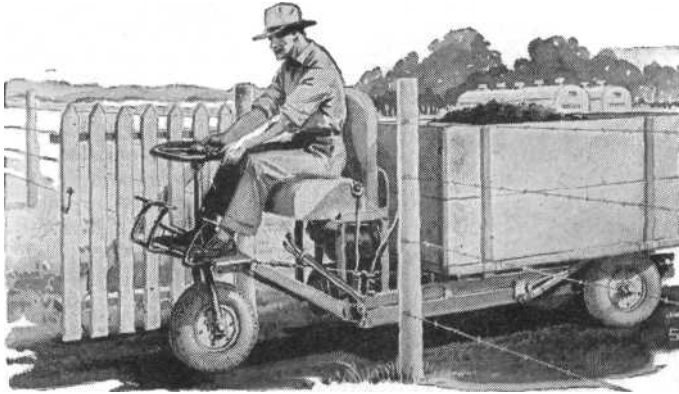
Only general dimensions are given for the frame, Fig. 1. Parts of a Model T Ford frame are used, as will be noted. However,

you can use steel channels for the frame side members and save welding on stiffeners, which are called for in Fig. 1. In building the chassis frame it is necessary to adapt it to the parts and equipment you have available or at hand. The frame should be long enough to accommodate engine, clutch, two transmissions, hydraulic pump and the rear axle. If you use the same equipment as on the original vehicle, the frame dimensions will correspond closely to those given in Fig. 1. Assembly of the driving parts is illus-



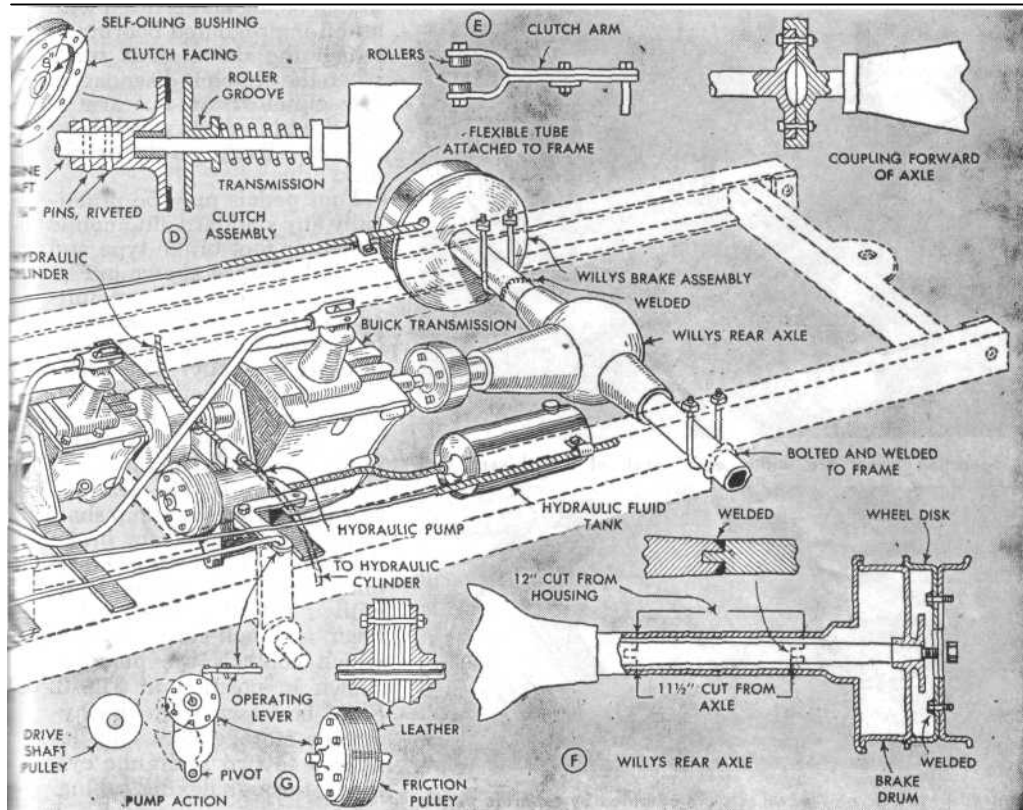
trated in the perspective view in Fig. 3. Main-frame channels are cut and welded to form the "kick-up" forward portion. Stiffeners of flat steel are welded along the bottom of the straight section to give additional rigidity. A steel floor plate is welded to the front end, with a round opening to receive the steering-post bearing. Seat frame is built up of 1/8 by 1 1/2 by 1 1/2-in. angle iron with all joints welded. This should be dimensioned to accommodate the cushions you will use.

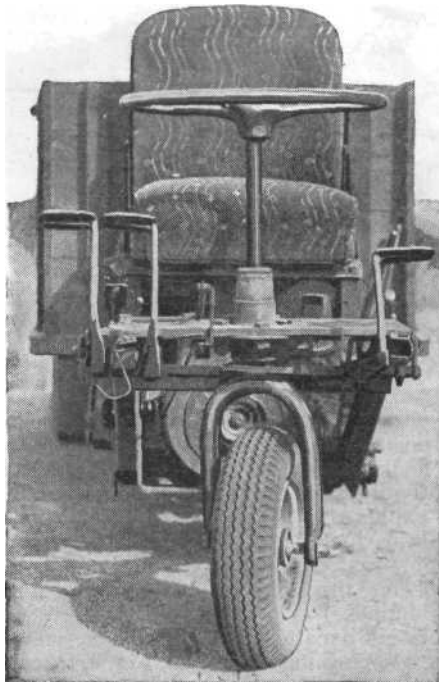
Supports for engine, transmissions, etc., are located where required, and a shaft carrying the lower eye bearings of the hydraulic cylinders is supported by bearings welded to the side frames as shown. Place the transmissions, engine and other parts in position and from this trial set-up determine the location of supporting members on the frame. Don't weld frame cross-members in place until you make this trial assembly. Using an engine with an inter-



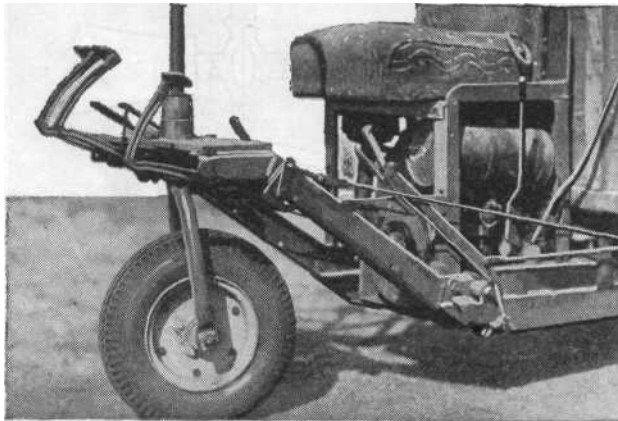
gral clutch, Fig. 3, A, will change the relative positions of these parts. Provide for a tow hook at the rear end of the frame and install guides for brake cables on each side. The cables should be located after brake pedals are installed. Holes are drilled in the extreme rear ends of the channel members to receive the bolts on which the dump body hinges.

Relative locations of the parts, when using a spring-loaded clutch, Fig. 3, D, can be worked out on the partially completed frame. Generally, it's best to begin by bolt-

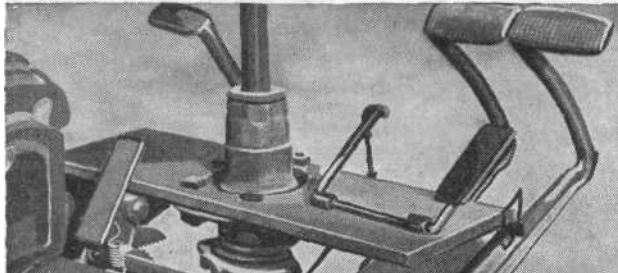




**Narrow tread and single-wheel steering permits use in close quarters**



**All operating levers are within easy reach of the driver's seat**



**Independent brakes on rear wheels are operated by separate pedals which can be locked to hold truck on a grade**

ing the rear axle in position and then work back to the engine. The angle of the drive shaft is determined by the height of the crankshaft above the center of the rear axle, Fig. 2. With the frame blocked up, the axle is bolted directly to the frame, under the channels and at the ends of the stiffeners as shown. U-bolts made from 3/8-in. round rods will serve to hold the axle in place. In the original job a Willys rear-axle assembly is used and the tread is narrowed to 31 in. by cutting out a 12-in. section of the housing and 11 1/2 in. of the live axles on each side as in Fig. 3, detail F. The ends of the axles then are turned in a lathe as shown in the detail and welded, as is the housing. A coupling to connect with the rear transmission—in this case a Buick transmission—is made as shown. Any similar coupling will be satisfactory if a different make of transmission is used. In order that the tops of the transmissions will clear the bottom of the body, it is necessary to mount them at an angle as in Fig. 3, C.

The second transmission, taken from a Graham car, was originally fitted with an emergency brake, the drum of which is utilized to drive the hydraulic pump through a friction pulley, Fig. 3, detail G. Next comes the clutch assembly, shown in Fig. 3, details D and E. On the original job this was made especially for the purpose. The driving disk is faced with clutch facing and is fitted with an oil-impregnated bearing in which the drive shaft turns when the clutch is disengaged. The clutch throw-out arm is fitted with rollers which bear against a flange on the driven disk.

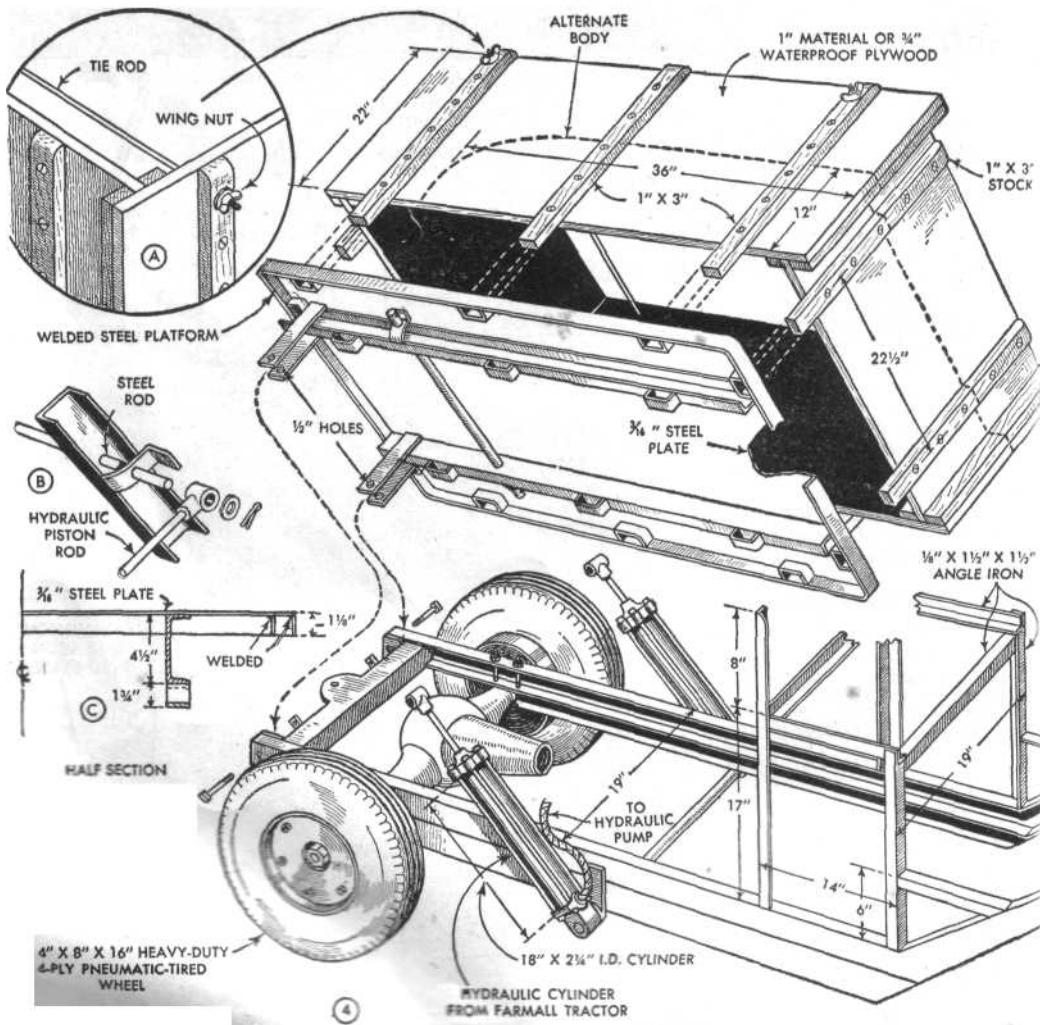
Foot pedals may be practically any standard automobile clutch or foot-brake type and are linked up as shown in Fig. 3. Gearshift levers are mounted on a frame crossmember as indicated. Link bars are bent to clear the body. The brake shaft is fitted with a ratchet foot-operated lock, Fig. 3, B. A gear-type hydraulic pump is mounted on the frame as indicated. The leather-faced pulley on the pump shaft contacts the emergency brake drum, and is thrown into and out of contact by a hand lever with a ratchet. The ratchet lever and bell-crank linkage which controls the pump is shown in position in Fig. 3. Fluid is drawn from the hydraulic storage tank and delivered to two hydraulic cylinders through flexible tubing.

# FEEJEE-AN ALL-PURPOSE

THE upper ends of the hydraulic-cylinder plungers are mounted as in Fig. 4, B, and the platform is pivoted at the rear end of the truck frame in the manner shown. For a high lift of the truck body, the hydraulic lift units are lengthened by removing the upper head and plunger guide and substituting a longer cylinder of seamless steel tubing and longer bolts. Dimensions of the steel platform or bed are given in Fig. 4, details C and D. All parts which comprise the platform are welded together, as strength and rigidity

are necessary in this unit. The overall size as detailed was found to be the most practical for all ordinary purposes and, due to the low center of gravity, there is little danger of tipping even with comparatively high, bulky loads. When you have heavy parts or materials to load you'll appreciate the low platform. The full-box and half-box body were referred to in the first installment of this story, and dimensions were suggested for these parts. Of course, either or both of the boxes can be altered to suit any special requirements.

The next step is the mounting of the rear-wheel disks on the brake drums of the rear axle. Refer to Part I, Fig. 3, detail F, which shows how the wheel disks are welded to

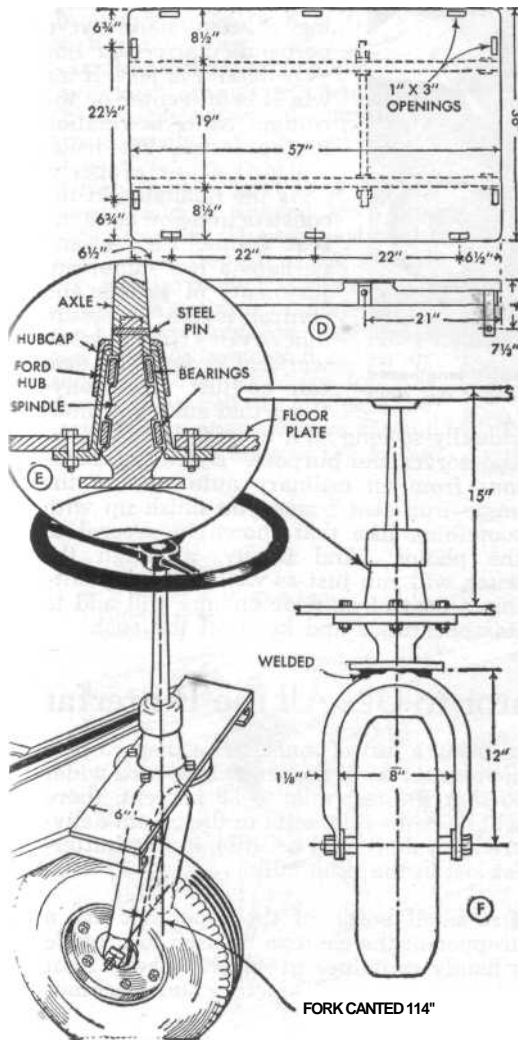


# DUMP TRUCK

the brake drums. As you can see from Fig. 4, the wheels are 4 by 8 by 16 in. in size and are fitted with 4-ply pneumatic tires. Two-ply tires in the same size will not be satisfactory for the purpose except perhaps for very light loads. Although it is possible to bolt the 8-in. wheel disks to the original axle-wheel flanges by means of spacers, this method is not as satisfactory as welding the disks to the drums. As a rule, wheel disks of the type used consist of two halves held together with bolts and, as these will be inaccessible after the disks are welded to the drums, it's a good idea to weld the bolt heads beforehand to prevent them from loosening or turning. Care must be taken when welding the disks in place to



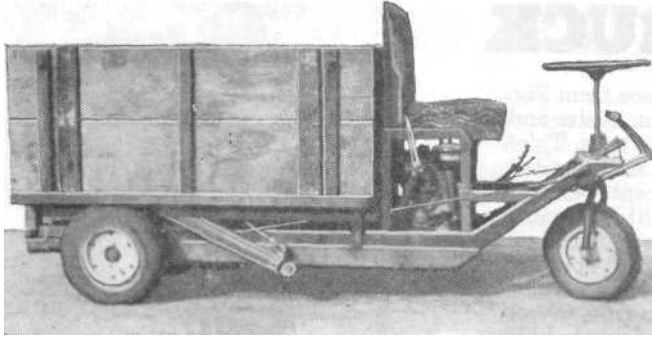
As you see here, the truck has a comfortable spring cushioned seat mounted on an angle-iron frame



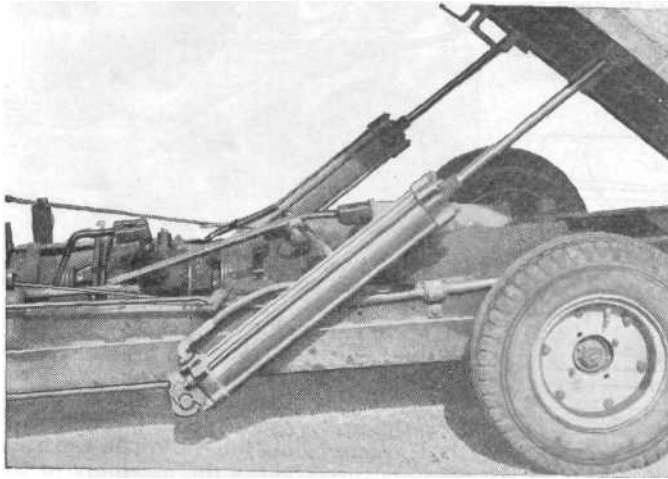
assure true-running wheels. Even a slight wobble will result in undue wear on the tires. The drums should be cleaned thoroughly before reassembling and, if necessary, the brake shoes should be relined.

Another welding job calling for the same care and precision is the assembly of the front-wheel fork, bearing and steering post. Details of this assembly are shown at E and F in Fig. 4. The front wheel is the same size as the rear wheels, but of course the hub and bearings are retained. The wheel fork is made from 1 1/8-in. seamless steel tubing bent to the shape indicated. The ends are flattened before bending and are drilled to take a steel shaft having both ends shouldered and threaded for nuts and lock washers. This work can be done in a lathe. When mounting the wheel in the fork it may be necessary to use spacers at both ends of the hub. Short lengths cut from ordinary iron pipe will do, but the spacers must be a close fit on the shaft and the length must be such that the hub of the wheel has about 1/16 in. end play when the assembly is complete. The hub should be provided with a pressure grease fitting. A steering-post bearing, Fig. 4, E, is adapted from a Ford front-wheel hub and the steering shaft is made up from a length of the live axle which was removed from the rear-axle assembly when cutting it down to a narrower tread. One end of this shaft is drilled and tapped to screw over the threaded end of the spindle, to which it is





When fitted with the full-box body the truck will handle loose grain, ensilage, **ground** feeds or any small, loose parts of either metal or weed



For a higher body lift the original hydraulic cylinders are easily lengthened with seamless steel tubing of the same diameter and longer stay bolts

pinned as indicated. The opposite end of the shaft is machined and threaded to take a 16 or 18-in.-dia. steering wheel. Usually a steering wheel of this type is keyed to the steering shaft with a semicircular or "half-moon" key. This work can be done in your local machine shop. The wheel-mounting flange is bolted to the floor plate of the truck frame when assembly is made. In

making the assembly the wheel fork is welded to the end of the spindle and when making this weld care must be taken to cant the fork back 1 1/2 in. at the lower end. This arrangement gives the wheel the proper caster for stability and ease of steering. Before assembling the steering column completely, ream the outer end of the hub cap to a close fit over the steering shaft to keep out dirt and grit. Provide a pressure grease fitting for convenient lubrication of the bearing. When assembled in the truck frame it's important that the wheel, fork and steering column stand on a perpendicular center line as in detail F, Fig. 4. If the wheel is off-center or the column cants in relation to the frame, the truck will not steer properly. As the final step in the construction you have the seat frame, Fig. 4, and perhaps a few minor adjustments of pedals and control levers to assure that everything is in working order. The seat can be just about anything that suits you individually so long as it is safely constructed and serves the purpose. By fitting cushions from an ordinary auto seat in the angle-iron seat frame you finish up with something like that shown in several of the photos. And finally, although the truck will run just as well without painting, a coat of outdoor enamel will add to its appearance and keep off the rust.