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EC788 Revised 1946 Home Made Manure Loaders

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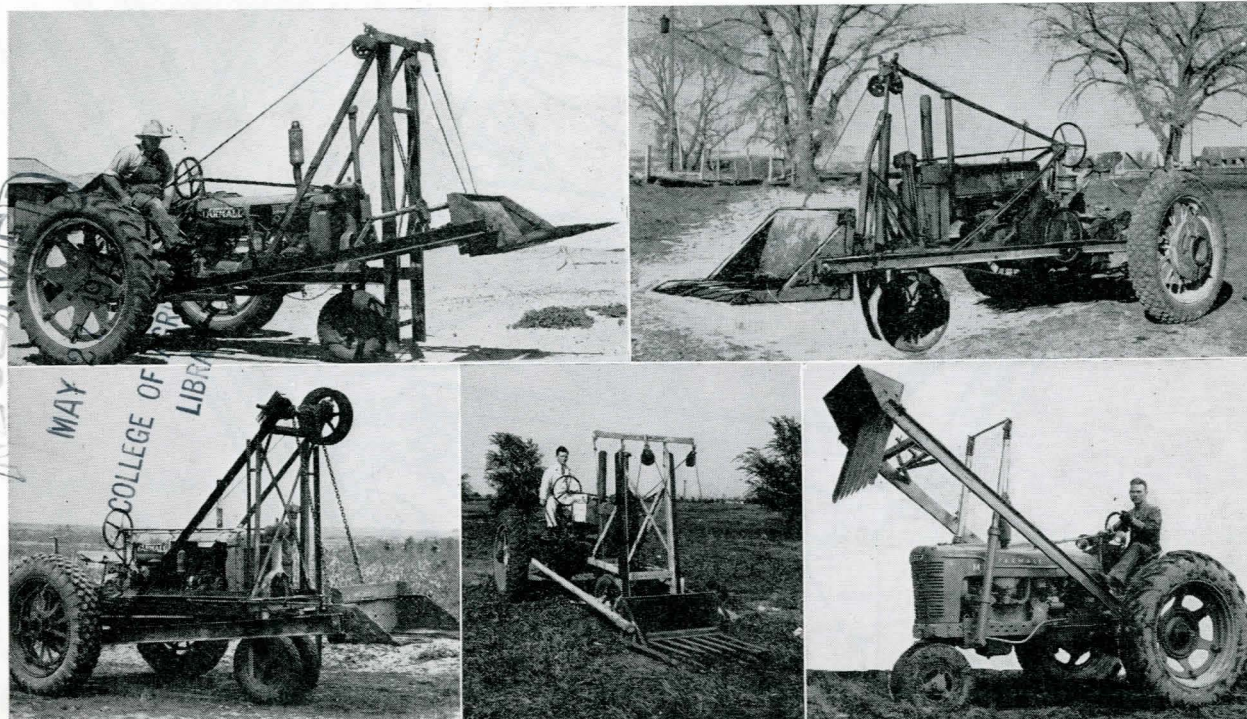
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Homemade Manure Loaders

L. F. Larsen and R. M. Loper



THE MANURE LOADER is one of the most useful labor-saving devices on the farm for accomplishing many tasks, such as loading manure, cobs or corn, moving dirt, and doing numerous other tedious jobs.

This circular describes several types of manure loaders built by many Nebraska farmers and shopmen.

The upper left hand picture shows a loader built by Pete Ardissono and his local shopman, Otto White, in Broadwater. The upper right hand picture is of a popular type of

hydraulic manure loader built by Harlan Cooper, Scottsbluff. The lower left hand picture shows a loader built by Schwarz Brothers of Humphrey. The lower center picture shows Robert Cole, Jr., of Plattsmouth and his homemade manure loader. The lower right hand picture, furnished through the courtesy of the American Road Equipment Co., 2319 North 18th Street, Omaha, shows a loader all homemade except for the hydraulic cylinders.

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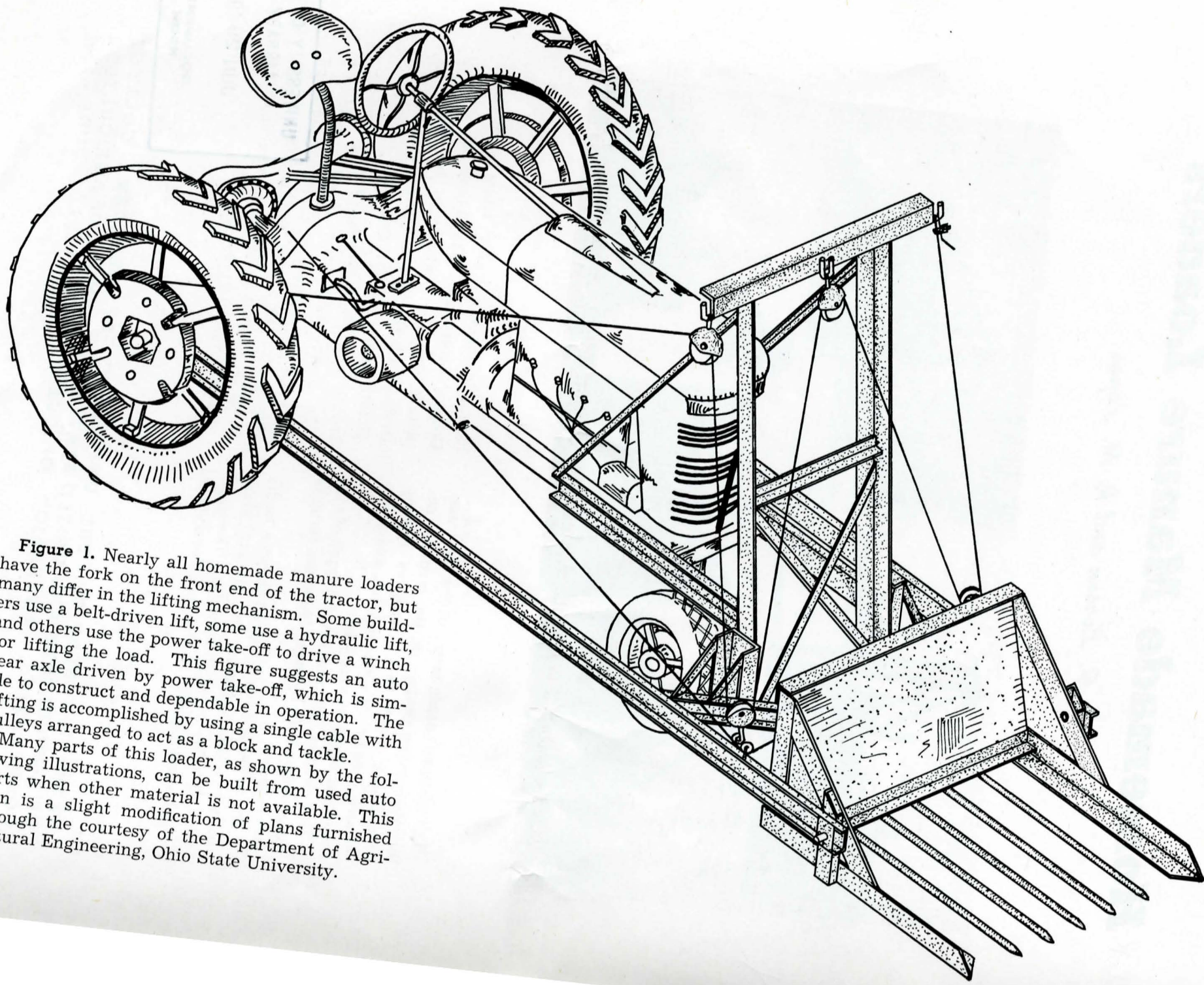


Figure 1. Nearly all homemade manure loaders have the fork on the front end of the tractor, but many differ in the lifting mechanism. Some builders use a belt-driven lift, some use a hydraulic lift, and others use the power take-off to drive a winch for lifting the load. This figure suggests an auto rear axle driven by power take-off, which is simple to construct and dependable in operation. The lifting is accomplished by using a single cable with pulleys arranged to act as a block and tackle. Many parts of this loader, as shown by the following illustrations, can be built from used auto parts when other material is not available. This plan is a slight modification of plans furnished through the courtesy of the Department of Agricultural Engineering, Ohio State University.

Figure 2. The hoist frame can be constructed of angle iron, channel iron, or auto frame material. This frame should incline slightly towards the rear as in Figure 1 or, better yet, the upright irons can be bent in several places as illustrated, by cutting and welding, to better fit the arc caused by the angle iron guides when lift arms are raised. The hoist frame should be as close to the front wheels as possible without interfering with turning. In other words, have the hoist frame as near as possible to the front end of the tractor in order to allow maximum clearance between the frame and the end of the fork.

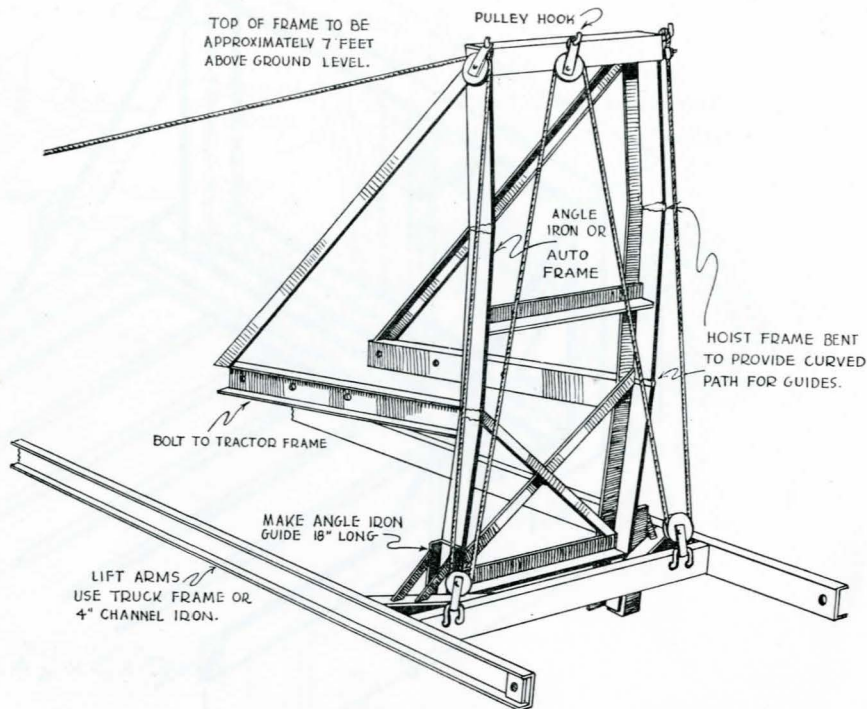
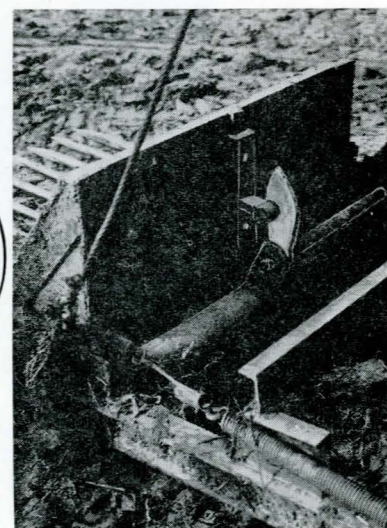
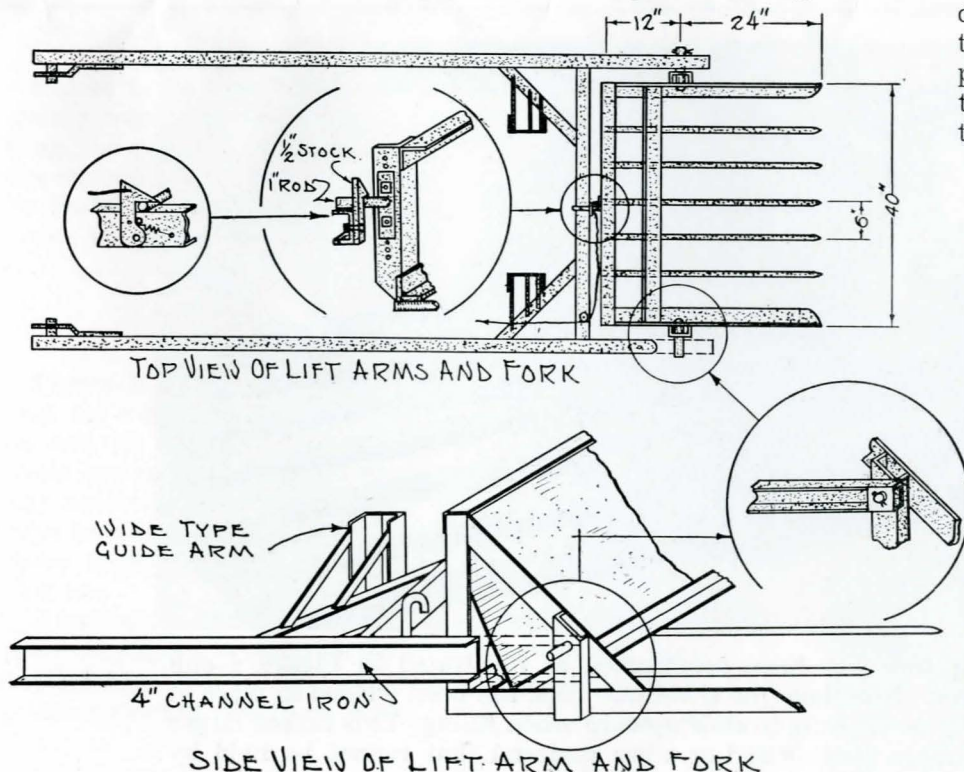


Figure 3. This indicates the general details of the lift arms, fork, and latch. The lift arms can be made from old truck frames, 4" channel irons, or large pipe. For heavy duty use, these lift arms must be well braced and very strong. They should be hinged no lower than the rear tractor axle. The guide arms are important to keep the fork lifting

evenly. They should be 18" long and fit close to the hoist frame.

The points of the fork teeth should be approximately 5' from the hoist frame; any greater distance puts an unnecessary load on the front end assembly of the tractor, and any less may not permit placing load properly. The latch, shown in drawing, is one of the many kinds—a simple barn-door type of hook that is easy to build and satisfactory. The photograph shows another type that is equally satisfactory.



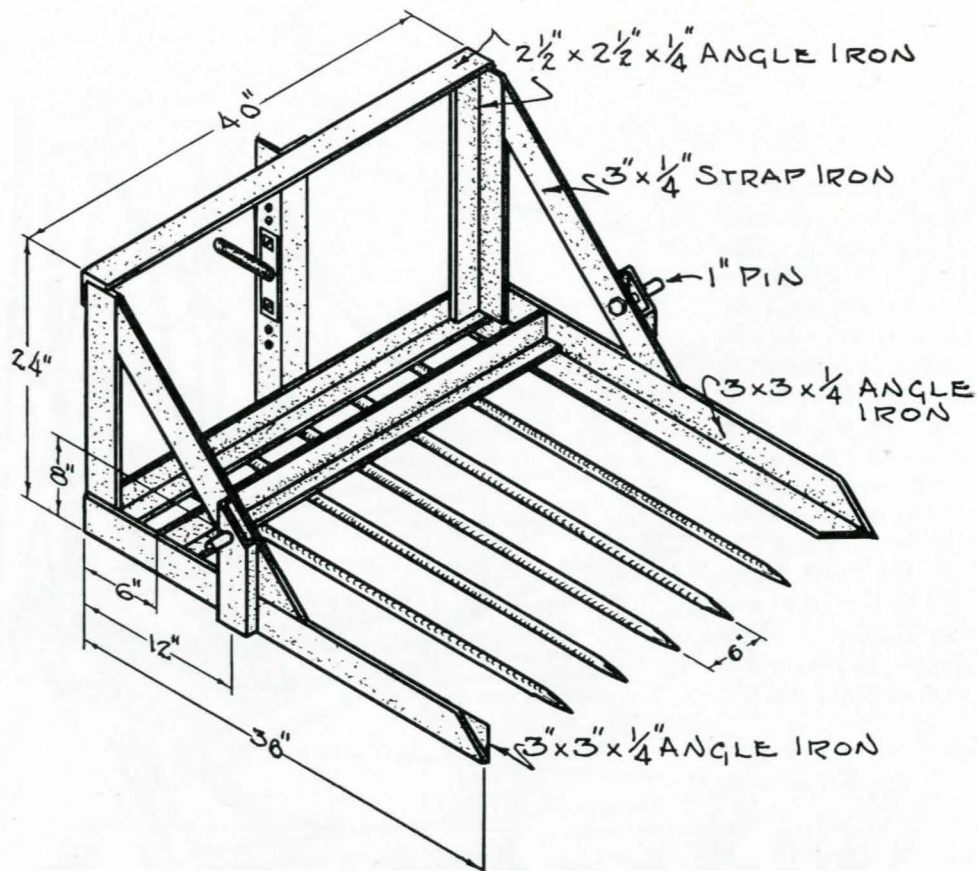


Figure 4. The fork frame is made entirely from angle iron welded together. The catch pin is made from a 1" steel rod and should be mounted so that it can be adjusted for setting the proper angle of the fork teeth. The teeth can be made from angle iron or "T" iron. Used auto drive shafts make very good teeth. Used auto rear axles make ex-

cellent teeth and can be used by making the fork slightly shorter in length.

If dimensions, as indicated, are followed, it will not be necessary to use any springs, chains, or levers to bring the fork back to home position after unloading, as the fork is pivoted or hinged so that it will snap back into place automatically.

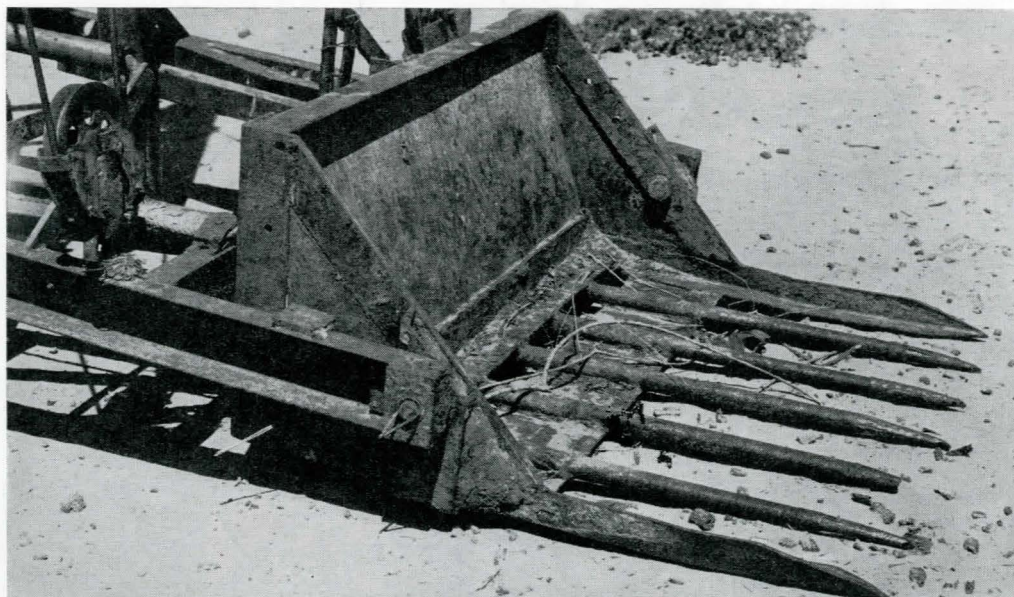


Figure 5. This fork has been constructed as illustrated in Figure 4 and found satisfactory. Note how the sheet iron back has been welded in place at an angle allowing the manure to slide upward when filling. This makes larger loads possible. When loading dirt or other material that cannot be held by fork teeth, a sheet iron cover can be made for the teeth.

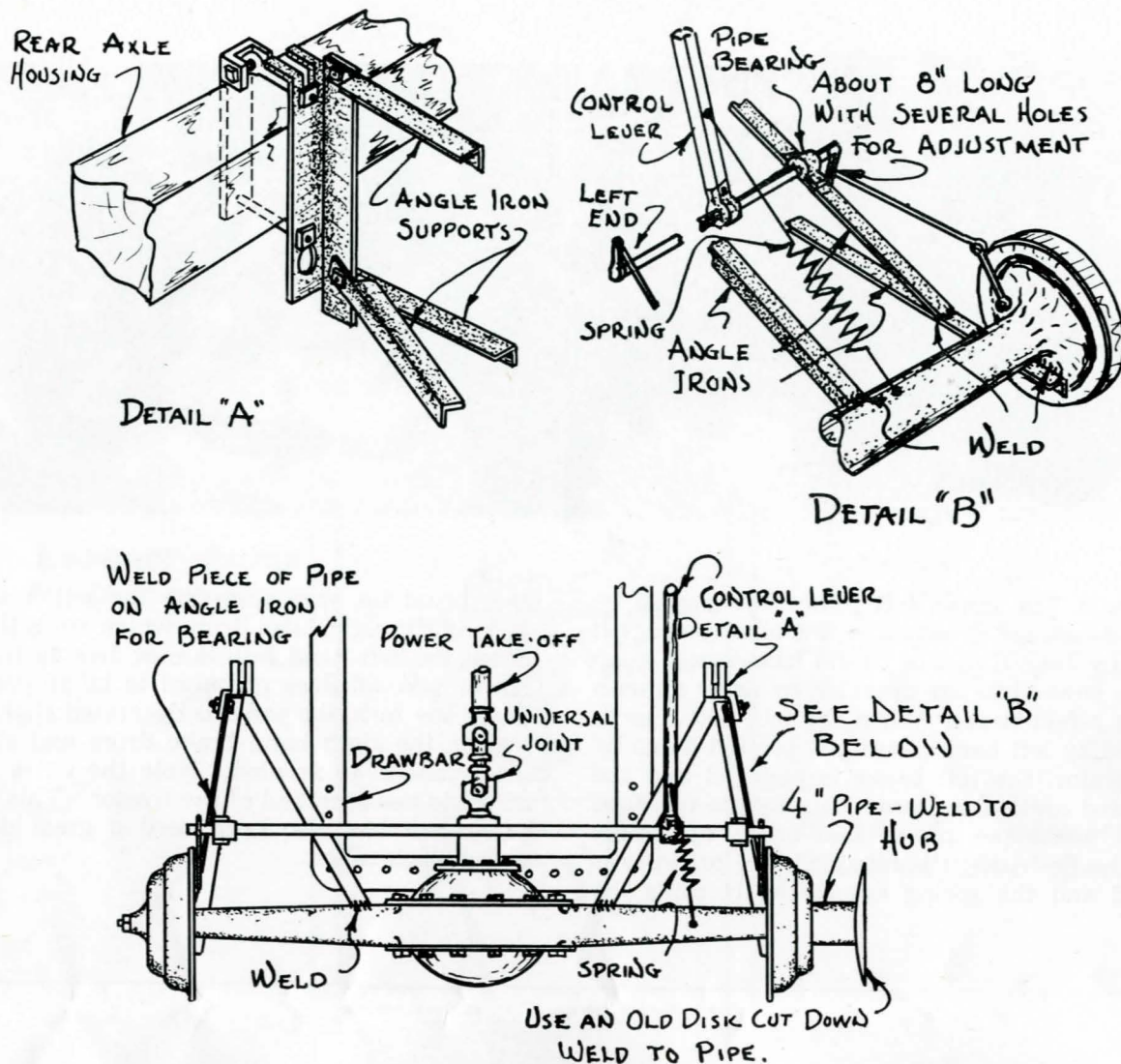
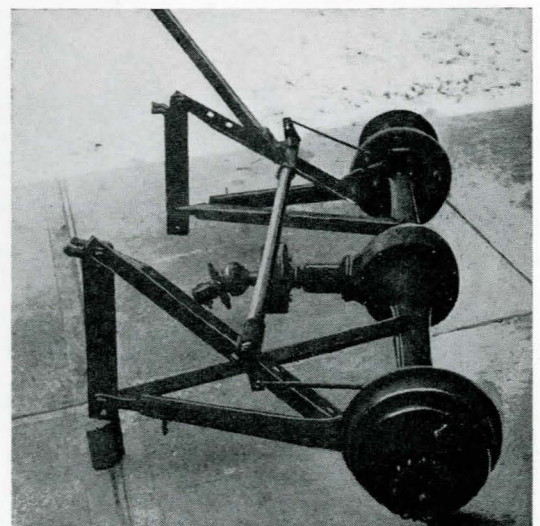


Figure 6. The power lift mechanism is made mainly from used auto parts and power is obtained from the power take-off. Detail "B" shows how the control lever is arranged to operate the brakes. By pushing the control lever forward, the left hand brake is applied and the right hand brake is re-

leased. With the control lever released and held back by the spring, the opposite effect is produced. This simple arrangement makes it possible to use an auto rear axle as a power lift, clutch, and brake, while the power take-off is operating.

Figure 7. This type of power lift works equally well for a manure loader, power buck rake, or stacker bucker. It is important to use two universal joints to avoid any misalignment of the power drive parts. Most any auto rear axle is suitable for this purpose but the type having a universal joint near the rear end of the drive shaft is preferred as it is easier to convert for this use.

A hydraulic brake system will work well if a separate master cylinder is installed for each wheel brake. Master cylinders can then be actuated by the same type of lever system as described above.



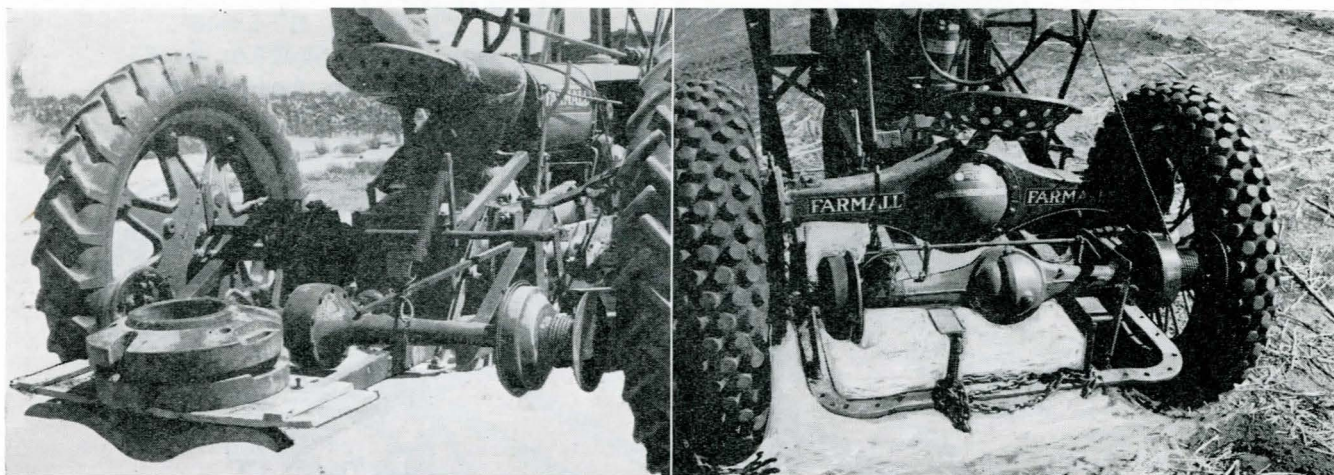


Figure 8. The upper left power lift is used by Pete Ardissono of Broadwater; the other power lift is used by John Kallos of Grand Island.

These power lifts are operated by using either a lever or a foot pedal. When the foot pedal, as illustrated by left hand picture, is pressed down by the operator, the left brake is engaged and the right hand brake is released, causing the windlass to turn when the power take-off is operating. When the desired lift is obtained, the pressure is released and the spring automatically pulls the

foot pedal up, thus releasing the left brake and locking the right hand drum which holds the load. Since the left hand hub is now free to turn, the power take-off does not need to be stopped. To lower the fork, the pedal is depressed slightly, releasing the right hand brake drum and allowing the windlass to unwind. Note the extra weight added to the back end of the tractor. This type of power lift has also been used a great deal for power buck rakes.



Figure 9. An extra frame has been attached to the rear of this tractor to carry added weight which helped to reduce the load on the front end of the tractor and give more traction to rear wheels. This is a single cylinder hydraulic loader owned by Chas. Barbour, Scottsbluff.

Figure 10. The drawing illustrates another type of lift used by some builders which could also be used on the loader illustrated in Figure 1, by using a separate cable on each side of the loader. The photograph illustrates a similar type of lift used by Dave Kuhlman, Scottsbluff County. It uses a clutch and brake from a conventional type of auto instead of a model "T" transmission.

In both of these power lifts, the differential has been locked and the clutch arrangement inserted between the power take-off and the rear axle. Either type of clutch is satisfactory; however, this type of construction is more complicated to build than the one shown in Figures 6 and 7.

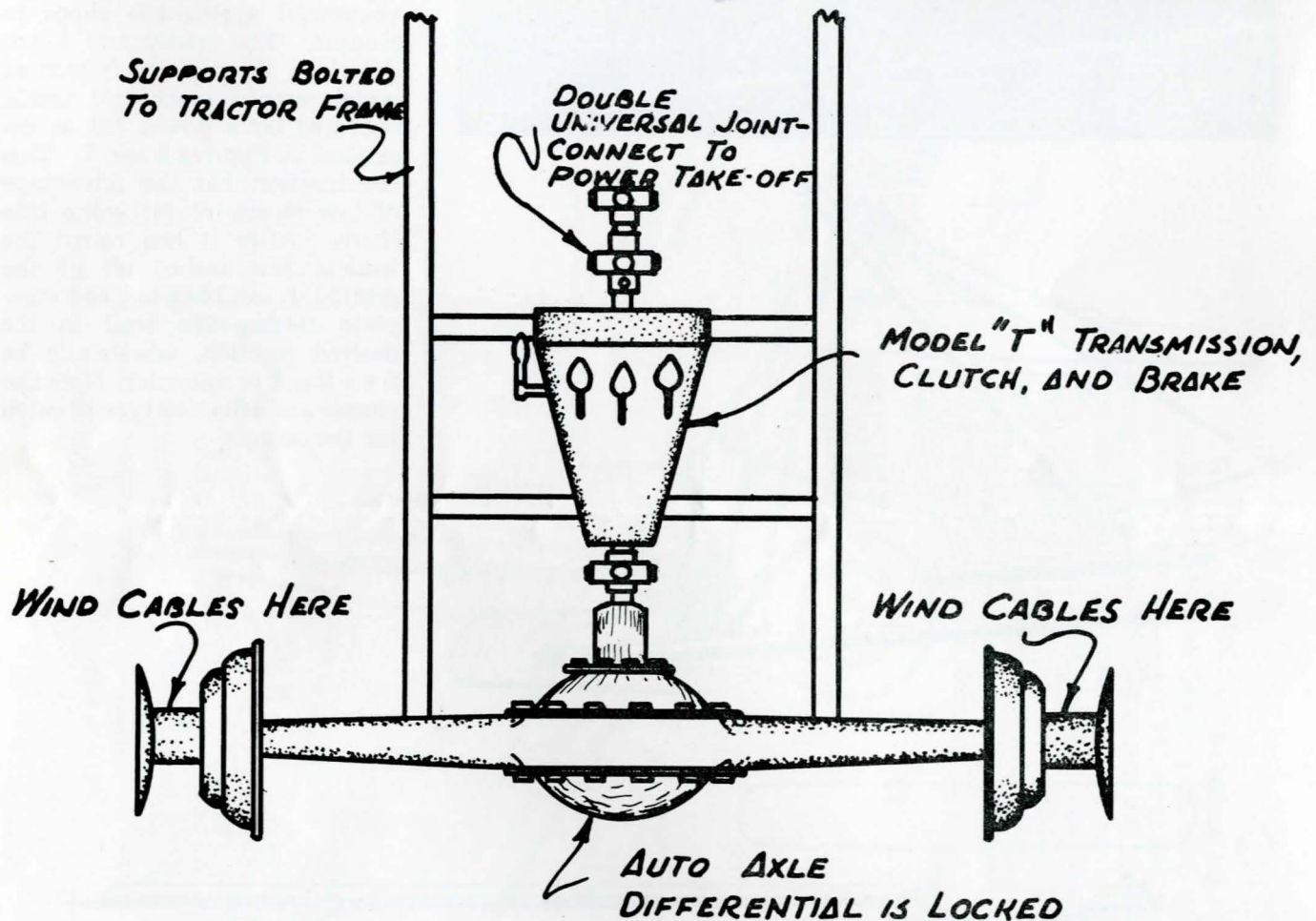
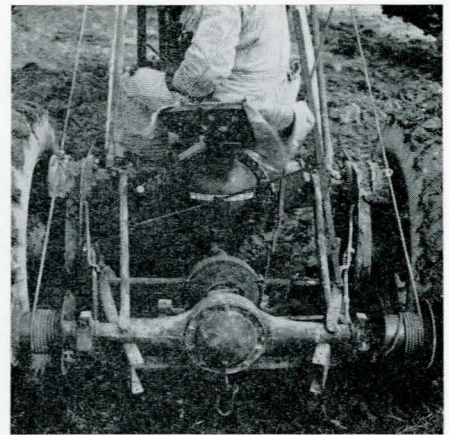


Figure 11. This illustration was furnished through the courtesy of the South Dakota Experiment Station, and is described in Bulletin No. 378, "A Tractor Mounted Manure Loader," published by that Station. It is another type of lift that has the advantage of lifting separately on each side of the fork as in Figure 10, and also has the simplicity of lift operation described in Figures 6 and 7.



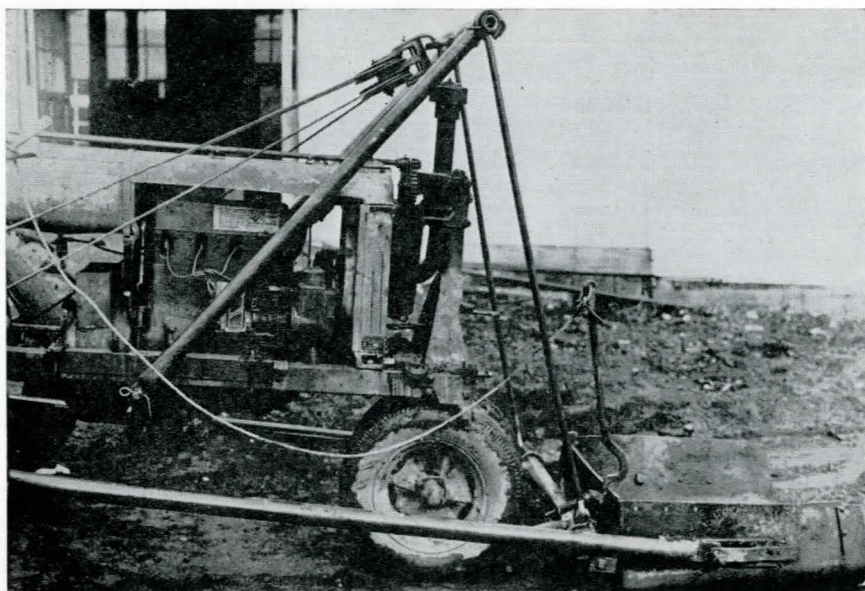
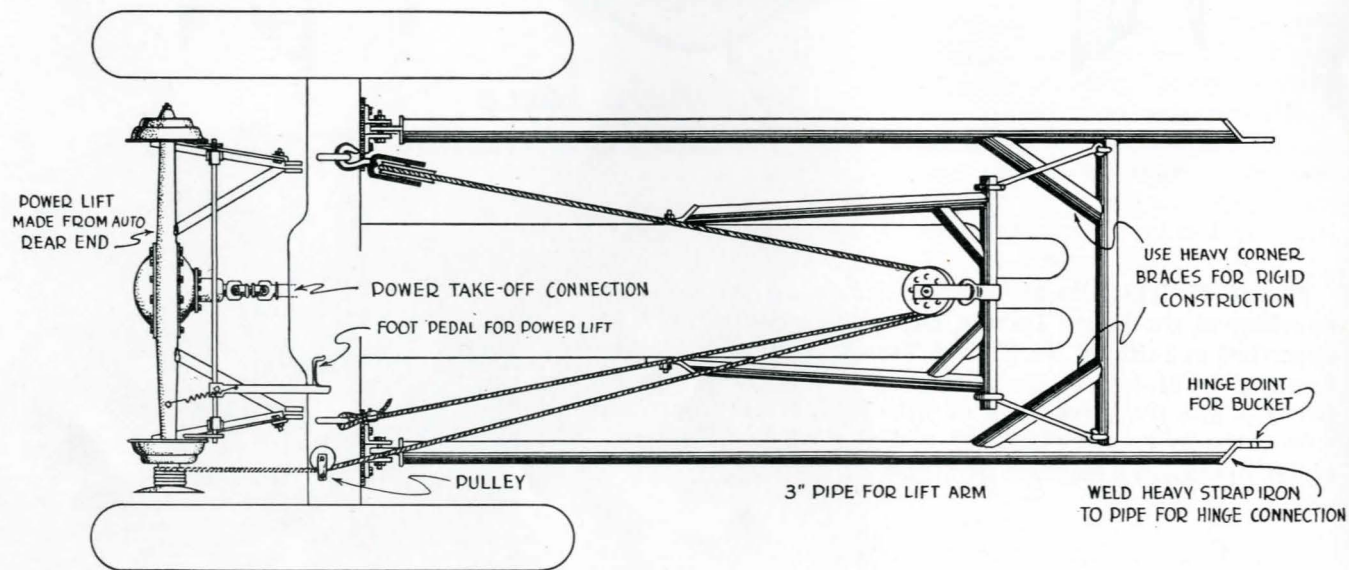
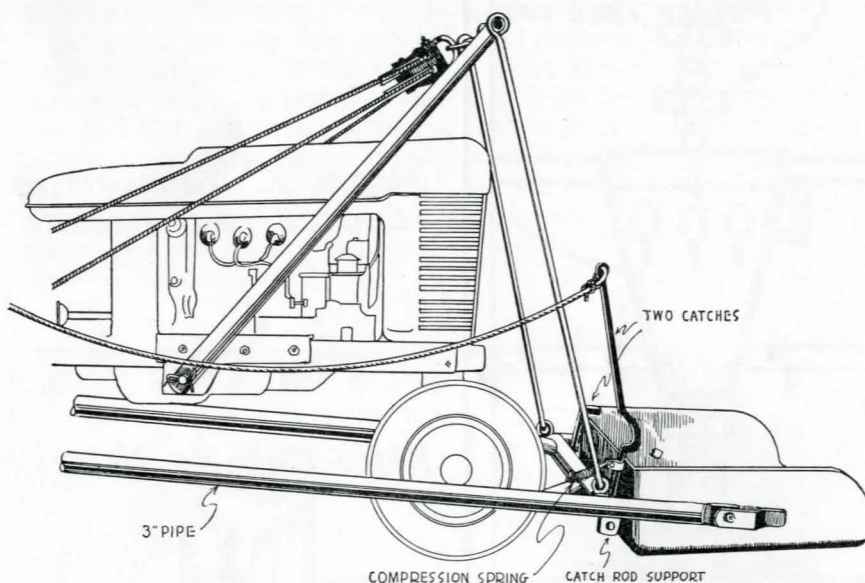


Figure 12. The upper picture, furnished through the courtesy of the Extension Service of Kansas State College, shows another type of manure loader built in vocational agriculture shops in Kansas. The center and lower drawings show the lift system which uses a block and tackle operated by a power lift as described in Figures 6 and 7. This construction has the advantage of low clearance for going into sheds. After it has raised the load a few inches off of the ground, it can back out and complete raising the load to the desired position, whether it be for a truck or spreader. Note the simple and effective type of catch for the scoop.



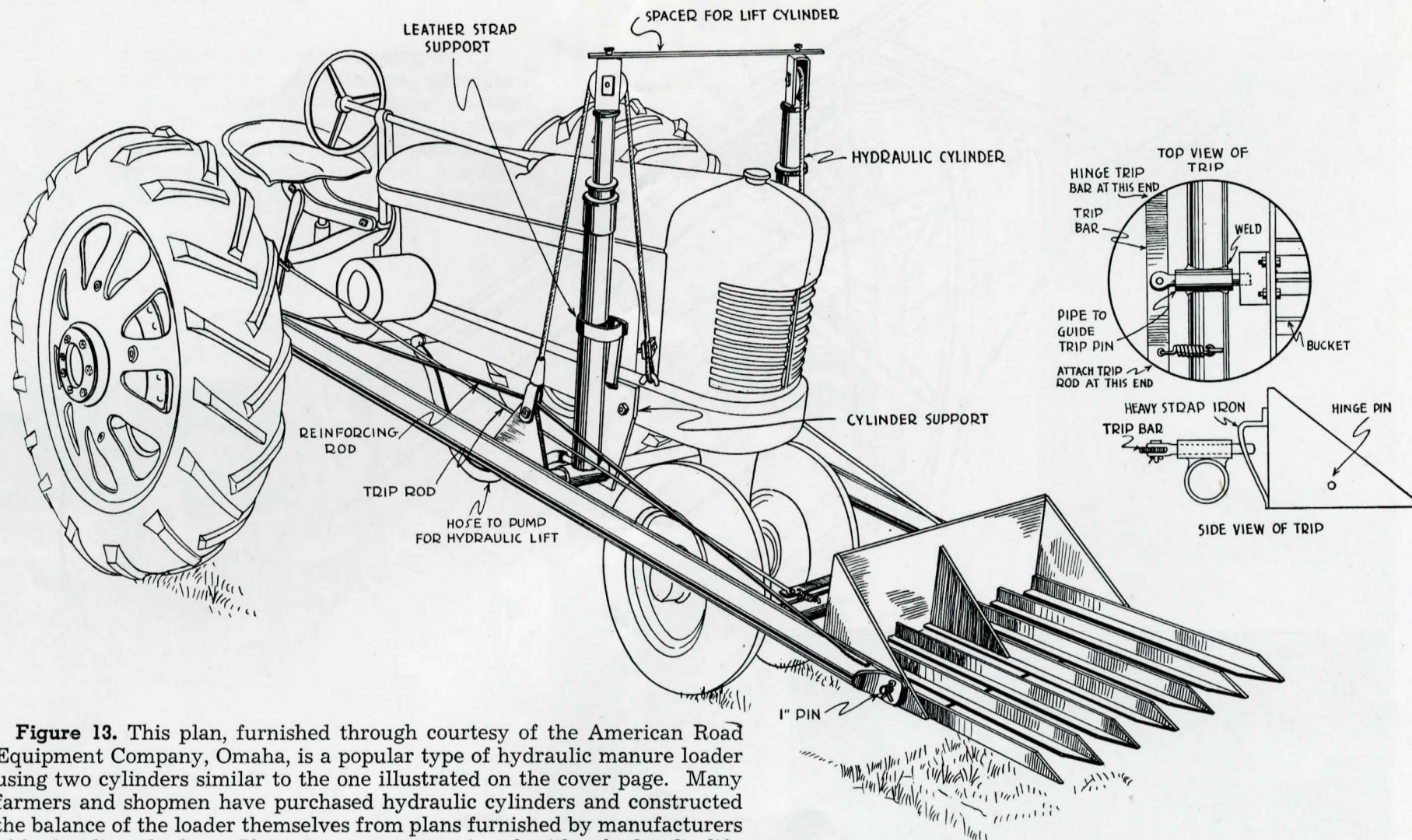


Figure 13. This plan, furnished through courtesy of the American Road Equipment Company, Omaha, is a popular type of hydraulic manure loader using two cylinders similar to the one illustrated on the cover page. Many farmers and shopmen have purchased hydraulic cylinders and constructed the balance of the loader themselves from plans furnished by manufacturers of hydraulic cylinders. If tractors are not equipped with a hydraulic lift, it is possible to purchase such a lift and install it in various ways. Some drive the hydraulic unit by a "V" belt from the front end of the crankshaft; some use a roller chain and drive from the flywheel as illustrated in Figure 17. Note the catch arrangement for scoop.

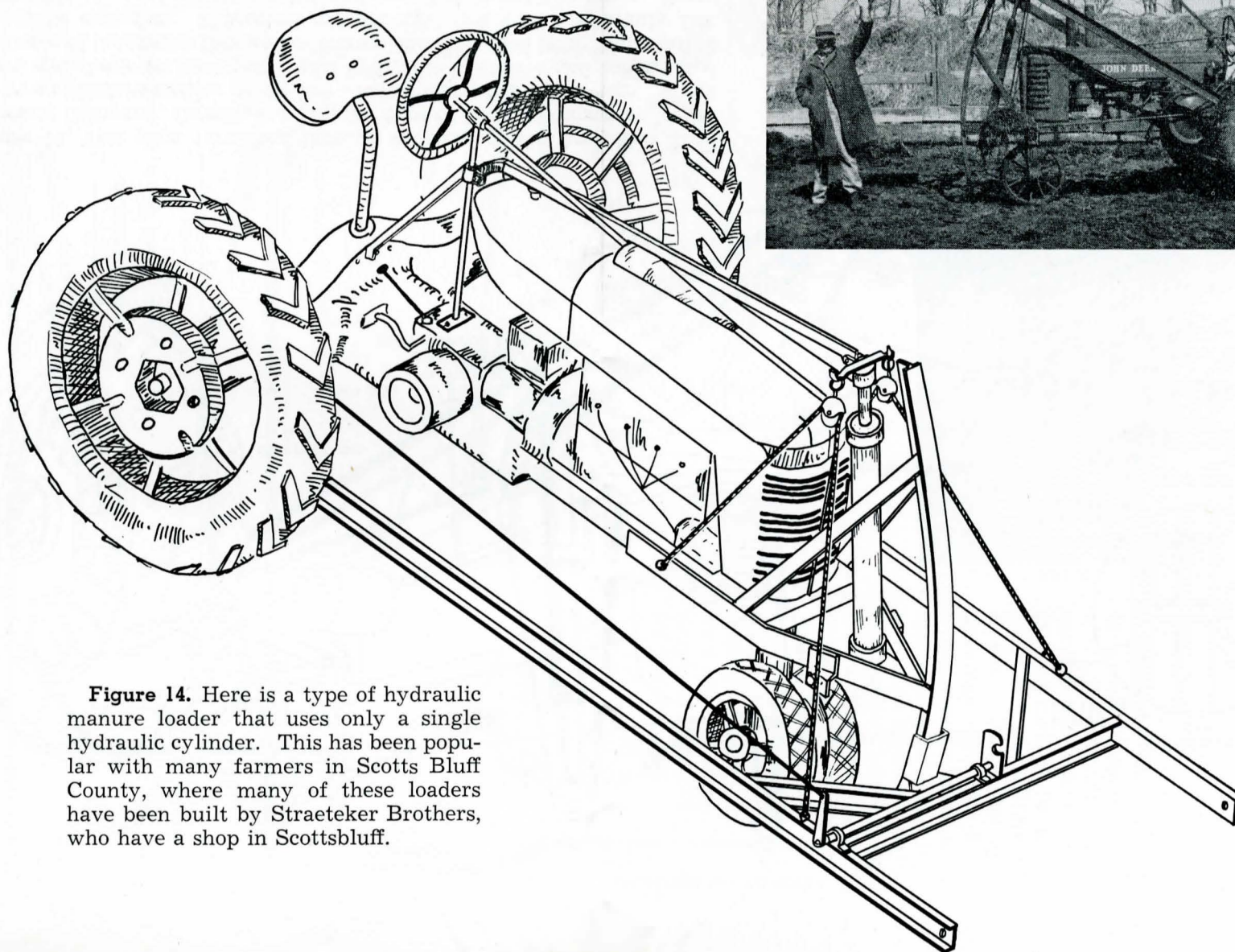


Figure 14. Here is a type of hydraulic manure loader that uses only a single hydraulic cylinder. This has been popular with many farmers in Scotts Bluff County, where many of these loaders have been built by Straeteker Brothers, who have a shop in Scottsbluff.





Figure 15. This photo shows a manure loader owned by Charles Barbour of Scottsbluff. It shows how a hydraulic unit has been mounted on this type of tractor and driven by means of a chain from the crankshaft. This lift will operate regardless of whether or not clutch is engaged, provided the engine is running. This is an advantage over most other types of power lifts.

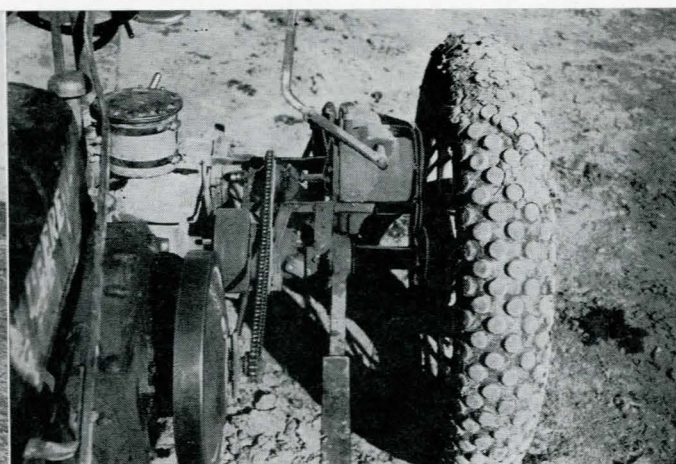


Figure 16. A hydraulic unit driven by a chain used by Harlan Cooper of Scottsbluff. Note the two bearings supporting shaft driving hydraulic unit. This saves wear on the bearing in the hydraulic unit and is a desirable feature.

Figure 17. A belt-driven type of manure loader converted to operate on a crawler type of tractor. This was operated by W. Busch on the Harold Ledingham farm in Scotts Bluff County.



Figure 18 (Below). A belt driven loader that utilizes an auto transmission, clutch and brake to operate the winch. This was used on Charles Laurcomer's farm near Scottsbluff.

Figure 18 (Lower Right). A manure loader owned by Ed Siever of Scottsbluff—a very popular type of loader in that vicinity.



Some Other Uses for Manure Loaders



Figure 20. This shows a dirt and gravel scoop used on a four-wheel type of tractor. Note how the lift arms are bent to go over the front axle of the tractor. A scoop of this type on any manure loader is very satisfactory for loose material such as dirt and gravel.

Figure 21. This shows an extension built on each side of a conventional manure scoop by Lowell Campbell of Walthill. By using a plate under the conventional scoop, Mr. Campbell was then able to scoop corn, cobs, snow, or any other light weight, bulky material. Note that the enlarged scoop is almost three times the size of the original.

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