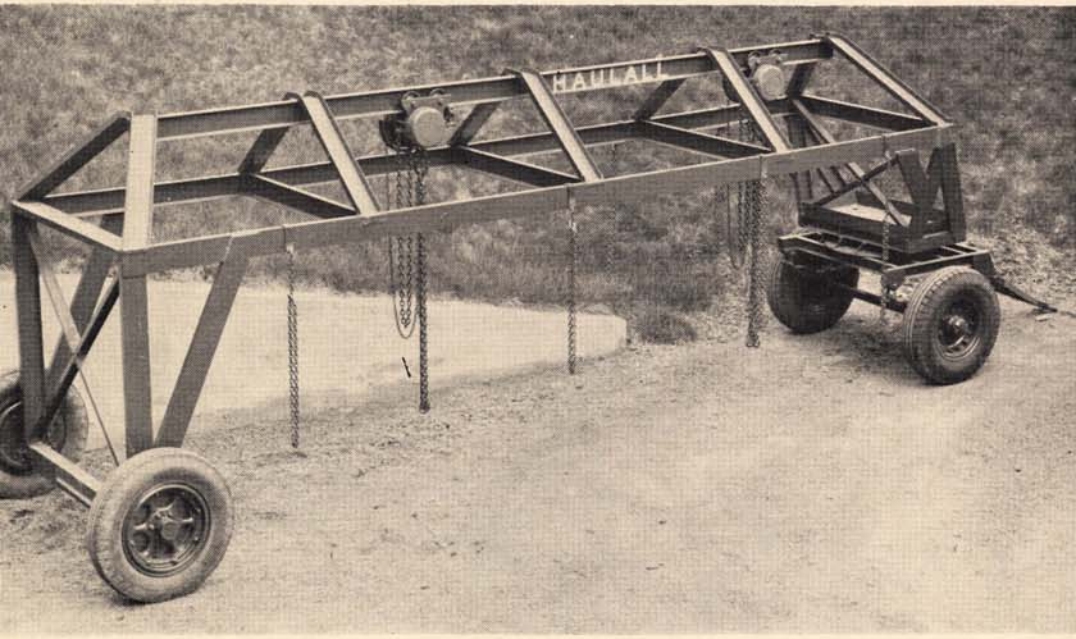
UNIVERSITY OF IDAHO
College of Agriculture

Farm Implement Carrier

EMMETT R. HOLEKAMP and L. M. MESSERSMITH



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Farm Implement Carrier

EMMETT R. HOLEKAMP and L. M. MESSERSMITH*

MANY farmers have expressed a need for an implement carrier larger than the commercial units available. A similar need existed at the University of Idaho Farm.

Common practice has been to move large pieces of machinery by truck or trailer. Not only is this method time-consuming, but it requires a crew of several men to do the loading and unloading.

With the needs of the University Farm and large-scale farmers in mind, the Department of Agricultural Engineering designed and constructed a large implement carrier which can be operated by one man. Features of this carrier are mobility, stability, and ease of loading. Yet, it is large enough to carry wide machines such as harrows and rod weeders.

Lift capacity of the carrier is 3 tons. It has been used to transport disk harrows, small crawler tractors, plows and a 45-foot sand screen for a deep-well turbine pump. A definite advantage of the carrier is that disk harrows and similar equipment can be moved without dulling the discs. Machinery can be easily brought in to the shop for repair.

Implements are loaded by moving the carrier over the equipment or a machine can be towed or backed under the carrier, whichever is more convenient. A sharp turn puts the carrier over machinery and can be done without difficulty. To position the carrier over machinery, it is pulled across the end of the machine to be loaded. Then a sharp turn is made to swing the carrier over the machine. The sharp turn is made when the rear wheel nearest the machine is in the position shown in Figure 1.

The carrier is of welded construction using channel iron for the frame and an I-beam for the hoist trolley track. Old truck and trailer axles and wheels were used for the rolling gear. Axles and wheels should be selected to support a 1½-ton load per wheel. Minimum truck tire size with 50 percent overload is 7:00x15, 8-ply. This size tire is satisfactory only for low speeds of less than 10 mph. Two war surplus geared chain hoists were used for lifting the load (Figure 2). For transportation, the load is suspended on four to eight movable chain ties (Figure 3).

The rear axle was constructed from a front truck axle. The axle was lengthened to 94 inches, just under the maximum permissible width on public roads. Figure 4 shows details of widen-

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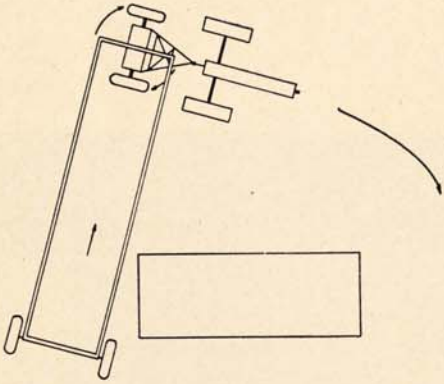


Figure 1.—A sharp turn as shown is required to position the implement carrier over a load. The turn is made when the rear wheel nearest the load is in position.

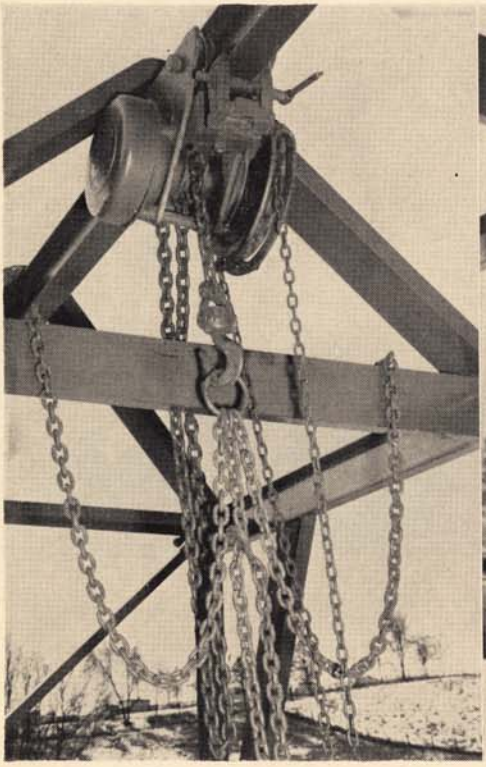


Figure 2.—Geared chain hoists on trolleys are used to lift the load. Three chains attached to a ring are looped over the hoist hook to lift the load.

Figure 3.—Load anchor chains are attached to brackets on the channel iron frame. The free end of the anchor chain is equipped with a grab hook for quick and easy fastening to the load.

ing the wheelbase and reinforcing with 6-inch channel iron. The front wheels, axle and steering mechanism of a truck-trailer were used for the front end of the carrier. If a unit of this type is not available, alternate plans for steering mechanism and axle are shown in the drawings.

The framework of the carrier is constructed from 6-inch channel iron as shown in Figure 5. The rectangular frame was constructed on the floor to permit easier welding. The vertical supports on the front and rear axles were welded to the axle assemblies. Next, one end of the rectangular frame was raised and welded to the supports of the rear wheels. Then, the other end of the rectangular frame was raised and welded to the front axle supports. The diagonal braces at the front and rear were then added. The three intermediate supports for the 6-inch I-beam were cut and tack-welded into position. The I-beam was then placed and welded into position. The end braces for the I-beam were then cut and welded into position. Clearance under the I-beam supports was allowed for the hoist trolleys.

Two special lifting chains were constructed from 3/8-inch steel chain. Three 4½-foot lengths of chain were attached to a 3-inch ring of ½-inch steel to hook on the hoist. A chain grab hook was fastened to the loose end of each chain (Figure 2).

Eight movable and detachable implement support chains were constructed from 5/16-inch chain. Each was 6½ feet long with a bracket to fit over the 6-inch channel iron on one end and an open chain grab hook on the other end. Details of the bracket are shown in Figures 3 and 5.

The welder constructing the implement carrier must be able to make vertical and overhead welds. A 1/8- to 5/32-inch all-purpose rod marked E-6013 is satisfactory for all welds. A 180-amp farm welder will make satisfactory welds. It will be found helpful to have an acetylene-torch for cutting the steel members.

BILL OF MATERIALS

Item	Number	Length	Size
Channel iron	6	30 ft.	Standard 6"
Channel iron	1	30 ft.	Standard 3"
I-beam	1	20 ft.	Standard 6"
Angle iron	1	30 ft.	2 x 2 x ¼
Chain	8	6.5 ft.	5/16"
Chain	6	5 ft.	3/8 "
Chain grab hooks	6	——	3/8"
Chain grab hooks	8	——	5/16"
Geared chain trolley hoist	2	——	1½ ton
Axles	2	——	3 ton
Wheels	4	——	
Tires	4		
Miscellaneous steel and hardware			

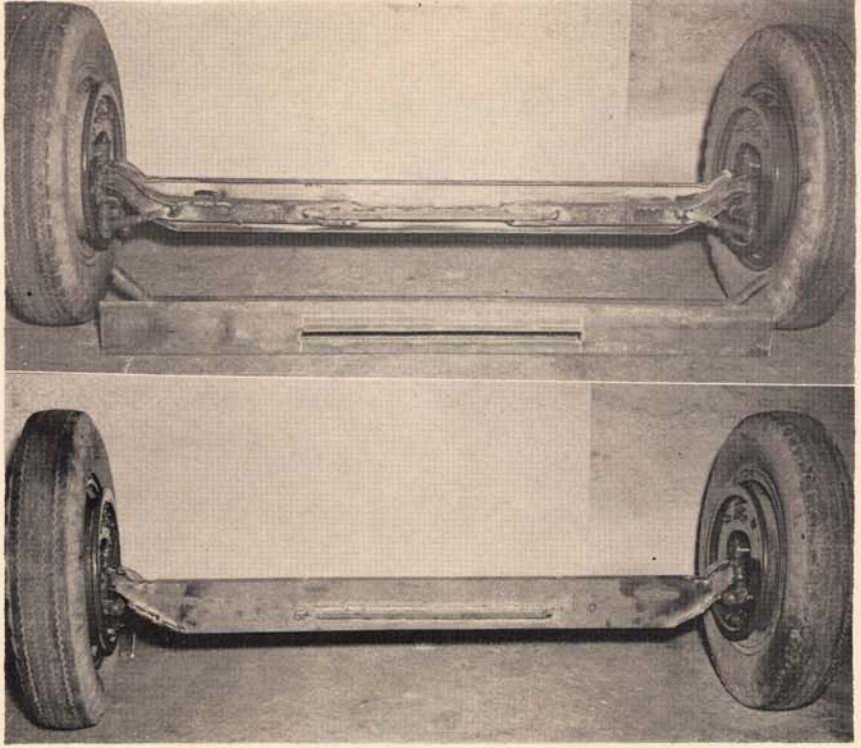


Figure 4.—A second-hand truck front axle was altered to serve as the rear axle for the implement carrier. The upper picture shows how the axle was cut, spaced with bar steel, and then reinforced with 6-inch channel iron. Note how the tie rods to the steering arm were welded to the axle. The bottom picture shows the completed axle. Care should be used to maintain a slight toe-in and the original camber of the wheels.

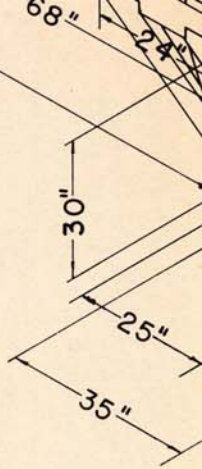
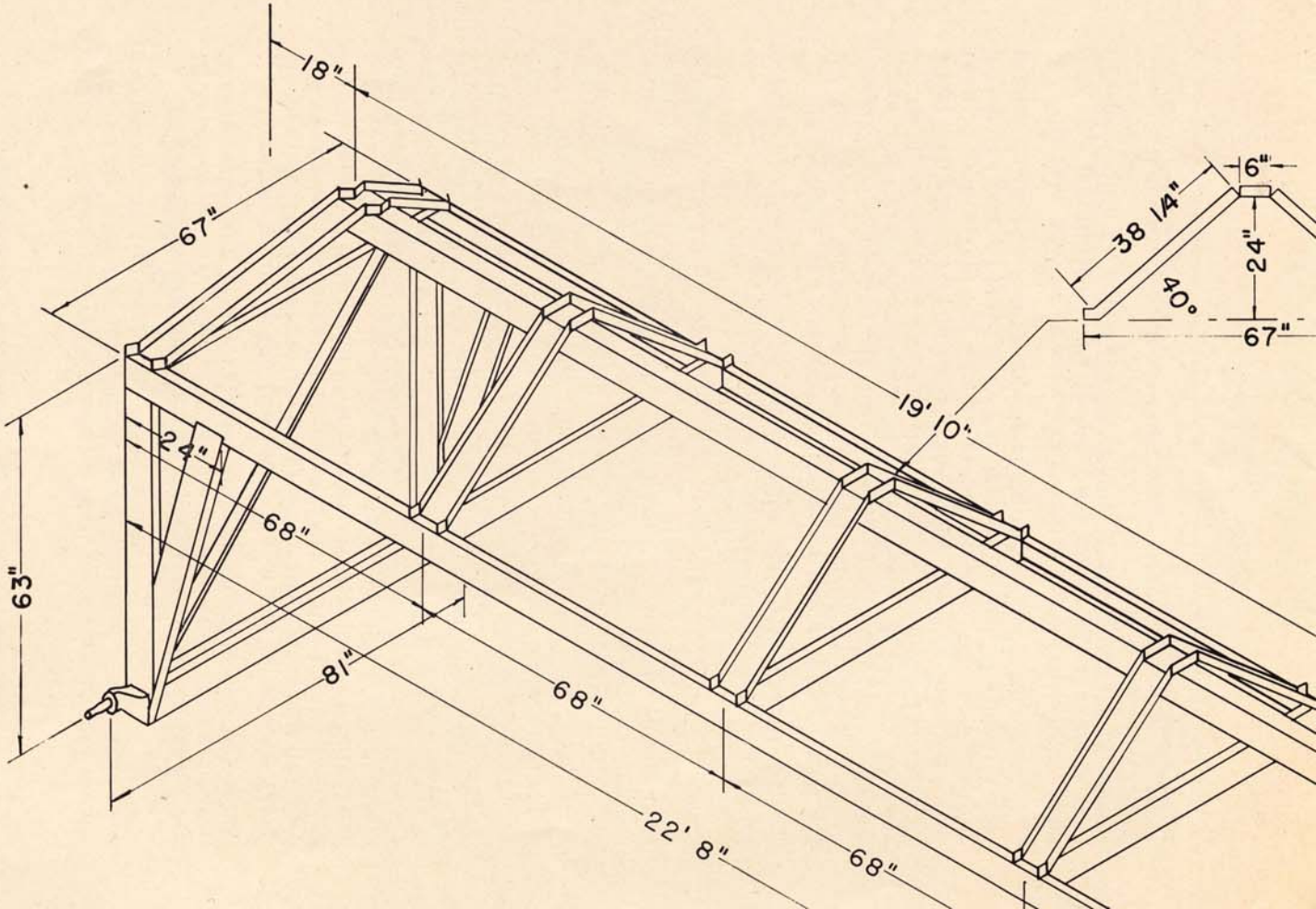
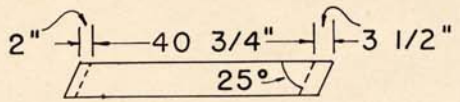
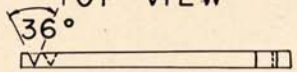


Figure 5.—Con

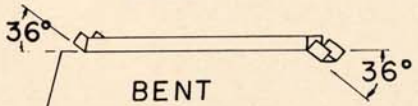

18"
67"
19' 10"
6"
38 1/4"
24"
40°
67"
24"
68"
63"
81"
68"
22' 8"
68"



TOP VIEW

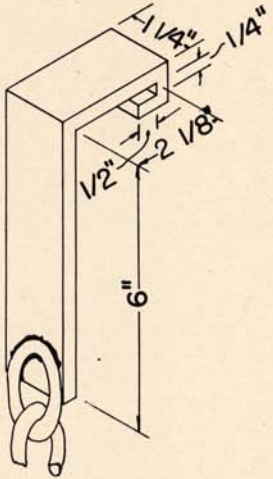


SIDE

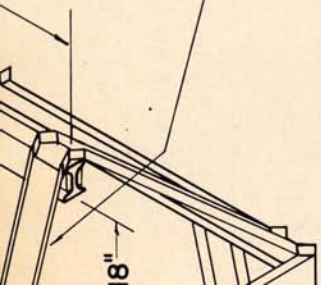


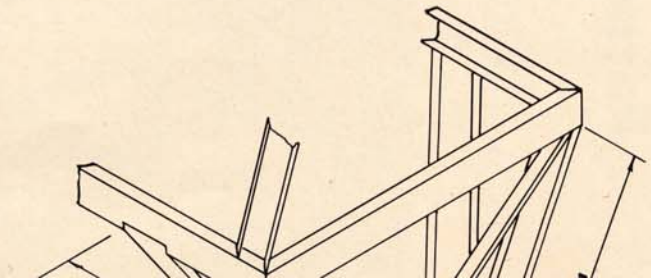
BENT

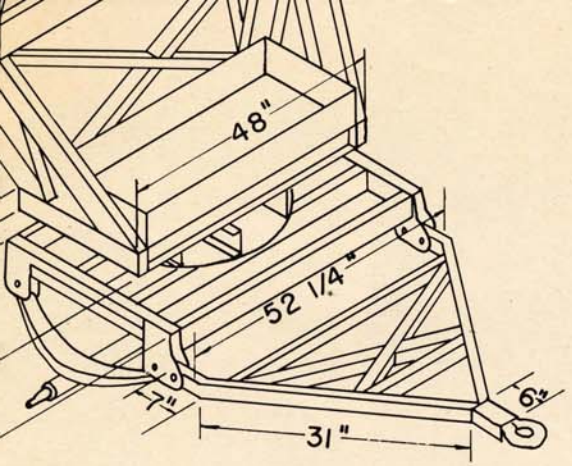
REVERSE ANGLES
FOR 2 PIECES



CHAIN BRACKET







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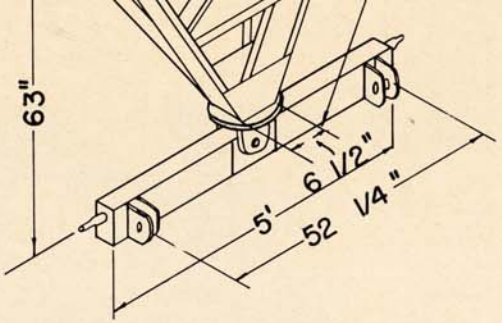
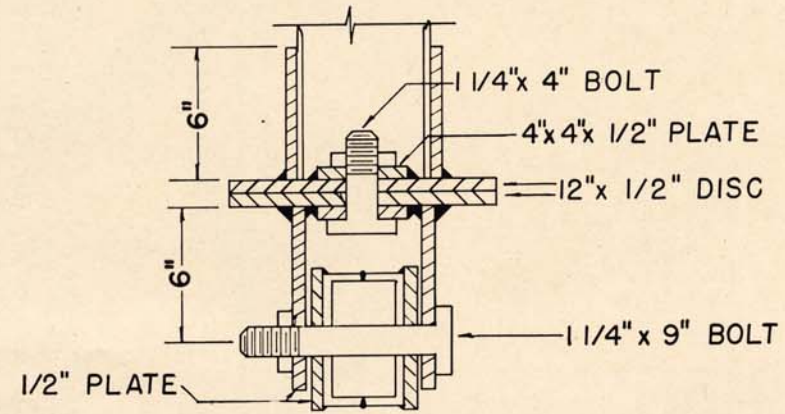


ALTERNATE FRONT AXLE



SECTION THROUGH FRONT AXLE PIVOT