

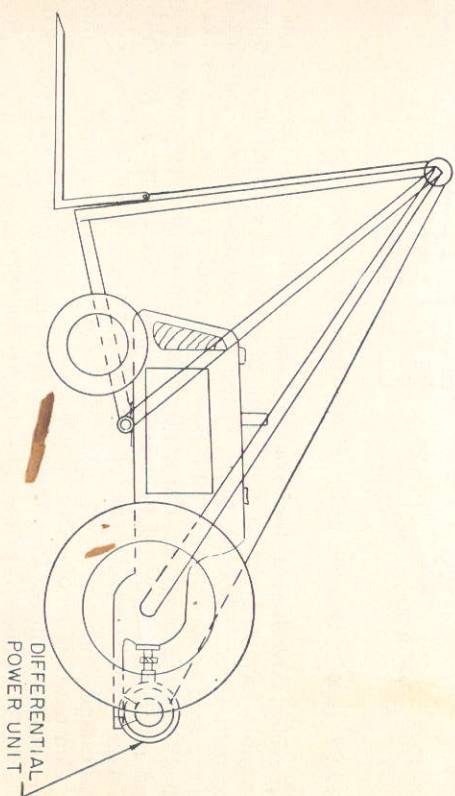
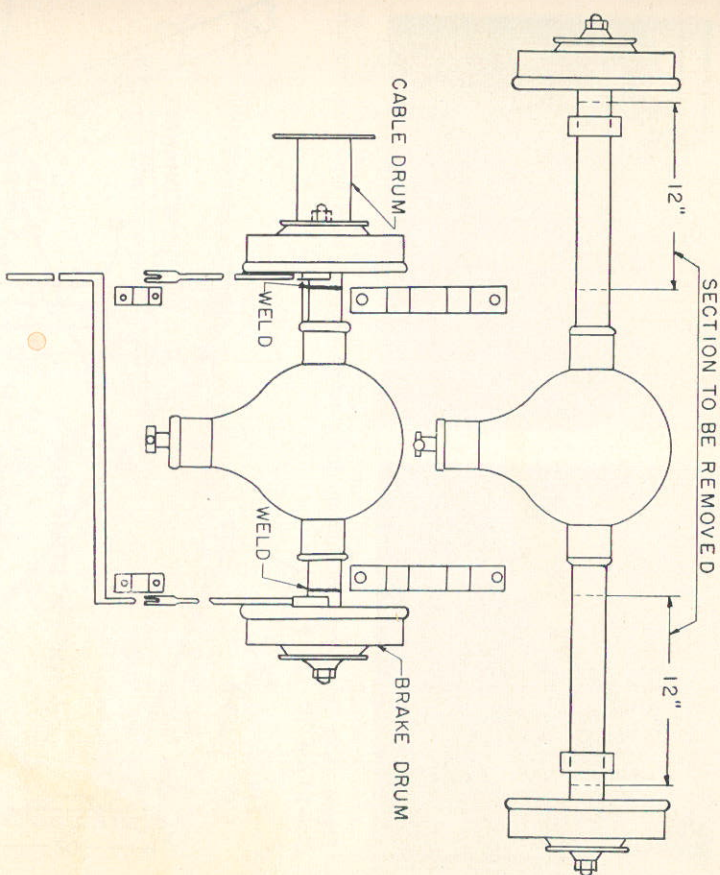
The hoist was cut down to a height of 6'-4" and mounted on skids 9'-2" long. Angle iron braces extend upward from the ends of the skids to the vertical end members of the frame. A piece of channel iron braced with angle iron was welded to the top of the frame above the winch. The cable pulleys were attached to these pieces of channel iron. A pulley was located below the gear assembly to take the cable under the hoist frame to a second pulley on the opposite end of the hoist.

The lifting cradle was built 2' wide and 8' long. Heavy angle iron was used with the open part of the angle down. Round mild steel  $\frac{5}{8}$ " in diameter was used for the lift linkage on the ends to which the cables were attached. The total cost of rebuilding the hoist was about \$15. It was used in handling 6000 bushels of corn the first year after rebuilding.

Estimated bill of materials:

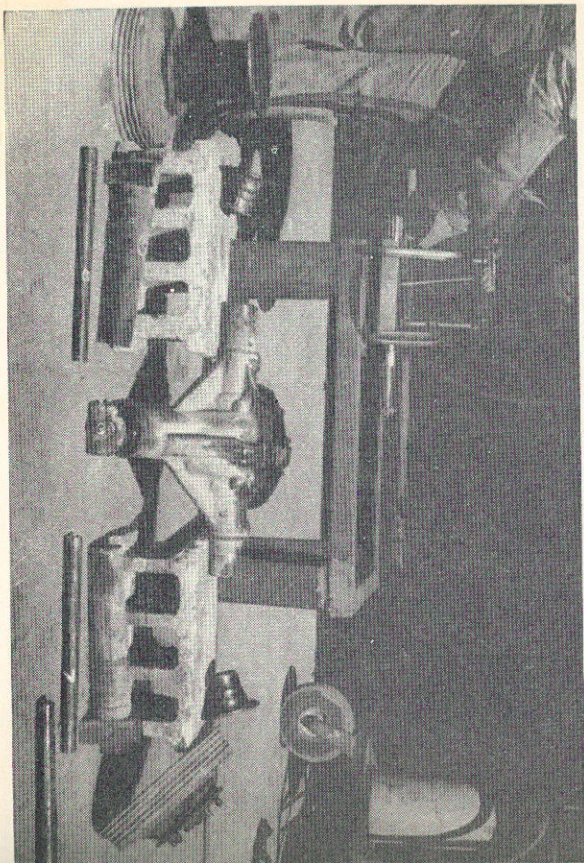
2—2"x2"x9' square steel tubing	10—2"x2"x $\frac{3}{16}$ " angle iron for
4—3"x3"x $\frac{1}{4}$ " angle iron, 6'-6" long	braces
4—2"x2"x $\frac{3}{16}$ " angle iron, 6' long	5—4 $\frac{1}{2}$ " pulleys
2—3" channel, 3' long	32'- $\frac{1}{2}$ " wire cable
2—3"x3"x $\frac{1}{4}$ " angle iron, 2' long	Gear assembly
2— $\frac{5}{8}$ " round mild steel, 4' long	

**Differential Power Unit**—One of the first problems in the construction of a manure loader, hay loader, buck rake, and similar equipment is the construction of a power unit to act as a winch. J. D. Wadsworth, Logan, Utah, suggests that this power unit be made from a car differential and axle assembly that has a tubular axle housing. A section is cut from the axle and the housing, and then welded together again. A cable drum is welded to one brake drum. The other brake acts as a clutch. Care must be used in the construction of the unit to keep the axles and the housings properly aligned during the welding process. They should be clamped in a V-block



**Figure 16.28** Sections were cut from the axle and housing and the parts were welded back together.

or a piece of angle iron to insure good alignment. After welding the axles they should be placed in lime or dry sand and be allowed to cool slowly. Figure 16.27 shows the section removed and the parts being welded. Figure 16.28 suggests where the section should be removed.



**Figure 16.27** A winch is being built from a differential and axle assembly.