

SWEEP RAKES

Sweep rakes have been used for several years to push hay to stacks or to the baler in the field, but not until recent years have they been used for hauling hay any distance. Many types are being used on farm tractors with rubber tires, on farm trucks and on old automobiles. They have been used not only to handle hay and straw but also corn bundles for the silo and grain bundles for the grain separator.

The sweep rake enables the user to move hay from the field to the barn with power, thus eliminating hand labor in the field. One man with a suitable sweep rake can move the hay from the field, after it has been windrowed, at a rate that will keep a crew of three men busy storing it in the barn. This saving in labor is the principal item encouraging the increase in use of the sweep rake in Indiana.

Requirements

Observations have indicated that in order to satisfactorily serve farm conditions in the state the following requirements of sweep rake equipment are desirable:

1. Speed of the motive unit should be at least 10 miles per hour. Speed is an important item in loading the rake and traveling to and from the field.
2. Carrying capacity of the rake should be from 800 to 1200 pounds per load, larger capacity important as distance of haul increases.
3. Provide lifing device that will raise ends of teeth at least $2\frac{1}{2}$ to 3 feet from ground to prevent hay dragging and stirring up dust.
4. Easy operating lifing device. Hand operated may be hydraulic jack or windlass with cable. Power may be from implement lift or belt pulley on tractor. On an auto, power may be taken from fan pulley of motor through reduction constructed with old auto differential.
5. Rake of dimensions that permit travel through farm gates and lanes. A 10 foot width with 12 foot teeth is the size favored by most users.
6. A spacing of that will pick up hay or straw from the swath as well as windrow, and also handle grain bundles. Usually a close space is about 9 to 10 inches and a wide spacing of 12 inches. Usually 12 teeth are used for a 10 foot width rake.

Construction of Rakes

The main frame of the rake to support the teeth and back stop have been constructed of steel welded together, a combination of steel and wood and all wood construction. The use of steel such as pipe or parts of auto frames welded together gives maximum strength for the weight. Welding gives an easy method of construction where services are available.

The teeth for the rake should be made of stiff wood such as yellow pine, fir, oak or ash. Native oak or ash should be well seasoned to prevent warping of teeth. Tapered 2x4's or 2x6's sawed to give two tapered teeth may be used for teeth, however, added strength is obtained by using 3 inch material preventing side whip of teeth. Four tapered teeth may be sawed from 3x12 material for additional strength. Ready made points for teeth can be obtained from implement dealers.

The back stop should be constructed to give strength for attaching the lifting cables. It should be well braced with angle braces to support the teeth. A push off device hinged to the top of the back stop is quite often desirable in unloading the rake.

Attaching to Power Unit

Most farmers prefer the rake mounted on the rear end of an old auto or truck in that it gives the advantage of clear vision and better cooling of motor when traveling with load. The auto is desired in many cases, since the tractor may be busy at other jobs such as cultivating corn during the haying season.

The rake frame may be hinged to the rear of the auto frame by welding or bolting attachment irons to the auto frame. It is necessary to block between the car frame and rear axle so that the springs of the car do not carry the full load.

Rakes may be attached to the front of tractors by supporting irons and pushing bars attached to the tractor frame. If heavy loads are to be carried by the rake on the tractor, it is well to support the rake by castor wheels at each side to relieve the front wheels of the tractor of the extra load.

Lifting Devices

Providing a power lift is the most difficult problem except on tractors where a power lift mechanism is used. Simple hand operated windlasses may be constructed, however, most operators prefer a faster and easier lift on automobiles.

The fan belt is the easiest place to get power from the auto motor. A method that has been used successfully is to have the fan belt drive on an old automobile transmission and rear axle. The lifting cable is operated from one axle and the other axle is left to run only when the load is being lifted. The load is lifted by braking the free axle causing the lifting axle to run. The transmission driving the rear axle lift is left in low position to give maximum lifting power. Fig. 2.

The use of the hydraulic bumper jack with at least 15 inches lift may be used for an economical and easily constructed lift as illustrated. The movable pulley can be hinged to the car from close to the driver's seat so that the jack may be operated while the car is in motion. The cable or rope used for the lifts should be of ample strength to support at least twice the weight carried by the rake. Usually a double cable of 1/4 inch is sufficient, however, a single cable should be 3/8". Fig. 3.

Due to various materials at hand, there are numerous variations in details of construction of homemade rakes. This information is only suggestive and it is hoped that it will in a general way be helpful in formulating plans for home constructed rakes for those who desire to build their own.