front. They carry flexible steel wire tines or fingers, which revolve under and to the front. These tines roll the hay ahead and to one side. Another type which is known as the endless apron side delivery rake is arranged in such a way that the hay is elevated up on to an endless apron which is made to run in either direction at right angles to the direction in which the rake is going, thus delivering the hay in a row on either side parallel to the direction of the rake.

The side delivery rake will take the place of a hay tedder to a large extent, especially with the handling of clover, for it can thus be raked into light windrows shortly after mowing.

THE HAY TEDDER. Where the hay is very heavy and in the case of clover where it is necessary to dry quickly, the hay tedder is used very extensively. The hay tedder is a machine which raises the hay out of the swath and leaves it in a light, fluffy mass, in order that the sun and wind may act upon it more rapidly. Grasses when cut with the mower are deposited very smoothly and the swath is packed somewhat to the stubble by the passing of the team and mower over it.

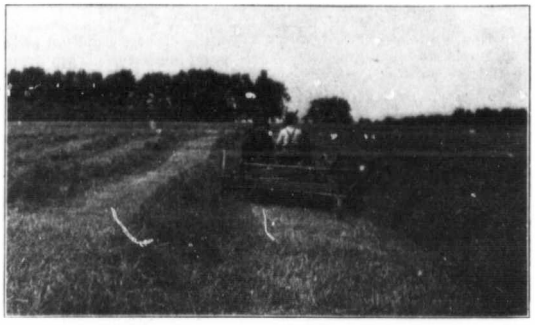
The hay tedder consists of a number of arms with wire fingers at the lower end. These are fastened to a revolving crank near the middle and to a lever at the other end. The motion of the crank causes the fingers to kick backward under the machine, thus engaging the mown hay, tossing it up and leaving it in a very loose condition.

The modern hay tedder is made almost entirely of steel and where any considerable quantity of hay is raised is a very efficient and profitable implement, as the time saved by having the hay dried more quickly may often times be the means of saving the entire crop.

The next machine to come into use is the hay loader and while it is probably the most recent of hay making tools, it is nevertheless, a most valuable labor saver. He who has pitched hay on to a high wagon on a hot day has some idea of the amount of labor that this machine will save. It is particularly adapted to Western Canada for the reason that the country is generally level, and the swaths are long which saves considerable time in turning.

The machine is designed to be attached to the rear of the wagon, to gather the hay and elevate it to the rack on the wagon. It receives its power from its own drive wheels, which in most cases are provided with cleats in order that it may grip the ground more firmly. In all of the early machines, the hay was placed upon the elevating aprons by forks attached to oscillating bars extending up over the load. The hay was pushed along this apron by these oscillating bars with the tines or forks on the under side. This form of loader worked very satisfactorily, but had one disadvantage in working in clover and alfalfa. The oscillating bars were unsatisfactory as they shook the leaves out of the hay. This led to the introduction of an endless apron, which works very satisfactorily in this respect.

The loader equipped with oscillating forks is of much more simple construction than the other type. It also has an advantage in being able to draw the swath of hay together at the top and force it upon the wagon. Loaders of this kind are made without gears by increasing the throw of the forks.



A Dain side delivery rake doing some nice work.

Another type is known as the endless apron loader. The hay is elevated in this type of loader on an endless apron or carrier after it has been gathered by a gathering cylinder. The main advantage of this type of loader is that it does not handle the hay as roughly as the fork loaders. This is an important feature in handling alfalfa and clover, as there is a tendency to shake out many of the leaves which form the most valuable part of the hay. Due provision, however, must be made to prevent the hay from being carried back by the carrier when returning on the under side, which has teeth to aid in starting the hay up the carrier. Provision must be made to enable the gathering cylinder to pass over obstructions and uneven ground. For this reason the gathering cylinder is mounted upon a separate frame and the whole held to the ground by suitable springs.

The loader has a great range of capacity. All modern machines will load hay from the swath or windrow and the carrier will elevate large bunches of hay without any difficulty.

With a modern mower, hay rake, hay tedder, side delivery rake and hay loader the handling of the hay crop from the grass to the wagon is a thing that requires absolutely no hand labor, but is entirely mechanical.

MACHINES FOR FIELD STACKING. In Western Canada most of our hay is stacked in the field, only a small percentage of it being stored in barns. This creates a demand for another type of hay handling apparatus, which are known as sweep rakes. These sweep rakes are very efficient tools in the handling of hay quickly where it can be stacked right in the field and does not have to be hauled a considerable distance. The hay is drawn to the stack from the swath windrow or bunch and placed upon the stack by the hay fork or more commonly, the stacker. The sweep rake has straight wooden teeth to take the hay either from the swath or windrow and is either drawn from between the two horses or pushed ahead. Where it is drawn between the two horses it is required that one horse travel on either side of the rake and it requires some little training in order to accustom the horses to handling this sort of a proposition. When the load is secured the teeth are raised, the load is hauled to the stack and placed upon the stack and the rig backed away.

Alfalfa

There are three different types of sweep rakes. First, the wheelless with the horses spread to each end of the rake; second, the wheeled rake with the horses spread in the same manner, and, third, the three wheeled rake with the horses directly behind the rake. In the simpler machines the teeth are raised from the ground by the driver shifting his weight either froward or backward. More complicated rakes have lever devices for raising the teeth.

These sweep rakes are constructed almost entirely of wood and as a rule deserve more care than what they get. A trip through the country in the winter time will reveal many of these machines standing out in the hay field where they were last used, with the result that the life of the machine is materially shortened. There is no reason why a set of these machines should not last a farmer a life time, as there is practically nothing about them to wear out that cannot be replaced at very small cost.

HAY STACKERS. Hay stackers are made in two general types; the over-shot which raises the hay placed upon the teeth by the sweep rake and throws it back over the machine on to the stack, and the swinging stacker which is loaded on the side of the stack, its load raised to the upper height, swung over the stack and discharged. The over-shot stacker is the more easily handled and is not so complex, but has the disadvantage of always placing the hay in the same spot, with the result that that part of the stack is packed more than the rest and will not allow the stack to settle evenly. In Western Canada where high winds prevail at certain seasons of the year, it is also quite difficult to handle light hay with the over-shot stacker as the hay must always be raised to the same height. With the swinging stacker the hay need not be raised higher than is actually required to place it upon the stack and the hay may be dropped at various points. In using any of these stackers, it is a mistake to overload them as the enormous weight of the hay will sometimes cause trouble that will far

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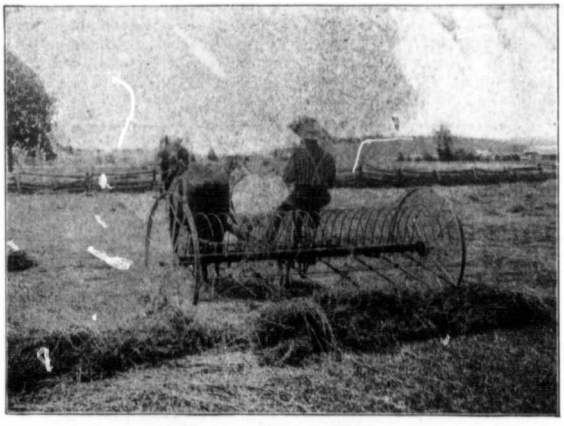
Burr Clover



An I. H. C. sulky rake picking it up clean.