from an opening in inner end of reservoir " K." These few drops of gasoline are immediately vaporized or made into gas by the quickly moving air current, and both air and gas are brought into the cylinder and well mixed together. This mixed gas and air forms a combustible mixture and will burn if a light is applied to it. The gas and air have entered the cylinder through a check valve " D," and immediately the piston begins to come back on the return stroke, this valve closes and the mixture of gas and air being imprisoned is compressed by the momentum of the fly wheel into the space between piston and cylinder head.

In the compressed condition this mixture is lighted by an electric spark or hot tube and as before stated the air is expanded and produces a pressure sufficient to force the piston out strongly, and causes the fly wheel to revolve and do work. As soon as the piston has reached its extreme outward stroke, the exhaust valve "F" is opened and the burnt charge in cylinder is allowed to escape into the open air.

From the above it will be noticed that two revolutions of the engine are described, the first outward stroke which draws in the air and gas. The first inward stroke which compresses the charge, the second outward stroke produced by the expansion of the air as above described, and the inward stroke which drives out the burnt products through the exhaust. These four strokes, or two revolutions form the working cycle, or round of operations, by which the engine operates.

These may again be repeated for clearness' sake :

1st. The charging stroke. 2nd. The compression stroke. 3rd. The power stroke. 4th. The exhaust stroke.

These operations repeated continuously produce an even, steady motion, which is regulated by the automatic governor, so perfectly that a dynamo may be driven directly from the engine, giving perfectly steady electric lighting. This is the supreme test of the steady running of any motor. Incidentally this opens up the subject of the ease with which country residences, farm houses may be illuminated by electricity, but the limits of this article will not admit of its discussion.

In conclusion it may be said that the gasoline engine would appear to be an excellent motor for the farmer, as it possesses many desirable qualities, which it is hoped may be clearly understood from the explanations given.

Feed Cutters and Blowers.

By C. E. Ffolkes, Toronto

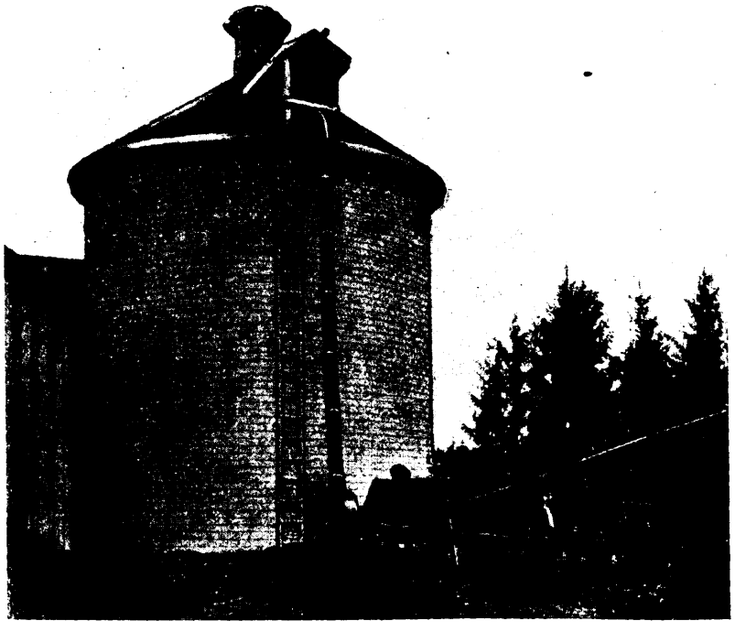
For probably two centuries the value of cutting hay and straw for feeding purposes has been known by the farmers in England and part of Europe, but within the last century rapid strides have been made in this direction. Dry fodder, cut, possesses many advantages over the uncut, principally the following :

1. Cut feed requires only about half the time for mastication in comparison with the uncut, consequently the animals have more time for rest, chewing their cud, etc.

2. As fodder is principally required by animals for its bulk or filling qualities as the best fat or milk producing foods consist of grain or its products, by mixing the two, which can readily be done when the fodder is cut, a much coarser or inferior fodder can be utilized, as the animals will eat it with relish when mixed with grain. Pulped turnips added to the mixture add greatly to its feeding value.

3. The operation of cutting removes a great portion of dust and other foul matters from the feed, which renders it more wholesome.

4. Saving in space for storage and time in feeding. As cut fodder occupies only about one-third the space required for long feed, the saving in space for storage, and time in feeding is apparent.



5. Saving in feed. In feeding uncut feed, the animals eat only the finer portions, leaving the balance which is thrown out as worthless before feeding again. In cut feed this is saved, as the feed being all in a fine condition all is eaten.

It will be easily understood from the above, and many other reasons not mentioned, why the cutting of fodder has become a necessity with farmers. In a great many instances straw is cut for bedding, which has many advantages over the uncut, principally the following: Cut straw will remain where placed, and as the animals cannot move readily it is always under them when lying down. Cut straw will absorb three or four times the moisture long straw will, which is the principal object in using bedding, conseqently a less quantity will be required for that purpose.

There is another class of cut feed which is far superior to dry feed, and is rapidly coming into general use among farmers within the last twenty-five years. That is ensilage, which usually consists of corn cut and put into the silo in its green condition, when it undergoes a process of fermentation. The air being excluded, the fermentation after reaching a certain stage remains stationary, and the feed will keep for a considerable length of time. Silos should be built high, as the weight of the ensilage assists greatly in packing the mass together and excluding the air.

A great many devices for cutting feed have been made use of since the system first came into use. Probably it was first done by placing the feed into a large box, and cutting it by repeated blows from a sharp spade. Later we have a rude machine consisting of a large knife or scythe, fastened on a pivot at one end and a handle at the other, and adapted to slide in front of a trough, into which the material to be cut was placed and pushed forward after each cut by hand, the length of the cut being guess-work. Various devices for gauging the length of cut and advancing the fodder were afterwards added and we have yet in use machines of this type.

The first step in improvement was the machine with the knife attached to a gate or frame which slid up and down on slides attached to the frame of the machine and actuated by a small crank and connecting rod. Rollers were placed in the feed trough of this machine to feed the material to the knife and were connected to the