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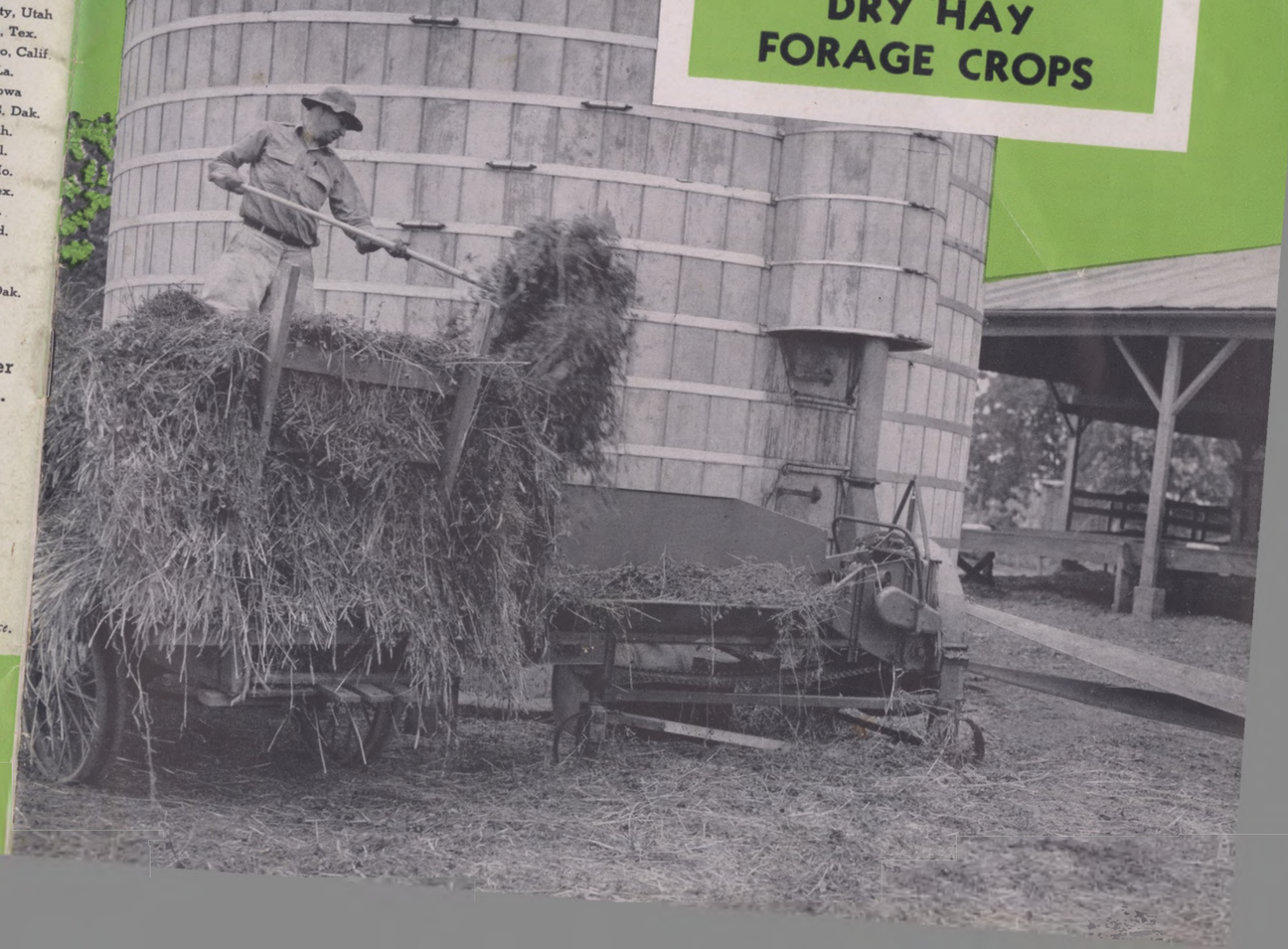
A-183-JJ. 12-18-II. PRINTED IN UNITED STATES OF AMERICA

McCORMICK-DEERING

Ensilage Cutters

Modern Machines for
CORN SILAGE
GRASS SILAGE
DRY HAY
FORAGE CROPS



It Pays to Feed Silage

Conserves Feed and Increases Production

FARMERS are being urged to use every available means of insuring an adequate supply of feed for an increased production of meat and dairy products. We have no assurance that nature will cooperate to produce a bumper crop each year, but we can harvest and store such crops as are produced so that the maximum feeding value can be obtained.

Farmers all over the country have long recognized the fact that silage is a valuable and most desirable feed for livestock. Silage is a succulent feed that has a nutritional effect on livestock similar to green pasturage. It is an aid to digestion, stimulates the appetite, and is an excellent balance for high-protein concentrates in the usual ration. In silage is saved the greatest amount of digestible nutrients of such crops as corn and green forage. It is often the only means of saving a late "catch" crop from an early frost, from damage by insect infestation or drought.

The livestock-carrying capacity of many farms has been greatly increased by feeding green forage crops as silage instead of attempting to provide pasturage even during the summer months. On other farms silage is used as a supplementary feed during the latter part of the summer, when pastures become short due to drought.

Experiment station records show that feeding silage to all kinds of livestock increases profits. The Ohio Experiment Station reports that one acre of corn put into the silo will feed a steer 370 days, while an acre of corn from the same field, put into the crib, will feed one steer only 176 days. An acre of corn fed as silage gave a return of $71, while the returns from an acre fed on the cob was only $50, or an extra profit of $21 per acre for silage. A similar test from the Missouri station shows that in fattening steers for the market, corn silage from one acre was worth 50% more than an acre of shocked corn.

For the dairy farmer, the Ohio station reports that corn silage saved 12 cents per pound in producing butterfat and 40 cents on the cost of producing 100 pounds of whole milk. Similar results are reported from other stations, which goes to prove that putting corn into the silo increases feeding profits.

Corn Silage

Corn must be cut in the proper stage of maturity to make the best silage. If corn is cut in the milk stage, too much acid will develop and the silage will have a laxative effect on the cattle. On the other hand, if it is too mature the silage will be dry and proper fermentation cannot develop. When the right stage of maturity has been reached, the kernels will be well dented but still in the soft-dough stage and the stalks and leaves will be green and full of juice. This stage lasts for only a short time, so it pays to watch the cornfield and cut the corn while it is in the proper condition. Corn allowed to pass through the dough stage will have from 10 to 25 percent less feeding value when made into silage.

What Silo Owners Say About Silage

- Silage supplies a cheap pasture and hay substitute.
- Doubles the corn profits.
- Saves $1.00 on each 100 pounds of beef or mutton produced, 10 to 15 cents on each pound of butterfat, and 40 cents on 100 pounds of whole milk.
- Saves all the feeding value of the corn crop.
- Silage assures green feed when pastures are short.
- Saves storage space—4 to 5 times as much feed can be stored in a silo as in the same space in a haymow.
- Reduces fire hazards—there is no danger of spontaneous combustion in the silo.
- Putting corn into the silo helps to control the European corn borer.

Reduces Feeding Costs

Grass Silage

Grass ensilage provides an alternative method of storing forage from legume and grass crops and makes the farmer less dependent upon the weather. Ensilage from the first cuttings of legumes conserves feeding value to nearly equal that of the original herbage and can be made during weather conditions when it would be impossible to make good hay.

Delays in Silo-Filling May Be Costly

Costly delays at silo-filling time are often caused by being unable to obtain the service of a cutter when the crop is in the best stage for ensiling. The man who does not own a cutter is often at a disadvantage when he joins a silo-filling ring that keeps him away from home at the time when his corn should be cut. Having his own cutter makes it possible for him to fill his silo on time with very little outside help. With a suitable size cutter for his individual needs, silo filling can be made a family affair with minimum labor and expense.

With this outfit a small crew can soon turn a field of corn into an abundance of winter feed.

Dairy cattle like and thrive on molasses silage. As a winter feed, such silage is "preserved summer pasture."

Trench Silo

The trench silo is simply a trench dug in the ground. It is more or less a temporary silo, but is used successfully by many feeders who do not wish to build an upright silo or who have need for additional silage space to supplement their permanent silos. Trench silos are used extensively in the western prairie states and many have been dug in other parts of the country. The quality of silage from them compares favorably with that from upright silos. A trench silo offers a means for storing green feed satisfactorily at little cost. Labor is the principal item of expense involved in building a trench silo.

Anyone interested in knowing about trench silo construction may obtain a free booklet, giving full details, by writing the International Harvester Company, Chicago.

Photo: Courtesy, Bureau of Dairy Industry, U. S. Dept. of Agriculture

Filling a well-built trench silo. Many farmers use trench silos to supplement their permanent silos.

Cows reach for molasses silage because it is sweet and palatable.

Advantages of Grass Silage

- Permits saving all the crop without loss in rainy weather.
- High in feeding value—reduces the amount of protein concentrate necessary to balance the usual ration.
- Saves the vitamin and carotene value of green feeds that are usually lost in cured hay.
- Fire hazard is eliminated—no danger from spontaneous combustion as with hay.
- Less storage space is needed—four to five times more green feed can be stored as silage than as loose hay in the barn.
- Less labor is necessary to put up grass silage than hay.
- Easy to feed—eliminates dust and waste.
- Can be used to supply late summer feed when pastures are poor.
- Increases profits—steps up production of milk and beef.
- Grass silage cuts feeding costs—is a high protein feed, cheaply produced.

Grass Silage

WHAT IT IS — — HOW IT IS MADE

THE practice of making grass and legumes into silage instead of hay has increased very rapidly during the past few years. First-class silage can be made from clover, alfalfa, soybeans—in fact, almost any kind of green grass crop, provided sufficient preservative is added to produce the desired bacterial action in the silo. Unlike corn, green hay crops are deficient in sugar content and require the addition of other substances to produce the helpful acids necessary for preserving silage. Several methods have been developed in this connection. In one method, about 50 pounds of ordinary sugar, beet, or corn molasses is used with each ton of green material. The amount of molasses to use will depend upon the nature of the crop used. The following table gives the suggested amounts of molasses that have been found sufficient for various crops:

Kind of Crop	Molasses Per Ton
Grasses and green cereal crops	3½ gal. (40 lb.)
Mixed grasses and legumes	5 gal. (60 lb.)
Alfalfa and clovers	7 gal. (80 lb.)
Soybeans	8½ gal. (100 lb.)

THE practical method of making grass silage which meets the needs of up-to-date livestock feeders and dairymen throughout the country is this:

1. Cut the crop in early stage with windrower-equipped mower. The windrower attachment makes raking unnecessary.
2. Load the crop from the windrow, shortly after cutting, onto motor truck or wagon with a green-crop loader which is built especially for heavy, green crops. Ordinary hay loaders are not strong enough to handle green crops satisfactorily.
3. Deliver the crop to the feed table of an ensilage cutter which does the complete job of chopping, molasses distribution, and blowing in the most efficient manner and at minimum cost.

If molasses is not available 200 to 250 pounds either of corn meal, corn-and-cob meal, or ground barley may be added to each ton of green material. Also by partially wilting the green forage for two or three hours on sunny days, a sufficient concentration of fermentable carbohydrates is obtained to assure good results. In any case the moisture content of the chopped material should not be greater than 68 percent. Leaking juices, which are formed from grass of higher moisture content, indicate undue pressure on the walls of the silo, make an offensive odor, and provide a messy place for flies to breed.

The assimilation of minerals by livestock is much greater during the pasture season than during the winter when they are fed cured hay and other dry feeds. This is due to the presence of vitamins and carotene in the green crops. During the winter, grass silage will supply these essentials to aid in the better assimilation of minerals. This is a very valuable feature of grass silage and is a point to be considered by livestock feeders.

On some farms, bin storage of chopped hay is replacing the conventional haymow.

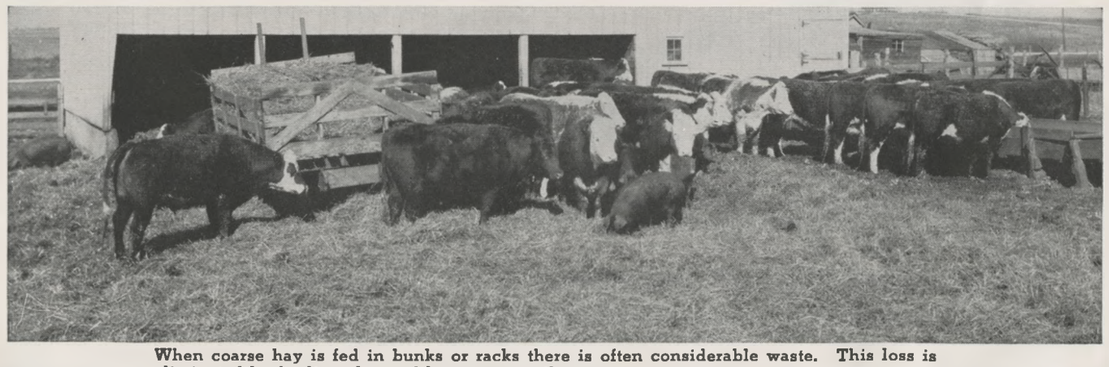
Chopped Hay

The present trend in livestock management is toward feeding chopped hay. Stock like it better than bulk hay, especially alfalfa and sweet clover, and clean up the coarse stems better. There is practically no waste in feeding chopped hay. Oat straw can be run through the ensilage cutter and when mixed with silage makes a very palatable ration. Chopped oat straw is sometimes dampened and mixed with chopped grain and is well liked by the stock. The greatest value in chopping hay is due to the fact that it is eaten cleaner and occupies less than one-half the storage space that is required by bulk hay.

The illustration above shows the change that is taking place in modern barn design due to the practice of chopping hay. It is no longer necessary to build barns with large overhead space for hay storage. The modern barns are built low, at less expense, with large silolike bins for chopped hay storage.

McCormick-Deering ensilage cutters are designed to handle cured hay as well as green crops for grass silage.

Grass silage "takes up the slack" when pastures are short and enables milch cows to maintain high production.



When coarse hay is fed in bunks or racks there is often considerable waste. This loss is eliminated by feeding chopped hay or grass silage.

No. 5 No. 7 No. 9

McCORMICK-DEERING ENSILAGE CUTTERS

"GIVE us a cutter that will do several jobs," was the request from farmers. Our reply is found in the Nos. 5, 7, and 9 McCormick-Deering ensilage cutters, each of which is an all-purpose machine, designed to handle green corn, green hay, dry hay, etc. These three sizes—identical in design—offer you a size small enough for the farm with a single silo to fill and perhaps a small amount of hay or straw to chop, a size for the medium-size farm, and a larger size for the large farm or for custom work. No matter what the job to be done or the power available, there is a size to fit your farm.

Should you decide on the smallest size cutter, you can be assured of obtaining a machine that has all the features of the largest size. There are no trimmings to make one a "De Luxe" and another a plain model. Capacity, safety, adaptability, and low-cost operation modestly describe the performance of these cutters. They embody the principles that years of experience alone can prove, the conveniences users consider essential, and the refinement that long study of a problem makes possible.

A short review of the users' problems will explain why these new all-purpose cutters were created. The promotion of diversified farming results in a larger variety of crops on most farms. The farmer cannot afford a specialized machine for each crop, therefore the machines he buys must be easily adapted to the handling of several crops.

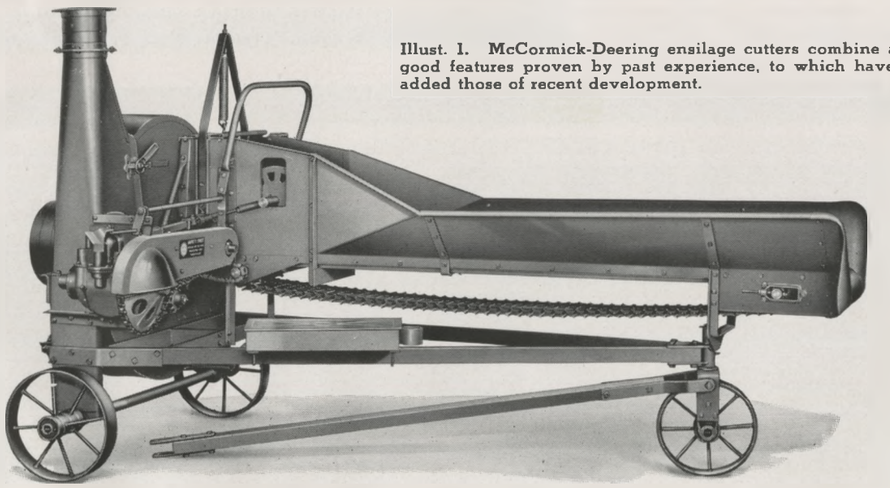
The difficulty of obtaining additional help for short periods of time makes it essential that his machines save as much man power as possible. The McCormick-Deering ensilage cutter feeder saves a man. It is truly a self feeder.

Many farmers are finding that small tractors fit the majority of their power requirements and that it is poor economy to keep a large one for one or two heavy jobs. The proper weight and balance in the flywheel, curved flywheel wings, ball bearing mounting, tool steel knives and shear bar, and enclosed transmission gears running in oil, all combine to give maximum capacity with a minimum of power.

Since many different crops are run through the cutter, the length of cut may have to cover a very wide range. By locating a simple chain and sprocket drive where it is most accessible and furnishing extra sprockets with the cutter we make it easy for the user to obtain different lengths of cut.

Worn flywheel wings and a worn fan housing can cause an otherwise good cutter to make a very poor showing. Speeding up the flywheel in an attempt to overcome this inefficiency is expensive as it places the added burden on the source of power. New flywheel wings and a new blower housing are expensive. The user of a McCormick-Deering cutter does not have this problem. The lower half of the blower housing can be adjusted to take care of this wear and the original efficiency is maintained.

Modern tractors have relatively high road speeds and most farms also have trucks. The ensilage cutter must be able to keep apace. The tubular steel A frame and tricycle mounting enable this cutter to stand up to road travel and pull straight when being trailed.



Illust. 1. McCormick-Deering ensilage cutters combine all the good features proven by past experience, to which have been added those of recent development.

SIX BIG FEATURES

- One Machine Handles All Crops.
- A Combination Feeder.
- Low Power Requirement For Maximum Capacity.
- Length Of Cut Easily Changed.
- Blower Housing With Adjustable Bottom.
- Tricycle Mounting.

Regular Equipment

Tricycle truck with tractor hitch.
Extra set of knives.
Flexible blower pipe connection.
Blower pipe deflector.
7, 9 and 12-tooth feeder drive sprockets.
Steel wheels.
Two knives on flywheel (No. 5).
Four knives on flywheel (No. 7 and No. 9).

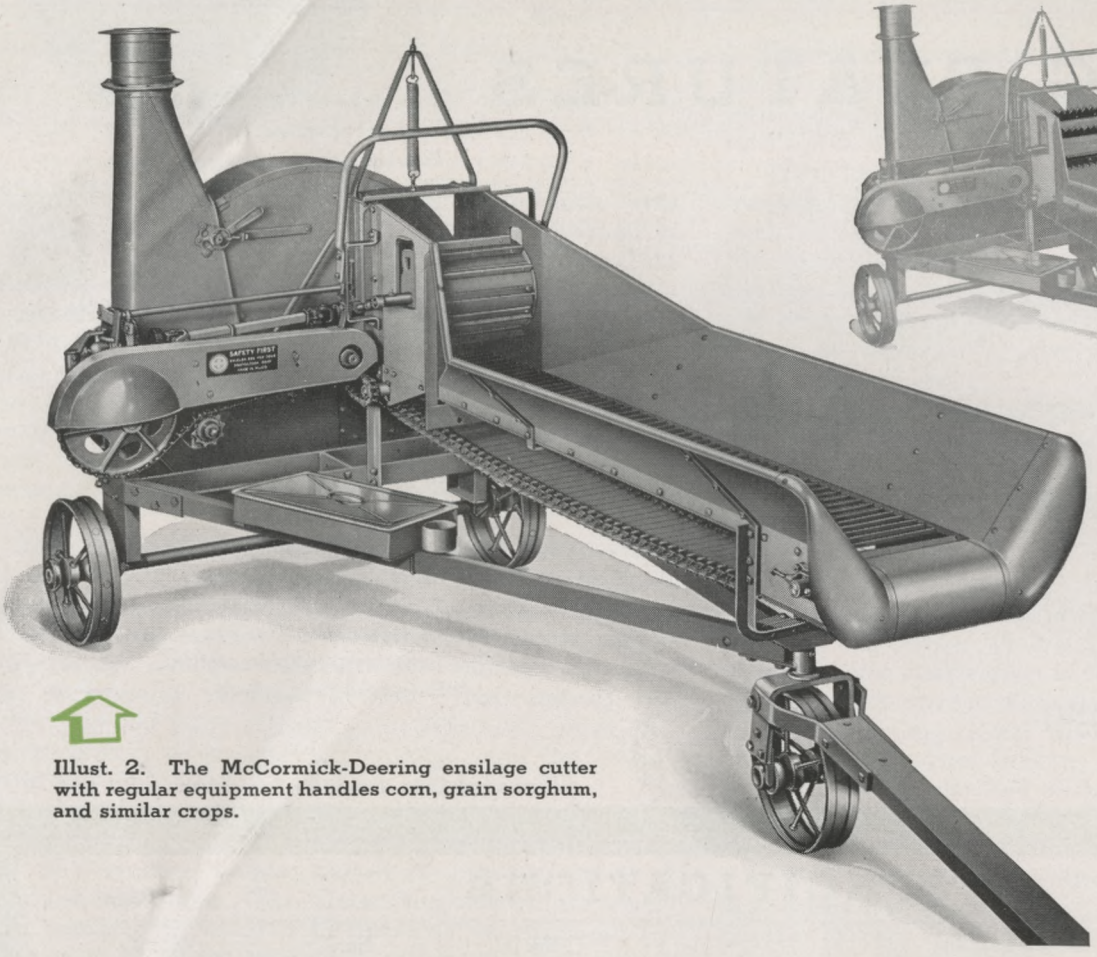
Special Equipment

Hay chopping attachment.
Molasses pump attachment.
Knife grinding attachment.
Lower feed roll hopper.
Parts to obtain 1, 1⅝ and 2⅜-inch cut.
Set of shredder bars.
Two knives with knife posts to make four-knife flywheel (No. 5).
Deflector adjustable section.
Pneumatic tired wheels.

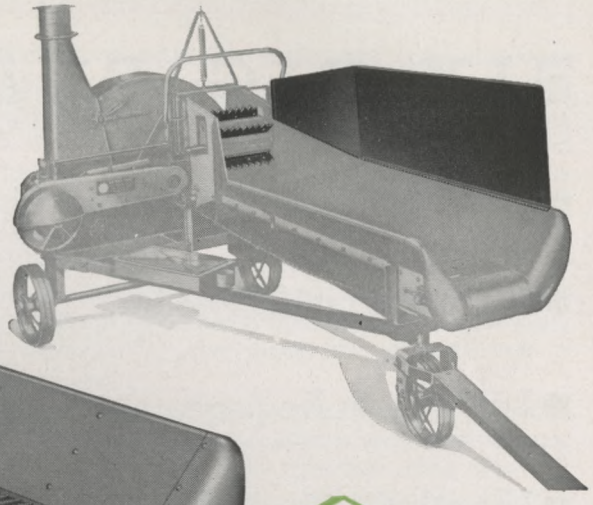
SPECIFICATIONS

Description	No. 5	No. 7	No. 9
Maximum capacities—(tons per hour):			
Corn and bundle silage (½-in. cut)	Up to 15	Up to 20	Up to 30
Loose (grass) silage (½-in. cut)	Up to 8	Up to 12	Up to 15
Dry hay (1-in. cut)	Up to 3	Up to 5	Up to 7
Horsepower required	Up to 15	Up to 20	Up to 30
Elevating height, ft.	Up to 100	Up to 100	Up to 100
Flywheel speed, r.p.m.	Up to 900	Up to 800	Up to 700
Width of feeder conveyor	9½″	12″	15¾″
Throat opening (maximum), sq. in.	65	82	106
Throat width, in.	10	12⅝	16¼
Throat height, in.	6½	6½	6½
Flywheel (boiler plate, ball bearings) diameter, in.	34	40	49
Number of knives	2 regular 4 special	4 regular	4 regular
Length of cut:			
7-tooth sprocket	½″ (2 knives) ¼″ (4 knives)	½″ (2 knives) ¼″ (4 knives)	½″ (2 knives) ¼″ (4 knives)
9-tooth sprocket	¾″ (2 knives) ⅜″ (4 knives)	¾″ (2 knives) ⅜″ (4 knives)	¾″ (2 knives) ⅜″ (4 knives)
12-tooth sprocket	1″ (2 knives) ½″ (4 knives)	1″ (2 knives) ½″ (4 knives)	1″ (2 knives) ½″ (4 knives)
Blower pipe diameter, in.	6	6	7
Distance from ground to top of flexible joint	66″	68″	74″
Pulley (Rockwood)			
Size (regular), in.	12 x 7	14 x 7	16 x 7
Weight, complete with regular equipment, lbs.	1150	1365	1765
Weight, hay attachment, lbs.	20	25	26
Wheels (steel, regular)			
One—front	14″ x 3″	14″ x 3″	16″ x 4″
Two—rear	14″ x 3″	16″ x 3″	20″ x 4″
One—front (Pneumatic, Special)	4.00 x 9	4.00 x 9	4.00 x 9
Two—rear (Pneumatic, Special)	4.00 x 9	4.00 x 12	4.00 x 12

One Machine HANDLES



Illust. 2. The McCormick-Deering ensilage cutter with regular equipment handles corn, grain sorghum, and similar crops.



Illust. 3. Equipped with feeder sideboard and saw teeth on the paddle roll it is ready for green crops, cured hay, or straw.

ENSILAGE cutters for filling silos with corn or grain sorghum crops have been in common use for many years. In years past, occasional attempts were made to handle bundled oats, soybeans, green or dry hay and other crops with ensilage cutters with varying degrees of success. This led to the development of another type of cutter known as hay choppers. Both types machines did good work in their respective fields. Now, however, the new line of McCormick-Deering ensilage cutters makes it possible to do all kinds of green or dry forage crop cutting with one modern machine. It is no longer necessary for the farmer to have two machines. Neither is it a difficult or expensive job to equip the regular machine for chopping hay. All that is necessary is the addition of saw-tooth extensions to the paddle roll and a sideboard to one side of the feeder. Moreover, this sideboard can be attached to whichever side of the feeder is more convenient for unloading. It is shaped to fit the feeder sides so there are no sharp corners or lapping joints to catch hay and slow up feeding.

Chopping Cured Hay

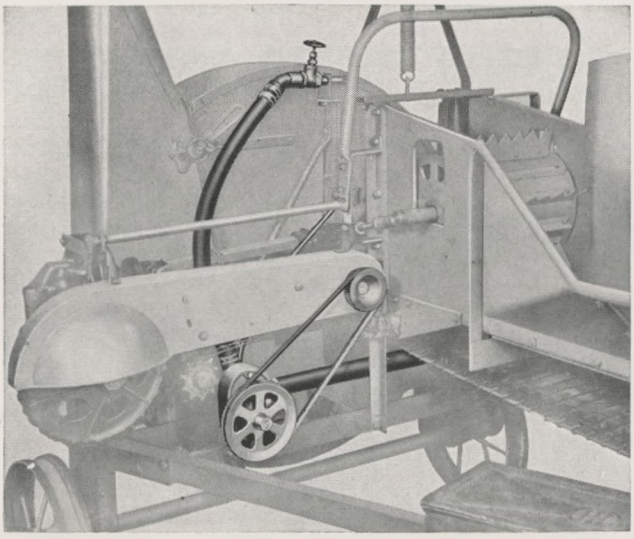
The use of the ensilage cutter to put cured hay in the mow is also gaining favor. There are several reasons for this. Chopped hay requires only half of the storage space needed for loose hay. More hay can therefore be protected from the weather. Less help is needed to put the hay in the mow. No "derrick horse" to drive, and it is unnecessary to keep a man in the mow since several loads can be put in before any "leveling off" is necessary. Chopped hay is more easily forked out of the mow than loose hay. There will be less waste when feeding chopped hay since the stock eat it all and do not get so much into the stall to be trampled underfoot. Chopped hay has gained favor with many feeders because they can blow a few loads into a small barn or shed not equipped with track and carrier, thereby avoiding the unpleasant job of hauling loose hay in bad weather.

Pasture in the Winter

On many farms today silo filling is not just an annual affair of putting semiripe corn into the silo. Dairymen have learned that many green crops can be made into silage and used to maintain the production of high-quality milk when pastures are short or the size of the farm will not provide sufficient pasturage to carry the herd. Other feeders use grass silage as a supplement to or instead of corn silage. The silo is to livestock what modern refrigeration is to man. Both make much-needed types of food available during that part of the year when they could not otherwise be obtained. Clover, alfalfa, soybeans, various grasses, beet tops, peas, green oats, rye, barley, and numerous other crops are being put into the silo at the stage of their growth when they contain the maximum feeding value. Don't let a rainy season spoil a good crop. With a McCormick-Deering ensilage cutter you can put it into the silo and have better feed.

Molasses Silage

Many of these green crops lack sufficient sugar to cause the bacterial fermentation which takes place in corn or sorghum silage. Adding molasses is the secret of converting such crops into first-class silage. A molasses pump and distributing system are easily installed on the McCormick-Deering ensilage cutter.



Illust. 4. The molasses pump attachment automatically feeds molasses in proportion to the amount of silage passing between the feeder rolls.

Making corn silage.

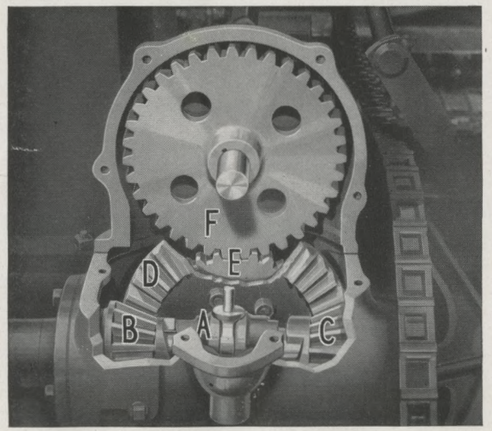
Making molasses silage of a crop of green barley.

Chopping cured hay and blowing it into the mow.

Combination Feeder

EQUALLY EFFICIENT FOR BUNDLE CROPS OR LOOSE HAY

Illust. 5. The wide, deep feed trough with sloping sides and rolled edges and the large feed throat and power driven paddle roll combine to make this ensilage cutter the easiest to feed.



Illust. 6. The transmission gears are enclosed and run in oil. Illustration shows gear box cut away.

Combination Feeder

AFTER watching a McCormick-Deering ensilage cutter in operation for a short time you will be impressed with the "Constant Flow" of material through the machine and into the silo. Perhaps you recall the first time you hauled heavy, bundled corn to an ensilage cutter; how you sweated and worked to get that first load off the wagon. The feed trough was too narrow and many bundles went onto the ground. Others poked the men in the back who were trying to force the bundles into the machine and it was a hard job for everyone. All that is history when you start using a new McCormick-Deering ensilage cutter.

The feed trough is wide and deep. The edges are rolled so there are no corners or sharp edges to catch stalks or hay. The sides of the feeder gently slope to the large-capacity feed throat. The slatted conveyor apron has turned up edges on each slat to insure positive movement of the material while the large-diameter power driven paddle roll is faced with twelve angles that bite into the crop and get it all down no matter how bulky or stubborn it may be to feed. From this point the smooth lower and fluted upper-feed rolls feed the material onto the shear bar. From the time the feed is placed on the feed table the value of "Constant Flow" is apparent. No jamming here or hesitating there and no need for a man at the feeder. Whether it be bulky cured hay or straight bundled corn this feeder handles it so easily there just doesn't seem to be anything for a "feeder" man to do. Even green grass or legume crops have no tendency to wrap on this paddle roll and feed rollers because there are no openings or sharp corners to catch stalks and the driving shafts are entirely enclosed.

Transmission Gears

The transmission gears of McCormick-Deering cutters are made of high-grade grey iron, assuring long life. The entire gear assembly is enclosed in a dustproof gear case and runs in oil. The two bevel pinions (B and C, see Illust. 6) are loose-mounted on the power shaft and are always in mesh with the large bevel gear (D) which drives the lower feed roll and conveyor apron. The sliding clutch (A) is shifted by means of a shifting fork controlled by the feeder control bail. Power is transmitted to the upper feed roll through the spur gear (F), which is in mesh with a similar gear (E) attached to the back of the bevel gear (D). The gear shift provides a quick 3-way control of the feeding mechanism—namely, forward, reverse, and neutral.

Feed Rolls

In order for silage to keep well it must be firmly packed so air is excluded. If silage is cut in uniform lengths and not shredded it can be firmly packed. In order for silage to be uniformly cut it must first be firmly held on the shear bar while being cut and, second, it must be cut with a sharp knife. It is a generally accepted fact that knives must be kept sharp and most users attempt to keep sharp knives on their cutters. This alone, however, will not assure uniformity of cut. The material being cut must be positively held. The smooth lower roller insures a surface against which it can be held by the fluted upper roller. To insure a positive grip on the feed the upper roller is under spring pressure at all times. Whether a thin layer of hay or a large bundle of corn is going through, it will be held so the knife can make a clean cut. Compare this combination with any other type of feed rolls and you can readily understand why feeders are so enthusiastic about silage cut with McCormick-Deering ensilage cutters.

Self-Cleaning Conveyor

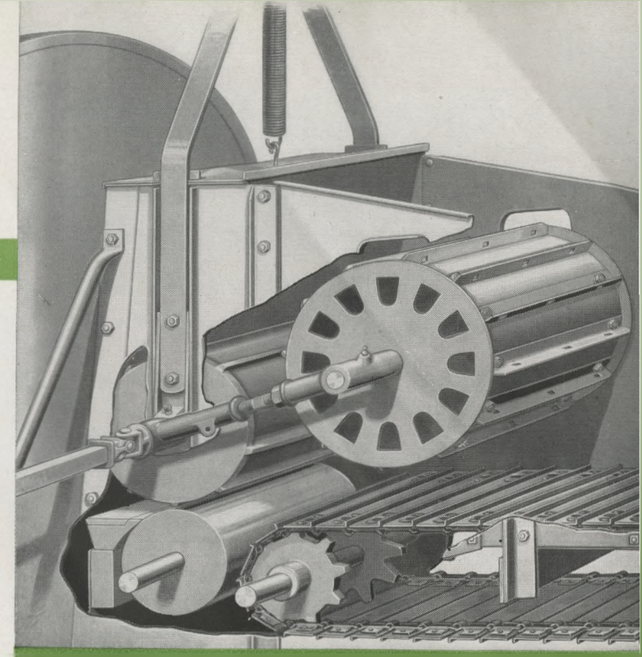
The feed conveyor permits no gumming up of the chain links because holes in the steel slats allow the sprocket teeth to push material through which would otherwise collect in the links causing the chain to tighten up and perhaps break links. There will be no bent slats in this conveyor because they are made of steel of high-tensile strength and there is a third, wide-tooth sprocket midway between the driving sprockets. The flat ends of the sprocket teeth fit up to the back side of the slats so they do not have a chance to bend down under the pressure of heavy bundles of corn. Heavy, wooden boards and steel, side-trough rails provide adequate support for the conveyor throughout the length of the feed trough. Convenient tighteners enable the operator to keep the conveyor running at the correct tightness. The slats are closely spaced to prevent that familiar pile of fine material from collecting on the ground under the feeder.

Safety Shear Bolts

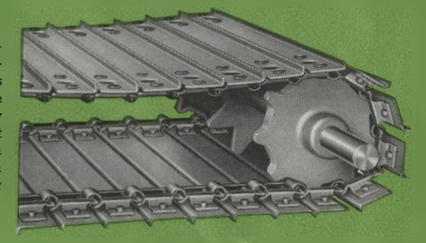
Two small bolts connect the flange collars on the upper transmission shaft which drives the upper feed roll. Should the upper feed roll become stalled from overfeeding or by any large object accidentally getting into the feeder, the bolts will shear and prevent damage to the transmission and other parts.

Feed Control Lever

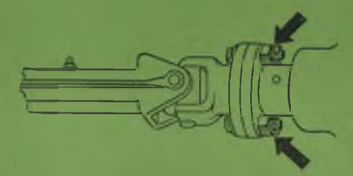
The feed control lever, which extends in the form of a bail across the feeder, is one of the outstanding safety features on McCormick-Deering ensilage cutters. By pulling on the bail the feeder is put into forward motion, a light push on the bail stops the feeder, while a further push reverses the mechanism. No gear shifting arrangement could be more convenient or safe. The bail can be operated from either side of the machine.



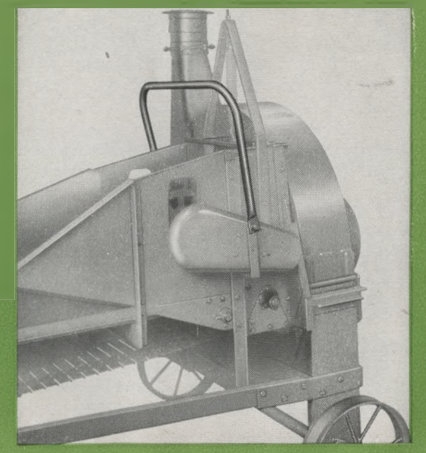
Illust. 7. Power-driven, smooth lower and fluted upper feed rolls with power-driven paddle roll insure constant feeding and clean cutting.



Illust. 8. Self-cleaning conveyor slats eliminate breakage by keeping short material from building up on the conveyor chain.



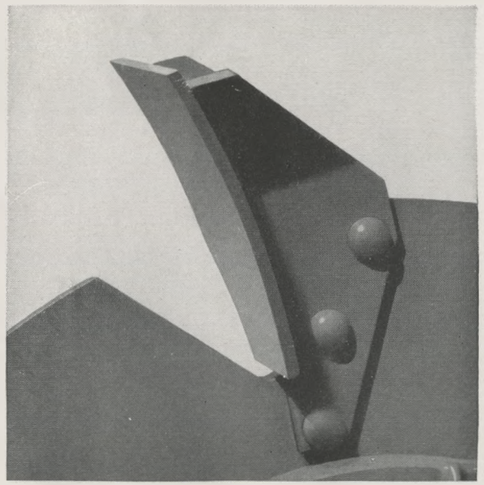
Illust. 9. Arrows indicate safety shear-bolts which protect feed rolls and transmission gears.



Illust. 10. The bail-type throwout control may be operated from any position promptly to stop or reverse the machine.

CURVED FAN WINGS Give Better Lift with Less Drag

Illust. 11. The flywheels of the No. 7 and No. 9 are regularly equipped with four knives and eight curved fan wings.



Illust. 12. The flywheel wings are curved, giving a better lifting action with less drag.

Safe-Efficient Flywheel

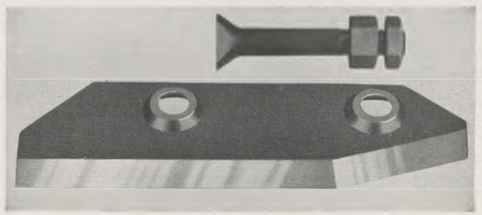
McCORMICK-DEERING flywheels are safe and efficient. They consist of a ½-inch thick sheet of boiler plate steel because this material will not fly apart or crumble should some one accidentally let a piece of iron get into the feeder. The boiler plate is backed up by a heavy malleable iron disk which also forms the hub. This provides an unbeatable combination of strength, rigidity, and sufficient weight to insure constant speed and no springing away from the shear plate when the going gets tough. The complete unit is carefully balanced, securely keyed to a large diameter steel shaft, and mounted on ball bearings to insure its being efficiently operated by even a small tractor or power unit.

Curved Fan Wings

The flywheel, which also acts as a blower fan, is equipped with curved fan wings. The fan wings are curved so that the air blast and silage are directed straight up the blower pipe. This increases the lifting capacity of the blower and materially reduces wear on the blower housing and especially at the outlet as the silage is picked up by the wings and thrown up the pipe rather than dragged around the housing and then thrown against the side of the outlet. This feature can be very easily demonstrated by trying to throw a handful of sand. You will find it is much easier to throw the sand in a straight line and less will fall off when the hand is cupped than when it is held flat. The steel fan wings have been electric-welded to steel supports and the wing unit is hot-riveted to the flywheel.

Flywheel Knives

The knives are tool steel, which means they will stay sharp longer. Each knife is held securely in place by means of two large bolts fitted with lock-nuts.



Illust. 13. The cutting knives are made of high-grade tool steel and are bolted securely to knife posts which take the cutting strain.

The heads of the bolts are countersunk into the face of the knife, giving a smooth surface which does not interfere with setting the knife close to the cutter bar. The countersunk portion in the knife is punched instead of being bored. This punching provides extra material on the back of the knife to form a collar. The collar is machined to fit into a seat in the knife post, thus helping to secure the knife still more firmly.

Ball Bearings

The flywheel acts as a reservoir of power which drives the feeder, cuts the silage, and throws the cut silage to the top of the tallest silo. In order that this can all be done most efficiently the flywheel shaft must turn on bearings which are as durable and frictionless as possible. Years of experience in building ensilage cutters have proven that heavy-duty, high-quality ball bearings do the best job of meeting these requirements. Your cutter will just naturally pull easier with the flywheel mounted on this type of bearings. Long life is assured these bearings because they have oil and dirt seals to keep the lubricant in and the dirt out.

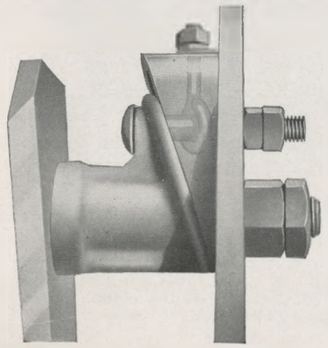
Wedge-Type Knife Adjustment

The wedge-type knife post is a regular feature on all McCormick-Deering cutters. It greatly simplifies the adjustment of the knives as they are being replaced after sharpening. By means of two bolts, the knife can be accurately adjusted to the proper distance from the cutter bar before the large knife bolts are tightened. Illustration 14 shows how the adjustment is made.

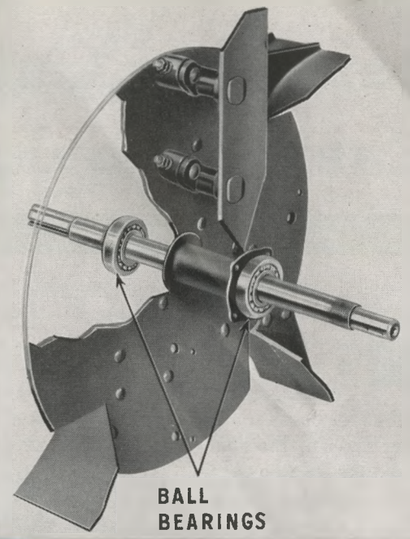
Another advantage of this type of knife post is that it takes all the cutting strain off the knife bolts.

Adjustable Side Shear Bars

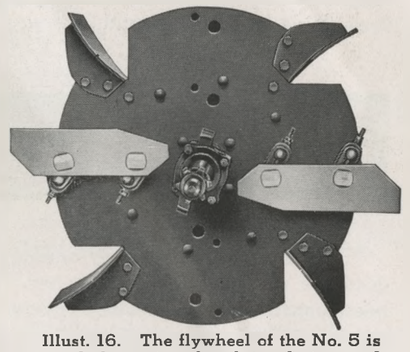
The feeder side sheets have slotted holes and the shear bars are backed up by set screws so they cannot move back should the bolts holding them become loosened. The shear bars serve two purposes. First, they supplement the main shear bar when cutting large bundles of corn and, second, they act as a safety feature so that the knives can never some in contact with the main shear bar.



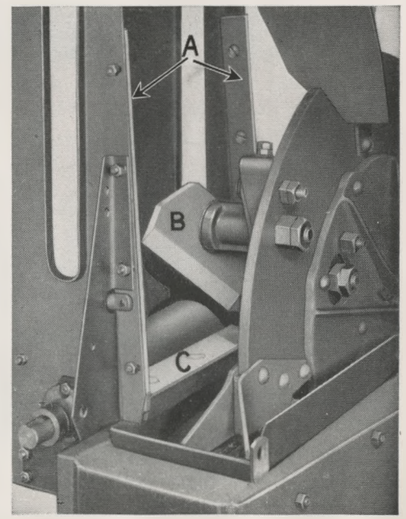
Illust. 14. Wedge-type adjustment does not have to be changed every time knife is sharpened. The cutting strain is taken by the knife post and not on the bolts.



Illust. 15. Balanced flywheel rotating on ball bearings combines maximum capacity with minimum power requirement.

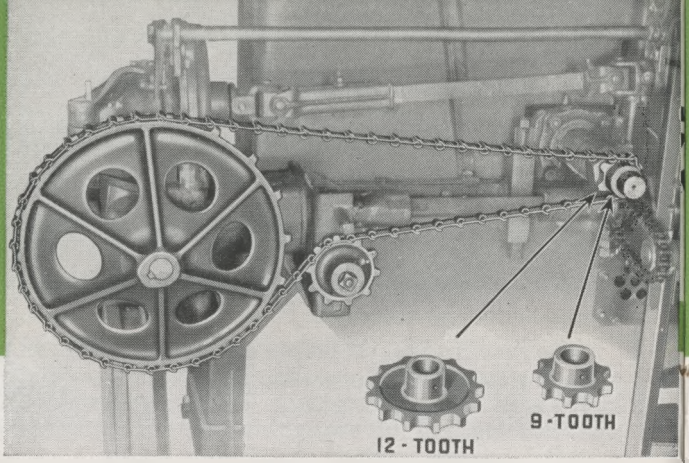


Illust. 16. The flywheel of the No. 5 is regularly equipped with two knives and is drilled so two more can be added if desired



Illust. 17. (A) indicates adjustable shear bars; (B) one of the cutting knives; (C) cutter bar. The shear bars are a safety feature, preventing any possibility of the knives striking the cutter bar.

Length of Cut Easily Regulated



Illust. 18. Simple, trouble-free feeder drive. Length of cut easily changed by changing sprockets.

THE length of cut is regulated by the size of the sprocket on the flywheel shaft. Three sprockets—7, 9, and 12-tooth—are regularly supplied with each machine. These sprockets constitute the drive for the feed rollers and feeder conveyor. Changing the size of the sprocket speeds up or slows up the feed to the flywheel knives resulting in longer or shorter lengths of cut.

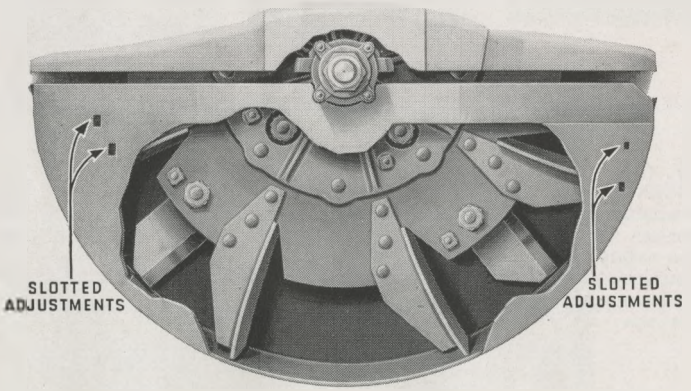
By ordering package No. 13400-LB, a 22-tooth driven sprocket with extra chain and tightener plate can be obtained. By using the 22-tooth sprocket in place of the regular 36-tooth sprocket much longer lengths of cut can be obtained. This package is available for Nos. 5, 7, and 9.

Lengths of Cut

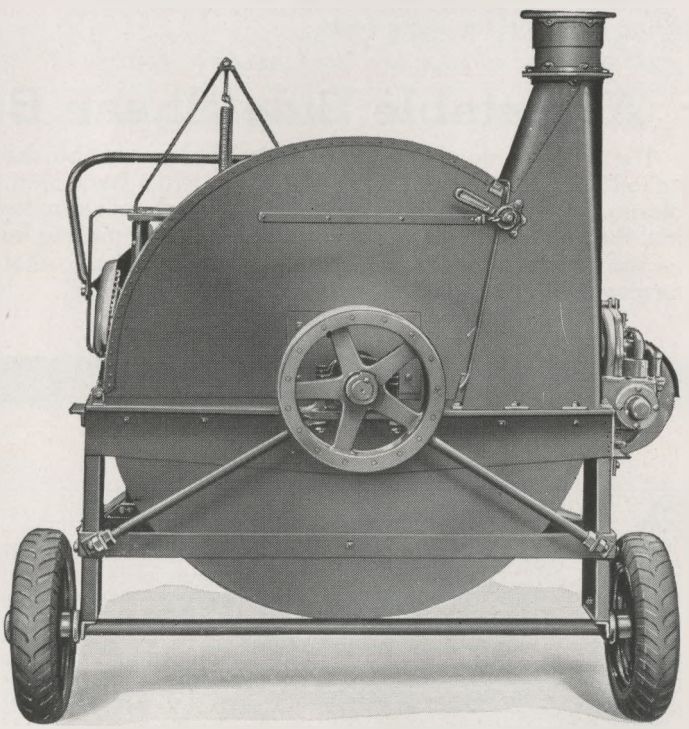
Regular			Using Package No. 13400-LB	
Sprocket	Two Knife	Four Knife	Sprocket	Two Knife
7-tooth	1/2"	1/4"	7-tooth	1"
9-tooth	3/4"	3/8"	9-tooth	1 5/8"
12-tooth	1"	1/2"	12-tooth	2 3/8"

BLOWER HOUSING — Heavy Steel Lower Section Adjustable to Maintain Full Air Blast

The blower on almost any ensilage cutter will do a good job when the machine is new. The problem has been to maintain this efficiency without making extensive repairs. The problem is solved for you when you own a McCormick-Deering ensilage cutter. The lower half of the blower housing can be raised or lowered so that when wear occurs on either the flywheel wings or the blower housing the original clearance can be restored. The bolts, which hold the lower half of the housing in place, have slotted holes. By loosening these bolts the lower section can be raised so the original clearance and efficiency are restored. It always "blows" like a new cutter.



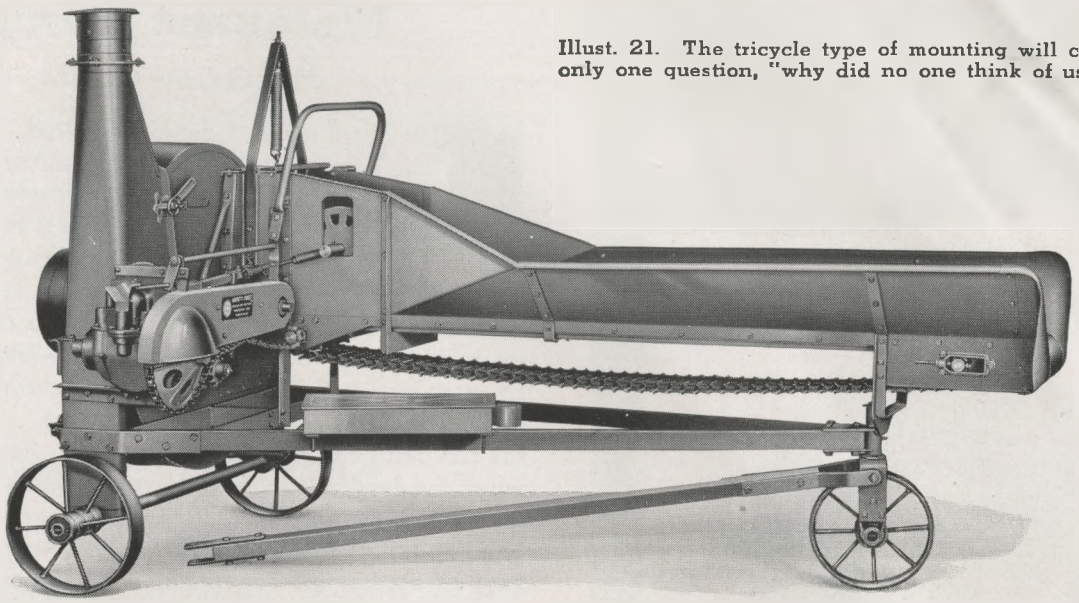
Illust. 19. The adjustable blower housing enables you to maintain new machine efficiency.



Illust. 20. The pull of the belt will never cause any distortion of the blower housing in the McCormick-Deering cutter. Side braces relieve even the main frame of belt pull.

Tricycle Mounting

OFFERS DISTINCT ADVANTAGES



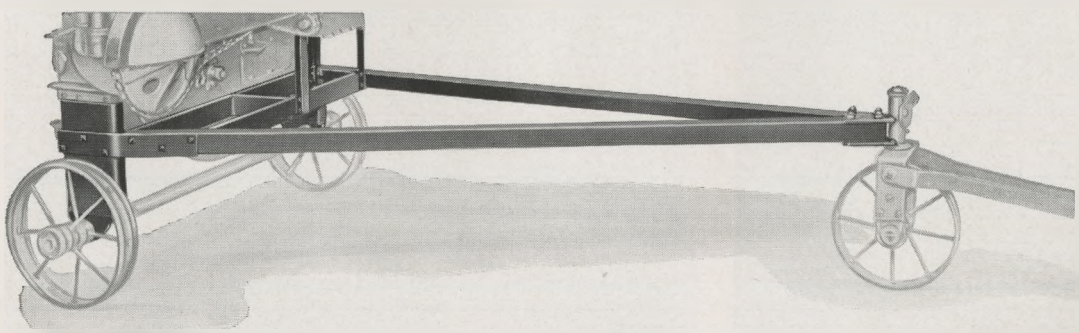
Illust. 21. The tricycle type of mounting will cause you to ask only one question, "why did no one think of using it before"?

Tricycle Mounting

The three-wheel truck construction is new to ensilage cutter design and offers several advantages. It can be easily pulled behind a tractor or truck and will trail straight down the road. No shimmy or side sway so common to the conventional four-wheel truck. It is more easily backed into cutting position and the weight being well distributed on all three wheels enables the machine to stand in position against belt pull with very little bracing. In cutting position the tongue can be turned to one side or back under the feeder. No extra work is involved in removing the tongue whenever the machine is set and there are no wheels to trip over to get around the feeder.

The wheels are smaller than we have heretofore used on ensilage cutters. This was done so that the machine could be belted with a tractor in any position without having to block up the axle and remove a wheel.

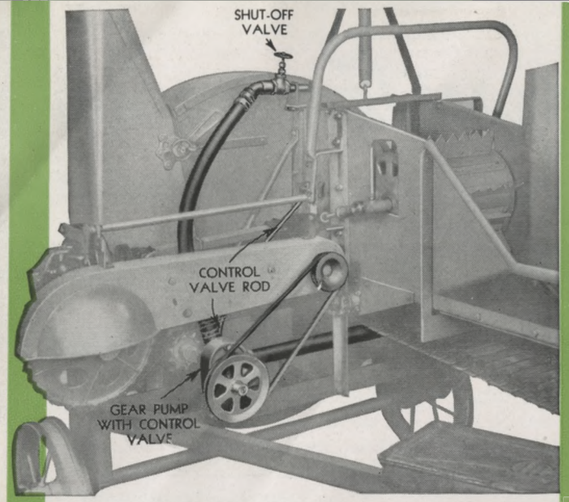
NON-SAG MAIN FRAME



Illust. 22. The use of the best material, put together by up-to-date methods, results in a main frame which combines strength with simplicity.

The main supporting frame is an all-steel, welded unit directly mounted on the axle. The "A" frame is made of rectangular steel tubing which affords strength and rigidity without the need for diagonal braces. The feeder is attached to the pivot wheel bearing member so the weight of the machine is carried directly on the wheels instead of on the frame. This construction provides adequate strength and simplifies the appearance since working parts are not hidden by frame members or braces.

Special Equipment



Illust. 23. Making molasses silage no longer need be a messy job. Just roll up the barrel, our distributing system does the rest.

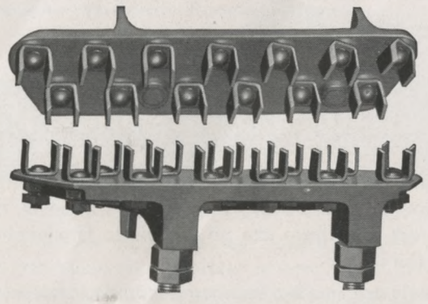
Molasses Pump Attachment

THIS attachment is complete, clean, and efficient. The heart of the system is the automatic, dependable, gear-type pump which draws the molasses from the barrel and distributes it to the crop just before it is cut. This system offers many advantages, among them:

Automatic regulation of the volume of molasses to the material going through the cutter. This is controlled by a valve in the pump which is operated by a rod connected to the upper feed roll yoke. The length of the rod can be adjusted so the valve is completely closed when the feed roll is in its lowest position and opens as the feed roll is raised by feed passing under it. A gate valve in the distributing line can be used to regulate the flow or shut it off completely. Eliminates the troublesome job of diluting molasses, and eliminates waste by feeding molasses only when material is passing between the feed rollers.

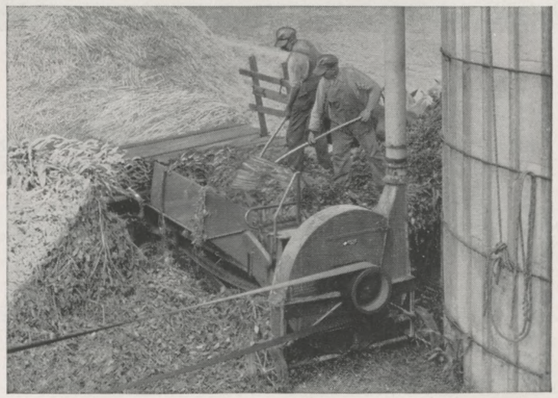
There is no guesswork and no mess with this system. The feed is positive and when the control valve is full open it is of sufficient volume for the silage being cut.

The pump has a by-pass valve which opens when the control valve is closed, so that the pump is not damaged or hoses blown off.



Illust. 24. Shredder bars for shredding fodder are available as extra equipment. Two bars comprise a set.

The feed trough on McCormick-Deering ensilage is wide and deep for easy feeding. There are no sharp edges.



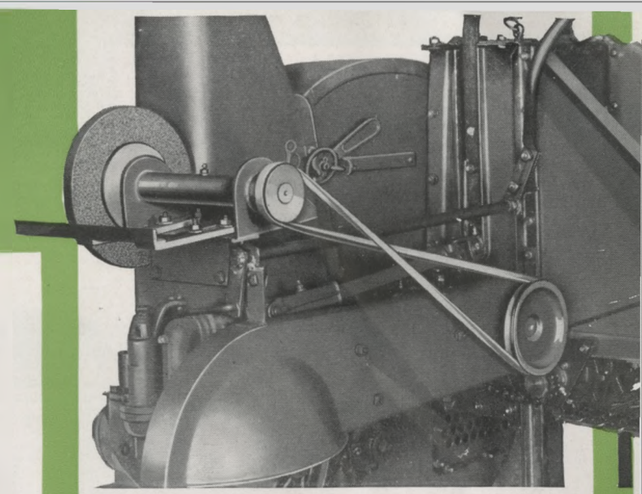
Legume ensilage, such as this mixture of soybeans and corn, helps to provide a "year-'round" succulent feed.

Shredder Bars

McCormick-Deering cutters can be used for shredding fodder by equipping the flywheel with special shredder bars. These bars fit the regular knife posts and are interchangeable with the regular cutting knives. The usual arrangement is to use two shredder bars and two cutting knives. The shredder teeth are made of tool steel, tempered and ground. The teeth are individually removable for sharpening, or some of the teeth may be removed if coarser shreds are desirable.

Knife Grinding Attachment

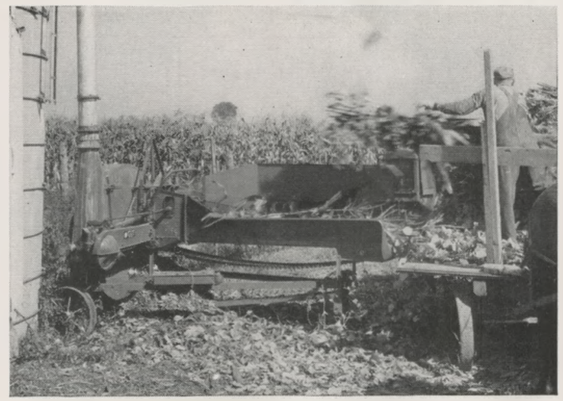
Knife-grinding attachments are available as extra equipment for McCormick-Deering cutters. These grinders are readily attached to the machine and are driven by means of a V-belt from the flywheel shaft while the cutter is in operation. This makes it a simple matter to keep an extra set of knives sharp so that knives can be changed at any time when required. Keeping the knives sharp helps to maintain smooth, easy operation of the cutter at full capacity.



Illust. 26. Knife-grinding attachments are available as extra equipment. One set of knives can be sharpened while the other is in use.

Illust. 27. Pneumatic-tired wheels can be supplied as extra equipment. Tires are the implement type.

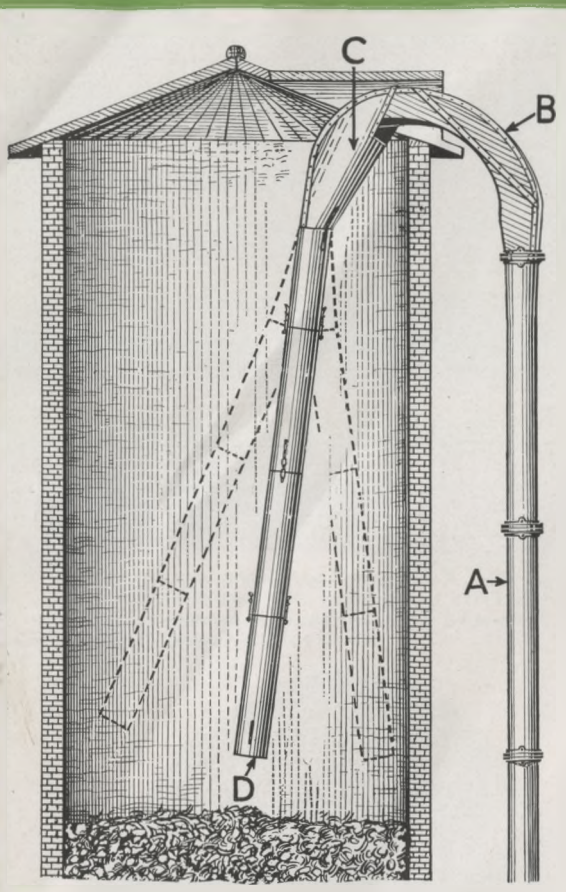
The blower housing with adjustable bottom assures a full air blast and maximum capacity through years of service.



The combination feeder handles all crops. The material stays in the trough with no loss over the sides.

Pipe Equ

ANY COMBINATION



Illust. 29. Cross-sectional diagram showing the arrangement of blower pipe and distributor in filling a silo. (A) indicates blower pipe; (B) deflector; (C) distributor hopper; (D) distributor pipe section.

THE great variety of pipe equipment available for McCormick-Deering cutters is an important feature in the successful operation of these machines. Blower pipe and distributor pipe sections in any desired numbers, as well as flexible elbows, curved pipe sections, etc., are available to meet any silo-filling requirement.

Parts Regularly Supplied

McCormick-Deering cutters are regularly supplied with a flexible pipe connection and deflector (see Illust. 30). An adjustable section for the deflector (see Illust. 30), all blower and distributor pipe must be ordered separately as required.

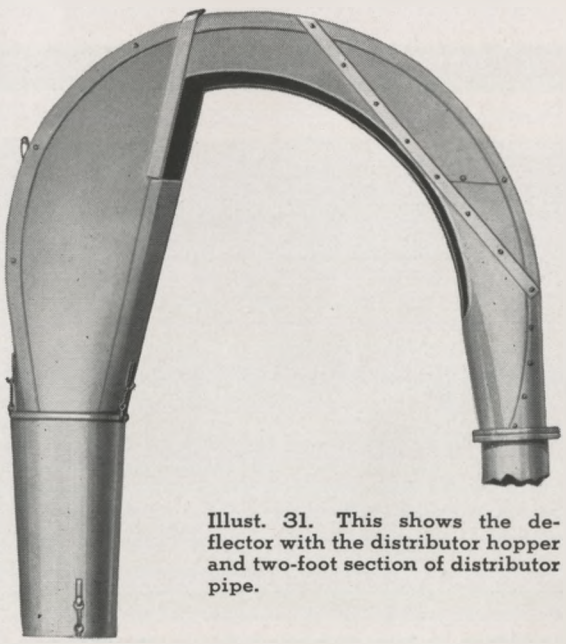
Blower Pipe

The blower pipe for the No. 5 and No. 7 is 6 inches in diameter and can be supplied in 1, 4, 6, and 8-foot lengths. The blower pipe for the No. 9 is 7 inches in diameter and can be supplied in 1, 4, 6, 8, and 10-foot lengths. A telescoping section can be supplied in either the 6 or 7-inch pipe which is adjustable from 4 to 7 feet in length. With this variation in length of pipe sections, owners are enabled to meet any requirement in silo height. All blower pipe is made of heavy-gauge sheet steel, and each section is equipped with a flange at top and bottom to permit bolting the sections firmly together.

Deflector

A deflector is regularly supplied with each cutter. Its purpose is to deflect the material coming up the blower pipe into the

Illust. 30. The deflector is regularly supplied with all machines. The hinged section (A) can be obtained if desired.



Illust. 31. This shows the deflector with the distributor hopper and two-foot section of distributor pipe.

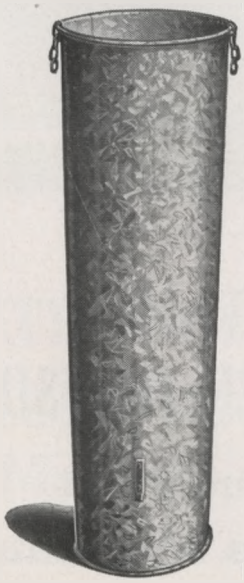
silo or storage place. When used in the silo, sections of distributor pipe are attached for uniform distribution of the silage. For storing small quantities of silage in crib silos, filling pit silos and putting dry hay in small mows the hinged section is very desirable. Illustration 30 shows the regular deflector with the hinged section attached.

Distributor Pipe

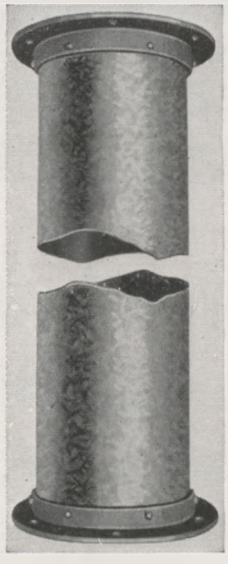
If silage is allowed to drop any great distance the heavier parts tend to fall in the center and the lighter husks and leaves go to the outside. This often results in considerable spoilage since the husks and leaves alone do not pack tightly enough to exclude the air. Using the distributor pipe makes it possible to spread a uniform mixture over the entire area and results in a better grade of silage. The complete distributor pipe consists of a hopper with two-foot joint and any required number of telescoping pipe sections. The sections are three feet in length and are connected by means of hooks and chains.

Curved Blower Pipe

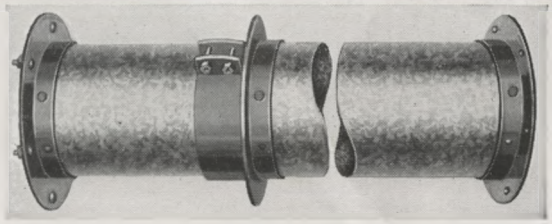
Rigidly constructed, curved blower pipe sections or elbows can be supplied. This equipment permits running the blower pipe at any angle necessary to reach the silo or storage place where the cutter cannot be placed alongside. Each section makes a 45-degree turn. By using two of these curved sections a complete right-angle turn can be obtained.



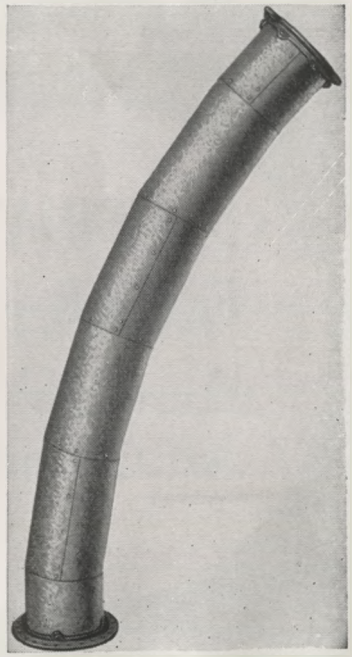
Illust. 32. The distributor pipe is made in three-foot sections of heavy sheet steel with reinforced ends.



Illust. 33. Sectional view of blower pipe showing flanges which permit sections to be securely bolted together.

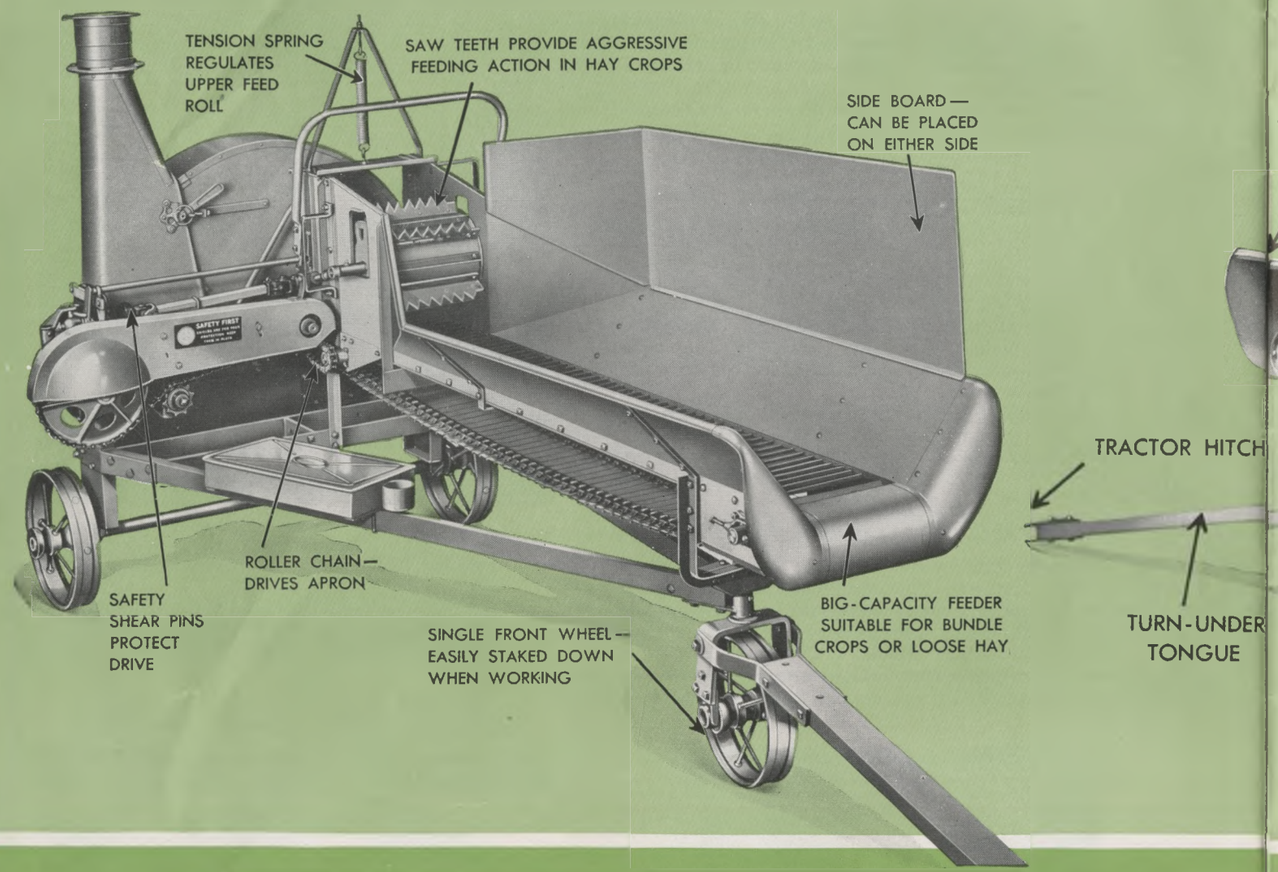


Illust. 34. Telescoping section of blower pipe. The clamp-type flange makes it possible to adjust this section from four to seven feet.



Illust. 35. Curved blower pipe section. Used as an elbow whenever turns are necessary to reach the storage place. The sections make a 45-degree turn.

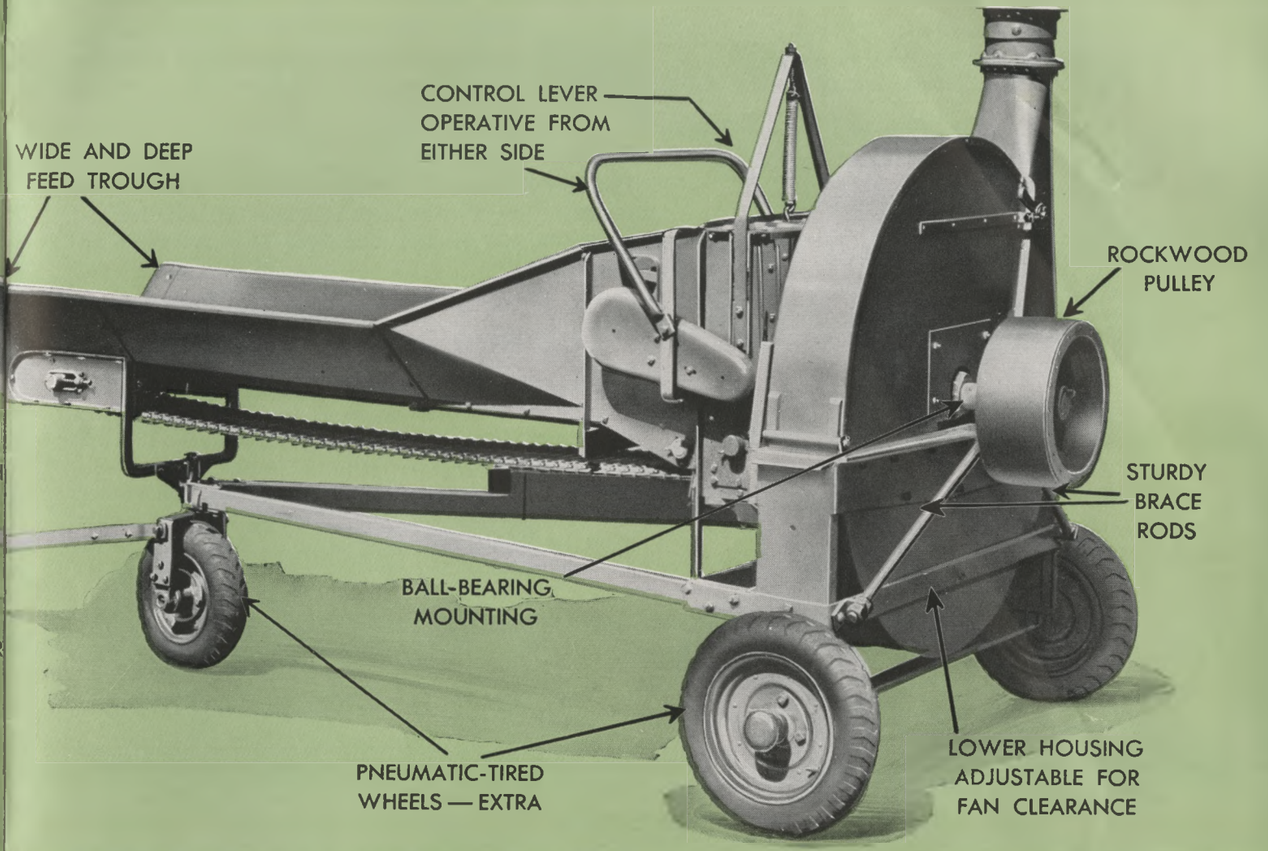
ONLY McCORMICK-DEERING GIVES YOU ALL THESE FEATURES



COMBINATION FEEDER
Handles All Crops

LESS POWER
Required to Operate

ADJUSTABLE BLOWER HOUSING
Full Air Blast Always Maintained

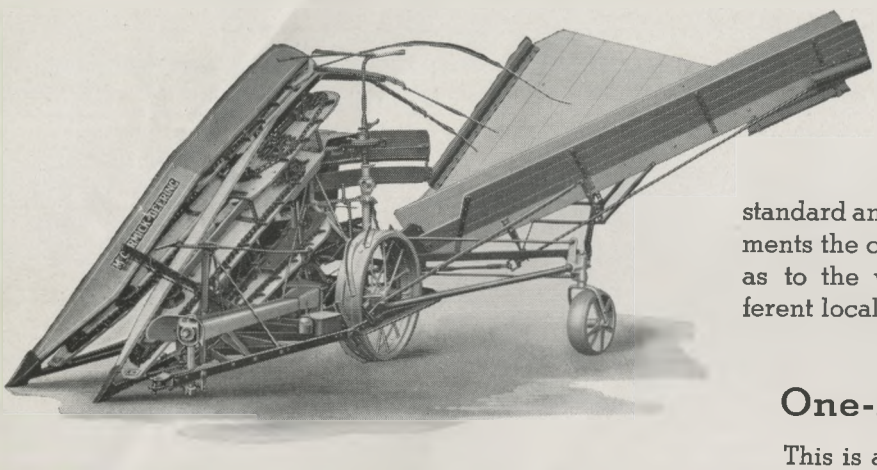


SAFETY DEVICES
Protects Operator and Machine

TRICYCLE MOUNTING
Easily Maneuvered and Trailed for Transport

THREE SIZES
To Meet All Needs

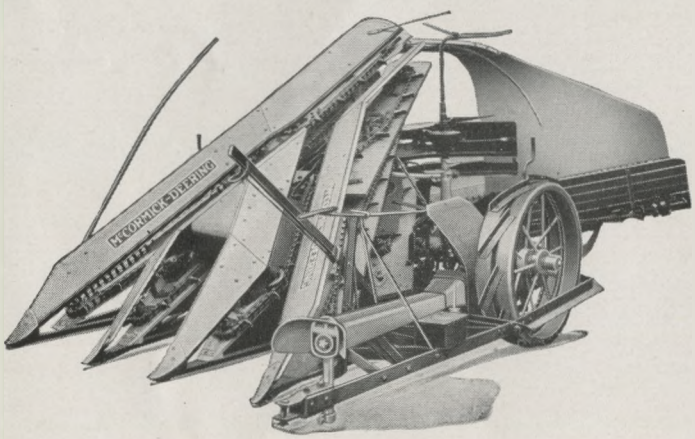
FOR ROW-CROP HARVESTING
USE McCORMICK-DEERING CORN BINDERS



McCORMICK-DEERING corn binders are made in three distinct types—the one and two-row power-drive binders for tractor use and the one-row ground-drive binder suitable for either animal power or tractor draft. All of these binders are available in both standard and "short corn" types. Thus they meet requirements the country over, both as to capacity and draft and as to the varying crop conditions encountered in different localities.

One-Row Power-Drive Binder

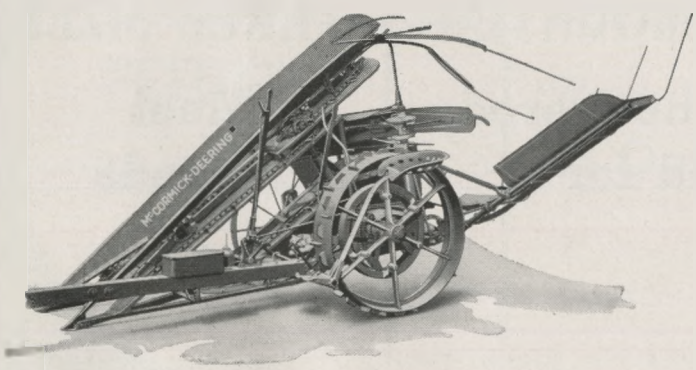
This is a popular binder for tractor owners who have medium to good-size acreages to harvest. It has a capacity of 10 to 12 acres a day and is designed throughout for fast, efficient harvesting at tractor travel speeds. The sliding propeller shaft hitch, for use with tractors having the standardized power take-off, is regular equipment for both tractor binders. The illustration of the one-row tractor binder at the top of the page shows the wagon bundle loader attachment that is supplied on special order at extra cost.



Two-Row Power-Drive Binder

This binder harvests two rows at a time and is especially adapted to big acreages. It has a capacity of 20 to 25 acres a day. The gatherers are amply wide to permit following the rows without missing stalks. Adjustments can be made for rows spaced 36, 38, 40, and 42 inches apart.

The center illustration shows the "short corn" type for two-row tractor binder with conveyor bundle carrier that is regular equipment for both one and two-row tractor binders.



One-Row Ground-Drive Binder

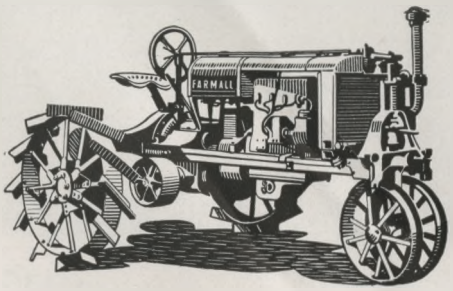
This popular binder meets the requirements for a dependable, economical machine suitable for use with horses or behind a tractor. It has a normal capacity of 8 to 10 acres a day. Power is obtained by the traction of a heavy lugged drive wheel and is transmitted through gears and shafts to the different parts of the machine. The stalks are cut and conveyed in a straight line to the binding mechanism where they are bound while in an upright position and with the butts resting evenly in the butt pan. This assures square-butted bundles.

Since 1923, the Farmall System of Farming Has Set the Pace

IN 1923 came Farmall, the first successful all-purpose tractor. Here was something new—farm power designed from the soil up, a tractor that started from the implement end. International Harvester built this first Farmall and developed a unique system of power farming out of a wealth of experience with the varied machine requirements of farmers everywhere.

For two decades the Farmall idea has been the foundation for all experiments in all-purpose tractor design and attaching equipment. It is this Farmall System that has made automotive farming practicable and thus helped keep young leadership in agriculture. Not long after the first Farmall was built there were a hundred thousand and then a half-million Farmalls at work.

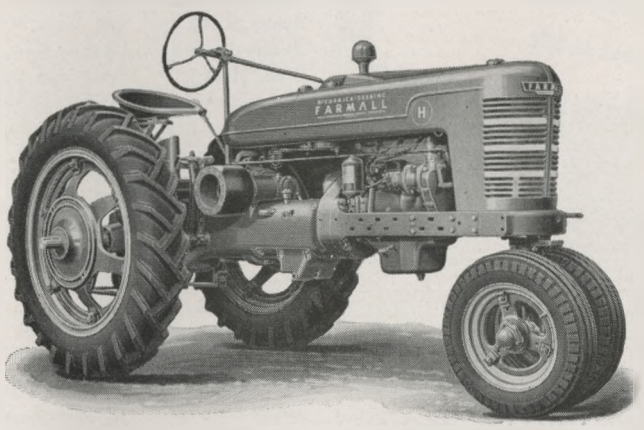
Today there are more Farmalls on farms than all other makes of all-purpose tractors combined.



The Original Farmall—Born 1923

There's a proud record of progress between the old "Original" of 1923 and the streamlined red Farmalls of today, with endless improvements in power and machines. A new generation has grown up since that date to hail the **Farmall System of Farming.**

The complete line of Farmall tractors and the machines built for direct attachment to them are abundant assurance that your selection of McCormick-Deering equipment will be right!

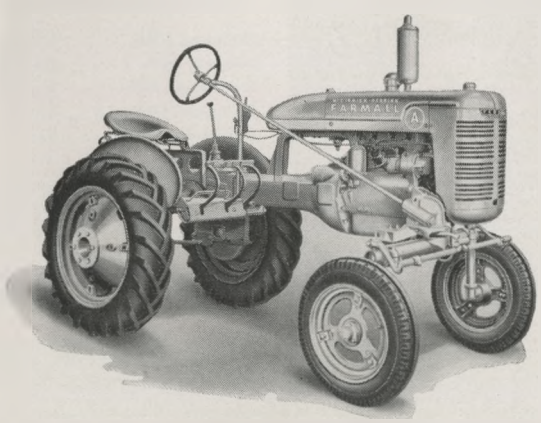


Farmall-H is the tractor for the average farm—in the 160 to 200-acre group. Rear wheels are adjustable for 44 to 80-inch treads. Farmall-H is also suited to extra-large farms requiring a number of tractors to keep different jobs going at the same time.

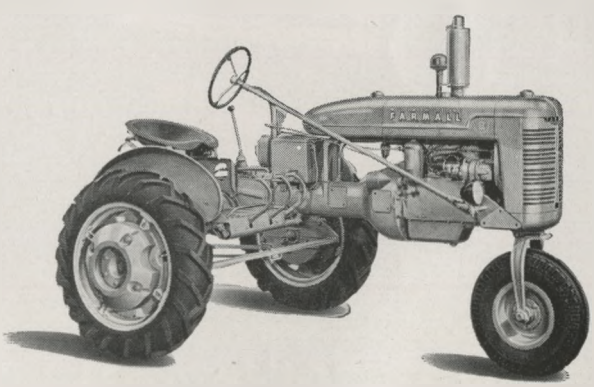
The four smallest Farmalls are the A, AV, B, and BN. The Culti-Vision Farmall-A is a 4-wheel, 1-row tractor which does the work of 2 to 4 horses. Farmall-AV is the same tractor as Farmall-A except that it has 27 inches of clearance for work in vegetable crops. Farmall-B and the narrow-tread Farmall-BN are 2-row, all-purpose tractors. They have the same snappy 4-cylinder engine as Farmalls A and AV, and pull the same size drawbar machines.

The medium-size Farmall-H will pull two 14-inch bottoms under harder-than-average conditions. It is wonderfully economical in the use of fuel.

Farmall-M will supply extra-husky power for pulling the larger plows, 2-row corn pickers, and 4-row cultivators, and for operating the heavier belt machines.



Farmall-A will plow 6 to 7 acres a day in average soil. It supplies economical power for cultivating 1 row of corn, cotton, or similarly spaced crops, and up to 6 rows of vegetables. Wheel treads are 40 to 68 inches.



Farmall-B will cultivate 2 standard crop rows at a time, and meets the requirements of the farm using 2 to 4 horses. It also makes an economical second tractor for the larger farm for planting, cultivating, mowing, hauling, etc.