

**FLYING
DUTCHMAN
AND
MOLINE
LOW DOWN
SPREADERS**



**MOLINE PLOW CO.
MOLINE, ILL.**

Sold by ADRIANCE, PLATT & CO., Poughkeepsie, N. Y.

SPREADERS

Flying Dutchman Endless Apron

Moline Return Apron

Moline Wagon Box Spreader

With Special Steel Wheel Truck



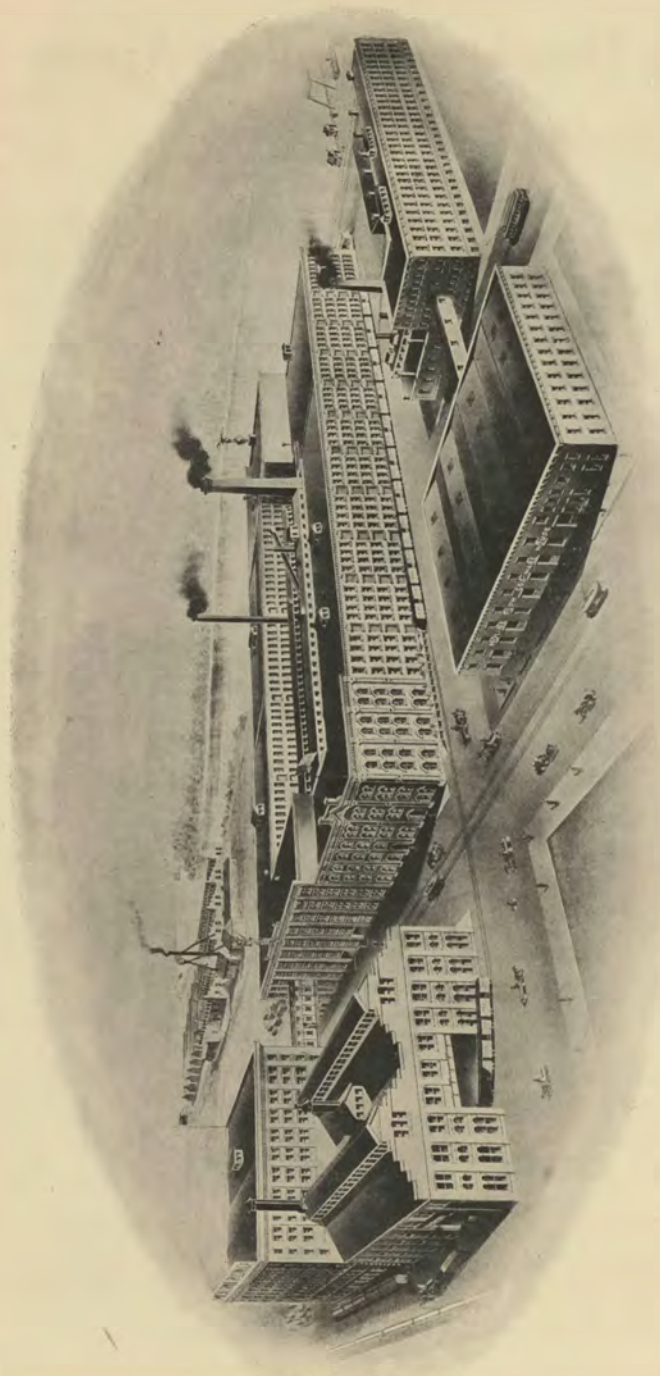
Manufactured by

MOLINE PLOW COMPANY
MANDT WAGON BRANCH

STOUGHTON, WIS.

SOLD BY HOME OFFICE AND ALL BRANCH HOUSES

MOLINE PLOW CO., MANDT WAGON BRANCH



FACTORY OF MOLINE PLOW COMPANY, MOLINE, ILLINOIS



Introductory



Presenting to the Trade these two new Spreaders—THE FLYING DUTCHMAN Endless Apron and THE MOLINE Return Apron—we invite your special attention to the low down feature of these machines, making them vastly more convenient for the user to load.

Equally important, however, is the fact that in building these Low Down Machines, we have not sacrificed any of their good working qualities. Nor have we resorted to such extreme methods as placing the rear axle behind the spreader, and the front wheels out in front of the machine.

By retaining both the front and rear axles in their proper position, we have preserved the correct proportions of the machine, and secured convenience in turning, ample driving power and light draft.

It is a well known fact that a long-coupled wagon, or a machine, wherein the load or point of draft is a great distance from the horses is much heavier in draft than a short-coupled one.

Then, too, all spreaders require a certain amount of traction, obtained through contact of the tires of the rear wheels with the ground.

In long-coupled machines, there is not sufficient weight on the rear axle to secure the proper traction, and the wheels will slip when the ground is soft. Such machines are also long and unwieldy in turning, especially inconvenient around the barn and feed lot.

The FLYING DUTCHMAN and the MOLINE SPREADERS are not built on theoretical, untried principles; no freak construction; but along lines and with all the points of merit which have been tried out and thoroughly proven during our long experience in building spreaders.

Another important feature is the fact that the Apron and Load are not carried level, but somewhat higher in front than in the rear, giving the proper incline in traveling down toward the Beater, making these machines especially light draft. This construction also affords the necessary clearance between the lower portion of the apron and the ground.

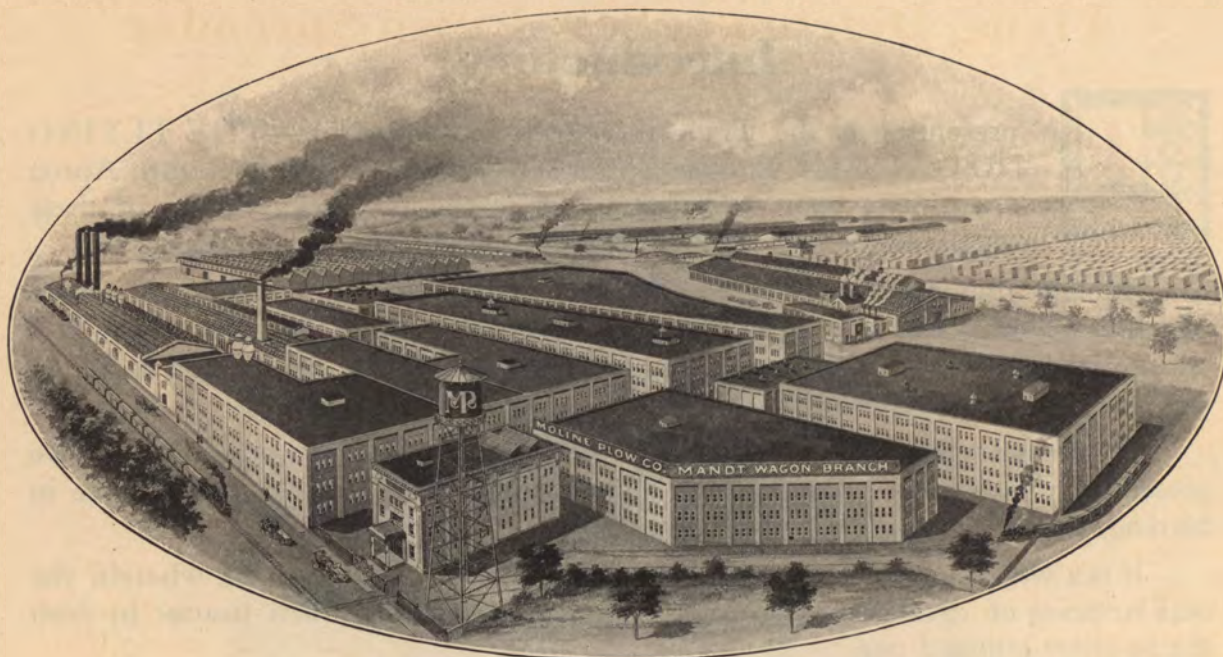
These two machines will be found simple, easily understood and operated—nothing intricate or complex. They have proven durable and highly satisfactory. They are, without doubt, "THE LIGHTEST DRAFT LOW DOWN SPREADERS EVER BUILT."

MOLINE PLOW COMPANY

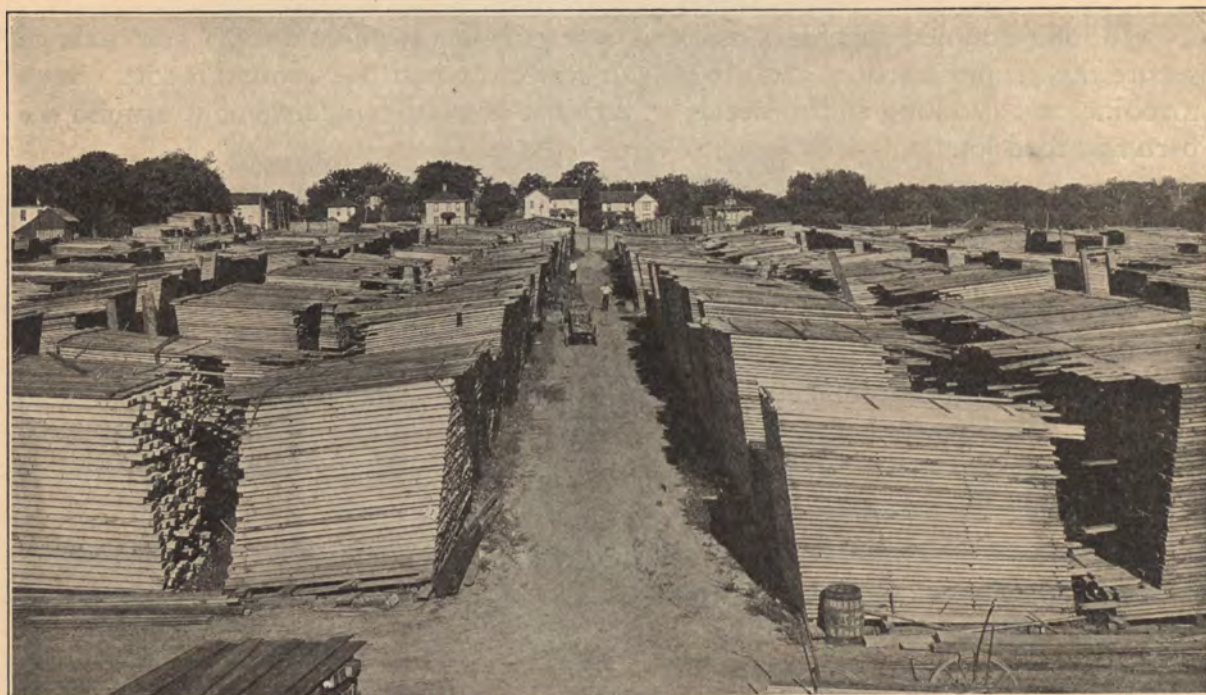
MANDT WAGON BRANCH,

Stoughton, Wisconsin.

MOLINE PLOW CO., MANDT WAGON BRANCH



OUR WAGON AND SPREADER FACTORY, STOUGHTON, WIS.



A CORNER OF OUR LUMBER YARD
The Entire Yard Covers 32 Acres



Flying Dutchman Low Down Spreader

(Endless Apron)



In general terms, the Flying Dutchman Spreader is an Endless Apron machine, of the low down type, with steel frame construction. In producing this Spreader, we have simplified the mechanism, at the same time increased the strength and durability of the machine.

All users of farm machinery know that simplicity means durability. They know also from experience the greater durability and economy of steel frame machines.

The Endless Apron feature is not a new departure in spreader construction. A careful examination of the details of the Flying Dutchman will convince you how much more simple is its construction than that of any other machine on the market.

Low Down Feature

This machine is of the low down type, the height being 42 inches from the ground to the top of the box at the rear wheel and about 4 inches higher in front.

This construction affords ample clearance—18 inches—between the apron and the ground. Certain other makes have but 12 inches.

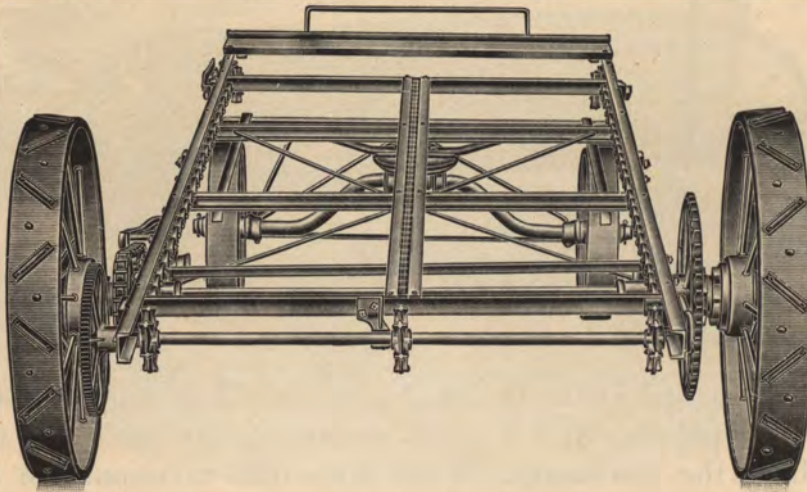
The rear wheels are of steel, 40 inches high, with flanged tires, and riveted mudlugs. The front wheels are steel, 24 inches in height, with flanged tire.

By referring to the illustration, you will note the perfect proportions of the machine. In designing a low down machine, it has not been necessary for us to place the rear axle behind the spreader and the front wheels out in front, thus making a long, unwieldy, heavy draft machine with insufficient traction. We have not sacrificed any of the working qualities of the Spreader and have secured the convenience of the low down feature, being easy to load, together with the cut-under or short turn, light draft and plenty of traction power.



General Construction

The Frame is built entirely of steel. The side sills are 3-inch, and the cross sills of 2-inch, high carbon channel steel, riveted with 7-16-inch rivets. The center sills are also of steel.



The front bolster and apron supports are heavy, thoroughly braced and connected. There is no opportunity for this frame to rot, warp, sag or get out of line. It is practically indestructible.

An especially distinct improvement is our method of attaching the apron rollers to the side sills. These rollers are supported by a malleable bracket riveted with a soft steel rivet to the side sills, allowing a free movement of the roller, with no opportunity for wearing the pin—no bolts to work loose, making a permanent, positive construction.

You will note the apron is supported by three sets of rollers—making its operation especially light draft—also prevents sagging of the slats.

On the basis of the figures given us by the steel companies, a safe load on a 3-inch channel steel frame with supports ten feet apart, we estimate 4500 pounds to be a perfectly safe load for our machines, especially in view of the fact that the frame supports are less than ten feet apart, together with two sills and the added strength of the side board to each sill.

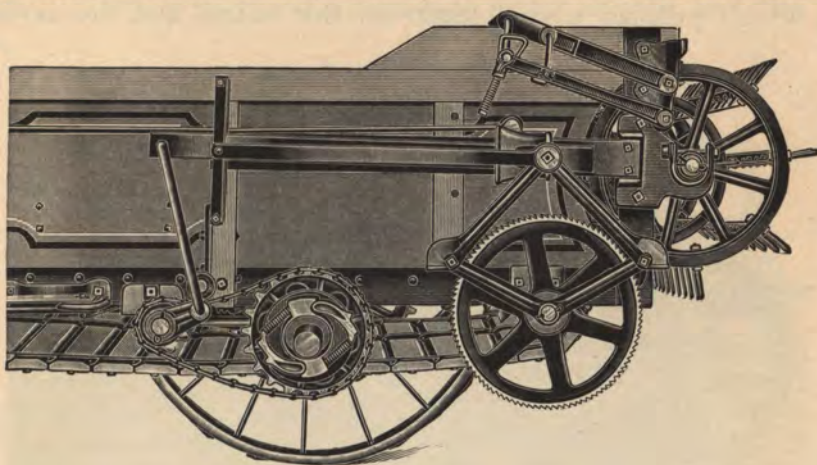
The sides are of panel construction, with long bolts extending down through the side sills, thus uniting the strength of the frame with that of the side board throughout the entire length of the machine.

The side boards are prevented from spreading outward by the use of a heavy steel brace, bolted to the side sills.



Apron Driving Mechanism

The device for driving the apron on the Flying Dutchman Spreader is much superior to that of any other now in use, owing to the fact that the power is taken directly from the axle, instead of the end of the beater, as is the case with certain other machines.



The Feed is of the Double Ratchet type, which is the only practical method of driving an endless apron machine, as it permits of a greater variation in speed than any other device. The changes of speed in the travel of the apron are produced simply by moving the fulcrum and giving a longer or shorter stroke to the connecting beam. This increases the stroke of the ratchets and moves the ratchet wheel a greater or lesser distance.

The ratchet wheel is secured to the apron shaft by means of a steel key. The entire device is positive, simple, with ample strength and works very smoothly.

The range of adjustment in the feed is very great, enabling the operator to spread any desired amount from minimum to maximum. In addition, there is a reserve speed for use for cleaning out the last remaining portion of the load; that is, by throwing the lever clear forward, below the notches in the ratchet, a speed is given the apron of over forty loads to the acre, so that in traveling but a very short distance, the last remaining portion of the load is entirely cleaned out.

Beater Driving Mechanism

An essential part of any Spreader is the device for driving the beater. Without a durable, positive device, you have an unsatisfactory machine. If you compare in detail our beater driving device with any other now in use, especially considering what these respective devices are required to do, you will realize the superiority of ours.

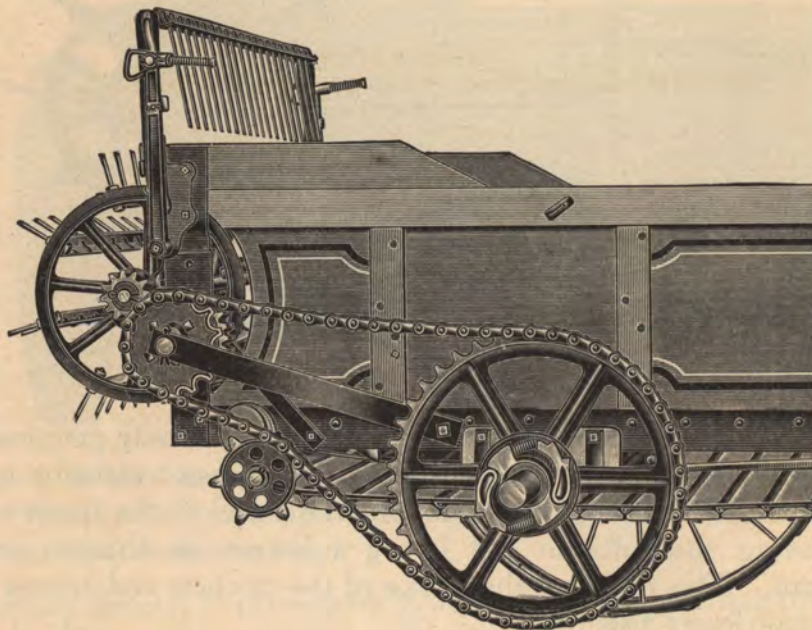
On the Flying Dutchman Spreader, the beater driving mechanism drives the Beater only—the apron being driven from the opposite end of the axle. Both

FLYING DUTCHMAN SPREADER—MOLINE PLOW CO.



beater and apron are driven direct from the axle—which is in turn driven by both of the wheels—securing a direct, positive application of the power.

On other endless apron machines, the power is taken from the axle and applied to one end of the beater, through the beater shaft, and the apron driven from the opposite end, which puts an undue strain on the beater and the device driving it.



On the Flying Dutchman, the power is taken from the large sprocket on the axle and transmitted by a heavy (steel pin) chain. This chain runs only when the spreader is in action.

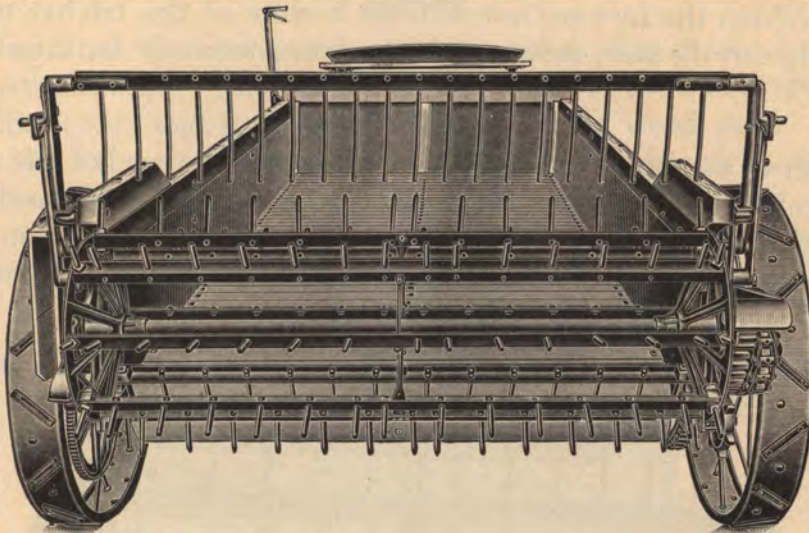
Attached to the smaller sprocket is a heavy gear which meshes in a pinion on the beater shaft. The driving gears and sprocket wheels are so proportioned as to produce the best results. The driving chain is not required to run over a small sprocket. It is not practical to run a large heavy chain over a very small sprocket, as the links cannot readily make the turn. We secure the proper speed for the beater by the difference in size between the sprockets, and gears as well.

This driving gear is placed in front of and below the beater pinion and is heavily braced down to the main axle. The action of the beater in raising and delivering the load produces a downward and backward pressure on the shaft of the beater. The driving gear is so situated as to pull upward and forward on the beater pinion, thus counterbalancing the backward and downward pressure of the beater, eliminating all possible friction—a great saving in draft.



Pulverizing Rake

This rake is entirely automatic, and requires no attention whatever from the operator. Being made entirely of steel, it is practically indestructible. The rake teeth are high carbon steel riveted to an angle steel bar, while the arms are of malleable iron. There is no wood about it to decay or split, and the teeth cannot become loose.



Its arrangement is such that when the rake is in its forward or lower position, it is locked in such a way as to prevent the manure from being loaded against the beater, thus the beater is left free to start when the machine is thrown into gear.

When the spreader is thrown into gear, the pressure of the load against the rake will automatically raise it to an upright position. When in this position, the rake is unlocked in such a way as to allow the head to act against the springs and the teeth are held down by spring pressure, thus there is no choking or clogging as large lumps or foreign articles are discharged without breaking the machine. When the load is discharged, the rake will drop back to its original position.

The raising movement is very easy, because of the fact that it is not lifted against spring pressure. Then, too, when the rake is dropped, the teeth extend further in the box than on any other rake on the market.

One Lever

The Flying Dutchman Spreader is especially adapted for use by a boy or hired help, as the entire machine is operated with but one lever. No difference how inexperienced the operator may be, he cannot manipulate this lever in such a manner as to do any harm to the machine.

FLYING DUTCHMAN SPREADER—MOLINE PLOW CO.



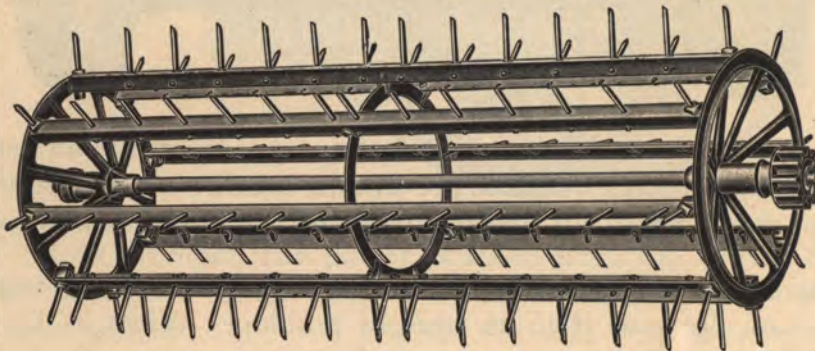
When the lever is raised up to the rear end of the ratchet, the machine is securely locked out of gear. When it is advanced forward to the first notch on the ratchet, the beater is thrown into gear, but not the apron. This gives the beater a chance to free itself before the load is fed against it. As the lever is advanced further forward, the speed of the apron is gradually increased. When the lever is placed in the forward notch, the machine will spread 28 loads per acre.

The space from the forward notch to the bottom of the ratchet is to be used only in cleaning out the last portion of the load, as previously explained.

Beater

The Beater of a spreader travels at the highest rate of speed of any moving part. It should, therefore, be as light as is consistent with the work it has to do. It should also be perfectly balanced. No additional weight or encumbrance of any sort should be loaded on one end, as that will cause it to sag, get out of balance, run heavy and prove generally unsatisfactory.

The Beater on the Flying Dutchman Spreader is constructed entirely of steel and malleable. The bars are of angle steel and the teeth are of high carbon steel,



sharp pointed and riveted to the angle bar. The teeth are arranged in a spiral manner from the center to each side with a tooth at the extreme end of each bar—no clogging on the ends.

This construction has proven to be very much superior to the ordinary wood bars, both on account of the durability and the fact that there is so much more clearance between the bars. A malleable ring is used in the center of the beater, uniting the strength of all the beater bars. The beater heads are malleable and are concave. There is no opportunity for clogging at the ends, and the beater runs free in every respect.

The beater is supported by means of cast iron yokes, which are in turn attached to a steel standard. This arrangement is much neater and stronger than the old method of attaching by means of heavy, clumsy castings.

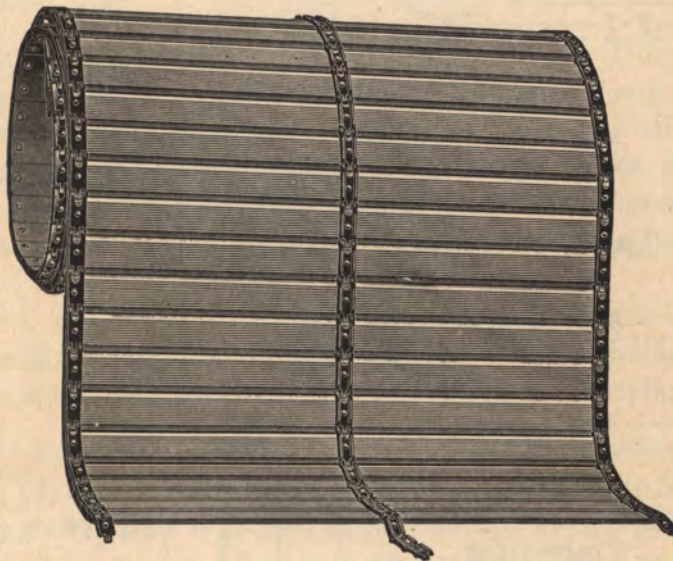


Roller Bearings

This Spreader is fully equipped with roller bearings. They are used on both ends of the beater, both ends of the main axle and on the driving gear. The benefit of roller bearings on all fast moving parts, both in reducing draft and eliminating wear, is too well known to require mention here.

Apron

The Apron is of the endless type, and provided with three chains extending through its entire length. The apron slats are bolted to the chain, instead of being riveted, making it very easy to remove and replace the wood slats. The apron is supported by three rows of rollers, which makes the delivery of the load very easy, reduces friction, and prevents sagging of the beater slats.



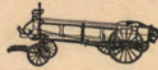
The entire machine is carried slightly higher in front than in the rear. The travel of the apron is down toward the beater which also facilitates the delivery of the load.

To prevent overfeeding when the machine is driven up hill, a friction brake is provided to retard the speed of the apron. It is only necessary to use this brake on hilly ground. Same is furnished as an extra, not being part of the regular equipment.

Draft

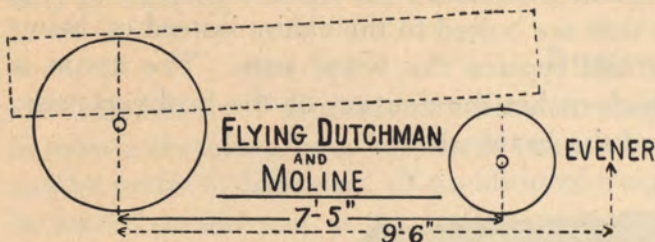
An especially important item in any spreader is that of draft. It is a well known fact that the further you hitch from the load on a plow or wagon, the heavier the draft. Now in a spreader, the power is taken from the rear axle and

FLYING DUTCHMAN SPREADER—MOLINE PLOW CO.

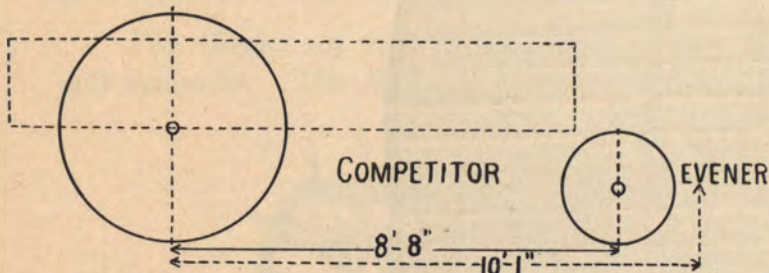


transmitted to the beater and apron at the extreme rear end of the machine. The hitch then should not only be close to the front end of the machine, but also as close as possible to the rear axle.

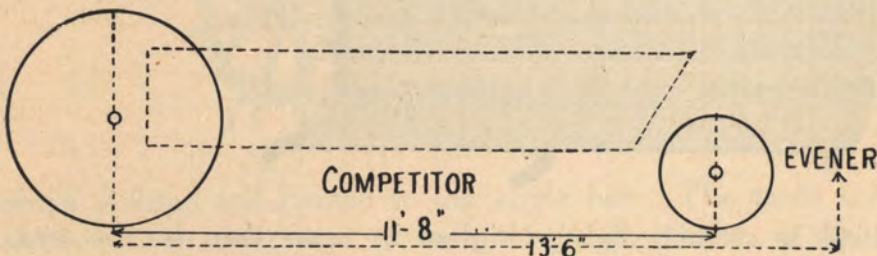
A brief study of the following diagrams, showing the distance from the rear axle to the evener and also the length of the wheel base or distance between the front and rear wheels, will prove highly instructive, especially in view of the claims made by certain other manufacturers for light draft.



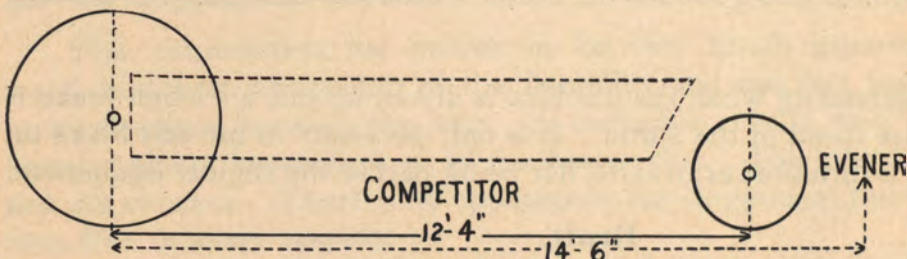
Both wheels under the load—short wheel base—light draft—short turn—apron travels down to beater—plenty of traction power to handle the machine in any field.



Front wheels out in front—heavier draft—incorrect proportion—all weight on rear axle.



Rear axle behind load and front out in front. Long wheel base—heavy draft—insufficient traction.



Extremely long—unwieldy—extreme distance from rear axle to evener—heavy draft—insufficient traction power—apron travels level—runs hard.

You will note that the Flying Dutchman and Moline Spreaders have the shortest wheel base of any of the machines. This means convenience in turning



and a sufficient amount of weight on the rear axle to secure the proper traction power—wheels never slide and choke the machine. You will also observe how much closer the team is hitched to the rear axle on these machines than on any of the three other types shown.

Ample power to drive the "Flying Dutchman" spreader under any condition is secured from wheels having the ordinary mud lugs riveted flat to the tires; that is, the height of the lugs is but the thickness of the plate. On the other hand, certain of the machines shown herewith have proven to either require much more power to drive them or else the rear wheels do not carry sufficient weight to prevent them from slipping, and the builders have found it necessary to use a much deeper mud lug.

Our construction again proves our uncontested claim of the "Lightest draft low down spreaders ever built."

We might further add that we have seen a Flying Dutchman Spreader in the field with the other types shown herewith, when three horses would operate the Flying Dutchman machine, while it required four on the other machines of the same capacity, under the same conditions and spreading the same thickness. In considering then the investment of a Flying Dutchman Spreader as against the investment of the others, there is just the price of a horse between them.

Operation

The machine is thrown in and out of gear by shifting the large sprocket wheel on the axle—thus when the machine is not in action the driving chain stands still.

An especially important feature is that of throwing the machine in and out of gear. When the Flying Dutchman is thrown into gear, it is locked in that position, and when thrown out of gear is locked equally secure in that position. There is no possible danger of the machine flying into gear when driving to or from the field, or flying out of gear when at work. Many users of the ordinary type of spreaders will appreciate this feature.

As previously stated, the entire machine is operated by one lever, and no movement of it, even when in motion, can work harm to the machine.

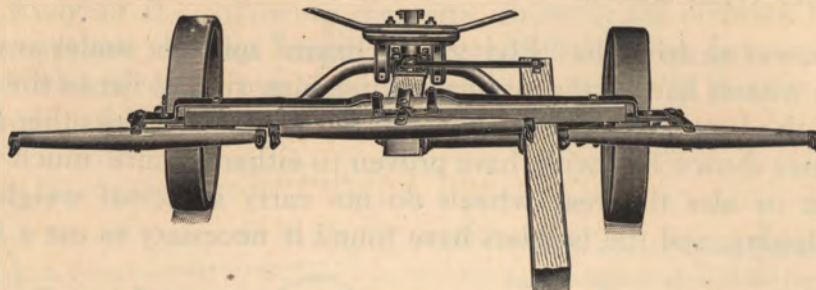
Another important point is that all parts which are subject to wear are exposed to the view of the operator. Not only is he given ample opportunity to lubricate these parts, but also to observe their action. There is no possibility of any hidden part cutting out and delaying the use of the machine.

The Flying Dutchman Spreader is simple, convenient, "trouble proof," easy to load and wherever used has proven highly satisfactory.



Hitch

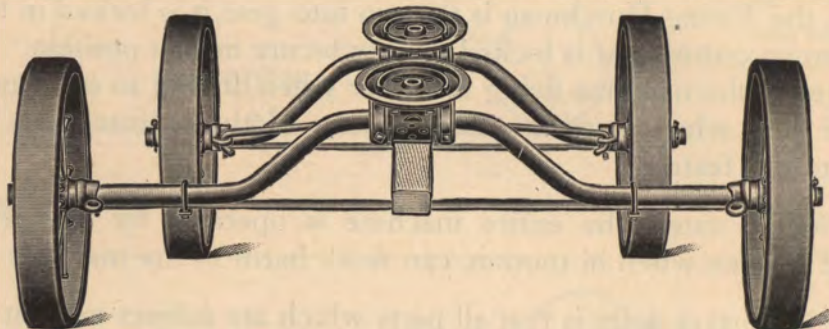
The medium size or the No. 11 Flying Dutchman Spreader (same being the size more generally sold), is equipped with three-horse hitch, and a set over pole.



The set over pole arrangement has proven to be the best method of hitching three horses to a spreader. The horses are thus placed immediately in front of the machine, and there is no possibility of side draft. The three-horse evener is substantially made, the wood parts being hickory. The singletree hooks are the same as used on our wagons. The draft is equalized between the horses, and each horse has plenty of room to work. There is no crowding against the pole. The rear end of the long pole is connected directly to the main axle and is also substantially braced to the stub pole. Should the operator desire to use but two horses, the long pole can be placed in the center.

Wheels

We use the well known Bettendorf steel wheels with flanged rims and spokes riveted into the hub, and also riveted into the tire. The tire is welded and is just as strong at that point as at any portion of the rim. Properly constructed



steel wheels have proven the most satisfactory for use on a spreader. The weather does not affect them, and there is no difficulty with the tires becoming loose and falling off.

The front wheels are provided with a removable boxing, and it is not necessary to purchase an entire wheel, should the boxing become worn.

FLYING DUTCHMAN SPREADER—MOLINE PLOW CO.



You will note from illustration on opposite page the comparative width of our Wide and Narrow Track front axles.

Some localities prefer the machines built with the front wheels to track with the rear ones; others prefer a narrow track front axle and the wheels set closer together, so that they do not track.

We can furnish either style as desired.

Sizes and Equipment

The Flying Dutchman Spreader is built in three sizes, as follows:

	BODY			Weight	Equipment
	Width	Length	Depth		
Flying Dutchman No. 10	42 inches	9 feet 10½ inches	15½ inches	1900 pounds	2-horse
Flying Dutchman No. 11	54 inches	9 feet 10½ inches	15½ inches	2050 pounds	3-horse
Flying Dutchman No. 12	54 inches	11 feet 10½ inches	15½ inches	2150 pounds	4-horse

Uses One—Buys Another

ISLAND FARM

H. E. Slack, Proprietor

Carlisle, Iowa, Sept. 10, 1912.

Moline Plow Co., Mandt Wagon Branch
Stoughton, Wisconsin

Dear Sirs:

The Flying Dutchman spreader recommended by you proved so entirely satisfactory, that I ordered a second machine.

These spreaders have been running steadily for the past six weeks, and give entire satisfaction.

They handle with apparent ease a class of manure that we have been unable to handle satisfactorily with any other spreaders.

Respectfully, (Signed) H. E. SLACK.

Minnesota Moline Plow Co.
Minneapolis, Minn.

Barnesville, Minn., Oct. 18, 1912.

Gentlemen:

Your new "Flying Dutchman Low Down" manure spreader is a fine built machine and I think has the right construction to be easy to load and still retain the full power to do the spreading. It is my firm conviction that it is one of the best spreaders now on the market.

Yours very truly,

A. HAAGENSON.

FLYING DUTCHMAN SPREADER—MOLINE PLOW CO.

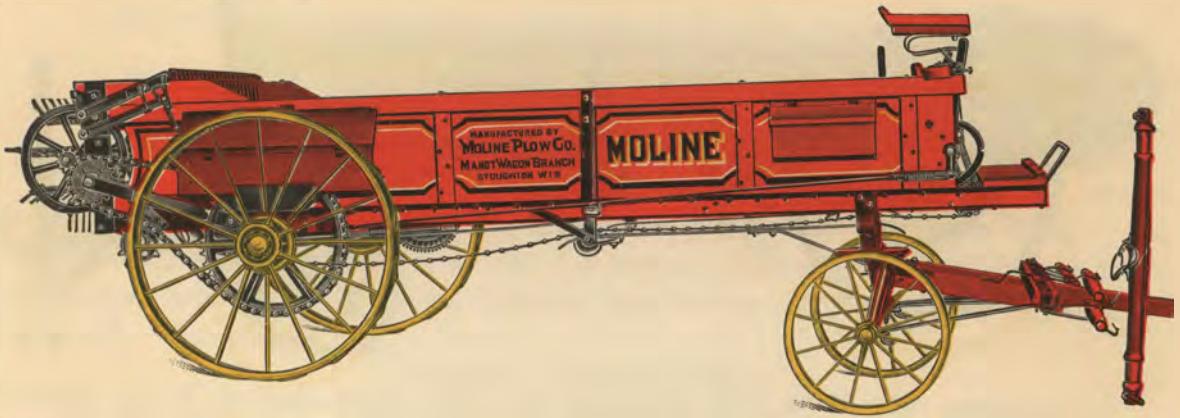


**The Flying Dutchman Spreader
(Endless Apron)**



The FLYING DUTCHMAN and MOLINE are

THE MOLINE SPREADER—MOLINE PLOW CO.



**The Moline Spreader
(Return Apron)**

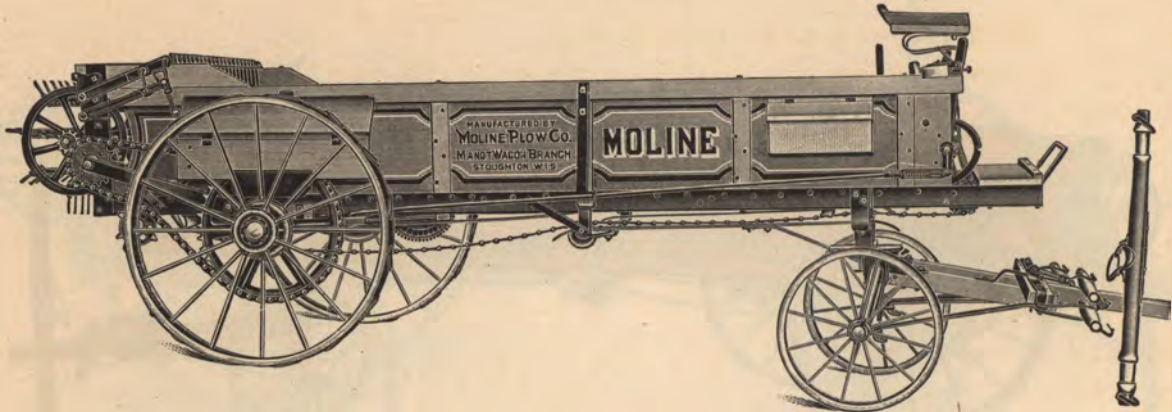


Easy to Load—The Box is Only Waist High



The Moline Spreader

(Return Apron)



In building the MOLINE Spreader, we have embodied in it five distinct improvements over all other machines of similar type.

- First:** The Low Down feature without resorting to freakish construction.
- Second:** A Return Apron Spreader with a dependable automatic device for returning the apron.
- Third:** A positive movement in throwing the Machine in and out of gear.
- Fourth:** Fewer moving parts; hence less opportunity for wear.
- Fifth:** Light draft.

A careful examination of the detail construction as shown in the following pages will prove conclusively our claim of "The Lightest Draft Low Down Spreaders Ever Built."

Low Down Feature

This machine is of the Low Down type, the height being 42 inches from the ground to the top of the box at the rear wheel and about 4 inches higher in front.

The rear wheels are of steel, 40 inches high, with steel flanged tire, and riveted mudlugs. The front wheels are steel 24 inches in height with flanged tire.

By referring to the illustration, you will note the perfect proportion of the machine. In building the Low Down machine, it has not been necessary for us to place the rear axle behind the spreader and the front wheels out in front, thus making a long, unwieldy, heavy draft machine with insufficient traction. We have not sacrificed any of the working qualities of the machine and have secured the convenience of the Low Down feature, together with the cut under or short turn, light draft and ease in loading.



As previously stated, the height of the machine from the ground to the top of the box at the rear axle is 42 inches, and about four inches higher in front. By this construction, we accomplish three things:

- First:** The cut under or short turn.
- Second:** Affords sufficient clearance under the machine to pass over obstructions and when driving over manure piles.
- Third:** The Apron being carried slightly higher in front, the load travels downward to the Beater, which makes the delivery easier and the draft lighter.

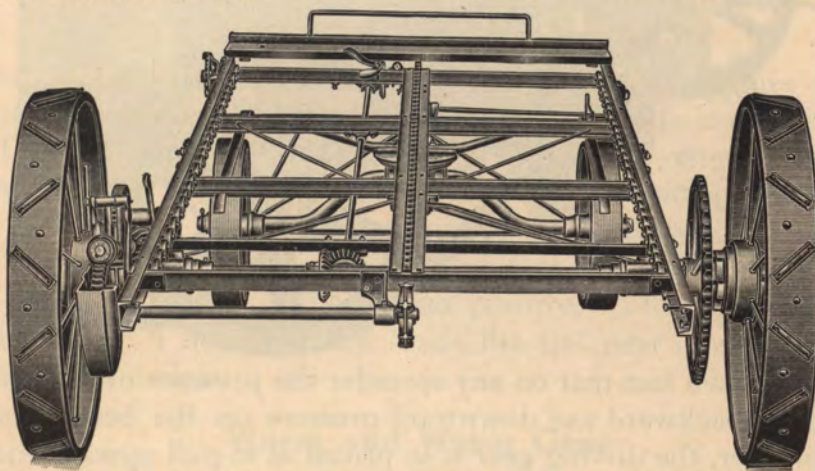
The drive wheels are not quite as high as the top of the body, and so not in the way when loading the machine. The Pulverizing Rake drops down out of the way and the seat turns forward, so that the entire side of the machine is free from obstructions when loading. The distance from the lowest portion of the apron to the ground is 18 inches.

General Construction

The Frame is built entirely of steel, the side sills being of 3-inch and the cross sills of 2-inch, high carbon channel steel, riveted with 7-16-inch rivets. The center sills are also of steel.

The front bolster and apron supports are strong and heavy, being also thoroughly braced.

There is no opportunity for this frame to rot, warp, sag or get out of line. It is practically indestructible.



By examining the above illustration you will note a distinct improvement in the method of attaching the apron rollers to the side sills. These rollers are attached with a malleable bracket and are riveted to the frame with a soft steel rivet. This allows a free movement of the roller, with no opportunity for wearing the pin, no bolts to work loose, making a permanent, positive construction.

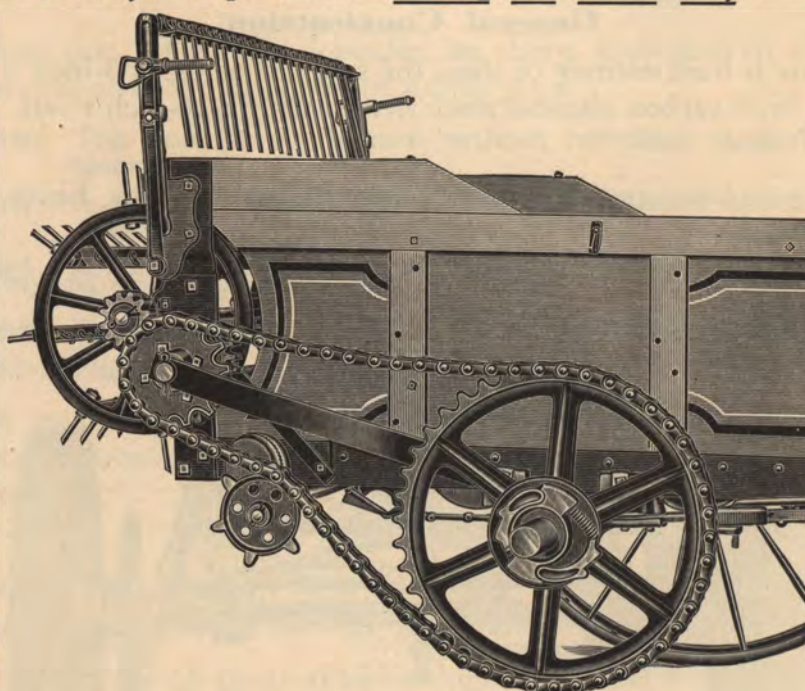


On the basis of the figures given us by the steel companies, a safe load on a 3-inch channel steel frame with supports ten feet apart, we estimate 4500 pounds being a perfectly safe load for our machines, especially in view of the fact that the frame supports are less than ten feet apart, together with two sills and the added strength of the side-board to each sill.

The sides are of panel construction with long bolts extending down through the side sills; thus uniting the frame with the side board throughout the entire length of the machine.

Beater Driving Mechanism

A very important part of any spreader is the device for driving the Beater. Without a perfect mechanism you cannot have a durable machine. You will note by reference to the following illustration, that we use a large sprocket wheel on the main axle with a heavy steel pin chain—driving the Beater only.



It is a well known fact that on any spreader the pressure of the load against the Beater produces a backward and downward pressure on the beater shaft. On the MOLINE Spreader, the driving gear is so placed as to pull upward and forward on the beater pinion; thus counterbalancing this pressure and eliminating all friction.

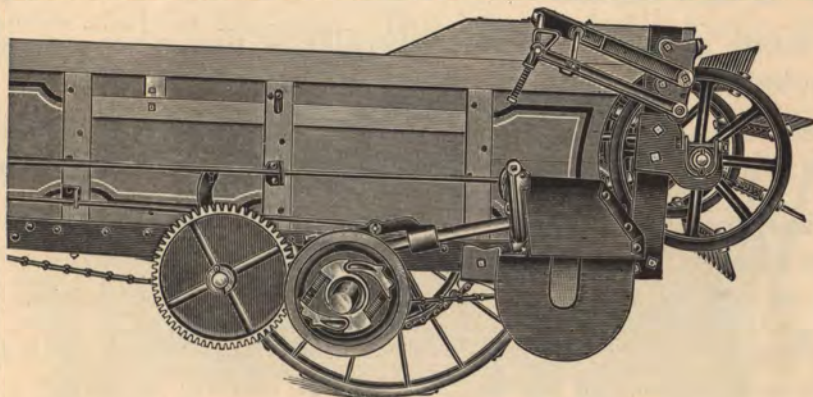
Now, in increasing the speed of the Beater from that of the axle we do not run this heavy chain over an especially small sprocket on the beater shaft. A portion of this increased speed is secured by the small gears mentioned above. This also gives a reverse motion to the beater and relieves the beater shaft of any strain.



The spreader is thrown in and out of gear by shifting the large sprocket wheel on the axle; thus when the spreader is out of gear the drive chain is idle. Many builders of spreaders have failed to provide a satisfactory device for throwing the machine in and out of gear. On the Moline this arrangement is positive and the machine is securely held in or out of gear as desired. This machine will never fly in or out of gear except as automatically tripped or shifted by the operator.

Apron Driving Mechanism

The power is taken directly from the left end of the axle to drive the apron. Now do not understand that one wheel drives the apron and the other the Beater—this is not the case—both wheels drive the axle. From one end of the axle by means of the large sprocket and chain, the Beater is driven, and from the other, the apron, as described herewith.



The Disc Gear is placed in front of the main axle and meshes with the spur gear on the shaft. To change the speed, the shaft is thrown inward away from the disc gear. The spur pinion is then shifted on the shaft to engage any one of the four different rows of cogs on the disc gear, thus producing the desired speed. The shaft is then thrown outward into position. The flange on the pinion fits in between the rows of cogs and positively prevents the pinion slipping from one row to another. Thus the device is simple and positive. The cog wheel on the main axle is provided with a flange, which holds the disc gear in correct position with relation to the speed pinion.

Worm and Worm Gear

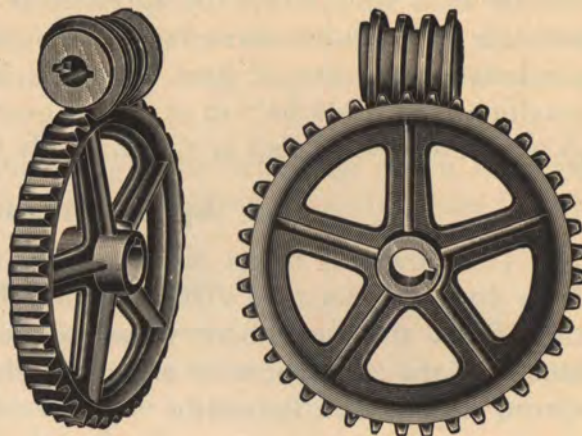
We use the worm and worm gear style of transmission, which admits of four distinct changes of speed in the travel of the apron, and produces a steady, positive movement.

We wish to call your especial attention to the construction of the worm and worm gear.



You will note the concave shape of the outer edge of the teeth on the worm gear—conforming to the shape of the worm.

The worm is smaller in the middle than at either end, thus conforming to the shape of the worm gear. This arrangement permits a larger contact surface between the two parts than any other device on the market. There are three of the spiral parts of the worm in full contact with three teeth of the gear at all times, and a portion of the time there are four in such contact.



Both the worm and worm gear are reversible, so that when one side becomes worn they can be reversed, doubling the life of the gear.

An oil reservoir is provided which should be filled with oil. To this is fitted a cover which is dirt and dust proof, thus keeping parts clean and well lubricated.

The worm is raised and lowered by means of a positive device which firmly locks the parts together when at work. This lock is also adjustable, so that all wear may be taken up and the worm and worm gear kept in proper mesh.

An additional advantage of this device for driving the apron, is the ease with which its motion is reversed to return the apron to loading position.

Apron



The apron is of the Return type and is built upon three heavy chains running on three rows of rollers. This construction makes the delivery of the load very easy.

The slats are bolted—not riveted—to the chains.

The Endgate is braced with three upright channel iron cleats and is slightly curved.

Apron Returning Device

The Moline Spreader is provided with the only strictly automatic device on the market for returning the apron. It is so arranged that when the load is discharged, it is automatically thrown into gear and the apron returned to proper position for

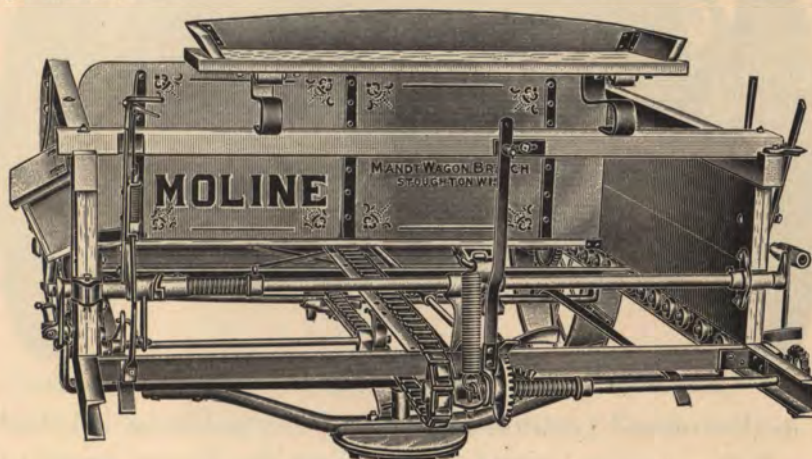


loading, and is then automatically thrown out of gear. It requires no attention whatever on the part of the operator.

A point urged in connection with Endless Apron Machines, is the fact that the machine is thrown in and out of gear by a hand lever, thus insuring a more positive movement. This feature cannot be used on a return apron machine for the reason that the operator might forget to throw the machine out of gear at the proper time. It is necessary therefore to provide an automatic device to throw at least a portion of the machine out of gear without attention from the operator.

Divided Crank Shaft

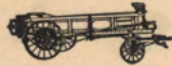
On the front end of the machine we do not depend upon spring pressure to throw the beater driving mechanism in and out of gear, but use what is known as a "divided crank shaft." It is so arranged that one movement of the main lever throws the entire machine into gear. This is an exclusive feature found only on the Moline Spreader.



When the load is discharged, the apron trips the device and the front shaft is divided by means of a cam, which disengages the ratchets and allows the shaft to turn within the sleeve which supports the main lever. The main lever remains in an upright position and the spring only disengages the worm from the worm gear, at the same time throws the apron returning device into gear.

The main lever does not fly forward by means of a spring as in all former return apron machines, but remains in its upright position to be thrown forward by the operator at leisure, thus securing a positive movement to throw the Beater Driving Mechanism out of gear.

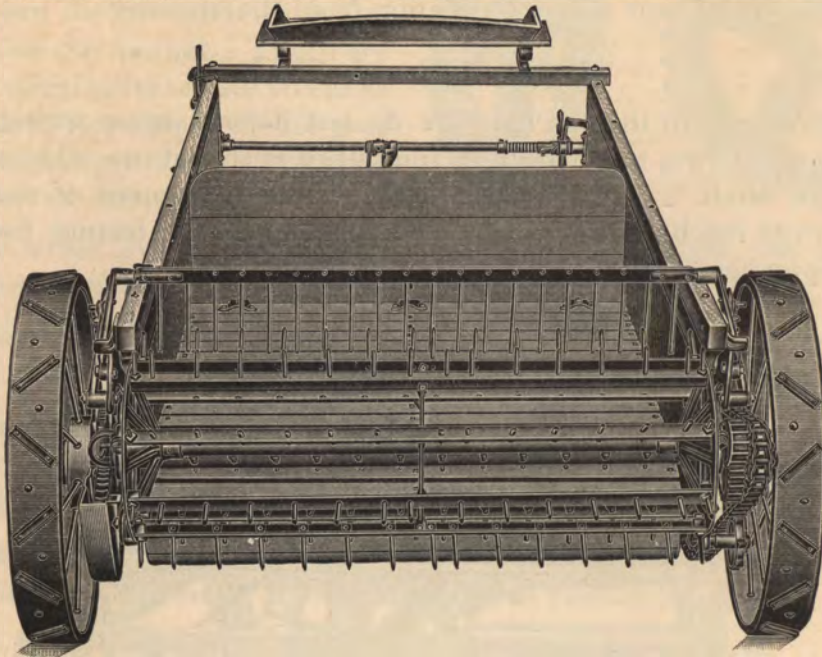
When lever is thrown forward and before it reaches lower notch, the divided crank shaft re-connects and is then in position to throw the machine into gear with one operation. When lever is raised the entire machine is again thrown into gear.



Pulverizing Rake

In construction, this Rake is practically indestructible. It consists of an angle steel rake bar into which are riveted high carbon steel teeth. The rake arms are malleable iron.

Its action is entirely automatic, requiring no attention whatever on the part of the operator.



When in its downward position for loading the machine, it is locked in such a way as to prevent the manure being loaded against the beater, leaving the latter free to start when the machine is thrown into gear.

When the spreader is thrown into gear, the pressure of the load automatically lifts the rake, and raises it to an upright position. When in this position, the rake head is unlocked and the teeth are allowed to act against the springs. Their action assists in pulverizing the manure, also permits the discharge of large lumps or foreign articles.

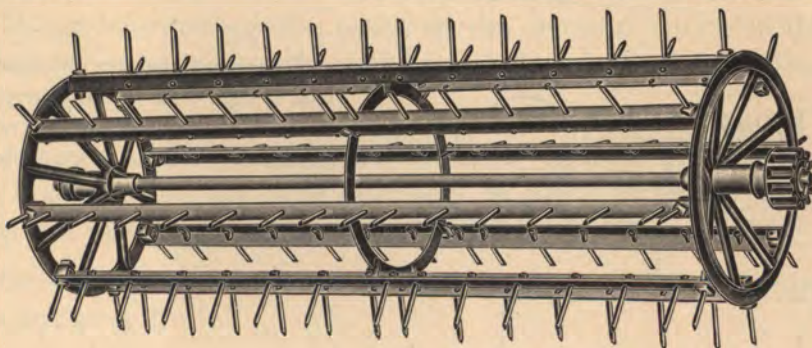
When the machine is emptied, the rake drops back to its original position.

The raising motion is very easy because of the fact that it is not lifted against spring pressure. It also drops further down into the box than any other rake of this type.



Beater

But two materials, steel and malleable, are used in the construction of the Beater on the Moline Spreader. The Bars are of angle steel into which are riveted the sharp pointed high carbon steel teeth. The Beater heads are malleable iron.



A malleable ring in the center unites the strength of all the Beater bars. It is not, however, attached to the Beater shaft, so there is no danger of springing the shaft. There is no chance for clogging at the ends, as the heads are concave and each bar has a tooth at the extreme end on each side. There are no parts to rub against the Beater and increase the draft.

This Beater Runs Free in Every Respect

for it is perfectly balanced and is entirely open and free from encumbrances of any sort.

The supports are cast iron yokes attached to a steel standard. This construction is much superior to the old method of using a heavy, clumsy casting.

Roller Bearings

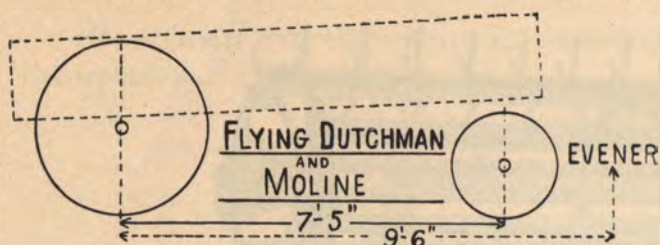
The Moline is fully equipped with roller bearings. They are used on both ends of the Beater, both ends of the main axle and on the driving gear. It has been clearly demonstrated that roller bearings assist materially in reducing the draft and eliminating wear on all fast moving parts.

Draft

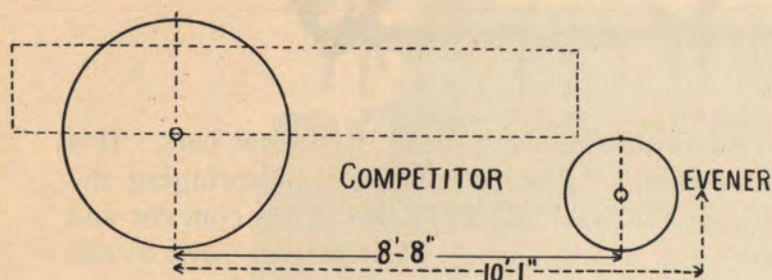
An especially important item in any spreader is that of draft. It is a well known fact that the further you hitch from the load on a plow or wagon, the heavier the draft. Now in a spreader, the power is taken from the rear axle and transmitted to the beater and apron at the extreme end of the machine. The hitch then should not only be close to the front end of the machine, but also as close as possible to the rear axle.



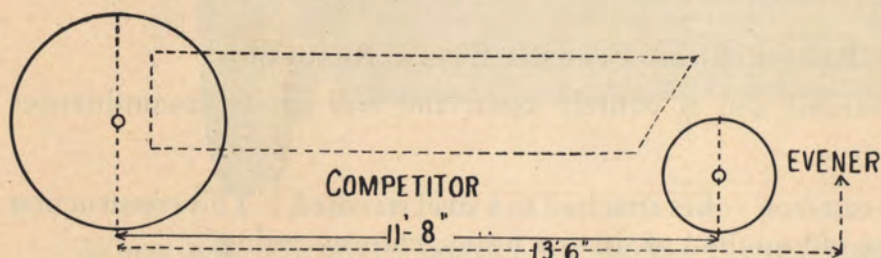
A brief study of the following diagrams, showing the distance from the rear axle to the evener and also the length of the wheel base or distance between the front and rear wheels, will prove highly instructive, especially in view of the claims made by certain other manufacturers for light draft.



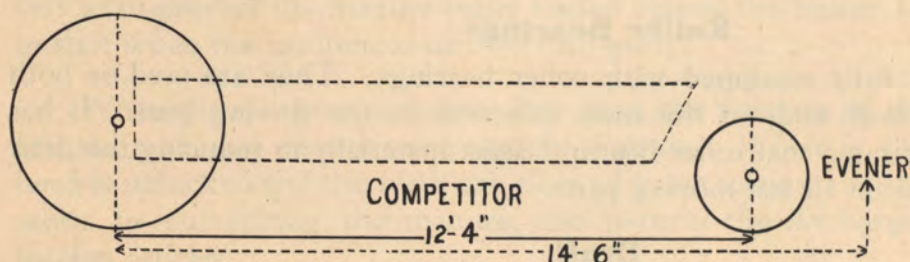
Both wheels under the load—short wheel base—light draft—short turn—apron travels down to beater—plenty of traction power to handle the machine in any field.



Front wheels out in front—heavier draft—incorrect proportion—all weight on rear axle.



Rear axle behind load and front out in front. Long wheel base—heavy draft—insufficient traction.



Extremely long—unwieldy—extreme distance from rear axle to evener—heavy draft—insufficient traction power—apron travels level—runs hard.

From the above you will note the Moline and Flying Dutchman Spreaders have the shortest wheel base of any of the machines.

This means, in addition to convenience in turning, a sufficient amount of weight on the rear axle to secure the proper traction power to operate the Spreader under any and all conditions.



The wheels of the Moline Spreader will not slip and permit the machine to choke down.

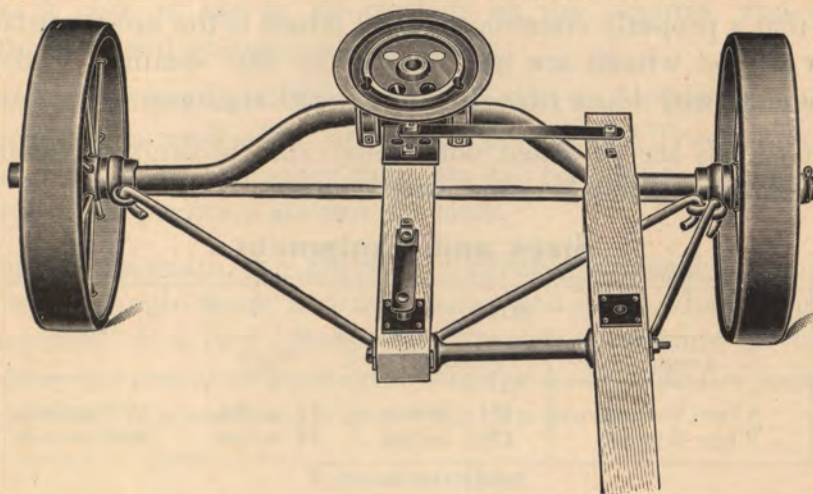
You will also observe how much closer to the rear axle the team is hitched than on the other types of machines. This enables three horses on a Moline Spreader to do the work which will require four horses on the long coupled machines. When comparing the price of the Moline Spreader with that of the other types, the price of a horse should be added to the others, as it is required as a part of the investment.

Ample power to drive the Moline Spreader is secured from the ordinary flat riveted mud lugs. It has not been necessary on this machine to use a much deeper mud lug as is the case on the other machines.

These facts again prove our uncontested claim of the "Lightest Draft Low Down Spreaders ever Built."

Three-Horse Hitch

The No. 7 Moline is equipped with a Three-Horse Hitch. This is accomplished by using an off-set pole and a plain substantial three-horse equalizer. The latter is of hickory with singletree hooks of the same pattern as used on our wagons.



The off-set pole arrangement has proven the best method of hitching three horses to a spreader. The horses are thus placed immediately in front of the machine and side draft is entirely eliminated, and each horse has plenty of room to work. There is no crowding against the pole.

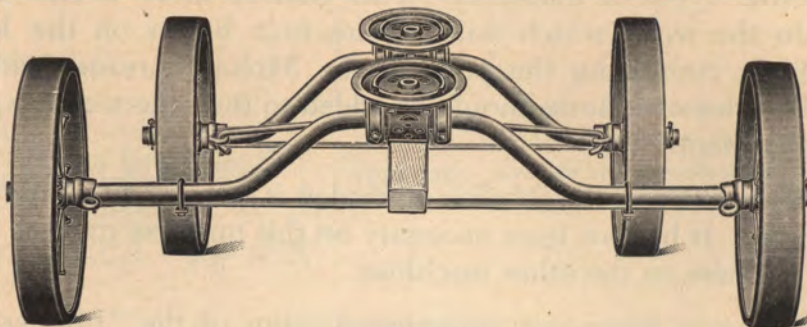
The rear end of the long pole is connected directly to the main axle in such a way as to make it very substantial. Should the operator desire to use two horses, the long pole can be placed in the center.

THE MOLINE SPREADER—MOLINE PLOW CO.



Wide and Narrow Front Axle

As shown herewith, the Moline is furnished either with Narrow or Wide track front axle as desired. When the Wide track axle is used, the front wheels track



with the rear ones, but on the Narrow track axle, the front wheels run somewhat closer together than the rear ones.

Wheels

We use the Bettendorf Steel Wheels, with flanged tires. The rim is welded where it is joined, and is just as strong at that point as at any other portion.

The Spokes are riveted into the hub, and also into the tire. Our experience has shown us that a properly constructed steel wheel is the most satisfactory for use on a Spreader. Steel wheels are not affected by the weather, and there is no trouble experienced with loose tires or spokes working loose in the hub.

The front wheels are provided with removable boxings which are easily and cheaply replaced, should they become worn.

Sizes and Equipment

	BODY			Weight	Hitch
	Length	Depth	Width		
Moline No. 6	9 feet 9 inches	15½ inches	42 inches	1800 pounds	2-horse
Moline No. 7	9 feet 9 inches	15½ inches	54 inches	2000 pounds	3-horse

Minnesota Moline Plow Co.
Minneapolis, Minn.

Rochester, Minn., Oct. 18, 1912.

Gentlemen:

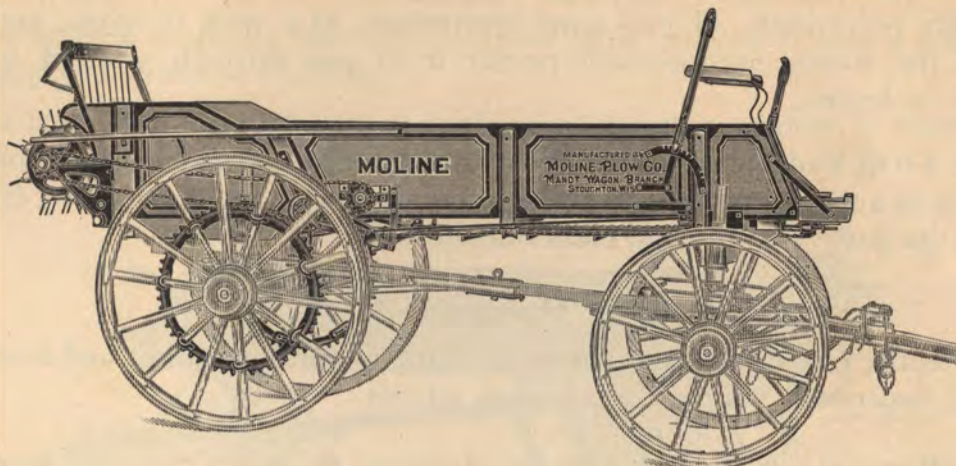
We have one of your Moline Spreaders on our sample floor, and after comparing it with other spreaders will say that you certainly have a splendid machine. Have sold the National Spreader for years with splendid satisfaction but believe the Moline has that beat in several ways.

We shall have no fear in placing this machine in the hands of our customers, on its own merits.

Yours truly, L. B. & G. P. JOSSELYN.



The Moline Wagon Box Spreader



There is, in many localities, a demand for a Wagon Box Spreader which can be attached to any Farm Gear. Such a machine is, of course, adapted to small farms and for the use of gardeners.

The Moline Wagon Box Spreader, illustrated above, has been on the market several years; is now in use in all sections of the country, and has proven a satisfactory, practical and economical machine.

It is furnished either as a Box Spreader only, to be put on any gear, or as a complete machine equipped with our Special Steel Wheel Truck. When furnished as a complete machine, the Spreader itself can still be removed and the Steel Wheel Truck used for other purposes around the farm.

On account of its width, this Spreader is suitable for top dressing growing corn. It can be driven through doors and into barns and sheds which cannot be entered by larger machines. It is very convenient to handle on account of its size and can be used for many purposes, without removing the body from the wagon. Being of unusually light draft, it is easily operated with two horses.

Construction

The Moline is an especially well built machine; the sides are made of first class material, well braced, and have no inside cleats to hold back the manure. The Bottom is also well made, and is reinforced with heavy oak cleats.

The Beater is large, equipped with concave heads, which prevent choking.

The Beater is also located to the rear of and a little below the bottom, thus lifting the manure directly upward and avoiding crowding it forward against the load, making the Moline Wagon Box Spreader very light running.

MOLINE BOX SPREADER—MOLINE PLOW CO.



The Rake is placed directly over the Beater, and is so arranged and controlled by an adjustable spring that it will hold large chunks of manure until they are thoroughly pulverized. Should some obstruction, as a stick or stone, get in the machine, the spring pressure will permit it to pass through without breaking the rake or beater.

The Front Endgate is inclined toward the rear, so that the front portion of the load is left in a natural position to ride without support—the top does not fall down and thus the box is permitted to clean out entirely.

Operation

The entire machine is simple, with no complicated mechanism, and is especially powerful because it is driven from both wheels.

The Beater is driven direct with one chain and the Feed is driven direct from the main sprocket by the other. This is a vast improvement over other machines, which usually take the power from the beater to drive the apron.

The machine is thrown in and out of gear by a 36-inch lever, which operates the idlers or chain tighteners that guide and force the chains directly on the sprocket.

With this device, the leverage is so powerful that it is impossible for the drive chains to slip, and the machine works as perfectly on a hillside as on level ground.

When thrown out of gear, the lever raises the drive chains so high that they cannot come in contact with the sprocket, thus avoiding trouble and breakage.

Feed

Being driven direct from the main sprocket, the feed is positive and perfect. It can be regulated while the machine is in motion, and may be adjusted to spread from one to twenty-one loads per acre.

The load is carried back to the beater by the chain raddle, which is constructed of two chains, one on each side, and steel bars or slats. This device is virtually a force feed and highly satisfactory.

Dimensions of Spreader Box as built for narrow track gears:

Width inside	.	.	.	36 inches
Length inside	.	.	.	117 inches
Height of sides	.	.	.	15¼ inches

For wide track wagons, width of box is increased to fit bolsters.

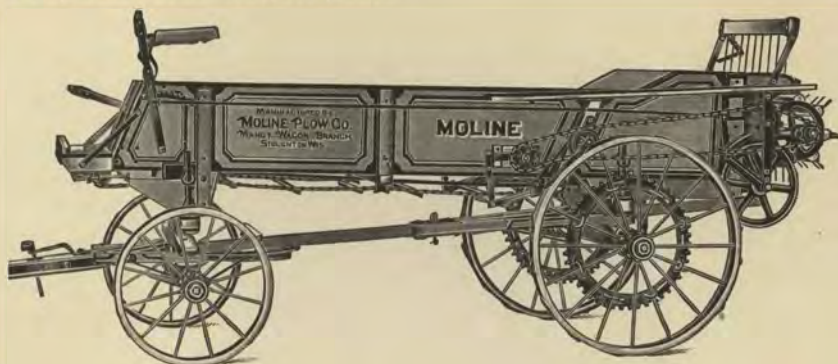
MOLINE BOX SPREADER—MOLINE PLOW CO.



Moline Box Spreader with Special Steel Wheel Truck

The Moline as shown herewith complete with truck, is at once a convenient, economical and attractive machine.

The Steel Wheel Truck especially designed for this purpose, is made up on the lines of a regular farm wagon gear.



The Special Steel Wheel Truck is built in one size only, $3\frac{1}{4}$ x 9-inch cast skeins; bolsters with wood stakes; front gear equipped with steel hounds and regular drop pole.

The wheels, however, have flanged tires. The front wheels are 28 inches high, $3\frac{1}{4}$ inches face. The rear, 40 inches high, 4 inches face, and are equipped with lugs.

Weight of regular Narrow Track Box Spreader 760 lbs.

The truck weighs 540 pounds, making the weight of the two combined 1,300 pounds.

Missouri Moline Plow Co.
St. Louis, Mo.

Union City, Tenn., Oct. 1, 1912.

Gentlemen:

We have operated and sold one of your Moline Wagon Box Spreaders and we found its work so very satisfactory we feel that we want you to know how much we think of the spreader.

Since seeing its work under a test in different conditions, we regard your "Moline" the most practical spreader we have seen for the average farmer. We put the spreader to a test which satisfied us that the draft is very light as compared with other machines. We operated it with two mules on a field that was just plowed for seeding wheat—putting a nice top dressing of manure on same. Then we put it to a test by spreading heavy, damp, half rotted straw—a thing other larger and high priced machines usually have trouble to handle.

In fact, we have been selling other spreaders that cost us more money than we can retail the "Moline" for and we like this better and regard it a better machine for the territory and our trade than the expensive machines. We expect a nice business on your spreader and since seeing the class of work it will perform we do not hesitate to ask our customers to buy it in preference to any machine we have ever sold.

Yours truly,

W. S. JACKSON SON & CO.

