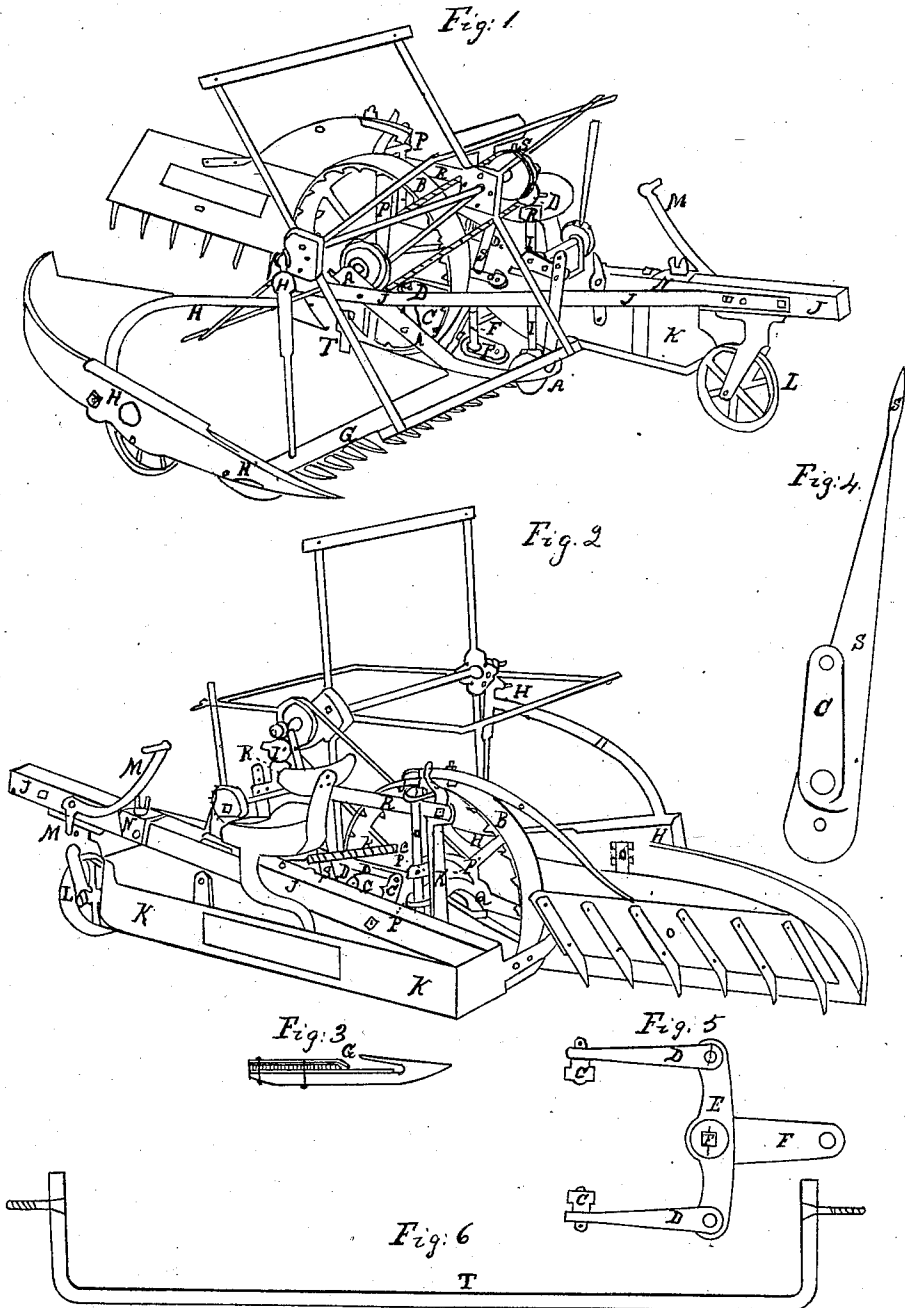


J. D. CUSTER.
COMBINED REAPING AND MOWING MACHINE.

No. 25,561.

Patented Sept. 27, 1859.



Witnesses.

L. E. Corson
B. Manlove

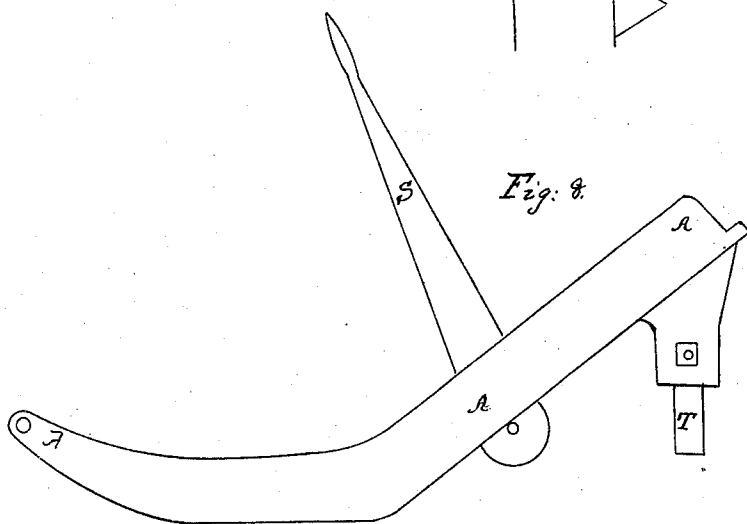
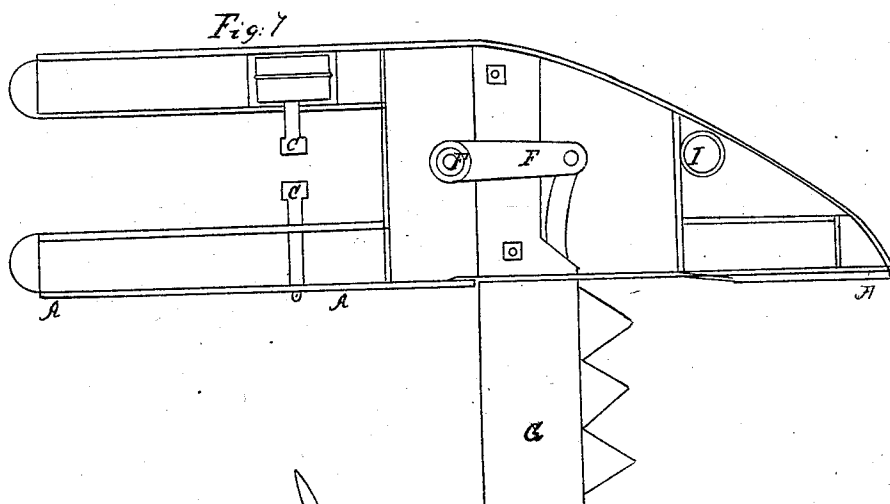
Inventor.

J. D. Custer

J. D. CUSTER.
COMBINED REAPING AND MOWING MACHINE.

No. 25,561.

Patented Sept. 27, 1859.



Witnesses.

L. E. Corson.
R. H. Hancock

Inventor.

J. D. Custer

UNITED STATES PATENT OFFICE.

J. D. CUSTER, OF NORRISTOWN, PENNSYLVANIA.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. 25,561, dated September 27, 1859.

To all whom it may concern:

Be it known that I, J. D. CUSTER, of Norristown, in the county of Montgomery and State of Pennsylvania, have invented a new and Improved Reaping and Mowing Machine Combined; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a perspective view of the machine, taken from the grain side, in front of it. Fig. 2 is a perspective view of the machine, taken from behind the driver's seat. Fig. 3 is an end view of the finger-bar, cutter-bar, and fingers. Fig. 4 is a side view of the out and in gear lever and one of the vibrating pallets, which is attached to it. Fig. 5 is a top view of the upper ends of the two vibrating pallets the two connecting-rods, the vibrating bar, and the lower vibrating-arm, which takes hold of and vibrates the cutter-bar. Fig. 6 is a side view of the movable shoe connecting and supporting bar. Fig. 7 is a top view of the main shoe, the vibrating-pallet pins, the vibrating-arm, and finger and cutter bar. Fig. 8 is an outside view of the main shoe, the out and in gear lever, and part of the movable shoe connecting and supporting bar.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The same letters refer to like parts in all the figures.

I construct the main shoe A A A of my machine out of cast-iron in the form shown in Figs. 1, 7, and 8, so that the driving-wheel B works in and supports the back end of it. The vibrating pallets C C work on pins C C, (shown at Fig. 7,) and to the upper end of the arms of those pallets C C the connecting-rods D D are attached by shackle-pins and keys. The other ends of said rods are attached to the vibrating cross-bar E, as shown at Figs. 1 and 5. Cross-bar E is keyed or squared on the upper end of the upright vibrating shaft F, and on the lower end of this shaft the arm F is firmly fastened, and by a pin in the end of it it takes hold of the cutter-bar, which works under it, so as to vibrate it. This shaft F is supported by a casting bolted on the shoe, back of it, between it and the driving-wheel B, (shown at U, Fig. 1.) At the top, just under cross-bar E, and

at the lower end, it runs in and is supported in a hole cast or bored in a boss cast in the floor of the shoe. The upper journal of shaft F is turned, so as to admit of it being raised up so as to detach the arm F from the cutter-bar when it is taken out to sharpen the knives or teeth. A pin-hole is made in the upper journal of F, just under its upper support, in which a pin is placed, so as to prevent the shaft from rising up when in operation. A slot is cut in the outside of the shoe, just above its floor, right opposite the cutter bar and teeth, so that the cutter-bar can be conveniently drawn out. A corresponding slot is also cast in the other side of this shoe, excepting it is as much larger as to admit of the finger-bar to be slipped in also along with the cutter-bar, so as to bolt the finger-bar down on the floor of the shoe under the arm F, as shown at Fig. 7. This main shoe has also a hole cast in it at I, Fig. 7, in which the reel-post I is keyed, and also a long hole near the front end of it, in which a small wheel runs to bear it up when mowing close to the ground. On the side, under the back end of this shoe, is a piece cast extending downward, to which the shoe-connecting bar is bolted, and under the outside of it are two half-round flanges cast, between which the lower end of the out and in gear lever moves on a pin, as shown in Fig. 8.

The driving-wheel B, I make with teeth on the outside, as usual, to prevent slip; but on the inside of the rim of the wheel I cast two sets of teeth—one set on each side of the arms of the wheel—arranged so that the center of the teeth at one side point exactly to the center of the space between the teeth on the other side, so that when the vibrating pallets O O work on pins C C in line it makes a complete escapement and gives the cutter-bar a regular and efficient motion with the least expenditure of power.

The finger-bar G, Figs. 1 and 7, I construct out of two bars or plates of steel or iron. The upper plate I bend down to form a lip or flange, between which and the fingers the cutter-bar works, bearing back against the under bar, which is not as wide as the upper plate by the width of the lip and cutter-bar, as shown at end view, Fig. 3. The fingers are riveted on under the lower bar, which keeps the bar and upper plate firmly together and forms a plain strong finger-bar.

H H H H is the grain side shoe and divider and reel-post. This shoe is made out of thin boiler-plate bent so as to form a smooth half-round top and open bottom, so that the wheel is placed under and in the back end of it. The reel-post H H is slipped down through the top of it into a block of cast-iron in the back end of the shoe, and a bolt is put through the shoe, block, and reel-post, which secures them firmly together. The reel-post is made of gas-pipe, and it runs up and forward, and a short pipe is secured across the end of it, with a knob to the upper end of it, (shown at H, Fig. 1.) In this cross-pipe a movable pipe or bar is placed, which is held in place by a set-screw in the knob H, and in the top of this piece the reel-journal works, kept in by a washer and pin on the end of the journal. The other end of the reel is also made movable by a like piece and set-screw in the gas-pipe reel-post I I, Fig. 1, so that the reel may be raised and lowered by loosening the set-screws. I make the reel larger (by one-fifth) than usual, and lean the said reel-posts forward properly, so as to make it unnecessary to shift the reel back or forward. A large reel also works much better than a small one. The reel-post I I also supports the self-acting rake-supporter bar R R at R, Fig. 1, and it also supports the front part of the tongue-frame J J J by running up between two friction-rollers which run on pins in the back part of the hoisting-frame, below I, Fig. 1, so that the reel-post I I can move up and down to raise and lower the cutter and finger bar, but not sidewise in the frame J J J. The hoister is shown at Fig. 1 and needs no description, as it made as usual.

J J J is the tongue-frame. It is composed of iron and hard wood, as shown at Figs. 1 and 2. The timber J J is bolted to the main shoe in front of the driving-wheel B, and the bar J J is bolted to it (in front) above the caster-wheel L. This bar is also bolted to the main shoe in front of the driving-wheel B, so that this bolt and the bolt in the timber and shoe on the opposite side of the shoe are exactly in line with each other across the shoe, so that the shoe may rise and fall on them in raising the cutter and finger bar and lowering it. From this bolt this bar runs back round the driving-wheel B, where it is also bolted to the frame-timber J J. The hoisting-frame is also bolted to this bar in front of the reel-post I I, and to the timber J J, so that this bar is firmly secured to the timber at three places and to the main shoe. The frame of the caster-wheel L works loosely on a pin which is firmly keyed in the casting above it, which is bolted under the tongue-frame timber. This pin has a head on the lower end of it to keep it in place.

M M, Fig. 2, is the caster-wheel controlling-lever. The lower branch of it at M takes hold of a pin in the side of the caster-wheel frame to control it so as to prevent all side draft and guide the machine, if desired.

N is a sliding plate and thumb-screw, by which the lever M M can be set so as to run

the machine on a straight line or detach it from the caster-wheel entirely, so as to set it free in turning round by bringing the lever down on the pin in the plate N below N. This controlling-lever works on a pin in the timber J J. The caster-wheel L has a sharp-edged flange on the face of it, which takes hold of the ground to prevent it from slipping sidewise when in operation.

K K, Fig. 2, is the driver and raker's floor when the self-acting rake is not used, and when it is used the back end of the floor is used for a tool-box. This floor is made of strong plank bolted under the tongue-frame timber as near to the ground as the working of the machine will permit, so as to make the driver's floor and seat as convenient and safe as possible. The driver's seat is bolted to the middle cross-timber, which timber is bolted between the tongue-frame timber and floor-plank. A like cross-timber is bolted under and between the tongue-frame timber and floor-plank in front and at the back end of it, and a side piece is attached to it to form it into a low box. The foot-lever for detaching the click of the hoisting-machine ratchet is placed on the front end of the driver's floor, in the right-side corner. The click is kept down by a spiral spring, also in said corner. This driver's floor is a great support to the tongue-frame timber and it also prevents the machine from upsetting.

O O, Figs. 1 and 2, is the self-acting rake head and handle. The head is made out of thin boards, and the teeth are riveted under or on the top of it. I make this rake-head wide, so as to form a divider to keep the grain which is falling divided from the grain about to be raked off. The self-acting rake-handle I make of grooved steel, iron, or wood, so as to make it light and strong. It is attached to its lifting and moving shaft P P at the top of it by a cast hub and pin and two bolts which hold it to the arm of the cast hub. This shaft P P is supported by a casting which is bolted to the under and back part of the main shoe, which casting extends up to the upper bar, R, and has a flange on it with a hole in it, in which the shaft works, and below is a like flange with a like hole, in which the lower end of the rake-shaft works loosely, so as to be capable of rising up and moving round at the same time. The lower end of this shaft reaches down through the tongue-frame timber, so as to give it end room enough below to allow it to raise the proper height when in operation. About the center of shaft P the rake lifting and operating arm is pinned on the rake-shaft, and it reaches round behind the piece R above the lifting and operating cam Q when the rake is thrown out. The under side of this arm is concave where the cam Q strikes, to elevate the rake rapidly at first until the point of the arm arrives to the upper flange on the piece Q, when it is caught by the flange and carried forward rapidly until it arrives at the side flange of Q, when the arm slides down the side flange as the rake falls, and passes under

it as the rake makes its stroke and sweeps the grain off of the platform. The rake is drawn back by a spiral spring (seen above S, Fig. 2.) Any spring or springs sufficiently powerful will answer, and a weight will also answer the purpose. Above the upper bar, R, is an S-shaped piece bolted to the casting R R, against which the rake-handle strikes at the end of its stroke, on which it runs up to soften the stroke and to assist to detach the grain from the rake-teeth at the end of the stroke. In heavy grain, I place two operating-cams Q on the arms of the driving-wheel, opposite to each other. This self-acting rake may also be lifted and operated by segments of teeth on the arm and on the cam Q. The horizontal bar R R is bolted to the upright casting R' R' at the back end, and in front it has an eye welded on it, which is slipped on the reel-post I under the knob I'. It supports the casting R R and the reel-post I, and the out and in gear lever S S is also held in its proper positions by a casting (with proper recesses in it) which is riveted on the inside of said bar.

S S is the out and in gear lever. It works on a pin under the outside arm of the main shoe, between the flanges which extend down and between the two flanges which form the outside arm of the shoe, Fig. 8. The hub or thick part of this lever fills the whole space between these flanges, as seen at Fig. 7, so as to hold the pallet C as firmly as if it were set in the solid iron, as the opposite one is, or nearly so, for the lever may work tight, as the least move at the top or sidewise will alter the depth of the escapement. A thin strong bar is riveted to this hub, extending upward, as shown, Fig. 8.

T, Figs. 1, 2, and 6, is the changeable shoe connecting and supporting bar, and it is bolted to the back end of the main shoe, Fig. 8, and to the inside of the grain-side shoe, so as to support it and the end of the finger-bar at the point of the shoe. This changeable bar is bolted on castings at each side, which have cross-seats cast in them to fit the ends of the bar, so that by partly unscrewing the bolts the bar can be changed so as to stand down or up, or so as to point back or forward. For reaping, it must stand down, so as to hold the grain platform, and for mowing it must stand back or up, so as to allow the cut grass to pass under it. The castings with cross-seats, (alluded to,) in which the ends of this bar are bolted, are riveted on the shoes. The shoe H H is closed at the end and welded as far back as the point of the last finger, where it is hooked

on the point of the finger and bolted on a flange cast on the back end of the said finger. This last finger is cast larger than the other fingers, and has a side piece outside cast on it to protect the extra cleaning-tooth on the cutter-bar from injury. I put a dull extra tooth on each end of the cutter-bar, to keep the first and last finger clean. This last finger is firmly riveted to the end of the finger-bar with three rivets, which make it sufficiently strong to hold the large shoe H H.

The tongue I make as usual, and attach it to the top or bottom of the tongue-frame timber J J, so as to place the horse's back as near the reel as possible.

The operation of my improved reaping and mowing machine is as follows: The caster-wheel-controlling lever S S is set so as to prevent side draft. The machine moves forward and the escapement-teeth vibrate the pallets C C, the connecting-rods D D, the cross-bar E, the shaft F, and the arm F, and it vibrates the cutter-bar, the reel moves, and the grain falls on the platform. The lifting and operating cam Q comes up under the self-acting rake-arm P and lifts it up and moves it forward over the grain on the platform, when it falls and sweeps the grain off the platform. The operation when mowing is the same as above, excepting the grain-platform is taken off, and also the self-acting rake is taken off or fastened forward so as to stop it, and the changeable shoe connecting and supporting bar T is changed to stand back or up, so that it may pass over the cut grass.

I do not claim the main shoe A A A, nor the shoe connecting and supporting bar T, nor the caster-wheel L, irrespective of my peculiar construction and arrangement, for they have been used in other forms and are old and well known; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. The main shoe A A A, constructed in the manner described, in combination with bars J J of main frame, and supporting-bar T, arranged and operating in the manner described, for the purpose specified.
2. The caster-wheel L, in combination with lever M and adjustable plate N, when the parts are constructed, arranged, and operated in the manner described, for the purpose specified, substantially as set forth.

J. D. CUSTER.

Witnesses:

J. HOFFMAN,
L. E. CORSON.