2 Sheets—Sheet 1.

C. CADWELL.

Harvester.

No. 52,026. Patented Jan'y 16, 1866.

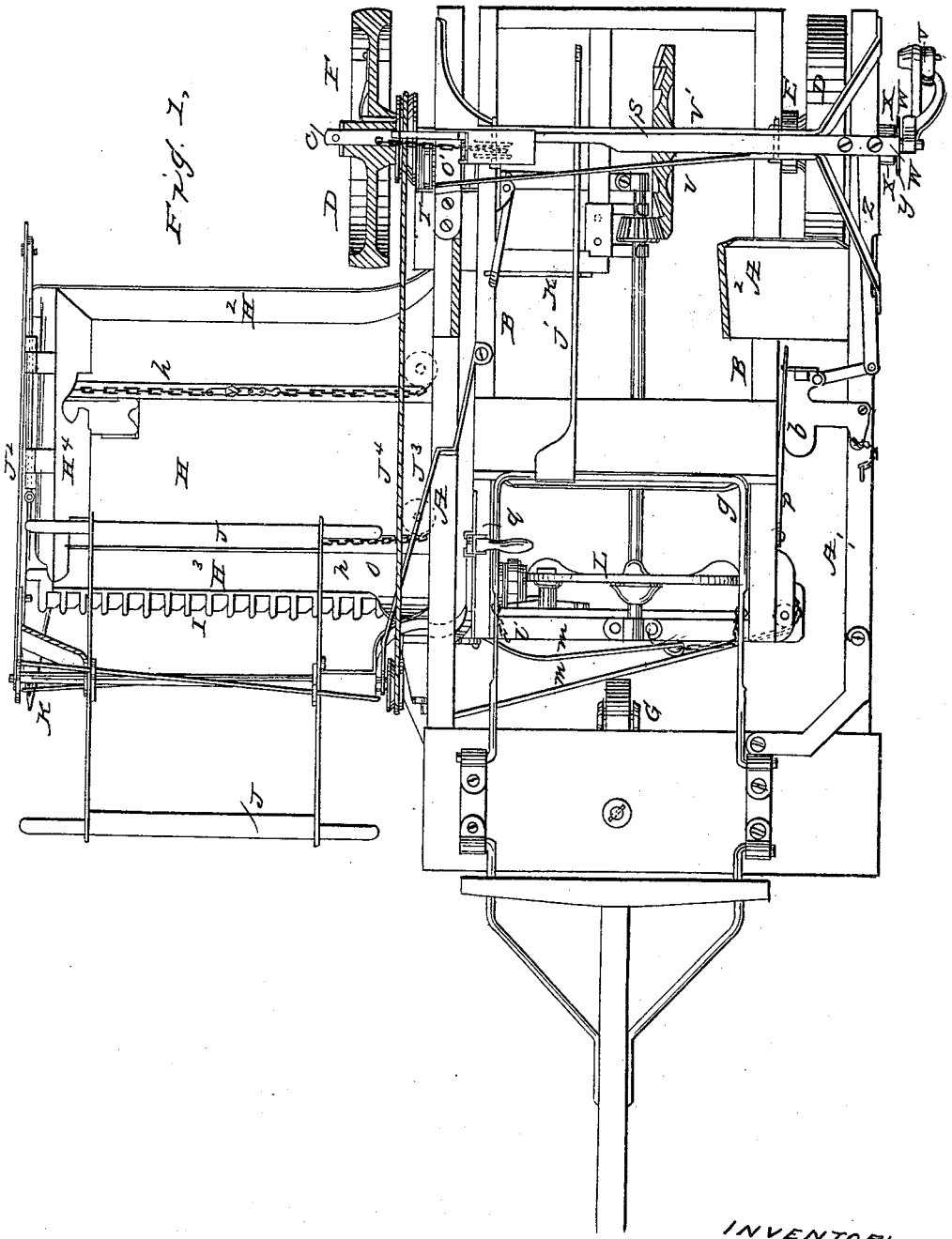

Fig. 1.

WITNESSES:
Charles A. Smith
Alex A. B. Hassall

INVENTOR:
Caleb Cadwell
By Munn & Co
attorneys

2 Sheets—Sheet 2.

C. CADWELL.

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Fig. 4,

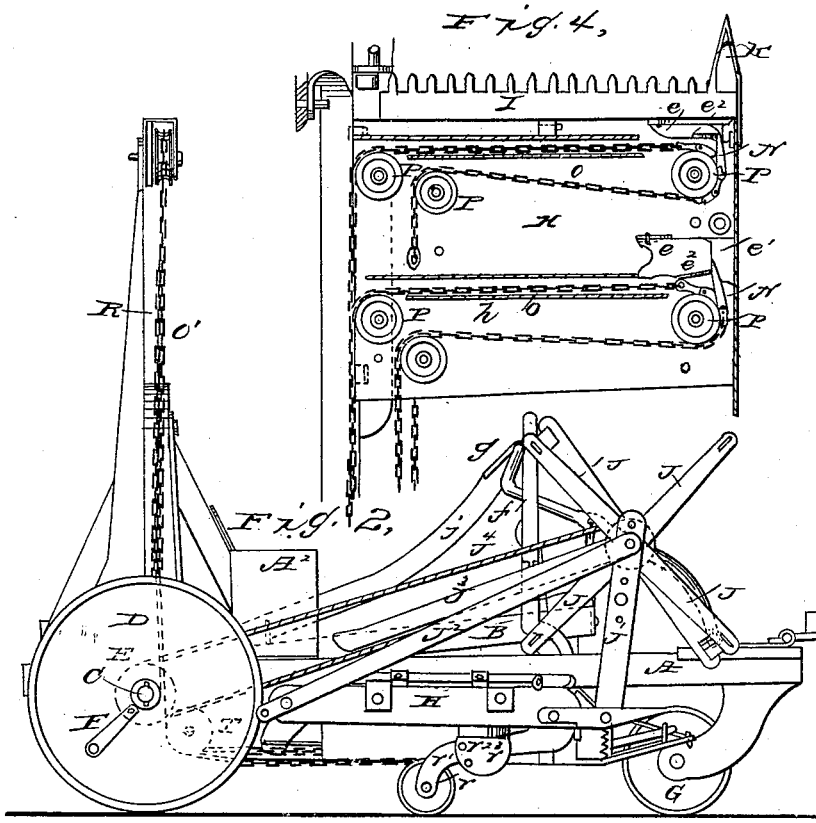


Fig. 2,

Fig. 5

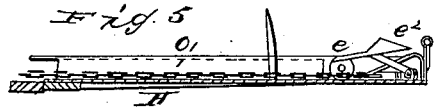
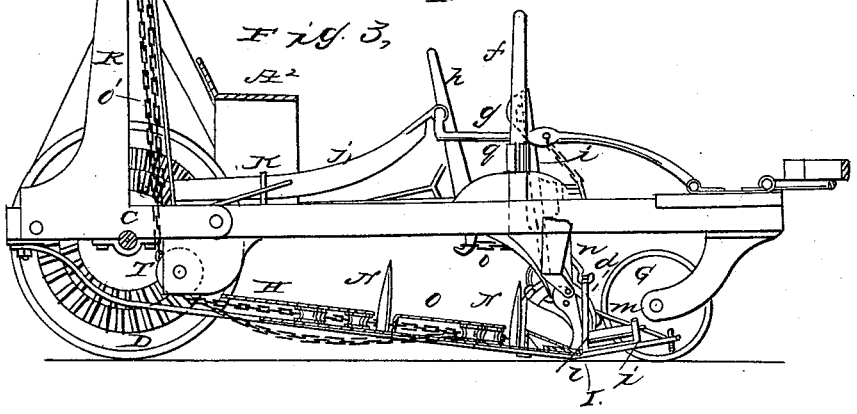


Fig. 3,



WITNESSES:
Charles D. Smith
Alf. A. Lewis

INVENTOR:
Caleb Cadwell
By Munn & Co
attorneys.

UNITED STATES PATENT OFFICE.

CALEB CADWELL, OF WAUKEGAN, ILLINOIS.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **52,026**, dated January 16, 1866.

To all whom it may concern:

Be it known that I, CALEB CADWELL, of Waukegan, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in Harvesting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the nature, construction, and operation of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan view of a harvester which embodies my improvements. Fig. 2 is a side elevation of the machine, showing the cutting apparatus elevated and adjusted at proper height for reaping. Fig. 3 is a sectional side elevation of the machine with the cutting apparatus in position for mowing. Fig. 4 is a horizontal section of the grain-platform. Fig. 5 is a vertical section of the grain-platform.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates, chiefly, to a novel and improved arrangement of devices for removing the grain from the platform. The platform contains, between the top and bottom plates of which it is formed, a series of pulleys, around which pass the branches or subdivisions of a chain, which is operated by a lever having a vibratory motion imparted to it through a crank arrangement whose motion is due to the rotation of the axle upon which the wheels are mounted. The chain or its branches above alluded to carry fingers or teeth which work in transverse guideways in the grain-platform, and which, in consequence of the movement of the chain produced by the vibration of the lever, are caused to pass back and forth across the grain-platform, said fingers rising to upright positions when moving in the direction of the body of the machine, so as to sweep off the grain and deposit it beneath the machine, but resuming horizontal positions as they move toward the grain side of the platform, so as in this movement not to disturb the grain.

To enable others skilled in the art to which my invention appertains to fully understand and use the same, I will proceed to describe its construction and operation.

A represents the main frame, and B a secondary smaller frame placed within the first. Both are common rectangular frames, supported at their rear ends upon the axle C, which is mounted upon wheels D D. Inasmuch as the motions are all transmitted from the axle, it is necessary that the rotation of the latter cease when the machine is backing, which object is accomplished by the use of feathered rings E, keyed upon the axle, and the spring-catches F, which work in connection therewith. These devices insure the rotation of the axle with the wheels while the machine is moving forward, but cause the wheel to rotate without turning the axle when the machine is moving backward. The main frame A is supported at its front end by the swiveled guide-wheels G.

H is the grain-platform. I is the cutter-bar. J is the reel. K is the divider at the grain side of the platform, and L is a wheel with a scallop-like groove, which receives the end of a motion-lever, M, which is jointed to the pitman-rod that moves the cutter-bar. As the cutter-bar, together with the devices for operating the same, form the subject of a separate application, I will not treat of the construction and operation of these parts here, but speak only of the raking device and its appurtenances and certain parts of the machine proper.

It will be well to state, first, that the grain is discharged beneath the machine as it is swept from the platform by the fingers or teeth N N, which are moved to and fro across the platform by the chains O O, which work around pulleys P P, which are placed between the top and bottom plates of the platform H. The chains O O are branches of the chain O′, which runs over a pulley, Q, on a standard, R. By means of a lever, S, vibrating in a vertical plane the chain O′ is pulled up and down, so as to give the requisite movement to its branches or subdivisions O to carry the fingers N back and forth across the platform H, said fingers N being jointed to their respective chains in such a way as to lie down flat against pressure from the direction of the outer side of the platform, and to rise uprightly, and in such position exert pressure upon a body interposed between it and the inner side of the grain-platform. The chain O′ and its branches O also work over pulleys T T, located beneath and a little in front of the axle. By reference to Fig. 4 the arrangement of the chains, pulleys, and fingers will be better understood.

The top of the grain-platform is composed of two plates of metal or two pieces of wood,

as may be desired, the same being bent down at proper points to form the grooves *h h*, in which move the fingers N N. The close sides of the grooves thus formed prevent the grain from getting into the space between the top and bottom of the platform, and thus protect the chains and pulleys therein from the straw or other matter which might interfere with their operation.

The lever S, which is attached to and acts upon the chain O′, is pivoted at a suitable point between its ends to two curved bars, U U′, the latter having its points of attachment one at the top of standard R and the other at the farther side of frame A, so as to constitute a brace for said standard, and at the same time act in connection with the bar U to guide and steady the lever S in its movement. The two ends of the bar U are fastened to the opposite sides of the frame A.

V is a connecting-rod, which communicates motion from the crank-arm W to the lever S, said rod being connected to the lever and crank through the medium of links V′ V′, which latter admit of the necessary vertical deflection and relative change in position as the arm swings around to move the lever. The extremity of the arm V, to which the lower link, V′, is attached, is formed with a boss, *v*, to give the requisite thickness to insure a good bearing for the pivot on which the said link turns.

One end of the crank is formed with a clutch, X, which is fixed loosely upon the axle C, and this end of the crank is also formed with an annular groove, which receives a claw, Y, adapted to be moved inward and outward upon the axle, for the purpose of coupling the same with the clutch X′ or breaking the connection between the two. The claw Y is to be operated by a lever, Z, pivoted upon the side of the frame A, and jointed at its respective ends to a lug on the claw and to a link, *a*, the latter being jointed to a foot-bar, *b*, which is pivoted upon the side of the frame A. By pressing the foot-bar *b* forward with the foot the operator, who sits upon the seat A^2, can vibrate the lever Z so as to throw outward the claw Y, and thus release the clutch X from the clutch X′, when the axle will turn independently of the crank W, and the operation of the lever S and of the raking device will cease. By pushing the foot-bar *a* backward the rear end of the lever Z is turned inward, the clutch X coupled with the clutch X′, and the operation of the lever and raking devices recommences.

The front end of the platform H consists of a piece of thin plank, H^2, hinged to the finger-beam, so as to preserve a proper position relatively to adjacent parts under all adjustments of the angle of the cutter-bar. The inner end of the strip H^2 is of such shape as to guide the grain around or away from the wheel *d* in being discharged from the platform under the machine. There should likewise be a strip, H^3, attached to the rear end of the platform in proper position to prevent the grain from sliding over and guide it off properly; also, a hinged strip or light board, H^4, on the grain side of the platform, whose office is to slide the grain in slightly, in order that the fingers N may the more readily act upon the same.

The portions of the chains O to which the fingers or hooks N are attached may be different in form from the main part of the chains—that is to say, they are made so as to bend in one way only. They will bend around the pulleys, but do not bend upward.

As before stated, the rake-fingers N lie flat in their movement toward the grain side of the platform. As they reach the termination of this movement their ends are thrown forward by the turn which the chain makes at this point, and their ends are thus thrown beneath the pivoted plate *e*, (see Fig. 5,) and the latter rises upward to the pressure of the finger, while the latter slides up upon the flange *e′*, whose top may be said to form the hypotenuse of a triangle having the bottom of the platform as its base. When the finger N has gone beyond the end of the plate *e* in its outward movement, said plate assumes its normal position with its outer end resting upon the highest point of the flange *e′*. At this stage the movement of the finger N, owing to a reverse vibratory movement of the lever S, is reversed, and each finger N moves away from the grain side of the platform, its point running upon the inclined edge e^2 of the plate *e*, in doing which the said finger is caused to assume an upright position, so as to carry with it the grain which has accumulated upon the platform.

The reel receives motion from the axle through a belt, J^4, is mounted on standards J′ J′, and is braced on its shaft by the braces J^2 J^3, which prevent the reel from swaying sidewise. The inner standard J′ is fastened with a pin to the lever *f*, and this standard is braced back near the seat on the inside frame, B. The outer standard J′ is fastened in like manner to the outer shoe or divider, K, and its brace is fastened to the rear end of the platform.

The device designated by *d* has been termed a "wheel," more from a consideration of its function than from any analogy in construction. It consists of a series of small rollers journaled in an endless chain of strong links, which move within a circular guideway formed in the metal framing on the front end of the inner and smaller frame, B. This frame B, being free to turn upon the axle C, is raised at its forward end by means of a bail or frame, *g*, fastened to the forward end of the frame A, and connected with the frame B by chains *i i*.

When elevated to determine the position of the cutter-bar and platform for reaping, the frame B is so retained by means of the notched lever *j*, employed in connection with a notched

plate, *k*, the latter being secured to a small frame within and at the back end of the frame B. If the frame B be lowered for mowing, the weight of the machine devolves upon the wheel *d*, which is raised and lowered with the frame.

The lever *f* has its fulcrum in the angular bar or bearing *l*, which is riveted or otherwise attached to the inner shoe of the cutter-bar. *m* is a brace-rod extending from this shoe to the farther side of the frame B.

n is a rod attached to the top of the bar *l*, and connected by means of a chain, *o*, with a lever, *p*.

By means of the lever *f* the cutter-bar, which is hinged, may be adjusted at any desired angle, and so retained by a suitable clamp-slide, *q*; and by the lever *p* the platform, with the cutter-bar, may be turned up to a proper height above the ground when the machine is being conveyed from place to place.

An angle brace or bar extends along the front and inner sides of the grain-platform, and is jointed to another bar bent in proper shape and fastened to the frame in such a way as to hold the brace in its proper place. The brace is also hinged to the cutter-bar, one bearing being near the center to strengthen the same.

r is the caster-wheel, which supports the outer end of the grain-platform. The shank *r'*, which carries the wheel at its end, is pivoted between the two sides of a semicircular box, r^2, which is formed on or affixed to the lower end of the pintle or journal on which the caster turns. The box r^2 has two or more holes, which admit of the adjustment of the shank *r'* by means of a pin, r^3. Thus the caster-wheel is adapted for supporting the outer end of the grain-platform at any height.

Having thus described my invention, the following is what I claim as new herein and desire to secure by Letters Patent:

1. The raking devices consisting of the branching chain O' and the fingers or hooks N, in combination with the platform H, formed with the grooves *h*, and otherwise constructed as herein described.

2. In combination with the chain O' and fingers or hooks N, the lever S, connecting-rod V, links V' V', and crank W, arranged and employed substantially as and for the purpose specified.

3. In combination with the above parts, the clutches X X', claw Y, lever Z, link *a*, and foot-bar *b*, arranged and operating substantially as herein described.

4. The pivoted plate *e* e^2 and flange *e'*, in combination with the finger or hook N, for the purpose explained.

5. The arrangement of standards and braces, herein shown and described, for supporting the reel.

6. Elevating the grain-platform by means of the frame B, bail *g*, and lever *j*, when the parts are arranged as herein shown and described.

7. The platform H, constructed with top and bottom plates, the hinged side and end pieces, and the angle-brace, substantially as described.

8. The wheel or series of rollers *d*, when constructed, arranged, and operating as herein described.

CALEB CADWELL.

Witnesses:
R. C. VAN RENNSELAER,
AMOS D. WATERMAN.