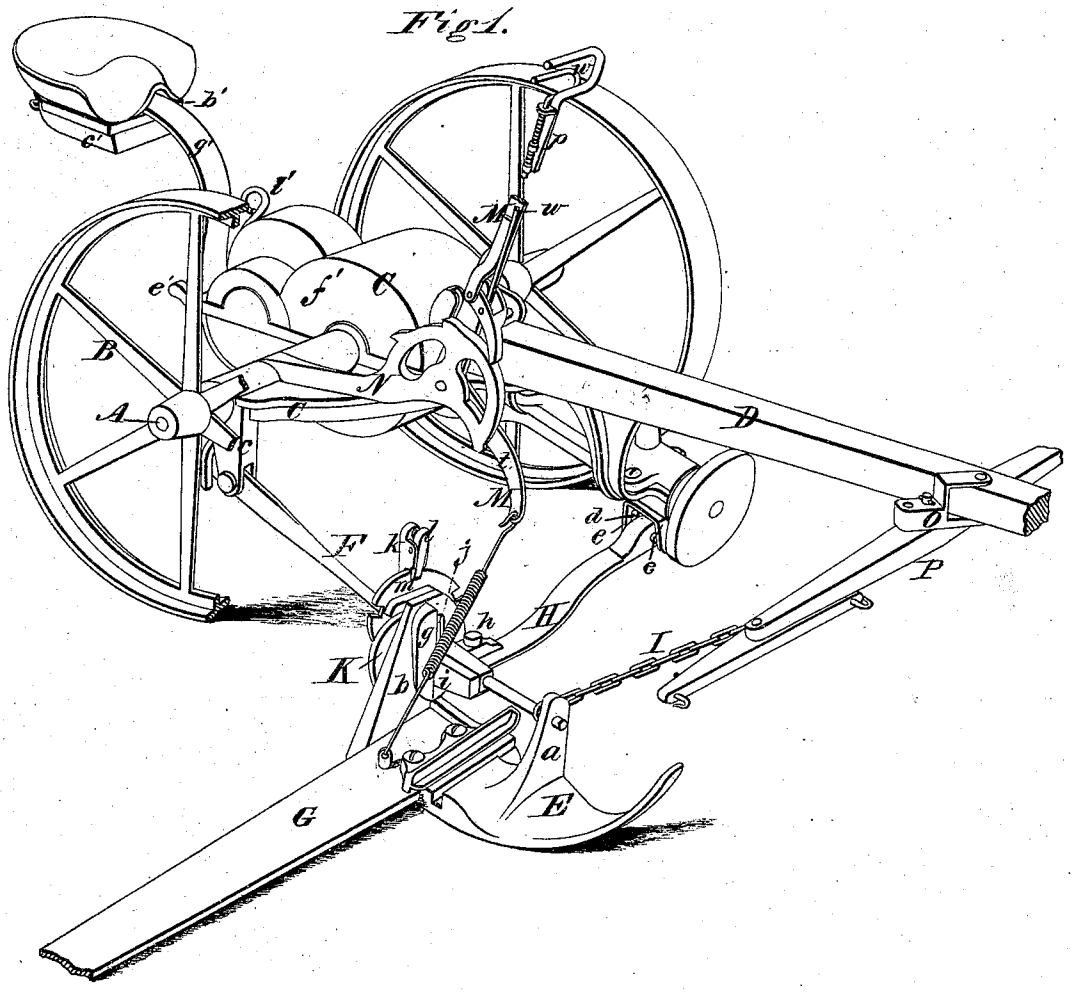
3 Sheets--Sheet 1.

H. M. BURDICK.

Mowing-Machines.

No. 150,822. Patented May 12, 1874.

Fig. 1.



Witnesses.

Harry King.

Jno. Williams

Inventor.

Hiram M. Burdick

By his attys

Dodge & Son

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Fig 2.

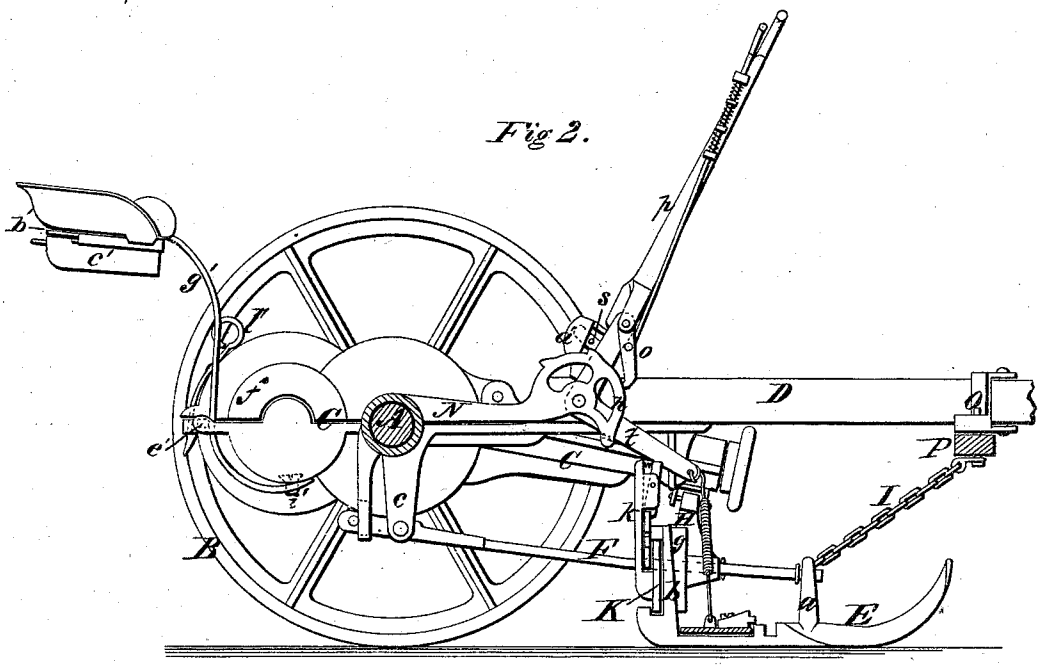
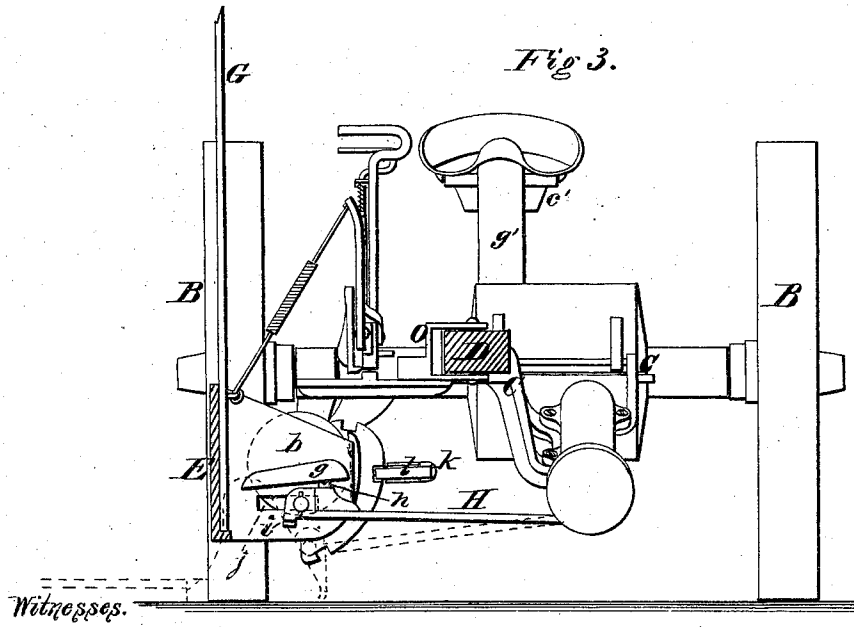


Fig 3.



Witnesses.

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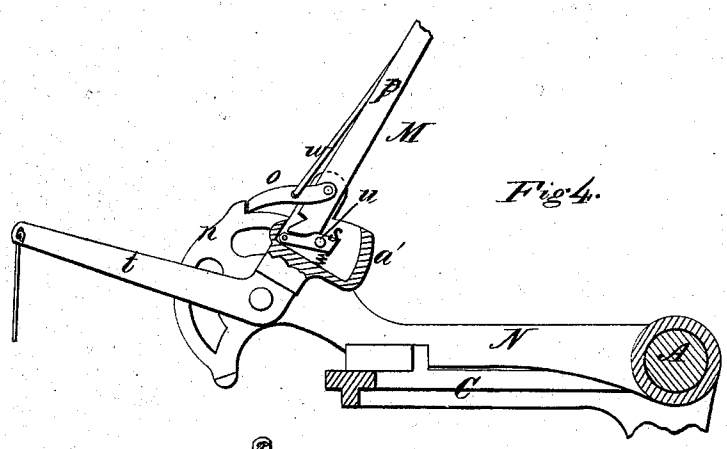


Fig 4.

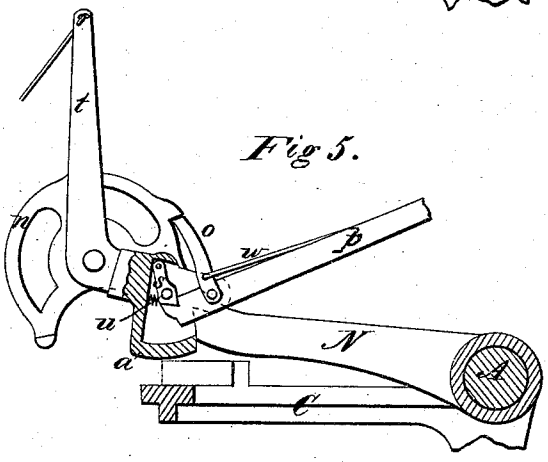


Fig 5.

Fig 10.

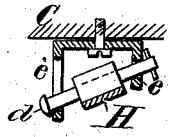


Fig 6.

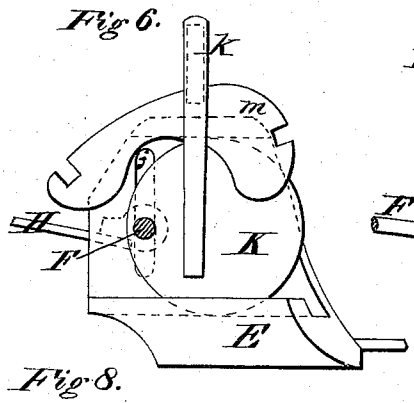


Fig 7.

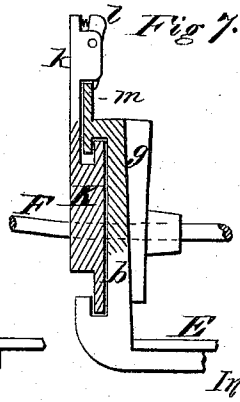


Fig 9.

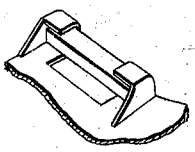
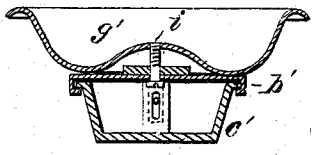


Fig 8.



Witnesses.

Harry Teng.
Jno Williams

Inventor.

Hiram M. Burdick
By his attys
Dodge & Son

UNITED STATES PATENT OFFICE.

HIRAM M. BURDICK, OF ILION, NEW YORK.

IMPROVEMENT IN MOWING-MACHINES.

Specification forming part of Letters Patent No. **150,822**, dated May 12, 1874; application filed February 15, 1873.

To all whom it may concern:

Be it known that I, HIRAM M. BURDICK, of Ilion, in the county of Herkimer and State of New York, have invented certain Improvements in Mowing-Machines, of which the following is a specification:

My invention consists in a novel manner of hinging and bracing the main shoe, which carries the cutter-bar, to the machine; in providing the heel of the shoe with an eccentric, by which it may be raised and lowered in order to rock the cutter-bar edgewise and change the height of cut; in jointing the lifting-lever, so that, after being drawn back to partly raise the cutter-bar, it may be thrown forward and a new hold taken, so as to allow the operator to exert his strength to advantage in raising the bar the remainder of the distance; in arranging said lever so as to raise its own fulcrum, and thus increase the speed with which the cutter-bar is raised, and in various other details, as hereinafter explained.

Figure 1 is a perspective view of my machine, a portion of the inside wheel being broken away to expose other parts; Fig. 2, an inner side elevation of the machine with the inner wheel removed; Fig. 3, a front elevation of the machine with the cutter-bar turned up, the front end of the main shoe being broken away; Figs. 4 and 5, side views of the lifting-lever and the arm or hanger to which it is pivoted; Figs. 6 and 7, respectively, a back view and a vertical cross-section of the device by which the heel of the shoe is held and adjusted; Fig. 8, a vertical cross-section of the seat and tool-box; Fig. 9, a perspective view of the devices for holding the seat-spring; and Fig. 10, a perspective view, showing the manner in which the transverse brace is connected to the frame.

My improvements are intended more especially for application to that class of machines having two wheels and a solid iron frame, but they may, of course, as far as practicable, be applied to other classes of machines.

In the drawing, A represents the axle; B B, the wheels; C, the solid iron frame mounted on the axle, and D the tongue or draft-pole, all of which parts are constructed and arranged in the same general manner as in the present machines.

The first of my improvements is in the manner of attaching the inner or main shoe, which carries the cutter-bar, and it will be readily understood upon reference to Figs. 1, 2, and 3. The shoe E is made in the same general form as those now in use, and is provided with two upright studs or ears, *a* and *b*, one at the heel and the other at the toe. These two studs are mounted or pivoted on the front end of a rod, F, which extends backward under the frame A, and has its rear end pivoted in a depending arm, *c*, formed on the frame immediately below the axle, and directly behind or in rear of the main shoe. The rod passing through the ears holds the shoe in position, and forms a pivot or fulcrum for the shoe to revolve upon when the outer end of the cutter-bar G is raised, the cutter-bar being secured rigidly thereto, as usual. The rod, being pivoted to the frame, is free to rise and fall at its forward end to permit the necessary vertical movement of the shoe. The rod is prevented from springing laterally by a brace, H, which extends across under the front of the frame, and has one end mounted on the rod and the other attached to the frame, as shown in Fig. 1. The brace is attached to the frame in the manner shown in Fig. 10, its end being mounted loosely on a rod, *d*, which is supported in two lugs, *e*, on the frame, one of the lugs being slotted to allow a vertical play of one end of the rod, which is thereby allowed to accommodate itself to the twisting movement of the brace. This arrangement, while it holds the brace from moving endwise, allows it to play laterally, to turn or twist, and to rise and fall at its lower end, so that under no circumstances can it be cramped or wedged fast by the movements of the shoe. In order to limit the rotation of the shoe, and thereby the vertical play of the cutter-bar around the rod, I provide the rear lug *b* with a projection, *g*, and the end of the brace H with a screw, *h*, and a shoulder, *i*, as shown in Figs. 1 and 3. When the cutter-bar is down in its working position the projection *g*, coming against the shoulder *i*, prevents the outer end of the cutter-bar from descending beyond the desired limit, and causes it to rise when the shoe is raised beyond a certain height. When the cutter-bar is turned up in a vertical position the projection *g* strikes

upon the screw *h* and checks the revolution of the shoe, so as to prevent the cutter-bar from falling inward across the machine. By adjusting the screw the point at which the shoe is stopped may be changed so as to stop the cutter-bar before it attains a vertical position, or to allow it to swing inward past that point. A draft-chain, I, is connected from the front end of the rod F to the double-tree, as shown, so that the team draws directly from the shoe, as in certain other machines.

My next improvement is in the arrangement for raising and depressing the heel of the shoe to vary the height of the cutting devices. I accomplish this by slotting the rear lug of the shoe, as shown at *j*, in order that it may play vertically on the rod, and then mounting on the rod an eccentric, K, which bears between lips on the shoe, as shown in Figs. 1, 2, 6, and 7, so that when the eccentric is turned it will raise or lower the heel of the shoe, according to the direction in which it is turned. The eccentric is provided with an arm, *k*, having a spring-catch, *l*, which engages in a notched plate or flange, *m*, formed on the shoe, as shown in Figs. 1, 6, and 7, so as to lock the eccentric fast and hold the shoe in the desired position. In order to change the height at which the machine cuts, it is only necessary to release the catch *l*, and move the arm *k* to the right or left.

The next point to be noticed is the jointed lever for raising the cutter-bar. The lever, as shown at M, Fig. 1, is made in the usual L form, and pivoted to an arm or support, N, on the frame, and its end connected by a rod or chain to the cutter-bar. The arm or support N is also provided, as usual, with a toothed head or plate, *n*, and the lever with a pawl or dog, *o*, which engages in the toothed head, so as to lock the lever and hold the cutter-bar when raised. The lever, however, instead of being made in one solid piece, as usual, is divided just above its pivot, and the lower arm or part *t* provided with a socket or recess, in which the upper arm or handle *p* is pivoted, as shown in Figs. 4 and 5, so that it can be moved forward and back independently of the lower arm. A spring dog or catch, *s*, is mounted in the socket or recess, to lock the handle when it is thrown forward. When the cutter-bar is down and the parts in their working positions, the end of the arm or handle *p* bears against the side of the socket, as shown in Fig. 4, so that, upon being drawn back, it operates the lower or lifting arm *t* and raises the cutter-bar, in the same manner as an ordinary solid lever. When, however, the cutter-bar is to be raised so far that the lever-handle cannot be conveniently thrown back far enough for the purpose, the handle is thrown forward until the dog *s* locks it fast to the lower arm, and then drawn back again, so as to carry the lifting-arm up beyond its first position. Thus it will be seen that the first stroke of the handle raises the lifting-arm a portion of the required distance; and that, upon the handle being again thrown forward, it takes a new hold on the lifting-arm, and then on the second stroke it raises the arm the remainder of the distance. By thus constructing the lever, so that two short strokes may be given instead of the single long stroke necessary with a solid lever, I enable the operator to exert his strength to a better advantage, and to raise the cutter-bar with less effort, than in the present machines. In lowering the cutter-bar, the operation is the reverse of that in lifting, the arm being lowered a portion of the distance, while the handle is locked, as in Fig. 5, and then the remainder of the distance upon a second stroke of the handle, which is first released and thrown back, as in Fig. 4. The dog or catch *s* is provided with a pin or stud, *u*, which protrudes, as shown in Fig. 5, so that it may be released by the foot of the operator. The pawl or dog *o*, which holds the lifting-arm of the lever, is provided with a rod, *w*, which extends up through ears on the handle *p*, and has its upper end shaped as in Fig. 1, so that when the operator takes hold of the handle, he can, with the same hand, operate the rod, and raise the pawl so as to release the lever. The arm or support N, on which the lever is pivoted, is mounted at one end on the axle, and rests at its front end loosely on the frame. The lever is provided with a projection or cam, *a'*, which, when the lever is thrown back, bears upon the frame, as shown in Fig. 5, and raises the front end of the arm N, thereby elevating the fulcrum of the lever, and causing the cutter-bar to rise more rapidly. The effect of this arrangement is, of course, to shorten the required movement of the lever.

The next feature to be noticed is the arrangement of the pole and double-tree. The pole is secured to the frame as usual, but is placed nearer the outside, in order to leave more room for the inner horse between it and the standing grass. In order to avoid the side draft that would result from attaching the double-tree to the pole thus arranged, the pole is provided with a pivoted arm, O, which extends inward from its side, and then the double-tree is pivoted to this arm and connected by a chain with the main shoe, as shown in Figs. 1, 2, and 3. In this way the team is caused to draw from the same point, as usual, and side draft avoided, notwithstanding the change in the position of the pole.

Next, as to the arrangement of the tool-box under the seat. When the seat is applied, a plate, *b'*, of suitable size, having flanges turned downward on two opposite edges, is secured to the under side of the spring, below the seat, by means of the same screw which holds the seat in place, as shown in Fig. 8. The box *c'*, which is made the proper size, and provided with flanges on its sides, is then simply slid into place under the seat, with its flanges in the flanges or lips of the plate *b'*, as shown. In order to prevent the box from sliding back and falling off, it is provided with a spring-catch, which engages in the plate, as shown.

The seat-spring g' is secured at its lower end to the frame by a bolt, i', and is supported at a higher point by a bar, d', locked into lugs e' on the frame, as shown in Figs. 2 and 9.

The frame of the machine is formed, as in all this class of machines, with a box or shell, f', to inclose the gearing, the upper part or half of which is hinged, so that it may be turned up when it is desired to gain access to the gearing. The upper hinged part of the shell I provide with a combined catch and handle, l', consisting of a single piece of metal, having its upper end fashioned into a handle, and its lower end into a spring-catch. This piece, while it answers both the purposes of a catch to hold the top down and of a handle by which to raise the same, can be made for a less cost than the two devices separately, and attached by a single screw or rivet.

Having thus described my invention, what I claim is—

1. The combination of the rod F, the shoe E, having the slotted stud d, and the eccentric K, constructed and arranged to operate as described.

2. The eccentric K, provided with the arm k and catch l, in combination with the notched plate or flange m on the shoe, constructed and arranged to operate as described.

3. The projection g on the shoe E, in combination with the stops h and i on the brace H, as and for the purposes set forth.

4. The lifting-lever M, consisting of the two parts p and t, jointed together and provided with the dog s, constructed and arranged to operate substantially as set forth.

5. The arm or support N, in combination with the cam a', to raise the end of the arm, and thereby raise the fulcrum of the lifting-lever.

6. In combination with shoe E, brace H, and rod d, the lugs e, one of which lugs having a slot to allow vertical motion of the rod for rocking the brace and finger-bar, substantially as described.

HIRAM M. BURDICK.

Witnesses:
CHARLES RATHBONE,
C. A. VANDENBERGH.