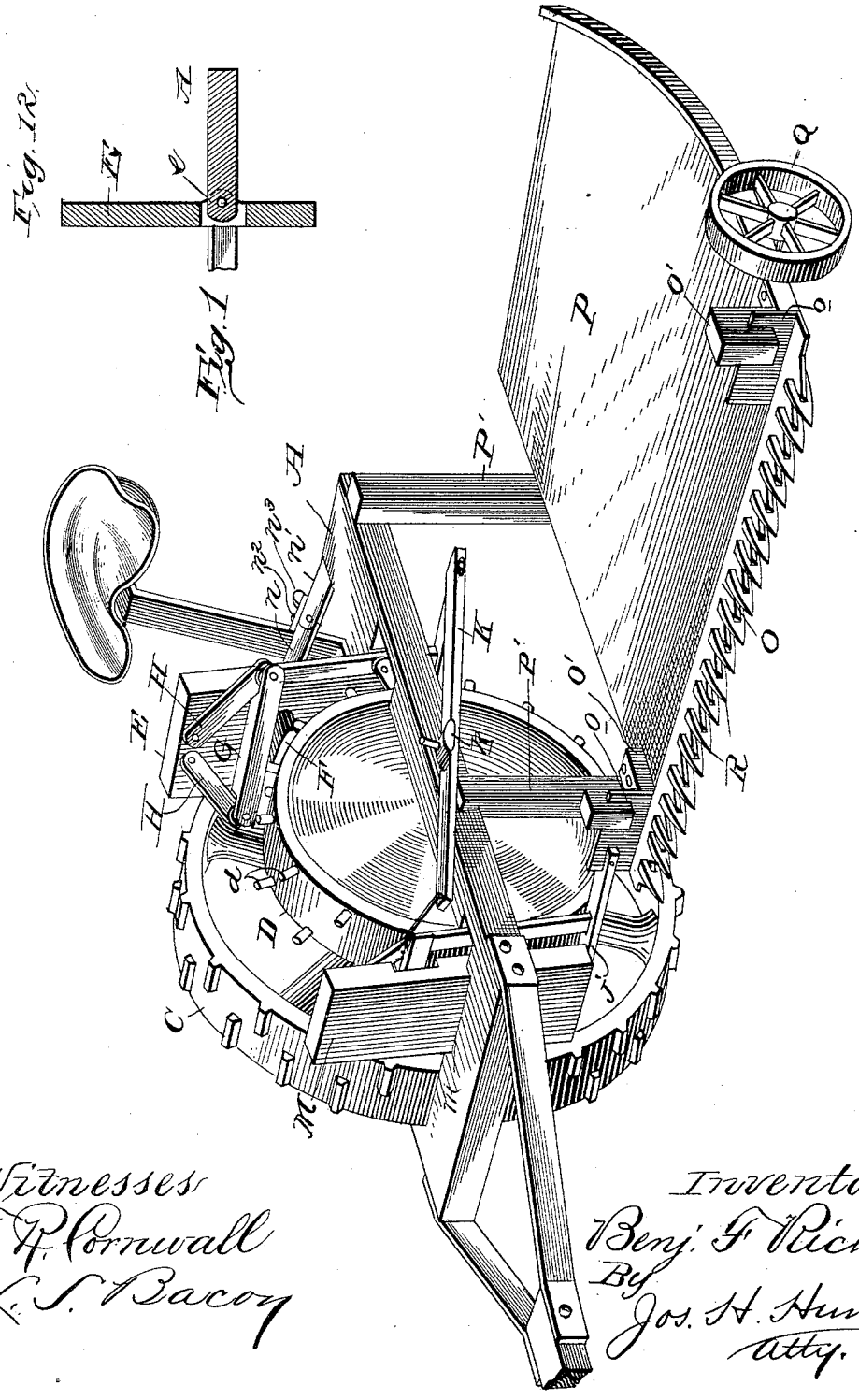
(No Model.) 2 Sheets—Sheet 1.

B. F. RICH.

MOWING MACHINE.

No. 459,018. Patented Sept. 8, 1891.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2

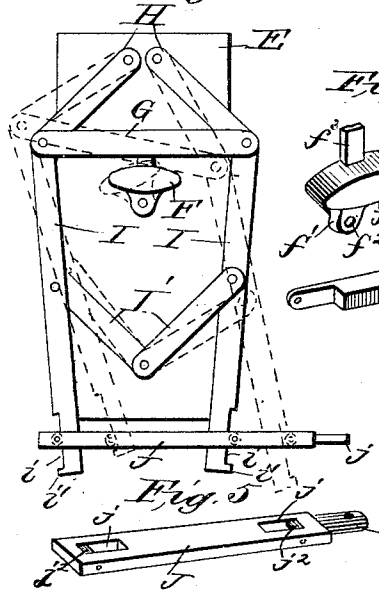


Fig. 3

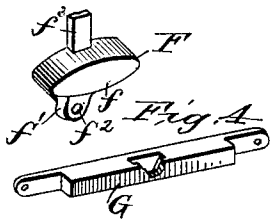


Fig. 4

Fig. 7

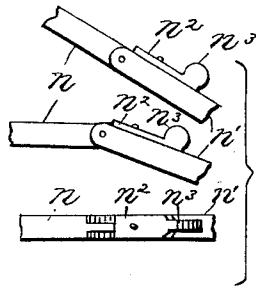


Fig. 5

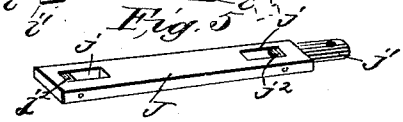


Fig. 6

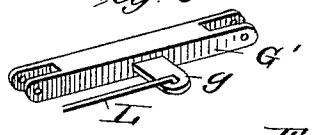


Fig. 8

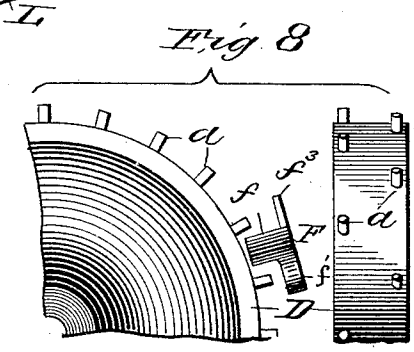


Fig. 9

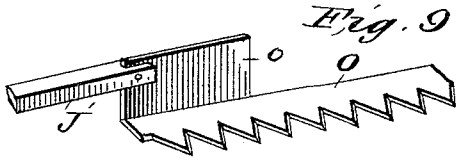


Fig. 10

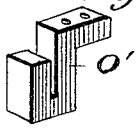
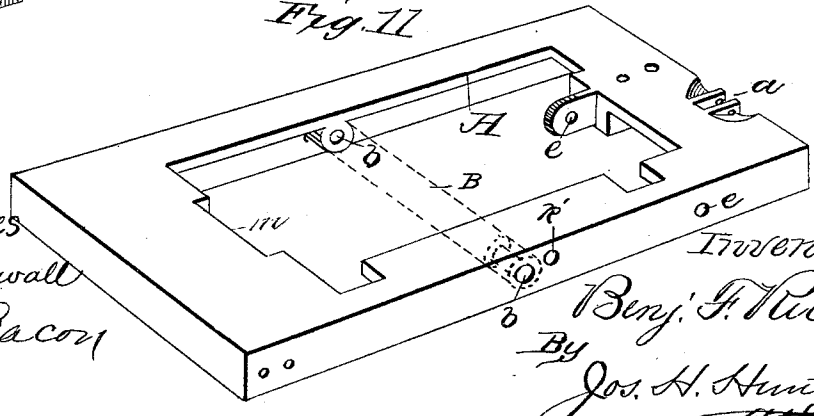


Fig. 11



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UNITED STATES PATENT OFFICE.

BENJAMAN F. RICH, OF SPANISH FORT, TEXAS.

MOWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 459,018, dated September 8, 1891.

Application filed November 12, 1890. Serial No. 371,215. (No model.)

To all whom it may concern:

Be it known that I, BENJAMAN F. RICH, a citizen of the United States, residing at Spanish Fort, in the county of Montague and State of Texas, have invented certain new and useful Improvements in Mowing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to a new and useful improvement in mowing-machines; and it consists in the construction and arrangement of parts hereinafter described, and afterward definitely pointed out in the claims.

The object of my invention is to provide a simplified means of applying the power direct to the cutter-bar by means of levers and connections hereinafter described.

Another object is to provide a mowing-machine of structural simplicity embodying economy of space, rigidity, easy running, and one which is comparatively silent in operation.

These objects I attain by the construction illustrated in the accompanying drawings, forming a part of this specification, wherein like letters of reference indicate corresponding parts in the several views, in which—

Figure 1 is a perspective view of my invention complete. Fig. 2 is a detached view in elevation of one of the standards, showing the T-shaped rock-arm and its connection with adjacent levers and in dotted lines the position assumed by the levers when the rock-arm is at its limits of movement. Fig. 3 is a perspective view of the rock-arm. Fig. 4 is an inverted perspective of the bar with which the rock-arm is connected, showing in section the opening for the reception of the lug on the rock-arm. Fig. 5 is a perspective view of the horizontally-movable lever, which is attached to the vertical levers. Fig. 6 is a view in perspective of a similar piece on the opposite standard, showing the lug and part of the connecting-arm. Fig. 7 is a detail view of means for rigidly holding the standard in operative contact with the studded driving-wheel. Fig. 8 is a detail section of the studded driving-wheel in operative contact with the rock-arm. Fig. 9 is a detached perspective of a portion of the knife-bar. Fig. 10 is an inverted perspective view of one of the guides. Fig. 11 is a perspective view of the skeleton supporting-frame. Fig. 12 is a vertical section through the center of the swinging frame and its bearing.

Referring to the drawings by letters of reference, A indicates a skeleton supporting-frame having journaled in bearings *b* at or about its center a transverse shaft B, as shown in dotted lines, Fig. 11, on which is mounted rigidly the ground-wheel C, of any ordinary or approved construction.

D represents a studded wheel rigidly mounted on the shaft B, smaller in diameter than the wheel C, and having studs *d* on its periphery placed diagonally opposite each other. These studs may be cast integral with the wheel or may be screwed in, so as to be easily replaced should they become broken.

Directly in the rear of the studded wheel D is a swinging frame E, mounted in the skeleton frame at *e*. (See Figs. 11 and 12.) This swinging frame has pivoted near its upper end a T-shaped rock-arm F, consisting of an elliptical body *f*, a depending flange *f'*, having an opening f^2 for the reception of the pivot-pin, and a lug f^3 extending upward from its inner end. This lug engages with a horizontal reciprocating bar G, having an inverted-frustum-shaped opening for the reception of the lug f^3 on the rock-arm F. Pivoted at the ends of this bar G are two supporting-arms H, which are pivoted to the swinging frame near its center, at the upper edge thereof, whose function it is to always hold the bar G in operative contact with the lug on the rock-arm and prevent said bar from becoming displaced.

I are vertical levers depending from the bar G and held apart by the bars I', which form a fulcrum therefor, said bars I' being pivoted to the bars I about their centers and their opposite ends secured on a pivot about the center of the swinging frame at its lower edge. The lower edges of these levers I have a reduced portion *i* and a lug *i'* on their ends to prevent displacement of the horizontally-reciprocating bar J, which consists of the body-piece having longitudinal openings *j* therein near its ends and an extension *j'* for engaging with the connecting-lever which operates the levers on the opposite standard.

Journaled in the openings j at their outer ends are rollers j^2 for engaging the reduced portions of the bars or depending levers I, the lug coming in contact with the rollers j^2 and preventing displacement of the levers I.

K indicates a lever fulcrumed on an elliptical pivot-pin k, pivoted on the inner side of the frame A at k', said lever being connected to the horizontal extension on the horizontal reciprocating bar J by a pin which allows the lateral movement thereof.

Secured to the upper end of the lever K is a connecting-rod L, said rod being connected at its other end to a lug or projection g', integral with the horizontal bar G', similar in operation to the bar G on the swinging frame, said bar having connecting-levers and supports arranged in like manner as the bar G.

M indicates a rigid frame secured in a reduced portion m of the supporting-frame in front of the studded wheel and in line with the swinging frame E.

Similar to the levers I, the levers depending from the bar G' have movable fulcrums and a horizontal reciprocating bar J', said bar J' being secured to the knife-bar.

Pivotally secured to the swinging frame E, at its rear side and near the upper edge thereof, is a locking mechanism consisting of two parts n and n', jointed together by a knuckle-joint, and their opposite ends resting in sockets in the swinging frame E and supporting-frame, as indicated at a, respectively. Pivoted on the upper face of the portion n' near the knuckle-joint is a locking-button n^2, having an upwardly-extending wing n^3 at its lower end. When it is desired to throw the swinging frame and its rock-arm in contact with the studded wheel, the portions n and n' are pressed down to bring them on the same plane, the angular end of the portion n resting snugly in a similarly-shaped groove in the adjacent end of the portion n', and the locking-button is placed parallel to the two parts and over the angular end of the portion n, preventing the same from rising and breaking the joint. When it is desired to release the swinging frame, the button is pushed to one side, the joint broken by underpressure, thus releasing the swinging frame, which is pulled back, making the portions n and n' assume a greater angle, and the button is pushed under the angular projection on the portion n, thus preventing the swinging frame from being knocked about by the jarring of the moving machine. The object of the wing on the lower end of the button is to allow easy operation of the same by hand, and, if desired, will be very handy to enable the operator to move the button to one side with his foot to break the joint and throw the operating mechanism out of gear. If desired, a spring-catch may be employed to prevent the button from becoming misplaced by jarring.

O indicates the knife-bar, made of a single piece of material, as shown in Fig. 9, having guides o, moving in guides O', mounted on the table.

P is the table, supported by standards P', secured on the inner side of the frame A, having journaled in its outer edge a trolley Q. Secured on the under side and at the front edge of this table are the usual guide-fingers R.

It is obvious that while I show a table extending rearwardly from the knife-bar I may employ a cutter-bar supported at its outer edge by a trolley, and have the knife-bar run in guides formed by the guide-fingers and dispense with the table.

The operation is as follows: The machine is started, revolving the ground-wheel and the studded driving-wheel, the jointed bar in the rear of the swinging frame E is pushed downward and locked, and the studs of the driving-wheel being arranged in two rows diagonally opposite each other one stud at a time will come in contact with the elliptical-shaped rock-arm, tilting the same to one side. Said rock-arm being connected to the horizontal bar G by a lug, will carry said bar with it, which also carries the vertical levers I, which are fulcrumed on movable fulcrums H. This will actuate the horizontal bar J backward or forward, as the case may be, which, being attached to one end of the lever K, carries the same with it. Said lever K, being fulcrumed on the frame and connected by a rod L to the horizontally-movable bar G', will actuate the same, and with it the two supporting-levers, which, being fulcrumed on movable fulcrums, as indicated at H in Fig. 2, will thrust or withdraw the horizontal reciprocating bar and the knife-bar, to which the horizontal bar is attached, backward or forward laterally about the widths of two knives or serrations. When the diagonally-opposite stud in the other row on the studded wheel D comes in contact with the opposite side of the rock-arm, it will tilt the same in an opposite direction, thus repeating the operation of the levers in an opposite direction, and so on, alternately backward and forward in a lateral direction.

I do not wish to be understood as limiting myself to the specific construction herein shown and described, as it is obvious that many minor changes in the construction and arrangement of the parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a mowing-machine, the combination, with the frame, ground-wheel, and studded wheel having studs on its periphery diagonally opposite each other, of a swinging frame, a rock-arm mounted on said swinging frame for contacting with the studs on the studded wheel alternately, a horizontal bar supported

above and in contact with said rock-arm, a lug on the rock-arm engaging with the horizontal bar, levers depending from said bar, movable fulcrums for the depending levers, said depending levers having a reduced portion at their lower ends, a horizontally-reciprocating bar having openings therein, and rollers in said openings for engaging the depending levers in their reduced portions, substantially as described.

2. In a mowing-machine, the combination, with the supporting-frame, ground-wheel, and studded wheel, of frames mounted immediately in front and in the rear of said studded wheel, a rock-arm on the rear frame for engaging the studs on the studded wheel, adjacent levers actuated by the rock-arm, similarly-located levers on the front frame, a lever K for transmitting motion from the levers on the rear frame to the levers on the front frame, and a knife-bar made of a single piece of material operated by the levers on the front frame, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

BENJAMAN F. RICH.

Witnesses:
R. L. MARCH,
R. E. BROWN.