3 Sheets--Sheet 1,

J. TILDSLEY.

Mower.

No. 206,278. Patented July 23, 1878.

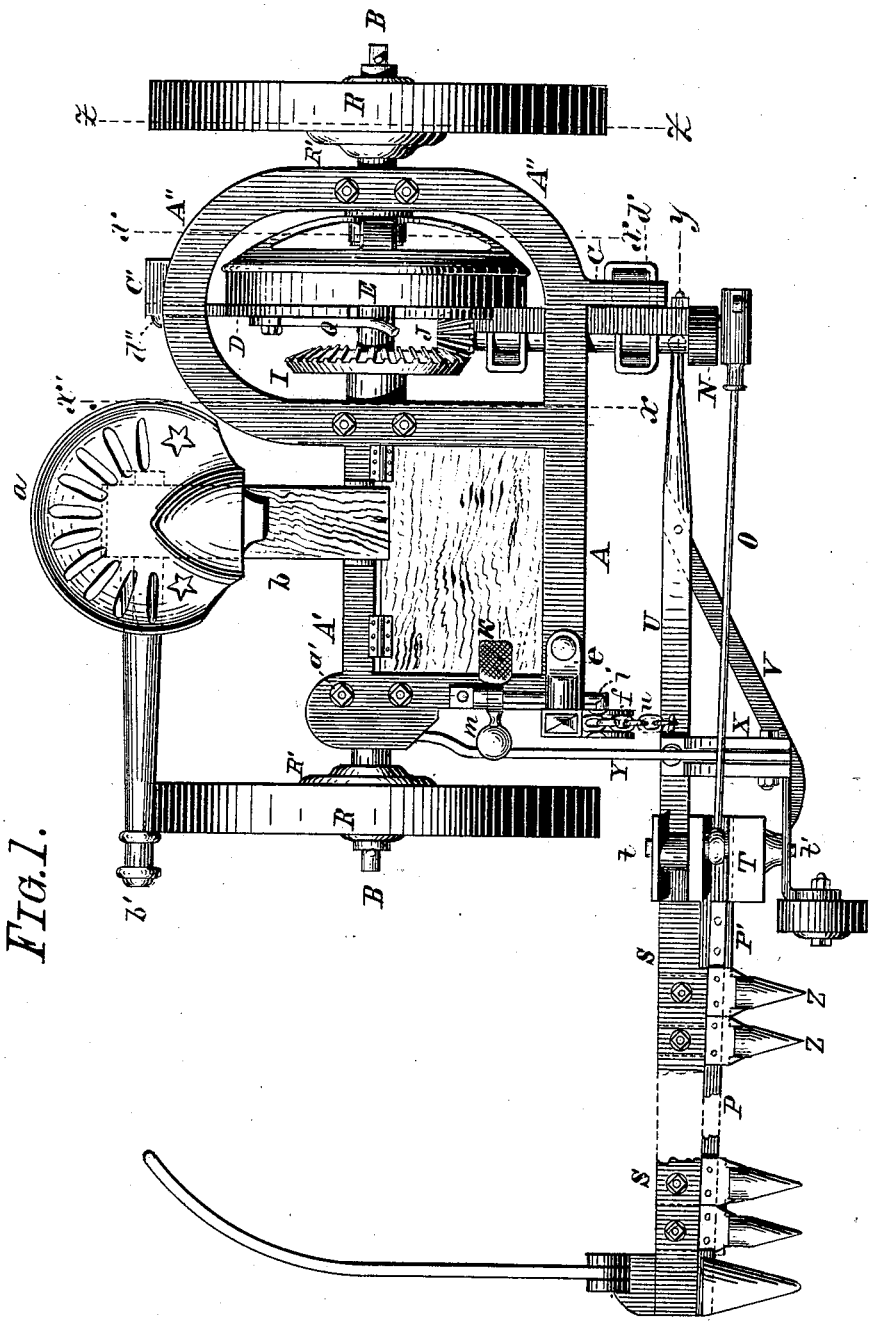

FIG. 1.

Witnesses:

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by Michael P. Stack

his atty

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No. 206,278. Patented July 23, 1878.

FIG. 2.

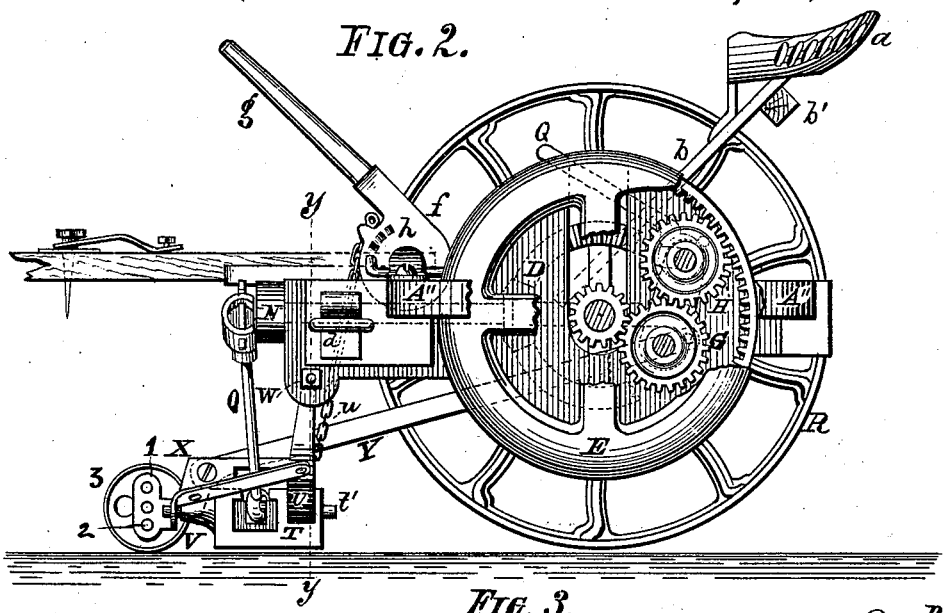


FIG. 3.

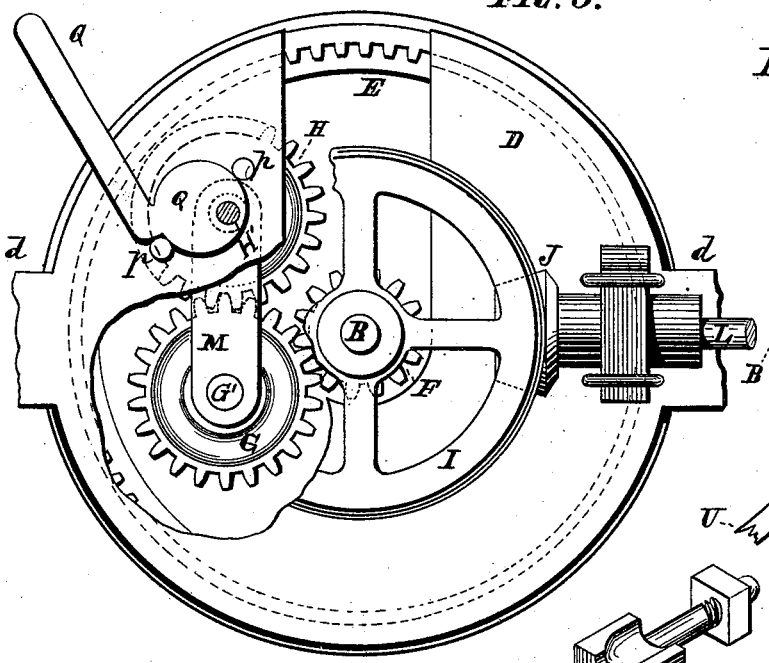
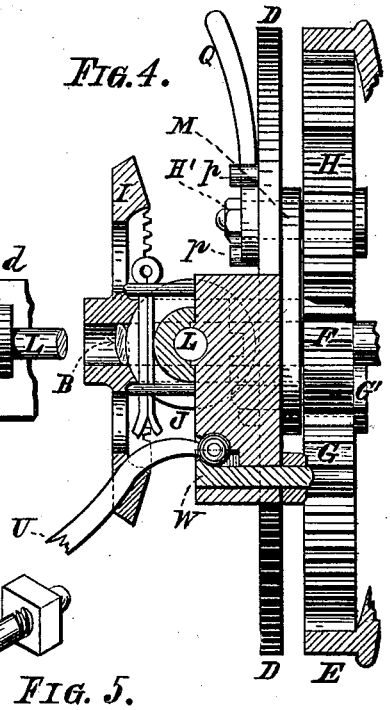


FIG. 4.



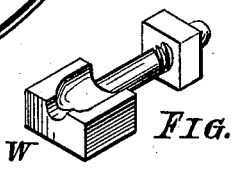


FIG. 5.

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No. 206,278. Patented July 23, 1878.

FIG. 8.

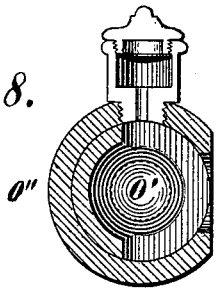


FIG. 6.

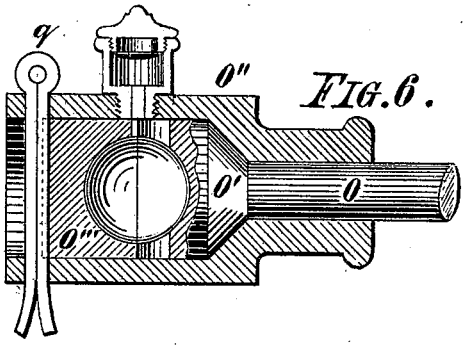


FIG. 9.

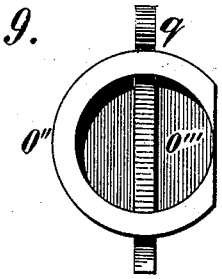


FIG. 7.

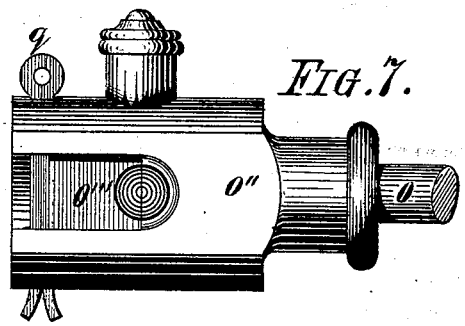
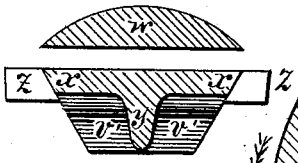
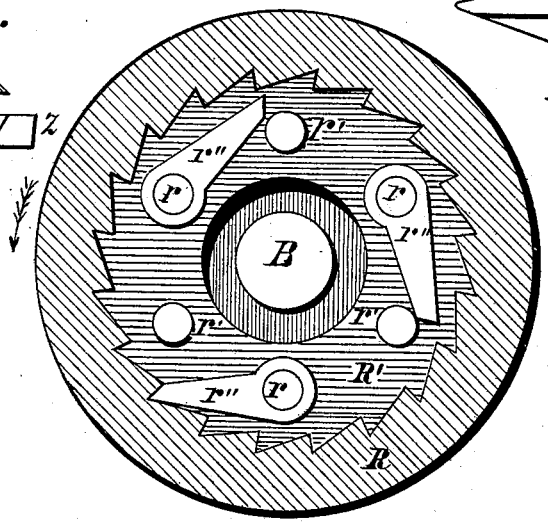


FIG. 12.





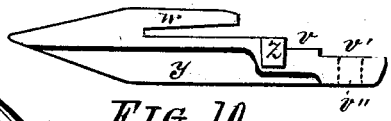


FIG. 10.

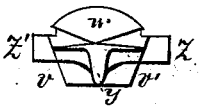


FIG. 11.

FIG. 13.

Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

JOSEPH TILDSLEY, OF LOCKPORT, NEW YORK.

IMPROVEMENT IN MOWERS.

Specification forming part of Letters Patent No. **206,278**, dated July 23, 1878; application filed December 13, 1877.

To all whom it may concern:

Be it known that I, JOSEPH TILDSLEY, of Lockport, in the county of Niagara and State of New York, have invented certain new and useful Improvements on a Mowing-Machine; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheet of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

My present invention refers in general to mowing-machines; and it consists in the peculiar arrangement of parts and details of construction, as hereinafter fully set forth and described.

In the drawings heretofore mentioned, Figure 1 is a plan of my improved mower. Fig. 2 is a sectional elevation taken in line *x x*, Fig. 1. Fig. 3 is an elevation of a portion of the machine, taken in line *x' x'*, Fig. 1, parts being broken away to illustrate the construction of the starting-gear. Fig. 4 is a section in line *y y*, Figs. 1 and 2, of that portion of the machine represented in Fig. 3, the bevel and internal gear wheels being likewise in section. Fig. 5 is a perspective view of the bolt W. Figs. 6, 7, 8, and 9 are detail views of the connecting-rod. Figs. 10, 11, and 12 are detail views of one of the fingers. Fig. 13 is a section in line *z z*, Fig. 1, showing the construction of the coupling mechanism of the main wheels R.

Like letters of reference indicate corresponding parts in all the figures.

A is the frame of my mower. It consists of a cast or wrought iron skeleton, of the contour shown in Fig. 1, and it has on its lower side, under the members A' and A'', bearings for the main shaft B, secured to the said frame by staples *a'*. The member A'' of this frame has two oppositely-located lugs, C C', respectively, to which are secured a circular plate, D, having lugs *d d*, coinciding with the lugs C C'. This plate serves as a basis for attachment of the starting-gear, hereinafter to be described, and the shaft L, and it is secured to the lugs C C' by means of the staple and split key *d'* on one side and a bolt, *d''*, on the opposite side.

E is an internal gear-wheel. It is securely fastened to the main axle B in the usual manner, and serves to communicate motion to a pinion, F, loosely revolving upon said axle B, through the intervention of the intermediate gear-wheels G H, respectively. Upon the axle B is further revolving a bevel-wheel, I, which is coupled to the pinion F in any of the well-known manners, or formed in one piece with it, which bevel-wheel meshes with a bevel-pinion, J, fastened to the shaft L. This shaft carries on its extremity opposite to that where the pinion J is attached a crank-disk, N, having a ball wrist pin, which engages the connecting-rod O, and thereby gives a reciprocating motion to the cutter-bar slide P', said connecting-rod being pivoted to said slide in the usual manner.

The main axle B receives motion from the vehicle-wheels R through the medium of a coupling arrangement, (shown in Fig. 13 in detail,) and transmits the same to the cutter or knife bar P through the wheels E, F, G, H, I, and J, and shaft L, disk N, connecting-rod O, and slide P', as hereinbefore described.

S is the finger-bar, secured to the shoe T on its under side. This shoe is pivoted to the curved bar U and brace V by the pins *t t'*, respectively, and it has a groove, within which the cutter-bar slide reciprocates.

The brace V consists of a flat piece of wrought-iron, bent as shown in Figs. 1 and 2, and formed into a T on one extremity. (Marked 1.) This part has apertures 2, vertically, for the passage of a stud, upon which the ground-wheel 3 revolves. By this arrangement the relative height of the knife and finger bars from the ground may be readily adjusted by placing the stud of the ground-wheel 3 in its respective aperture. The brace V has also an aperture, serving as a bearing for the pivot *t'* of the shoe T, and it is securely fastened to the bar V by means of the bridge X near one extremity and a bolt or bolts passing through both bars at their junction. This arrangement of the two bars allows, in addition to the ready adjustment heretofore mentioned, the shoe T to be speedily removed, in case of necessity, by withdrawing the bolts in the respective parts.

The two bars U V, as before stated, are con-

nected together by a slotted bridge-piece, X, and this in turn is pivoted to a push-bar, Y, which, again, is pivoted to the under side of the frame A. The purpose of this bar Y is to keep the cutter and finger bars steady and in proper position relative to the machine, and the bridge X is pivoted to said push-bar Y by means of a bolt passed through the slotted bridge in front, to drag or draw the finger-bar, instead of pushing it, as would be the case were it centrally or rearwardly attached to said bridge.

The relative arrangement and construction of the knife and finger bars does not vary from those of other first-class machines, and I shall therefore not enter into a detailed description thereof, excepting the fingers Z, which will hereinafter be particularly referred to.

a is the seat for the driver. It is secured to an obliquely-arranged support, *b*, which latter has a sidewise-projecting pole, *b'*. This pole serves to carry the finger and knife bars when the machine is not in use; and, to enable these bars to be carried in this manner, they are first pivoted to the brace-bar V and curved bar U by the pivots *t t'*, and the bar U is pivoted to the lug *d* of the plate D by a ball-and-socket joint at W, whereby said knife and finger bars are capable of a compound movement, and may thus be readily placed upon said pole *b'*. But, since the connecting-rod O is in pivoted contact with the knife-bar, said rod must be capable of turning around its longitudinal axis, and to reach this result I have constructed the said rod O with a head, O'. (See Figs. 6, 7, 8, and 9.) This head fits the cylindrical bore of the socket O'', and it has in front a semi-spherical depression, serving as one half of the ball-socket for the ball wrist pin heretofore mentioned, the other half of the spherical depression being in a box, O''', also placed in the socket O'', and retained therein by a split key, *q*, a groove being made in the back of the box O''', as shown in dotted lines in Figs. 6 and 7, to prevent it from turning.

I have provided the connecting-rod with a ball-and-socket joint, in order to enable it to assume a position obliquely to the axis of its driving-shaft L, and made the rod O to turn in its socket O'', so that the shoe T can be brought into any position within the compass of its movements.

The starting-gear heretofore mentioned consists of the two gear-wheels G and H, and these wheels are placed upon arbors G' H', Figs. 3 and 4, respectively, of which G' is permanently secured to the plate D, Fig. 4, and the other to a link, M, Figs. 3 and 4. The bolt G' serves also as a medium around which the link M may move, and the bolt H' as a means for moving said link, it being provided with an eccentric-lever, Q, turning freely upon said bolt H', and between two oppositely-located lugs or pins, *p p*. This lever, when moved in one or the other direction, will move the link M in a corresponding way, and thus throw the wheel H into or out of gear with the internal wheel E, a slot in the plate D for the passage of the bolt H' allowing such movement of the link M.

The coupling arrangement of the driving-wheels consists, as shown in Figs. 1 and 13, of two flanges, R', secured near each extremity of the axle B. Each of these flanges has a series of pivots or pins, *r* and *r'*, respectively, the former being pivots for the dogs or pawls *r''*, and the latter stop-pins to prevent said pawls from moving beyond a fixed limit.

The hub of the wheel R has a recess in its face, whose edge is serrated or provided with ratchet-teeth. Now, if the wheel R revolves in the direction of the arrow on Fig. 13, which is equivalent to a forward motion of the wheel to the left of the driver of the machine, one, or sometimes two, of the dogs *r''* will be caught by the ratchet-teeth, and thus cause the shaft B to revolve with the wheel R. When going in an opposite direction no such engagement of the pawls *r'* can take place, and thus the machine will operate only when going forward, while as soon as it is backed up the driving mechanism will instantly cease to operate; but, by means of the starting-gear, the operating mechanism may also be stopped at pleasure when the mower is going ahead by simply turning the lever Q in the proper direction, so as to avoid obstructions in the field, and for other obvious purposes.

To elevate the knife and finger bars S P, I use the mechanism shown in Figs. 1 and 2, consisting of the chain-sheave *f*, having the handle *g* attached for operation. This sheave revolves upon a stud, *e*, Fig. 1, secured to the frame A, and is locked in any desired position by the lever *i* and the counter-weight *m* on the treadle K, said lever *i* engaging with any one of a series of indentations, *h*, Fig. 2, for this purpose. To lower the knife and finger bars, the handle *h* is first pulled toward the operator and the treadle K depressed, which will free the sheave *f* from the lever *i*, when the said bars may be readily lowered in a manner readily understood, and automatically secured in place by the counter-weight *m* throwing the lever *i* into contact with the sheave *f*. A chain, *u*, is passed from said sheave *f* to the curved bar U to connect both.

The fingers Z, heretofore referred to, and fully illustrated in Figs. 1, 10, 11, and 12, are preferably made of steel by the now well-understood process of casting from previously-prepared patterns. These fingers have a T-shaped cross-section, the horizontal part of which is tapered on the edges *x x*, which edges are the lower cutting-edges, and can be ground as often as necessary until they reach the vertical member, when they are replaced by new fingers.

It will be readily observed that the part *x* of said fingers is thin, and thus easily ground,

whereby a great saving of time and labor is attained, as compared with the grinding of otherwise-constructed fingers.

The bar U has a ball on its extremity, (shown in Fig. 4,) which revolves in a socket formed partly in the lug *d* of the plate D and partly in the head of the bolt W, as shown in Fig. 5. This bolt has on one of the sides of its head a semicircular depression, the forward end of which is spherical. This bolt is inserted into a passage transversely through the lug *d* after the ball of the rod U is entered into the lug *d*, and then secured in place by the nut shown.

It will be observed that the coupling arrangement in the disks R′ operates entirely without springs or other mechanical means—viz., by gravitation—and is thereby positive in its operation, and free from liability to get out of order and failure to operate when wanted.

It will be further observed that all the pieces attached to the machine, &c., are, wherever possible, secured together by split keys or wedges, thus dispensing as much as possible with the objectionable bolts and nuts, which are always more or less out of order, and a source of constant trouble and annoyance in agricultural machinery.

Having thus fully described my invention, I desire to secure to me by Letters Patent of the United States—

1. In a mowing-machine, the combination, with the gear-wheel E, secured to the shaft B, of the intermediate gear-wheels G H, link M, and eccentric-lever Q, as and for the purpose stated.

2. The combination, with the gear-wheel E, fixed to the shaft B, of the intermediate gear-wheels G H, pinion F, bevel-wheel I, and bevel-pinion J, said wheels G H being secured to the link M, and capable of being thrown into and out of gear with the gear-wheel E, as specified.

3. The combination, with the frame A, of the plate D, having an angular recess in its lug *d*, the forward and upper end of which is formed into a partial sphere, and the bolt W, having the semicircular depression in one of the sides of its head, said bolt being inserted into the said recess, as and for the purpose specified.

4. The pole *b*′, projecting laterally from the seat-support *b*, and arranged to reach beyond the frame A, and provided with a notch in its extremity to carry the finger and cutter bars, substantially as and for the purpose set forth.

5. The knife and finger bars P S, secured to and operating within the shoe T, in combination with the ball-pivoted curved rod U, brace V, bridge X, and push-bar Y, said push-bar being pivoted within the bridge X, connecting said bars U V on the forward end of said bridge, whereby said knife and finger bars are dragged along, substantially as and for the purpose specified.

In testimony that I claim the foregoing as my invention I have hereto set my hand and affixed my seal in the presence of two subscribing witnesses.

JOSEPH TILDSLEY. [L. S.]

Attest:

MICHAEL J. STARK,
FRANK HIRSCH.