

(No Model.)

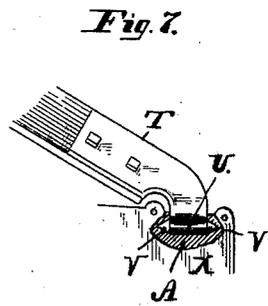
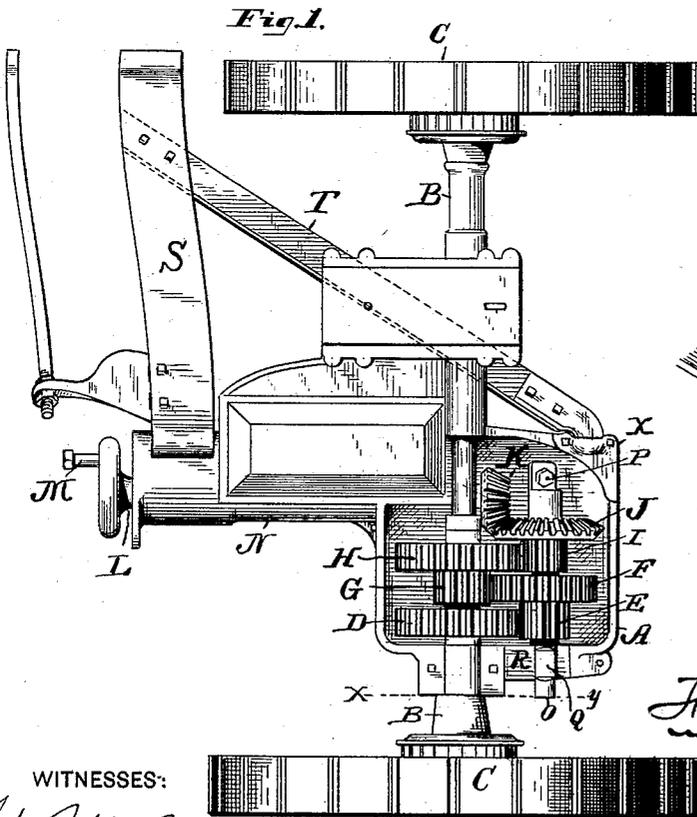
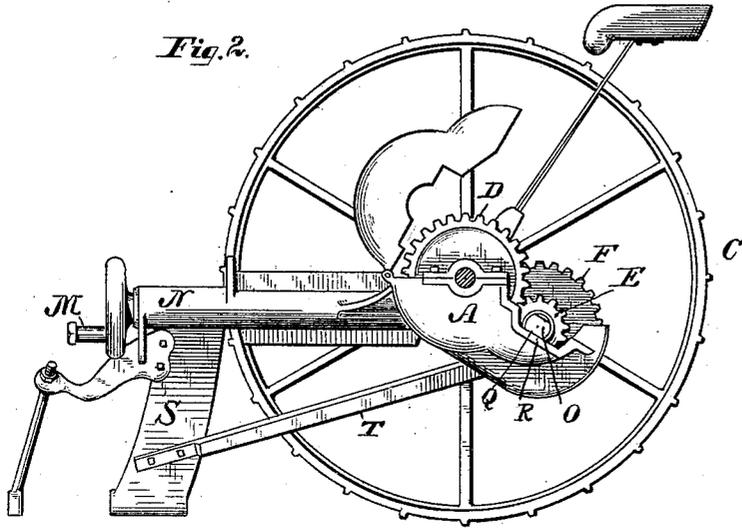
2 Sheets—Sheet 1.

T. S. BROWN.

MOWER.

No. 357,902.

Patented Feb. 15, 1887.



WITNESSES:

John Kelly
J. Norman Dixon.

INVENTOR

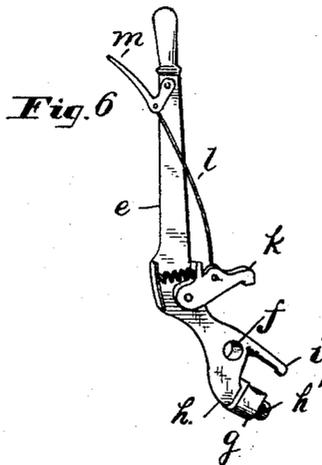
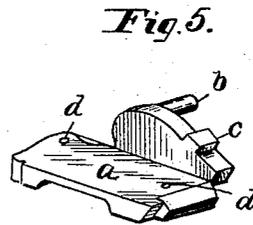
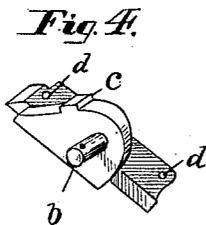
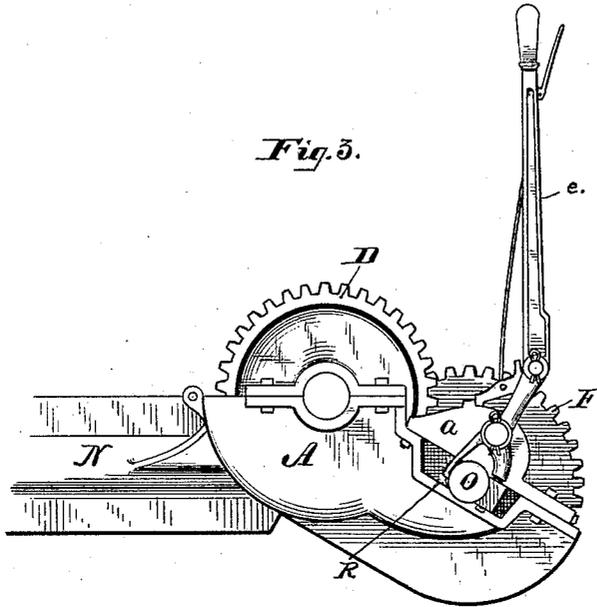
Thomas S. Brown
 By his Attorneys,
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T. S. BROWN.

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No. 357,902.

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UNITED STATES PATENT OFFICE.

THOMAS S. BROWN, OF POUGHKEEPSIE, NEW YORK.

MOWER.

SPECIFICATION forming part of Letters Patent No. 357,902, dated February 15, 1887.

Application filed May 17, 1886. Serial No. 202,406. (No model.)

To all whom it may concern:

Be it known that I, THOMAS S. BROWN, a citizen of the United States, residing at Poughkeepsie, in the State of New York, have invented a new and useful Improvement in Mowers, of which the following is a specification, reference being had to the accompanying drawings, which form a part thereof, and of which—

Figure 1 is a top plan view of a part of a harvester; Fig. 2, an end elevation upon the lines *x y* of Fig. 1; Fig. 3, an enlarged end elevation of part of a machine embodying my invention; Figs. 4, 5, and 6, perspective details of parts of Fig. 3; and Fig. 7, a top plan view of the hinged joint between the rear brace and the main frame.

Similar letters of reference indicate corresponding parts wherever used.

The following is a description of a machine embodying my improvements.

A is the main frame, which, by suitable bearings therein, is mounted upon and carried by the main axle B and road-wheels C C.

D is the main driving gear-wheel keyed to the axle B.

E and F are gear-wheels cast together in one piece and loosely mounted upon the swinging shaft O.

G and H are gear-wheels cast together in one piece and loosely mounted upon the axle B.

I and J are gear-wheels cast together in one piece, and loosely mounted upon the swinging shaft O. The shaft O is, at one end, pivoted at P to the main frame, said shaft being at said end flattened, as shown in Figs. 1 and 2. This shaft, at its outer end, is flattened, as shown at Q, to form a proper surface to slide upon the flat inclined surface R of the main frame, and permit of the throwing of the train D E F G H I J into or out of gear by a movement of the swinging shaft O in a direction toward or away from the axle B, and the consequent engagement or disengagement of the teeth of the wheel E with or from the teeth of the wheel D.

The crank-shaft L is mounted and contained within a bearing, N, in the main frame A, and is, at its rear end, provided with a bevel-pinion, K, which meshes with and is driven by the

gear-wheel J. This crank-shaft is provided with a crank-pin, M, by which, through the intervention of a pitman, the knives or cutters are reciprocated. The crank-shaft L is located in a plane parallel with the ground and with the cutters, and in the same horizontal plane as the swinging shaft O, and in a horizontal plane lower than that of the axle B.

S is a front brace hinged at one extremity to the main frame by a hinge parallel with the axis of the crank-shaft, and at the other extremity connected with the finger-bar in the usual manner. To this front brace a back brace, T, is, at its forward extremity, rigidly attached. At its rear extremity the brace T terminates in a cylinder, U, having conical ends V, which form a hinge-connection with the main frame by means of a conically-ended cylindrical seat formed between the metal of the main frame and a cap, X, bolted to the main frame over said rear end of the brace T.

a is a cap, the under surface of which, when it is in place upon the main frame, forms the upper surface or wall of the way within which the free end of the swinging shaft slides. This cap is secured to the main frame by bolts passed through the holes *d*, and is provided with a pin, *b*, and one or more ratchets or stops, *c*, which devices respectively serve to support and to lock the lever *e*, by which the free end of the swinging shaft O is operated.

The shifting lever *e* is provided with a bearing, *f*, by which it is mounted upon the pin *b*, as shown in Fig. 3. This lever, at its lower end, is forked, as at *i* and *h*, the fork *h* being provided with a revoluble collar, *g*, secured thereto by a pin, *h'*. This collar is, on its inner face, conformed to the surface of the swinging shaft O, with which it is, when in place upon the machine, in contact.

From the construction described, it will be understood that the swinging shaft O may be moved toward the axle B, and the gear-wheels on said swinging shaft be caused to mesh or gear with the wheels upon said axle by throwing the lever *e* in a direction away from the axle B, and that said lever may be fixed and locked in said position by adjusting the pawl *k*, by means of the latch *m* and link *l*, behind

the proper ratchet or catch *c* upon the cap *a*. The lever may be unlocked from the position described and be thrown in a direction toward the axle B, with the result that the swinging shaft O will, by gravity or by the finger *i*, be caused to slide down the inclined plane R, whereby the wheel E will be thrown out of gear with the wheel D.

In the operation just described, the collar *g* upon the end of the lever *e* revolves sufficiently to permit its concave face to at all times adapt itself to the various angles of the face of the swinging shaft O, with which it is in contact.

Heretofore in harvesters, where the crank-shaft has been located in a horizontal plane as high as the main axle, and has been driven directly by gearing on said axle, it has been found that the angle of the connecting-rod or pitman connecting the crank-shaft and the cutters has been so great as to materially increase the resistance to the operation of the cutters, and to occasion the requirement of a greater power to drive the machine, as well as a very considerable wearing of the parts of the machine upon which said resistance was exerted. It was, moreover, found, when it was attempted to avoid these difficulties by dropping the forward end of the crank-shaft, so that it occupied a position nearer the ground than the driven end of said shaft, that the crank-pin M, at various points of its revolution, occupied various angles with the ground and with the cutting apparatus, and that the end of the connecting-rod was thrown backward and forward, or in a direction at right angles toward and away from the main axle, at each revolution of the crank-pin.

By my invention it will be seen the crank-shaft is located in a plane lower than the main axle and in a plane parallel with the ground and with the cutting apparatus, whereby the angle of the pitman or connecting-rod is decreased and the forward and backward throw of the pitman or connecting-rod above described obviated and the pitman maintained at all times in line with the cutting apparatus. Further, it will be understood that my form of hinge between the back brace and the main frame provides a coupling of great strength and insures reliable and easily-flexible connection between the cutting apparatus and the main frame, the axis of said hinge being in a line and parallel with the axis of the hinged joint between the forward brace and the main frame.

It will be apparent that a very limited backward movement of the swinging shaft O will be sufficient to disengage the gear-wheel E from the gear-wheel D, and that the disengagement of the other gear-wheels of the train

to throw the machine in or out of gear will be unnecessary. From this it follows that the machine can be thrown into gear with rapidity and certainty, as but two gears need to be brought into mesh each with the other to accomplish this result.

I am aware that constructions of harvesters have been proposed in which the crank-shaft itself was mounted in bearings pivoted on the main frame, so as to permit said shaft to be thrown into and out of gear with the driving mechanism. I lay no claim to such constructions.

In the machine hereinbefore described the crank-shaft is mounted in bearings fixed to the main frame and is driven by gearing mounted upon a swinging shaft in its normal position parallel with the main driving-axle.

Having thus described my invention, I claim—

1. In a mower, in combination, a main axle provided with gear-wheels, a swinging shaft pivoted at one end to the main frame or to an attachment thereof, and in its normal position parallel with the main axle and located in a horizontal plane below it, and a crank-shaft mounted in bearings fixed to the main frame, as specified.

2. In a mower, in combination, a main frame, a front brace at one end hinged to the main frame, a back brace at its forward end attached to said front brace and having its rear end terminated in a conically-ended cylinder which is contained and hinged in a conically-ended cylindrical bearing in the main frame, the axis of said cylindrical bearing being parallel to the axis of the crank-shaft, as specified.

3. In a mower, in combination, a main axle provided with gear-wheels, a swinging shaft pivoted at one end to the main frame, or to an attachment thereto, and provided with gear-wheels, a crank-shaft provided with a gear-wheel, and mechanism for moving the free end of said swinging shaft toward or away from the main axle and occasioning the throwing of the crank-shaft into or out of gear with the main axle, as specified.

4. In a mower, in combination, the axle B, the crank-shaft L, intermediate gearing, D, E, F, G, H, I, J, and K, said gear-wheels E F and I J being loosely mounted upon a swinging shaft, O, pivoted at one end to the main frame and located in a horizontal plane lower than the axle B, as specified.

In testimony whereof I have hereunto signed my name this 12th day of May, A. D. 1886.

THOMAS S. BROWN.

In presence of—

ROLAND R. DENNIS,
EDWARD A. KING.