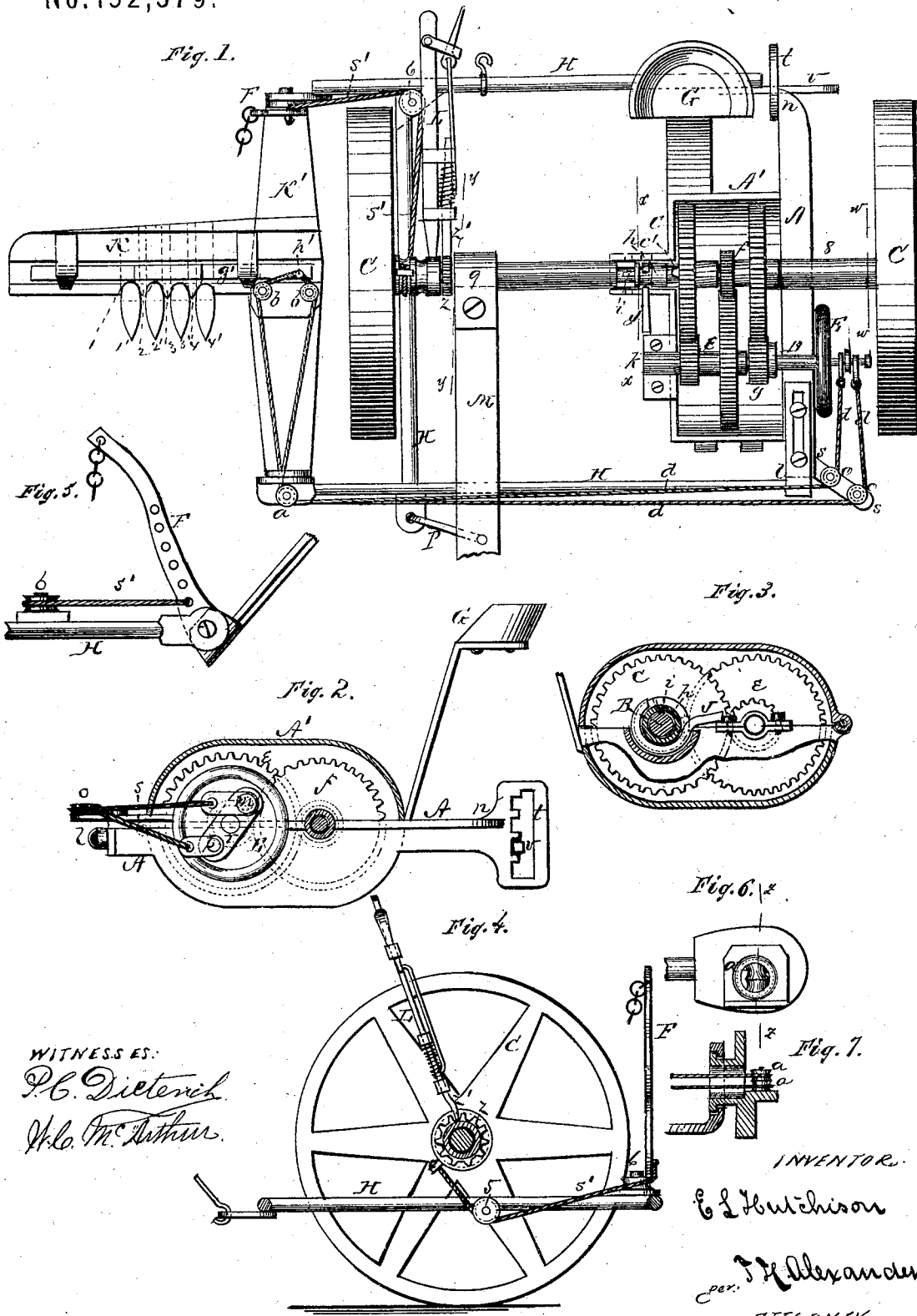


E. L. HUTCHINSON.
Harvesters.

No. 152,379.

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WITNESSES:
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EDWIN L. HUTCHINSON, OF AUBURN, NEW YORK.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **152,379**, dated June 23, 1874; application filed April 30, 1874.

To all whom it may concern:

Be it known that I, EDWIN L. HUTCHINSON, of Auburn, in the county of Cayuga and State of New York, have invented certain new and useful Improvements in Mowing and Reaping Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, which form part of this specification.

My invention relates to improvements in the construction of mowing and reaping machines; and consists principally of a new device for operating the cutters by ropes, chains, or belts, together with various other improvements incident thereto.

In the accompanying drawing, Figure 1 is a plan view of a mower and reaper embodying my invention. Fig. 2 is a section through the line *vv*, Fig. 1, the side of the cap being removed. Fig. 3 is a section through the line *xx*, Fig. 1, the side of the cap being removed. Fig. 4 is a section through the line *yy*, Fig. 1; and Figs. 5, 6, and 7 are detached views of certain parts of the machine.

A represents the main frame, to which the gearing *c e f g*, tongue M, and seat G, and other auxiliary parts are secured. S 9 represent bearings in the main frame A, which support the driving-shaft B, which support the driving-wheels, which may run on the ends of the shaft B, and when advancing run the same by means of the usual ratchets. A' represents the cover of the gearing *c e f g*. The gear C has a clutch, C', on its face, which is made to connect with the clutch *h* on the driving-shaft. The clutch *h* slides on the shaft B, and is kept from turning around independent of the shaft by means of the feather *i*. The clutch *h* is operated to throw out and in gear by the lever *j*. The double gear *e* runs on a hollow stud, *k*, which answers for a cap to the crank-shaft D, passing through said hollow stud, and having a bearing on the main frame A. The double gear *e* communicates motion to the double gear *f*, which runs loosely on the shaft B, and the double gear *f* gives motion to the pinion G, which is fastened to and drives the crank-shaft D. The fly-wheel E is fastened to the end of the crank-shaft D, and has

crank-pins *m*, to which is rigidly connected the plate *r*, having crank-pin *p*. Attached to the front outer corner of the frame A is an adjustable angular plate, *s*, to which are fastened two loose pulleys, *oo*. An adjustable coupling-frame, H, is hinged to the main frame A—one end at the point *l*, the outer front corner, and the other at the point *n*, the outer rear corner. At the point *n* of the frame A is fastened a plate, *t*, through which the end *v* of the frame H passes. The plate *t* has notches, as shown in Fig. 2, in which the end piece *v* is caught and retained. K represents the finger-bar, and K' the main shoe, to which the finger-bar is bolted. Each end of the shoe K' is turned up so as to form two parallel pieces, and through these pieces are passed bolts or bearings at the lower end of the frame H, and on which the shoe K' pivots or turns. At the rear end of the shoe K' is bolted a lever, F. L represents a lifting-lever, which turns on the same center as the shaft B. This lever is held in any desired position by means of the notches in the piece Z on the frame A and the catch Z'. To the lever L is attached one end of a cord or chain, *s'*, which passes around pulleys 5 and 6 on the frame H, the other end being secured to the lever F at any desired point indicated by the holes in the lever. The tongue M is attached directly to the frame A. One end of a rope, *d*, is fastened to the crank-pin *m*, and running from thence around the pulleys *o a b b a o*, the other end is fastened to the crank-pin *p*. The pulleys *oo* are arranged in a horizontal line at the outer front corner of the frame A, the pulleys *aa* one above the other at the inner front corner of the frame H, and the pulleys *bb* in a horizontal line on the shoe. *h'* represents a pin in the cutter-bar *g'*. This pin *h'* is fastened to the rope *d*. 1 2 3 4 represent the cutters, and 1' 2' 3' 4' the fingers or guards. P is a draft-rod, which connects the frame H with the tongue M.

When motion is communicated by the advance of the machine to the fly-wheel E, having the crank-pins *m p*, to which are attached the ends of the rope *d*, one crank-pin moves forward in a circular motion, and the other pin moves in a circle in the opposite direction. This advancing and receding motion of the crank-pins is communicated to the rope *d*,

which in turn gives a reciprocating motion to the cutter-bar *g'*.

The pulleys *o o* are placed so near the center *ln*, from which the frame *H* swings, that the rising and falling motion of said frame does not materially affect the rope *d*, either to slacken or tighten it; nor does the movement of the shoe *K'*, when the finger-bar *K* moves up and down, act to either slacken or tighten the rope *d*. This is effected by the rope's passing as near as possible to the center, on which the frame *H* swings. If the rope *d* becomes slack by usage, it can be tightened by pushing out the plate *s*, which carries the pulleys *o o*. The cutter-bar is lifted to pass obstructions by means of the levers *F* and *L*. It is never necessary to use the lever *F* separately, unless it is desired to carry the cutter-bar in an upright position. The lever *L* is used when it is desired to raise the finger-bar but a short distance—say, from a few inches to two or three feet. The finger-bar *K* is tilted so as to pick up lodged grass or grain by raising the end *v* of the frame *H*, and placing it in a higher notch.

I have made the throw of the cranks *m p* double the distance between the center lines of any two adjoining fingers—viz., double the distance from *1'* to *2'*—so that each knife passes from the center of one finger to the center of the second finger beyond, and then returns from *1'* to *3'* and back to *1'*, thus giving two cuts to each stroke; and by this means I am

enabled to gear the machine up just half the number of times I would if the stroke were only from one finger to the next. The stroke may be made sufficient to run from one finger to the third or fourth beyond. This could be done in a reaper, but in a mower would probably make the outer shoe too wide.

A platform and cutter-bar can easily be attached to the frame *H* for reaping, by simply removing the present cutter-bar and shoe.

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

1. The combination of the crank-pins *m* and *p* and rope *d* with guide-pulleys and cutter-bar, substantially as and for the purpose described.

2. The arrangement of pulleys *a a*, *b b*, and *o o*, respectively, on the main frame, coupling-frame, and shoe, for the passage of the rope *d* from the crank-pins *m* and *h* to the cutter-bar, substantially as and for the purpose herein set forth.

3. The combination of sliding piece *s*, rope *d*, and crank-pins *m* and *p* with the cutter-bar, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

EDWIN L. HUTCHINSON.

Witnesses:

C. C. BUTTON,
A. L. PALMER.