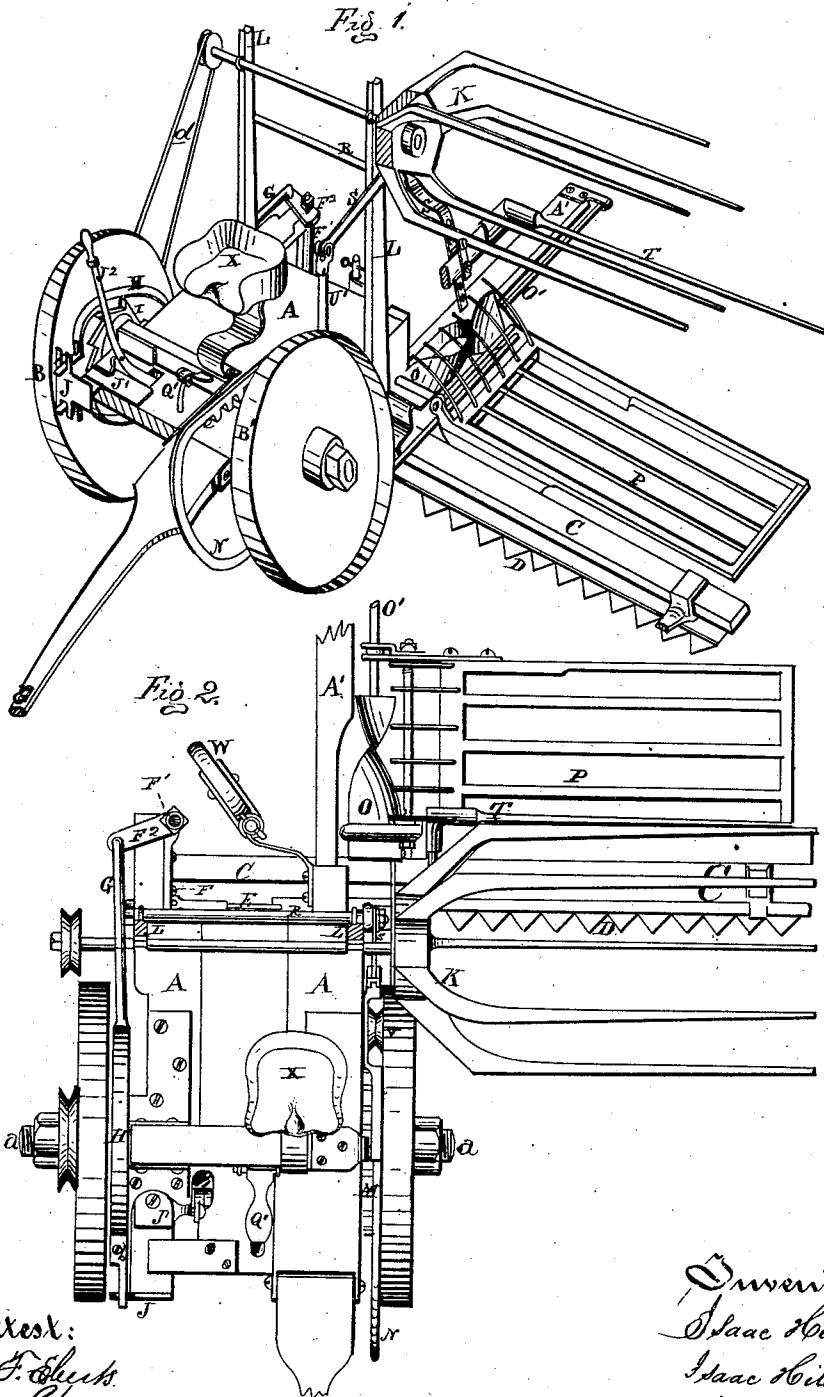


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Harvester-Droppers.

No. 155,305.

Patented Sept. 22, 1874.



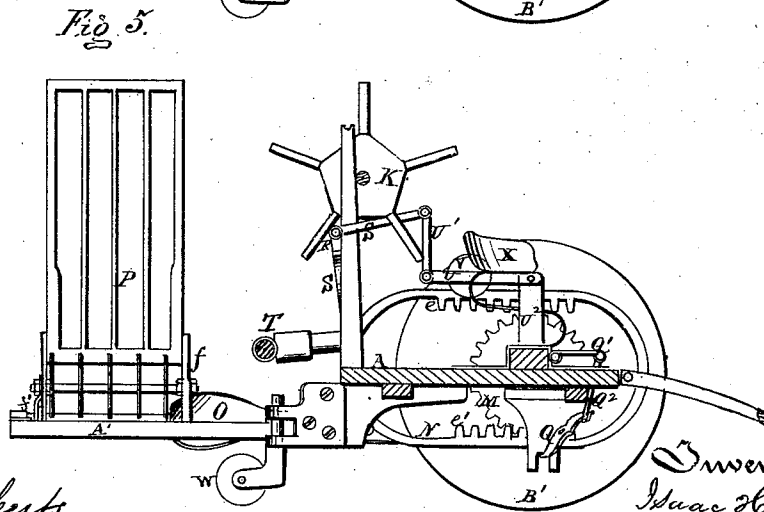
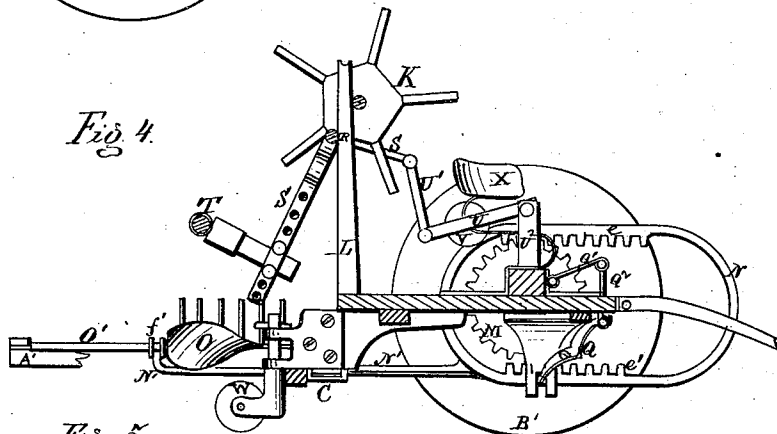
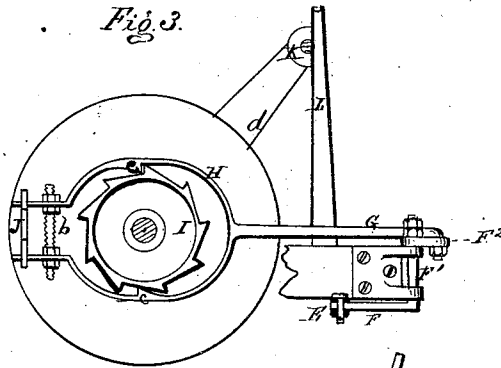
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UNITED STATES PATENT OFFICE.

ISAAC HILLS AND ISAAC HILLS, JR., OF FRANKFORT, MICHIGAN.

IMPROVEMENT IN HARVESTER-DROPPERS.

Specification forming part of Letters Patent No. **155,305**, dated September 22, 1874; application filed May 22, 1874.

To all whom it may concern:

Be it known that we, ISAAC HILLS and ISAAC HILLS, Jr., of Frankfort, in the county of Benzie and State of Michigan, have invented certain new and useful Improvements in Harvesters, of which the following is a specification:

Our invention relates to a peculiar dropper and the mechanism for operating the same; and it consists in the peculiar construction of the dropper-apron and its operating mechanism, so combined with the reaper-frame and a pinion on one of its traction-wheels as that the apron may be moved back, tilted up to discharge the grain lying on it, and moved forward again whenever the operating-racks are thrown into gear with the said pinion by the driver, as more fully hereinafter set forth.

Figure 1, Sheet 1, is a perspective view of the machine. Fig. 2 is a plan. Fig. 3, Sheet 2, is an elevation of the inner side of the traction-wheel. Fig. 4 is a longitudinal section of the machine-frame, showing the apron-dropper down ready to receive the cut grain. Fig. 5 is a similar view, showing the dropper-apron carried back and tilted to discharge the grain in the wake of the machine.

In the drawings, A represents the frame of the reaper, having an axle, *a*, on the right arm of which is mounted a traction-wheel, B, and on the left arm another wheel, B'. C is a stiff cutter-bar secured across and projecting laterally from the rear end of the frame of the machine when used as a reaper. For mowing, it is replaced by a flexible cutter-bar. D is the knife or sickle, having pivoted to its heel the pitman E, which is in turn pivoted to the end of an arm, F, on the lower end of a shaft, F', vertically journaled at the right rear corner of the frame, and whose upper end carries an arm, F², at a right angle with the lower one. In its outer end is hooked the rear end of a rod, G, which carries an elliptic yoke, H, which includes between its upper and lower parts a ratchet-wheel, I, bolted to the inner face of the wheel B, and which ratchet has an odd number of teeth. The front end of the yoke is cut open, and has the ends bent forward and made adjustable with relation to each other by a screw, *b*, with a double set of adjusting-nuts. The open ends play in two

slots in a plate, J, at the overhanging front end of a bell-crank, J¹, pivoted on the frame, and so connected with a hand-lever, J², pivoted in the frame, as that the driver, by moving this lever back, can draw the yoke away from the ratchet, and, by throwing it forward, move the yoke into the plane of the ratchet. The reciprocation of the yoke, and through it that of the sickle, is effected by two abutments, *c*, one in each half of the yoke, the abutments facing in opposite directions, one of which alternately engages with a tooth of the ratchet, which moves the yoke along with it until the tooth has become tangent to the said abutment, when a tooth at the opposite side of the ratchet engages in like manner with the other abutment and reverses the movement of the yoke until the tooth becomes tangent thereto. The abutments should be made of hard steel to stand the wear, and detachable, so as to be replaced by new ones at a very small cost when worn out. K is a reel, whose shaft is mounted in a pair of standards, L, at the rear corners of the main frame, and it is driven by a cord, *d*, passing around its pulley, and one on the wheel B; or it may be driven in any other convenient manner. M is a pinion bolted to the inner face of the traction-wheel B'. N is a double rack-frame with circular end lying in the path of the pinion. N' is a rod forming a rear prolongation of its lower rack. O is a plate having its front end bolted to the cutter-bar, extending to the rear, its rear end having a quarter-twist turned in it, and from its end a rod, O', extends still farther to the rear, where it is supported by a bracket from the end of a prolongation, A', of one sill of the main frame. There is enough vertical play to the frame-rack to permit either the upper rack, *e*, or the lower one, *e'*, to be engaged with the pinion M. When the frame-rack is moved forward, neither rack will mesh with said pinion. P is a slatted dropper-apron lying behind and parallel with the cutter-bar. Its inner forward corner has a metal yoke, *f*, which embraces the plate O, while the rear corner has a projecting eye, *f'*, which is sleeved on the rod O', the eye being double plates, between which an eye on the end of the rack-rod N' is inserted, so that if the latter be moved backward the apron will be moved by

it, preserving its horizontal position until the clamp-yoke *f* runs upon the twisted part of the plate, when the twist will throw up the apron to a vertical position as it is carried along, and thus its contents will be dropped off in the path of the machine over a grating at the heel of the apron, which is provided for the purpose of preventing the grain from falling upon any of the operative parts. *Q* is a lever pivoted under the main frame, its outer end passing under the rack-frame, which can be raised up by depressing the other end of the said lever by means of the spring-treadle *Q*¹, which is connected therewith by a rod, *Q*². *R* is a shaft journaled across the standards *L*. On the left end of said shaft is secured a bell-crank, *S*, to one arm of which is adjustably secured the shank of a grain-holder rod, *T*, below and usually behind the reel. To the front arm of the bell-crank is suspended, by a link, *U*¹, the rear end of a radius-bar, *U*, whose front end is pivoted to a short standard, *U*², rising from the axle. *V* is a grooved metal wheel journaled to the side of the bar *U*, and rides on the top and rear end of the rack-frame. *W* is a caster-wheel at the rear end of the main frame. *X* is the driver's seat.

The operation of the dropper is as follows: The machine advancing, the grain, as cut, falls upon the dropper. When enough has accumulated thereon to form a gavel the driver depresses the treadle *Q*¹, which, through the lever *Q*, raises the frame *N*, so that the rack *e'* will mesh with the pinion *M*, which will thus propel the said frame rearward, carrying the dropper-apron with it. The frame underruns the wheel of the radius-bar *U* and link *U*¹,

which thus swings forward the grain-holder *T* under the reel to hold the grain standing on the cutter-bar. As the apron completes its rearward movement it tilts up and discharges the grain, when the driver releases the treadle, which allows the rack *e* to drop into gear with the pinion *M*, which reverses the movement of the apron and rod *T* until the said rack is run forward out of gear, and is kept there by the weight of the wheel *V*, which rides its end. The action of the dropper is so quick that no great amount of grain can accumulate on the cutter-bar during its movement.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination, with the frame *A* and yoke *H*, of the slotted plate *J*, bell-crank *J*¹, and hand-lever *J*², as and for the purpose set forth.

2. The combination, with the frame *A* *A'* and traction-wheel *B'*, of the pinion *M*, frame *N* *N'*, racks *e* *e'*, spiral plate *O*, rod *O'*, dropper-apron *P*, yoke *f*, eye *f'*, lever *Q*, and treadle *Q*¹, substantially as and for the purpose specified.

3. The combination, with the standards *L*, shaft *R*, bell-crank *S*, and grain-holder *T*, of the link *U*¹, radius-bar *U*, and wheel *V*, arranged to operate the said holder *T* by the movement of the rack-frame *N*, substantially as described.

ISAAC HILLS.

ISAAC HILLS, JR.

Witnesses:

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A. JONES.