2 Sheets--Sheet 1.

C. S. STICKLE, W. P. PARKER & J. D. MOORE.

Harvester.

No. 163,275. Patented May 11, 1875.

Fig. 1.

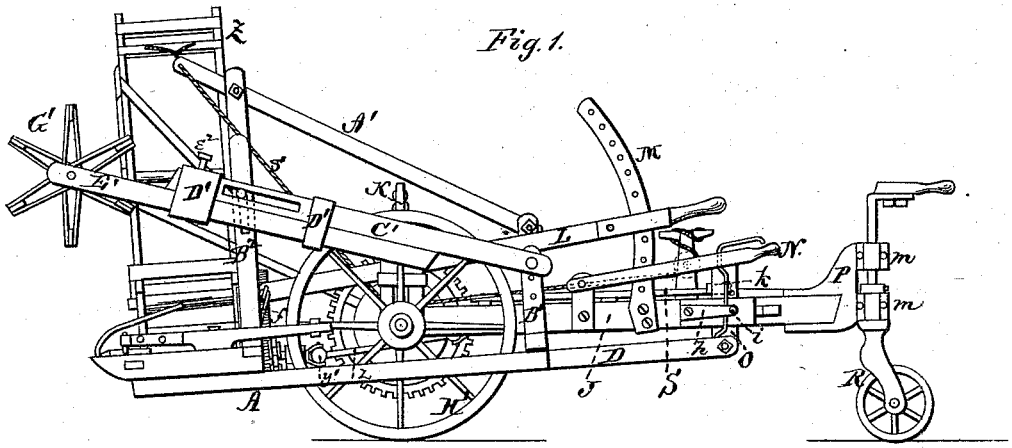


Fig. 3.

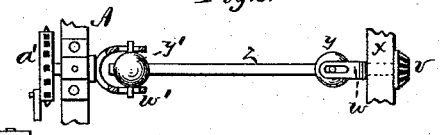
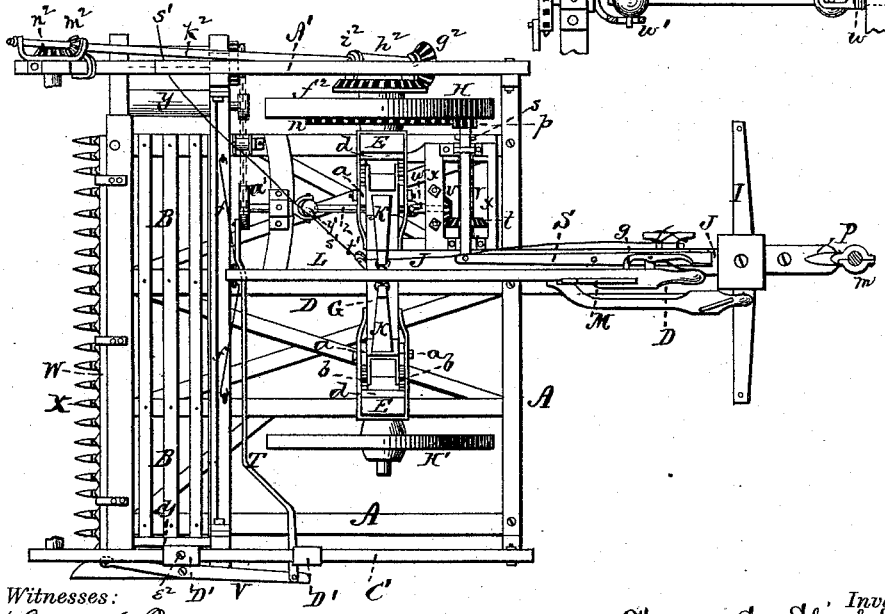


Fig. 2.



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2 Sheets--Sheet 2.

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Fig. 4.

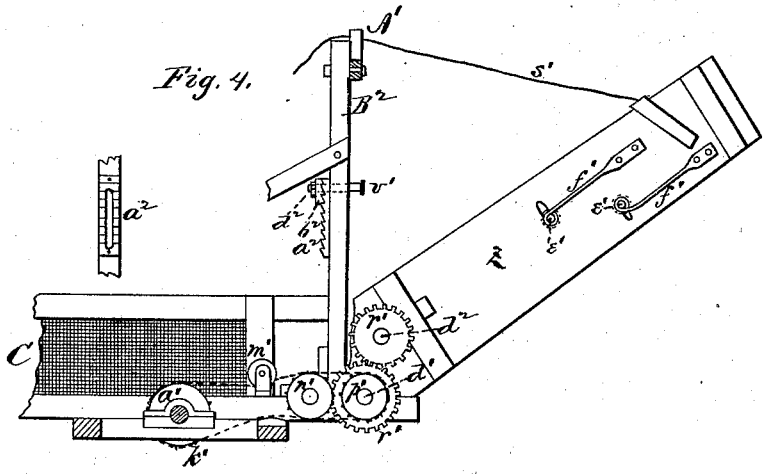
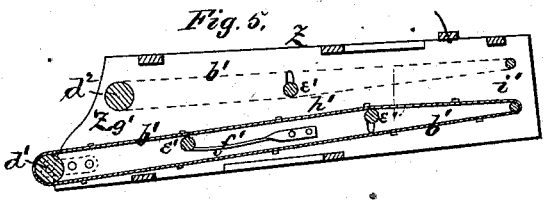


Fig. 5.



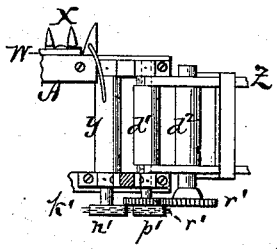


Fig. 6.

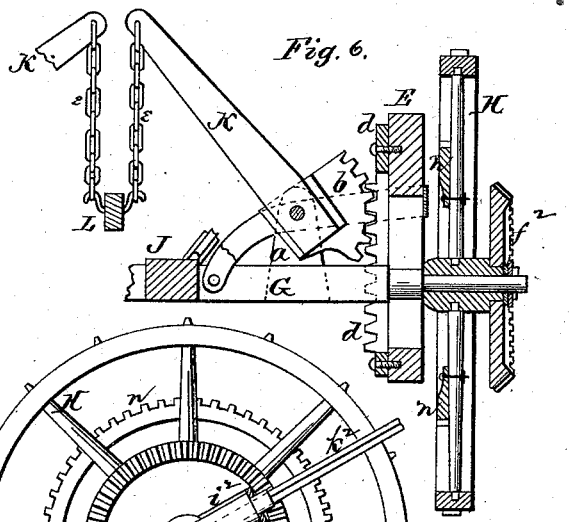
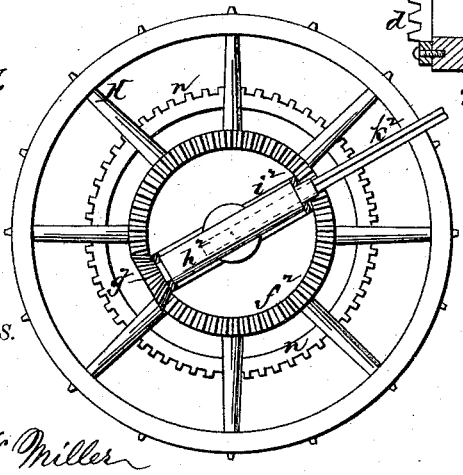


Fig. 7.



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UNITED STATES PATENT OFFICE.

CHARLES S. STICKLE, AND JAMES D. MOORE, OF GRINNELL, AND WILLIAM P. PARKER, OF TAMA, IOWA; SAID MOORE ASSIGNOR TO SAID STICKLE AND PARKER.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **163,275**, dated May 11, 1875; application filed November 6, 1873.

To all whom it may concern:

Be it known that we, CHARLES S. STICKLE, of Grinnell, Poweshiek county, WILLIAM P. PARKER, of Tama, Tama county, and JAMES D. MOORE, of Grinnell, in the county of Poweshiek and in the State of Iowa, have invented certain new and useful Improvements in Grain Harvester or Header; and 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, making a part of this specification.

The nature of our invention consists in the construction and arrangement of a grain-harvester, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which our invention appertains to make and use the same, we will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a side elevation of our machine. Fig. 2 is a plan view of the same with the reel and elevator removed. Fig. 3 is a plan view of the shaft, with its balls and pins connected to the slotted forks, one of which is secured to a stationary frame and the other to a movable frame. Fig. 4 is an enlarged rear view of the elevator, with the gearing for operating the same. Fig. 5 is a longitudinal vertical section of the elevator. Fig. 6 is an enlarged section, showing the mode of raising and lowering the frame. Fig. 7 is an enlarged side view of one of the driving-wheels.

A represents the frame of our machine, constructed of three parallel bars, connected by side bars at or near their ends, and with intermediate bars and braces arranged in any suitable manner. Along the front part of the frame A is a slat platform, B, and at the back edge of this platform is a vertical screen, C, of perforated sheet metal, wire-cloth, or other suitable material. In the frame A is secured a lever, D, which extends to the rear beyond the frame for a suitable distance. E E represent two vertical standards in the frame, which standards are mortised or slotted longitudinally for the passage of the ends of the axle G. The axle G is located between the standards E E, its ends projecting through the slots in the same, and immediately on the outside of the standards the driving-wheels H H′ are placed upon the ends of the axle. Attached, and suitably braced, to the axle G, is a tiller-beam, J, which extends toward the rear, and is, near the rear end, provided with the double-tree I, for the attachment of the horses, which walk behind the frame of the machine and force the machine ahead of them. Near each end of the axle G are two posts, *a a*, between which is pivoted a short lever, K. Each lever K is, at its pivot end, provided with a cogged segment, *b*, which is grooved or slotted to fit over the axle, and gears with a slotted and cogged plate, *d*, attached on the inner side of the standard E. The inner or loose ends of the two levers K K are, by chains *e e*, connected with a long lever, L, the front end of which is, by rods *f f*, connected with one of the beams of the frame A, in rear of the screen C, and the rear end of the lever L is slotted and passes over a curved perforated bar, M, attached to the tiller-beam J. The lever L is held on the bar M by means of a spring-pin, *g*.

In this coupling arrangement of the long lever L, there is a method of lifting at two points; first, where the lever is hooked onto the frame by the rods *f f;* and secondly, by the chains *e e*, fastened to the short levers K K, so that when the lever L is depressed the levers K K are pulled down, and by means of the cog-gears *b d* the machine is raised up bodily.

The object of the lever D, under the tiller-beam, is to keep the machine on a level while cutting, if desired, or to elevate or lower the front of the machine, as may be necessary. This lever D is operated by a smaller lever, N, above the tiller-beam, connected to the lower lever by a vertical bar, O, passing through a box or loop on the side of the tiller-beam and arranged with a pin, *i*, and spring, *h*, to keep it in place. This lever can be raised and lowered by the foot or hand at pleasure, by first

throwing it out of gear by a crank-shaft, *k*, so arranged as to press the spring *h* out and remove the pin *i* from its place, thus enabling the driver to raise or lower the lever at will.

On the front end of the tiller-beam J is secured a casting, P, which is divided into boxes *m m*, bolted together as shown in Fig. 1. The casting P is made so as to slip over the end of the tiller-beam, and is fastened by a single bolt. Through the boxes *m m* passes the stem of the single wheel R, said stem being at its upper end provided with a handle, by means of which the wheel R is turned so as to steer the machine. Upon the inner side of the wheel H is secured a cog-wheel, *n*, which gears with a pinion, *p*, placed loosely upon the end of a shaft, *r*. The pinion *p* is thrown in and out of gear with the shaft by means of a movable feathered clutch, *s*, which is operated by a lever, S, pivoted on top of the tiller-beam, and which may be moved either by the hand or foot, as desired. By this means the driver can throw the machine in and out of gear as occasion may require.

Upon the shaft *r* is secured a bevel or miter cog-wheel, *t*, which gears with a similar wheel, *v*, upon the end of a short shaft or journal, having a fork, *w*, upon its other end, both prongs of said fork being slotted, as shown in Fig. 3. The shaft *r*, with its wheels, and the wheel *v*, are supported in a frame, *f*, which is securely attached to the tiller-beam J. In the fork *w* is placed a ball, *y*, having pins or journals passing through the slots in the prongs. The ball *y* has a square hole in the center, through which is passed the square end of a shaft, *z*. The other end of this shaft is passed through a similar hole in another ball, *y'*, and this ball is also provided with pins or journals which are passed through slots in the prongs of a fork, *w'*. This fork *w'* is formed on or attached to the end of a short shaft, which is supported upon a part of the main frame A, and carries at its other end a wheel, a^1.

By means of the slotted forks *w w'*, balls *y y'*, and shaft *z*, the wheel a^1 is always kept in gear with the wheel *v*, no matter how the main frame A may be adjusted by the levers D and N. On the rear side of the wheel a^1 is a crank-pin, on which a pitman, T, is attached, said pitman connecting with the rear end of a lever, V, pivoted on top of the shoe at one end of the platform B. The other or front end of the lever V is connected with the end of the sickle-bar W, whereby the same obtains a reciprocating motion. X represents the finger-bar, the fingers or guards of which are riveted on the bottom, so as to give a smooth surface on top for the grain to pass over onto an endless apron which passes over rollers Y Y, one at each end of the platform B. From this apron the grain is caught between two other endless aprons, b^1 b^1, in the elevator Z, which is hinged at the end of the platform B on the other side from where the lever V is situated. d^1 and d^2 are the rollers at the inner end of the elevator, around which the aprons b^1 b^1 pass, the roller d^1 having its journal-bearings on the end of the main frame A, and the elevator hinged to its journals, as shown in Fig. 5.

All the aprons in the machine are provided with slats running across them a suitable distance apart, to assist in carrying up the grain.

The aprons b^1 b^1 in the elevator *z* pass also over rollers e^1 e^1, which have their journal-bearings in spring-arms f^1 f^1, so as to yield to the amount of grain passing between the aprons.

The spring-arms f^1 f^1 may be arranged either on the inside or outside of the elevator, and if arranged on the outside the journals of the rollers e^1 e^1 must pass through slots in the sides of the elevator.

By reference to Fig. 5 it will be seen that the two aprons b^1 b^1 are so arranged as to be farther apart at the inner end or throat *g'* than at or near the middle at h^1, and at this point h^1 the distance between them is smaller than at the outer end *i'*. The object of this arrangement is to allow the grain to pass into the throat at *g'* freely, and the aprons then hug the grain at *h'* to make it pass up and then deliver freely at i^1. The aprons are operated by means of a chain, k^1, which passes around the wheel a^1 under an idle pulley, m^1, and around pulleys n^1 and p^1, placed respectively upon the journals of the rollers *y* and d^1. The rollers d^1 and d^2 are then geared together by means of cog-wheels *r' r'*. The elevator Z is raised and lowered and held at any angle desired by means of a rope, *s'*, which is attached to the elevator at or near its outer end, passes the end of a beam, A^1, under a pulley, *t'*, on the axle G back to a suitable fastening device near the rear end of the tiller-beam J. On each side of the main frame A are two upright posts, B^1 and B^2. To the upper end of the rear post B^1 is pivoted the rear end of an arm, C', the front end of which is slotted longitudinally, as shown in Fig. 1. A bolt, *v'*, is passed from the outside through the slot in the arm C' through a vertical slot in the post B^2 and through a slot in a ratchet-plate, a^2, attached to the inner side of said posts B^2. A ratchet-washer, b^2, is then placed on the end of the bolt *v'* and a nut, d^2, screwed up on the bolt against the washer, and thereby securing the arm in position. By this means the front end of the arm C' may be adjusted up and down as desired and held or clamped in place. To each arm C' are attached two metal loops, D' D', in which the reel-bearer E^1 may slide back and forth. The reel G' is journaled in the front ends of the reel-bearers E^1 E^1, and these being movable out and in, in connection with the up and down adjustment of the arms C' C', the reel may be adjusted to any desired position over the cutter-bar. The reel-bearers E^1 E^1 are held by means of set-screws e^2 e^2 through the front loops D'. The reel G' is operated by the following means: On the outer side of the

wheel H is a beveled or miter cog-wheel, f^2, which gears with a similarly-shaped pinion, g^2, attached upon the end of a hollow sleeve, h^2. This sleeve has its bearings, and revolves in a frame, i^2, which is placed upon the end of the spindle for the wheel H, and may turn upon the same. In the hollow sleeve h^2 is inserted the square end of a shaft, k^2, the front end of which revolves in suitable ears attached to the outer end of the reel-bearer E^1 on that side of the machine. This end of the shaft is provided with a bevel-pinion, m^2, which gears with a similar pinion, n^2, on the end of the reel-journal. By means of the square end of the shaft k^2 fitting in the square interior of the sleeve h^2, the reel may be adjusted out and in, by the means above described, without interfering with the running of the reel; and by means of the frame i^2 turning upon the wheel-spindle the up and down adjustment of the reel does not interfere with the running of the reel.

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

1. The combination, with the levers D N and connecting bar O, of the pin *i*, spring *h*, and crank-shaft *k*, substantially as and for the purposes herein set forth.

2. The combination, with the frame A with its standards E E, and the axle G with the wheels H H′, of the lever L, rods *f f*, chains *e e*, levers *k k*, with cogged segments *b b*, and the slotted and cogged plates *d d* attached to the standards E E, all substantially as and for the purposes herein set forth.

3. The endless aprons b^1 b^1, arranged as described in the elevator Z, so as to be farther apart at the throat g' than at the center h^1, and closer together at the center than at the outer end i^1, for the purposes herein set forth.

4. The rollers e^1 supported in spring-bearings f^1 f^1 and operating in combination with the aprons b^1 b^1, substantially as and for the purposes herein set forth.

5. The combination of the adjustable arm C′, loops D′ D′, reel-bearer E^1, and set-screw e^2, substantially as and for the purposes herein set forth.

In testimony that we claim the foregoing we have hereunto set on hands this 8th day of October, 1873.

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