(No Model.) 3 Sheets—Sheet 1.

E. L. MOWREY.

COTTON CHOPPER.

No. 273,586. Patented Mar. 6, 1883.

Fig 1

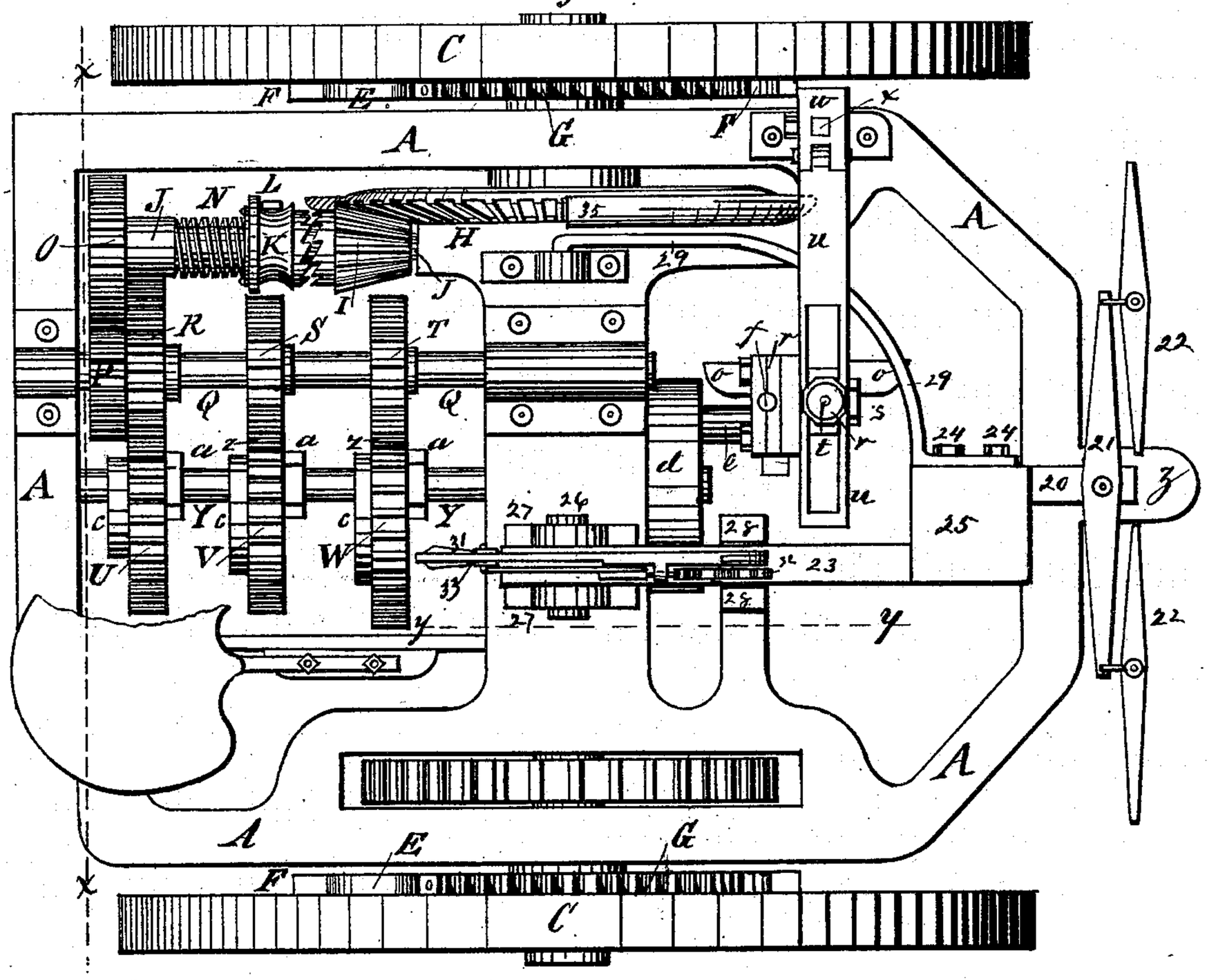


Fig 2

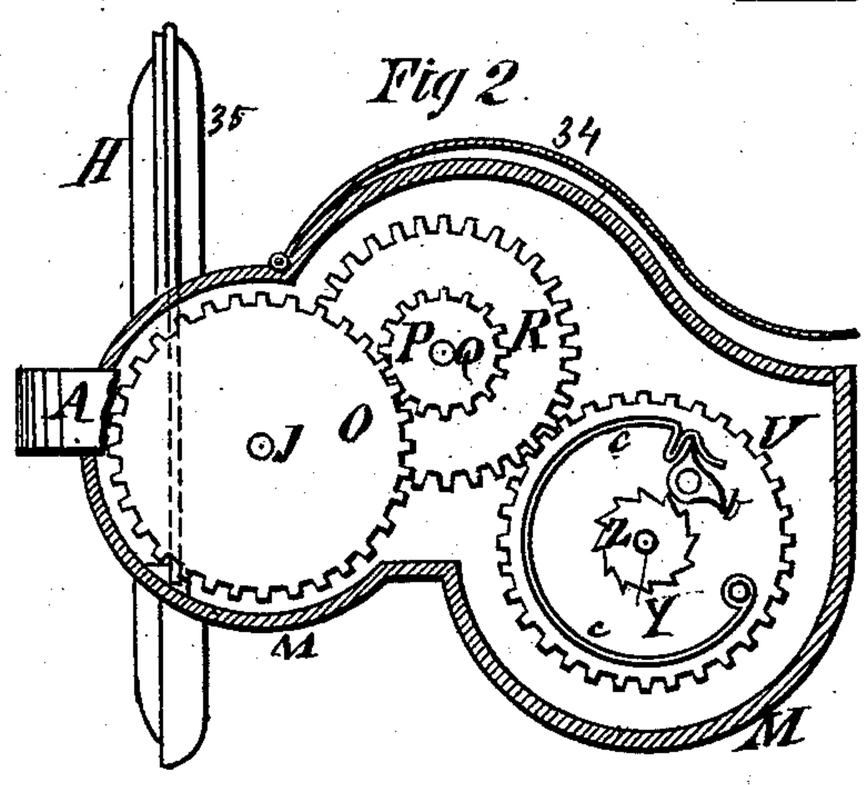
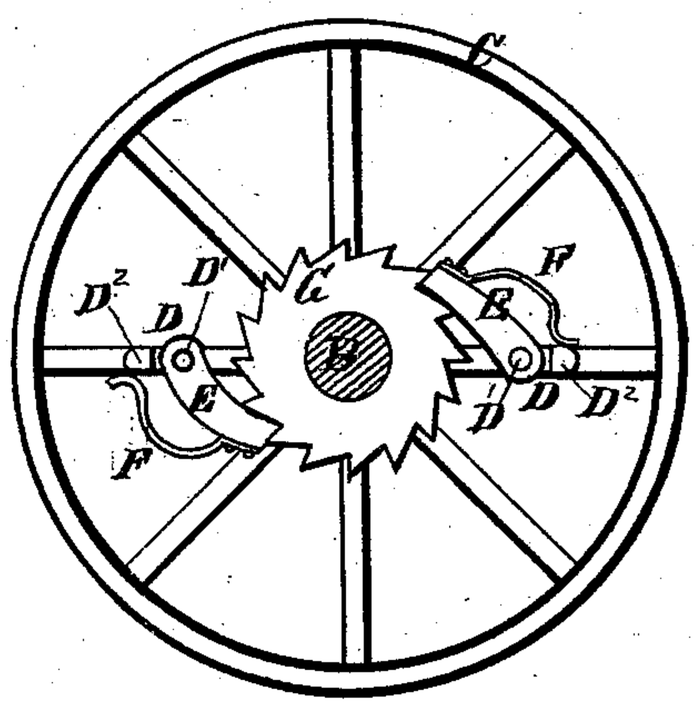


Fig 3



WITNESSES:

Chas. C. Howell.

C. Sedgwick

INVENTOR:

E. L. Mowrey,

BY Munn & Co

ATTORNEYS.

(No Model.)

3 Sheets—Sheet 2.

E. L. MOWREY.

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Fig 4

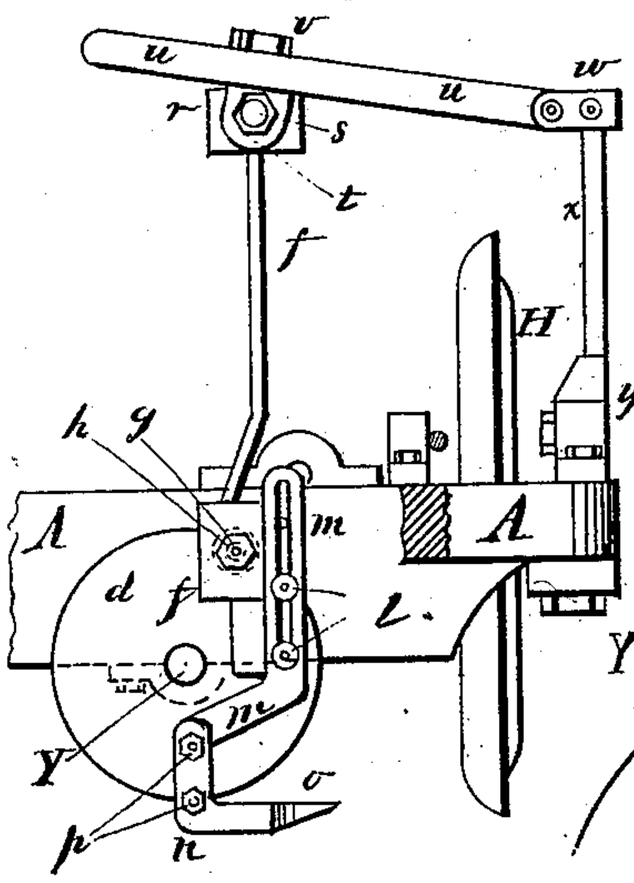


Fig 5

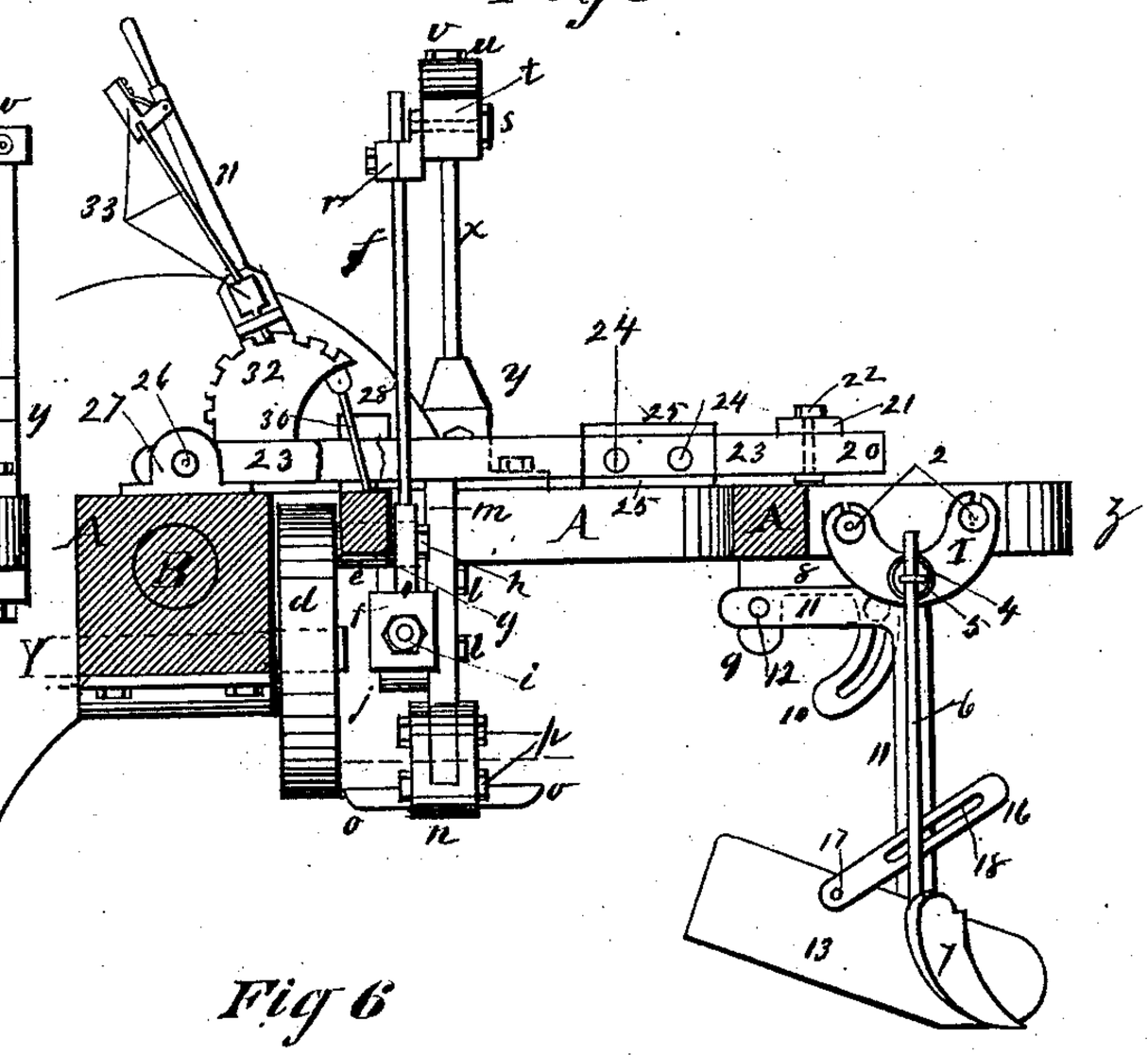


Fig 6

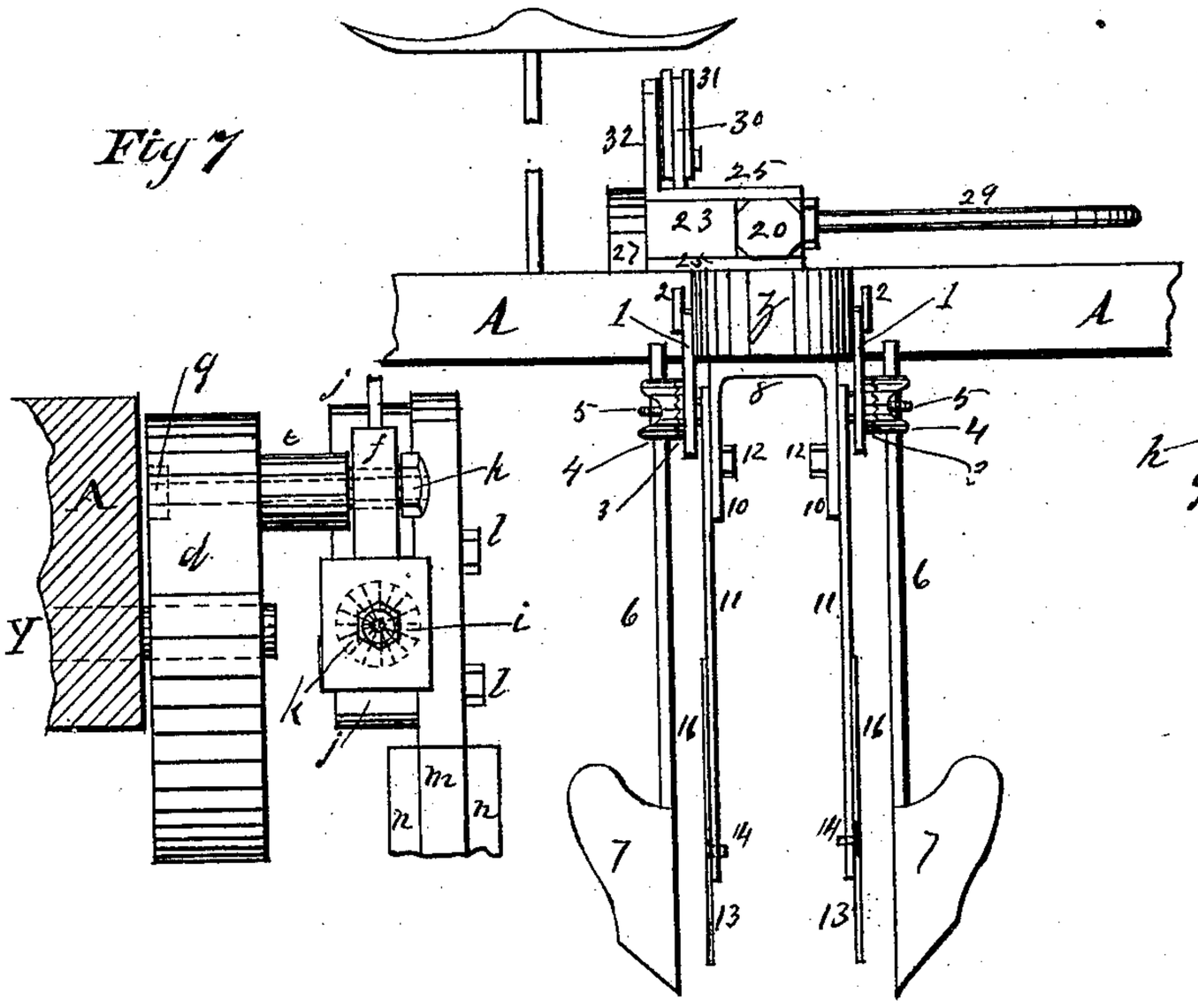
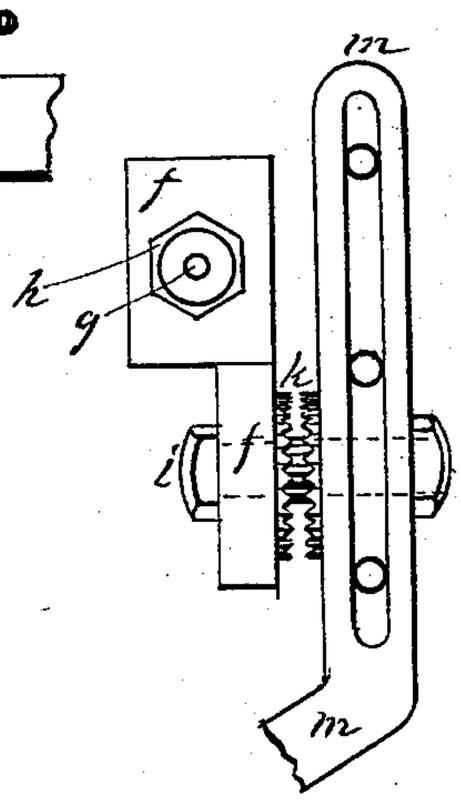


Fig 7

Fig 8.



WITNESSES:

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(No Model.) 3 Sheets—Sheet 3.

E. L. MOWREY.

COTTON CHOPPER.

No. 273,586. Patented Mar. 6, 1883.

Fig 9

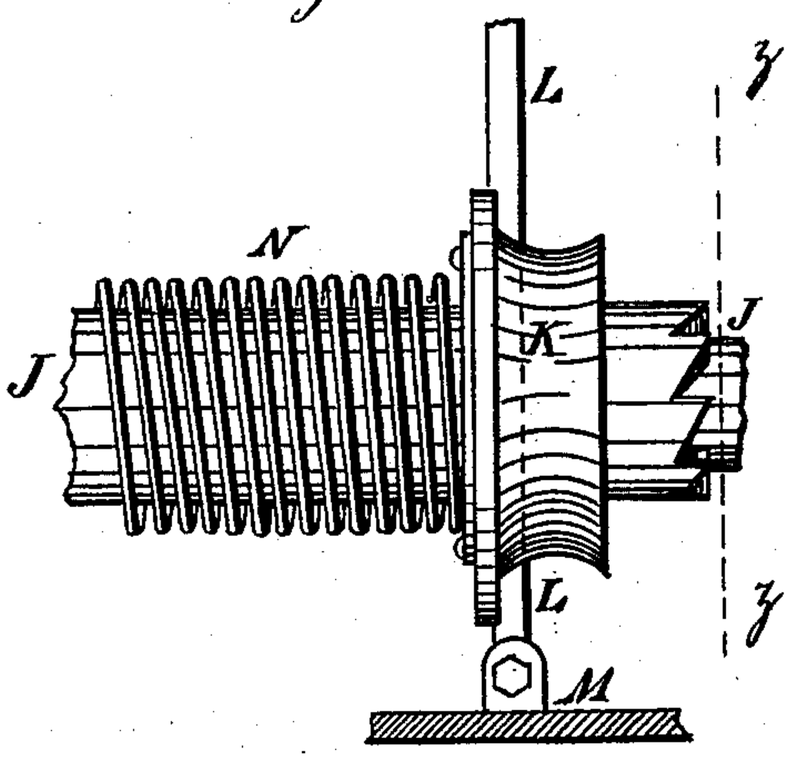


Fig 10

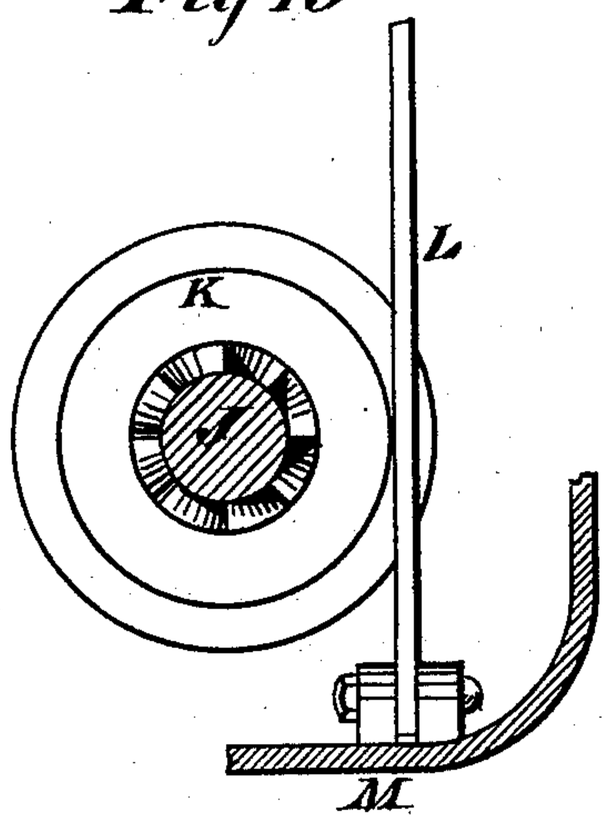


Fig 11

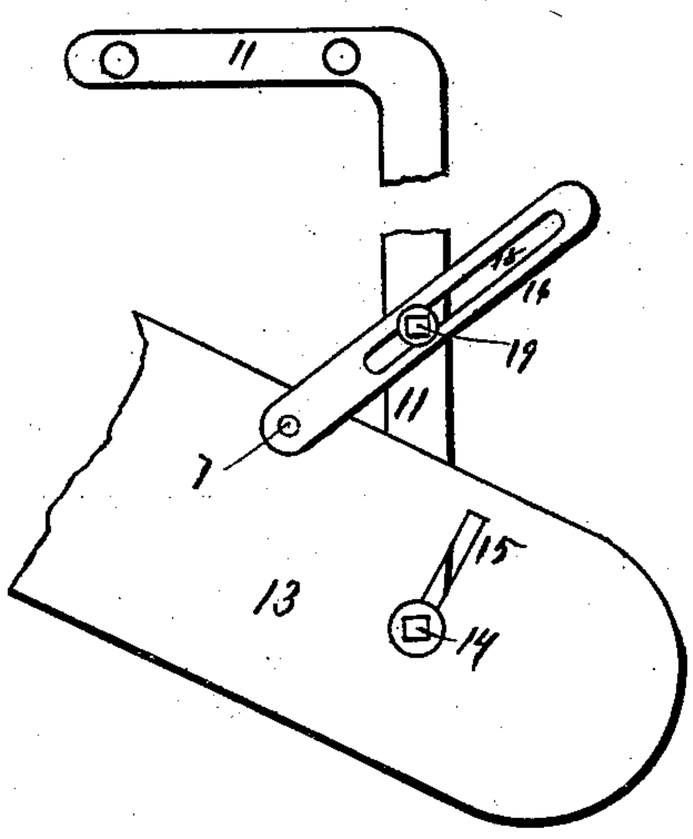


Fig 12

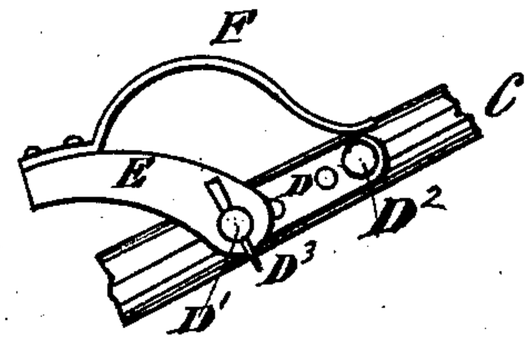


Fig 13

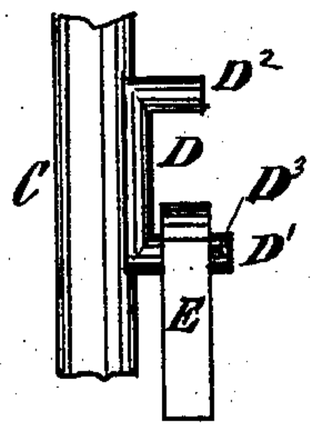


Fig 14

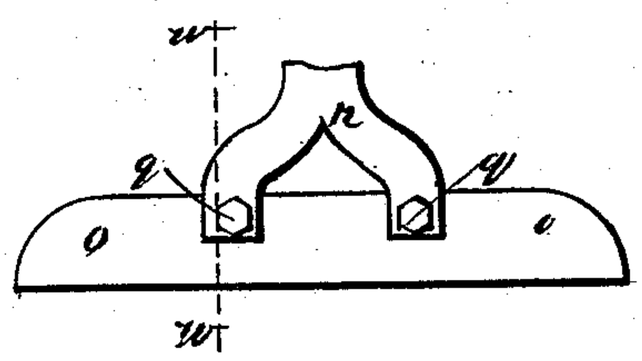


Fig 15

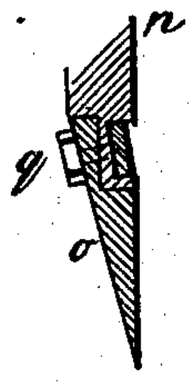
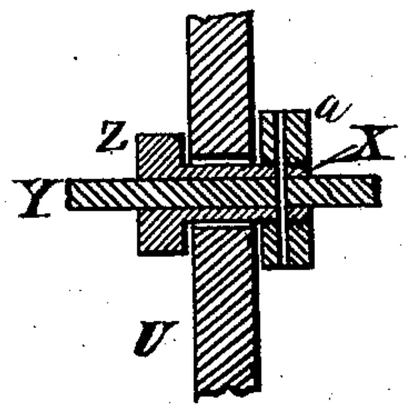


Fig 16



WITNESSES:

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C. Sedgwick

INVENTOR:

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UNITED STATES PATENT OFFICE.

EPHRAIM L. MOWREY, OF MILTON, TEXAS.

COTTON-CHOPPER.

SPECIFICATION forming part of Letters Patent No. 273,586, dated March 6, 1883.

Application filed August 2, 1882. (No model.)

To all whom it may concern:

Be it known that I, EPHRAIM L. MOWREY, of Milton, in the county of Lamar and State of Texas, have invented a new and useful Improvement in Cotton-Choppers, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1, Sheet 1, is a plan view of my improvement, the cover of the gearing-case being removed. Fig. 2, Sheet 1, is a sectional rear elevation of a part of the same, taken through the line *x x*, Fig. 1. Fig. 3, Sheet 1, is a side elevation of one of the driving-wheels. Fig. 4, Sheet 2, is a front elevation of the chopping-hoe and its supporting mechanism. Fig. 5, Sheet 2, is a sectional side elevation of the forward part of the machine, taken through the line *y y*, Fig. 1. Fig. 6, Sheet 2, is a front elevation of the plows and their supporting mechanism. Fig. 7, Sheet 2, is a side elevation of the mechanism for connecting the chopping-hoe with the crank-wheel. Fig. 8, Sheet 2, is a front elevation of the same. Fig. 9, Sheet 3, is a side elevation of the clutch, lever, and spring for throwing the gearing into and out of gear. Fig. 10, Sheet 3, is an end elevation of the same, the shaft being shown in section through the line *z z*, Fig. 9. Fig. 11, Sheet 3, is a side elevation of one of the fenders and its standard and brace. Fig. 12, Sheet 3, is a front elevation of the pawl, spring, and coupling for connecting a drive-wheel with its axle. Fig. 13, Sheet 3, is a side elevation of the same, the spring being removed. Fig. 14, Sheet 3, is a bottom view of the chopping-hoe and its shank. Fig. 15, Sheet 3, is a sectional elevation of the same, taken through the line *w w*, Fig. 14. Fig. 16, Sheet 3, is a sectional elevation of a gear-wheel and its sleeve and ratchet-wheel.

The object of this invention is to promote convenience in adjusting and regulating cotton-choppers.

The invention consists in the peculiar construction of the driving mechanism and of various parts of the operating mechanism, as will be hereinafter fully described, and then pointed out in the claims.

A represents the frame of the machine, in bearings in which revolves the axle B of the drive-wheels C.

To two spokes of each wheel C, upon the opposite sides of its hub, are secured couplings D, having a projecting stud at each end.

The inner stud, D′, is designed to serve as a pivot for the pawl E, and the outer stud, D^2, is designed to serve as a support and stop for the free end of the spring F to rest against. The pawl E is secured in place upon the stud D′ by a key, D^3, passed through a hole in the said stud at the outer side of the said pawl. The spring F is secured to the rear side of the engaging end of the pawl E by bolts or rivets, and is so formed as to bear against the stud D^2 and hold the pawl E in place, both when in gear with the ratchet-wheel G, attached to the axle B, and when out of gear with the said ratchet-wheel, so that the drive-wheels can be made to carry the axle with them in their revolution, when the machine is at work, by throwing the pawls into gear with the ratchet-wheels, and can be allowed to run free, when the machine is being taken from place to place, by throwing the said pawls out of gear.

To the axle B, near one side bar of the frame A, is attached a large beveled-gear wheel, H, into the teeth of which mesh the teeth of the small beveled-gear wheel I. The gear-wheel I runs loose upon the shaft J, which revolves in bearings formed in or attached to the frame A. The gear-wheel I is made to carry the shaft J with it in its revolution by the sliding clutch K, placed upon the said shaft and connected with it by a tongue and groove or other suitable means. The clutch K has an annular groove formed in it to receive the lever L, pivoted to the lower part, M, of the casing that covers and protects the gearing, and which passes up at the side of the clutch K, so that its upper end can be readily reached and operated by the driver to throw the said clutch out of gear. The clutch K, when the lever L is released, is thrown into connection with the gear-wheel I by the spiral spring N, placed upon the shaft J, with its forward end resting against the clutch K and its rear end resting against a shoulder, collar, or other stop formed upon or attached to the said shaft J.

To the rear end of the shaft J is attached a large gear-wheel, O, the teeth of which mesh into the teeth of the small gear-wheel P, attached to the shaft Q. The shaft Q revolves in bearings attached to the frame A, and to it are attached a large gear-wheel, R, a smaller gear-wheel, S, and a still smaller gear-wheel, T, the teeth of which mesh respectively into the teeth of the gear-wheel U, the larger gear-wheel V, and the still larger gear-wheel W. The gear-wheels U V W run loose upon sleeves X, which are placed upon the shaft Y, and are secured to the said shaft by keys, pins, set-screws, or other suitable means.

Upon one end of the sleeves X are formed, or to them are attached, ratchet-wheels Z, against which the gear-wheels U V W rest, and are secured in place by nuts *a*, screwed upon the other ends of the said sleeves X.

To the sides of the wheels U V W are pivoted pawls *b* in such positions that they can be turned down to engage with the ratchet-wheels Z, and thus cause the said wheels U V W to carry the shaft Y with them in their revolution, and can be turned back to allow the said wheels U V W to run free.

To the gear-wheels U V W are attached springs *c*, to rest upon the pawls *b* and hold them securely in either position. With this construction, by throwing the pawls of the gear-wheels V W out of gear and the pawl of the gear-wheel U in gear, the shaft Y will be driven by the gear-wheels R U with a fast movement. By throwing the pawls of the gear-wheels U W out of gear and the pawl of the gear-wheel V in gear the shaft Y will be driven by the gear-wheels S V with a slower movement; and by throwing the pawls of the gear-wheels U V out of gear and the pawl of the gear-wheel W in gear, the shaft Y will be driven by the gear-wheels T W with a still slower movement. The shaft Y revolves in bearings in the frame A, and to its projecting forward end is attached a crank-wheel, *d*.

Upon the wheel *d* is formed, or to it is rigidly attached, a crank-pin, *e*, which is perforated longitudinally, the said perforation extending through the wheel *d*. The outer end of the crank-pin *e* is turned down to form a journal to receive the enlarged lower end of the bar *f*, where it is secured in place by a bolt, *g*, which passes through the wheel *d* and the pin *e*, and has a nut, *h*, upon its forward end. The nut *h* is screwed up against the end of the hollow pin *e*, so that it cannot pinch the bar *f*, and thus prevent the said bar from working easily. The bar *f* projects below the crank-pin *e*, and has a hole formed through its projecting lower end to receive a bolt, *i*, which passes through it and through the coupling-block *j*, placed against the side of the said bar *f*. Upon the adjacent faces of the bar *f* and block *j* are formed, or to them are attached, plates *k*, having radially-corrugated faces to engage with each other and hold the block *j* from turning upon the bar *f*, while allowing the said block to be readily adjusted by loosening the nut of the bolt *i*.

To the forward side of the coupling-block *j* is secured by bolts *l* a standard, *m*, the lower part of which is bent laterally and then downward to bring its lower end into proper position to receive the shank *n* of the chopping-hoe *o*. With this construction, when the shaft Y is driven by the gear-wheels R U, a twelve-inch hoe *o* should be used. When the shaft Y is driven at a slower speed by the gear-wheels S V a fifteen-inch hoe *o* should be used; and when the shaft Y is driven at a still slower speed by the gear-wheels T W an eighteen-inch hoe *o* should be used, so that the cotton can be cut to any desired stand. The upper part of the shank *n* is slotted to receive the lower end of the standard *m*, and is secured to the said standard by bolts *p*. The lower part of the shank *n* is bent inward, is forked, and has its prongs inclined from each other, as shown in Fig. 14. The ends of the prongs of the shank *n* are placed in recesses in the lower side of the chopping-hoe *o*, and are secured to the said hoe by bolts *q*, the heads of which enter countersinks in the ends of the prongs of the shank *n*, so as to leave the lower surface of the hoe smooth. The upright part of the standard *m* is slotted longitudinally to receive the bolts *l*, so that the said standard, by loosening the bolts, can be raised or lowered to adjust the chopping-hoe to strike shallower or deeper in the ground.

The upper end of the bar *f* is secured in a coupling, *r*, which rocks upon a bolt, *s*. The bolt *s* also passes through the head of a bolt, *t*, which passes up through a longitudinal slot in the bar *u*, and has a nut, *v*, screwed upon its upper end. With this construction, by loosening the nut *v* and moving the bolt *t* to the right or left in the slot in the bar *u*, the hoe *o* can be adjusted to the right or left, so as to strike the row of plants when at the lowest part of its movement. The outer end of the bar *u* is hinged to a collar, *w*, placed upon the upright *x*, and secured in place by a bolt or set-screw, so that it can be readily adjusted higher or lower upon the said upright, as may be desired. The lower end of the upright *x* is inserted in a socket, *y*, where it is secured in place by a set-screw or bolt. The socket *y* is secured by bolts or other suitable means to a side bar of the frame A.

To the forward end of the frame A is attached a short bar, *z*, to serve as a beam to support the plows and fenders.

Upon the opposite sides of the beam *z* are placed two curved bars, 1, with their convexed edges downward, and which have slots in their ends to receive the bolts 2, that clamp the said bars 1 to the beam *z*. The nuts of the bolts 2 are screwed up sufficiently tight to hold the plows against the draft strain under ordinary circumstances, but which, should the plows strike an obstruction, will allow the forward ends of the bars 1 to slip out and the plows to

swing back to prevent the said plows from being broken.

Upon the outer sides of the centers of the curved bars 1 are formed circular projections 3, having radial corrugations upon their faces to engage with corresponding radial corrugations in the faces of the coupling-blocks 4, which are held in place by bolts 5, passing through them and through the projections 3 and the bars 1, and have nuts screwed upon their inner ends.

Upon the outer ends of the bolts 5 are formed hooks or eyes to receive the plow-standards 6, which rest in radial grooves in the outer sides of the coupling-blocks 4, so that the said plow-standards will be held securely in place by tightening the nuts of the eye or hook bolts 5, and can be raised and lowered by loosening the said nuts.

To the lower ends of the standards 6 are attached the plows 7, which are intended to bar off the row of plants in advance of the chopping-hoe.

To the lower side of the beam *z*, between and a little in the rear of the curved bars 1, is attached a block, 8, which has a short downwardly-projecting and laterally-perforated arm, 9, formed upon its rear end, and a longer downwardly-projecting, rearwardly-curved, and longitudinally-slotted arm, 10, formed upon its forward end. The arm 10 is curved in the arc of a circle having its center in the perforation of the short arm 9.

11 are the fender-standards, the upper ends of which are bent to the rearward, and are perforated to receive the bolts 12, that secure them to the arms 9 10, so that the lower ends of the said standards can be swung forward or backward by loosening the nuts of the bolts 12, the arm 9 serving as a pivoting-point for the movement. To the lower ends of the standards 11 are secured the forward parts of the fender-plates 13 by bolts 14, which pass through holes in the lower ends of the said standards and through transverse slots 15 in the said fender-plates 13. The fender-plates 13 are further secured in place by the braces 16, the lower ends of which are secured to the upper rear parts of the said fender-plates by bolts or rivets 17. The upper parts of the braces 16 have longitudinal slots 18 formed in them to receive the bolts 19, that pass through holes in the standards 11. The slots 15 and 18, in connection with the adjustability of the standards 11, allow the fender-plates 13 to be adjusted upward, downward, forward, and backward, as circumstances may require. The fender-plates 13 are designed to prevent small plants from being injured by soil and clods moved by the plows, to limit the amount of soil that passes to the plants, and to cut the crust of the soil, and thus prevent the plants from being pulled out of root by the breaking away of the said crust.

20 is the tongue to which the draft is applied by means of a double-tree, 21, and whiffletrees 22 in the ordinary manner. The tongue 20 is secured to the inner side of the forward end of the draw-bar 23 by bolts 24, and the connection is strengthened by coupling-plates 25, attached to the upper and lower sides of the said overlapped ends. The rear end of the draw-bar 23 is hinged by a bolt, 26, to and between lugs 27, formed upon or attached to the middle part of the frame a little to one side of its central line. This construction takes the draw-bar 23 out of the sweep of the bar *f*, that controls the chopping-hoe. The draw-bar 23 and the tongue 20 are held from lateral movement by the upright guards 28, formed upon or attached to the frame A, and between which the draw-bar 23 passes, and by the brace 29, the rear end of which is hinged to the frame A, and its forward end is rigidly attached to the tongue 20 and draw-bar 23 at their point of connection.

To the part of the frame A that supports the upright guards 28 is attached the lower end of a short rod, 30, which passes up through a slot in the draw-bar 23, and is hinged at its upper end to the short arm of the lever 31. The lever 31 is fulcrumed to a plate, 32, attached to the upper side of the draw-bar 23, and projects upward into such a position that it can be conveniently reached and operated by the driver.

Upon the upper edge of the plate 32 are formed notches or teeth, with which engages the spring lever-pawl 33, attached to the lever 31 to hold the said lever securely in any position into which it is adjusted. With this construction, by operating the lever 31, the forward end of the frame A can be raised and lowered to cause the plows to work shallower or deeper in the ground.

The rear part of the machine is covered with a casing, 34, to protect the gearing from dirt, the said casing 34 being hinged at one edge to give convenient access to the gearing. For the same reason the toothed side of the beveled-gear wheel H is covered with a casing, 35, the edge of which overlaps the edge of the said wheel, and which is attached to the frame A.

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

1. In a cotton-chopper, the combination, with the gear-wheel H, attached to the carriage-axle, and the shaft Y, that carries the hoe-operating crank-wheel, of the gear-wheel, shaft, clutch, and spring I J K N, the gear-wheels O P, the three unequal gear-wheels R S T, attached to the shaft Q, and the three unequal gear-wheels U V W, connected with the shaft Y by the ratchet-wheels Z and the spring-pawls *c b*, as set forth.

2. In a cotton-chopper, the combination, with the shaft Y and the three gear-wheels U V W, of the sleeves X, the ratchet-wheels Z, and the spring-pawls *c b*, substantially as herein shown and described, whereby either of the said gear-wheels can be thrown into and out of gear with the said shaft, as set forth.

3. In a cotton-chopper, the combination, with

the crank-wheel *d*, having hollow crank-pin *e*, of the bolt *g*, the swinging bar *f*, the coupling-block *j*, the interlocking corrugated plates *k*, the bolt *i*, and the slotted standard *m*, carrying the shank *n* and hoe *o*, substantially as herein shown and described, whereby the said hoe can be readily adjusted, as set forth.

4. The combination, with the upper end of the bar *f*, of the rocker-coupling *r*, the bolt *t*, the bolt *s*, passing through the head of bolt *t*, the hinged longitudinally-slotted bar *u*, the nut *v*, and the collar *w* on upright *x*, whereby the hoe may be adjusted with respect to the rows, as described.

5. In a cotton-chopper, the combination, with the beam *z* and the plow-standards 6, of the curved bars 1, having slots in their ends and provided with radially-corrugated projections 3, the coupling-blocks 4, having radial corrugations upon their inner sides and recesses upon their outer sides, and the eyebolts 5, substantially as herein shown and described, whereby the plows will be allowed to swing back should they strike an obstruction and can be readily adjusted, as set forth.

6. In a cotton-chopper, the combination, with the beam *z* and fender-plates 13, having slots 15, of the block 8, having perforated arms 9 and slotted curved arm 10, the standards 11, having rearwardly-bent upper ends, and the slotted braces 16, substantially as herein shown and described, whereby the fender-plates can be readily adjusted, as set forth.

EPHRAIM L. MOWREY.

Witnesses:
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GEORGE W. SMITH.