

No. 661,135.

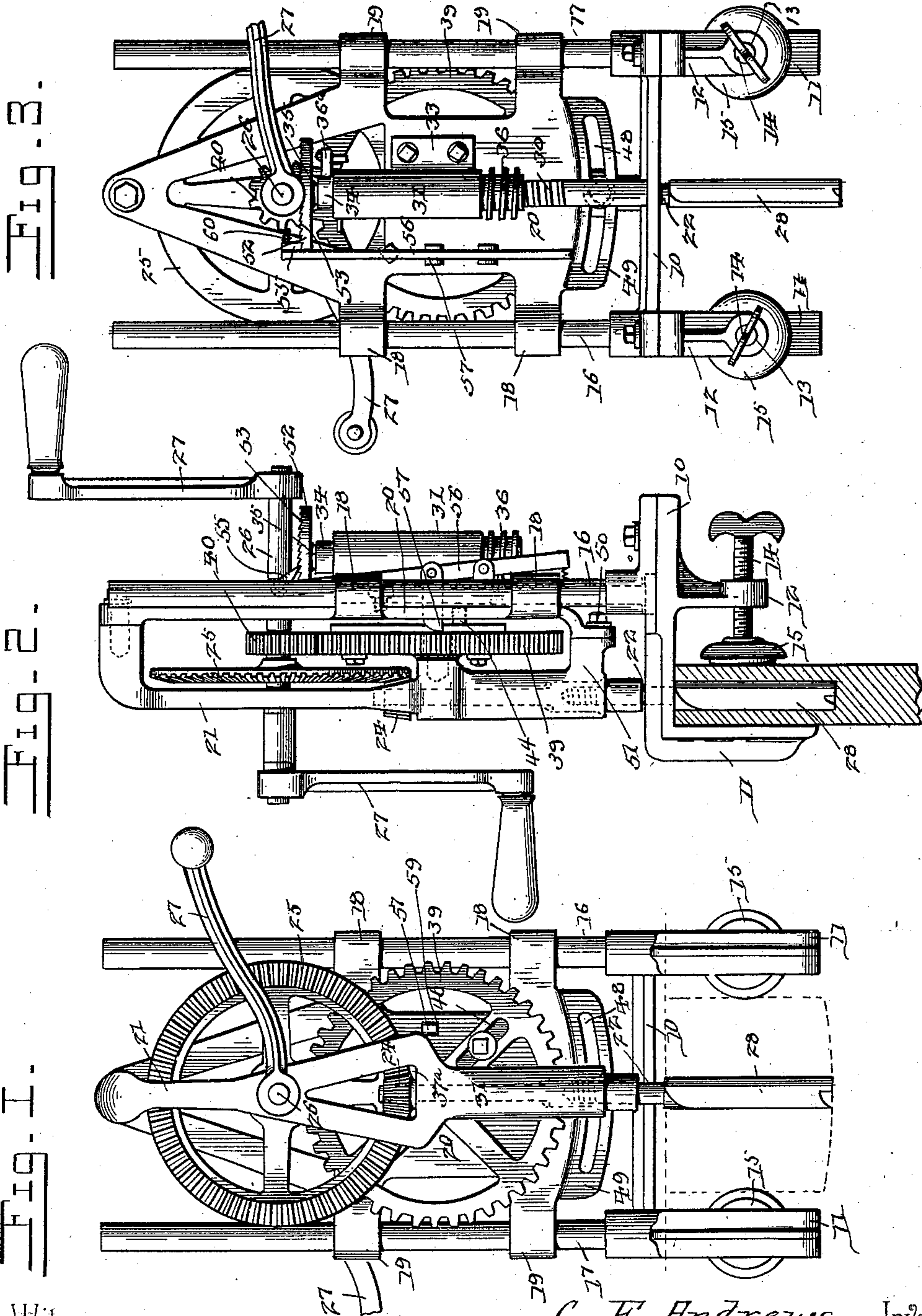
Patented Nov. 6, 1900.

G. F. ANDREWS.
MORTISING MACHINE.

(Application filed Apr. 30, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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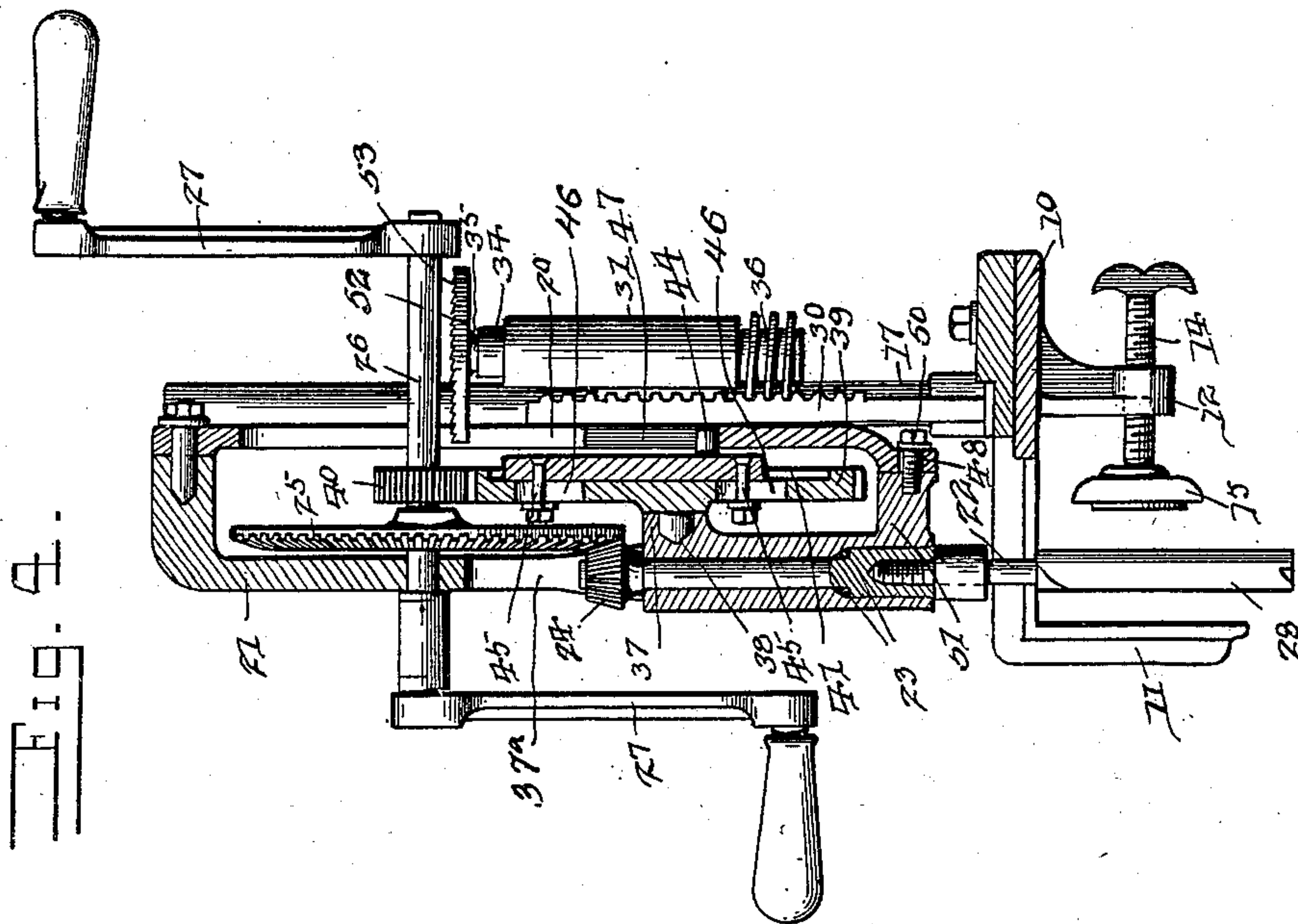
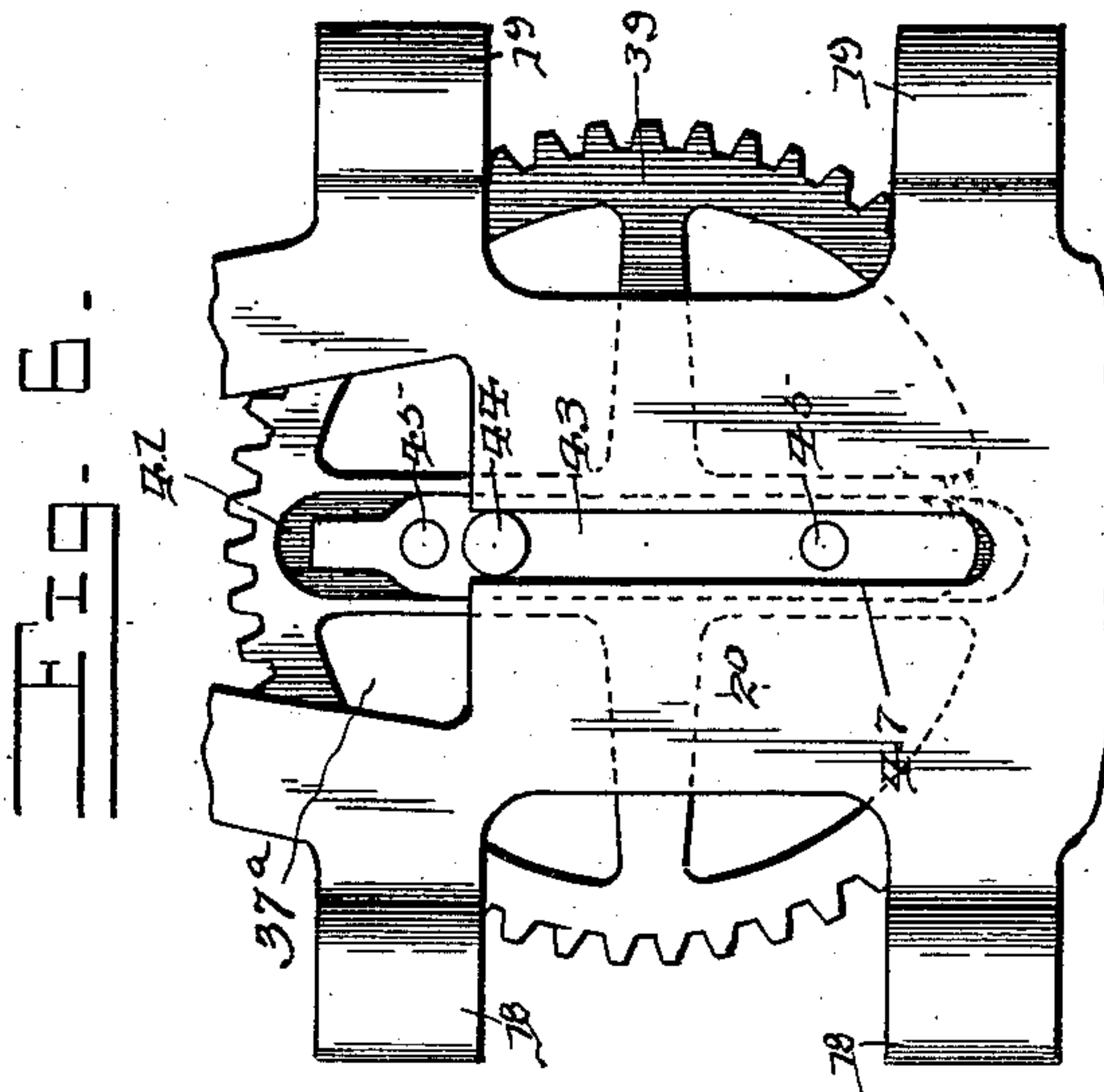
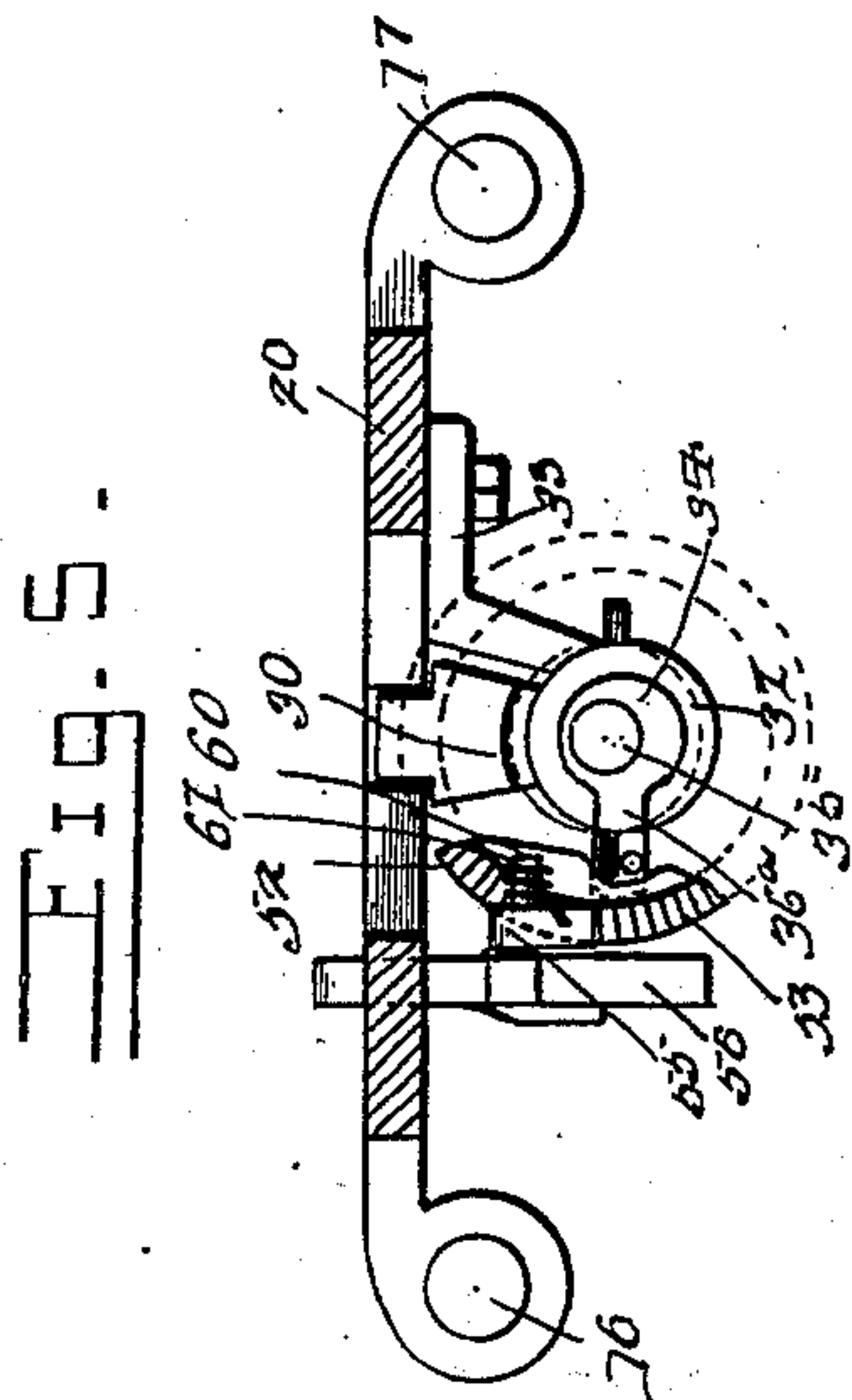
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UNITED STATES PATENT OFFICE.

GEORGE F. ANDREWS, OF RIVERSIDE, CALIFORNIA.

MORTISING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 661,135, dated November 6, 1900.

Application filed April 30, 1900. Serial No. 14,913. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. ANDREWS, a citizen of the United States, residing at Riverside, in the county of Riverside and State of California, have invented a new and useful Mortising-Machine, of which the following is a specification.

This invention relates to woodworking-machines in general, and more particularly to mortising-machines; and it has specific reference to hand-operated machines which are adapted to be transported from building to building and from place to place, although the principles involved, it will be seen, are adaptable also to power-machines.

One object of the invention is to provide a simple and efficient construction which may be readily applied to and removed from a timber or other piece of stock in which the mortise is to be cut and which when in place will operate to cut a hole that is rectangular in cross-section.

A further object is to provide means for varying the length of the cut and also for varying the width thereof within certain limits, additional objects and advantages being evident from the following description.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a front elevation showing the complete machine in its operative position on a piece of stock to be treated. Fig. 2 is a side elevation with the stock shown in section to illustrate the mortise. Fig. 3 is a reverse view of Fig. 1. Fig. 4 is a central vertical section, parts of the machine being shown in elevation to better distinguish the parts. Fig. 5 is a sectional view taken through the back plate of the machine and showing the eccentric mechanism for moving the screw into and out of engagement with the rack. Fig. 6 is an enlarged elevation showing the back plate or supporting-plate of the machine and the rocking wheel engaged therewith.

Referring now to the drawings, the present machine consists of a base 10, comprising fixed clamping-jaws 11, depending therefrom and having also depending brackets 12, having threaded perforations 13, with which are engaged screws 14, each having a second and movable clamping element 15 for coopera-

tion with the jaws 11. Mounted upon the base and at the rear thereof are two parallel uprights 16 and 17, and with these uprights are slidably engaged the perforated ears 18 and 19 at opposite sides of a carrier-plate 20, to which the cutter mechanism is attached. The upper end of the plate 20 is tapered and extends above the ears thereof, and at the upper extremity thereof is pivoted a rocker 21, which hangs downwardly and terminates at a point above the base 10. In the lower portion of the rocker 21, which lower portion is tubular in form, is journaled an auger-shaft 22, the lower end of which is increased in diameter and lies in a correspondingly-enlarged portion of the bore of the tube, bearing-balls 23 being disposed between the upper end of the enlarged portion of the shaft and the upper wall of the enlarged portion of the bore of the tubular portion of the rocker. The ends of the auger-shaft project from the tubular portion of the rocker, a bevel-gear 24 being fixed to the upper end of the shaft, while the lower end thereof is adapted for engagement of an auger therewith. In practice the auger lies between the clamping-jaws 11, which project forwardly from the base 10, these jaws being separated by an interspace sufficient to permit sufficient swing of the rocker for all practicable purposes. The upper end of the rocker 21 is bent rearwardly for attachment to the plate 20, so that the body of the rocker is separated from said plate by an interspace sufficient to accommodate a number of the working parts of the machine, including a bevel-gear 25, which is fixed upon a shaft 26, journaled in the rocker and having cranks 27, which lie exterior to the rocker and the carrier-plate, said gear-wheel being disposed to mesh with the bevel gear or pinion 24 at the upper end of the auger-shaft, whereby when the crank-shaft is operated the auger will be operated.

The auger 28 which is employed is of special form, being convolute and adapted for cutting both at its lower end and at a side. It will thus be seen that if the crank-shaft is operated the auger will be rotated, and if the rocker be at the same time swung and the auger be fed downwardly there will be cut a segmental slot in a piece of stock held by the clamps. In order to feed the auger down-

wardly, it is of course necessary to lower the carrier-plate 20 upon the uprights 16 and 17, and for this purpose a rack 30 is fixed at its lower end upon the base 10 and extends upwardly close to and parallel with the carrier-plate. A sleeve 31 is secured to the rear face of the plate 20 by means of a bracket 33 and in a position to lie in the rear of the rack and close to the rearwardly-projecting teeth thereof. In this sleeve is rotatably mounted a bushing 34, and eccentric to the bushing is journaled a worm-shaft 35, the worm 36 of which lies below the lower end of the sleeve and engages the rack. Thus as the worm is rotated it acts to feed the carrier-plate upwardly or downwardly of the rack, depending upon the direction of rotation of the worm-shaft. It is of course desirable at times to raise and lower the carrier-plate to move the auger independently of the feed mechanism, and to secure this result the bushing 34, which projects above the upper end of its enclosing sleeve, is provided with an operating-handle 36^a, through the medium of which the bushing may be oscillated, and as thus moved it throws the worm toward or away from the rack to engage and disengage the worm and rack. The outward movement of the worm is sufficient to entirely remove the worm from engagement with the rack, so that the plate may be moved freely. The means for gradually rotating the screw or worm for gradual feeding of the auger during the operation of the machine will be presently described.

To provide for swinging the rocker, a lug 37 is formed upon the rear face of the rocker and preferably at the upper end of the tubular portion thereof and below the opening 37^a of the rocker which accommodates the gear 24. This lug has an axial bearing in which is rotatably mounted the stub-shaft 38 of a gear-wheel 39, which operatively engages a pinion 40 upon the shaft 26, whereby it may be rotated from said shaft. In the rear face of the wheel 39 is formed a diametrical slot 41, in which is slidably mounted a wrist-pin block 43, having a wrist-pin 44 upon its outer face and adjacent to one end thereof, the wrist-pin being moved toward and away from the center of the wheel as it is adjusted in the groove. The plate or block 43 is held fixedly at different points of its adjustment by means of clamping-bolts 45, which are engaged with perforations in the block and with radial slots 46 in the gear-wheel, this general construction of holding adjustable bodies being well known. The wrist-pin 44 engages a vertical and straight slot 47 in the carrier-plate 20, and thus it will be seen that as the wheel 39 is rotated it will in its travel in the slot 47 act to move the rocker first in one direction and then the other and will impart a similar movement to the auger. A segmental slot 48 in an extension 49 of the plate 20 is engaged by a headed screw 50, carried by a rearwardly-directed lug 51 upon the rocker, whereby the rocker is held from movement

with its lower end away from the plate 20, while the rocking action thereof is not prevented.

To feed the carrier-plate and therewith the cutting mechanism, the worm 36 is rotated. For this purpose a disk 52 is mounted upon or formed integral with the shaft 35 at the upper end thereof, and this disk has ratchet-teeth 53 upon its upper face. Coöperating with this ratchet-disk is a pawl 55, pivoted to the upper end of a rock-lever 56, which is pivotally mounted upon the back of the carrier-plate 20. This rock-lever carries a pivoted finger 57, which reciprocates in a slot 59 in the carrier-plate, the free end of the finger being beveled and lying in the path of movement of the projecting portion of the block 43. As the block 43 rotates with the wheel 25 the block is moved against the pivoted finger at the beveled portion thereof and the finger is pushed rearwardly, with the result that the pawl is operatively engaged with the teeth of the ratchet-disk, and further movement of the pawl by the rock-lever causes the ratchet-disk to rotate, thereby rotating the feeding-worm and lowering the carrier-plate. The pawl is provided with the usual holding-spring 60, coiled about the pin 61, on which the pawl is mounted and having its ends fixed to the pawl and the rock-lever pin, respectively.

The operation of the apparatus is as follows: A piece of stock to be mortised is clamped in the stock-clamp, and the feed-worm having been swung from engagement with its rack the carrier is dropped until the auger rests upon the face of the stock, the pin 44 being also set at the proper distance from the center of wheel 39 to give proper swing to the rocker, according to the width of the mortise to be cut. The feed-worm is reengaged with the rack and the cranks are operated. As the cranks are operated the gear 25, engaging the gear 24, rotates the latter and rotates the auger, the wheel 39 being rotated by engagement of pinion 40 therewith. The rotation of wheel 39 causes pin 44 to traverse slot 47 and swing the rocker to correspondingly swing the auger and cut the proper mortise. At the same time block 43 strikes the finger 57 and moves it rearwardly to rock the lever 56 and operate the pawl 55 upon the ratchet-disk and rotate the feed-worm to lower the carrier and feed the auger down to increase the depth of the mortise. When the mortise is cut, the feed-worm is disengaged from the rack and the carrier is raised to lift the auger from the mortise.

With this construction it will be seen that the machine may be readily engaged with a piece of stock to be operated upon and that by operating the cranks the auger will be gradually fed downwardly into the stock and will be swung to cut a segmental opening. The length of the rocker is such, however, that the arc of the cut has little curvature and the ends of the cut have little converg-

ence; but if it is desired to make the mortise rectangular in every respect it may be done with very little chiseling. Furthermore, it will be seen that by adjusting the block 43 the length of the swing of the rocker may be varied and the mortise may be lengthened or shortened, as may be desired, within certain limits.

In practice the specific construction shown may be modified and any suitable materials and proportions may be used without departing from the spirit of the invention.

What is claimed is—

1. A mortising-machine comprising a stock-clamp, a carrier movable with respect to the clamp, a rocker carried by the carrier and adapted for attaching an auger, operating means for the auger carried by the rocker, a feed mechanism for the carrier and connections between the rocker and the feed mechanism for operating the latter.

2. A mortising-machine comprising a pivoted rocker, a rotatable cutter, means for rotating the cutter, said cutter and rotating means being carried by the rocker, feed mechanism for advancing the rocker, and connections between the feed mechanism and the cutter-operating mechanism for operating the feed mechanism.

3. A mortising-machine comprising a movable carrier, a rocker sustained by the carrier, cutting mechanism upon the rocker, feeding mechanism for the carrier operable by the rocker, and means for throwing the feeding mechanism into and out of operation.

4. A mortising-machine comprising a carrier, a cutting mechanism sustained by the carrier and mounted for lateral bodily movement, step-by-step feed mechanism for advancing the carrier, and means intermittently operable by the bodily movement of the cutting mechanism for actuating the feed mechanism.

5. A mortising-machine comprising guides, a slidable carrier sustained by the guides, a rocker pivoted to the carrier, an auger-shaft mounted in the rocker and adapted for attachment of an auger, a power-shaft operatively connected with the auger-shaft, a slot in the carrier, a gear-wheel mounted on the rocker and having a wrist-pin eccentric thereto and engaged with the slot, and connections between the gear-wheel and the power-shaft to operate the wheel and move the rocker.

6. A mortising-machine comprising guides, a carrier mounted on the guides, a rocker pivoted to the carrier, a cutting mechanism

carried by the rocker, a wheel mounted upon the rocker and having an adjustable wrist-pin engaged with a slot in the carrier, means for operating the wheel to move the rocker, feed mechanism for the carrier and means operated by said wheel for actuating the feed mechanism.

7. A mortising-machine comprising guides, a carrier mounted upon the guides, a rocker pivoted upon the carrier and carrying cutting mechanism, means for operating the rocker, a rack fixed with respect to the carrier, a feed-worm upon the carrier and engaging the rack, said worm being adapted for movement into and out of engagement with the rack to permit movement of the carrier independently of the worm, and actuating mechanism for the worm, operable by the rocker.

8. A mortising-machine comprising a carrier, a rocker pivoted to the carrier and having cutting mechanism mounted thereon, a slotted wheel carried by the rocker, a block adjustably mounted in the slot of the wheel and having means for holding it at different points of its adjustment, and a wrist-pin upon the block and engaged with a slot in the carrier, said slotted wheel and cutting mechanism having means for operating them whereby the rocker may be adjusted and operated to move the cutting mechanism through different arcs to cut different lengths of mortises.

9. A mortising-machine comprising a carrier, cutting mechanism, a rocker pivoted to the carrier and sustaining the cutting mechanism, means for operating the cutting mechanism and the rocker, a rack fixed with respect to the carrier, a sleeve mounted upon the carrier, a bushing rotatably mounted in the sleeve, a worm having a shaft rotatably mounted in the bushing and eccentric thereto, means for oscillating the bushing to engage and disengage the worm with respect to the shaft, a ratchet upon the worm-axle, a pivoted lever, a pawl upon the lever in operative relation to the ratchet, and a finger carried by the lever and lying in the path of the rocker to operate the lever and feed the carrier.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

GEORGE F. ANDREWS.

Witnesses:

C. W. FINCH,
BERTA S. FINCH.