

A. GODFREY.
HEEL NAILING MACHINE.
APPLICATION FILED DEC. 2, 1907.

916,948.

Patented Mar. 30, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

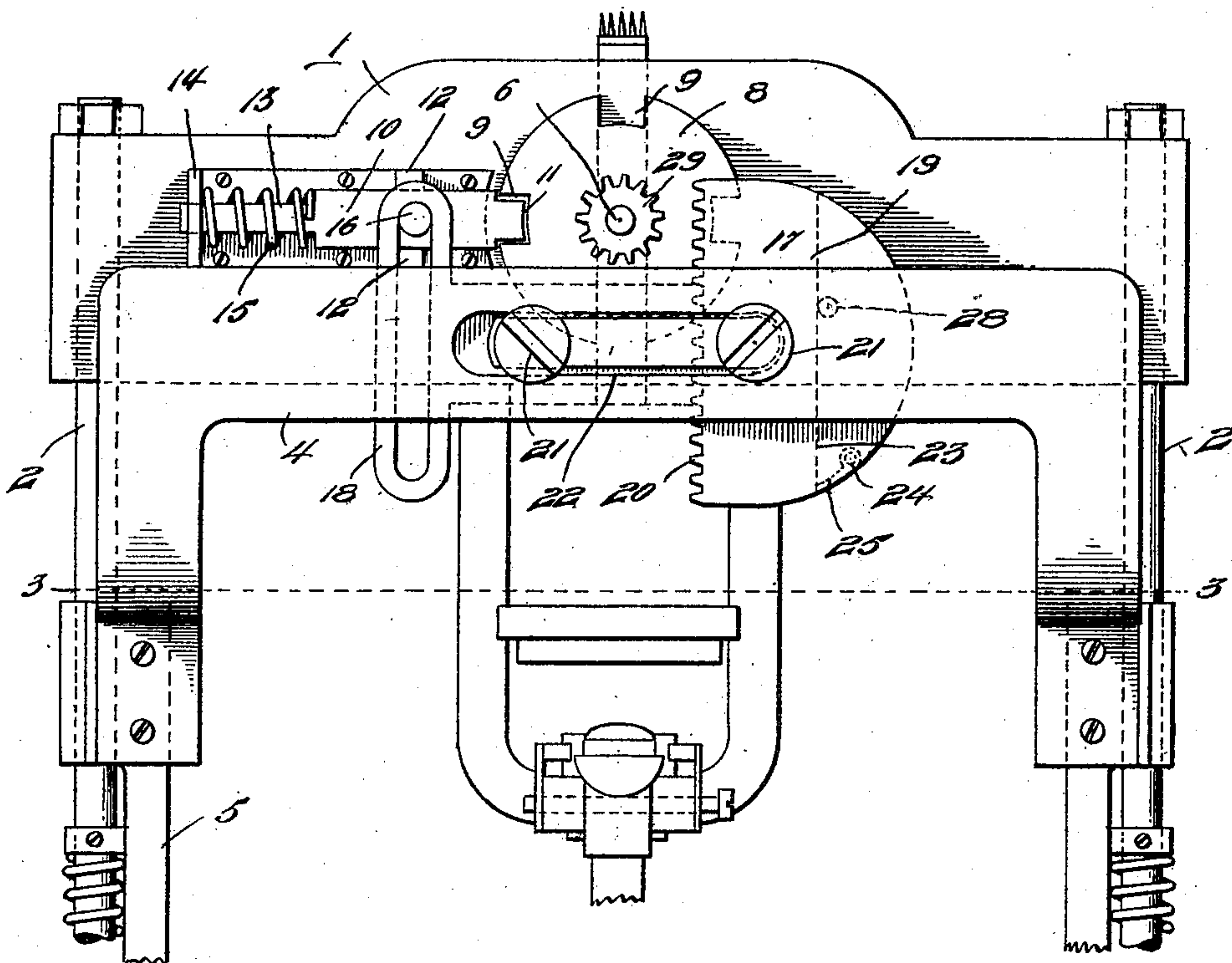
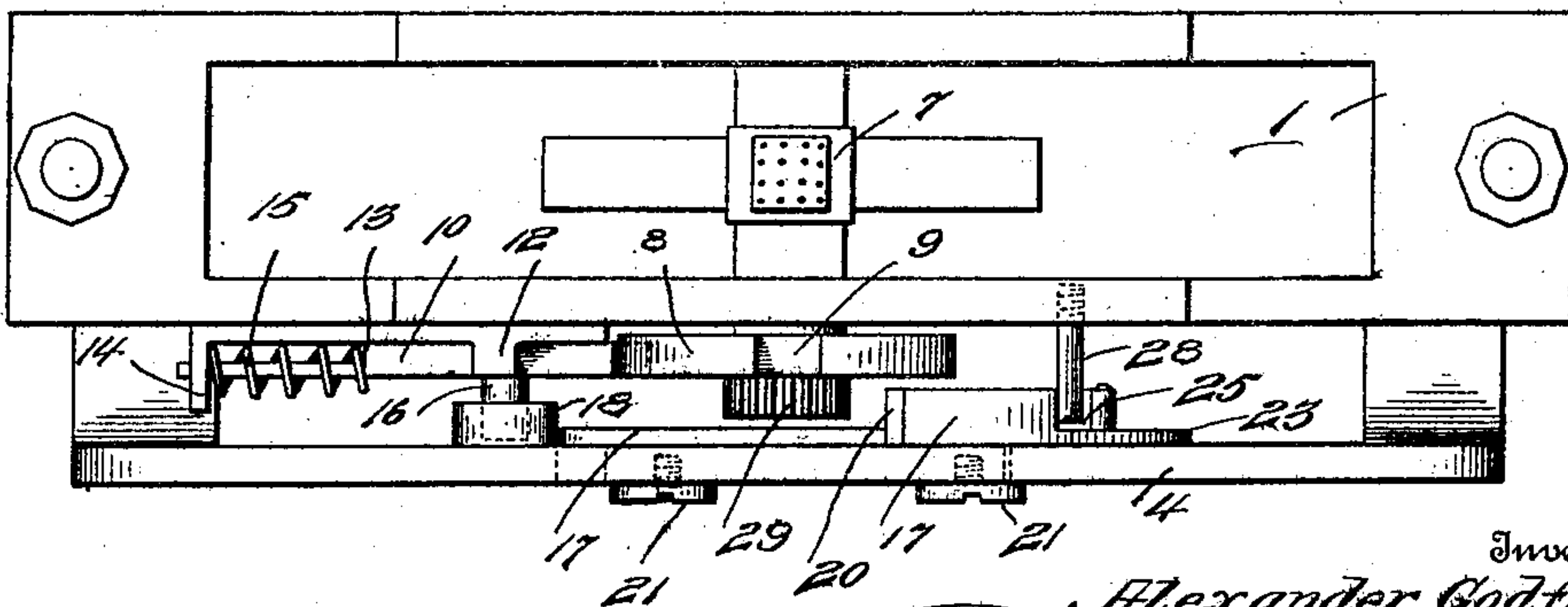


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

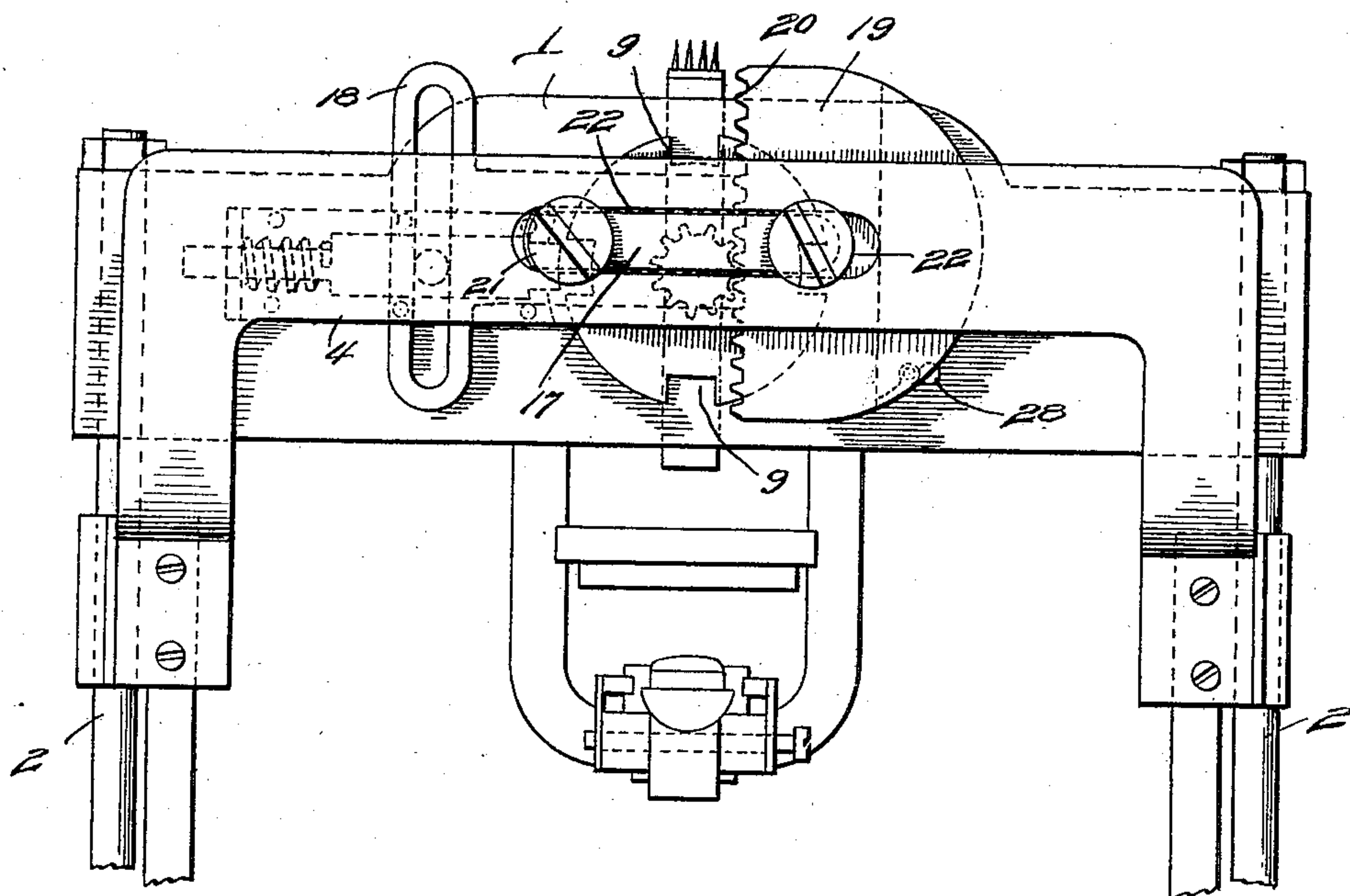
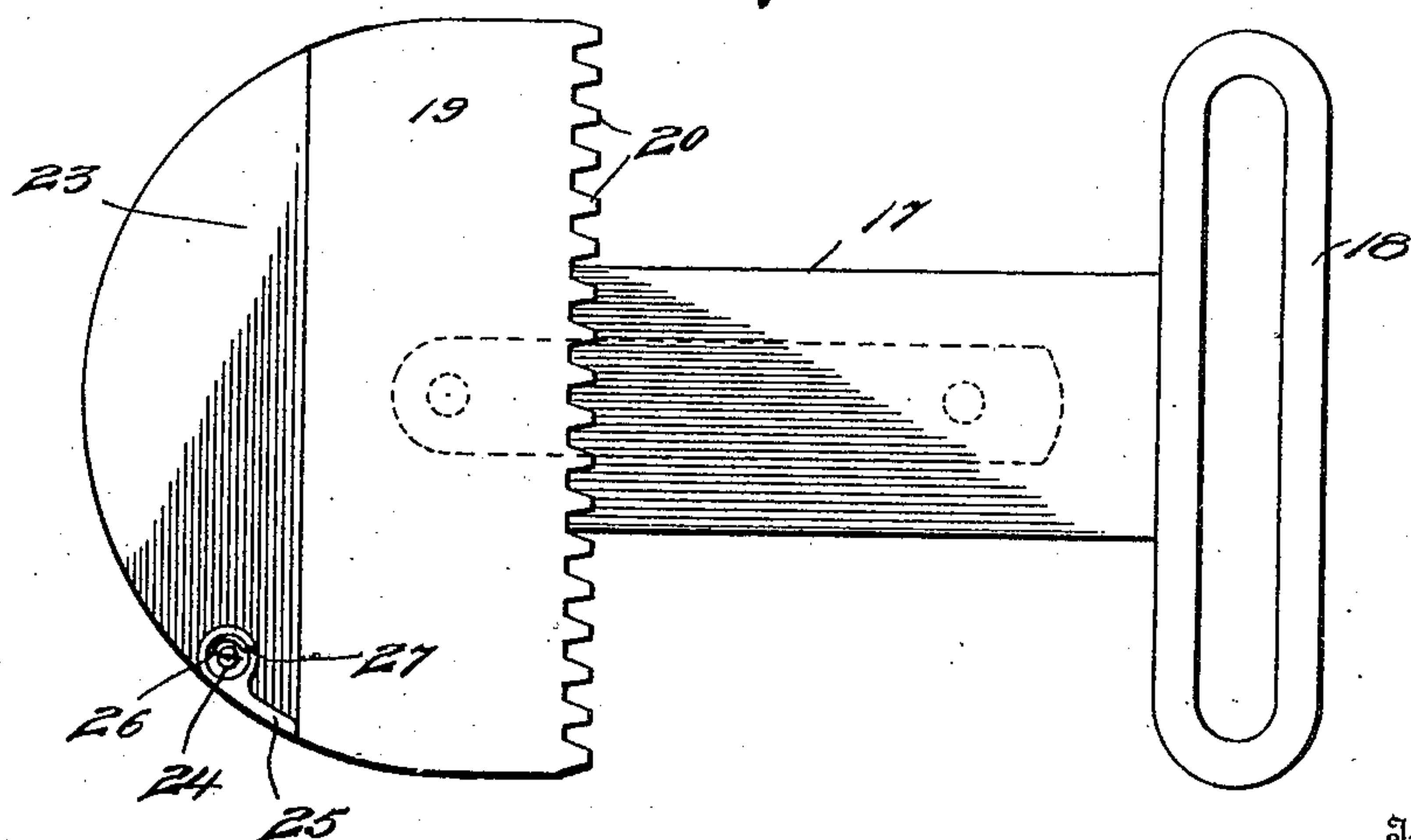


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

ALEXANDER GODFREY, OF BRADFORD, MASSACHUSETTS.

HEEL-NAILING MACHINE.

No. 916,948.

Specification of Letters Patent.

Patented March 30, 1909.

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To all whom it may concern:

Be it known that I, ALEXANDER GODFREY, a citizen of the United States, residing at Bradford, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Heel-Nailing Machines, of which the following is a specification.

My invention relates to improvements in heel nailing machines, and refers more particularly to that class of machines known as "vertically movable cross-head and turret" type, the object of the invention being to provide simple and efficient mechanism automatically operated in the upward travel of the cross-head to unlock the turret, partially rotate the same and lock it, thereby bringing the next set of tools carried by the turret into operative position for engaging the heel.

Another object of the invention is to provide a practical device for this purpose which may be readily applied or attached to any of the well known types of heel nailing machines without encumbrancing the machine in any way, and which will be speedy, positive and accurate in operation.

My invention consists of a device of the character set forth embodying certain other novel features of construction, combination and arrangement of parts substantially as disclosed herein and as illustrated in the accompanying drawings, in which:

Figure 1, is a front elevation of my invention as applied to a common type of heel nailing machine, only the upper portion of the machine being shown, the movable cross-head being in the uppermost position ready for its downward movement. Fig. 2, is a top plan view of the same. Fig. 3, is a view similar to Fig. 1, the turret operating mechanism being in operative engagement with the turret, the cross-head in this instance having started on its upward travel. Fig. 4, is an enlarged detached rear view of the slidable rack member for rotating the turret.

Heretofore, in machines of the rotatable turret type, it has been customary to rotate the turret by hand at the proper time to bring the next proper set of tools carried by the turret into position for operative engagement with the heel on the next downward movement of the cross-head. This manually operable method has proven generally unsatisfactory and unreliable, and to obviate these objections, I have devised the

improvements herein shown and claimed, for performing the above operations entirely automatically and independent of the operator.

In the drawings: The numeral 1, designates the movable cross-head which is supported upon the slide rods 2, the limit of the downward movement of the head being indicated by the dotted line 3—3 in Fig. 1. A supporting bracket 4, is secured to the frame 5, of the machine, this bracket being offset from the cross-head and extending parallel thereto as shown in Figs. 1, 2 and 3. The shaft 6, journaled in the head carries the usual turret 7, having the customary radial arms for the support of the awls, drivers, top lift holders, or other tools used successively in securing the heel in place.

Upon the outer end of the turret shaft is mounted the locking disk 8 having locking kerfs or recesses 9, at the proper points in its periphery to receive the reduced and shouldered end of the locking bolt 10, the extreme end of the said bolt being concaved as at 11, to correspond to the curvature of the locking disk. The bolt is slidably confined between the guiding lugs 12, and the outer portion of the bolt is shouldered and reduced in diameter as at 13, and passed through a guiding opening in the outstanding lug 14. A coil spring 15, engaged between the shoulder on the reduced outer end of the bolt and the outstanding guiding lug serves to hold the locking bolt in close engagement with the locking disk. If so desired, the support for the locking bolt may be in the shape of a simple base plate adapted for attachment to the cross-head and having the guiding lugs struck up from the face thereof to guide the bolt. The locking bolt is also provided with an outstanding pin 16, for operating the same.

The means for rotating the turret comprises a slidable block or member 17, having an angularly disposed slotted extension 18, at one end to receive the pin on the locking bolt, and a transversely disposed thickened portion 19, near its opposite end provided with teeth 20, on its inner edge to form a rack. The block is slidably supported in the bracket by means of the screws 21, which pass through the slot 22, formed in the horizontal portion of the bracket and the screws also serve to limit the lateral movement of the block. The rack end of the slidable block is shouldered transversely as at 23, and

the end of the block is thus of less thickness than the balance of the block. This thinned end of the block is preferably curved or rounded as shown and a post 24, is mounted near its lower edge which forms a pivotal support for the pawl 25, the pawl having a rounded outer edge. A spring 26, surrounding the pivot post and engaged in a recess 27, in the head of the pawl serves to hold the end of the pawl normally in engagement with the shoulder 23, on the back of the slidable plate or block. An abutment post or pin 28, mounted in the face of the cross-head is so positioned as to pass along the shoulder in the back of the rack plate, open the spring pawl outward and pass below the same.

The operation of the device is as follows: The cross-head in its downward movement causes the proper set of tools carried by the turret to engage the heel, the turret being locked as shown in Fig. 1. During this downward movement, the slidable block remains stationary, the abutment pin on the cross-head forcing the spring pawl open and passing below the same, the spring pawl resuming its former position in engagement with the abutment shoulder as soon as the pin has passed. In the upward movement of the cross-head, the abutment post engages the outer curved face of the spring pawl thereby forcing the sliding block over toward the left in the different figures, this lateral movement of the block forcing the locking bolt from out of engagement with the locking kerf in the disk as shown in Fig. 3. The rack is thereby brought into engagement with the pinion 29, on the extended end of the turret shaft and the turret is given a quarter rotation. After the pin has slipped past the pivot end of the spring pawl, the tension of the spring on the locking bolt holds the bolt in engagement with the periphery of the locking disk, thereby holding the rack in engagement with the pinion until after a quarter revolution the bolt slips into the next locking recess and locks the turret with the next set of tools in position for operative engagement with the heel.

Usually the turret carries a set of awls, a set of drivers and a top lift holder, and if it is necessary to use more or fewer tools, the number of locking recesses in the locking disk is varied, there being a corresponding seat provided in the disk for each independent set of tools. Thus by varying the number of radial arms on the turret and the locking seats in the locking disks any number of different operations may be performed by the machine. If desired, the operating pinion for the turret may be affixed to or carried by the locking disk.

From the foregoing description taken in connection with the drawings, the operation and advantages of my improved heeling machine will be readily understood and appre-

ciated, and it will further be apparent that I have provided a device of this character which fully and satisfactorily accomplishes all the results herein set forth as the objects of the invention.

I claim:

1. The combination with the reciprocating cross-head and turret of a heel nailing machine, of a latch for locking the tool carrier against rotation, of a slidable member, an element on the cross head to engage the slidable member, the slidable member operable on the upward thrust of the cross-head for operating the latch, engaging and rotating the turret, and again permitting locking engagement of the latch.

2. The combination with the cross-head and turret of a heeling machine, a latch for locking the turret, a slidable member having connection with the latch, an abutment on the cross head, a member carried by the slidable member to yield to the abutment on its downward travel and offer a cam surface to the abutment on its upward movement to cause lateral displacement of the slidable member, and means carried by the slidable member to engage the turret for rotating the turret.

3. In combination with a support, an operating member slidably supported thereon, a reciprocating member and a rotary member journaled therein, a lock to the rotary member, an abutment carried by the reciprocating member, a cam element on the operating member adapted to yield to the abutment when the reciprocating member is traveling in one direction and to present a cam surface on the return movement of the abutment whereby contact of the abutment with the cam surface causes lateral movement of the operating member, the operating member having connection with the lock to disengage the same when the operating member is shifted and adapted also to make connection with the rotary member to partially rotate the same and again allow the lock to act.

4. The combination with a heel nailing machine having a movable cross-head and turret, a locking disk and pinion carried by the turret, a spring pressed locking bolt to engage the locking disk, a support, an operating member slidably mounted on the support and having sliding connection with the locking bolt, a rack carried by said operating member to engage the pinion, an abutment carried by the cross-head, and a cam lever carried by the operating member adapted to yield to the abutment on the downward movement of the cross-head and to present a cam surface to the upward movement of the abutment to cause lateral shifting of the operating member thereby disengaging the locking bolt and causing operative engagement of the rack and pinion.

5. In combination with the reciprocating

cross head and rotary turret of a heel nailing machine, a latch for locking the turret against rotation, an abutment on the cross head and a slidable member adapted to be engaged by said abutment operable on movement of the cross head for releasing the latch from locking engagement with the turret.

6. In combination with the cross head and rotatable turret of a heel nailing machine, a latch for locking the turret against rotation, a slidable member, an element on the cross head to engage said slidable member, the slidable member operable by the movement of the cross head for releasing the latch from locking engagement with the turret, and means carried by said slidable member to engage and rotate the turret after the release of the latch.

7. In combination with the cross head and turret of a heeling machine, a latch for locking the turret, a slidable member, an element on the cross head to engage the slidable member, the slidable member operable on the movement of the cross head for releasing the latch from locking engagement with the turret, means carried by said slidable member to engage and rotate the turret after the release of the latch and at the end of such movement to permit locking engagement of the latch with the turret.

8. In combination with the cross head and turret of a heeling machine, a latch for locking the turret against rotation, an abutment on the cross head and a slidable member operable upon engagement by said abutment to release the latch from locking engagement with the turret and at the end of such movement to again permit locking engagement of the latch with the turret.

9. In combination with the cross head and turret of a heel nailing machine, a slidable member carrying a rack, a latch for the turret, the slidable member having connection with said latch, a pinion carried by the turret to be engaged by the rack, means for shifting the slidable member to cause disengagement of the latch and operative engagement of the rack with the pinion.

10. In combination with the cross head and turret of a heel nailing machine, a slidable member carrying a rack, a pinion carried by the turret to be engaged by the rack, and means for shifting the slidable member laterally to cause operative engagement of the rack with the pinion.

11. In combination with the cross head and turret of a heeling machine, a latch for locking the turret, a slidable member operable by the movement of the cross head for releasing the latch from locking engagement with the turret, means carried by the slidable member to engage and rotate the turret after the release of the latch, and a spring to disengage the slidable member from operative engagement with the turret and cause locking engagement of the latch after the turret has been properly rotated.

12. In combination with a cross head and revoluble turret of a machine, a disk carried by the turret having locking recesses, a latch to engage the locking recesses, a member operable on the movement of the cross head to disengage the latch from the locking recesses and impart a partial rotary movement to the turret, said member being actuated by contact with an element on the cross head and a spring for holding the end of the latch against the periphery of the disk to cause it to engage the next locking recess and cause disengagement of the member from the turret.

13. In combination with the cross head and turret of a machine, of a support having a horizontal slot therein, an actuating member having a rack and a slotted extension opposite said rack, securing means passing through the slot in the support and engaged in the actuating member to slidably hold it upon the support, a recessed locking disk and a pinion carried by the turret, a spring pressed bolt to engage the recesses in the locking disk, a pin carried by the bolt in slidable engagement with the slotted extension of the actuating member, an abutment on the cross head, and a cam on the actuating member to present a cam surface to the abutment of the cross head whereby the actuating member is moved over to disengage the locking bolt from the locking recess in the disk, the rack engaging the pinion to rotate the turret, and the spring causing the bolt to engage the next locking recess and forcing the rack from engagement with the pinion.

In testimony whereof I affix my signature in presence of two witnesses.

ALEXANDER GODFREY.

Witnesses:

DANIEL J. SHEA,
WILLIAM LAUGHLIN.