

No. 675,025.

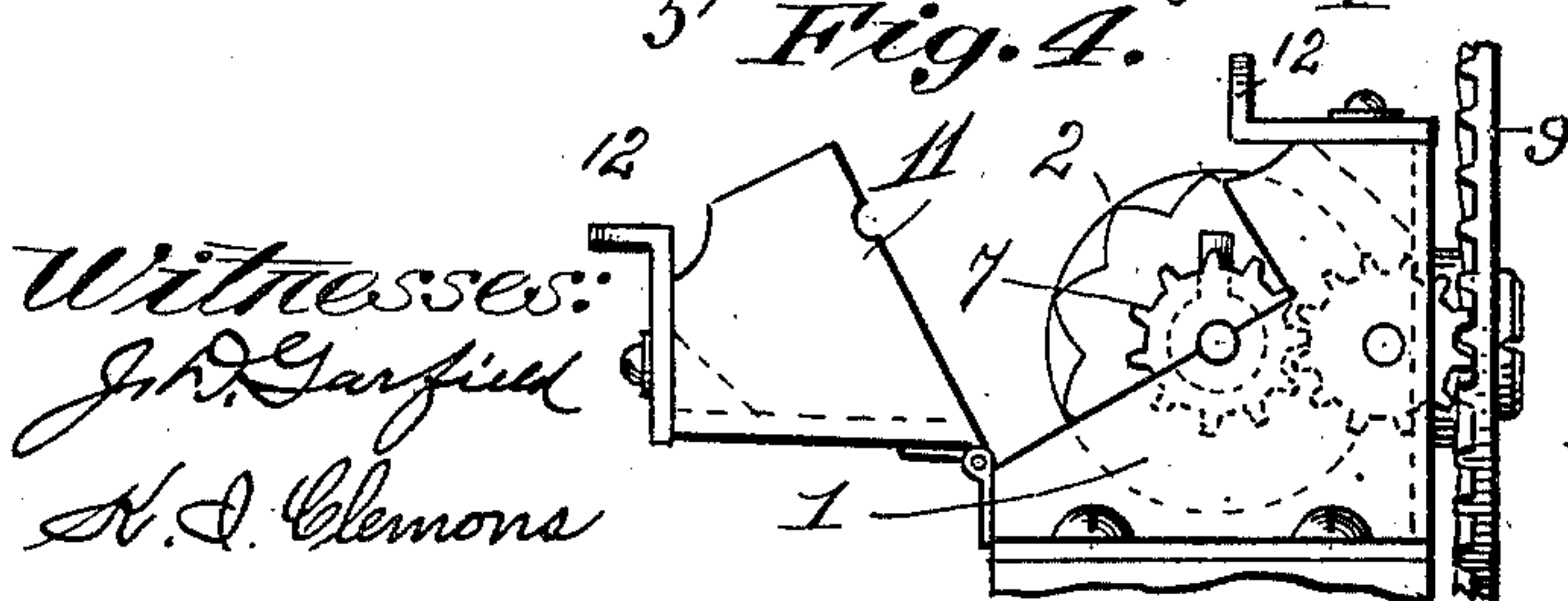
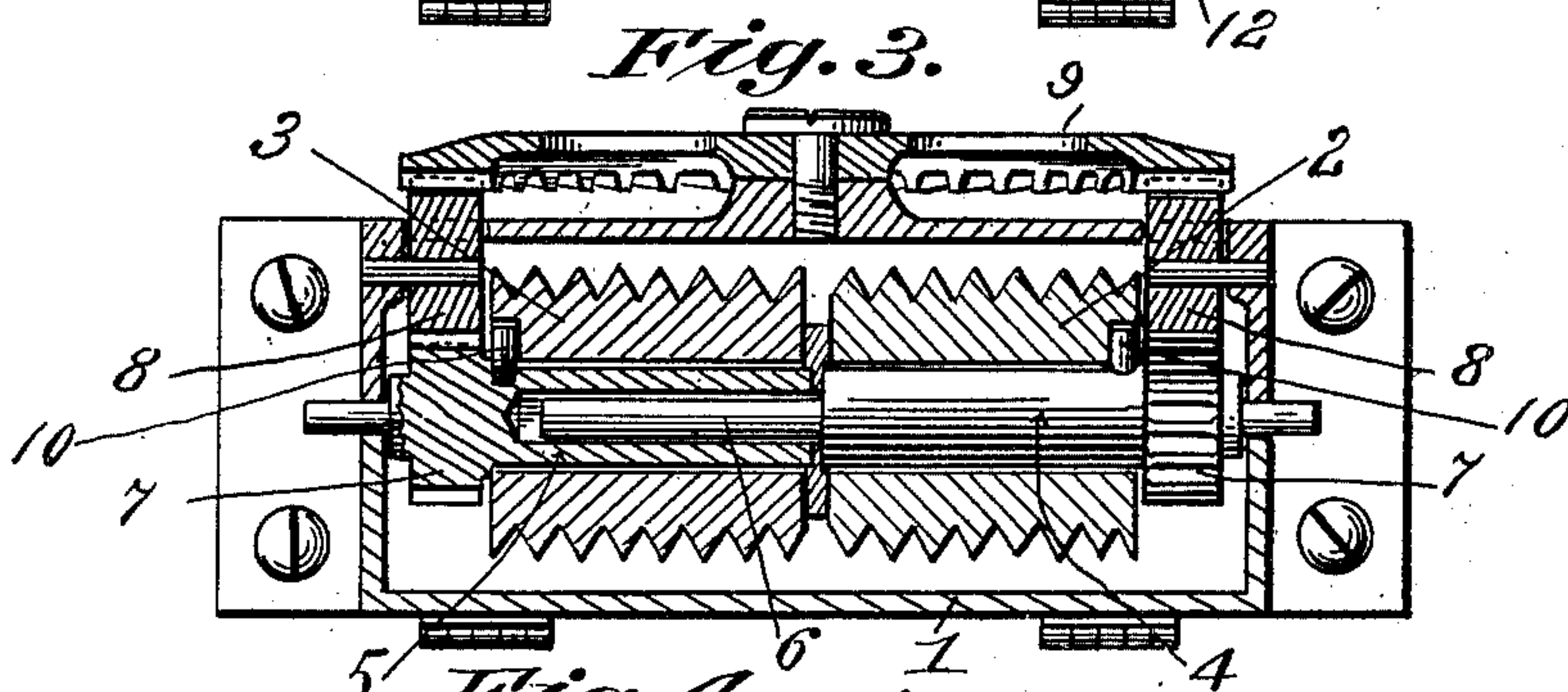
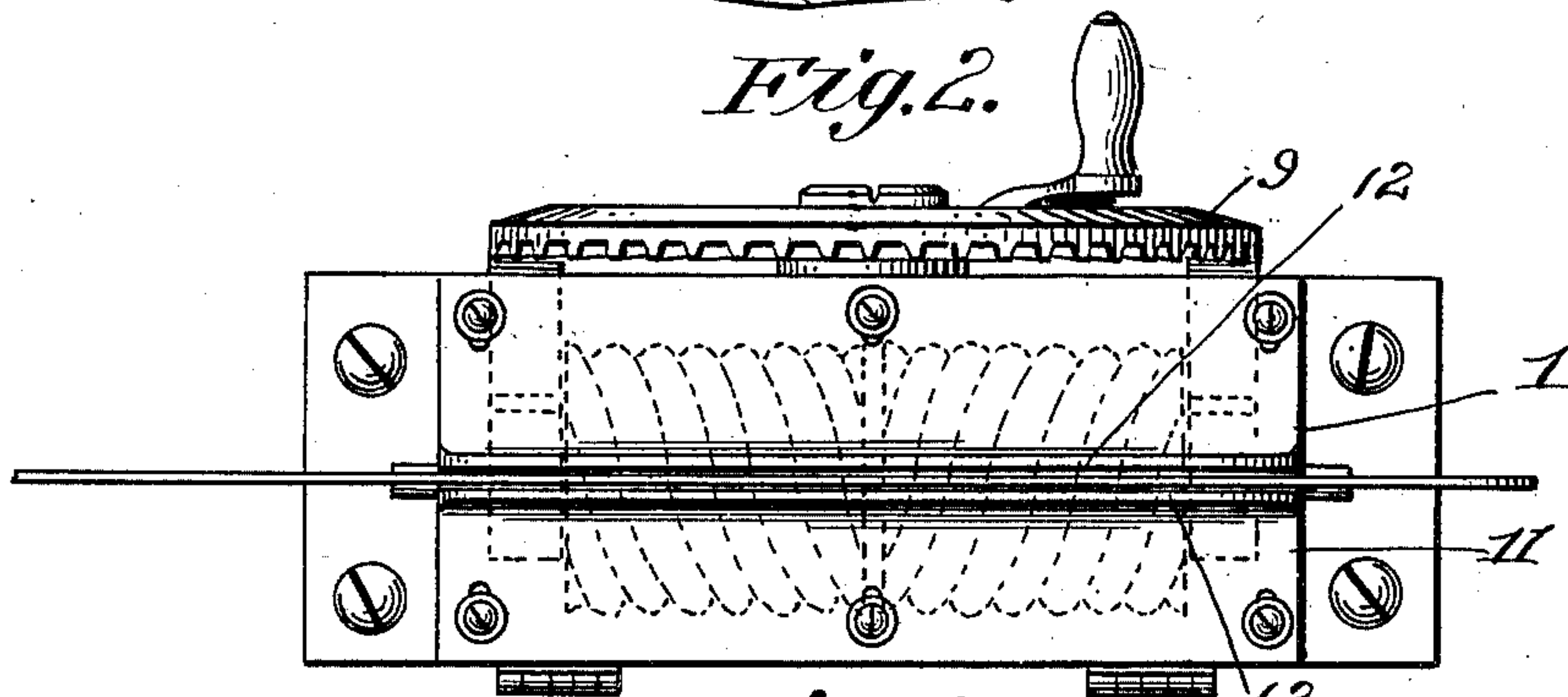
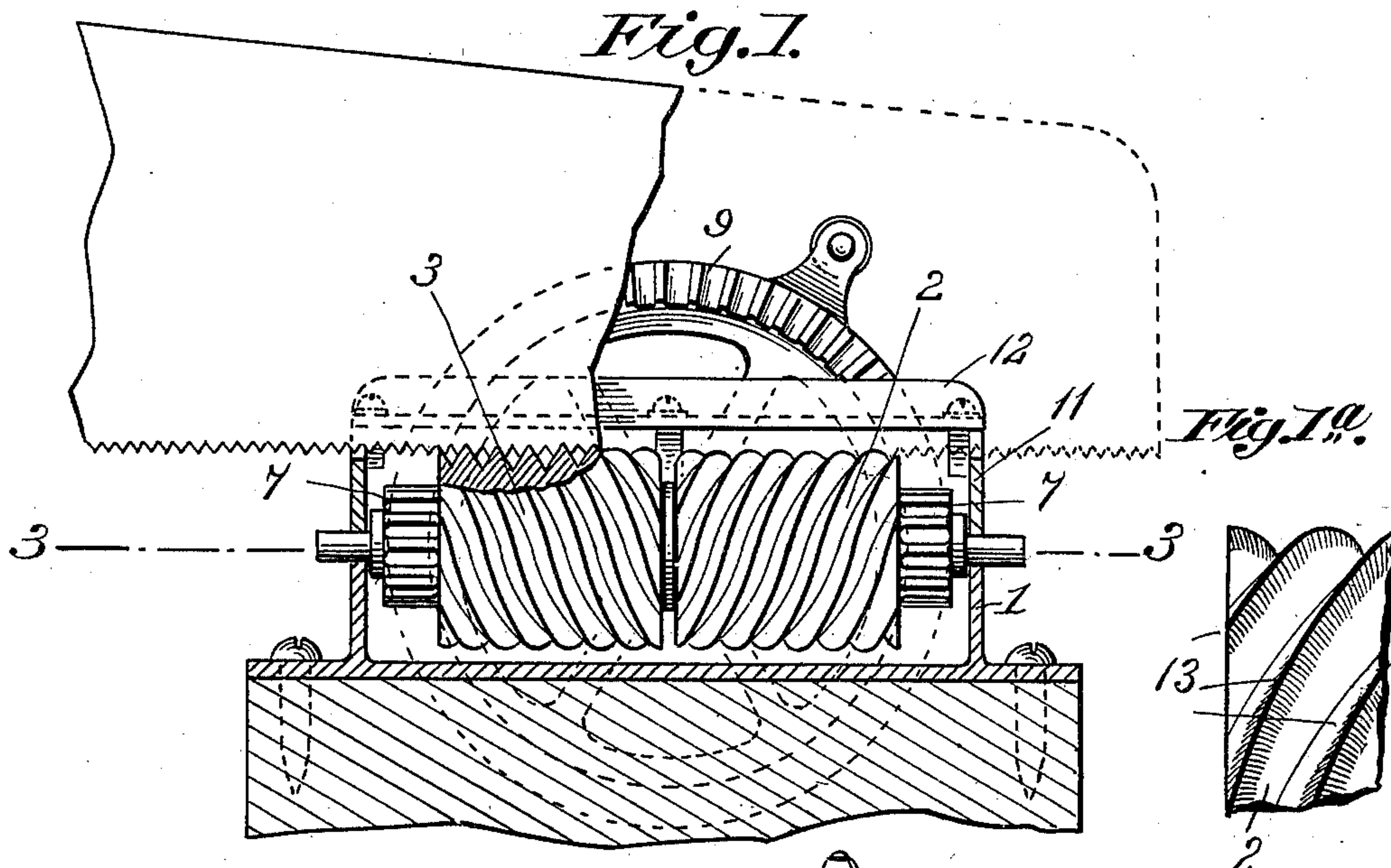
Patented May 28, 1901.

J. H. STRATTON.  
MACHINE FOR FILING SAWS.

(No Model.)

(Application filed Apr. 30, 1900.)

2 Sheets—Sheet 1.



Witnesses:  
J. H. Garfield  
H. J. Clemons

Inventor,  
John H. Stratton  
by Chapman & Co.  
Attorneys

No. 675,025.

Patented May 28, 1901.

J. H. STRATTON.  
MACHINE FOR FILING SAWS.

(Application filed Apr. 30, 1900.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 5.

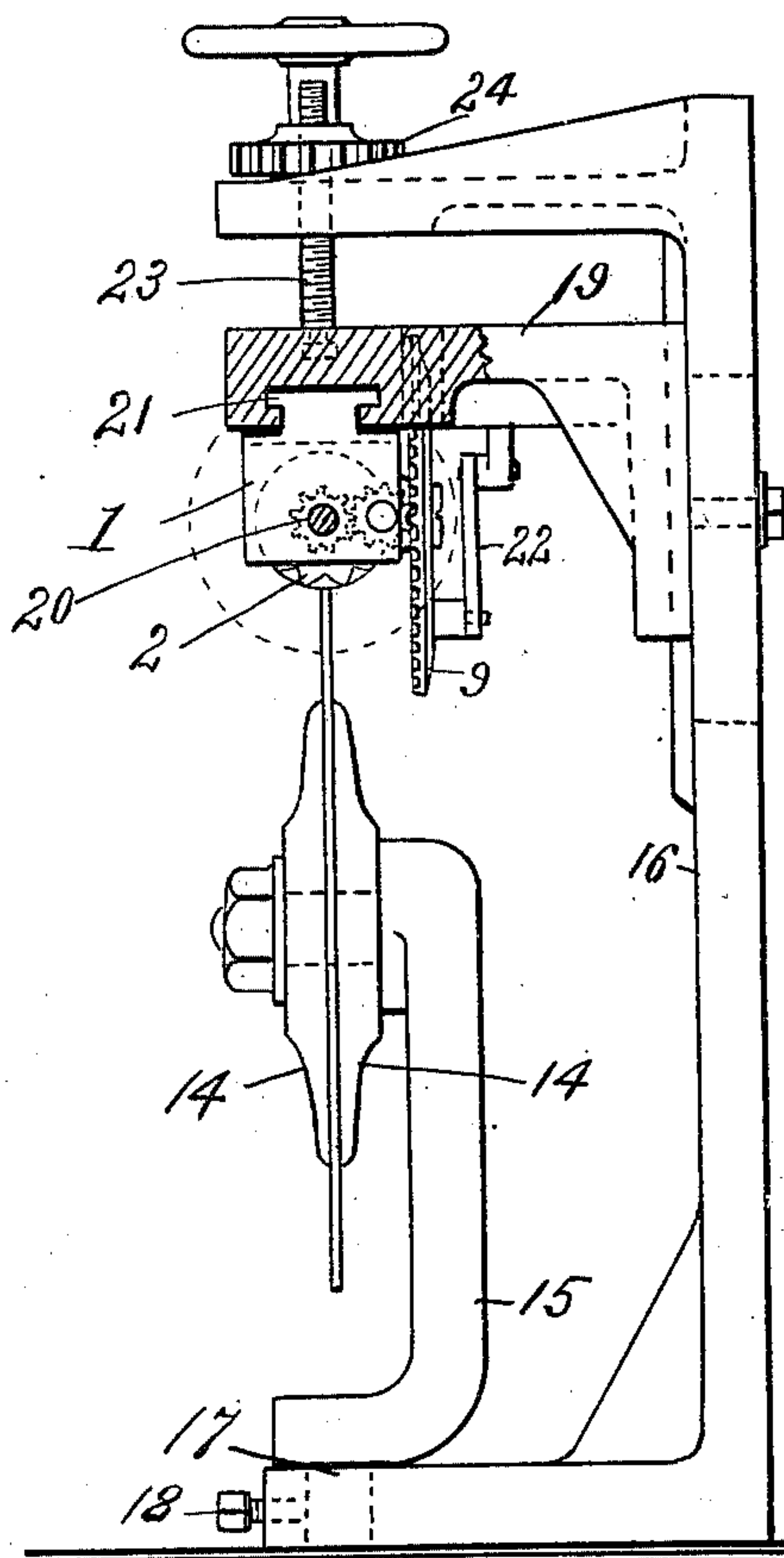


Fig. 6.

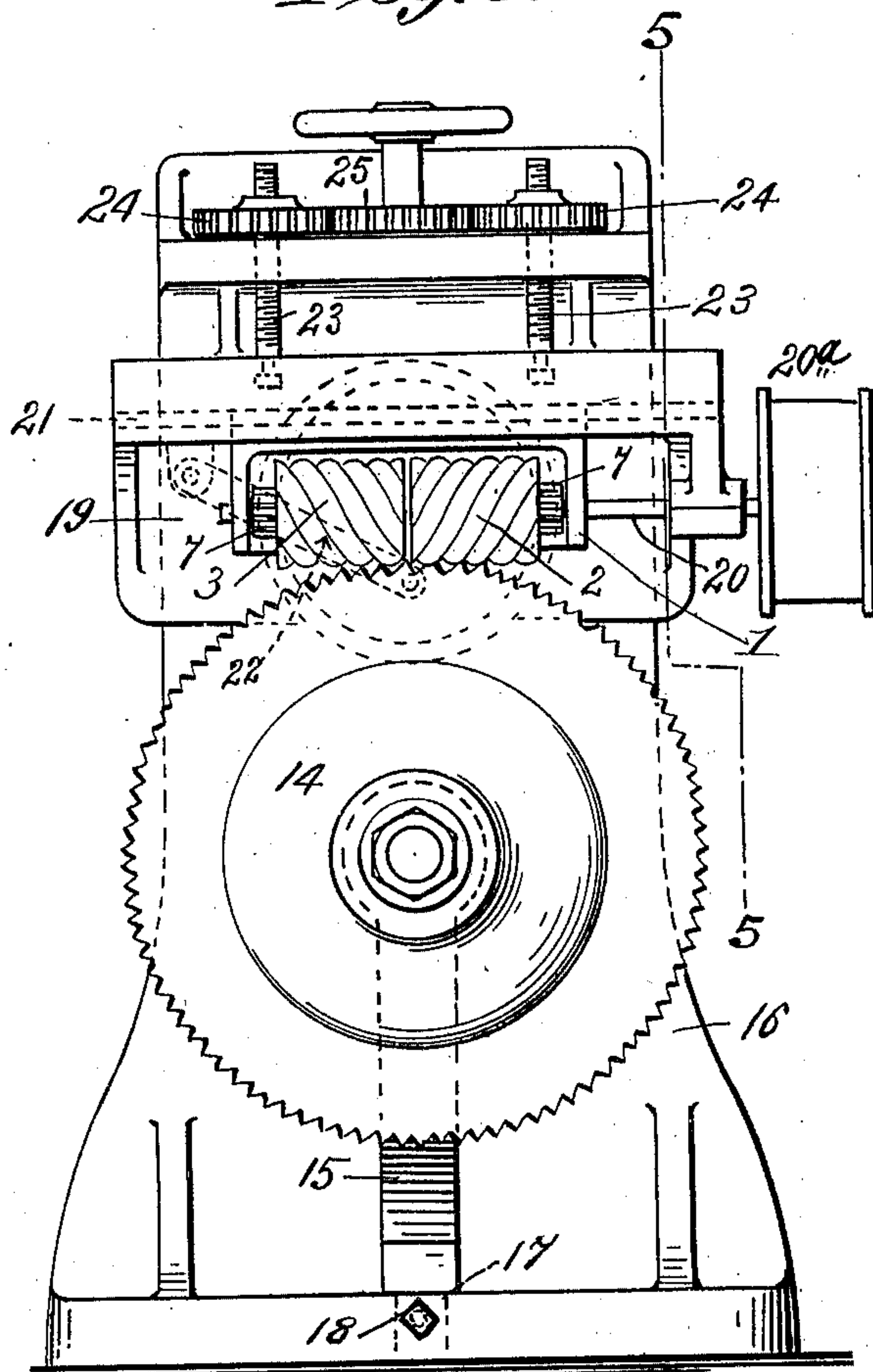
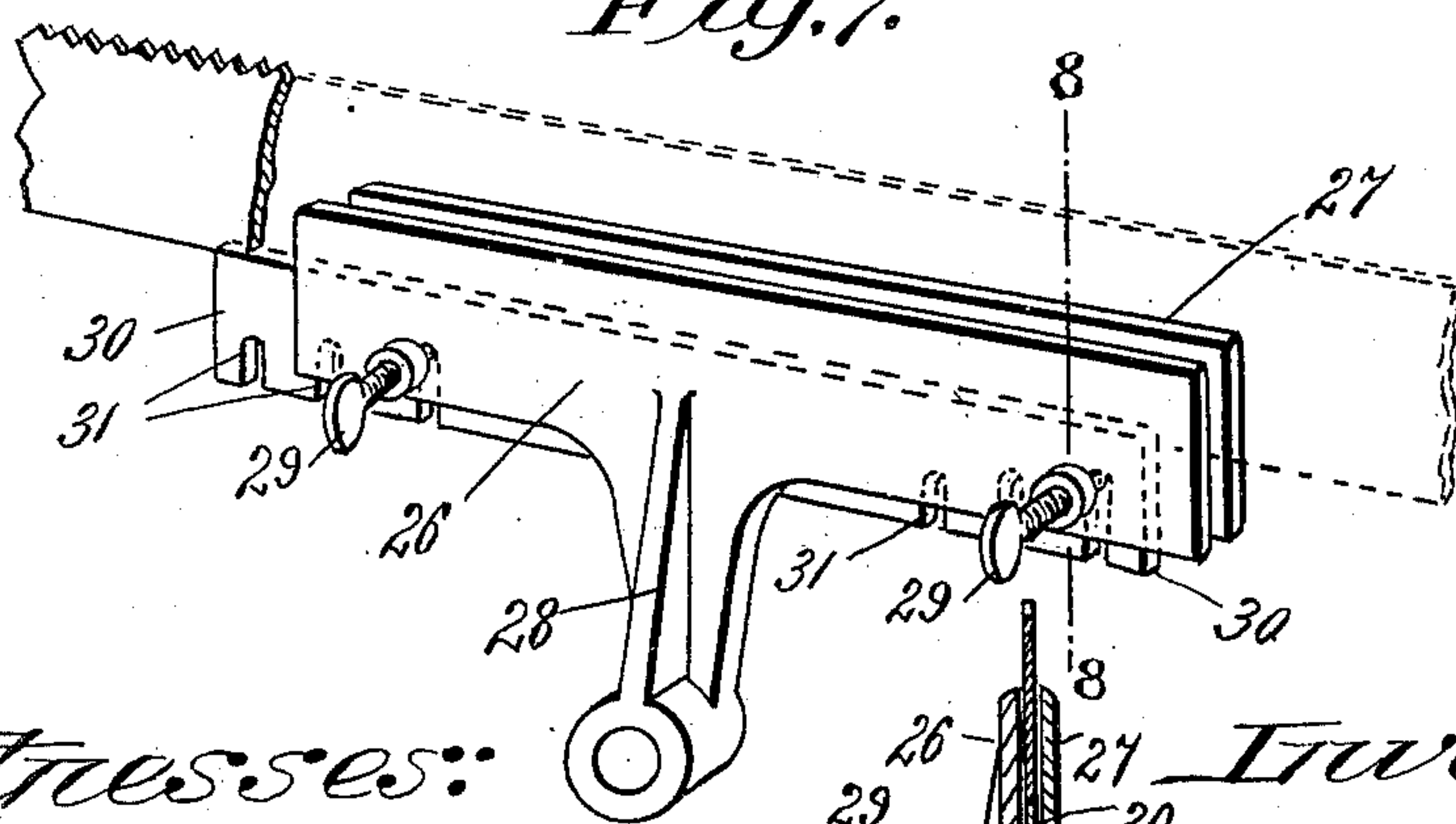
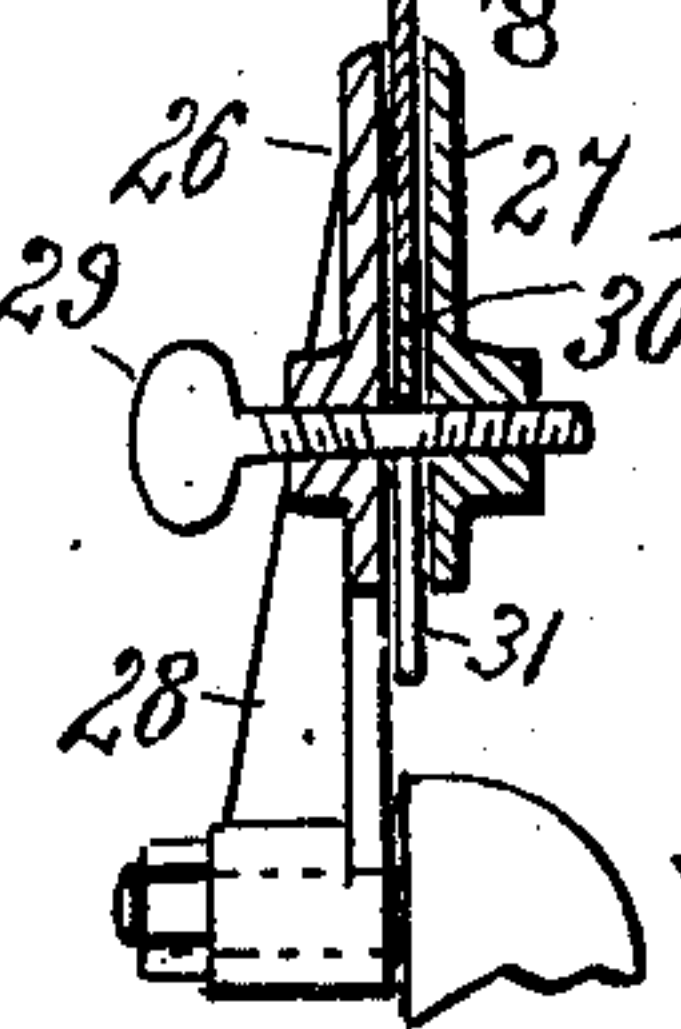


Fig. 7.



Witnesses:  
J. H. Garfield  
H. J. Clemons

Fig. 8.



Inventor:  
John H. Stratton  
by Chapin & Co.  
Attorneys.



# UNITED STATES PATENT OFFICE.

JOHN H. STRATTON, OF HOLYOKE, MASSACHUSETTS.

## MACHINE FOR FILING SAWS.

SPECIFICATION forming part of Letters Patent No. 675,025, dated May 28, 1901.

Application filed April 30, 1900. Serial No. 14,808. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. STRATTON, a citizen of the United States of America, residing at Holyoke, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Machines for Filing Saws, of which the following is a specification.

This invention relates to machines for filing saws, the objects thereof being to produce a machine of this class capable of being adapted to the filing of either handsaws, circular saws, or band-saws much more rapidly and accurately than it can be done by hand and to provide means whereby the cutting edge of the saw-tooth may be cut in a plane substantially at right angles to the blade or at a greater or less angle thereto, as desired, and whereby the action of the cutters on the saw-blade will not only operate to sharpen the teeth thereof, but will feed the saw along at the same time.

The invention consists in the construction set forth in the following specification and summarized in the claims forming a part thereof.

In the drawings forming part of this specification, Figure 1 is a side elevation, partly in section, of a machine constructed according to this invention. Fig. 1<sup>a</sup> is an enlarged view of a cutter-roll. Fig. 2 is a top plan view of the machine. Fig. 3 is a horizontal section taken centrally through the cutters. Fig. 4 is an end view. Fig. 5 shows in end elevation, partly in section, on line 5 5, Fig. 6, the machine mounted to operate on a circular saw. Fig. 6 is a front elevation of Fig. 5. Fig. 7 is a perspective view of a guide for a band-saw. Fig. 8 is a sectional view on line 8 8, Fig. 7.

Referring to the drawings, 1 is a box-like casing in which are mounted two cutting-rolls 2 and 3. These are made of steel and are readily removable from their supporting-shaft. The latter, as shown in Fig. 3, is made in two parts 4 and 5. The section 4 carries the roll 2, and the section 5 carries the roll 3, the latter being bored out to receive an extension 6 of the section 4, of smaller diameter than the latter, and when the two sections are put together they form practically a continuous shaft for said rolls, each section be-

ing independently revoluble and having a uniform diameter equal to the diameter of the section 5. On the outer ends of each of said sections is a pinion 7, in mesh with intermediate gears 8, which in turn mesh with the crown-gear 9 at opposite points thereof. Hence the rotation of either of the shaft-sections or the rotation of the crown-gear 9 will effect the rotation of the rolls 2 and 3 in opposite directions, the latter being each adapted to rotate with its own shaft-section by means of a pin-and-socket connection 10 between the roll and its shaft (shown in Fig. 3) or any other suitable connection. The intermediate gears 8 are supported on suitable studs in the casing 1, and the outer ends of the sections 4 and 5 are extended far enough to provide suitable bearings in the casing for said sections. The contiguous ends of the rolls 2 and 3 are separated by a washer of a thickness equal to not less than the distance between one tooth of the saw and another. The crown-gear is supported rotatably on the rear side of the casing 1. In Figs. 1, 2, and 3 this casing is made in the form of a box inclosing the rolls 2 and 3, as shown; but obviously any form of support for the above-enumerated parts of the mechanism may be employed. In said three figures one part 11 of said casing is hinged to the other and adapted to swing outward to permit the removal of the rolls, and along the meeting line of the two parts of the casing, above the rolls, a sufficient space is left to permit the saw to be applied to said rolls, and on each side of said space on top of the casing are mounted two flanged guides 12, movable one toward the other, whereby the width of said space may be varied. In the said three figures said guides are shown secured by screws passing through elongated slots therein, whereby said movement thereof may be effected. Said rolls 2 and 3 are made of steel and are provided with helical V-shaped ribs 13. These are illustrated in Fig. 1<sup>a</sup>, which shows the preferable method of constructing them—viz., with teeth cut therein after the manner of cutting file-teeth. These need only extend from the edge of the helical V-shaped ribs toward the axis of the rolls to such a distance as will slightly exceed the depth of a tooth to be cut on the saw. These ribs 13 are laid out with a right and left hand pitch, re-



spectively, on the two rolls, and the distance between the apex of two of said ribs is such that when a saw is applied to the rolls two of the saw-teeth will lie between said two ribs—  
 5 that is to say, said cutting-ribs engage with the space between every first and third saw-tooth.

It will appear obvious from a glance at the drawings that the pitch of the ribs must equal  
 10 the angle which it is desired to give to the angle of the saw-teeth operated on, and therefore in all but rip-saws a number of cutting-ribs to each roll (the latter being of substantially the same dimension) must vary accord-  
 15 ing to the pitch of the edge of the saw-teeth, even though the different saws to be operated on may have only the same number of teeth to the inch.

It has been said that the ends of the two  
 20 cutting-rolls are separated by a space equal to one tooth. The object of this is for the purpose of permitting the thread of one roll to engage the space between the two teeth lying between two of the teeth in the other  
 25 roll when that space passes from one roll to the other. It will thus be seen that all of the spaces between the saw-teeth occupied by the cutting edges of the roll 3 will, when the saw passes onto the roll 2, (assuming the feed to  
 30 be in that direction,) lie between the cutting edges of the latter. Furthermore, the cutting-ribs 13 on roll 3 will cut the saw-teeth at one angle, being laid out with a right-hand twist, and the roll 2 will cut the opposite edges of  
 35 said teeth on an opposite angle, the cutting-ribs of the roll being laid out with a left-hand twist. These two rolls have, however, opposite directions of rotation, and therefore each attacking the saw from opposite sides, and  
 40 the cutting-ribs of each having an opposite pitch and an opposite direction of rotation the result is that the saw is fed along the roll in the plane of the axis thereof and the teeth cut at the same time.

45 It is understood, of course, that the flanged guides 12 are necessary to hold the saws in their plane of the axis of these rolls in the construction in Figs. 1 to 3.

Figs. 5 and 6 show the adaptation of this  
 50 invention to cutting the teeth of circular saws. In these views the saws are shown revolvably supported between circular clamps 14 on standards 15, which in turn are swiveled on the base of the frame 16. This manner  
 55 of holding the saw permits its rotation on its own axis in a vertical plane and likewise permits the standard 15 to be swung on its pivot 17, which is in line vertically with the center of oscillation of the saw. A set-screw 18 or  
 60 other suitable means may be employed to secure the standard 15 at any desired angle, whereby the saw may be presented to the cutters with the plane thereof in the plane of the axis of the rolls or at any desired angle rela-  
 65 tive thereto. In said Figs. 5 and 6 the cutter-rolls 2 and 3 are shown mounted on a bracket 19, which slides vertically on the

frame 16 and may be secured at any desired elevation thereon adapted to bring the cutter-rolls to bear properly on the saw-teeth. The  
 70 axis of the rolls is extended outward, as indicated by 20, and a pulley 20<sup>a</sup> is fixed thereon, whereby the rolls may be rotated in the manner already described. Said rolls 2 and  
 75 3 are adapted to have a traverse movement along the bracket 19, the casing in which the rolls are hung being supported in a T-groove 21 in the bracket, as shown, and adapted to slide therein. The object of imparting a slid-  
 80 ing movement to the cutter-rolls is to distribute the wear thereof evenly over their entire length. This traverse movement may be attained in any desired manner. A good way to provide for it is to connect one end of  
 85 an arm 22 to the gear 9 outside of the center thereof and its opposite end to some point on the bracket 19, as shown in Figs. 5 and 6, and when the rolls are rotated the rotation of the gear 9 will cause the case in which the  
 90 rolls are hung to have a reciprocatory movement in the groove in the bracket 19. The latter may be adjusted vertically by means of two screw-rods 23, which are supported in the frame 16 and engage the bracket and  
 95 are simultaneously operated in either direction by the gears 24, which are in mesh with a centrally-located gear 25. The operation of this last-named gear will operate said  
 screw-rods to move the bracket. The traverse motion of the rolls in any case is com-  
 100 paratively slight, and if the pulley 20<sup>a</sup> be flanged, as shown, a belt would not run off from said pulley if it were made fast to the shaft of the rolls and had the same lateral movement that the rolls have. If it is  
 105 desired to give the rolls more traverse motion than could safely be given to the driving-pulley, then the latter could be secured to the shaft by a groove-and-feather connection and the shaft thereby allowed to have  
 110 endwise movement therethrough.

If desired to use this device for the purpose of sharpening the teeth of band-saws, then a guide, such as is shown in Figs. 7 and 8, would be provided. This consists of two rectangu-  
 115 lar plates 26 and 27, on one of which is an arm 28, adapted to be secured on the stud in the end of the standard 15, on which the circular clamps of the circular saw are secured and on which said band-saw guide may swing to bring  
 120 the saw to a position parallel with the axis of the rolls 2 and 3. The plates 26 and 27 are secured together by screws 29, and between said plates is secured a strip of metal 30, a little thicker than the saw, and this strip has  
 125 in its lower edge two series of vertical notches 31 of different heights, but so spaced that when the strip is dropped in between the plates 26 and 27 a notch of each series will straddle the screws 29, which pass through the  
 130 plates. By shifting the metal strip endwise notches of greater or less depth may be brought in position to engage the screws 29, and thus the upper edge of said strip may be



brought to any desired position relative to the under side of the cutter-rolls. This strip serves as a base on which the band-saw may slide through the guide-plates 26 and 27, and by the means for adjusting it vertically, just described, the guide may be adapted to band-saws of different widths.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A saw-filing machine comprising two rolls rotatable on a common axis, means for rotating the rolls in opposite directions, a plurality of spirally-disposed V-shaped ribs on each of said rolls, having abrading-surfaces, said ribs encircling the roll once and having the same degree of pitch, the spacing between said ribs adapting the latter to engage only every other tooth of a saw; a space between the contiguous ends of said roll equal to the width of one saw-tooth, and the ribs on one of said rolls having a pitch opposite to those on the other, whereby equal angular faces may be cut on the rear edges of two adjacent saw-teeth by one roll, and like faces, having an opposite pitch, may be cut on the front edges of said teeth by the second roll, means for reciprocally moving said rolls and their driving mechanism in a plane parallel with their axis, and for adjustably moving them vertically, substantially as described.

2. In a saw-filing machine, two rolls having a common axis, means for rotating said rolls in opposite directions, a plurality of spirally-disposed V-shaped ribs on each of said rolls having abrading-surfaces, said ribs encircling said rolls one or more times in opposite direc-

tions on each roll, but having the same pitch, the spacing between said ribs adapting the latter to engage only every other tooth of a saw; a space between said rolls equal to the width of one saw-tooth; means for supporting said rolls consisting of a separate arbor for each of the rolls, to which the latter are secured, the inner end of one arbor having a bearing in a socket in the end of the other, and means for rotating said arbors in opposite directions, substantially as described.

3. A saw-filing machine comprising a standard, means for supporting a saw thereon, one or more cutting-rolls having spiral V-shaped ribs thereon having abrading-surfaces, a bracket, vertically adjustable on said standard, a support for said rolls, transversely slidable in said bracket, means for rotating said rolls, and means for imparting a reciprocating sliding movement to said roll-support, substantially as described.

4. A saw-filing machine comprising a standard, means for supporting a saw thereon, one or more cutting-rolls having spiral V-shaped ribs thereon having abrading-surfaces, a bracket, vertically adjustable on said standard, a support for said rolls, transversely slidable in said bracket, means for rotating said rolls and means operated by the roll-driving mechanism for imparting a reciprocating sliding movement to said roll-support in said bracket, substantially as described.

JOHN H. STRATTON.

Witnesses:

WM. H. CHAPIN,  
H. L. COGSWELL.