

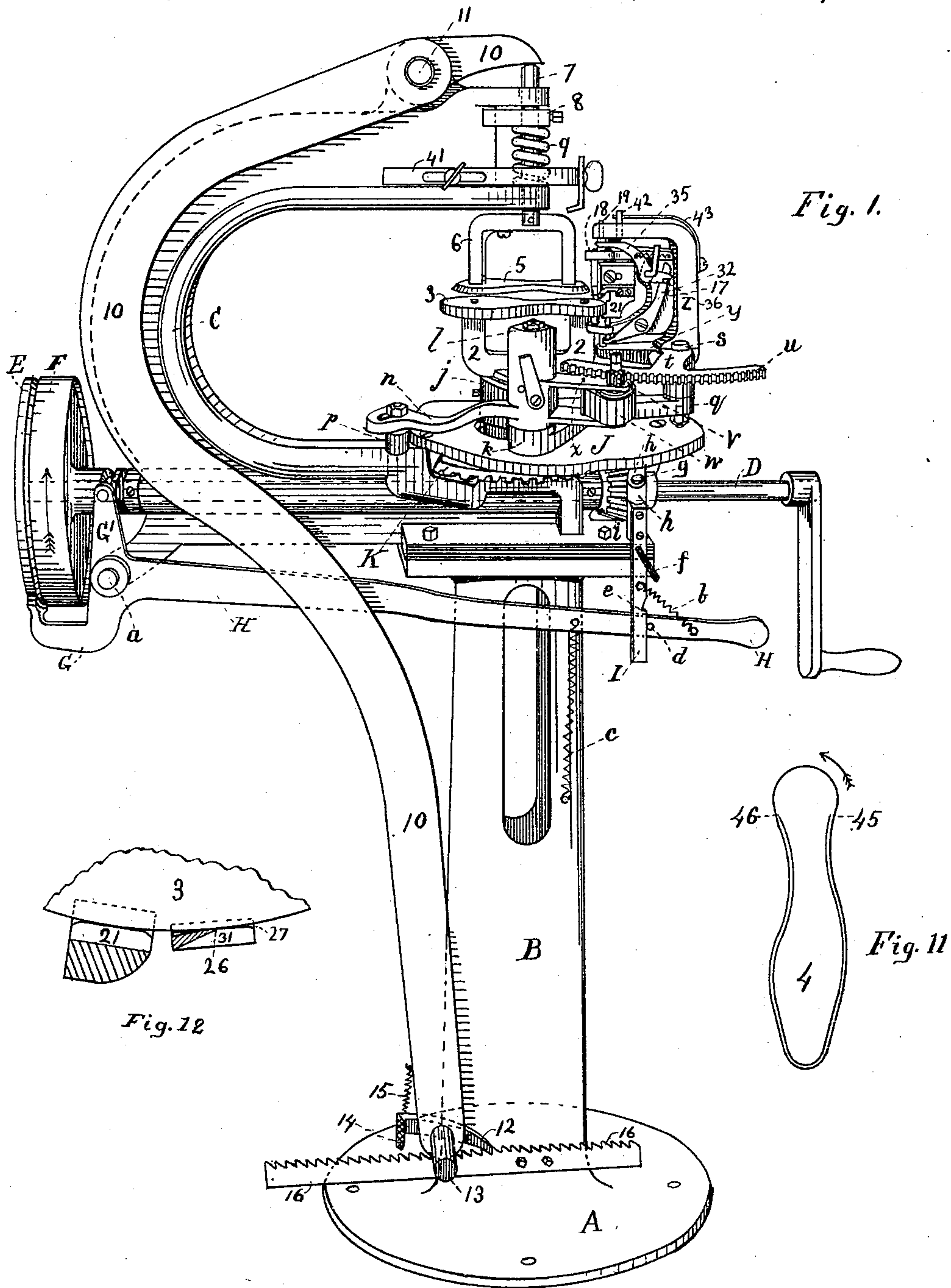
(No Model.)

4 Sheets—Sheet 1.

H. H. CUMMINGS.
SOLE CHANNELING MACHINE.

No. 354,012.

Patented Dec. 7, 1886.



Witnesses
J. W. Stearns
L. W. Brown

Inventor.
Henry H. Cummings
per *J. W. Porter* Atty

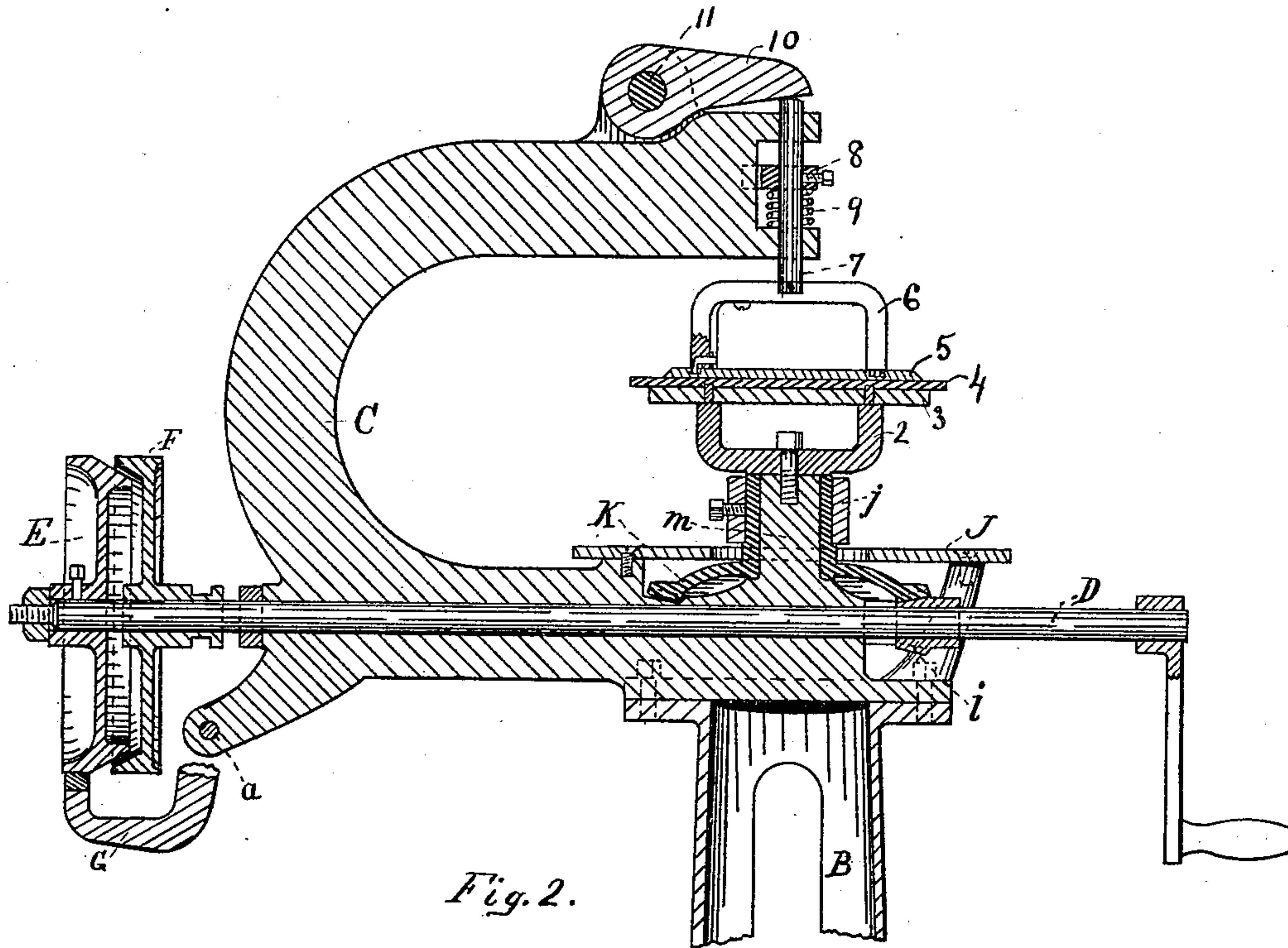
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4 Sheets—Sheet 3.

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Fig. 3.

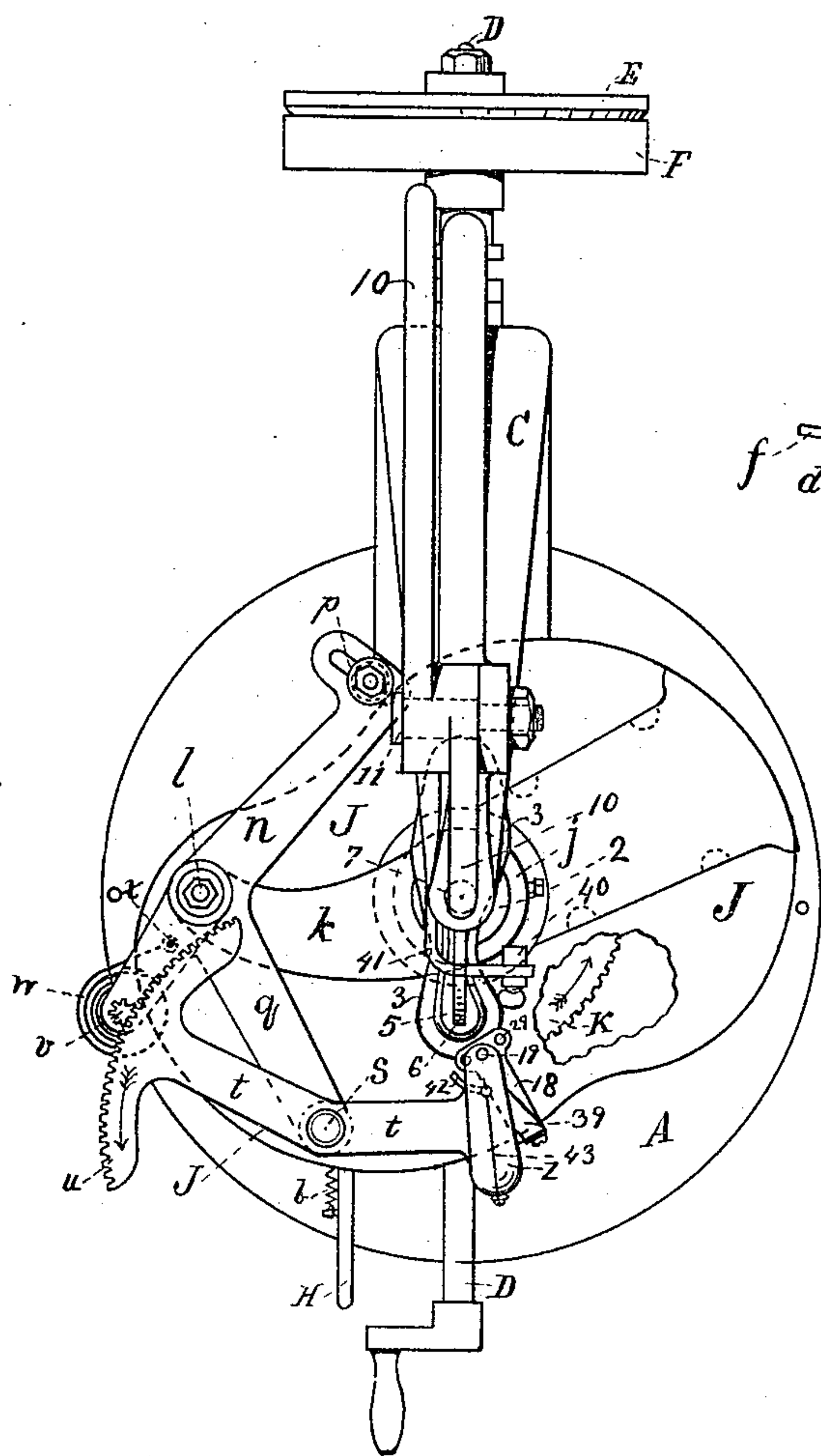
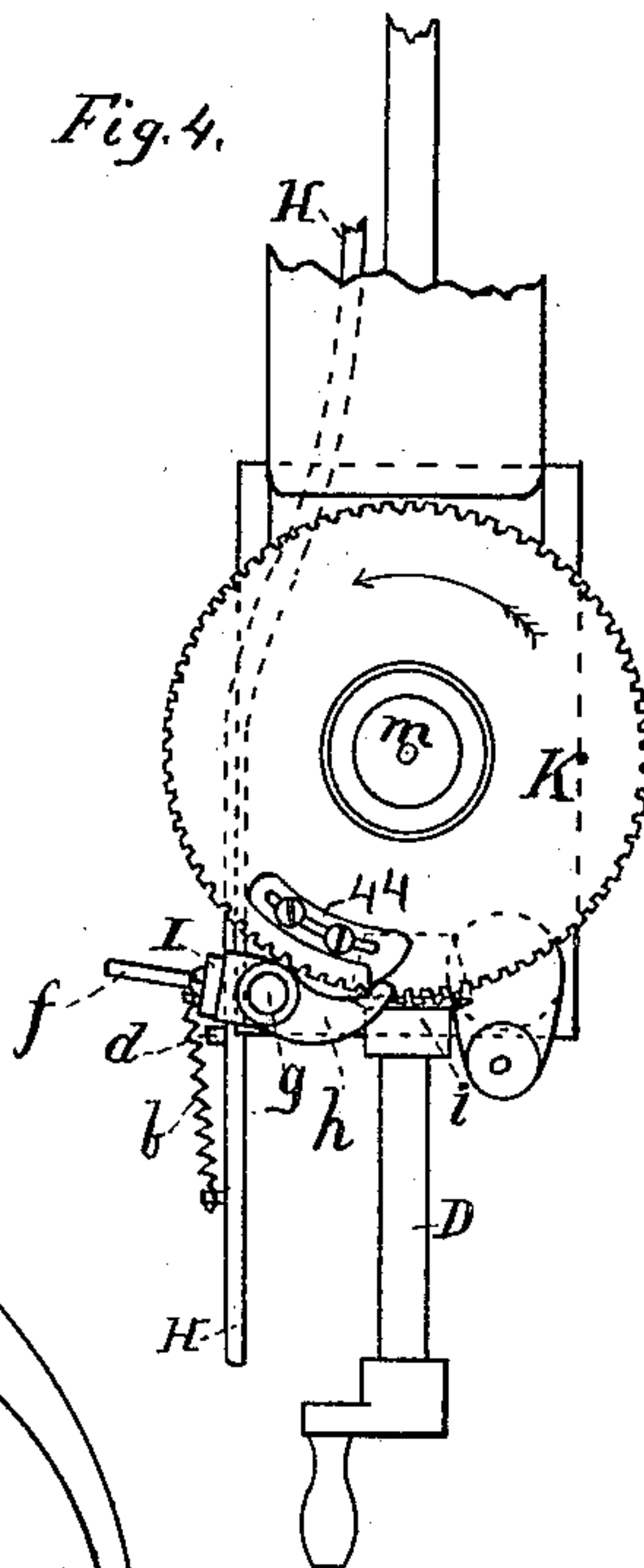


Fig. 4.



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(No Model.)

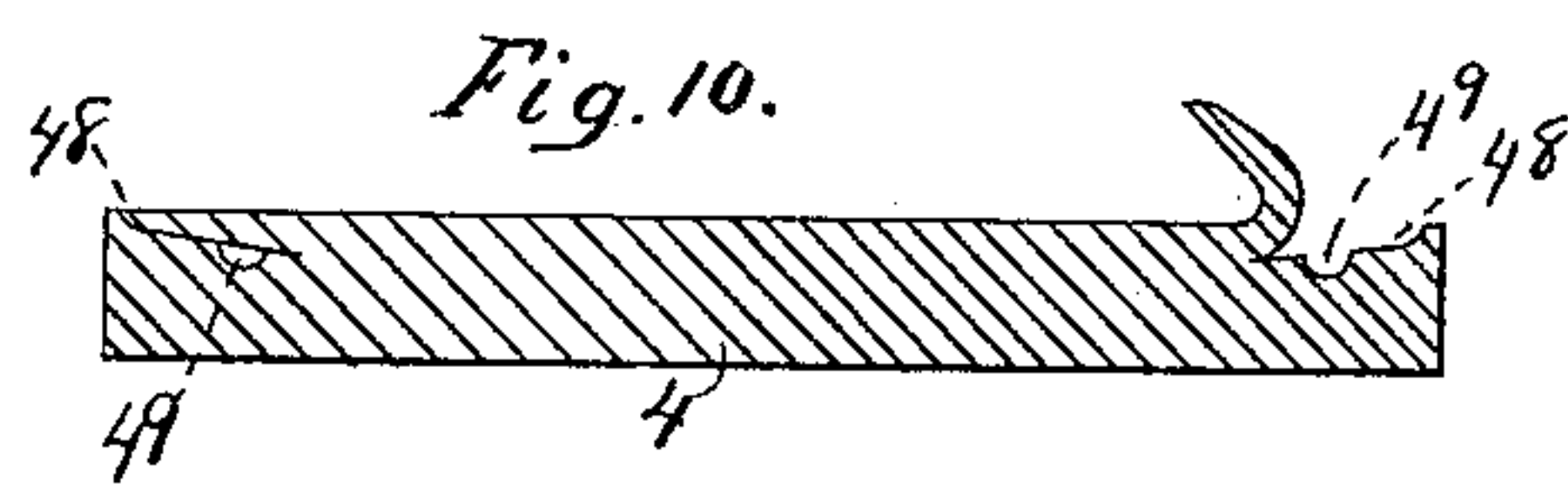
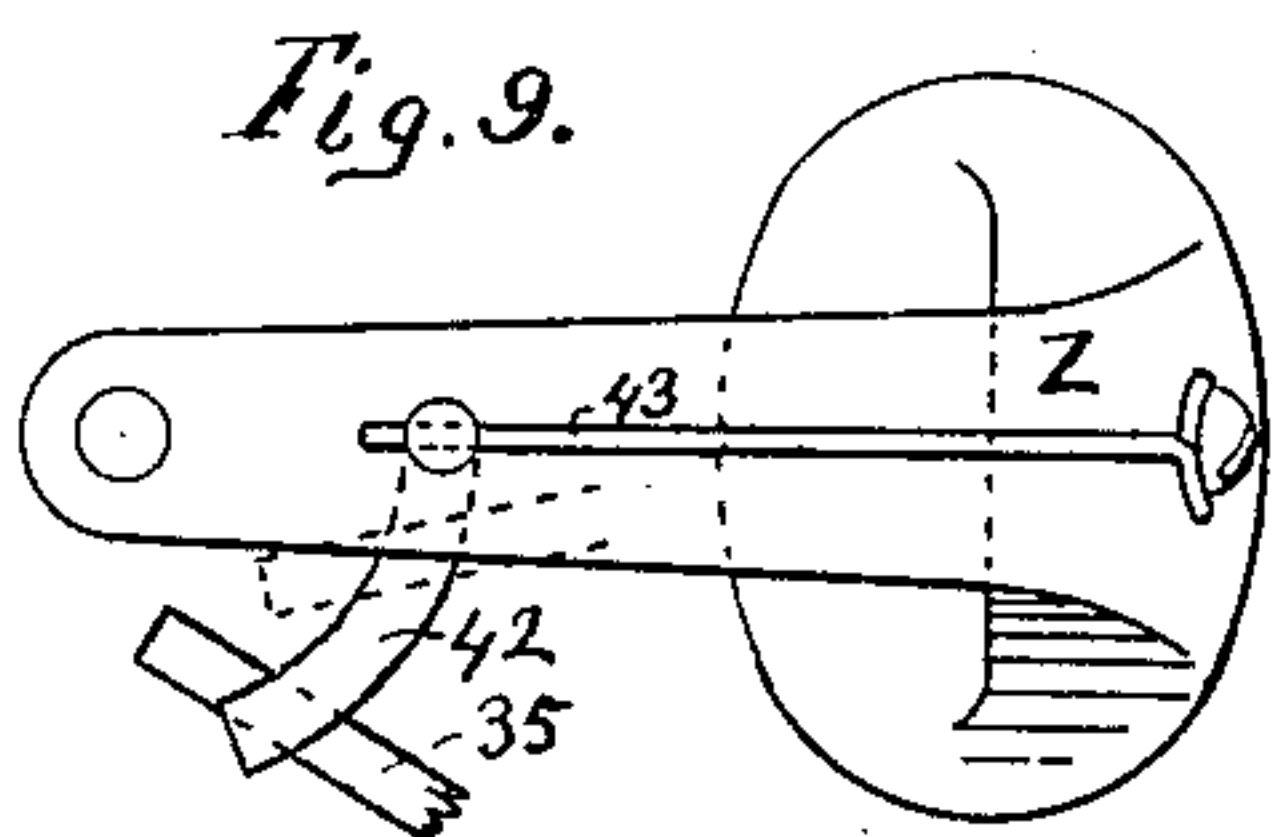
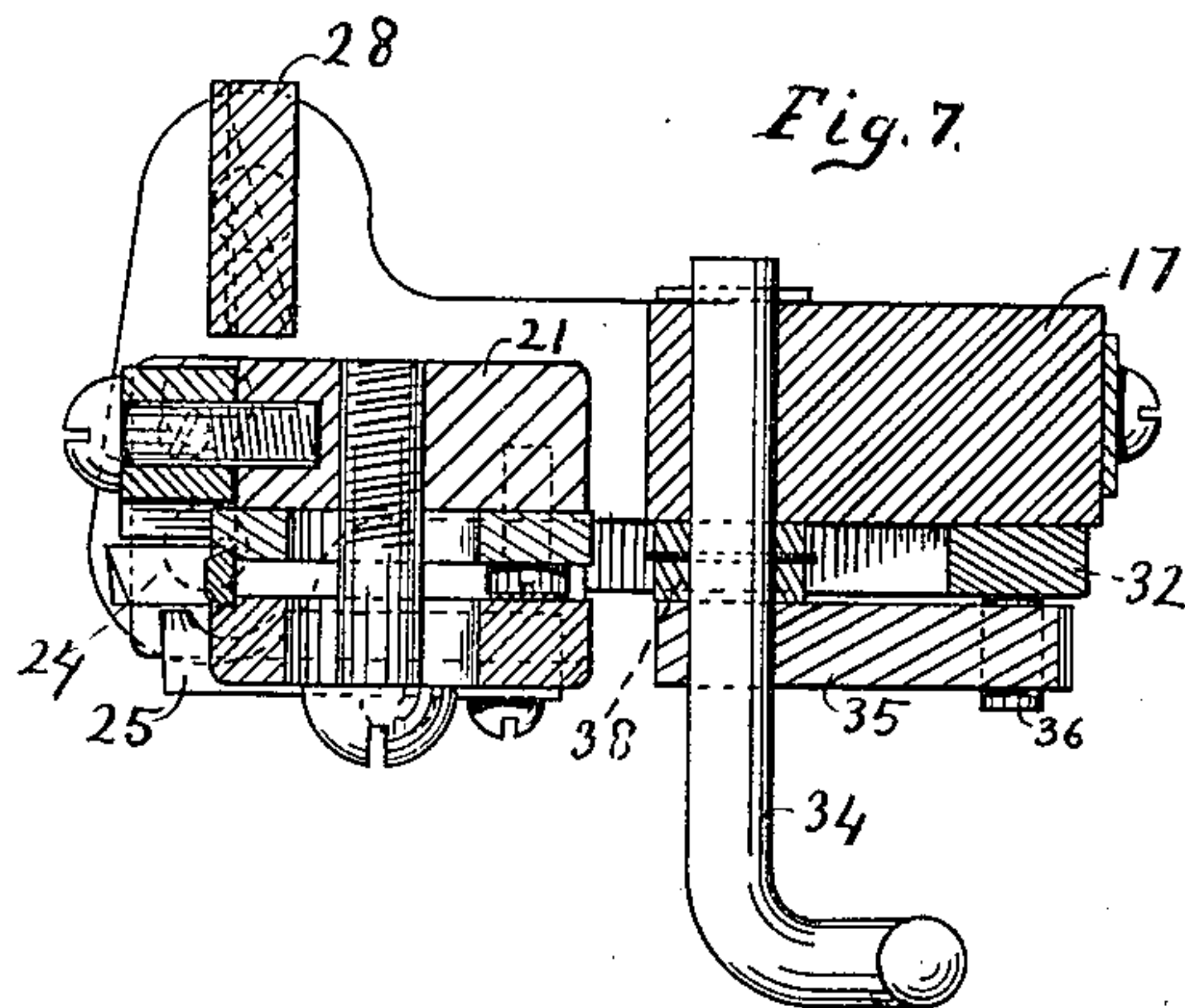
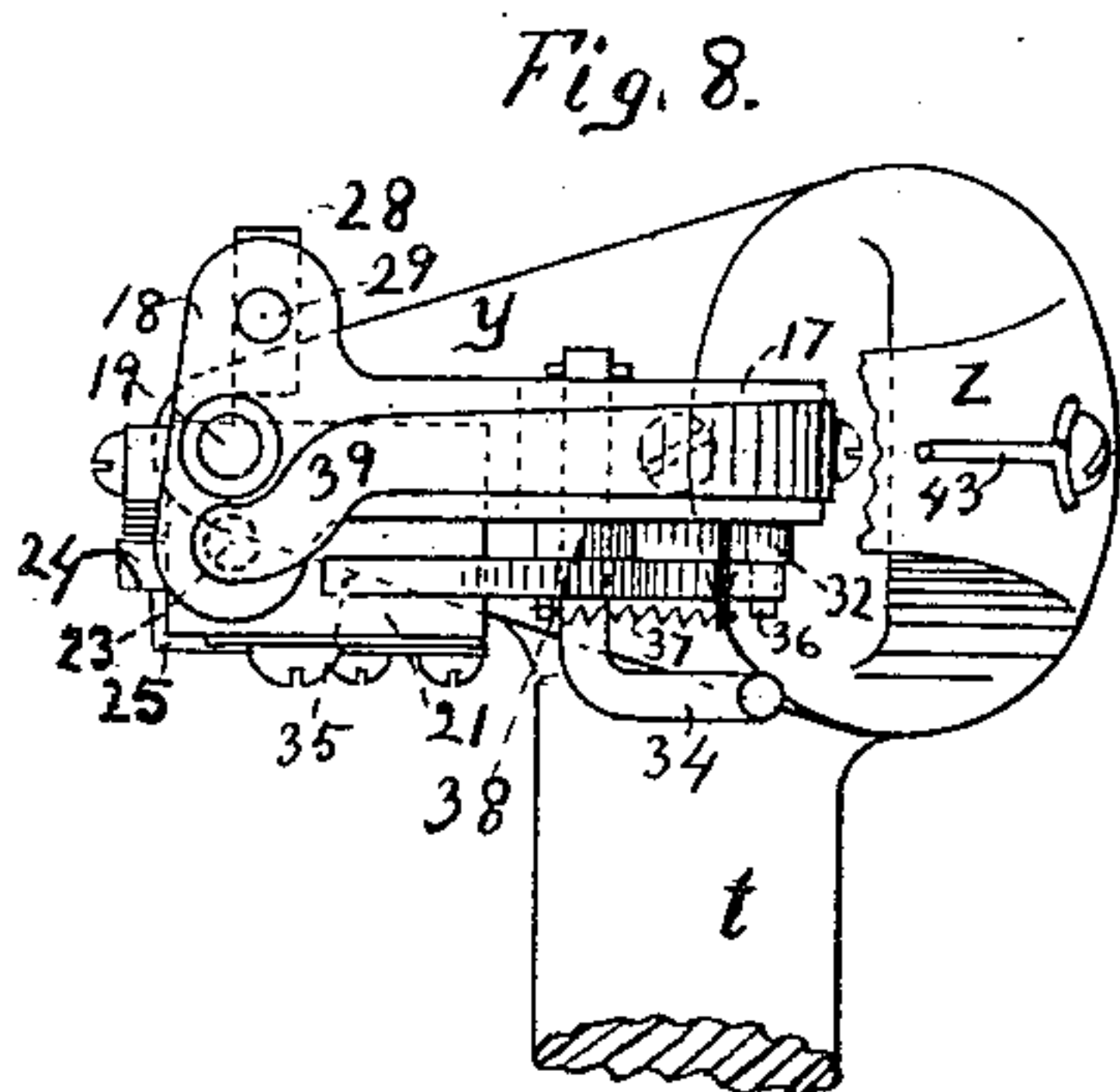
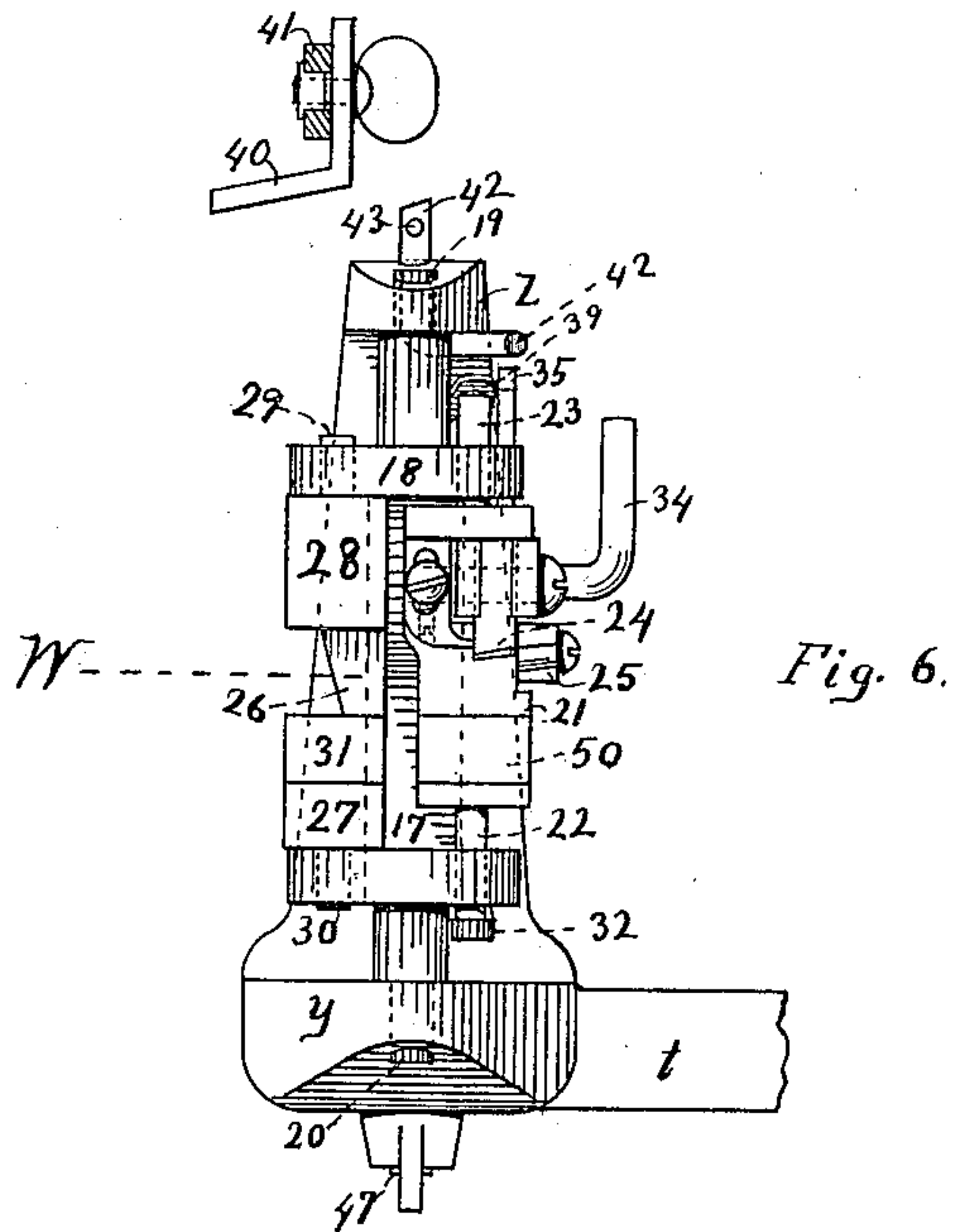
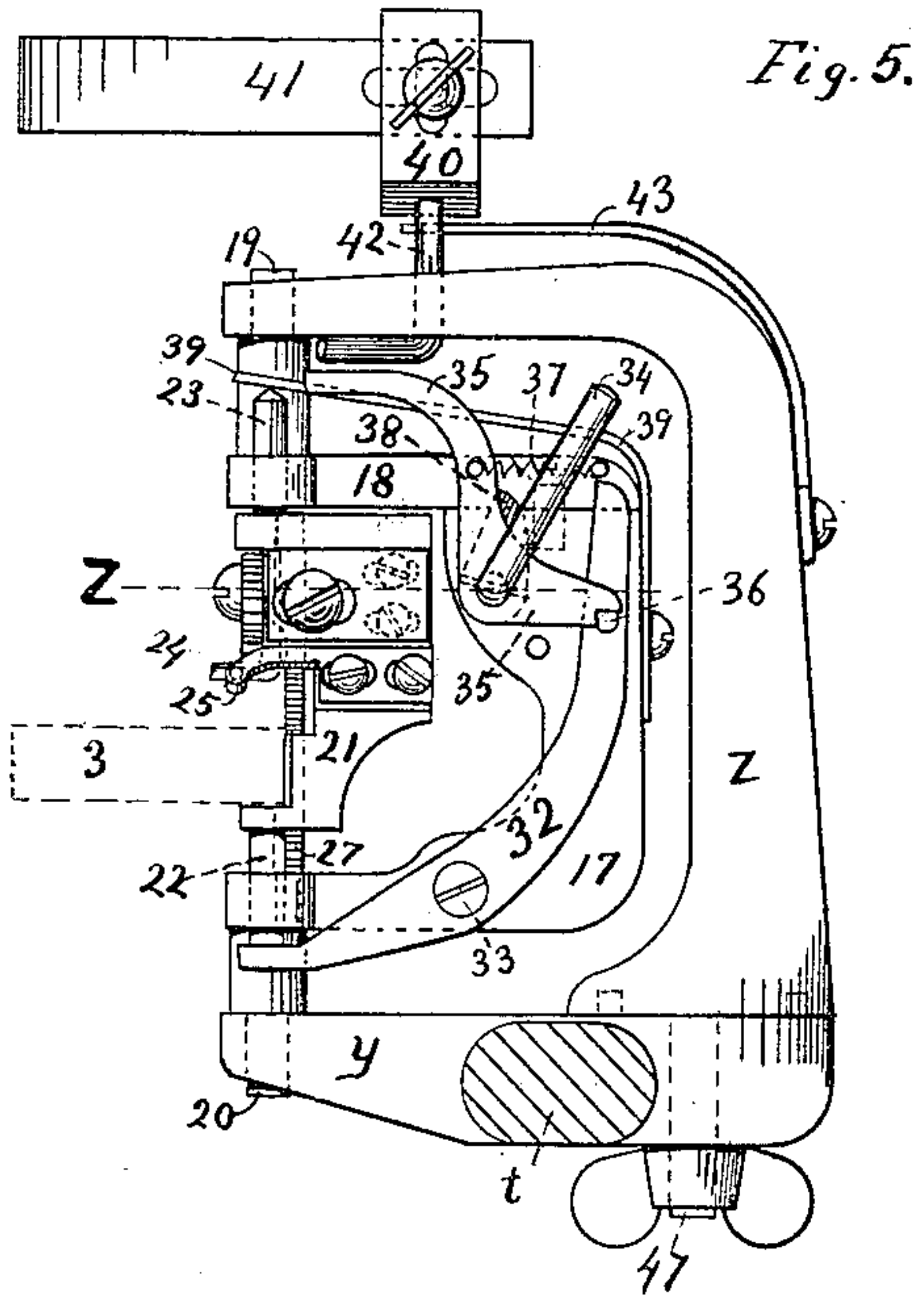
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WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRY H. CUMMINGS, OF MALDEN, MASSACHUSETTS.

SOLE-CHANNELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 354,012, dated December 7, 1836.

Application filed December 17, 1885. Serial No. 185,910. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. CUMMINGS, of Malden, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Sole-Channeling Machines, which will, in connection with the accompanying drawings, be hereinafter fully described, and specifically defined in the appended claims.

Figure 1 is a side elevation of my machine. Fig. 2 is a vertical section of the upper portion of the machine, taken on a plane coincident with the axis of the driving-shaft D, which is shown in elevation. Fig. 3 is a top plan view of the machine. Fig. 4 is a detached top plan view of the gear K and certain parts arranged below it. Fig. 5 is a side elevation of the cutter-head and its supporting devices. Fig. 6 is an elevation taken as viewed from the left in Fig. 5. Fig. 7 is an enlarged horizontal section taken through the cutter-head on line Z, Fig. 5. Fig. 8 is a top plan view of Fig. 5, with the tripper-gage omitted and with the upper portion of the supporting-standard broken away in order to show the parts directly beneath it. Fig. 9 is a top plan view of the supporting-standard L and certain of the tripping devices. Fig. 10 is a transverse section of a sole, shown as having passed through my machine. Fig. 11 is a diminished top plan view of a sole, shown as channeled and to illustrate the operation of my machine. Fig. 12 is a sectional plan view, the section being taken as on line W, Fig. 6, through the edge-trimming knife and the stock of the channel and groove cutters, and a portion of the pattern-plate being shown in plan in its proper relation to the other parts.

My invention relates to that class of machines which trim or outline the edge of the sole, and at the same time cut the channel and thread-groove therein; and it consists in features of novelty hereinafter fully described, and pointed out in the claims.

Referring again to the drawings, A represents a base, and B a supporting-column, suitable for my machine, and upon the column is secured the goose-neck-like head C, in which is journaled the driving-shaft D, which is rotated either by a crank, as shown, or through its clutch E, which is frictionally engaged by driving-pulley F, which is engaged with and

released from the clutch by the hand-lever H, pivoted at *a* upon an arm of head C, and whose lower arm, G, acts as a brake on clutch F to stop the machine, while upper arm, G', by a pin that enters a concentric groove in the hub of pulley F, as shown, and in a well-known manner, serves as lever H is raised and lowered by the operator to engage and disengage the pulley with the clutch, said lever H, when released being drawn downward by coiled spring *c*. Upon shaft D is secured a pinion, *i*, which meshes with and drives the larger gear, K, whose vertical sleeve-like portion is fitted to revolve on the stud *m* of head C.

For the purpose of starting and stopping the movement of the machine, a short lever, *h*, pivoted at *g*, and having its upper arm horizontal and its lower arm vertical, is arranged to be engaged and vibrated by a dog, 44, adjustably secured upon gear K, as shown in Fig. 4, as the gear rotates in the direction indicated by the arrow thereon. For the purpose of moving and holding lever *h* in the path of dog 44, a spiral spring, *b*, is connected with lever H and arm I, which latter constitutes an extension of the vertical arm of lever *h*, said spring serving to hold the arm I in contact with stud *d* in the lever, and when the latter is raised to cause said stud to enter catch *e* in arm I, and thereby support the lever till, by the action of dog 44 against lever *h*, arm I would be moved out of contact with stud *d*, when lever H would fall, thereby disconnecting the pulley and clutch and applying the brake to the latter, thus instantly stopping the machine, while the raising of lever H applies the pulley to the clutch and removes the brake from the latter. A short handle, *f*, extending from arm I, enables the operator to disconnect the arm from stud *d*, and thereby stop the machine.

Upon stud *m* is secured a yoke, 2, upon the arms of which is secured the pattern-plate 3, on which is placed the sole 4, which is clamped upon the pattern-plate by the slightly smaller plate 5, secured to and vertically actuated by yoke 6, which is secured to plunger 7, journaled in head C, and depressed by lever 10. A coiled spring, 9, acting upwardly against set-collar 8, serves to elevate said plunger and the clamping-plate 5 when lever 10 is released, said collar 8 being interlocked with head C,

as shown by dotted lines in Fig. 2, to prevent rotation of the plunger and consequent derangement of the clamping-plate 5 relatively to pattern-plate 3. Said lever 10, which is pivoted at 11 to head C, is actuated to depress plate 5 by the operator placing his foot on stud 13, by which he moves the lower end rearward, the pawl 12, by the action of its engaging-spring 15, being engaged with the ratchet-rack 16, to hold the lever in place when the sole is duly clamped, an arm, 14, of said pawl serving as a rest for the foot of the operator, by which to disengage the pawl from the rack, as also to swing the lower end of the lever to the front, in order to raise the clamping-plate 5 from the sole, after the latter has been trimmed and channeled.

For the purpose of trimming, channeling, and grooving the sole when thus clamped, and while the machine is being driven as stated, I employ the following devices: A cam-plate, J, having an opening to freely receive the sleeve of gear K, is secured to proper bearings of head C, as shown in Fig. 2, while upon said sleeve is rigidly secured the eye *j* of arm *k*, and upon the outer end of this arm is pivoted, at *l*, the T-shaped lever *n*, in one arm of which is adjustably pivoted the roll *p*, arranged to bear against and travel around the edge of cam-plate J, while in the outer end is pivoted the small pinion *v*, which meshes in segment-gear *u*, formed upon one end of lever *t*, which near its center is pivoted to the end of arm *q* of lever *n*.

A coiled clock-like spring, *w*, secured at one end to the rotary arbor of pinion *v*, and at its other end to stud *x* in lever *n*, serves by its expansive force to tend constantly to force the segment end of lever *t* outward and its opposite end inward, and to press roll *p* in the end of lever *n* constantly against the edge of the cam-plate. Upon the end of lever *t* is formed a cross-head, *y*, Figs. 5, 6, 7, and upon the cross-head is secured the angle-standard *z* by means of steady-pins and bolt 47, and its thumb-nut, to admit of ready removal for change of cutting-tools.

It will be seen in Fig. 5 that the upper end of standard *z* is coincident with a vertical line passing the end of cross-head *y*, and in these ends is pivotally supported the bracket 17, whose upper horizontal arm, 18, is removable, to facilitate removal and replacement of the cutting-tools, said bracket 17 being supported at top by pivot 19, journaled in standard *z*, while at its lower part it is supported by pivot 20, journaled in cross-head *y*. A sole-edge trimming-knife, 26, having an oblique overhanging edge to give a downwardly-acting draw-cut, as shown in Fig. 6, is, at the thicker upper portion of the bar of which the knife is formed, pivoted in arm 18 of bracket 17 by pivot 29, while at the lower thick portion, 27, of the knife it is, by pivot 30, supported in bracket 17. The portion 31 of the knife-bar, which is rounded at its corners, as shown in Fig. 12, is arranged to bear against the edge

of pattern-plate 3 as the knife trims the edge of the sole, the rounding of the edges of part 31 enabling the knife-bar to adjust its plane against the edge of the pattern-plate when pressed against the same by the action of spring *w*, operating through lever *t*, as stated.

A channel-cutting knife, 24, and a grooving-tool, 25, of usual construction, and respectively adapted to cut the channel 48 and groove 49 in sole 4, are duly clamped in the stock 21, as shown in Figs. 5, 6, 7, 8, said stock being at its lower end supported by its pivot 22 in bracket 17, and at its upper end by its pivot 23 in arm 18. Said stock is of less length than the distance between the lower arm of bracket 17 and its upper arm, 18, in order to allow a vertical end movement of the stock sufficient to move the channel-cutting knife and groover out of contact with the sole when trimming the heel portion thereof.

The devices by which stock 21 is raised by the operator and automatically locked to hold the channel and groove cutting tools above the sole, and is automatically released to allow it to fall so that said tools may act upon the sole, are described as follows: A curved lever, 32, is pivoted at 33 to bracket 17, and its lower end serves as a "step" for the lower pivot, 22, of tool-stock 21. In the upper part of bracket 17 is journaled an angle rock-shaft, 34, on which is secured a cam, 38, arranged to swing the upper end of lever 32 to the right, and so raise tool-stock 21 when the vertical arm of the rock-shaft is moved to the right. To lock lever 32 when thus moved to the right, an angle lever, 35, is pivoted on rock-shaft 34, and at its lower end is formed with a seat or shoulder to receive a stud, 36, in lever 32, thereby holding the same in position, a coiled spring, 37, insuring the contact of the lever and stud.

For releasing lever 35 from stud 36 an angle-rod, 42, is arranged to slide vertically in the horizontal arm of standard *z*, and is normally raised by lever-spring 43, as shown in Fig. 5, the lower arm of this angle rod being arranged to act upon lever 35 and trip the same when the rod is depressed, which latter result is effected by inclined angle-plate 40, adjustably mounted upon arm 41, secured to head C.

The bracket 17, which carries both the trimming knife 26 and channel and groove cutter stock 21, being pivoted at the end of arm *t* in cross-head *y* and its standard *z*, therefore the force exerted upon arm *t* will be equally exerted in pressing the bearing-face 31 of the trimming knife and bearing-face 50 of stock 21 against the edge of pattern-plate 3, while the knife 26 and stock 21 being each independently pivoted in bracket 17, therefore their respective bearing-faces, will at all times, by reason of their contact-pressure against the pattern-plate, adjust their planes to the line thereof, and hence always present the cutting-edges of the tool in the proper line to the sole clamped in the machine.

In use the dog 44 on the driving-gear K will, through described devices, arrest the movement of the machine when the channel and grooving cutters are at the point in the sole, indicated by line 45, Fig. 11, which is the point of termination of the channel and groove, and when the machine stops at this point the operator removes the already trimmed and channeled sole, and places another sole in the described clamping devices. He also, by means of rock-shaft 34, as described, raises stock 21, thereby placing the channel and groove cutters above the sole, (and then moving the angle of cam-shaft 34 to the left, so that the cam will not interfere with the action of lever 32,) when, by actuating lever H, as described, the machine is set in motion, and the trimming-knife 21 will commence at line 45 to trim the sole, and will so continue to operate till it has passed around the sole in the direction of the arrow thereon to the point of starting; but the channel and groove cutters being raised, as stated, and locked by lever 35, as described, will pass inoperative around the heel to point 46, when angle-rod 42 will encounter incline 40, and, being forced downward thereby, will trip lever 35, when bow-spring 39 acting upon pivot 23 of stock 21 will force the channel and groove cutters down into position, and they will perform their respective duties from point 46 round to 45, when the machine is again arrested by dogs 44, as stated.

I claim as my invention—

1. In a sole-channeling machine, the combination of a channel cutter mounted in a stock arranged to rock or rotate upon its axis, an edge-trimming knife, also arranged to rock or rotate upon its separate axis, a rocking or rotating support or bracket in which both said trimming-knife and channel cutter are severally pivoted, and mechanism, substantially as described, to press said knife and stock to the pattern plate, substantially as specified.

2. In a sole-channeling machine, the combination of a sole-pattern plate, 3, a clamp, 5, to hold the sole in place, a cam, J, levers *n t*, their engaging and actuating devices, and the edge and channel cutters mounted and arranged to travel with said levers, and to be thereby pressed toward said pattern-plate, substantially as specified.

3. In a sole-channeling machine, a pivotal bracket duly supported, an edge-trimming

knife pivotally mounted in said bracket, and a channel-cutter secured in a stock pivotally and separately mounted in said bracket with vertical adjustment therein, a lever, 32, arranged to raise said stock, and a depressing-spring, 39, to force said stock downward when released by said lever, substantially as specified.

4. In a sole-channeling machine, and in combination with the gear K and the mechanism thereby actuated, the shaft D, its clutch, pulley, and pinion, the starting and stopping lever H, tripping-lever *h*, with its extension I, and a tripper on said gear K, arranged to engage and actuate lever *h*, substantially as specified.

5. The combination of cam-plate J, gear K, with means to rotate it, arm *k*, secured to and carried by said gear, lever *n*, pivoted on arm *k* and carrying a roll to engage the periphery of the cam-plate, and lever *t*, pivoted upon lever *n*, and having mounted thereon at one end the cutting tool holders and at the opposite end connected with lever *n* by yielding devices which constantly tend to force the cutting-tools toward the center of the gear, substantially as specified.

6. The combination, with levers *n t*, combined and arranged to operate as described, of segment-gear *u*, pinion *v*, and clock-spring *w*, all substantially as specified.

7. The combination of pattern-plate 3 and means for clamping the sole thereon, bracket 17, pivotally mounted upon lever *t*, with means to constantly press it toward the pattern-plate, and edge-trimming knife 26 and stock 21, carrying the channel-cutters, each independently pivoted in said bracket and formed with a guiding-surface to align them relatively to the pattern-plate, substantially as specified.

8. The combination of pattern-plate 3, duly supported, clamping-plate 5, connected with and actuated by plunger 7, a guiding set-collar and elevating-spring arranged on said plunger, and lever 10 arranged to depress said plunger and provided with means at its lower end whereby the operator by his foot may actuate, lock, or release said lever, substantially as specified.

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