No. 682,679. Patented Sept. 17, 1901.

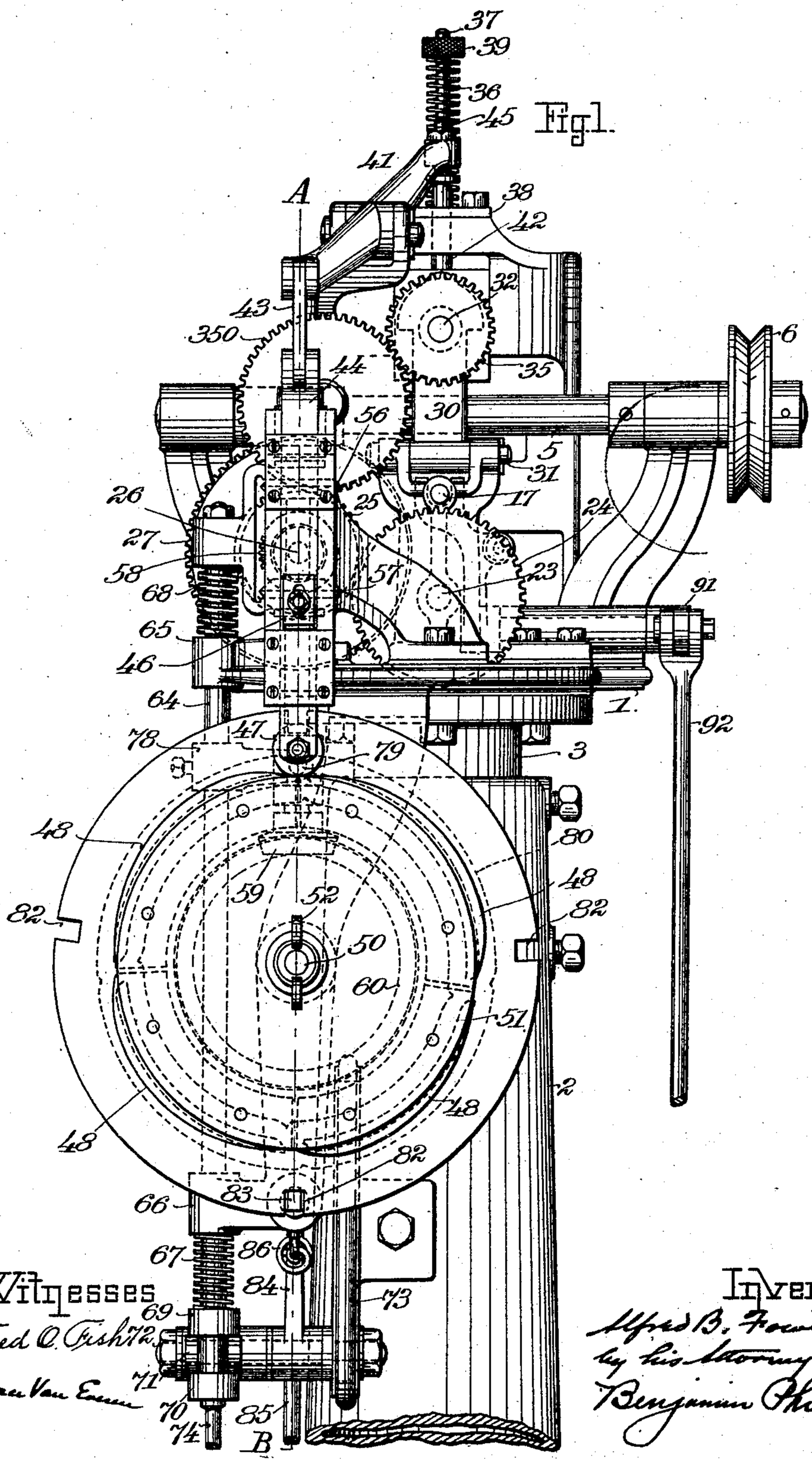
A. B. FOWLER,

ROUNDING AND CHANNELING MACHINE.

(Application filed Oct. 29, 1900.)

(No Model.) 5 Sheets—Sheet 1.

Fig. 1.



Witnesses

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Horace Van Emon

Inventor

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(No Model.) 5 Sheets—Sheet 2.

Fig. 2.

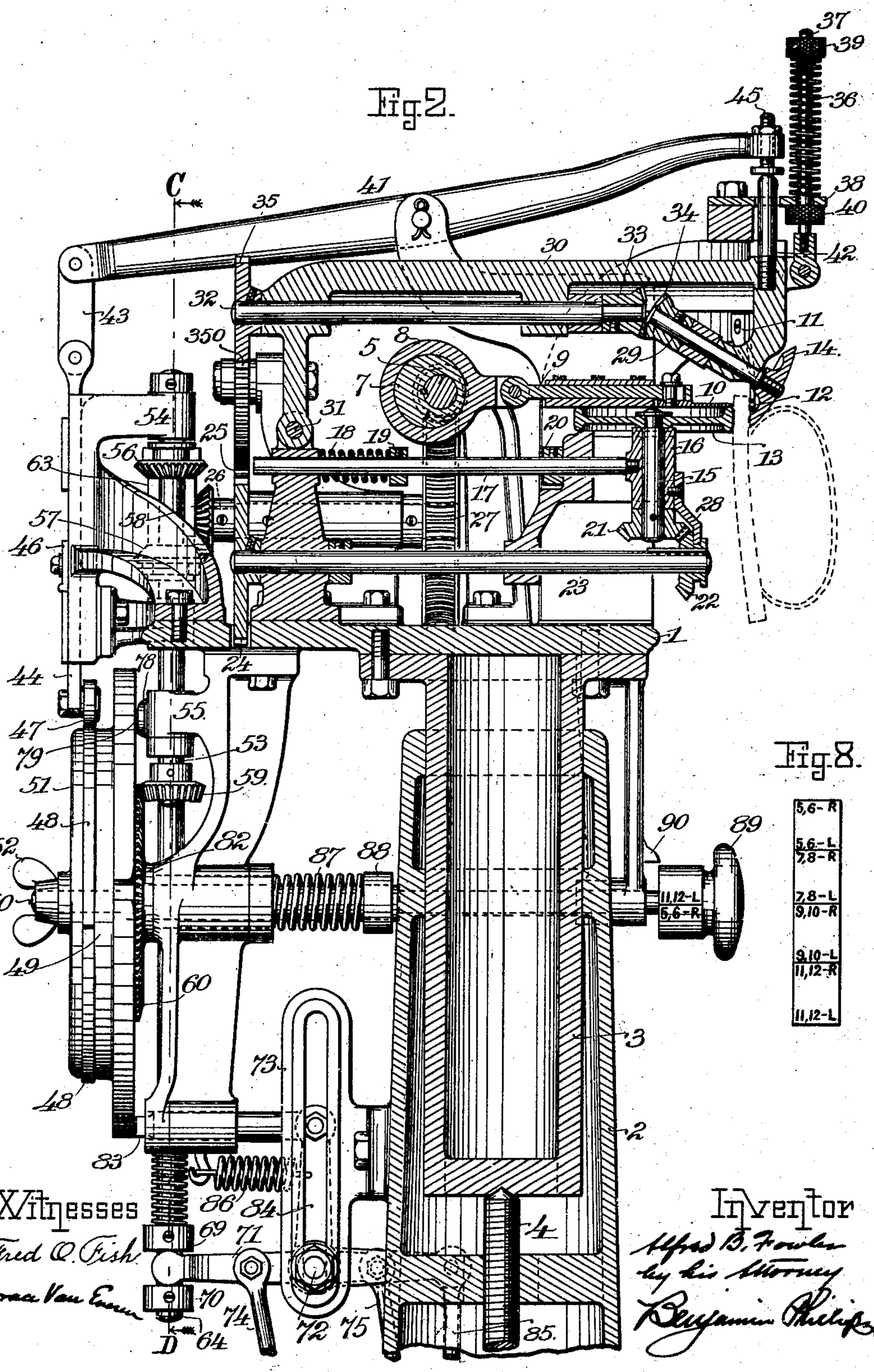

Fig. 8.

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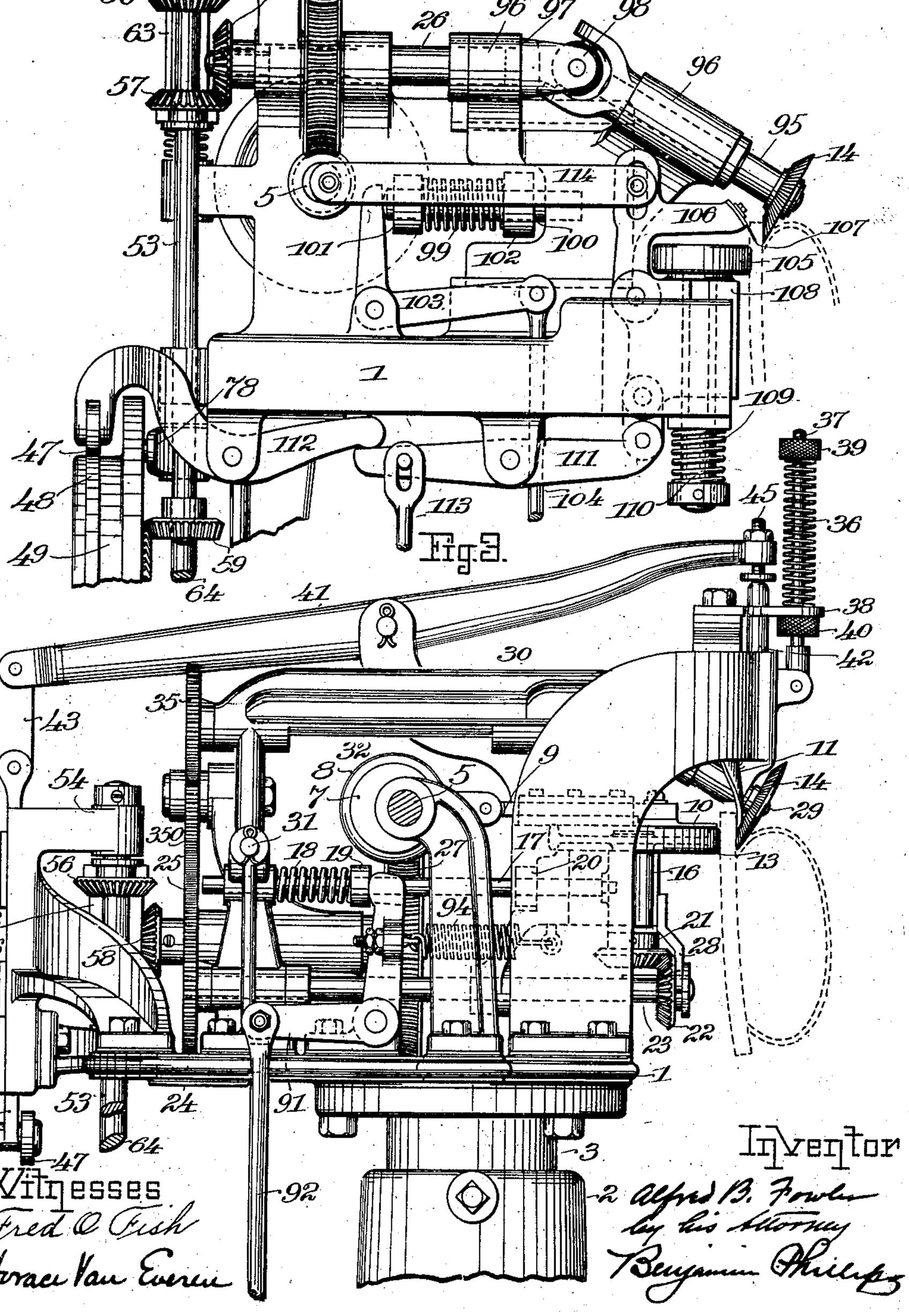
(No Model.) 5 Sheets—Sheet 3.

Fig. 3.



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(No Model.) 5 Sheets—Sheet 4.

Fig. 4.

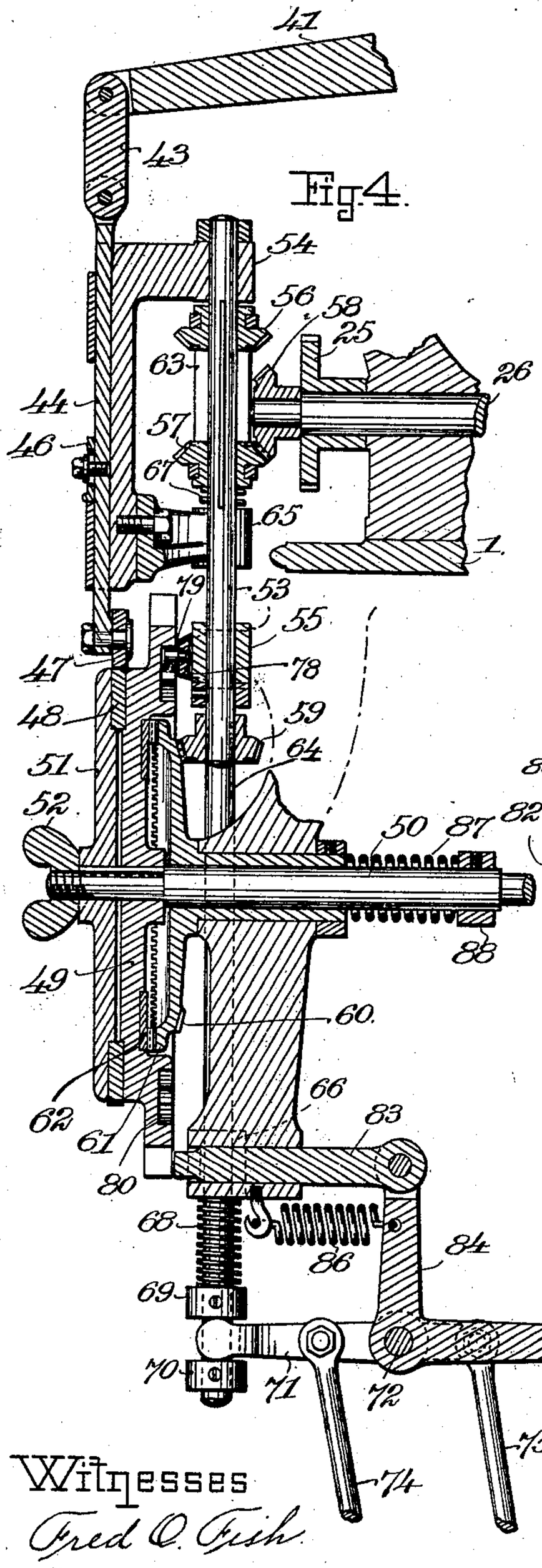

Fig. 5.

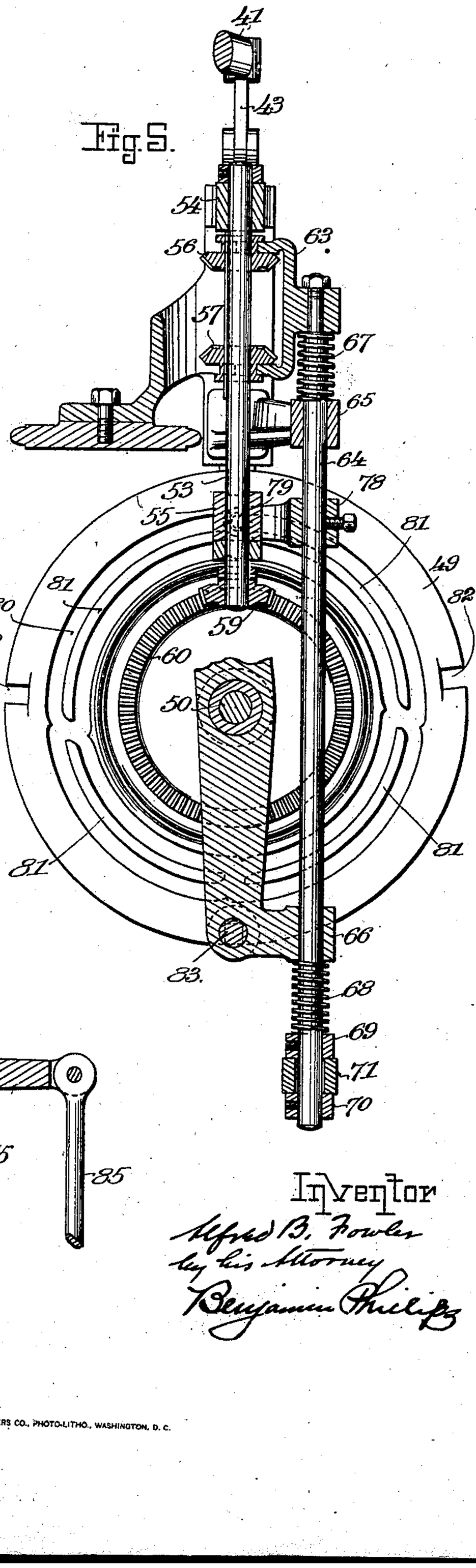

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Fig. 7.

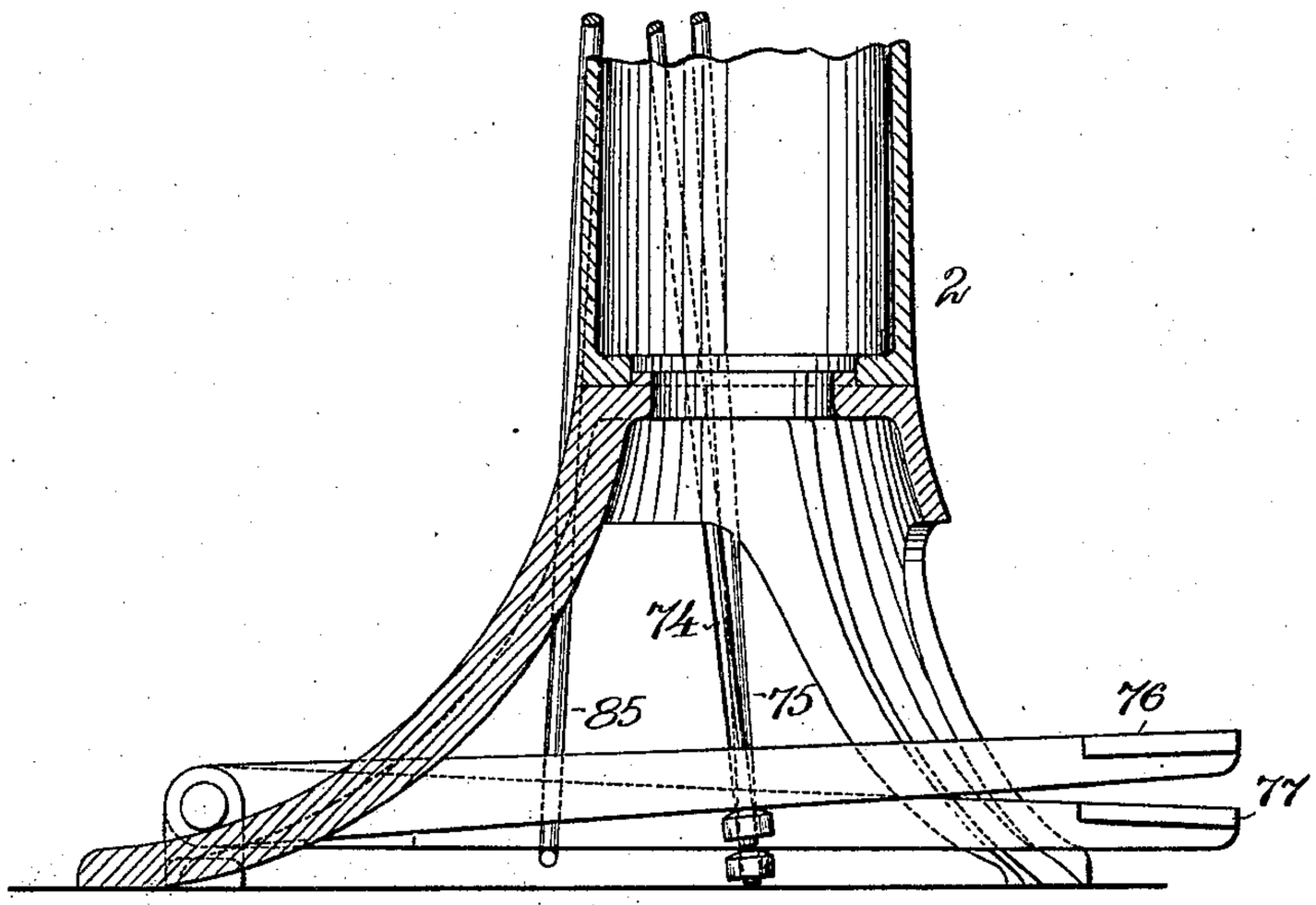
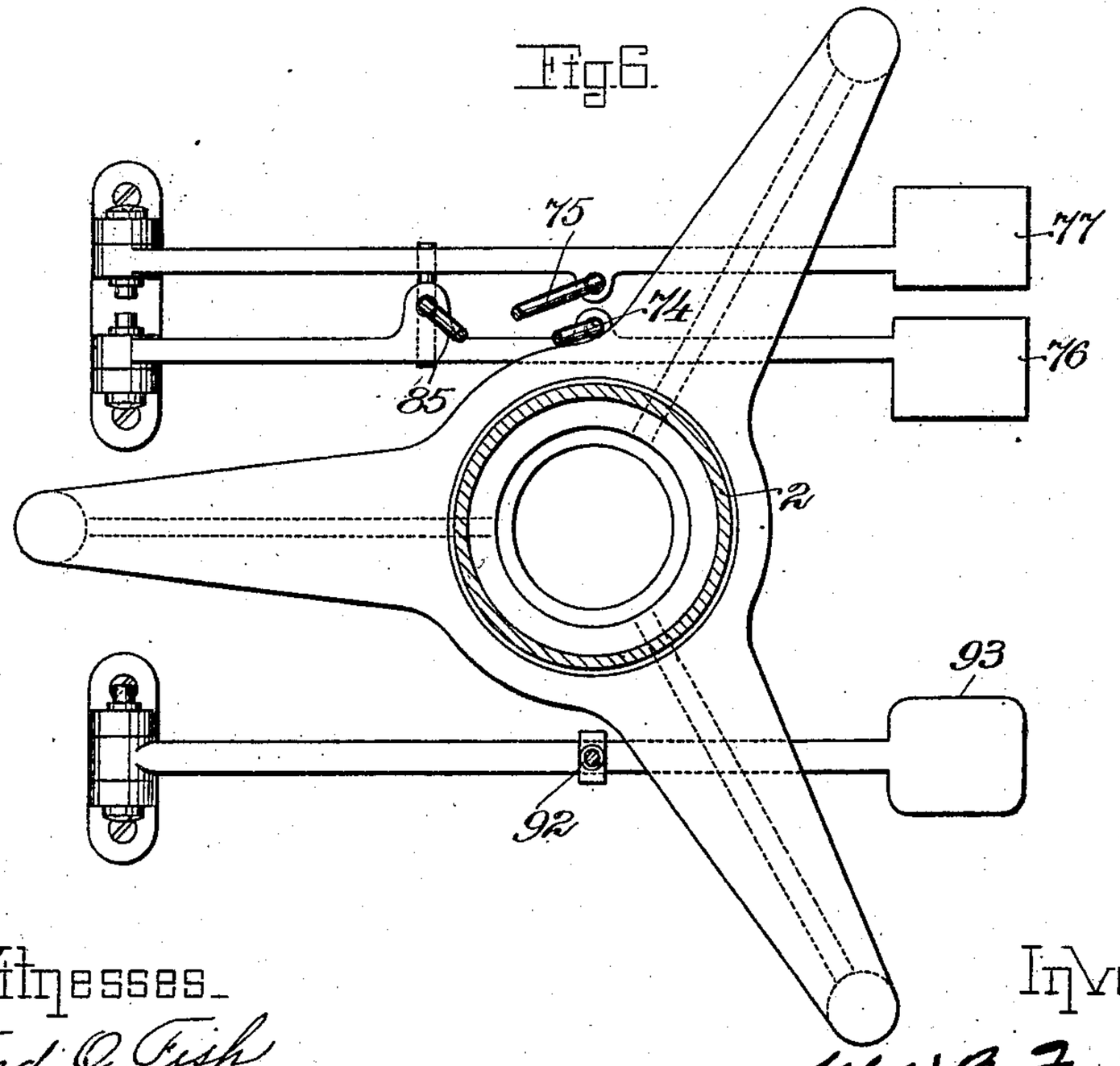


Fig. 6.



Witnesses.
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UNITED STATES PATENT OFFICE.

ALFRED B. FOWLER, OF CENTRAL FALLS, RHODE ISLAND, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY.

ROUNDING AND CHANNELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 682,679, dated September 17, 1901.

Application filed October 29, 1900. Serial No. 34,860. (No model.)

To all whom it may concern:

Be it known that I, ALFRED B. FOWLER, a citizen of the United States, residing at Central Falls, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Rounding and Channeling Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to machines for operating upon the soles of shoes, and more particularly to that class of such machines by which the edges of the sole of a lasted shoe are trimmed or rounded or a channel cut in the outer surface of the sole, or both these operations performed simultaneously. Such machines as heretofore constructed have been provided with means whereby the gage determining the position of the work with relation to the knife can be moved by the operator to vary the distance of the line of cut from the inseam or the juncture of the upper and welt to produce an extension, or, as generally termed in the art, a "Scotch" or "Baltimore" edge. Since, however, the movement of the gage is controlled by the operator, such machines impose an additional duty upon the operator in producing Scotch or Baltimore edges, adding to his labor and necessitating a higher degree of skill. In order to render such machines automatic in their action, it has been proposed to actuate the gage to vary the distance of the line of cut from the inseam by means of a cam and suitable connections, means under the control of the operator being provided for throwing said cam and connections into operation. By such construction the operator is relieved from the duty of controlling the position of the gage and the soles are trimmed or channeled in a uniform manner. In such construction, however, the movement of the gage is the same for all sizes of shoes, and consequently while all the other parts of the shoe vary proportionately with the size the width of the extension edge and the length of such edge remains the same and also the position of the channel with relation to the inseam. It has also been proposed to provide a machine for operating upon the soles of shoes—such as a shoe sewing, a rounding, or a channeling machine—with a cam for actuating the gage to vary the distance from the inseam at which the tool operates on the sole and with means under the control of the operator for stopping the revolution of the cam with the gage in either its extreme outward or inward position. By such construction, however, the gage is moved to the same extent for all sizes of shoes, as in the construction above referred to, and although the time during which the gage remains in its outward position can be varied, and consequently the length of the extension portion of the edge when the construction is embodied in a sole-rounding machine, this result can only be accomplished by acts of the operator requiring close attention and a considerable degree of skill.

The object of my invention is to provide a machine for operating upon the soles of shoes, automatic in its action, by which the distance from the inseam at which the tool acts on the sole can be varied as desired; and with this object in view my invention, broadly considered, consists in a plurality of means for relatively actuating the gage and tool of a machine for operating upon the soles of shoes to vary the distance from the inseam at which the tool acts on the sole and means for rendering any one of said means operative.

More particularly my invention has for its object to provide a sole rounding or channeling machine automatic in its action, by which the width of the extension edge and the length of such edge can be varied as desired; and with this object in view my invention consists in a plurality of means for relatively actuating the knife and gage of a sole rounding or channeling machine to vary the distance of the cut from the inseam, with means for rendering any one of said actuating means operative.

In the drawings accompanying this application I have illustrated my invention as embodied in a rough rounding-machine and also as embodied in a channeling-machine. In both of these machines feeding mechanism, a suitable knife, and a gage for the work are provided in the sole-rounding machine, the gage being movable with relation to the knife

to vary the distance of the cut of the knife from the inseam, and in the channeling-machine the knife being movable relatively to the gage to accomplish this result. Each machine is also provided with a plurality of means for so actuating the gage or the knife, said means being substantially the same in both machines, and with means for rendering any one of said actuating means operative. With regard to the particular form and arrangement of the feeding mechanism, the knife, and the gage it is to be understood that the form and arrangement shown are for the purpose of illustration only and may be varied as desired. The means shown for relatively actuating the knife and gage comprise a plurality of cams arranged circumferentially in series on a rotatable carrier, suitable connections between the cams and the gage or knife, means for rotating the carrier in either direction a distance equal to the length of one of the cams, and means for adjusting the carrier to bring any one of the cams into operative engagement with the connections to the gage or knife. It is to be understood, however, that any suitable means for relatively actuating the knife and gage might be employed. It is also to be understood that where the actuating means comprise a plurality of cams these cams need not necessarily be mounted in a single carrier or arranged in series thereon, nor need the cams be adjusted with relation to the connections to the gage or knife, provided that some means be afforded for rendering any one of said cams operative to actuate the gage or knife.

Having thus indicated the nature and scope of my invention, broadly considered, I will now proceed to describe the specific embodiment thereof illustrated in the accompanying drawings, in which—

Figure 1 is a view in rear elevation of a rough rounding-machine embodying the same, the lower part of the standard upon which the operating parts of the machine are mounted being broken away. Fig. 2 is a longitudinal sectional view of the machine shown in Fig. 1. Fig. 3 is a view in side elevation of the upper portion of said machine. Fig. 4 is a partial sectional view on the line A B, Fig. 1, showing the carrier for the actuating-cams and the driving mechanism therefor. Fig. 5 is a transverse sectional view on the line C D, Fig. 2, looking in the direction of the arrow. Fig. 6 is a sectional plan view of the lower portion of the standard of the machine, showing the treadles from which certain parts of the machine are controlled. Fig. 7 is a longitudinal sectional view of the parts shown in Fig. 6. Fig. 8 shows the index or scale developed, which indicates the position of the carrier for the actuating-cams; and Fig. 9 is a view in side elevation of the upper part of a channeling-machine embodying the invention.

Referring to the drawings, in which like characters of reference indicate like parts, 1 indicates the frame of the machine of any suitable construction for supporting the operating parts, and 2 a standard in which the frame 1 is mounted. To enable the frame to be adjusted vertically to suit the height of the operator, the frame 1 is provided with a socket 3, extending downwardly into the standard 2 and resting at its lower end on a vertical adjusting-screw 4, extending upward through a cross-web of the standard.

Mounted in suitable bearings in the upper portion of the frame 1 is the driving-shaft 5, provided with a suitable driving-pulley 6 and having secured thereto an eccentric 7, which through the eccentric-strap 8 actuates the slide 9, mounted to reciprocate in horizontal guideways secured to the frame 1 and having secured thereto by means of a bolt-and-slot connection the rounding-knife 10, the construction being such that as the shaft 5 rotates rapid reciprocating movements are imparted to the rounding-knife. Coöperating with the knife 10 is a plate 11, extending downwardly from the overhanging portion of the machine-frame, which is provided with a slot or throat 12, through which the knife 10 passes after having passed through the shoe-sole to insure a smooth clean cut. For feeding and guiding the shoe-sole a feeding-wheel 13 and a combined feeding-wheel and gage 14 are provided, the wheel 13 bearing against the bottom of the sole immediately beneath the knife 10, and the wheel 14, which is in the form of a bevel-faced disk, bearing against the welt side of the sole and engaging the upper to determine the distance of the cut of the knife 10 from the inseam or the juncture of the upper with the welt. The feed-wheel 13 is secured to the upper end of a short vertical shaft 15, journaled in a block 16, mounted to move horizontally in guideways in the frame of the machine, and thereby allow the wheel 13 to be moved nearer to or farther from the wheel 14 to accommodate soles of different thickness. A horizontal rod 17 is secured to the block 16 and slides in vertical bearings in the machine-frame, a coiled spring 18 surrounding the rod and bearing at one end against the frame of the machine and at the other end against a collar 19, secured to the rod, serving to press the rod and the block 16 to the left, as viewed in Fig. 2, and the wheel 13 into contact with the bottom of the sole. A collar 20 on the rod 17, engaging a portion of the machine-frame, limits the movement of the wheel 13 toward the wheel 14 when the shoe-sole is removed from between the wheels. For rotating the wheel 13 the lower end of the shaft 15 is provided with a beveled gear 21, meshing with a similar gear 22 on a horizontal shaft 23, to which is also secured a gear-wheel 24, meshing with a gear-wheel 25 on a shaft 26, which is rotated from the driving-shaft by means of a worm meshing with a large worm-gear 27 on shaft 26. In order to keep the beveled gears 21 and 22 in engagement during the horizontal

movements of the block 16, the gear 22 is splined on the shaft 23, so as to rotate therewith and to be free to move longitudinally thereon, and a plate 28, engaging the groove in the hub of the gear 22, is secured to the block 16. By this construction the gear 22 is moved longitudinally of the shaft 23, with the block 16 and gears 21 and 22 kept in engagement.

The gage 14 is secured to the lower end of a short shaft 29, journaled obliquely in the forward end of an arm 30, pivoted at 31 to the rear portion of the machine-frame. The gage 14 also acts as a feeding-wheel, as has been stated, and for rotating the gage a shaft 32 is journaled in the arm 30, said shaft being provided at one end with a beveled gear 33, meshing with a similar gear 34 on the upper end of the shaft 29 and at the other end provided with a gear 35, meshing with a gear 350, which meshes with the gear 25, hereinbefore referred to. The relative positions of the gears 25 and 350 and the pivot 31 of the arm 30 are such that the arm can rock on its pivot without disengaging the gears.

For varying the distance of the line of cut from the inseam the arm 30 is raised and lowered to thereby change the relative positions of the knife and gage. The arm 30 is normally held in its raised position by means of a spring 36, surrounding a rod 37, pivoted to the forward end of the arm and extending upwardly through an opening in a horizontal plate 38, secured to the overhanging portion of the machine-frame, said spring bearing at its upper end against an adjustable nut 39 on the rod 37 and at its lower end against the plate 38. The upward movement of the arm 30 is limited by the nut 40 on the rod 37 contacting with the lower surface of the plate 38. For actuating the arm 30 against the tension of the spring 36 a plurality of means are provided, any one of which may be brought into operation to actuate the arm during the operation of the machine. As shown, these means consist of a series of cams and a single set of connections to the arm 30. The single set of connections consist of a lever 41, pivoted to an upwardly-extending portion of the machine-frame, bearing at its forward end against a pin 42, projecting upwardly from the arm 30, and at its rear end connected, by means of a link 43, to a slide 44, mounted to reciprocate in vertical guideways in the rear portion of the machine-frame. The bearing-surface at the forward end of the lever 41, which engages the pin 42, is formed by the head of a screw 45, whereby said surface can be adjusted with relation to the lever. By means of this adjustment the distance to which the arm 30 is moved by any one cam can be varied. The upward movement of the forward end of the lever 41 is limited by a stop-plate 46, adjustably secured to the slide 44, by means of a bolt-and-slot connection, which engages the lower guide-plate for the slide. The lower end of the slide 44 is provided with a friction-roll 47, which bears against the actuating-cams, which will now be described.

As shown, the actuating-cams 48 are four in number and are mounted circumferentially in series on a rotatable carrier 49, secured to the rear end of a horizontal shaft 50, journaled in downwardly-projecting portions of the machine-frame. The cams 48 are removably secured to the carrier 49 by means of a clamping-disk 51, which is forced toward the carrier 49 by means of a winged nut 52, screwed on the end of shaft 50 and bearing against the hub of the disk. As a means for rotating the carrier in either direction a distance equal to the length of one of the cams 48, I have provided the reversible gearing shown more particularly in Figs. 4 and 5. Referring to said figures, 53 designates a vertical shaft mounted in bearings 54 and 55 of the machine-frame. Splined on the shaft 53, so as to rotate therewith, but free to move longitudinally thereon, are two bevel-gears 56 and 57, above and below, respectively, a bevel-gear 58 on the rear end of the shaft 26, with which the gears 56 and 57 are adapted to engage to drive the shaft 53 in opposite directions. To the lower end of shaft 53 is secured a bevel-gear 59, meshing with a bevel-gear 60, formed on a clutch member 61, engaging a clutch member 62, formed on the carrier 49. The gears 56 and 57 are moved longitudinally of the shaft 53 by means of a bracket 63, provided with arms which engage the grooved hubs of the gears, said bracket being secured to the upper end of a vertical rod 64, mounted to reciprocate in bearings 65 and 66 of the machine-frame. The rod 64 and bracket 63 are normally supported in such a position that the gears 56 and 57 are out of engagement with gear 56 by coiled springs 67 and 68, surrounding the rod and being interposed, respectively, between the bearing 65 and the bracket 63 and between the bearing 66 and a collar 69 secured to the lower end of the rod. Below the collar 69 another collar 70 is secured to the rod 64, and situated between these collars is the forked end of a lever 71, pivoted at 72 to a slotted bracket 73 of the standard 2. (See Fig. 2.) Rods 74 and 75, pivoted to the lever 71 on opposite sides of its pivot 72, connect the lever with foot-treadles 76 and 77. Secured to the rod 64 is a laterally-projecting arm 78, provided with a roller 79, adapted to engage grooves 80 cut in the inner face of the carrier outside the clutch member 62. The grooves 80 are formed in two series separated by four ribs 81, which correspond in position and length to the cams 48, the two series of grooves communicating between the ends of the ribs. The carrier 49 is provided with four peripheral notches 82, and coöperating with these notches to lock the carrier in position with the roll 47, resting between two of the cams 48 and the roll 79 between two of the ribs 81, is a lock-

ing dog or pin 83, mounted to reciprocate horizontally in a portion of the frame of the machine. A bell-crank lever 84, also pivoted at 72, is pivotally connected to the pin 83, and by a rod 85 connects with the treadles 76 and 77, so as to be operated by either treadle, as shown in Fig. 6. A spring 86, connected at one end to the frame of the machine and at the other to the bell-crank lever 84, tends to force the pin 83 into the notches 82.

The above-described construction is such that by pressing upon one or the other of the treadles 77 or 76 the rod 64 and bracket 63 will be raised or lowered against the tension of spring 68 or spring 67 to bring gear 57 or 56 into engagement with gear 58 and the pin 83 simultaneously withdrawn from the notch 82. As the rod 64 is raised or lowered the roll 79 will pass into the outer or inner series of slots 80, and as the carrier 49 rotates the roll will engage the outer or inner surface of one of the ribs 81, and thereby hold the rod 64 raised or lowered after the treadle 77 or 76 is released. After the carrier 49 has been moved a distance equal to the length of the cam passing under the roll 47 the roll 79 will pass off the end of the rib 81 and the spring 68 or 67 will immediately return the rod 64 and bracket 63 to their normal position, thereby disengaging the gears 57 or 56 and 58. At the same time a notch 82 will come opposite the pin 83, which will be forced into the notch and lock the carrier from movement. The cams 48 are so shaped that each cam when moved in one direction beneath roll 47 will actuate the gage 14, through the connections hereinbefore described, to produce an extension edge of the desired width and length for a right shoe of a certain size, and when moved in the opposite direction will actuate the gage to produce an extension edge of the desired width and length for a left shoe of the same size. For operating on different styles of shoes the cams 48 can be removed and others substituted therefor.

The clutch member 61 is in the form of a disk, provided with a hub journaled in the machine-frame, centrally bored to form a bearing in which the shaft 50 of the carrier 49 rotates and longitudinally of which it is free to slide. The periphery of clutch member 61 is provided with crown-teeth which engage similar teeth of the clutch member 62 of the carrier. A coiled spring 87, surrounding shaft 50 and interposed between the hub of clutch member 61 and a collar 88 on the shaft, normally forces the shaft to the right, as viewed in Fig. 4, to hold the clutch members in engagement. By forcing shaft 50 to the left, as viewed in Fig. 4, against the tension of spring 87 the clutch members can be disengaged and the carrier 49 rotated to bring any cam in operative relation to roll 47. When shaft 50 is so forced to the right, notch 82 is disengaged from pin 83 and grooves 80 from roll 79. As the carrier is rotated during such disengagement the roll 79, contacting with ribs 81, will prevent the return of the parts to engaging position until the roll registers with the interval between two of the ribs, at which time the roll 47 will rest on the carrier between two of the cams 48. For moving the shaft 50 endwise and rotating the carrier 49 a knob 89 is secured to the front end of the shaft. A scale (shown developed in Fig. 8) is marked on the hub of the knob, and, in conjunction with an index-finger 90 on the machine-frame, indicates which cams are in operative relation with roll 47. In the machine shown in the drawings a single cam is used for rounding the soles of two sizes, as is indicated on the scale, the scale also indicating in which direction the carrier 49 is to be turned for rounding rights and lefts.

For moving the wheel 13 away from the gage 14 to permit the insertion of the shoe-sole a bell-crank lever 91 (see Fig. 3) is pivoted to the machine-frame, the upper arm of which engages the collar 19 on rod 17, and the lower arm of which is connected by means of a rod 92 to a treadle 93. (See Fig. 6.) A coiled spring 94, connected to the upper arm of the bell-crank and to the machine-frame, moves the bell-crank in a direction to allow the feed-wheel to be pressed toward the gage by the spring 18.

The operation of the machine above described has already been sufficiently indicated and will be readily understood without further description.

In Fig. 9 I have shown my invention embodied in a channeling-machine. This machine is similar in many respects to the rounding-machine hereinbefore described, but differs therefrom in that the knife is arranged to move relatively to the gage to vary the distance of the cut from the inseam and in certain minor features of construction, as will be described. The carrier for the actuating-cams and the reversible gearing for actuating the carrier are the same as hereinbefore described. The shaft 26 is located above instead of below the driving-shaft 5, and the gage 14 is actuated directly from this shaft. The gage 14 is secured to the lower end of a shaft 95, journaled obliquely in a block 96, mounted to slide in horizontal guideways in the machine-frame. In the upper rear portion of the block 96 is journaled a short shaft 97, which is connected to the shaft 95 by means of the universal joint 98 and which has a telescopic connection with the shaft 26, so that it is rotated thereby, but is free to move longitudinally thereof. The block 96 is normally pressed toward the left, as viewed in Fig. 9, to bring the gage 14 against the welt side of the sole by means of a coiled spring 99, surrounding a pin 100, projecting rearwardly from the block, said spring being interposed between a collar 101 on the rear end of the rod and a projection 102 of the machine-frame. For forcing the block 96 to the right, to thereby move the gage 14 to allow the insertion of a shoe-sole, a bell-crank

lever 103 is pivoted to the frame of the machine, the upper arm of which bears against the end of the rod 100 and the lower arm of which is connected by means of a rod 104 to a suitable treadle. (Not shown.) The wheel 105, which corresponds to the feeding-wheel 13 of the machine hereinbefore described, and the lever 106, to which the channeling-knife 107 is secured, are mounted upon a block 108, arranged to reciprocate vertically in guideways in the machine-frame. The block 108 is normally held in its lowest position by means of a spring 109, surrounding a pin 110, projecting downwardly from the block, said spring bearing against the frame at one end and at the other against a collar secured to the lower end of the pin. The connections for moving the block 108 against the tension of the spring 109, to vary the distance of the cut of the channeling-knife from the inseam, consist of levers 111 and 112, pivoted intermediate their ends on the frame of the machine, one arm of the lever 111 being also pivoted to the block 108. One arm of the lever 112 is provided with a friction-roller which bears against the cams 48 on carrier 49 and the other arm of the lever rests upon the free arm of the lever 111, the construction being such that as the lever 112 is actuated by the cams 48 the lever 111 will be actuated to raise the block 108. A rod 113, having a pin-and-slot connection with the free arm of the lever 111 and connected to a treadle, (not shown,) serves as a means for actuating the block 108 independently of cams 48, if desired. The connections for actuating the channeling-knife 107 consist of a link 114, pivoted at one end to a crank-pin on the shaft 5 and at the other end adjustably pivoted by a pin-and-slot connection to the lever 106.

The operation of the mechanism above described will be obvious without further description.

While my invention is particularly applicable to sole rounding and channeling machines, and in the illustrated embodiment thereof hereinbefore described the invention is applied to such machines, it is to be understood that the invention is also applicable to other machines for operating upon the soles of shoes in which it is desirable to provide means for relatively actuating the gage and tool to vary the distance from the inseam at which the tool operates. For instance, my invention can be applied to shoe-sewing machines in which it is often desirable to vary the distance of the line of stitching from the inseam, as in stitching soles provided with extension edges.

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

1. A machine for operating on the soles of shoes, having, in combination, a suitable tool, a gage, a plurality of means for relatively actuating the tool and gage to vary the distance from the inseam at which the tool acts on the sole, said plurality of means being constructed and arranged to impart different relative movements to the gage and tool for shoes of different sizes or styles, and means for rendering any one of said means operative, substantially as described.

2. A machine for operating on the soles of shoes, having, in combination, a suitable tool, a movable gage, means for moving the gage to vary the distance from the inseam at which the tool acts on the sole comprising a plurality of cams and intermediate connections constructed and arranged to impart different relative movements to the gage and tool for shoes of different sizes or styles, and means for rendering any one of said cams operative, substantially as described.

3. A sole rounding or channeling machine, having, in combination, a suitable knife, a gage, a plurality of means for relatively actuating the knife and gage to vary the distance of the cut from the inseam, said plurality of means being constructed and arranged to impart different relative movements to the gage and knife for shoes of different sizes or styles, and means for rendering any one of said means operative, substantially as described.

4. A sole rounding or channeling machine, having, in combination, a suitable knife, a gage, means for relatively actuating the knife and gage to vary the distance of the cut from the inseam, comprising a plurality of cams and intermediate connections constructed and arranged to impart different relative movements to the gage and knife for shoes of different sizes or styles, and means for rendering any one of said cams operative, substantially as described.

5. A sole rounding or channeling machine, having, in combination, a suitable knife, a gage, means for relatively actuating the knife and gage to vary the distance of the cut from the inseam, comprising a plurality of cams and intermediate connections constructed and arranged to impart different relative movements to the gage and knife for shoes of different sizes or styles, and means for adjusting the cams to bring any one in operative engagement with said connections, substantially as described.

6. A sole rounding or channeling machine, having, in combination, a suitable knife, a gage, means for relatively actuating the knife and gage to vary the distance of the cut from the inseam comprising a plurality of cams and intermediate connections, a rotating carrier on which the cams are arranged in series circumferentially, mechanism for rotating the carrier a distance equal to the length of one of the cams, and means for adjusting the carrier to bring any one of the cams in operative engagement with said connections, substantially as described.

7. A sole rounding or channeling machine, having, in combination, a suitable knife, a gage, means for relatively actuating the knife and gage to vary the distance of the cut from

the inseam comprising a cam and intermediate connections, a driving-shaft, connections between the shaft and cam, means for throwing said connections into operation to actuate the cam, and means for automatically throwing said connections out of operation, substantially as described.

8. A sole rounding or channeling machine, having, in combination, a suitable knife, a gage, means for relatively actuating the knife and gage to vary the distance of the cut from the inseam comprising a cam and intermediate connections, a driving-shaft, connections between the shaft and cam, means for throwing said connections into operation to actuate the cam in either direction, and means for automatically throwing said connections out of operation, substantially as described.

9. A sole rounding or channeling machine, having, in combination, a suitable knife, a gage, means for relatively actuating the knife and gage to vary the distance of the cut from the inseam comprising a cam and intermediate connections, a driving-shaft, reversible gearing connecting the shaft and cam, means for throwing the gearing into operative engagement with the shaft and cam to actuate the cam in either direction, means for locking the gearing in such engagement and means for automatically throwing the gearing out of such engagement, substantially as described.

10. A machine for operating on the soles of shoes, having, in combination, a suitable tool, a movable gage, means for moving the gage to vary the distance from the inseam at which the tool acts on the sole comprising a plurality of cams and intermediate connections, means for actuating said cams in either direction, and means for rendering any one of said cams operative, substantially as described.

11. A sole rounding or channeling machine, having, in combination, a suitable knife, a gage, means for relatively actuating the knife and gage to vary the distance of the cut from the inseam, comprising a plurality of cams and intermediate connections, means for actuating said cams in either direction, and means for rendering any one of said cams operative, substantially as described.

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

ALFRED B. FOWLER.

Witnesses:

FRED O. FISH,

HORACE VAN EVEREN.