

W. A. DUNBAR.
MACHINE FOR MENDING IMPERFECTIONS IN PATENT LEATHER.
APPLICATION FILED DEC. 3, 1902.

916,124.

Patented Mar. 23, 1909.
4 SHEETS—SHEET 1.

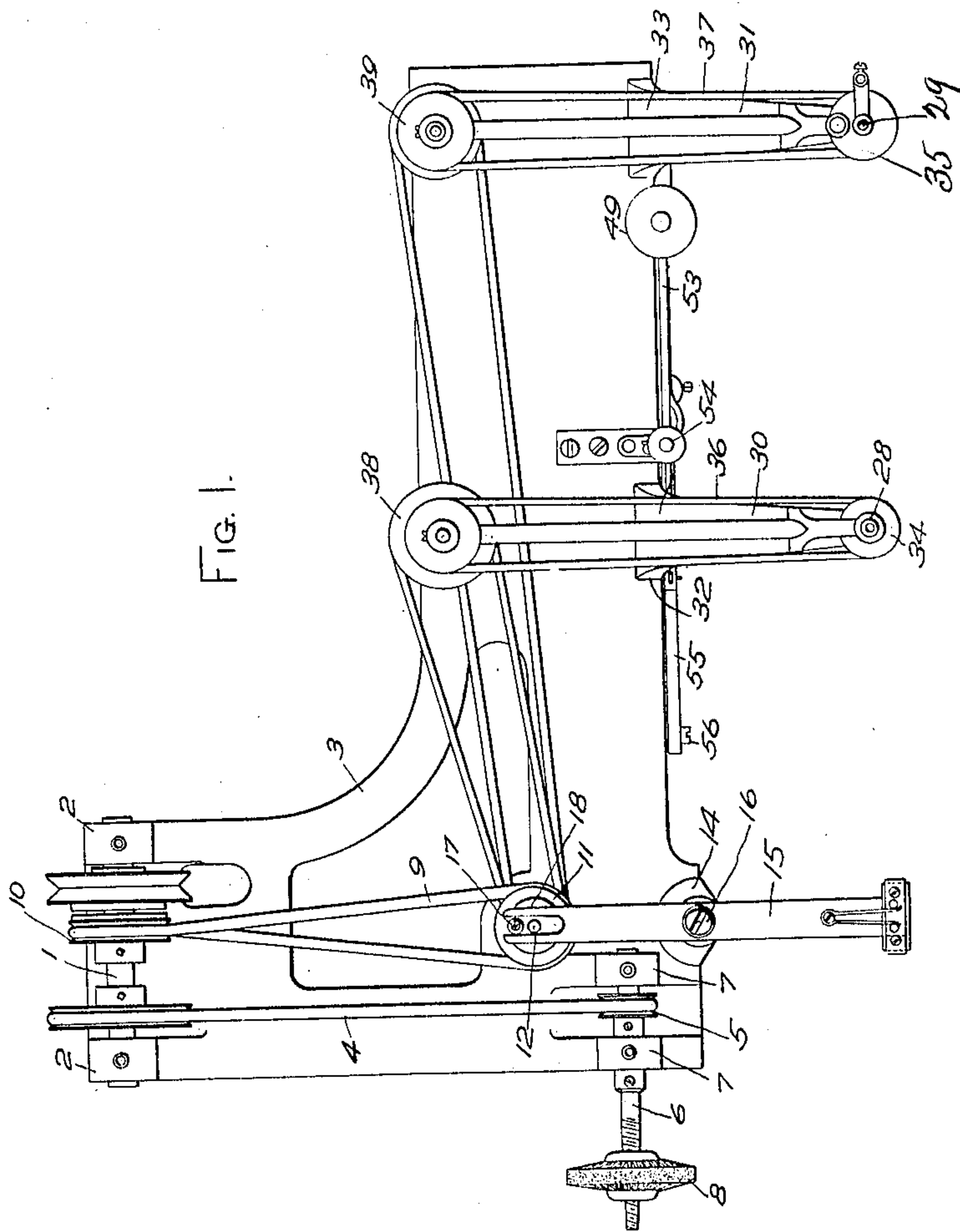


FIG. 1.

WITNESSES
Edwin F. Samuels.
Darnum F. Dorsey

INVENTOR
William A. Dunbar,
by his attorneys
Phillips Van Curen Fish

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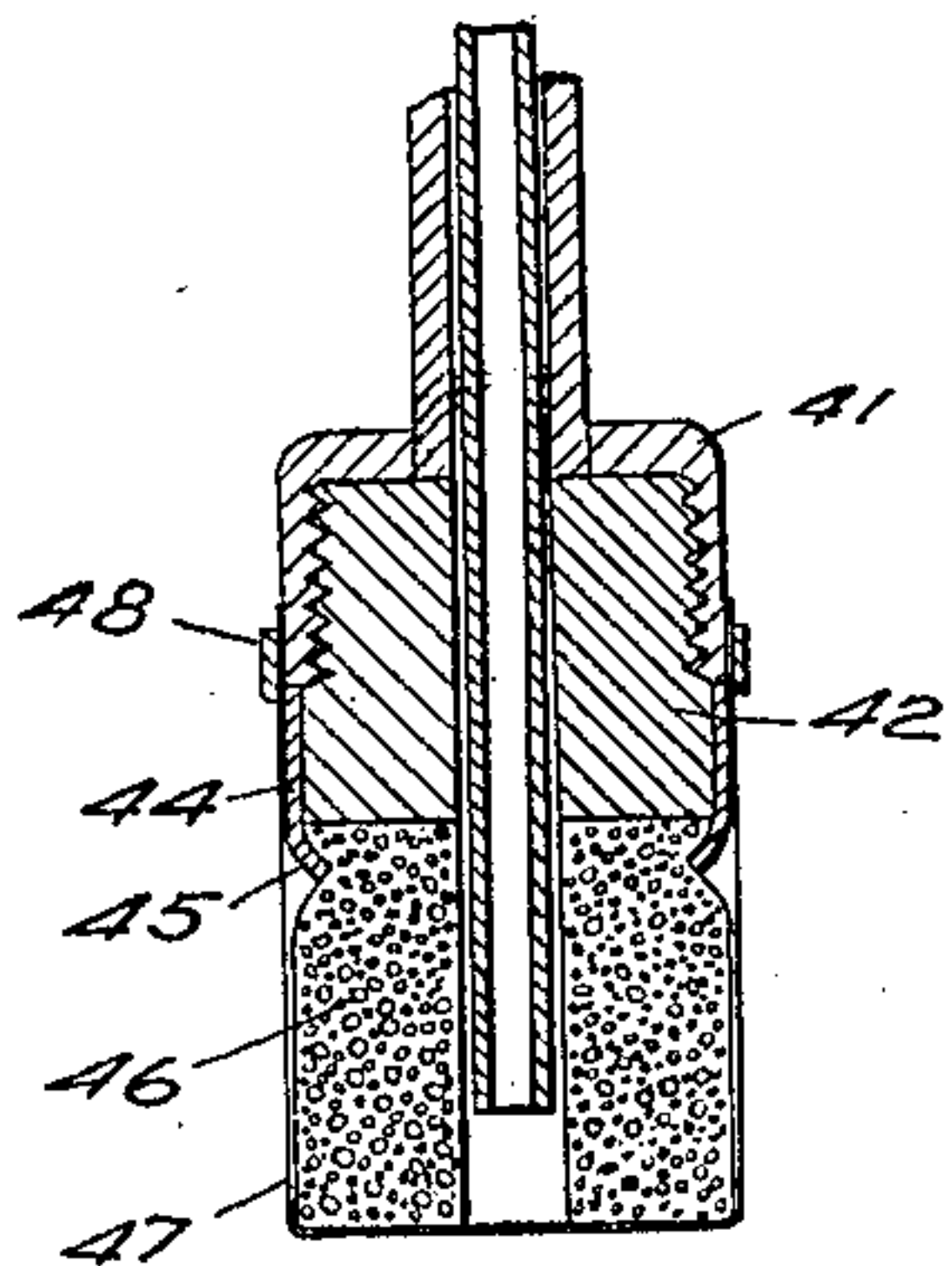
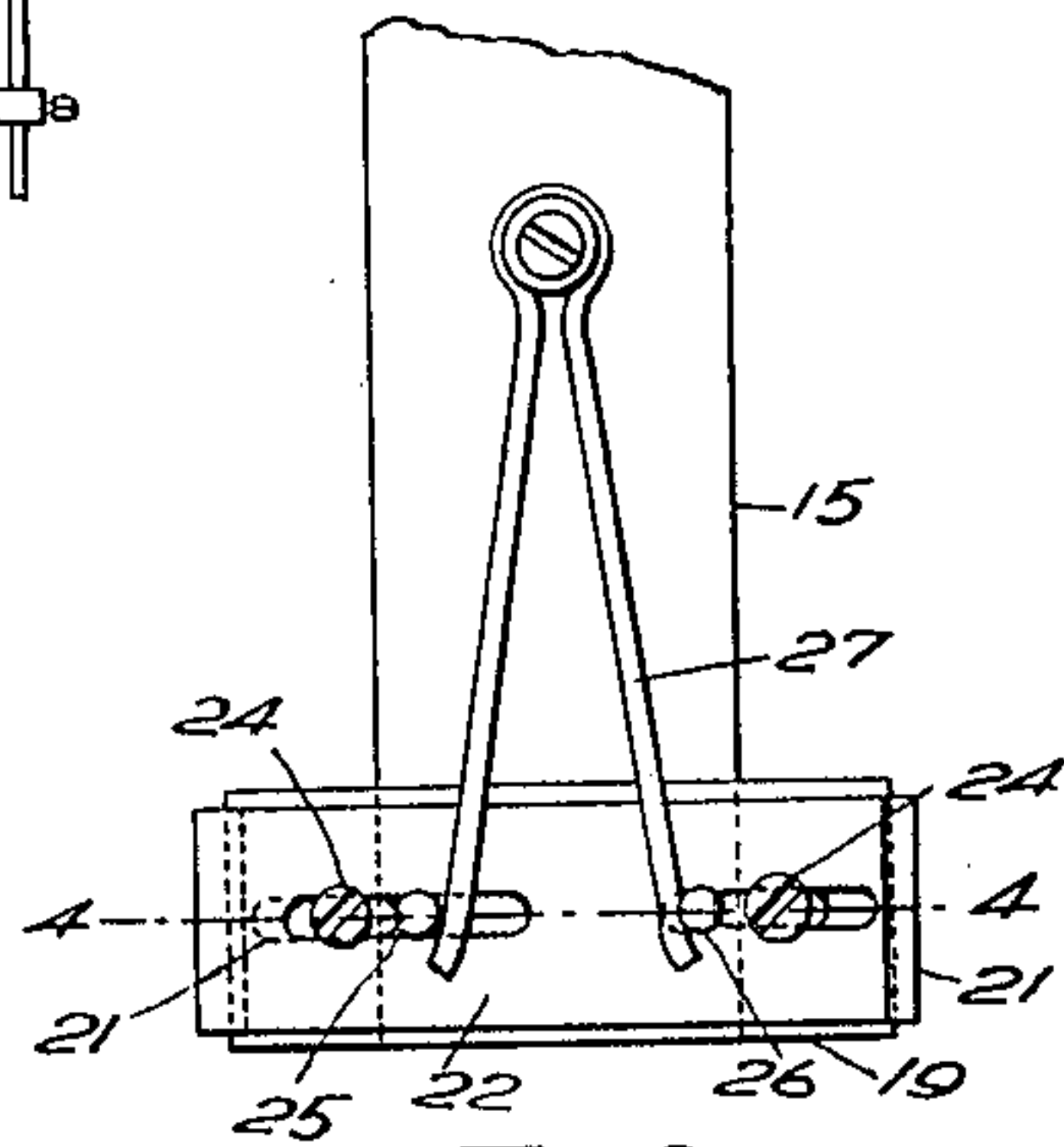
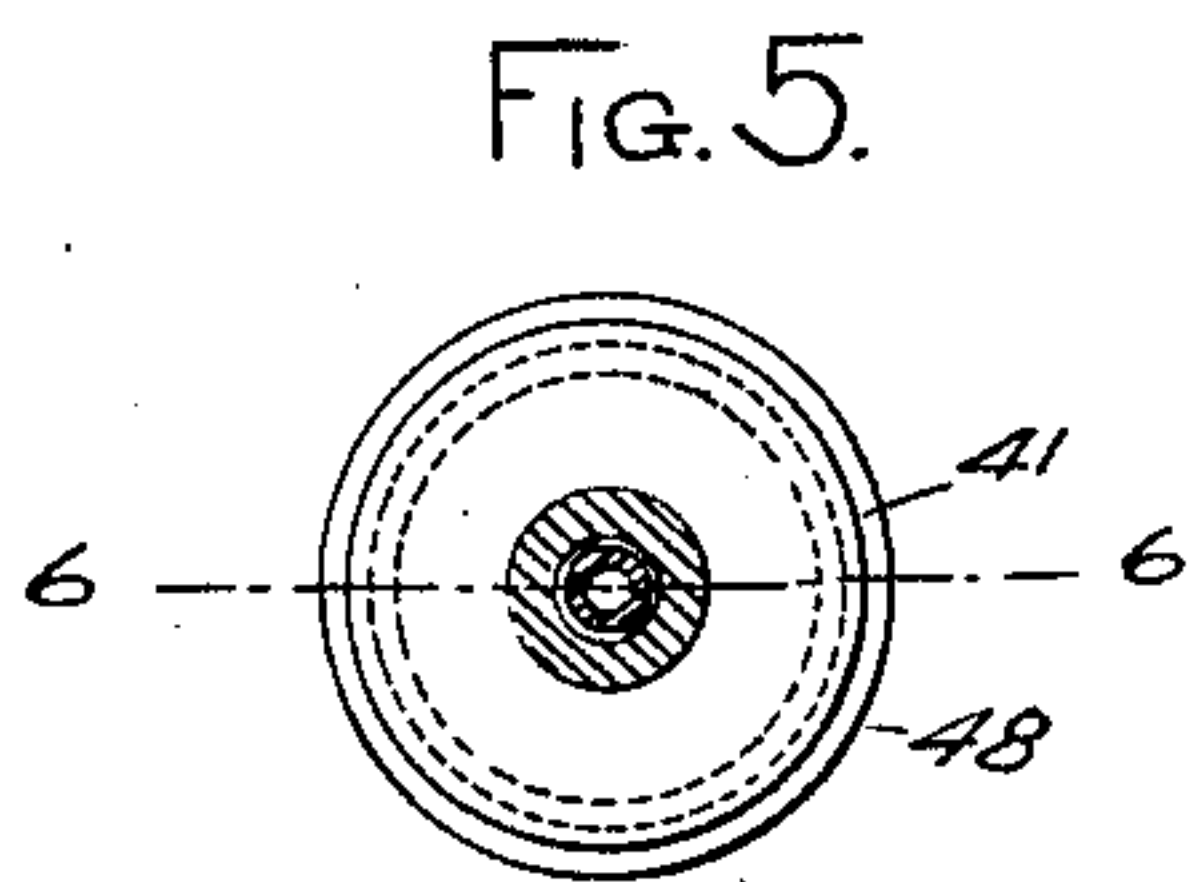
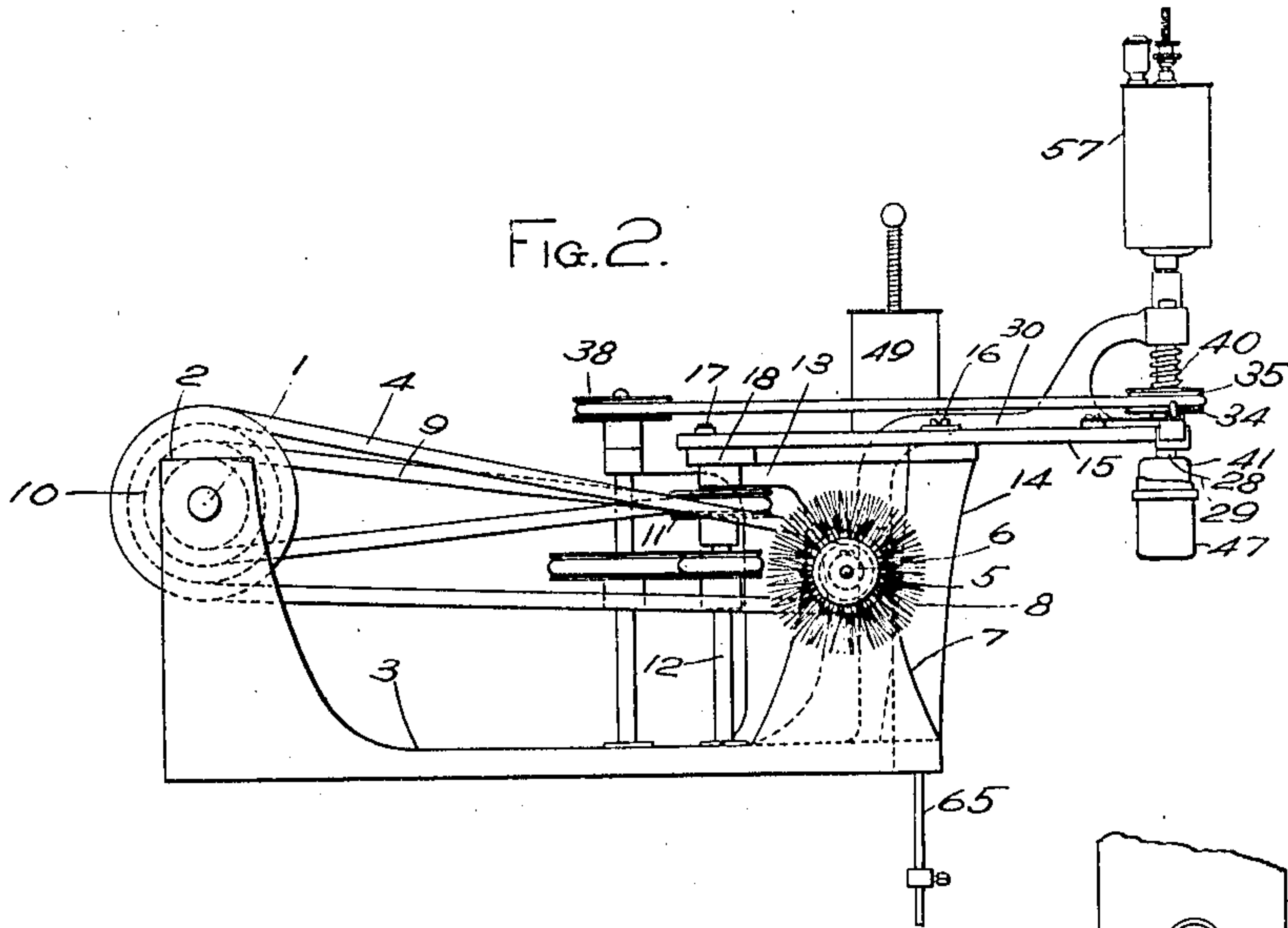
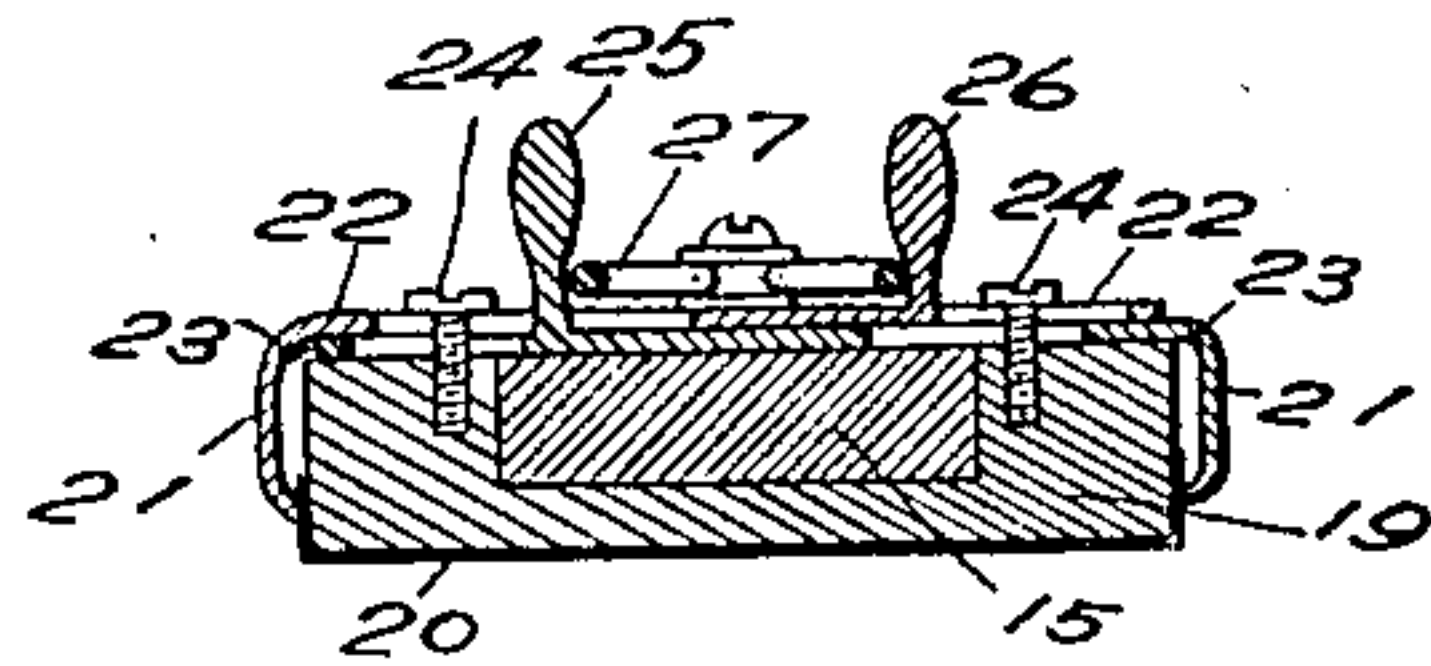


Fig. 6.



WITNESSES
Edwin H. Samuels.
Farnum F. Dorsey

INVENTOR
William A. Dunbar
by his attorneys
Phillips Van Curen & Fish

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4 SHEETS—SHEET 3.

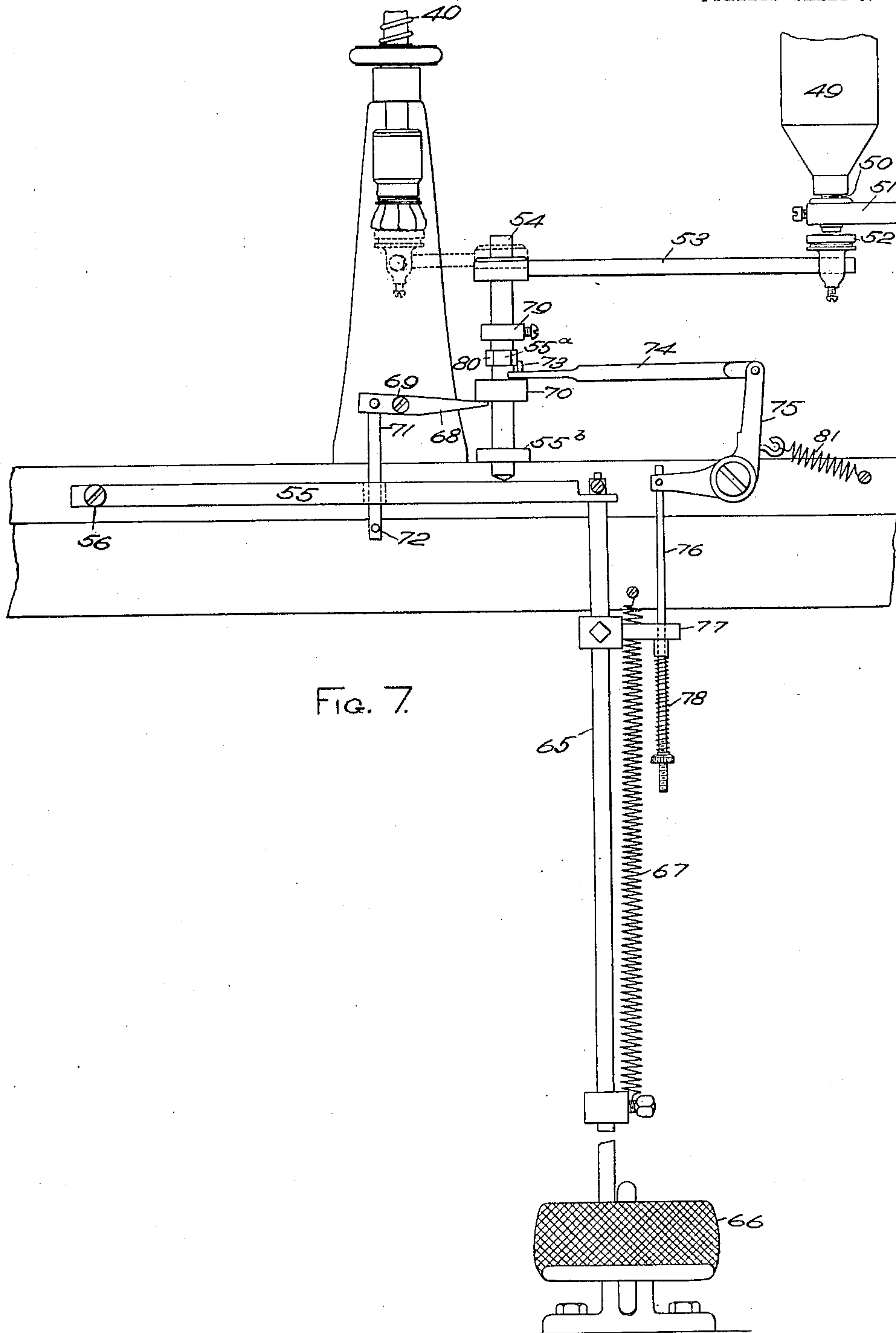


FIG. 7.

WITNESSES
Edwin H. Samuel
Jornum F. Dorsey

INVENTOR
William A. Dunbar
by his attorneys
Phillips Van Curen Fish

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4 SHEETS—SHEET 4.

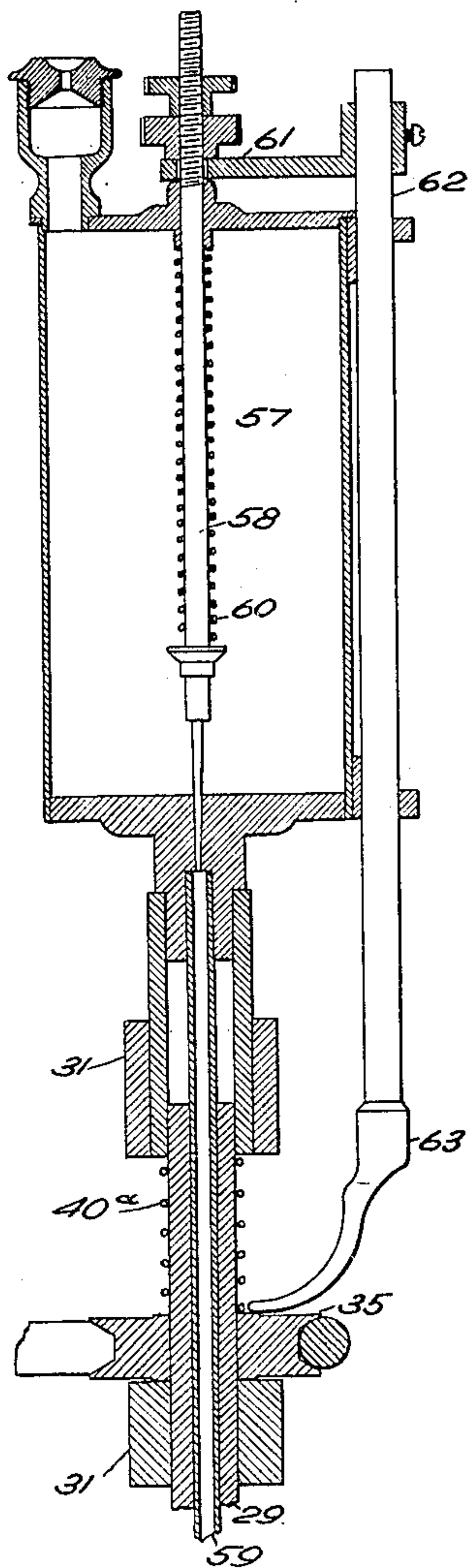


FIG. 9.

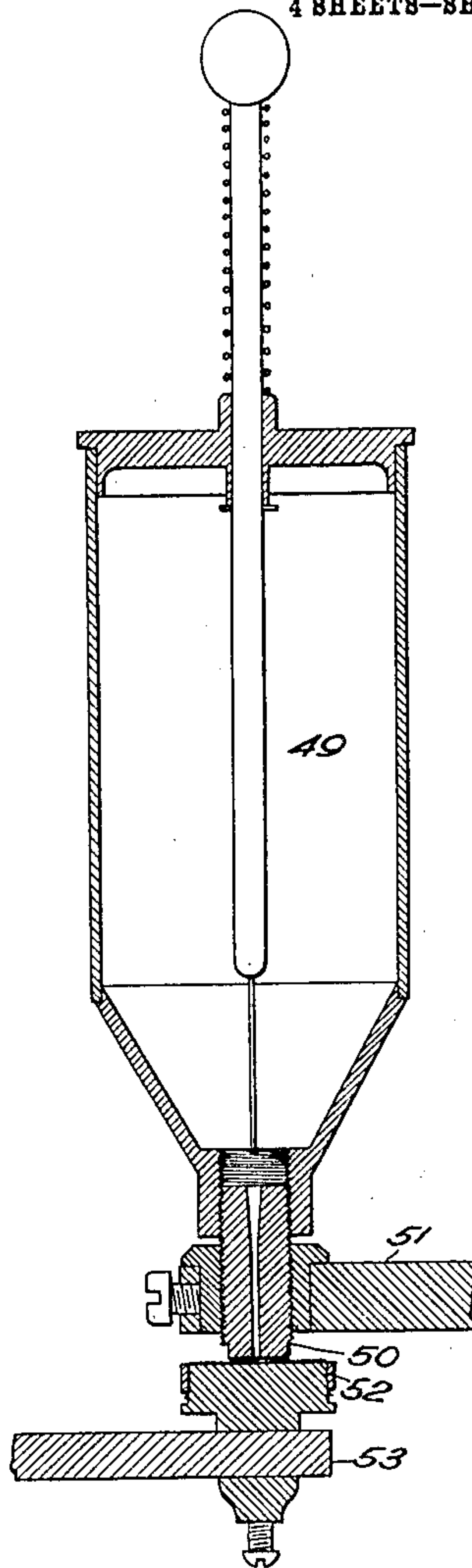


FIG. 8.

WITNESSES
Edwin F. Samuels
Barnum F. Dorsey

INVENTOR
William A. Dunbar,
by his attorneys
Phillips Van Euren Fisk

UNITED STATES PATENT OFFICE.

WILLIAM A. DUNBAR, OF LYNN, MASSACHUSETTS.

MACHINE FOR MENDING IMPERFECTIONS IN PATENT-LEATHER.

No. 916,124.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed December 3, 1902. Serial No. 133,666.

To all whom it may concern:

Be it known that I, WILLIAM A. DUNBAR, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Machines for Mending Imperfections in Patent-Leather; 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 object of this invention is to produce a machine for mending imperfections in patent leather, especially the cracks frequently occurring in the toe-caps of shoes in consequence of the bending of the leather in the process of lasting. Heretofore the mending of such imperfections, commonly known as "tip fixing," has been performed chiefly by hand. The workman removes the defective portion of the finish by sand-papering the surface until the varnish is removed and the surface of the leather is exposed. He then applies to the exposed part of the leather a fluid called by the trade "fixer number 1." This operation is performed by means of a piece of cloth wrapped about the forefinger; the workman removes the stopper from a bottle of the fixer, and transfers to the cloth on his finger a small quantity of the fixer which adheres to the bottom of the stopper. He then applies the cloth to the spot to be mended, and by a circular rubbing motion fills the grain of the leather and polishes the surface of the fixer as it dries. To conceal the junction between the mend and the general surface this operation is repeated after the shoe has been laid aside to dry, using a fluid called "fixer number 2," which is spread over a somewhat larger surface than fixer number 1, so as to blend the mended area into the original surface in order that the mend may not be apparent on a casual inspection. This process of repair, when performed by hand, as above described, is slow and wasteful, and the results are not entirely satisfactory. The rubbing required in the sand-papering or scouring cannot be performed rapidly by hand, and the sand-paper so used is not economized by uniform use of its entire surface. The operator cannot see the progress of the work without interrupting the operation, which causes further loss of time. The polishing, owing to the nature of the varnish

used, is best performed by a more rapid motion of the polishing cloth and a greater pressure than can be imparted to it by hand. The fixing fluids are expensive and volatile and are liable to be wasted in the hand method. A further disadvantage of the hand method lies in the fact that after the scouring the surface of the leather is rough, and not well adapted to receive a finish.

It is the object of the present invention to produce a machine which shall perform the operations of scouring and polishing and which shall also dust and compact the surface of the leather prior to the application of the fixers, all in a manner superior to the above-described hand method.

In the drawings forming a part of this specification, Figure 1 is a plan view of the entire machine; Fig. 2 is an end elevation looking from left to right; Fig. 3 is a plan view of a detail of the scouring mechanism, and Fig. 4 is a section of the same part on the line 4—4; Fig. 5 is a plan view of one of the polishing heads, and Fig. 6 is a vertical section of the same part on the line 6—6; Fig. 7 is a front elevation of the device for delivering fixer No. 1; Fig. 8 is a vertical section on the reservoir for containing and feeding fixer No. 1, and Fig. 9 is a vertical section of the device for feeding fixer No. 2.

The illustrated embodiment of my machine is constructed as follows:—

Upon a bed-plate are uprights which support a horizontal oscillating arm carrying a scouring device, vertical spindles carrying polishing devices, a horizontal spindle carrying a cleaning and polishing brush, and the necessary counter shafts for driving these members. A horizontal counter shaft 1 having journals in uprights 2, 2, upon the bed-plate 3 carries a loose driving pulley and two fixed pulleys. Upon the loose pulley and upon one of the fixed pulleys are the cooperating members of a clutch by means of which the loose pulley which is in communication with a suitable source of power may be caused to drive the counter-shaft and the fixed pulleys. A belt 4 communicates motion to a pulley 5 fixed on a spindle 6 journaled in uprights 7, 7. Upon this spindle is fixed a circular brush 8.

A belt 9 communicates motion from the pulley 10 to a pulley 11 fixed on a vertical shaft 12 journaled at one end in the bed-plate 3 and at the other in a projection 13

from an upright 14. A horizontal arm 15 pivoted by a screw 16 to the top of the upright 14 is caused to oscillate by a roller-pin 17, fixed in the crank disk 18 fast to the upper end of the vertical shaft 12, acting within the forked or slotted end of the arm 15. The other end of the arm carries the scouring device, shown particularly in Figs. 3 and 4. An oblong block 19 is attached to the end of the arm 15. A strip of sand-paper 20 slightly longer than the block is held in place by its upturned ends which are clamped between the clamp jaws 21, 21 and the ends of the block. These clamp jaws are made integral with overlapping plates 22 and 23, which are held in place by screws 24, 24, passing through slots in the plates. By pressing together the pins 25 and 26, which are fixed in the plates 23 and 22 respectively, the plates will be moved longitudinally, and the jaws 21, 21 will be moved out of engagement with the ends of the piece of sand-paper so that a new piece may be inserted. Upon releasing the pins 25 and 26 they will be forced apart by the spring 27 and the clamp jaws will hold the sand-paper firmly against the ends of the block. While this skiving device forms no part of the invention claimed herein, it is illustrated in the drawings and described for the purpose of setting forth the complete description of the machine in which the invention is preferably embodied.

Vertical spindles 28 and 29 journaled in overhanging arms 30 and 31 projecting from uprights 32 and 33 are rotated by pulleys 34 and 35, belts 36 and 37, and pulleys 38 and 39 fast upon counter shafts. These counter shafts are rotated by belt connections with the vertical shaft 12. The journals of the spindles 28 and 29 are in the forked ends of the arms 30 and 31. These spindles are prevented from downward motion by the pulleys 34 and 35 fixed upon them, but may be moved upward by a pressure sufficient to compress the springs 40 and 40^a, Figs. 7 and 9. Upon the lower ends of the spindles 28 and 29 are shell chucks 41, 41 which hold the polishing heads, Figs. 5 and 6. Each polishing head comprises means for attaching the head to the spindle, a yielding cushion, and means for retaining a polishing fabric upon the working surface of the cushion. In the machine particularly described these comprise a cylindrical wooden block 42 the upper part of which screws into the shell chuck 41, and a metal collar 44 with an inturned flange 45 upon its lower end. A cylindrical piece of spongy rubber 46, held by the flange 45 gives yielding support to the polishing cloth 47, which is drawn tightly over the polishing head and secured by a rubber or metal band 48.

The means for feeding and measuring the fixer No. 1 comprise a receptacle for the fixer, an arm to convey it to the polishing

head and pedal-actuated mechanism to operate the arm.

A receptacle 49 for the fixer is provided with a threaded stem 50 which engages a threaded bushing attached to a projection 51 from the frame of the machine. The fixer, which is viscous, passes slowly through a passage in the stem and falls on a pad 52 mounted on an arm 53 fixed to a vertical shaft 54 journaled at 55^a and 55^b to brackets attached to the frame of the machine. The lower end of the shaft 54 rests on a lever 55 pivoted at 56 to the frame. To the other end of the lever is attached a vertical rod 65 connected with a treadle 66 and supported in its raised position by a spring 67. A short lever 68 pivoted at 69 to the frame of the machine engages at one end a collar 70 fixed on the shaft 54. To the other end of the lever 68 is pivoted a rod 71 which passes loosely through a hole in the lever 55. A cross pin 72 in the lower end of the rod 71 is engaged by the lever 55 when it is depressed. Upon a pin 73 in the collar 70 is pivoted a connecting rod 74 the other end of which is attached to one arm of a bell-crank 75 pivoted to the base-plate of the machine. To the other arm of the bell-crank lever is pivoted a rod 76 passing loosely through a hole in an extension 77 from the treadle rod 65. A spring 78 engages at one end the extension 77 and at the other end an adjusting nut on the rod 76. A spring 81 tends to keep the bell crank lever in the position illustrated.

The mechanism above described operates as follows:—Upon the depression of the treadle the treadle rod 65 is drawn down, rotating the lever 55 slightly on its pivot 56. During the first part of this motion the shaft 54 follows the lever 55 upon which it is supported, and drops through its bearings 55^a and 55^b until a collar 79 fixed on the shaft bears on the upper journal 55^a. This motion lowers the pad 52 from the stem 50 and removes on the pad the fixer which has passed down and collected in a drop between the stem and the pad. Upon the continued motion of the pedal the shaft 54 is supported by the collar 79, but the spring 78 is compressed by the extension 77 sufficiently to overcome the spring 81; the bell-crank lever rocks to the left, and the connecting rod 74 rotates the shaft 54 until the pad 52 has assumed a position under that shown in dotted lines, directly under the polishing head. At this point the connecting rod 74 comes in contact with the shaft 54 and arrests its rotation. Upon still further depression of the pedal the lever 55 engages the cross-pin 72 and depresses the rod 71, turning the lever 68 on its pivot 69 and causing it to raise the shaft 54 and bring the pad 52 in contact with the polishing head, as shown in dotted lines thereby transferring the fixer from the pad to the polishing cloth. Upon the release of

the pedal it is raised and the parts returned to their positions by the springs, the pad first dropping from the polishing head, then rotating to its position under the feed stem 50, and then rising to its original position. The reverse rotation of the shaft 54 is limited by a pin in the collar 79 engaging a pin on the bracket 55^a. Beveled faces 80 on the bracket 55^a engage the pin 73 when the shaft 10 is raised and prevent rebounding of the arm 53 when the rotation of the shaft 54 is arrested. When the apparatus is not in use the reservoir is rotated and the stem 50 screwed down until it is in contact with the 15 pad, whereby the flow of fixer is interrupted. To remove dried fixer from the aperture in the stem a plunger carrying a cleaning wire is mounted in the cap of the reservoir 49.

The means for feeding fixer No. 2 are 20 somewhat different owing to the fact that the fluid is much thinner than fixer No. 1. The receptacle 57 is attached to the arm 31. A valve stem 58 carries at its lower end a needle valve which closes the passage from 25 the receptacle to the tube 59, which passes down through the spindle and the polishing head and ends a short distance above the polishing cloth. A spring 60 keeps the valve normally closed. An arm 61 fast to a vertical 30 rod 62 embraces the upper portion of the stem 58. An arm 63 fast to the lower end of the rod 62 rests upon the top of the pulley 35. When the spindle is raised the pulley raises the arm 63, the rod 62 and the arm 61, 35 which latter raises the valve stem 58 by means of adjustable nuts thereon, and opens the valve. When the spindle falls the parts are returned to their normal positions by the action of gravity and the spring 60. The 40 fixer No. 2 passes through the tube 59 to the polishing head and the amount of fixer fed will be proportional to the time during which the spindle is held in its raised position by the operator.

45 In using my machine the operator proceeds as follows:—After setting the machine in motion by means of the clutch he presents the part of the leather to be mended against the sand-paper on the scourer. When the 50 surface has been sufficiently cleaned he presents it to the rotating brush. This brush should have stiff bristles, so that it may not only remove dust but may also remove the loose fibers and compact the surface. The 55 operator next operates the treadle to apply fixer to the first polishing head and presents the scoured surface to the polishing head thereby applying and polishing the fixer. This action is repeated until a sufficient 60 quantity of the fixer has been applied. The operator next applies the shoe to the second polishing head, and presses thereupon with sufficient force to raise the spindle and open the needle valve. The fixer No. 2 passes 65 down the tube and drips on the inner side of

the polishing cloth. The fixer immediately soaks through the cloth and comes in contact with the leather. When enough of the fixer has been fed the operator moderates the pressure of the shoe against the polishing 70 head, thereby allowing the spindle to drop and the valve to close. The polishing is then completed with the polishing head in its normal position. The fixer No. 2 is spread over a surface slightly greater than 75 the scoured surface, and it partly dissolves and blends the old and the new finish, whereby the surface is left smooth and the mend concealed.

While I have thus described and shown in 80 the drawings the preferred embodiment of my invention, it is to be distinctly understood that my invention is not specifically limited thereto as the same may be embodied in other forms of mechanism without de- 85 parture therefrom.

Where the words "patent leather" are used throughout this specification and the claims it is to be understood that I intend thereby to include other forms of enameled 90 leather, or leather provided with a surface which is liable to crack when bent. Where I have used the words "polishing material" I wish to be understood as meaning either the fluids specifically mentioned as "fixers" 95 or any other suitable fluid or solid material.

Having thus described my invention, I claim as new and desire to secure by Letters Patent.

1. A machine for mending patent leather, 100 having, in combination, a polishing head, a receptacle for polishing material, means for delivering polishing material from said receptacle to the surface of said polishing head, and means for controlling the delivery 105 of polishing material to the head, connected to the head, so that pressure against the head operates to permit the delivery of polishing material thereto, substantially as described.

2. A machine for mending patent leather, 110 having, in combination, a polishing head, means for rotating the head, means for yieldingly supporting the head against the pressure of the work thereagainst, and means 115 operatively connected with the head for applying polishing material to the surface thereof operating to apply polishing material to the surface of the head upon the exertion of sufficient pressure of the work there- 120 against, substantially as described.

3. A machine for mending patent leather, having, in combination, a polishing head, means for containing and feeding polishing material, and means for transferring the material from the feeding means to the pol- 125 ishing head comprising a receptacle for receiving and transferring the polishing material and means controlled by the operator for giving to the said receptacle movements toward and away from the feeding means 130

and the polishing head, and for moving the receptacle between the said members, substantially as described.

4. A machine for mending patent leather,
5 having, in combination, a polishing head provided with a flexible cushion covered with textile fabric, a receptacle for polishing material, and means for delivering polishing material from the receptacle to the polishing
10 head comprising a tube, the cushion having an axial aperture extending to the textile

covering and the tube being arranged to deliver the polishing material through the aperture to the inner surface of the textile material, substantially as described. 15

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

WILLIAM A. DUNBAR.

Witnesses:

HORACE VAN EVEREN,
FARNUM F. DORSEY.