

No. 627,122.

Patented June 20, 1899.

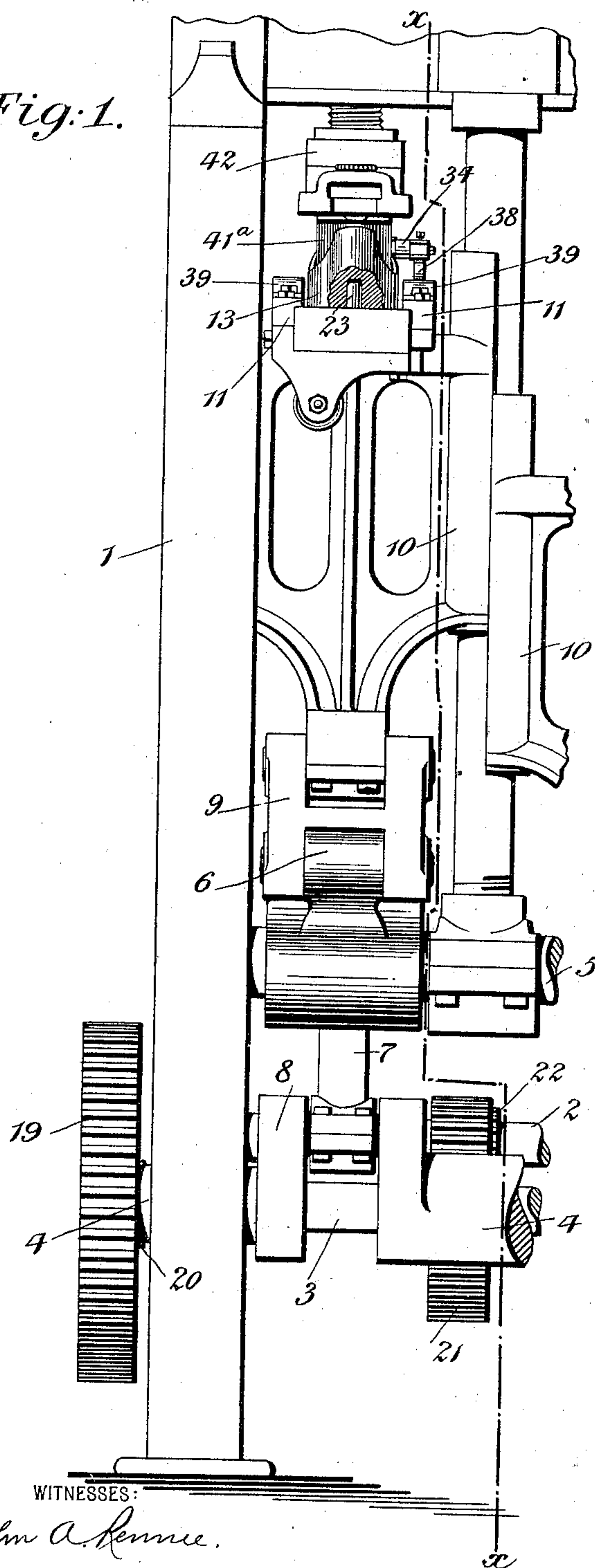
W. B. KEIGHLEY.
SOLE MOLDING MACHINE.

(Application filed May 24, 1898.)

(No Model.)

3 Sheets—Sheet 1.

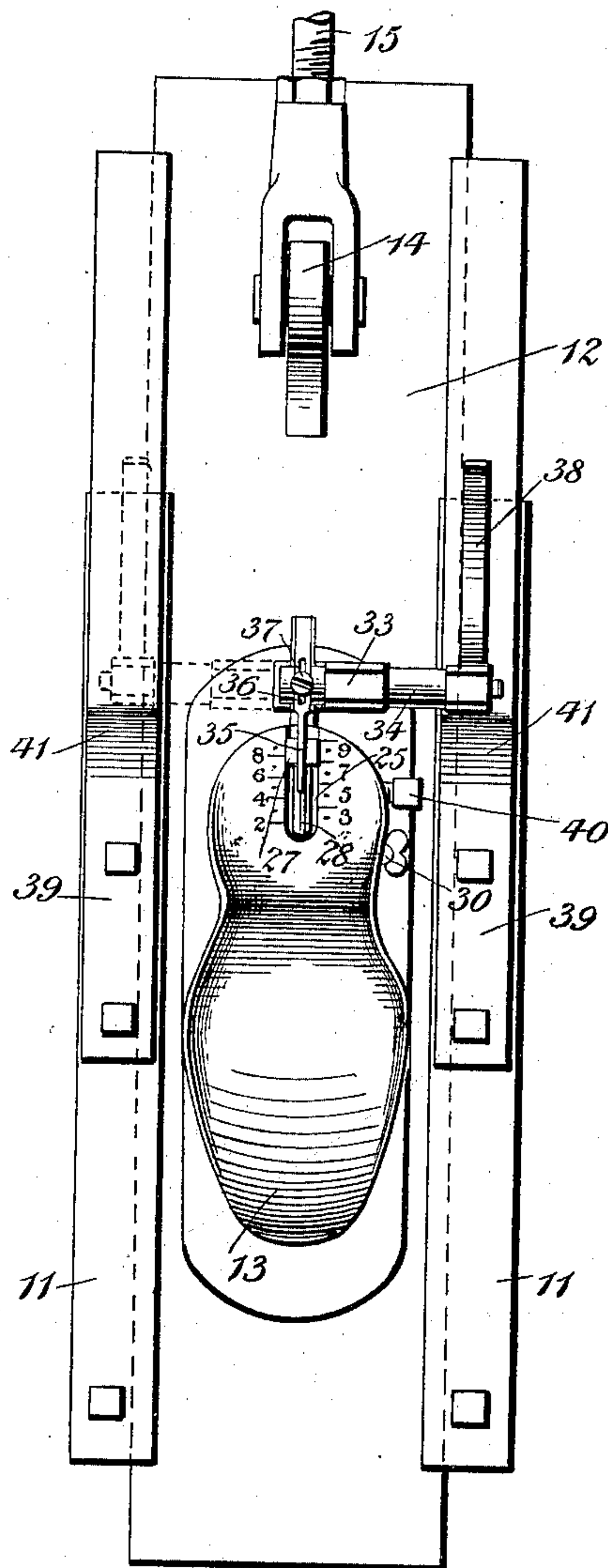
Fig: 1.



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Fig: 2.



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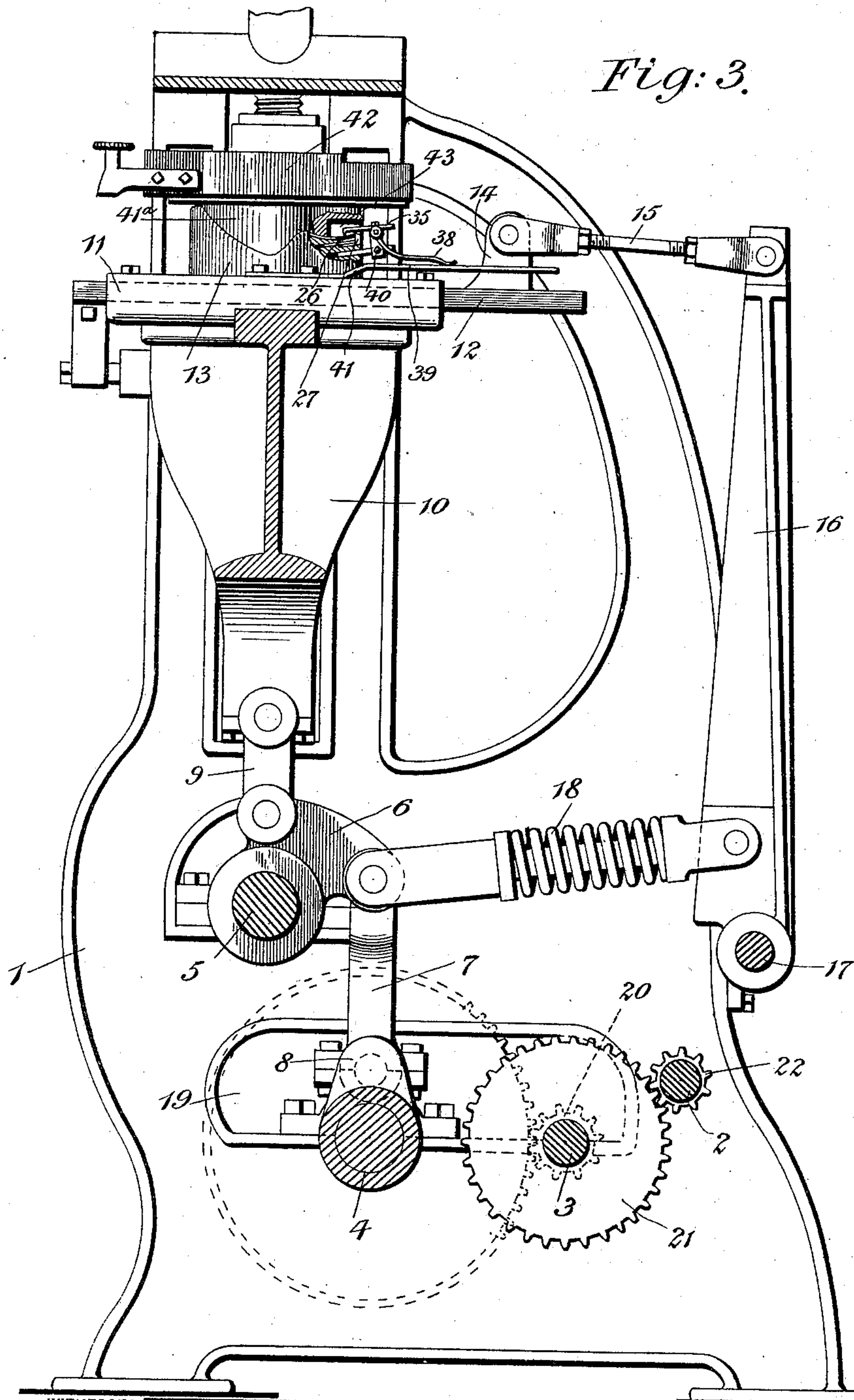
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3 Sheets—Sheet 2.



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Fig: 4.

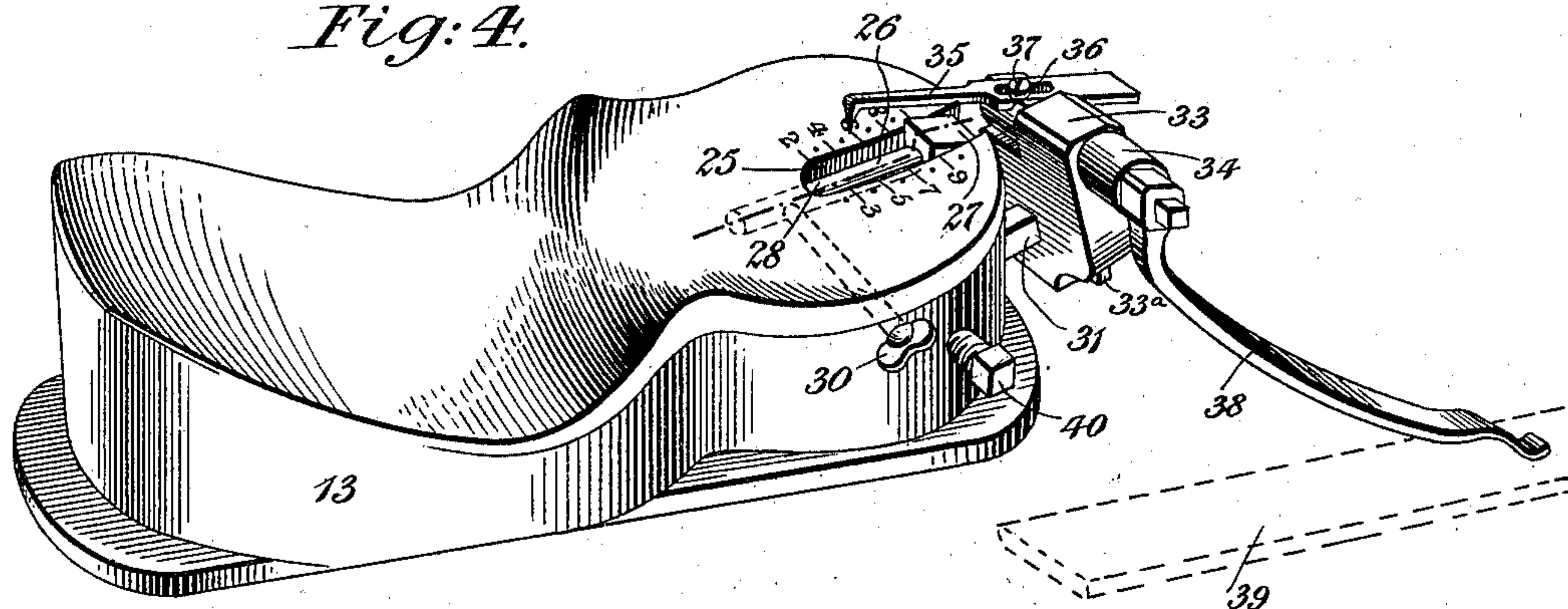


Fig: 5.

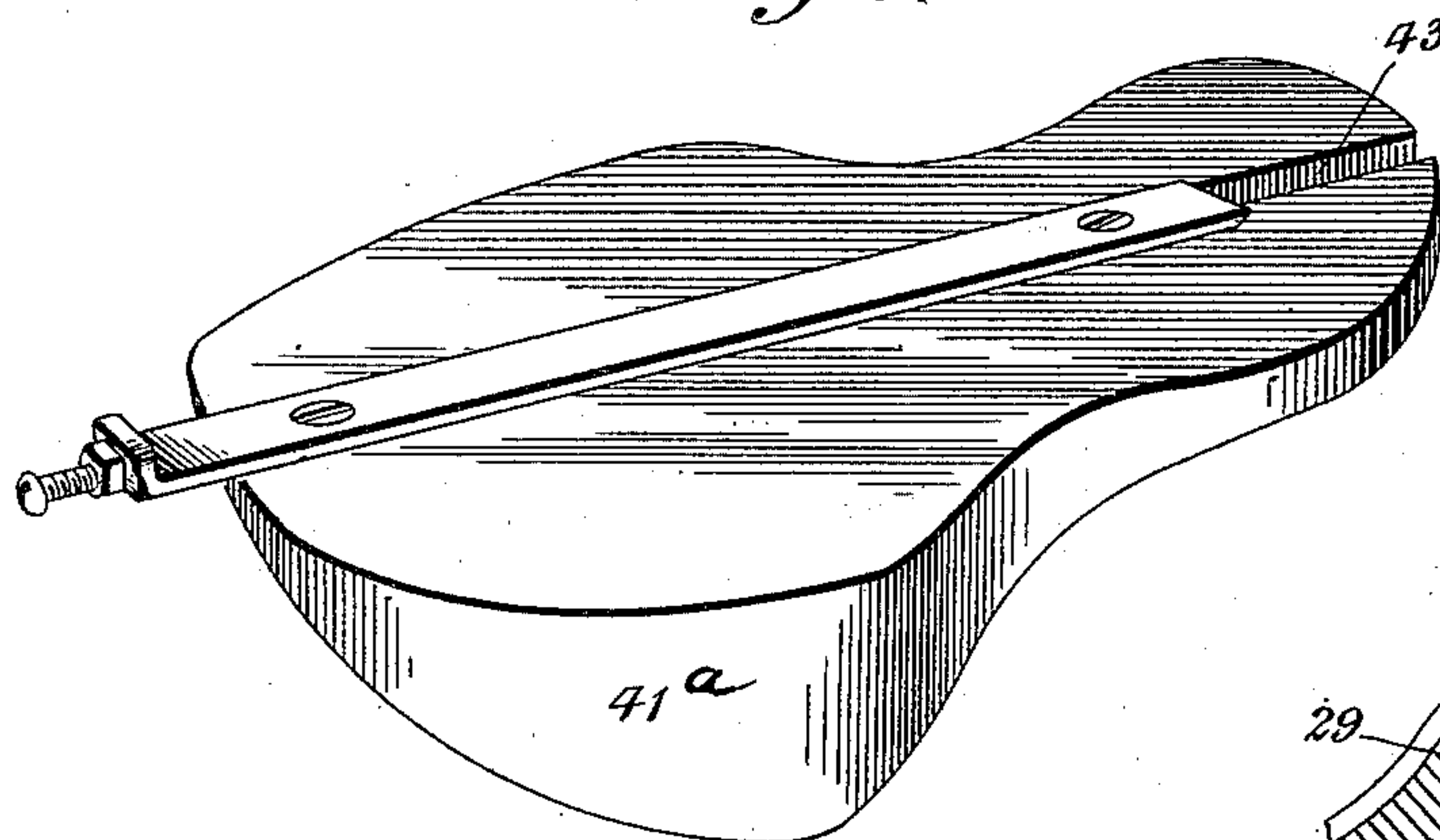


Fig: 6.

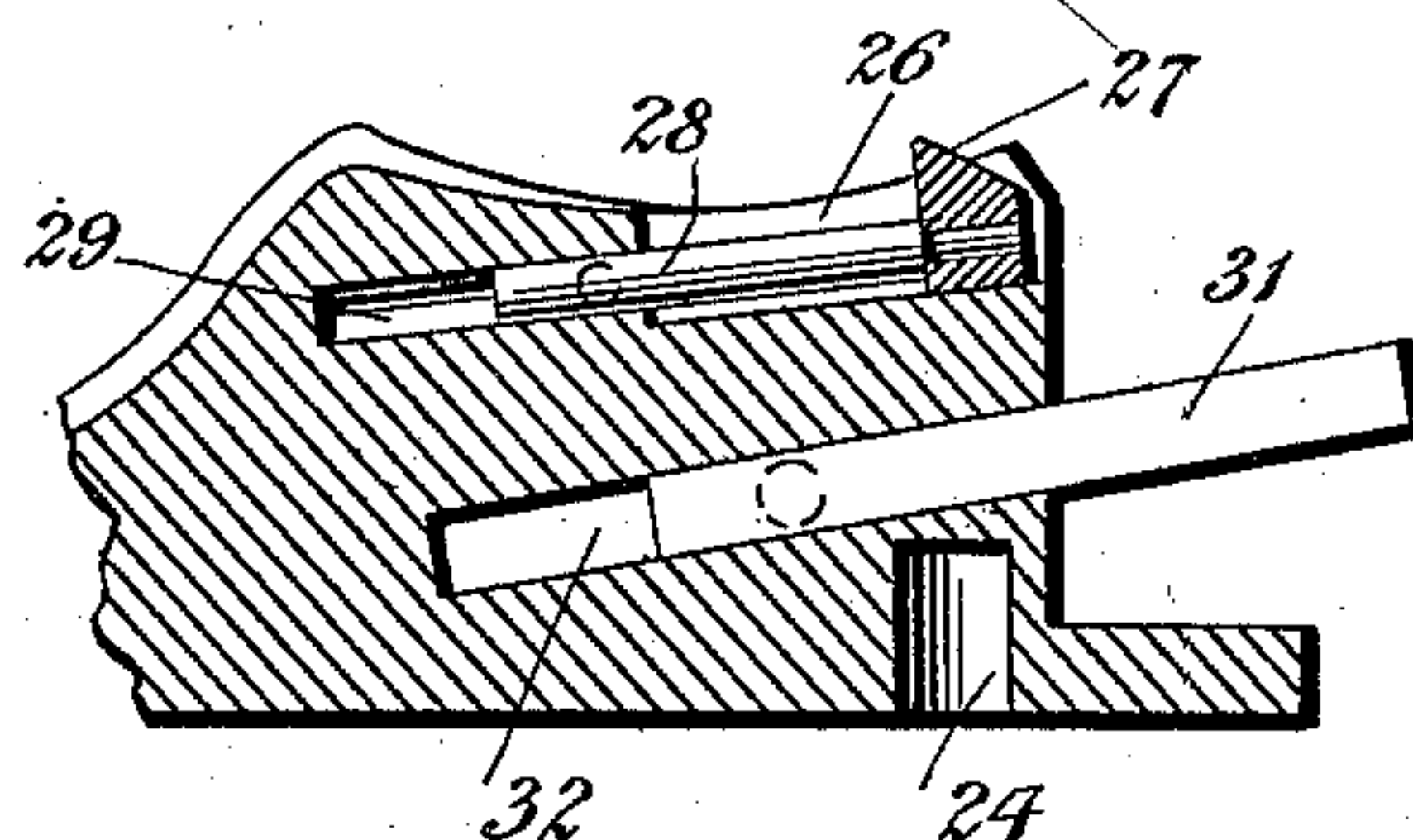
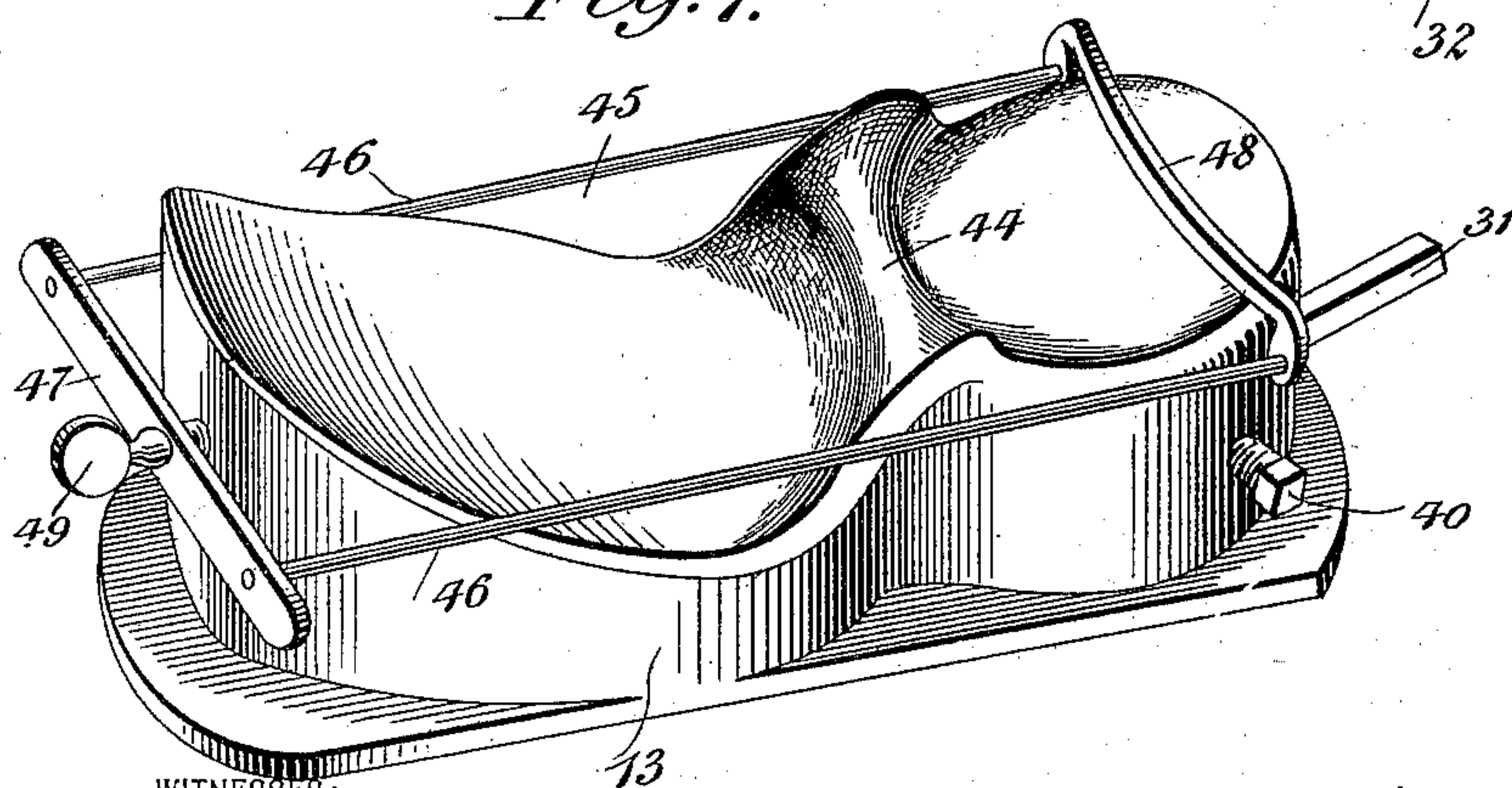


Fig: 7.



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UNITED STATES PATENT OFFICE.

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SOLE-MOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 627,122, dated June 20, 1899.

Application filed May 24, 1898. Serial No. 681,593. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. KEIGHLEY, a citizen of the United States, residing at Vineland, in the county of Cumberland, State of New Jersey, have invented a new and useful Improvement in Sole-Molding Machines, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to certain improvements in gripper attachments for sole-molding machines, whereby the sole is held against displacement from the molds during the operation of molding, the object being to provide in a simple and inexpensive manner a novel and effective device of this character which is readily applicable to most of the sole-molding machines at present in use and which is so arranged that the gripper devices will be automatically operated to grip the sole and to release the same after the sole has been properly molded. It also provides simple and convenient gaging devices whereby soles of varying sizes may be molded from one set of molds and the same uniformity maintained throughout after said gaging devices have been properly adjusted to mold any particular size.

It consists, substantially, of a mold, a gaging device to adjust the same for varying sizes of soles, a gripper attachment adjacent thereto, and means for automatically operating said gripper attachment to grip the sole and hold the same against displacement.

It further consists of the novel details of construction, all as will be hereinafter fully described, and particularly pointed out in the claims.

Figure 1 represents a front elevation of a sole-molding machine having my invention applied thereto. Fig. 2 represents a detail plan view of a slide to be described, showing the lower mold in place thereon and my invention applied thereto. Fig. 3 represents a vertical section taken on the line $x x$ of Fig. 1, showing the molds thereon in the act of pressing the sole. Fig. 4 represents a perspective view of the lower mold with my improved gripper attachment and gage applied thereto. Fig. 5 represents a similar view of the upper mold. Fig. 6 represents a vertical longitudinal section of the heel portion of the

lower mold with the gripper attachment removed. Fig. 7 represents a perspective view of a mold and gage device particularly adaptable for use in molding spring or wedge heel soles, the gripper attachment being also removed.

Similar reference-numerals indicate corresponding parts in the figures.

Inasmuch as my invention relates particularly and almost exclusively to the molds and their adjuncts, I have deemed it unnecessary to show a complete machine, but shall confine myself to a description of one side of the machine only, (of which there are two,) showing only such parts as will enable others to fully comprehend the same.

1 designates the frame which supports the main driving-shaft 2, a counter-shaft 3, a crank-shaft 4, and a rock-shaft 5, the latter being provided with a loosely-mounted bell-crank lever 6, adapted to rock thereon through the action of the rod 7, which connects with one end thereof and with a crank 8 on the crank-shaft 4, by which means it receives its motion. The opposite end of the bell-crank lever 6 is connected by means of a coupling-link 9 to a vertically-disposed sliding frame 10, having upon its upper extremity a horizontal guideway 11, adapted to receive therein and guide a sliding carriage 12, on which latter the lower mold 13 is removably held. The rear end of the sliding carriage 12 is provided with a perforated block 14, to which is pivotally secured one end of an adjustable connecting-rod 15, the opposite end of which is secured to an arm or lever 16, loosely mounted upon a shaft 17, journaled in the frame 1.

18 designates a spring connection between the bell-crank lever 6 and the lower end of the arm or lever 16, the object of which is to give an easier movement to the sliding carriage and to compensate for any excess of motion of the bell-crank lever, it being evident that as the crank rotates the bell-crank lever will, through the mechanism just described, lower the frame 10 and gradually move the sliding carriage 12 and connected mold 13 outwardly to receive thereon the sole-blank to be molded.

Motion is imparted to the crank-shaft 4 through the media of a gear-wheel 19, secured

to one end thereof, and a pinion 20, secured to the counter-shaft and intermeshing therewith, the latter receiving its motion from the gear-wheel 21, also secured to the counter-shaft, the same in turn being driven by a pinion 22, carried by the driving-shaft. Thus as the latter is rotated to put the operative parts into motion the sliding carriage is alternately raised and lowered and moved outwardly and inwardly at the proper intervals.

23 designates dowels projecting from the sliding carriage and adapted to enter sockets 24 in the base of the lower mold 13 in order that their relative position may be firmly maintained and that they may be easily removed when necessary.

The heel portion of the mold 13 is provided with a longitudinal slot 25, adapted to receive therein a gaging device 26, composed of a block 27, which projects above the surface of the mold and acts as an abutment against which the heel of the sole contacts, the said block having a stem or rod 28, projecting therefrom, adapted to enter a suitable socket 29, wherein it is adjustably secured by means of the set-screw 30. The surface of the mold adjacent the walls of the slot is graduated on both sides and in such manner that any predetermined size of sole within the capacity of the mold may be operated upon by adjusting the said gage-block into alinement or register with the proper gradation.

31 designates a bar adjustably supported in a socket 32, formed in the heel portion of the lower mold, and projecting sufficiently beyond the end thereof receives upon it an adjustable block 33, the said block being adapted to support a rock-shaft 34, to one end of which a gripper 35 is secured, the latter being slotted at 36 to admit a screw 37, whereby the said gripper may be adjusted to grip the sole at any desired or convenient spot. To the opposite end of the rock-shaft 34 is secured an arm 38, which extends rearward and downwardly, its extremity resting upon a cam-bar 39, two of which are secured to the frame 10, one at each side of and adjacent the mold 13, as clearly shown in Figs. 1 and 2. In actual practice one of these cam-bars 39 is preferably omitted, but under certain conditions two may be employed, in which event of course another arm 38 will be provided at the opposite end of the rock-shaft, as shown in dotted lines in Fig. 2. A set-screw 33^a serves to hold the block 33 in place on the bar 31 and permits of the adjustment of the gripping devices when desired.

40 designates a set-screw which engages a threaded opening in the mold and impinges the bar 31 and so secures it in place within the socket 32 and admits of the adjustment of the gripper devices, as will be evident.

It will be observed by reference to Figs. 2 and 3 that the cam-bars 39 are bent upwardly intermediate of their ends, as indicated at 41, from which point they extend rearwardly in a horizontal plane, it being obvious, there-

fore, that as the sliding carriage 12 and its mold 13 are moved rearwardly, as described, the arm or arms 38 will ride up the bent portions of the bars 39 and rock the shaft 34, thus actuating the gripper to grip the sole, which grip is retained until the sole has been properly molded, after which the forward movement of the sliding carriage will cause the arm or arms 38 to ride down said inclines, and by their own weight the gripper will be moved to release its contact with the sole.

The upper mold 41^a, which is held in the head-block 42 of the frame 1, is provided in the heel portion thereof with a longitudinal slot 43, which when the said mold is in the proper relative position with the lower mold is in vertical alinement with the gripper 35, which latter normally projects above the level of the mold and enters said slot 43 when the molds approach each other, thus allowing the abutting surfaces thereof to close in upon the sole and mold it, as will be readily understood.

In Fig. 7 I have shown a somewhat different form of mold, the same being especially designed for use in molding spring or wedge soles, it being observed in this construction that a perceptible rise occurs at that portion of the mold between the heel and toe, as indicated at 44, which formation is necessary in order that the additional stock and consequent increased thickness in the heel portion of the sole may be compensated for. The gaging device hereinbefore described is also omitted, and in its stead is provided a frame 45, composed of oppositely-disposed parallel rods 46, whose terminals are securely fastened to transverse bars 47 and 48, the latter extending across the heel portion of the mold and being bent to conform to the concavity therein forms an abutment for the heel of the sole. The bar 47 is perforated to receive a set-screw 49, which engages a threaded opening in the front or toe portion of the mold, and by means of which screw the frame 45 may be adjusted to and fro to mold soles of varying sizes. In adjusting this form of gage the frame 45 is moved to bring the bar 48 in such position that the heel of the wedge-sole will fit snugly between it and the rise or shoulder 44, after which the molding process can begin, it being understood that as the sizes of the soles increase the stock forming the heel becomes longer, and vice versa. Thus the graduations hereinbefore described are not necessary, as the length of stock in the heel serves for all practical purposes in gaging the different sizes.

The gripping device described will be used in connection with this mold, and the slot or opening in the upper mold will of course be unnecessary.

From the foregoing it will be seen that my invention provides in an effective and economical manner a gripper attachment which is positive in its operation and which will securely hold the sole in place upon the mold

during the operation of molding, thus insuring against all possible chances of displacement thereof and a consequent destruction of the sole. At the same time a succession of
 5 soles may be molded in a uniform and perfect manner, an accomplishment hitherto found impossible in heel-molding machines.

Having thus described my invention, what I claim as new, and desire to secure by Letters
 10 Patent, is—

1. In a sole-molding machine, the combination of an upper and lower mold, the latter being vertically and laterally movable, a gripper device arranged adjacent to said molds, a
 15 recess in one of said molds adapted to receive said gripper device and means for actuating said gripper device.

2. In a sole-molding machine, a plurality of molds, one of the latter having a recess therein, a gripper device arranged adjacent to said
 20 recess, and operating therein, said gripper device being adapted to grip the sole during the act of molding, and means for automatically operating said gripper device.

3. In a sole-molding machine, an upper and lower mold, means for actuating said lower mold, the latter having a slot therein provided with graduations adjacent thereto, an ad-
 25 justable gaging device located in said slot, a gripper device supported by said lower mold and means for actuating the latter and said gripper device.

4. In a sole-molding machine, upper and lower molds, a gripper device supported upon
 35 said lower mold and adapted to grip and hold the sole, means for adjusting said gripper device and means for actuating the same.

5. In a sole-molding machine, upper and lower molds, a gripper device supported upon
 40 said lower mold and adapted to grip and hold the sole, a gaging device for said sole, and means for actuating the said gripper device.

6. In a sole-molding machine, a gripper device pivotally and adjustably supported upon
 45 one of the molds thereof and adapted to grip and hold the sole, a gaging device adjacent to said molds and capable of movement to accommodate soles of varying sizes, and means for automatically actuating said gripper de-
 50 vices.

7. In a sole-molding machine, a mold having a slot, a gaging device adjustable within
 said slot, a gripper device pivotally and adjustably supported by said mold, and means
 55 for actuating said gripper devices to grip and hold the sole against displacement.

8. In a sole-molding machine, a mold having an adjustable gaging device adjacent thereto, a gripper adjustably mounted upon
 60 and supported by a rock-shaft, and an arm or arms secured to said rock-shaft and adapted to engage cam-bars, whereby the gripper is actuated to grip and release the sole.

9. In a sole-molding machine, a mold sup-

ported therein and adapted to slide back and
 65 forth, a gripper adjustably mounted upon and supported by a shaft, an arm or arms secured to said shaft and adapted to move with said mold, and cam-bars with which said arms en-
 70 gage and actuate the gripper to grip or release the sole.

10. In a sole-molding machine, a lower mold supported therein having a slot with gradua-
 tions at each side thereof, a gaging device ad-
 75 justable in said slot, a screw for holding said gaging device against movement, a gripper secured to a rock-shaft and supported by said mold, said gripper having a slot therein, a
 80 screw for said slot whereby said gripper is made adjustable on said rock-shaft, an arm or arms secured to the latter and adapted to engage cam-bars, whereby the gripper is ac-
 85 tuated to grip and release the sole and an upper mold having a slot therein in substantially vertical alinement with said gripper.

11. In a sole-molding machine, an upper mold, a lower mold, means for raising and low-
 90 ering and imparting lateral movement to said latter mold, an adjustable gripper suitably supported, a slot in said upper mold for the reception of said gripper and means for actu-
 95 ating the latter.

12. In a sole-molding machine, a lower mold, means for actuating the latter, a slot
 100 in the upper portion thereof, graduations adjacent a side of said slot, a gage-block movable in said slot, a rod attached to said block and movable in a suitable socket and a set-
 105 screw or similar device for locking said rod and block in desired position.

13. The combination of an upper and lower mold, a gripper device carried by said lower
 110 mold, means for rocking said gripper device so that the latter engages a sole during the act of molding, and means for reciprocating
 115 and raising and lowering said lower mold.

14. In a sole-molding machine, an upper mold, a lower mold having a slot with gradua-
 120 tions at a side thereof, an adjustable gaging device in said slot, a rock-shaft supported by said mold, an adjustable gripper mounted on said rock-shaft, an arm secured to the latter and adapted to engage a cam-bar, whereby
 125 said gripper is actuated and means for actuating said lower mold.

15. In a sole-molding machine, an upper and lower mold, said upper mold being sta-
 130 tionary, means for raising and lowering and imparting lateral motion to said lower mold, a gripping device carried by the latter, a recess in the upper mold adapted to receive said
 135 gripping device, and means for actuating the latter.

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Witnesses:

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