

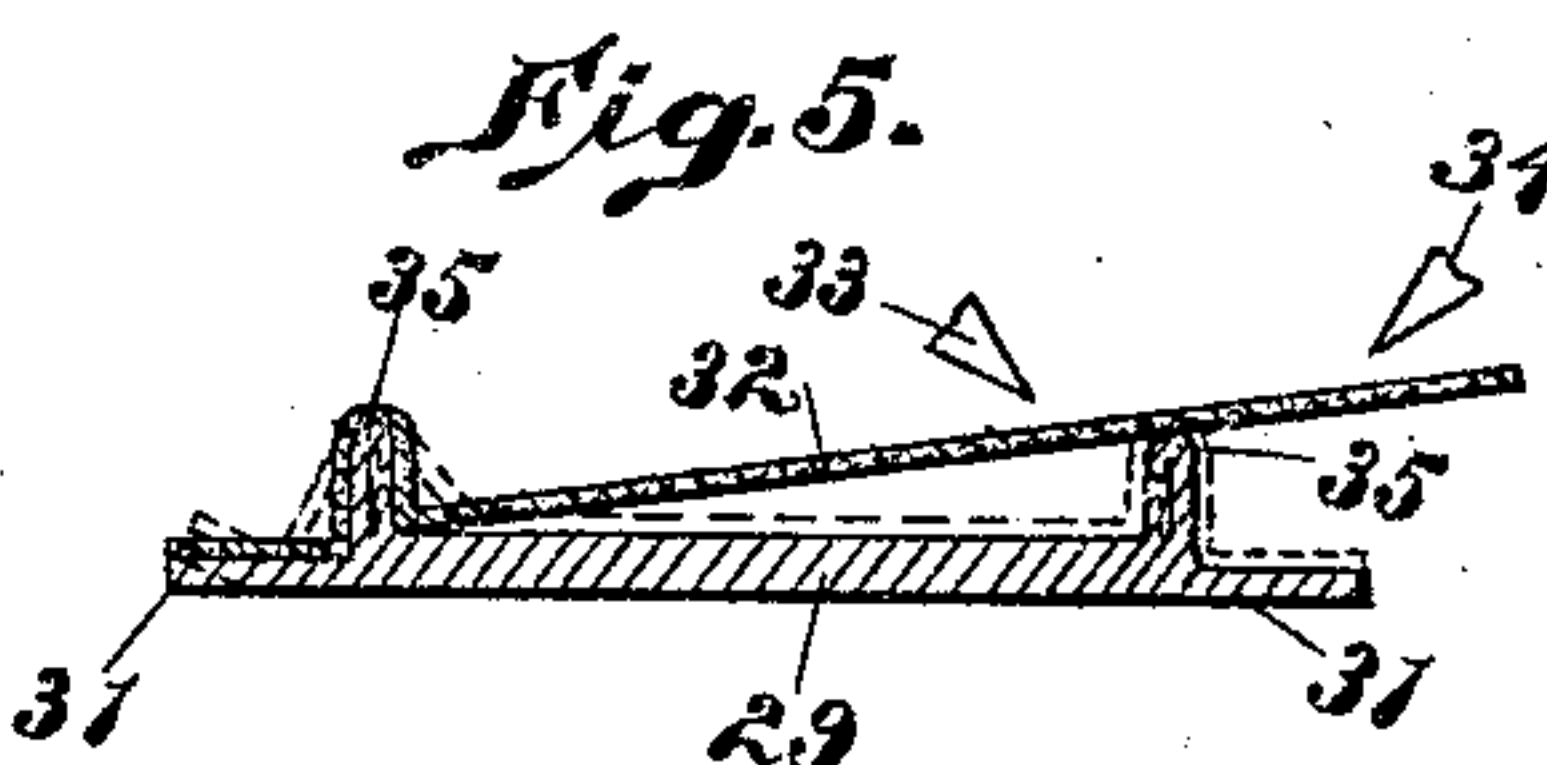
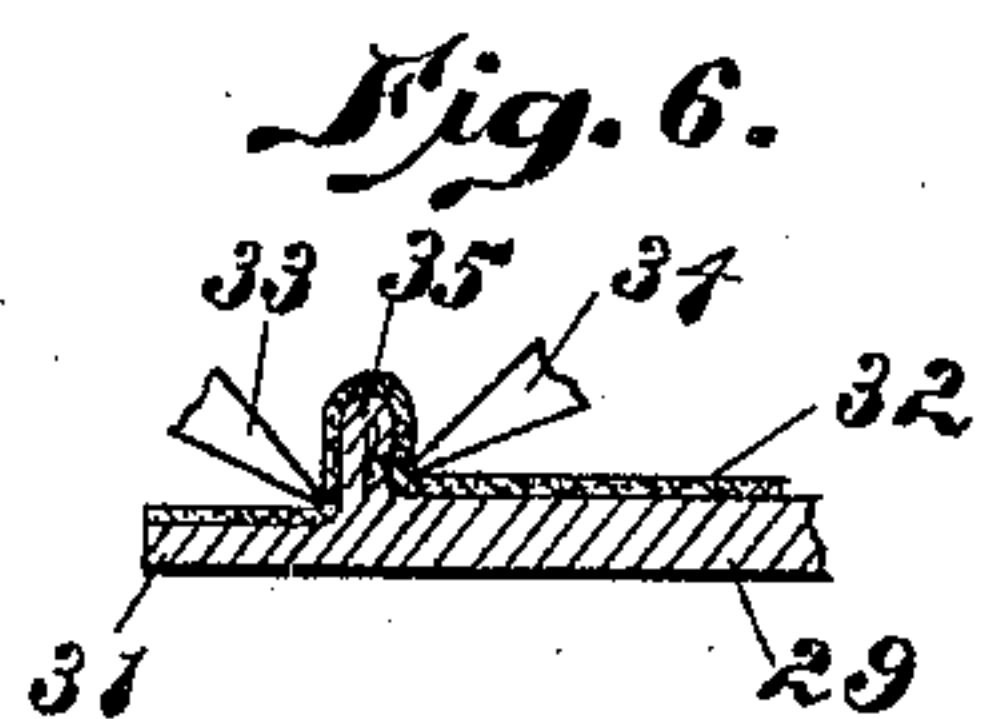
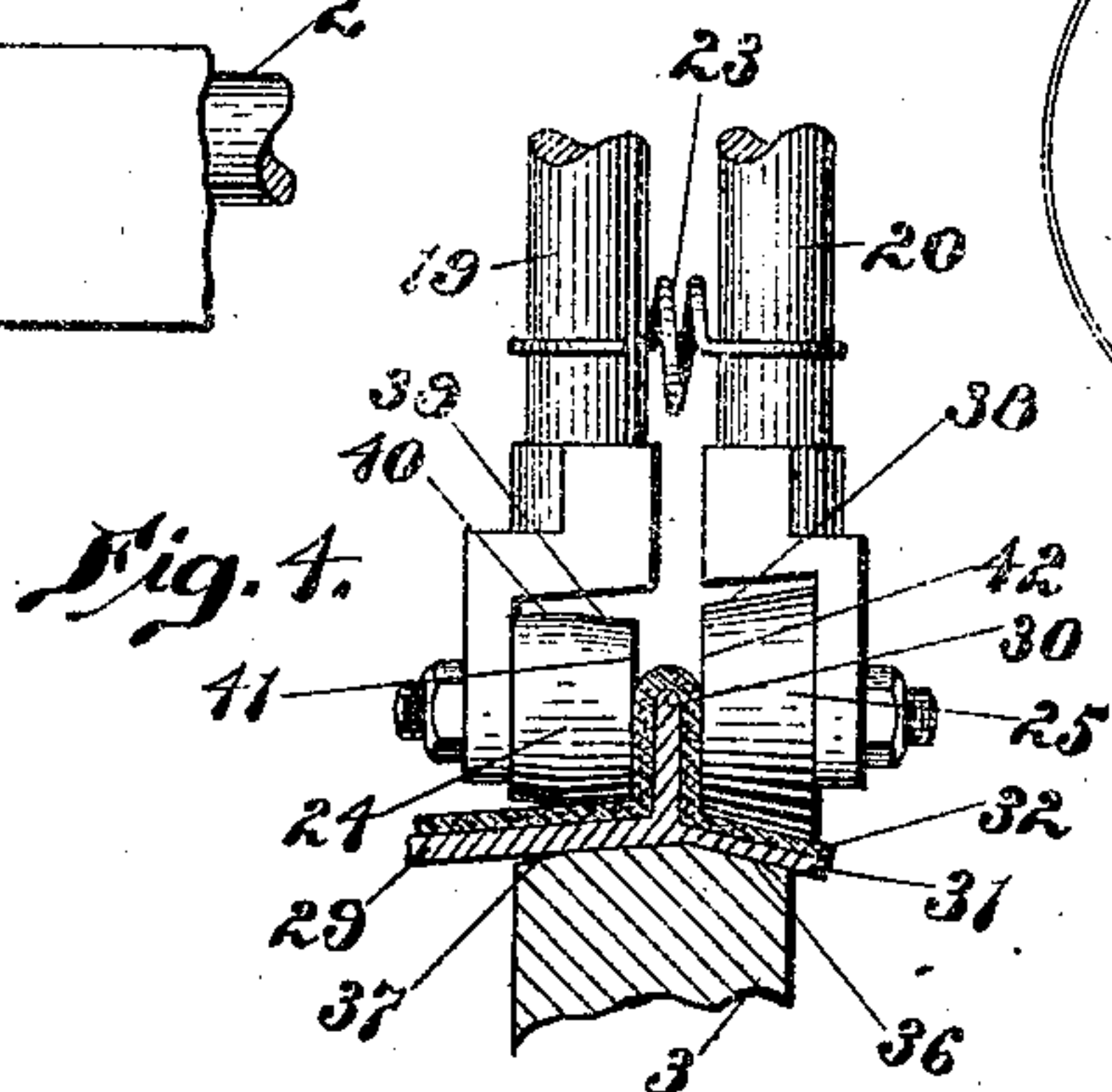
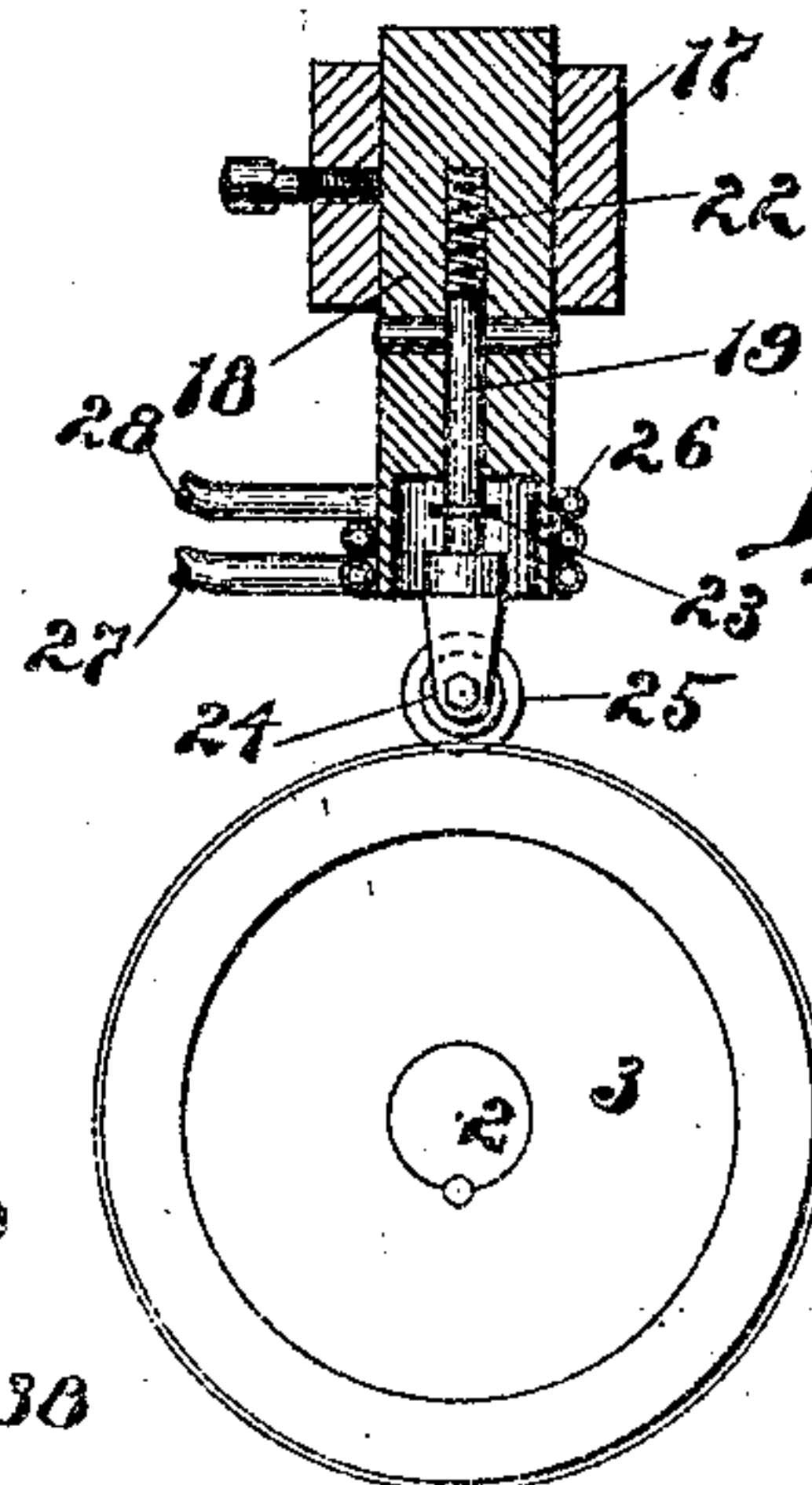
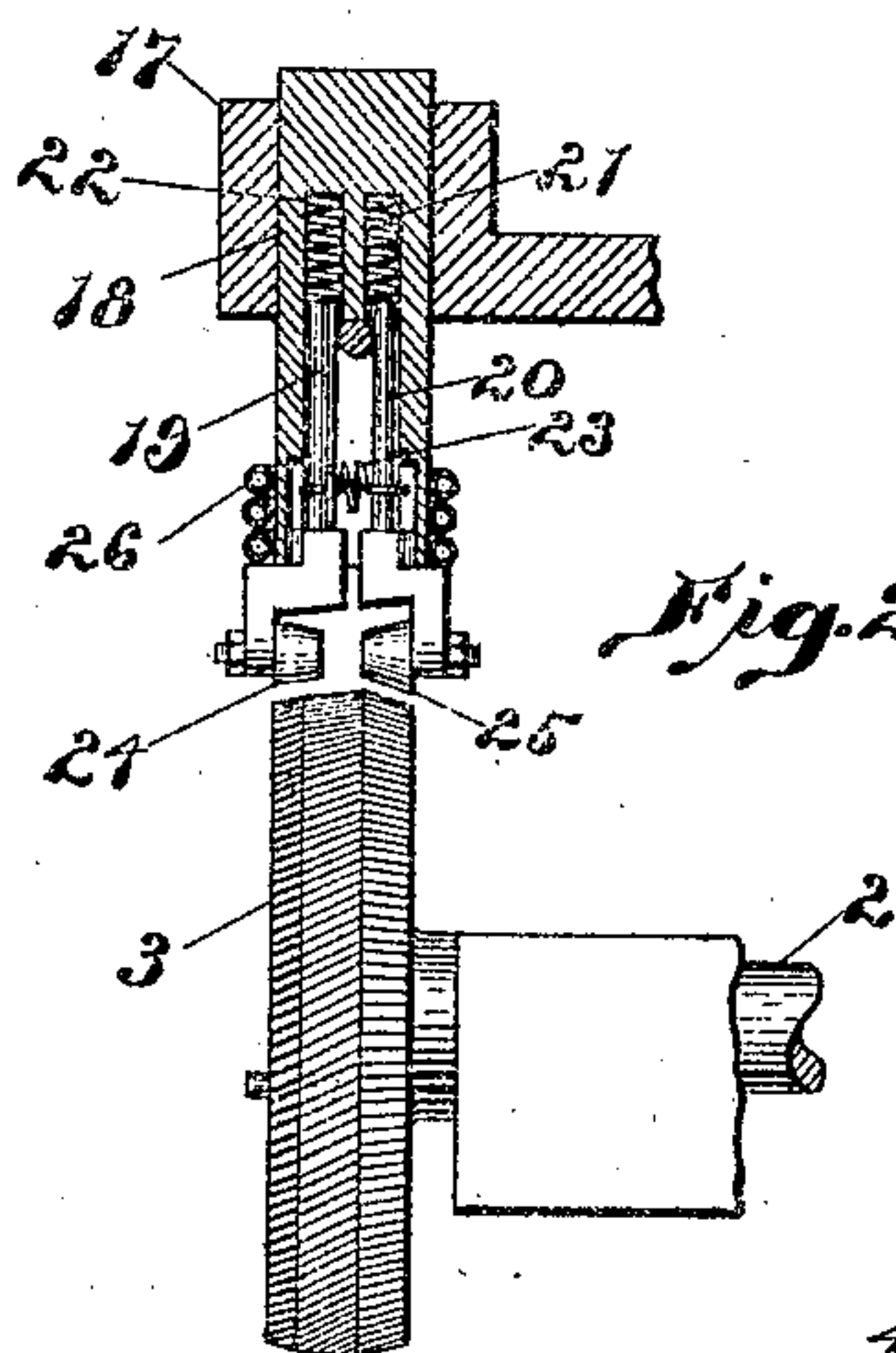
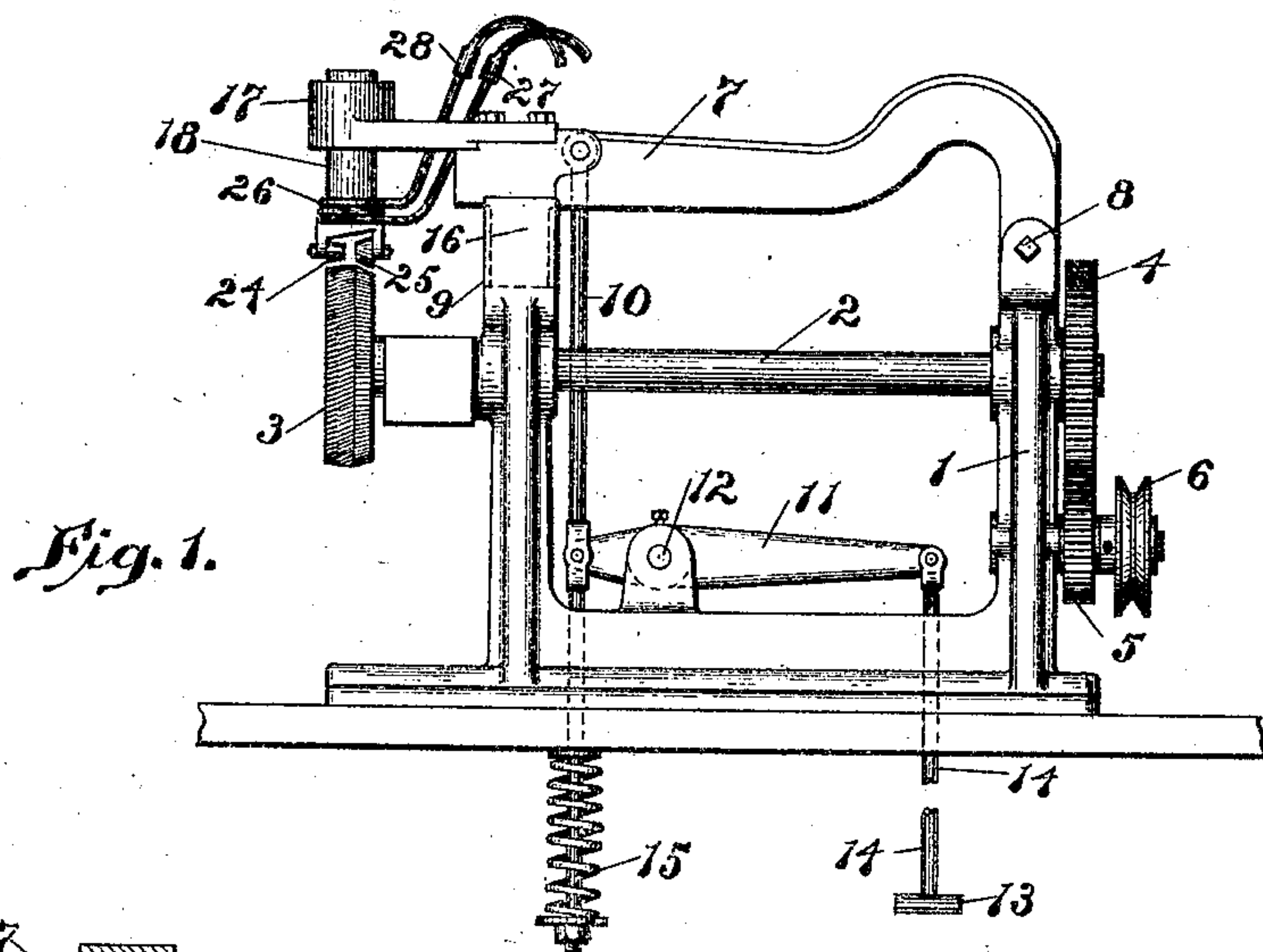
No. 843,035.

PATENTED FEB. 5, 1907.

G. E. ROLLINS.

# APPARATUS FOR FINISHING INNERSOLES.

APPLICATION FILED APR. 24, 1906.



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# UNITED STATES PATENT OFFICE.

GEORGE E. ROLLINS, OF BROCKTON, MASSACHUSETTS.

## APPARATUS FOR FINISHING INNERSOLES.

No. 843,035.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed April 24, 1906. Serial No. 313,438.

*To all whom it may concern:*

Be it known that I, GEORGE E. ROLLINS, a citizen of the United States, residing at Brockton, in the county of Plymouth and State of Massachusetts, have invented an Improvement in Apparatus for Finishing Innersoles, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention relates to innersoles, and more particularly to reinforced innersoles, in which a stitch-receiving rib projects from one side of the innersole and is strengthened by a layer of fabric cemented thereto, although certain features of my machine are of advantage in finishing and forming various other kinds of innersoles.

Referring now more particularly to the kind of reinforced innersoles above mentioned, my invention will be better understood by first explaining that, as commonly practiced, the reinforcing fabric (consisting of so-called "rubber-coated" canvas, or of canvas having one side coated with cement) is first treated, so as to be brought into the proper condition for application to the body of the innersole and is then applied thereto as a flat strip of canvas, which is thereupon pinched or formed around the stitch-receiving rib by means of a machine provided with opposite hammers or reciprocating feed-points, which press the canvas down simultaneously at the opposite sides of the rib, progressing along the length of the rib until they have traveled around the innersole. The hammers or feed points reciprocate rapidly, bending the fabric down on the opposite sides of the rib and forcibly pressing the fabric intermittingly against the innersole at the base of the stitch-receiving rib. In the case of cement-covered fabric the treating to which I have referred consists in first coating the fabric with naphtha-rubber cement and then waiting for the naphtha to evaporate, whereupon the partially dry and stiffened fabric is applied to the innersole by the progressive pounding and punching action of the machine above mentioned, and in the case of coated fabric the treating consists of moistening the coating either by steam or hot water and applying it directly to the innersole by the same pounding and punching process explained. In either case the fabric is left free to loosen between successive

punching operations and is liable to become distorted and displaced as the punching and pounding operation progresses, and also as the fabric is put in place by a series of sudden downward pulls the rib of contained leather is apt to be rolled over or improperly bent at its top edge, and also the fabric is furthermore prevented from adhering to the upper portion and sides of the contained leather rib by the included air which holds it more or less out of contact with the leather, the general result being that the fabric is either left quite loose about the stitch-receiving rib or becomes readily loose afterward, especially during the sewing process, and the feather-edge is apt to be curled up more or less by the cementing and pounding action explained. The latter disadvantage is quite serious in its effect on the sewing, as it interferes with locating the stitches along a line as near to the base of the stitch-receiving rib as they should be and also interferes with the lasting operation, as it leaves a curled-up edge to be caught and moved in the wrong direction by the edge of the vamp as the latter is pulled over the last, which will cause imperfect work, all as will be more fully explained later.

Accordingly my present invention resides in providing means for securing a number of advantages, viz: First, I operate upon the fabric by a pressing movement as distinguished from an intermittent punching or pounding movement, and I press progressively along the stitch-receiving rib, at the opposite sides thereof, whereby each pressed and secured portion of the innersole is held immovably in position as the next succeeding portion of the fabric is being pressed into final position. In the second place, I simultaneously secure the fabric to the opposite sides of the contained leather rib and at the same time straighten and press said rib into true upright position, thereby preventing said rib from being rolled or bent over at its upper thin edge and likewise causing perfect adhesion of the fabric to every portion of the entire surface of the rib. In the third place, I mold the outer edge or feather-edge of the inner sole downwardly and also, preferably, the inner portion next to the inner side of the stitch-receiving rib downwardly, thereby so forming the innersole that it will facilitate the subsequent sewing operation, as well as the lasting operation. I believe that this is the first attempt to provide means for form-



ing or shaping a reinforced innersole to conform to the last as it should prior to the lasting operation, and in the fourth place I promote the adhesion and proper union of the  
 5 parts by performing the above operations in the presence of heat, which serves not only to render the cementing process more active and sure, but gives permanency of shape to the pressed and molded parts.

10 The constructional details of my invention and further advantages and the operation thereof will be pointed out more at length in the course of the following description, reference being had to the accompanying drawings, in which I have shown one embodiment of the invention.

In the drawings, Figure 1 shows in side elevation a preferred form of machine. Fig. 2 is an enlarged vertical longitudinal sectional  
 20 view of certain details of the head. Fig. 3 is a front elevation of a portion of the head. Fig. 4 is an enlarged sectional view of a portion of an innersole, showing the molding and forming portions of my machine in operation. Fig. 5 is an illustrative cross-sectional view of an innersole. Fig. 6 is a similar sectional view showing how the stitch-receiving rib has been liable to be improperly  
 25 formed heretofore. Fig. 7 is a fragmentary cross-sectional view of an innersole-body before the reinforcing fabric has been applied.

I have herein illustrated a simple form of apparatus which I have found very practical, and therefore prefer to use.

35 Mounted in a suitable standard 1 of any convenient shape or construction I provide a shaft 2, having at its free end a knurled feed-roll 3 and at its opposite end a gear 4, driven by a pinion 5 and belt-wheel 6. Above the  
 40 shaft 2 is an arm 7, pivoted at 8 in the frame of the machine and held against lateral movement by a guide 9, but free to be raised on its pivot 8 by a rod 10 and lever 11, pivoted at 12 and operated by a foot-treadle 13 and link  
 45 14. The arm 7 is normally held downwardly by a spring 15 and limited in its downward movement by a stop 16. At its outer end the arm 7 has a socket-piece 17, in which is adjustably mounted a post 18, provided with  
 50 two plungers or vertical journals 19 20, shown in the machine of the patent as held yieldingly downward by springs 21 22 and yieldingly toward each other by a spring 23. At their lower ends the journals 19 20 are pro-  
 55 vided, respectively, with rolls 24 25, which are maintained hot by any suitable heating means, as by a coil or steam pipe 26, adapted to be connected at its free ends 27 28 to any source of steam-supply.

60 The rolls 3, 24, and 25 are of special shape for carrying out my invention, and I can best describe the construction and functions of these parts by referring to Fig. 4. Let it be supposed that my invention is to be applied  
 65 to what is commonly known as the "gem"

innersole, in which a leather body 29 is provided with a vertical rib 30 and a usual feather-edge 31; to which is to be secured a strip of properly coated and prepared fabric 32. As heretofore applied the fabric would  
 70 be simply laid on top of the innersole-body 29, resting on the top edges of the stitch-receiving rib 30, and then the punches or feed-points 33 34 would be driven simultaneously downward and inward, pounding the fabric  
 75 forward into the corners at the base of the rib 30, tending to bend over the top edge of the leather, as indicated at 35, Fig. 6. Having descended and delivered one blow against the corners aforesaid, the feed points or  
 80 punches were caused to rise, the innersole meanwhile having been fed forward one step, and then said feed-points 33 34 were caused to descend again. This operation was repeated rapidly throughout the entire length  
 85 of the rib or circumferential extent of the innersole. Not only was the top of the rib liable to be bent over and pulled down upon itself, as shown in Fig. 6, but between the successive hammering or punching opera-  
 90 tions the fabric was liable to become loose, inasmuch as it was pressed down for an instant only at one small point and then released; also, this sudden punching movement resulted in gradually bending upwardly the  
 95 feather-edge, as shown in Fig. 6 in dotted lines, and when the pounding operation came around to the opposite side of the innersole it tended strongly to pull away the fabric still more from the previously-pounded  
 100 portion of the stitch-receiving rib, as clearly shown in Fig. 5. My machine obviates all these objections simply by performing the operation with a pressing as distinguished from a pounding movement and continuing  
 105 said pressure unremittingly throughout the entire extent of the securing operation. The feed-roll 3 is provided with a somewhat sharp and short bevel 36 at its outer edge, and preferably a slight and longer bevel 37 at its op-  
 110 posite portion. The roll 25 is provided with a bevel 38, corresponding substantially to the bevel 36 and cooperating therewith to bend downwardly to form or shape the feather-edge 31 simultaneously with the securing of  
 115 the fabric on the innersole, the result being that all tendency of the feather-edge 31 to be pulled or curled upwardly by the fabric-securing operation is eliminated and the innersole is permanently shaped to conform to the  
 120 last for the lasting operation. The roll 24 has at its end adjacent the rib 30 a slight bevel 39, and also, preferably, a still slighter bevel 40 at its opposite end, and the adjacent  
 125 or free ends 41 42 of the rolls 24 25 stand approximately parallel to each other and to the stitch-receiving rib 30. The result is that as the feed-roll 3 forces the innersole forward the reinforcing fabric is simultaneously  
 130 pressed against the innersole-body at the



very corners formed by the rib 30 and the body of the innersole and along the lateral surface of the body of the innersole extending from the base of the rib, and also is pressed  
 5 against the opposite sides of the rib 30, and the latter is compelled to assume a truly erect position as the fabric is pressed and ironed flat and firmly against the same. For the best results the rolls 24 25, as I have  
 10 stated, are maintained hot, so that as the slow unremitting pressing movement progresses the parts are molded and permanently set in their desired ultimate positions or formation. The cooperating beveled sur-  
 15 faces 36 38 press downwardly the feather-edge 31 of the innersole and at the same time permanently cement or secure the fabric in said position, and the bevel 39 of the roll 24 molds or depresses the innersole at  
 20 the opposite or inner side of the stitch-receiving rib 30. The result is that when the needle of the sewing-machine approaches the rib 30, usually from the outside, there is no interference therewith on the part of the lateral  
 25 edge 31, but said edge is down out of the way, thereby permitting the point of the needle to enter the stitch-receiving edge at the very edge or bottom corner thereof; also, inas-  
 30 much as the roll 24 has pressed, held, and ironed the fabric into the very corner at the inner side of the rib until said fabric has been thoroughly united to the leather above in a vertical plane and in a horizontal plane there is no liability of the fabric being pushed  
 35 away from the rib by the needle as the latter pierces the stitch-receiving rib. So, likewise, when the shoe is lasted the innersole being already permanently molded by having its outer edges bent downwardly or dish-shaped  
 40 is entirely out of the way of the vamp when the latter is pulled tightly up over the edge of the last, and therefore cannot catch and be rolled or roughened upwardly and inwardly, as is apt to be the case when the innersole is  
 45 left more or less curled up in its previous method of manufacture by pounding, as explained. I regard this molding feature of my invention as of considerable importance in general use, whether employed in connection  
 50 with securing reinforcing fabric or not, and it will also be understood that for various purposes I am not limited to three rolls or pressing devices and that, as already stated, many changes and substitutions may be resorted to  
 55 without departing from the spirit and scope of my invention in its broader aspects.

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

1. A machine for finishing innersoles, 60 comprising means for supporting the innersole, and means operating in opposition thereto, having pressing-surfaces parallel to each other and spaced apart to receive the stitch-receiving rib of the innersole be- 65 tween them to apply a continuous and progressive pressure to the reinforcing fabric on the opposite sides of said rib and simultaneously to the body of the innersole at the base of said rib. 70

2. A machine for finishing innersoles, comprising a support for an innersole, a pair of yielding pressure devices having parallel sides extending perpendicularly to said support for yieldingly pressing the reinforcing fabric against the stitch-receiving rib of the innersole along the opposite sides of said rib and transmitting continuous pressure progressively thereto, heating means for maintaining said pair of pressure devices 80 hot, and yielding means for maintaining said support and said heated pressure devices continuously pressed toward each other in pressing engagement with the opposite parallel sides of said rib from the base of the 85 rib to the top edge thereof, and also in pressing engagement with the fabric and body of the innersole laterally from the base of said rib.

3. A machine for finishing innersoles, 90 comprising a positively-driven work-support, and a pair of heated pressure-rolls opposite said work-support, heating means for said rolls, yielding means for maintaining the said rolls under normal pressure toward each 95 other, and yielding means for maintaining said rolls under continuous pressure toward said rotary work-support, said rolls and work-support being constructed and arranged to feed the innersole and maintain 100 unremitting progressive pressure on the reinforcing fabric against the opposite sides of the stitch-receiving rib and simultaneously against the body of the innersole at the opposite sides of the base of said rib. 105

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE E. ROLLINS.

Witnesses:

GEO. H. MAXWELL,  
WM. J. PIKE.