

W. F. FRASER.
MACHINE FOR FORMING FASTENING MEMBERS FOR WELT SHOES.
APPLICATION FILED DEC. 10, 1909.

989,903.

Patented Apr. 18, 1911.

2 SHEETS—SHEET 1.

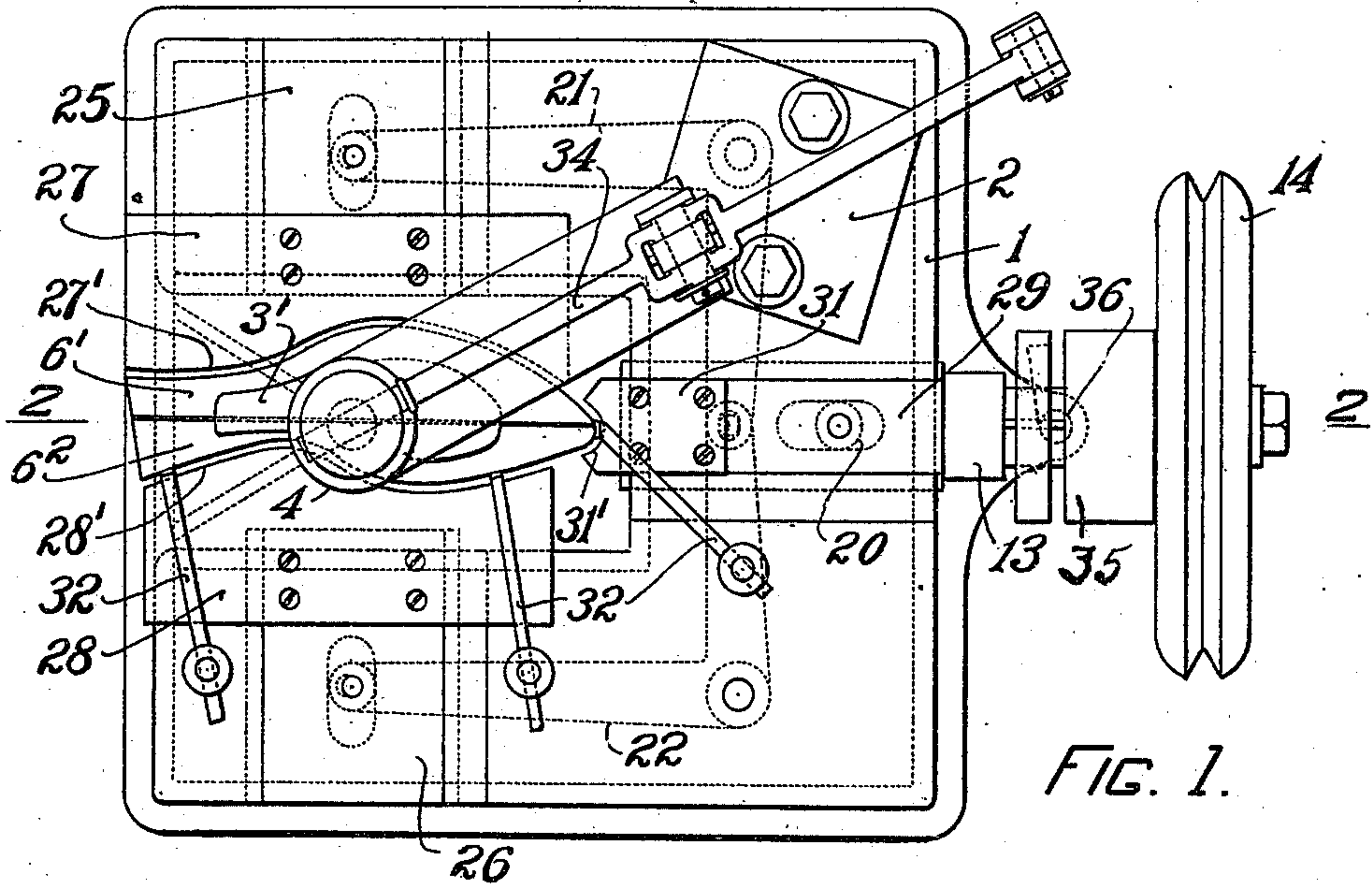


FIG. 1.

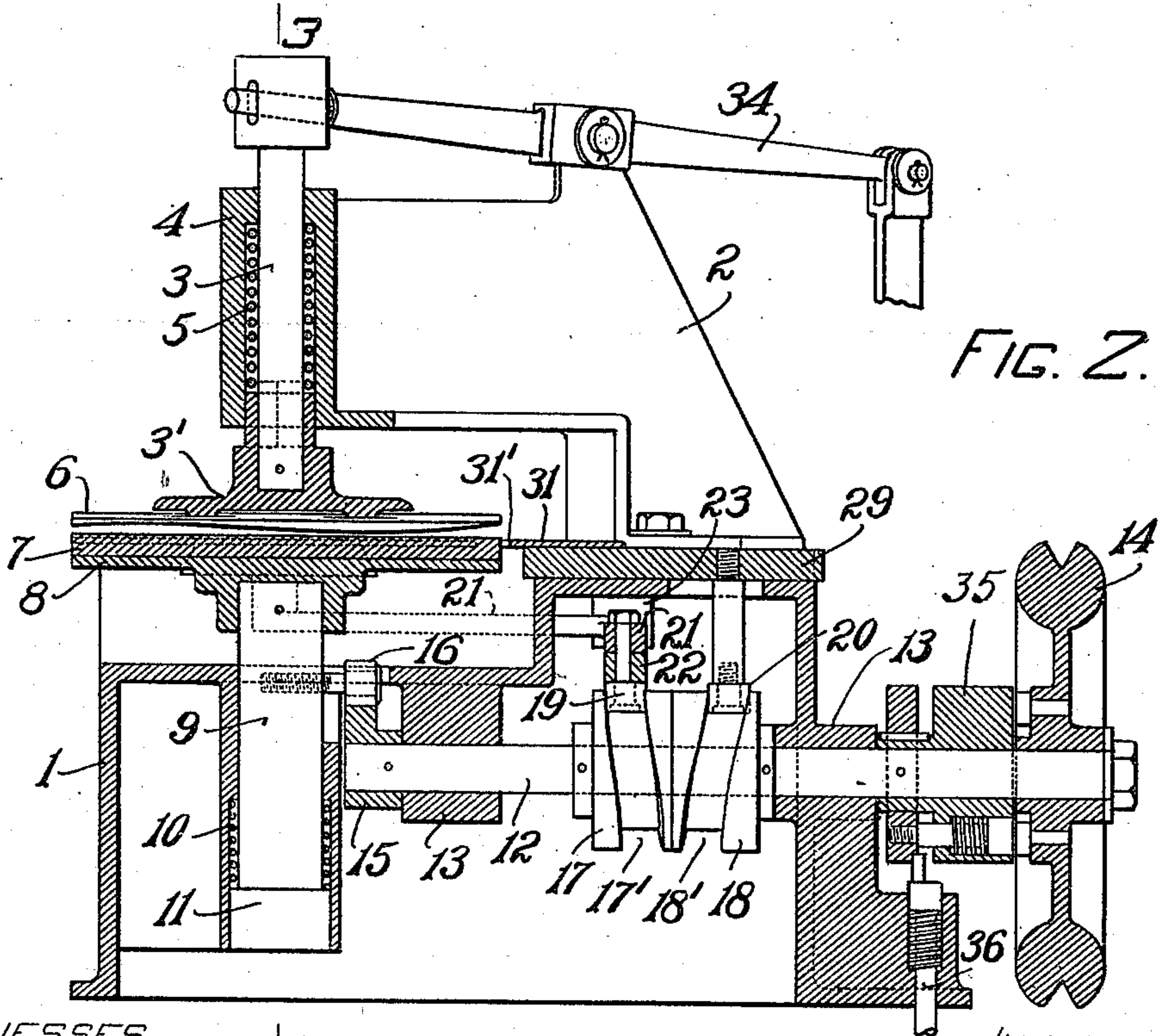


FIG. 2.

WITNESSES

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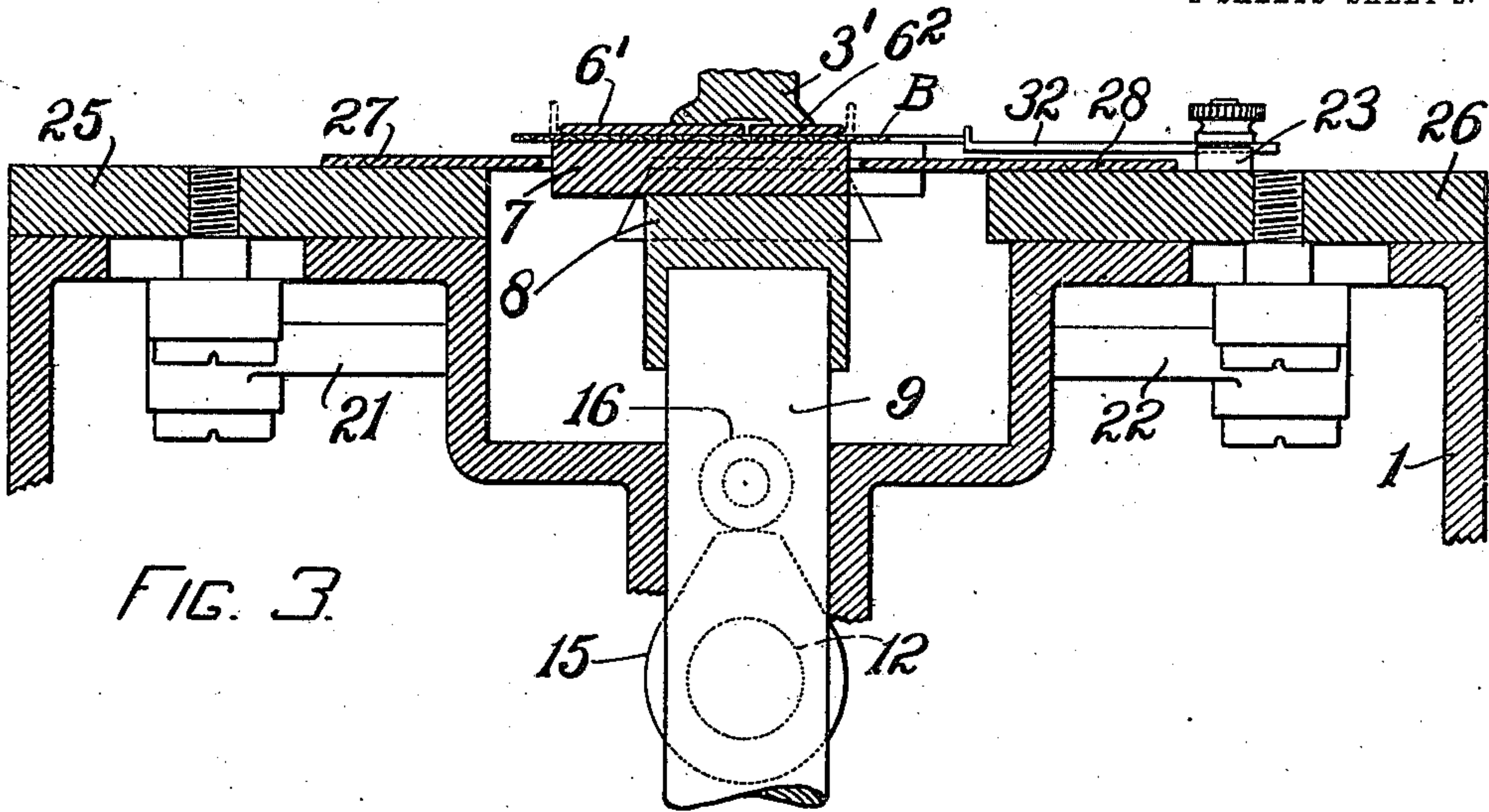


FIG. 3.

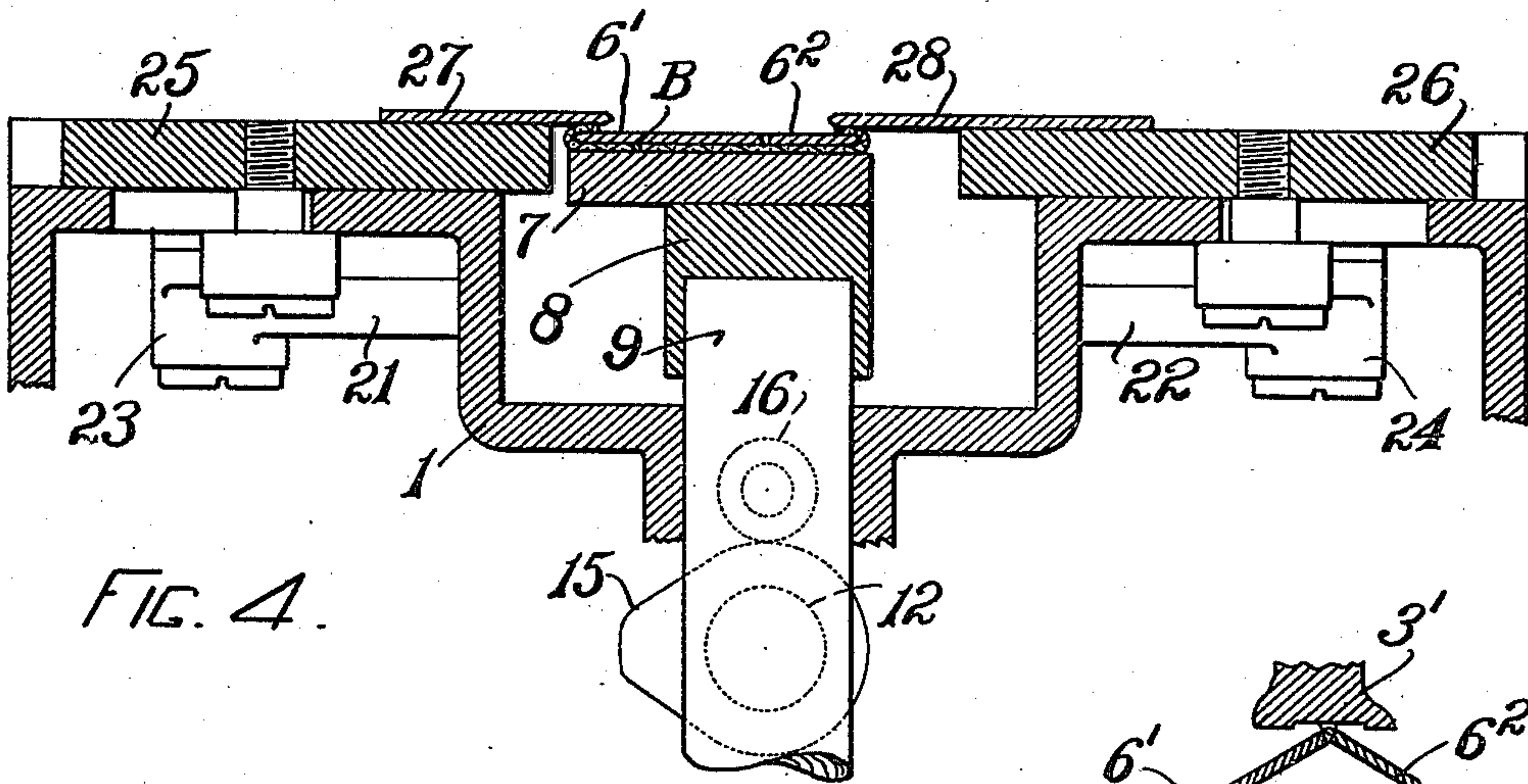


FIG. 4.

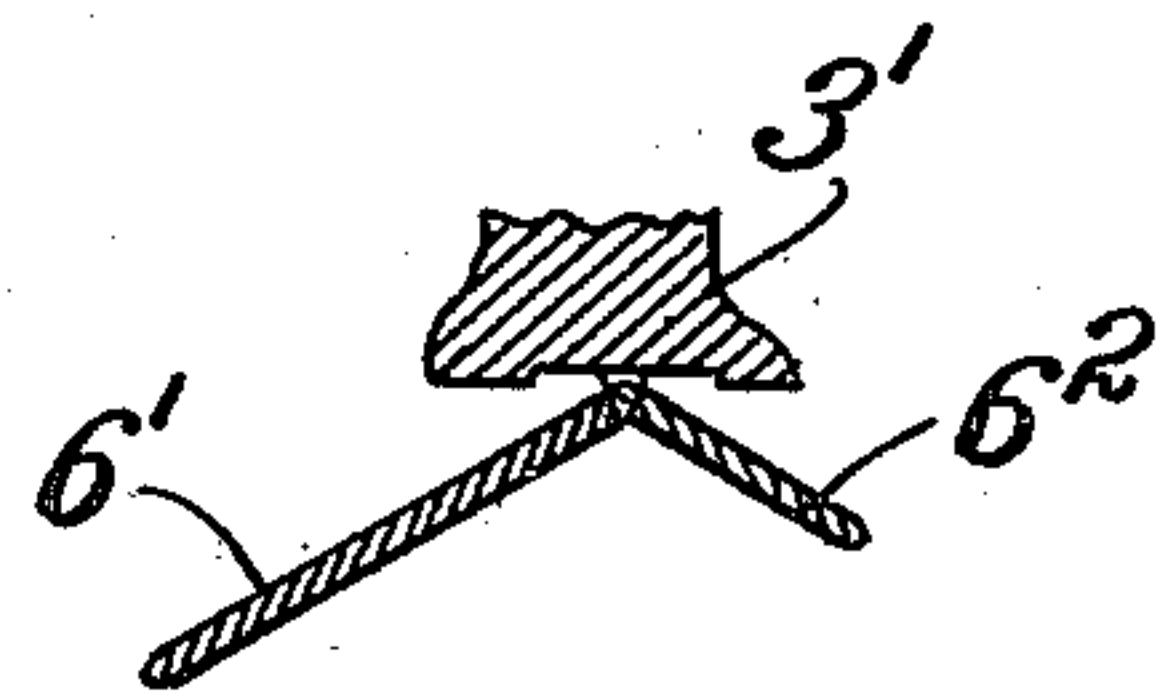
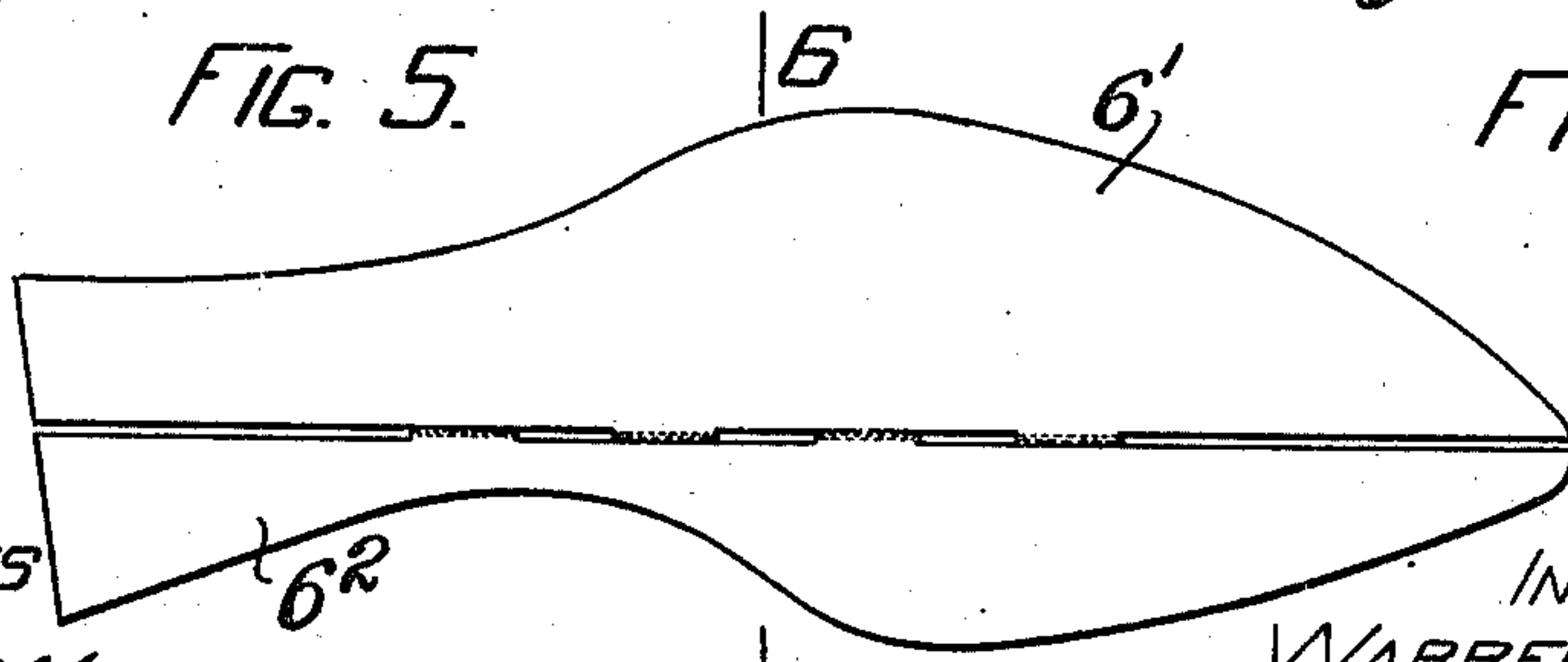


FIG. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

WARREN F. FRASER, OF DORCHESTER, MASSACHUSETTS, ASSIGNOR TO TURNER FLEXIBLE INERSOLE CO., OF PORTLAND, MAINE.

MACHINE FOR FORMING FASTENING MEMBERS FOR WELT-SHOES.

989,903.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed December 10, 1909. Serial No. 532,330.

To all whom it may concern:

Be it known that I, WARREN F. FRASER, a citizen of the United States, residing at Dorchester, county of Suffolk, Commonwealth of Massachusetts, have invented certain new and useful Improvements in Machines for Forming Fastening Members for Welt-Shoes, of which the following is a specification.

This invention relates to machines for forming the fastening members for welt shoes set forth in the previous application of W. A. Turner, Serial No. 504,227. In forming these fastening members a blank, shaped in contour like the shank, ball and toe portions of a sole, is folded up along its margins to form a fold along the line of which the stitching is laid which unites the upper and the welt strip to the fastening member. This fastening member is of soft or flexible material and preferably of some textile such as canvas. It is, therefore, necessary that the folding or forming action of the machine be capable of giving to the blank a fold or crimp which will render it permanently formed into the shape desired and it is desirable that the operation be performed in a single stroke which will act upon the edges of the shank, ball and toe all the way around. To these ends, therefore, I provide mechanism for receiving, clamping, turning up, folding and crimping the blank to produce the article in the desired form.

The structure and operation of my device will be more fully described in the specification which follows and an illustration of an embodiment of my invention is shown in the drawings which form a part hereof.

Like reference numerals are employed to indicate corresponding parts throughout both specification and drawings and in the drawings:—Figure 1 is a plan view of a machine involving my invention, Fig. 2 is a vertical sectional view along the line 2—2, Fig. 1, Fig. 3 is a sectional detail on the line 3—3, Fig. 2, showing the form clamping the centered work upon the support prior to the retreat of the work support, Fig. 4 is a similar view with the work support and form lowered and the folders advanced, Fig. 5 is a plan view of the collapsible form, and Fig. 6 is a transverse section of the same on line 6—6, Fig. 5.

1 is a suitable frame to which is bolted an upright 2 having a vertically movable plun-

ger 3 mounted in a head 4. A spring 5 within the head 4 and coiled about the plunger 3 normally tends to press down the plunger 3 and bring the form 6 yieldingly against the work support 7. This support 7 is a removable plate furnished in sets to afford a proper variety of shapes and sizes and is mounted on the plate 8 of a plunger 9 upon which the spring 10, coiled about the plunger and bearing against a head 11 on its lower end, exerts a constant tendency to retreat from its initial position in which it presents the top of the support 7 above the top of the frame 1 (see Figs. 2 and 3).

12 is a shaft journaled in bearings 13, 13 formed in the frame 1 and having a driving pulley 14 at its outer end. At the inner end of the shaft 12 is a cam 15 which contacts with a roller stud 16 set in the plunger 9 and causing its advance and governing its retreat under the influence of the spring 10.

17 and 18 are a pair of cam blocks having slots 17¹ and 18¹ in which roller studs 19 and 20 are guided. The stud 19 is rigidly connected to the end of the bell crank lever 22 and passes through the slotted end of the bell crank lever 21. The levers 21 and 22 are fulcrumed at 23 and 24 to bosses on the frame 1. At their opposite ends the levers 21 and 22 are pivoted to transverse slides 25 and 26 which work in slideways formed in the top plate of the frame 1. These slides 25 and 26 are provided with folder blades 27 and 28 having working edges 27¹ and 28¹ which are contoured to approximately correspond to the outline of the sides of the fastening member to be formed. This is on account of their double function of turners and folders as will be more fully explained in the description of their operation. The roller stud 20 is mounted on a slide 29 also working in slide ways formed in the top plate of the frame 1. The slide 29 carries a folder blade 31 similar in function to the blades 27 and 28 and having a contoured working edge 31¹.

One of the important features of the invention is that the form 6, support 7 and folder blades 27, 28 and 31 may be used for forming the fastening member of either right or left hand shoes as follows:—6 and 7 are each turned so as to bring the lower face on top, thus reversing the inside and outside contours. The blades 27 and 28 would be shifted to slides 26 and 25 respec-

tively being inverted thus, also reversing their contoured edge. The forming plate 31 is reversed by turning over in its own slide 29. An important feature of this reversing is that it permits the use of the same plates and forms for both right and left hand members and so saves in the numbers of members used and also in the wear on each member as the reversing brings substantially a different part into use.

The plunger 3 is raised by a lever 34 and 35 is a clutch for engaging the pulley 14 with the shaft 12 and normally disengaged by the stop 36 which is withdrawn by the operative to start the machine.

The form 6 is made in halves 6¹ and 6² hinged together along a line from toe to the end of the shank. This hinge is composed of loops formed on the edge of each half and also a pair of hoops formed on the lower face of the plunger head 3¹. These hoops inclose a common pin which sustains the two portions of the form 6 on the head 3¹ with a hinged relation thereto so that the halves droop slightly thus shortening their normal breadth and permitting a facile removal of the blank after it is folded.

The operation of my device is as follows: The operative rocks the lever 34 raising the plunger 3 and the form 6 and places a blank B on the support 7 against the turned up ends of the stops 32. The lever 34 is then released and the form 6 descends. As its edges in their drooping position contact with the blank upon the support 7 they are spread until they assume a horizontal position and lie flat upon the blank clamping it between folder and support. This spreading of the wings or halves 6¹ and 6² exerts a smoothing effect upon the blank, pressing it outwardly and laying it flat just prior to clamping it so that it is certain to be flat and unwrinkled at the moment it is clamped in final position. The stop 36 is then withdrawn and the shaft 12 makes a rotation turning the cams 15, 17 and 18. This first causes the relief, through the cam 15, of the support 7 which retreats from the position shown in Fig. 3 to the position indicated in Fig. 4. As the support 7 passes the contoured edges 27¹, 28¹ and 31¹ the margin of the blank is turned up and stands erect, as shown in dotted lines in Fig. 3. A further rotation of the cams 17 and 18 advance the folders 27, 28 and 29 to turn and crimp this upturned portion over the edge of the form 6. As the shaft 12 finishes its rotation the cams 17 and 18 withdraw the folders and the cam 15 returns the work support to its initial position. The lever 34 is again rocked to raise the form 6 and as it rises and collapses the formed fastening member is dropped or rendered easily removable.

Various modifications of my device may

obviously be made in the folding form which may be otherwise collapsible or even non-collapsible or integral or in the modification of the turning or folding members or otherwise in the structure of the device, all without departing from the spirit of my invention if within the limits of the appended claims.

What I, therefore, claim and desire to secure by Letters Patent is:—

1. In a machine for forming a fastening member, a vertically yieldable blank support, means to prevent the yielding of said support during the placing of a folding form of less size than the blank member to be folded, vertically movable means for clamping said blank between said form and said support in the line of feed of said blank, transversely acting folding edges below the line of said feed and adjacent to the edges of said support, means for pressing said support and said form while clamped upon said blank past the edge of said folders and means for advancing said folding edges to turn the margin of the blank over the edge of the folding form.

2. In a machine for forming a fastening member, adjustable stops in the line of feed of the blanks, a vertically yielding blank support, means for locking the support during the placing of the blank, a folding form of less size than the blank member to be folded, means for advancing said form against said blank support, a plurality of transversely acting folders below the line of said feed and adjacent to the edges of said support, means for unlocking said support to permit said form advancing means to depress said support to bring said blank past the edge of said folders and means for advancing said folders to turn the margin of the blank over the edge of the folding form.

3. In a machine for forming a fastening member, a vertically yielding blank support, a locking cam for said support, a vertically movable plunger, a folding form on said plunger, a plurality of transversely acting folders below the normal position of said support and adjacent to the edges thereof, a cam for moving said folders, means to rotate the cams, said cams being so timed as to permit the support to yield to bring the blank past the edge of said folders and then advance said folders to turn the margin of the blank over the edge of the folding form.

4. In a machine for forming right and left hand fastening members for shoes, a vertically yieldable blank support, means to prevent the yielding of said support during the placing of a blank, a folding form of less size than the blank member to be folded, vertically movable means for clamping said blank between said form and said support in the line of feed of said blank, transversely

acting folding edges below the line of said feed and adjacent to the edges of said support, means for pressing said support and said form while clamped upon said blank
 5 past the edge of said folders, means for advancing said folding edges to turn the margin of the blank over the edge of the folding form and means for reversing said form and
 10 folders to reverse the contour of said fastening member.

5. In a machine for forming right and left hand fastening members for shoes, adjustable stops in the line of feed of the blanks, a vertically yielding blank support,
 15 means for locking the support during the placing of the blank, a folding form of less size than the blank member to be folded, means for advancing said form against said blank support, a plurality of transversely
 20 acting folders below the line of said feed and adjacent to the edges of said support, means for unlocking said support to permit said form advancing means to depress said support to bring said blank past the edge of
 25 said folders, means for advancing said folders to turn the margins of the blank over the

edge of the folding form and means for reversing said form and folders to reverse the contour of said fastening member.

6. In a machine for forming right and left 30 hand fastening members for shoes, a vertically yielding blank support, a locking cam for said support, a vertically movable plunger, a folding form on said plunger, a plurality of transversely acting folders below the normal position of said support and adjacent to the edges thereof, a cam for moving said
 folders, means to rotate the cams, said cams being so timed as to permit the support to yield to bring the blank past the edge of 40 said folders and then advance said folders to turn the margin of the blank over the edge of the folding form, and means for reversing said form and folders to reverse the contour of said fastening member. 45

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

WARREN F. FRASER.

Witnesses:

ELLIS SPEAR, Jr.,
 R. B. ELLMS.