

(No Model.)

3 Sheets—Sheet 1.

A. DOLGE.

MACHINE FOR MAKING PIANO HAMMERS.

No. 586,018.

Patented July 6, 1897.

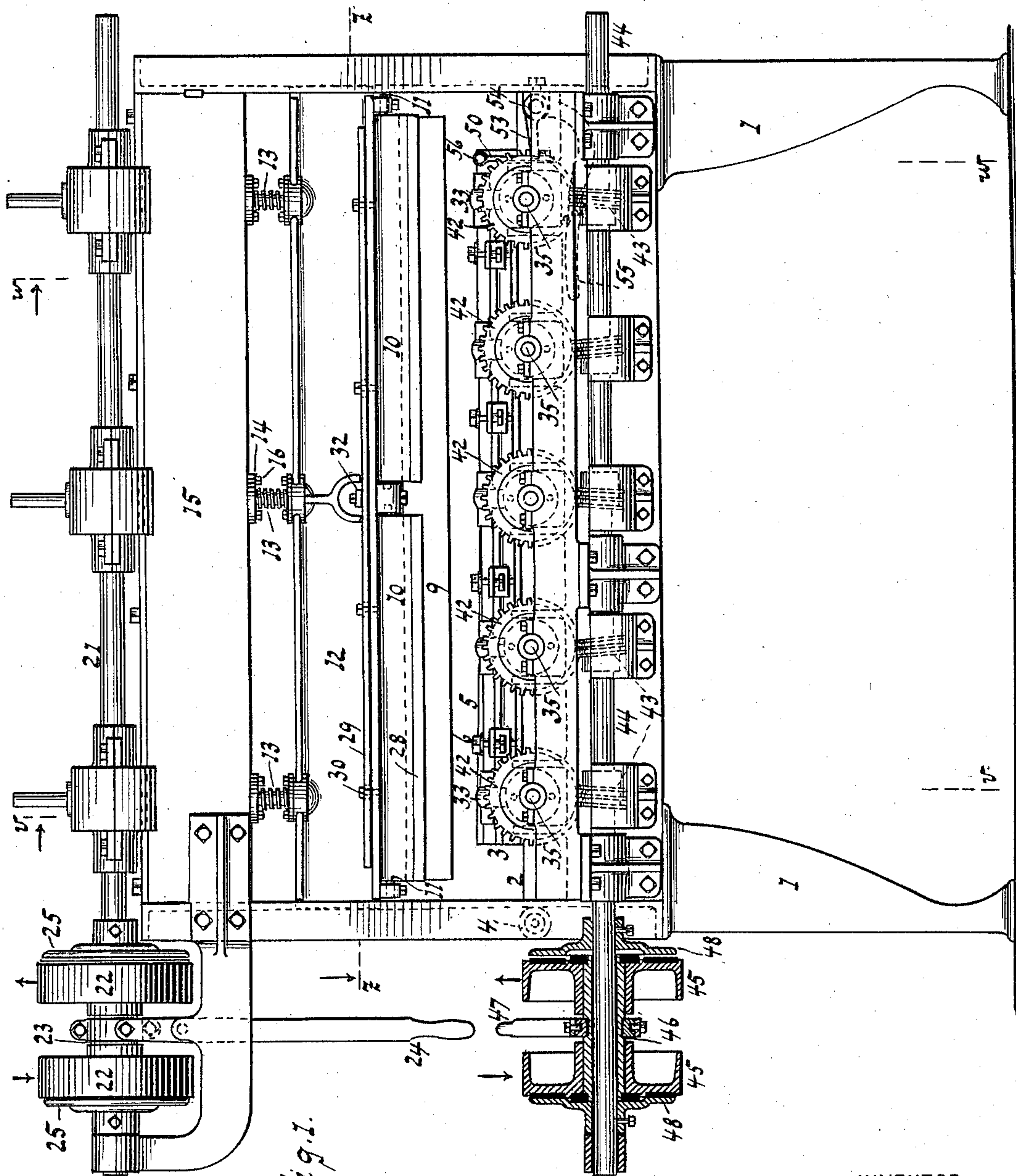


Fig. 1.

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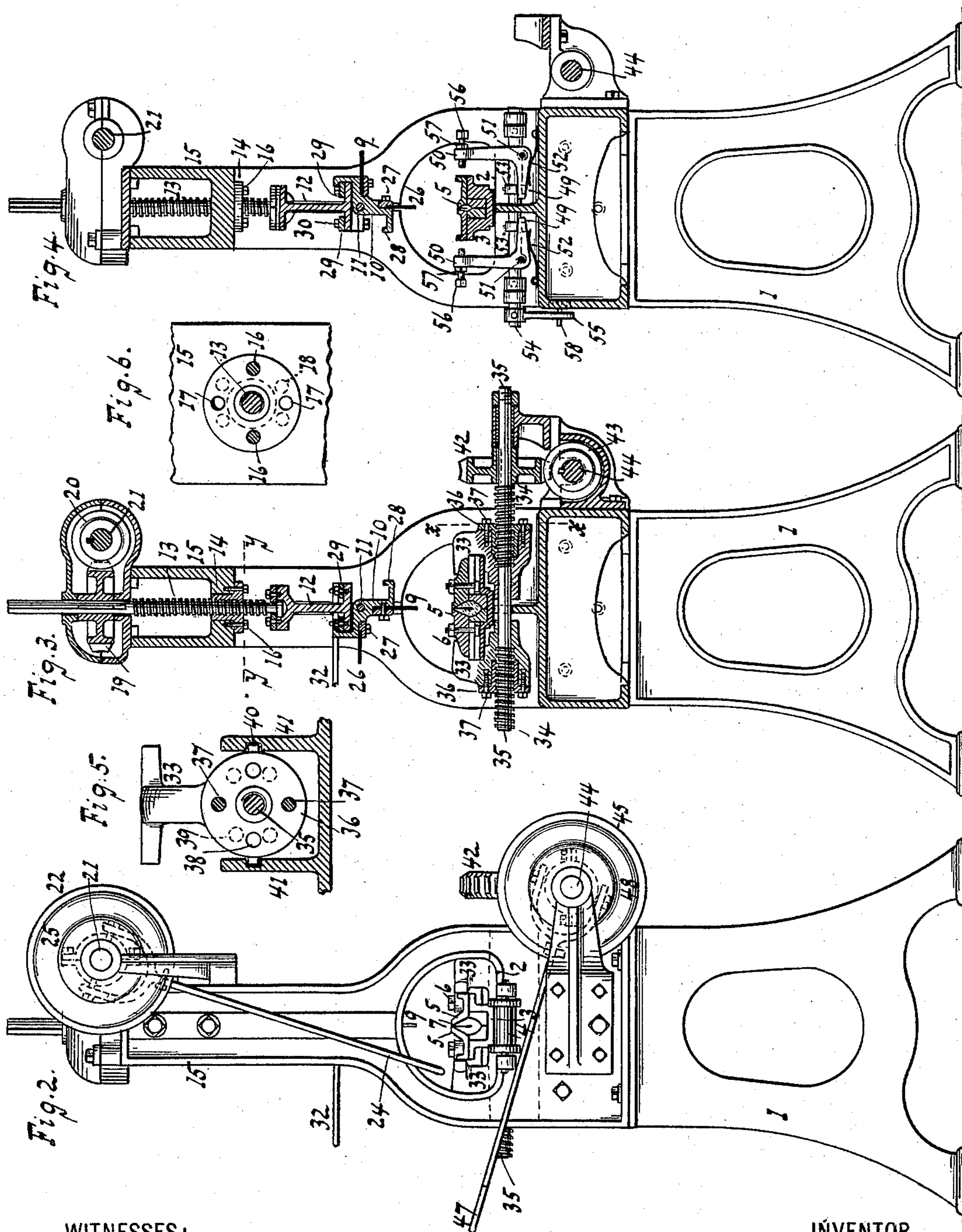
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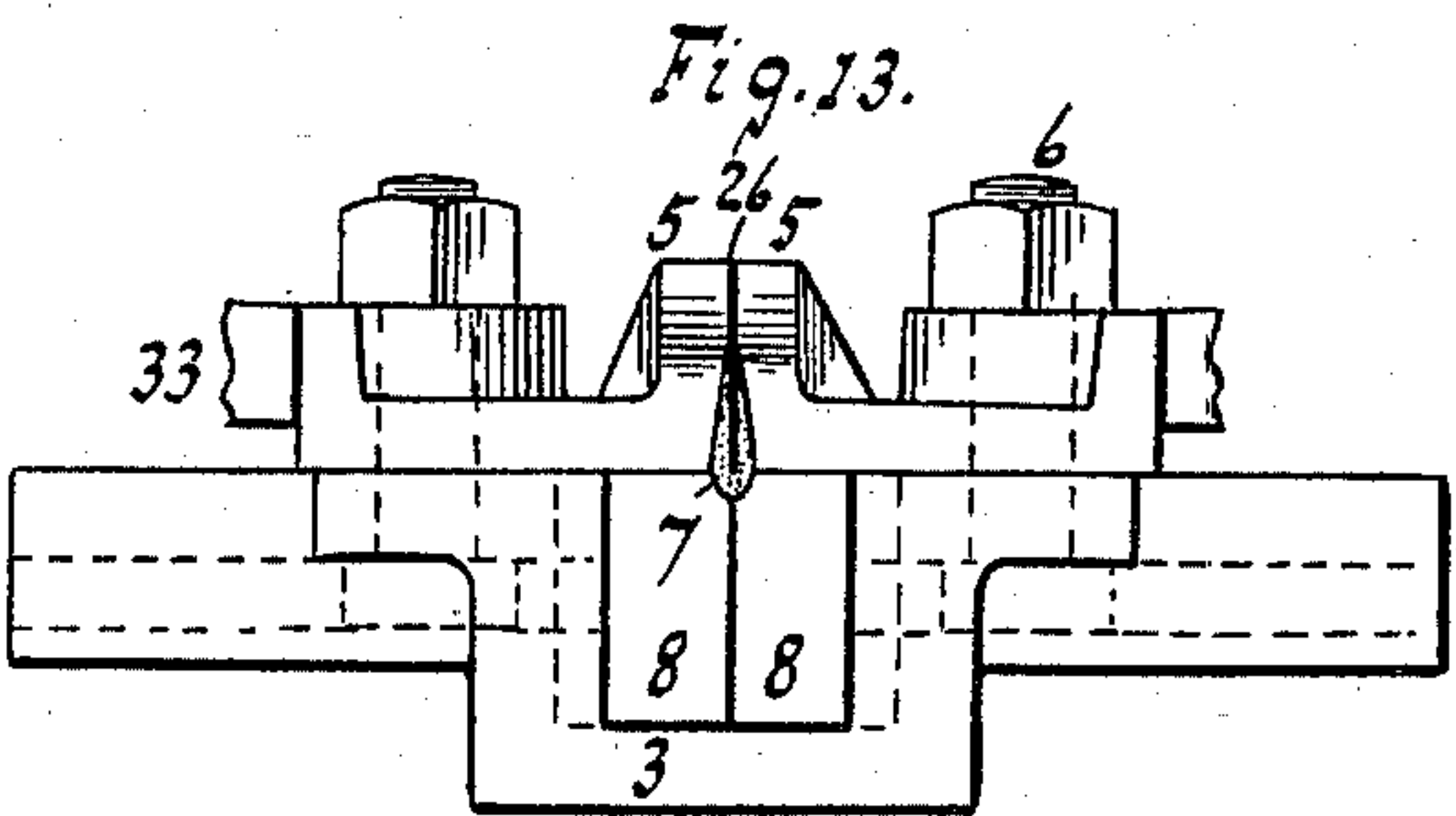
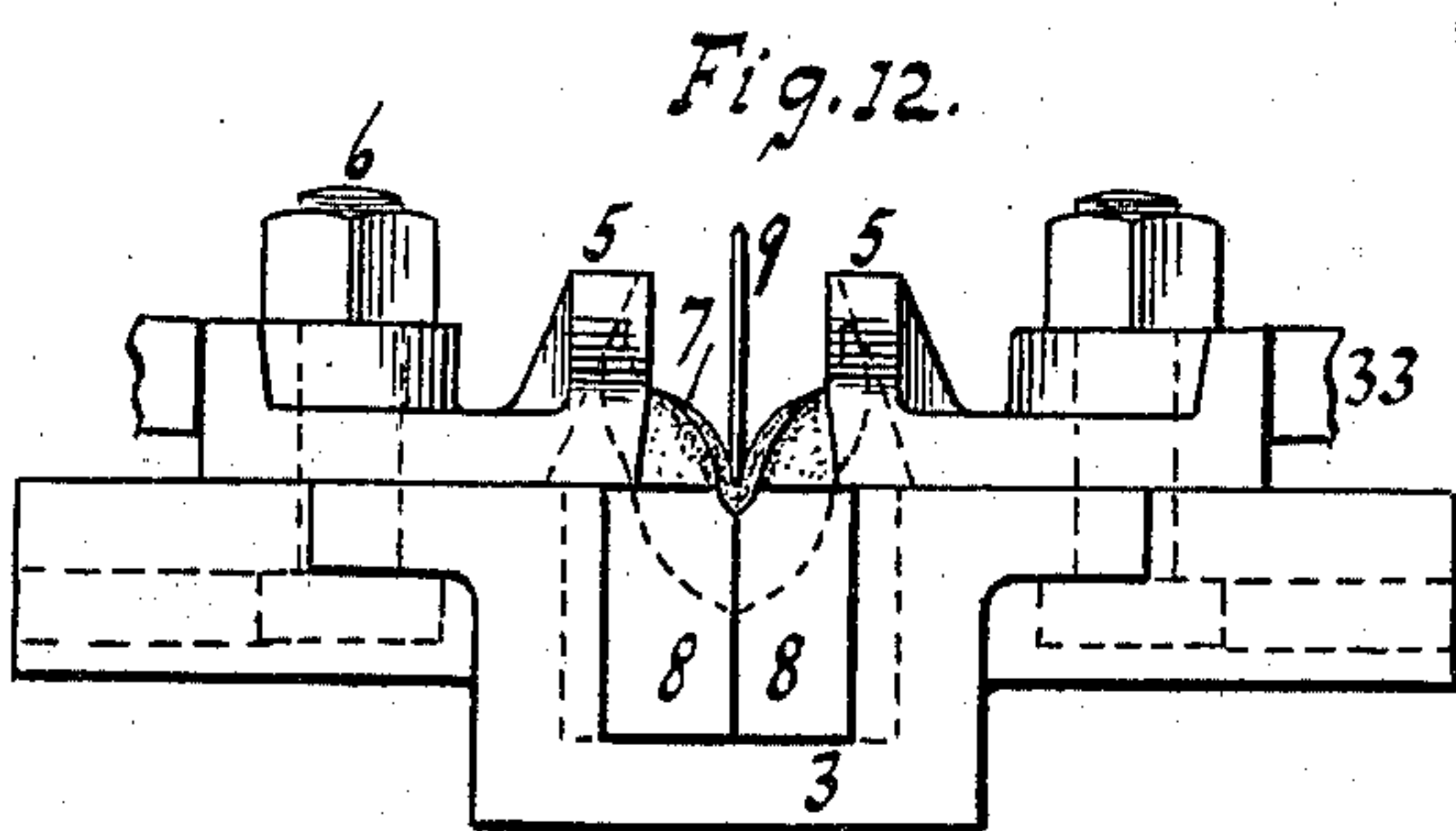
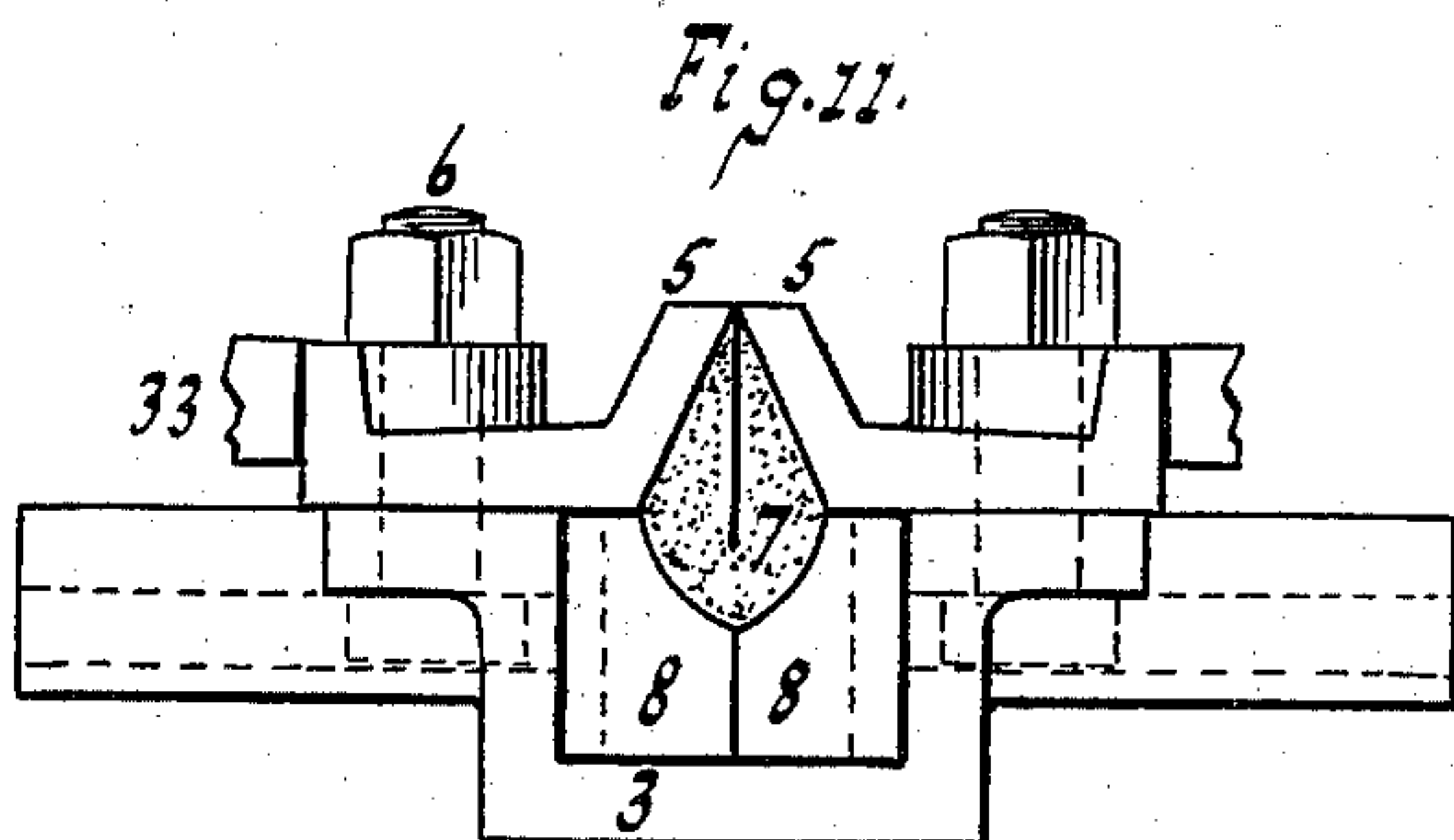
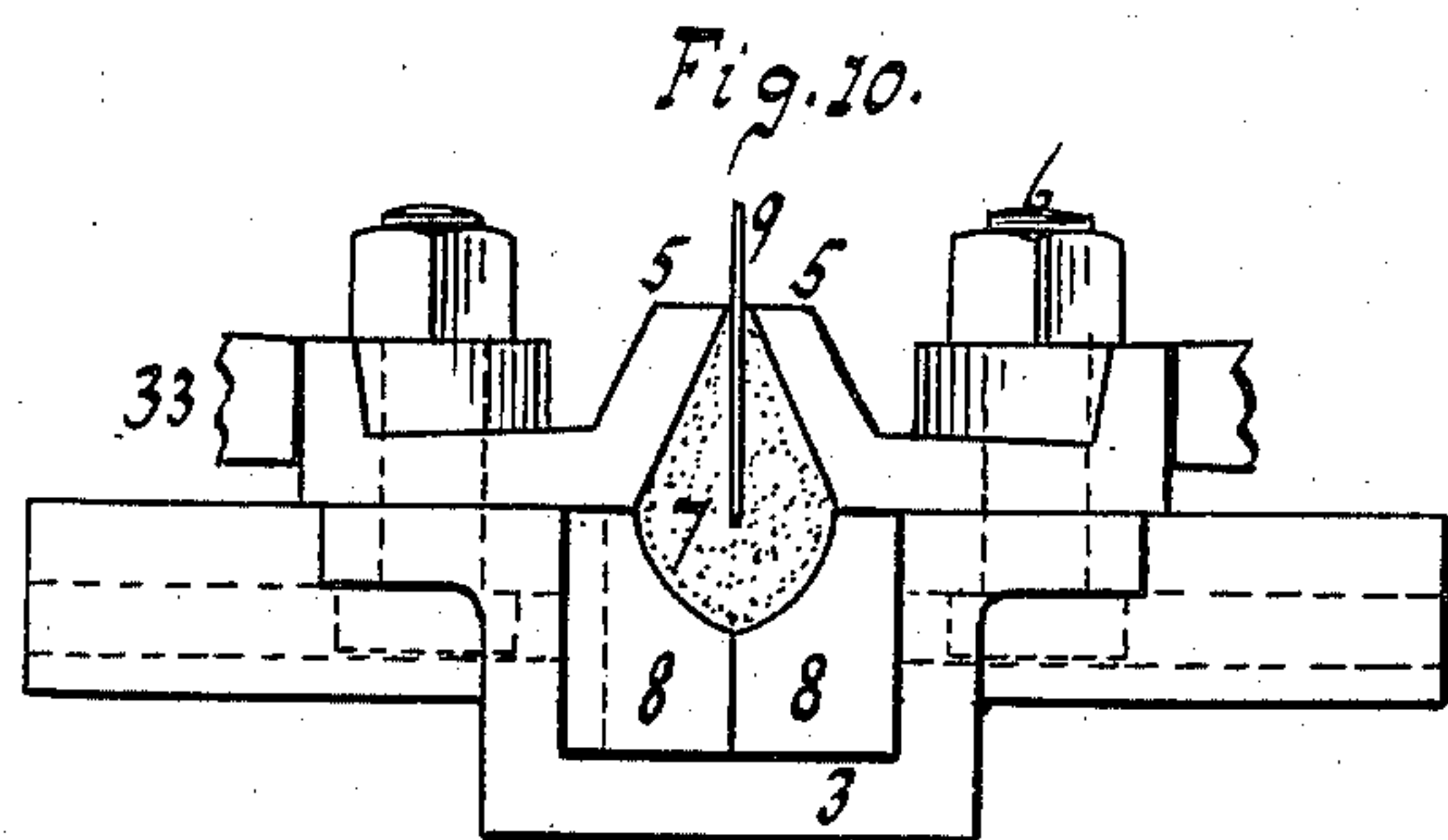
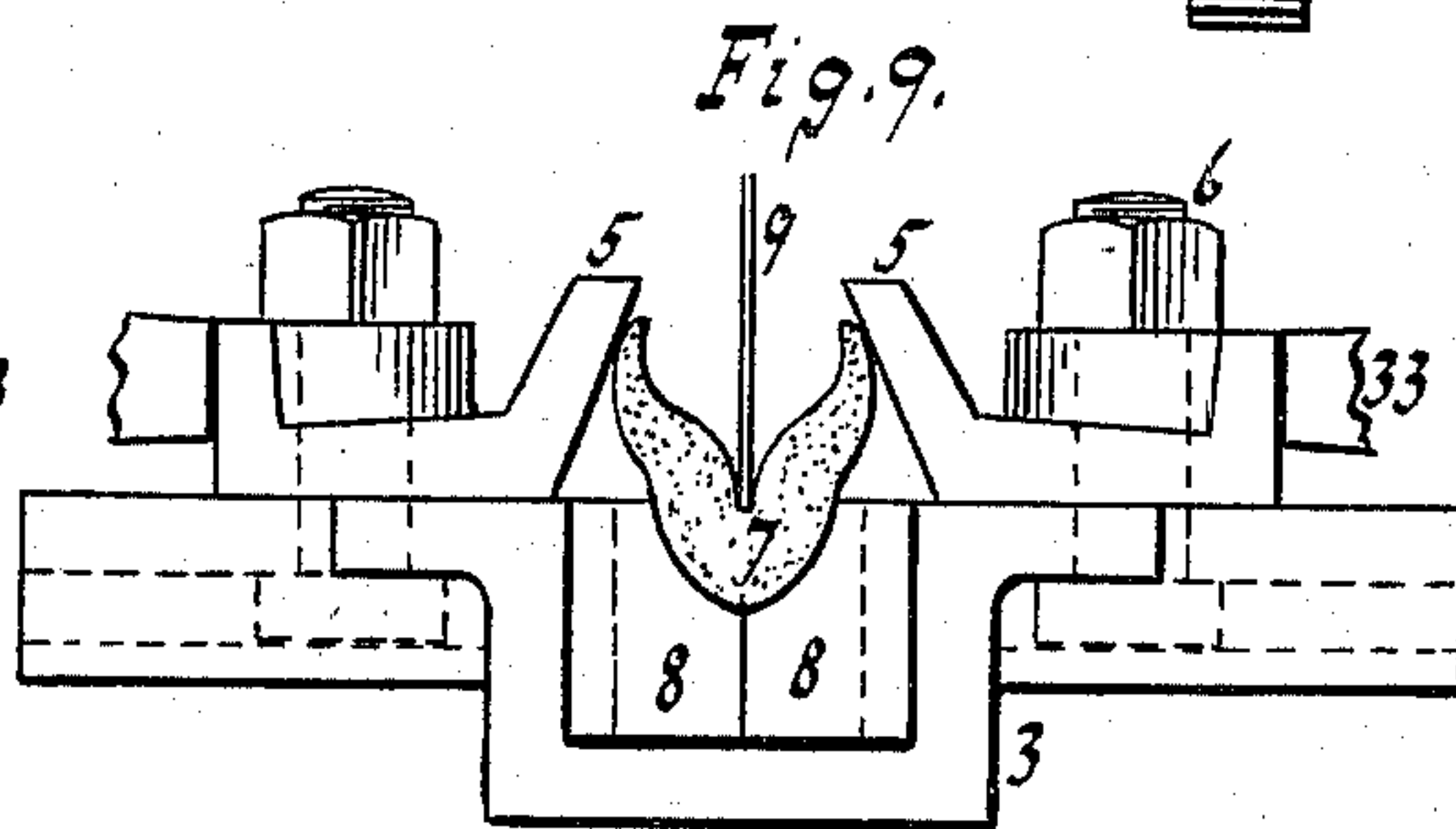
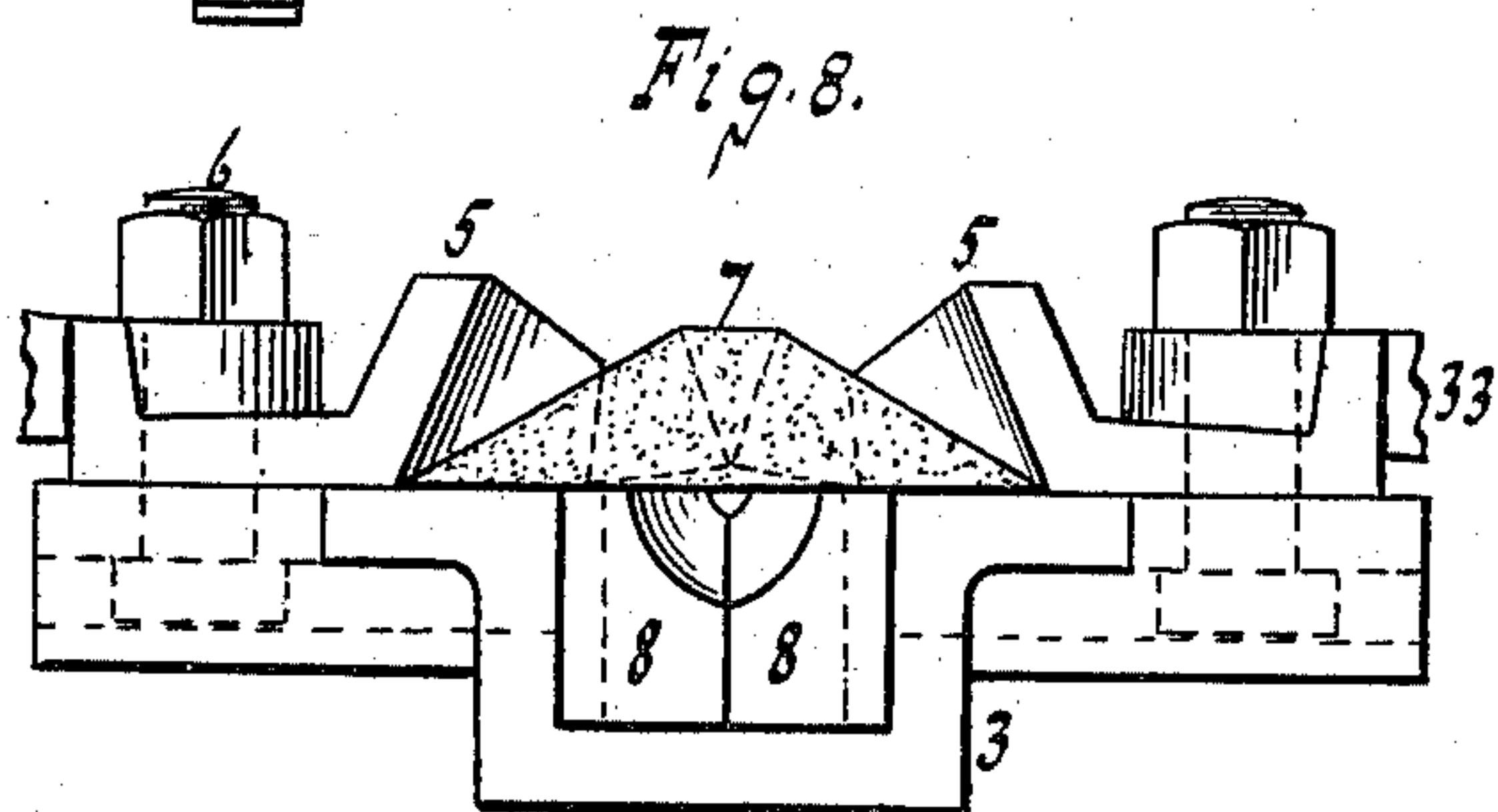
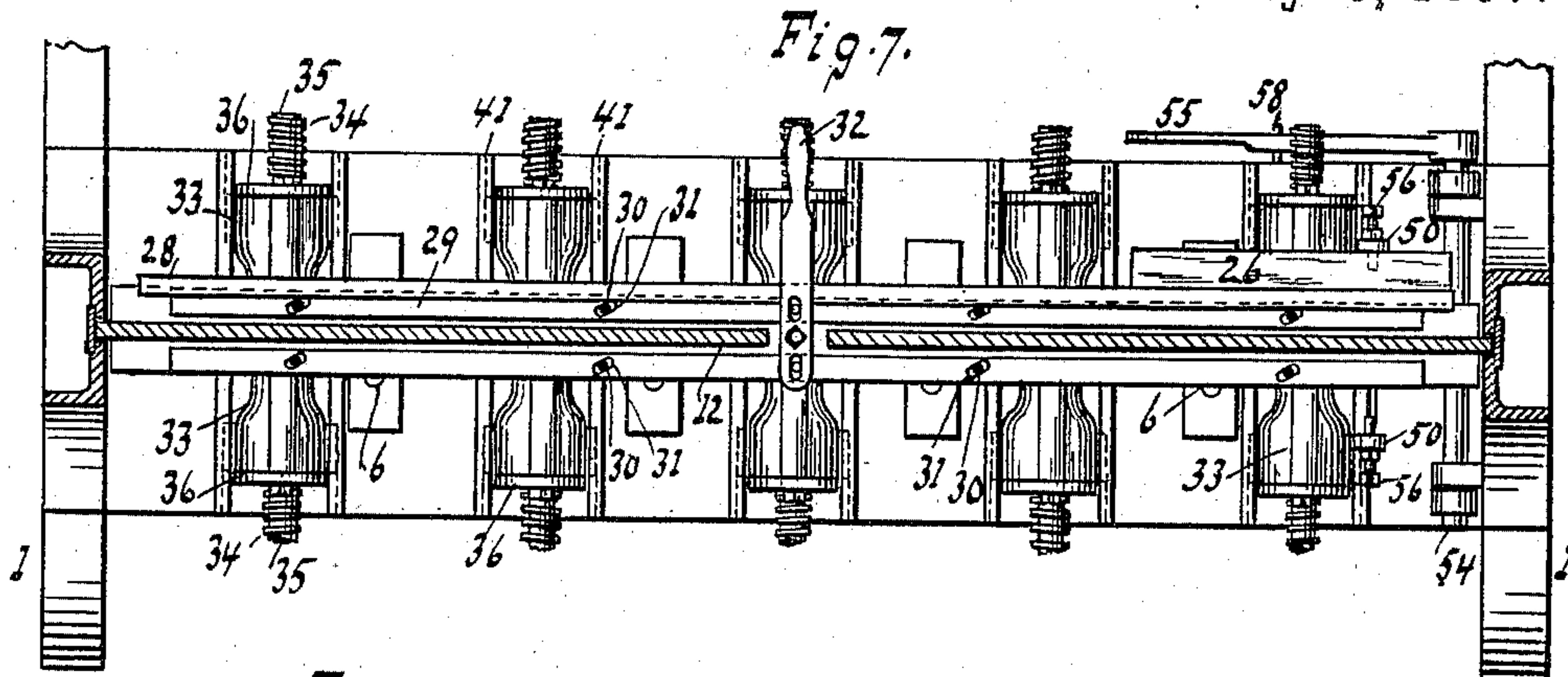
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UNITED STATES PATENT OFFICE.

ALFRED DOLGE, OF DOLGEVILLE, NEW YORK.

MACHINE FOR MAKING PIANO-HAMMERS.

SPECIFICATION forming part of Letters Patent No. 586,018, dated July 6, 1897.

Application filed January 29, 1897. Serial No. 621,195. (No model.)

To all whom it may concern:

Be it known that I, ALFRED DOLGE, a citizen of the United States, residing at Dolgeville, in the county of Herkimer and State of New York, have invented new and useful Improvements in Machines for Making Piano-Hammers, of which the following is a specification.

By means of this machine or apparatus felt for piano-hammers can be crimped and glued and, if required, a piece of veneer inserted, as into the felt, for the treble-hammers or at the treble end of a set of hammers; and the invention resides in the novel features of construction set forth in the following specification and claims and illustrated in the annexed drawings, in which—

Figure 1 is a side elevation of an apparatus for making piano-hammers. Fig. 2 is an end elevation. Fig. 3 is a section along *vv*, Fig. 1. Fig. 4 is a section along *ww*, Fig. 1. Fig. 5 is a section along *xx*, Fig. 3, enlarged, showing a compression-jaw. Fig. 6 is a section along *yy*, Fig. 3, enlarged, showing a crimping or crimper-actuating screw. Fig. 7 is a section along *zz*, Fig. 1. Fig. 8 shows a piece of felt before crimping. Fig. 9 shows a crimper as having crimped a piece of felt. Fig. 10 shows the compression-jaws as having compressed a piece of crimped felt, the crimper not yet being withdrawn from the felt. Fig. 11 is a view like Fig. 10, the crimper having been withdrawn or moved out of the crimped felt. Fig. 12 shows in full lines the treble-hammer felt as having been crimped, the bass-hammer felt portion being indicated by broken lines. Fig. 13 shows treble-hammer felt as having been crimped and compressed, the crimper having been withdrawn and a piece of veneer or filling having been inserted into the felt or crimp.

A support or legs 1 carry a table or support 2, onto which can be placed a removable form or trough 3. A roller 4, Figs. 1 and 2, facilitates the form being run or slid onto and off the table, the side of the machine-frame being suitably arched or open to allow the placing and withdrawal of the form.

The form has upper molds or compression-pieces 5, which can be slid on the form, as from the position shown in Fig. 8 to the position shown in Fig. 10. When in the posi-

tion shown in Fig. 10 and there secured, as by bolts or fastenings 6, said molds 5 will hold a felt 7 crimped or compressed. The bolts or fixing devices 6 can be slidably mounted on or connected to the form 3 in any suitable well-known way, as by slots or guides, along which the bolts can slide and at any suitable point of which they can be clamped or fixed. The form 3 also has lower molds 8, Fig. 8, and when the felt 7 has been pressed or crimped into the lower molds 8 by crimper 9, as seen in Fig. 9, and the upper molds 5 have been run or fixed against the crimped felt, as seen in Fig. 10, and the crimper 9 having been withdrawn, as seen in Fig. 11, said felt will be given a crimped form. By gluing the contacting faces of the crimped felt or causing said faces to adhere the felt is prevented from spreading or uncrimping when freed or taken from the molds 5 and 8.

The crimper 9 is run or moved toward and from the form 3 by the means presently described. Said crimper 9, as seen in Figs. 3 and 4, is connected to a crimper-carrier 10, jointed or pivoted, as at 11, to a beam or reciprocating piece 12. The crimper-carrier 10 by being pivoted can be moved to the position shown in Fig. 3 to present the crimper 9 to the form, or said crimper 9 can be swung away from form 3, as seen in Fig. 4, and for a purpose to be presently explained.

The beam or piece 12 is connected to the screws 13, so that a proper rotation of the screws will move or slide the beam 12 up or down. These screws 13 each run through a tapped bushing 14, secured to an upper part 15 of the machine-frame by fastenings or bolts 16. The bushings 14 and frame 15 have perforations 17 and 18, Fig. 6, for the reception of the bolts or screws 16. By having the perforations 17 and 18 differentially arranged or variously spaced—as, for example, by having four holes 17 and six holes 18—each bushing 14 by a comparatively slight turn to the right or left will always bring two holes 17 and 18 into correspondence for the reception of a bolt 16 for fixing the bushing 14. Such rotation of bushings 14 adjusts the screws 13 higher or lower, as required, for bringing the crimper 9 into proper position or elevation relative to the form 3 or for leveling the beam 12 or crimper-carrier 10.

The screws or actuators 13 have feather connections with gears 19, Fig. 3, so that the rotation of gears 19 rotates the screws 13 and the latter move longitudinally through bushings 14. These gear-wheels 19 are actuated by gear-wheels 20 on shaft 21, Figs. 1 and 3. The oppositely-rotating pulleys 22 are mounted on a sleeve 23, which can be slid along the shaft 21 by a shifter or lever 24. As one or another of the pulleys 22 is forced into contact with one or another of the friction-disks 25, fixed to shaft 21, the latter is rotated in one direction or another to turn the gears 20 and 19 and the screws 13 one way or another.

The treble-hammer felt, as known, is comparatively small or thin, and a veneer or filling-strip 26, Fig. 13, glued or secured into the crimp or fold of such treble-hammer felt, has been found to be at times of advantage. This veneer is connected to the crimper-carrier 10, Figs. 3 and 4, by screws or detachable fastenings 27, which when loosened or freed allow the veneer to detach itself from the carrier 10, so as to be left inserted in the felt. The carrier 10 when swung to the position shown in Fig. 4 is in position to insert or slip the veneer into the fold of the felt. This carrier 10 has shoulders 28. On the beam 12, or on a suitable base or flange part thereof, are slidable blades 29, Figs. 3, 4, and 7, connected to the beam 12 by pin and oblique-slot connections 30 and 31. A lever or handle 32 enables the blades 29 to be slid longitudinally one way or another, and this sliding by the oblique-slot connections 31 causes the blades to move toward and from one another or toward and from the beam 12. When the crimper-carrier 10 is either in the position shown in Figs. 3 or 4 and the blades 29 are spread or separated, one or another of the crimper-shoulders 28 is caught by one or another of the blades to hold the carrier 10 fixed to beam 12. A retraction of the blades 29 frees the carrier to enable the latter to be shifted or swung on pivot 11.

The molds or compression-slides 5 are moved to the felt 7 by jaws 33, Fig. 3, actuated by oppositely-run screws or threads on rotary shafts 35. The jaws 33 are provided with bushings 36, tapped for the engagement of threads 34. These bushings are connected to the jaws by bolts or fastenings 37, and by having the bushings 36 and jaws 33 provided with differentially-arranged or variously-spaced openings 38 and 39, Fig. 5, for the reception of bolts or screws 37 a slight or partial turn of the bushing 36 one way or another for slightly adjusting the respective jaw 33 toward or from form 3 will bring two of the openings or holes 38 and 39 into correspondence or alinement for the reception of a bolt or fastening 37. The jaws 33 have lugs 40, Fig. 5, running along ways or guides 41.

Each threaded shaft 35 connects by gear 42 with a thread or worm 43, Fig. 1, on rotary shaft 44. The oppositely-rotating pulleys 45 are mounted on a sleeve 46, which can be

shifted by lever or handle 47 along shaft 44 to bring one or another of pulleys 45 into engagement with one or another of the friction-disks 48; fixed to shaft 44, for rotating the latter one way or another to cause the jaws 33 to approach or recede from the form 3.

The jaws 33 when properly adjusted and approaching one another will center the molds 5 or the felt 7 therebetween, or bring said molds into proper position relative to the crimper 9. At the thin or treble part of the felt, however, a centering device may be found useful. This centering device comprises levers or bell-cranks 49 and 50, Fig. 4, fulcrumed at 51. Springs 52 normally tend to separate or swing apart the lever-arms 50. The lever-arms 49 contact with or engage noses or arms 53, Fig. 1, projecting from a shaft 54, having a handle or actuator 55. The lever-arms 50 carry screws 56, which can be accurately adjusted and fixed by lock-nuts 57. When the screws 56 are properly set and the handle 55 is moved to make rock-shaft 54 strike or press the lugs 53 against the lever-arms 49, the lever-arms 50 swing toward one another and contact their screws or adjustable faces 56 with the molds 5 to accurately center the latter. These centering-levers 49 and 50 need only be applied at the treble part of the molds to center the treble portion of the felt.

The form 3 is of any suitable shape, such as taper, to properly receive and hold the molds 8 for forming the lower or contacting part of the hammer-felt. The molds 8 when driven into such taper-shaped form or trough will be held securely in place and can be renewed or changed to fit different sizes of hammers or felts. The molds or compression-pieces 5 when made of brass have been found not to stain the felt. The acting faces of the molds 5, which contact with the felt, are properly shaped to form the upper or thinner part of the felt. The top faces of the molds 5 taper or grow thinner from bass to treble, and a knife, chisel, or suitable tool passed along said top faces will remove all surplus felt or glue. By oppositely threading the screws or worms 43 on shaft 44 such oppositely-threaded screws will tend to neutralize the end thrust of the shaft. Such opposite threading can also be employed for the worms or gears 20 of shaft 21. Of course in such opposite threading care must be taken to correspondingly alternate the respective threads of the gears or screws 19, 13, 42, and 34 to insure proper movement and cause various parts to properly coact.

The girder or beam 12, it is understood, does not rotate with the screws 13, but said screws run the beam 12 rectilinearly toward and from the felt in form 3. The lever or handle 55 can be stopped or held fixed by a pin 58, Fig. 4, passed through a hole in the handle 55 and into a suitable one of a series of holes in the bed-plate or table part 2.

The operation of the machine is readily un-

derstood. The pieces of felt to be formed and glued are cut to the desired shape. Such a piece of felt of the length required tapers from bass to treble to suit the various hammers to be made. The form 3, with molds 5 and 8, being slid into position, the felt to be glued or shaped is placed on top of the lower molds 8, Fig. 8. A suitable strip of veneer 26 is clamped in place by fastenings 27. The proper friction-pulley 45 is now brought into action to rotate shaft 44 for moving the jaws 33 and molds 5 until the latter begin to pinch the felt at the bass part. The machine is then stopped and the lever-handle 55 actuated and then locked by pin 58 at the proper position, so as to move the molds 5 inward or toward one another at the treble end by means of the lever-arms 50, as described. The screws or contactors 56 in the lever-arms 50 having been properly adjusted will secure the required centering at the treble end or portion of the felt. This centering of the treble end can of course be accomplished either before or after the centering of the bass end. The felt having been centered, the proper friction-pulley 22 is brought into action to rotate screws 13 for forcing the girder or beam 12, with carrier 10 and crimper 9, toward the felt. This crimper 9 can be practically made of sheet-steel, and coming into contact with the felt forces the latter into the mold 8, Fig. 9. During this movement the proper lower friction-pulley 45 is brought into action against a friction-disk 48 to cause the molds 5 to move to the position shown in Figs. 9 and 12, Fig. 9 showing the bass and Fig. 12 the treble part. When the crimper 9 has forced the felt into the mold 8, the shaft 21 is stopped. The jaws 33 and molds 5 continue to compress the felt until it assumes the shape shown in Figs. 10 and 13. As the molds 5 have now closed onto the felt and have moved away from the stops 56 in bell-cranks 49 and 50 the pin 58 is drawn out and the lever 55 further depressed or actuated and the pin 58 inserted into another hole in table or part 2, so as to leave a space, say about a half of an inch clearance, between the molds 5 and stops 56. The side screws 34 are now reversed and the jaws 33 drawn back sufficiently for the crimper to withdraw and for glue to be introduced into the joint or fold in the felt. The fold in the felt at the bass end if opened, say about an inch, and at the treble end, say about half of an inch, will have opened sufficiently for the withdrawal of the crimper and for the introduction of glue. The crimper having been raised or withdrawn, the holder or carrier 10 is swung or shifted to bring the veneer 26 into the position formerly occupied by the crimper 9, as indicated in Fig. 4. The glue having been applied to the joint or fold and the veneer 26 fed to its proper position or into the fold, the side screws 34 are set in motion to bring the molds 5 together with the felt therebetween, as seen in Figs. 11 and 13. The clamps or bolts 6 being now

tightened prevent the molds 5 from slipping back, and the veneer-holding fastenings 27 being loosened or released the carrier 10 can be run away from the felt, leaving the veneer therein, as seen in Fig. 13. The surplus felt, glue, and veneer being trimmed off and the jaws 33 sufficiently retracted, the form is removed and another one inserted or placed on table 2. The removed form being put aside for the glue to set, the machine can continue operating as long as available forms are ready for insertion into the machine.

What I claim as new, and desire to secure by Letters Patent, is—

1. A form provided with molds or pressure-pieces, combined with compression-jaws for the molds, and actuating bushings and screws for the jaws, said bushings and jaws having differentially-arranged fastener or bolt receiving perforations substantially as described.

2. A form and crimper, combined with a holder for the crimper, and an actuator for the holder, the holder having a veneer-clamp and being pivotally connected to the actuator to permit of setting and unsetting the crimper simultaneously with unsetting and setting the veneer-clamp, substantially as described.

3. A form and crimper, combined with a holder for the crimper, and an actuator to which the holder is jointed or movably secured so as to enable the crimper to be put out of action without interrupting or stopping the movement of the crimper-actuator substantially as described.

4. A form and crimper, combined with a holder for the crimper, and an actuator to which the holder is jointed or movably secured to permit the crimper to be set out of the work-engaging position or adjustment, said holder being provided with a clamp or releasable holding device for engaging a veneer substantially as described.

5. A form and crimper, combined with a holder for the crimper, and an actuator provided with locking-slides and to which the holder is jointed or movably secured to permit the crimper to be set out of the work-engaging position or adjustment, said holder being provided with a releasable veneer carrier or clamp and with shoulders adapted to be alternately engaged by the locking-slides for presenting the crimper and the veneer to the form substantially as described.

6. A form provided with molds, combined with centering-levers, a rock-shaft for actuating the levers, and a handle for the rock-shaft substantially as described.

7. A form and crimper, combined with a holder for the crimper, and an actuator provided with locking-slides and to which the holder is jointed or movably secured to permit the crimper to be set out of the work-engaging position or adjustment, said holder being provided with a releasable veneer carrier or clamp and with shoulders adapted to be

alternately engaged by the locking-slides for presenting the crimper and the veneer to the form, and centering-levers for adjusting the work relatively to the crimper and veneer, 5 said levers having adjustable faces or contactors substantially as described.

8. A form and crimper, combined with an actuating-screw for the crimper, a bushing for the screw, and a frame for supporting the 10 bushing, said bushing and frame having differentially-arranged fastener or bolt receiving perforations substantially as described.

9. A form provided with lower molds fixed in the form, upper molds made movable to- 15 ward and from one another across the top of the form, compression-jaws or actuators for the upper molds, and clamps or fixing devices

for said last-named molds substantially as described.

10. A form provided with lower molds fixed 20 in the form, upper molds made movable toward and from one another across the top of the form, combined with compression-jaws or actuators for the upper molds, and fastenings for securing the upper molds to the top or rim 25 of the form substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALFRED DOLGE.

Witnesses:

WILLIAM DOLGE,
E. F. KASTENHUBER.