

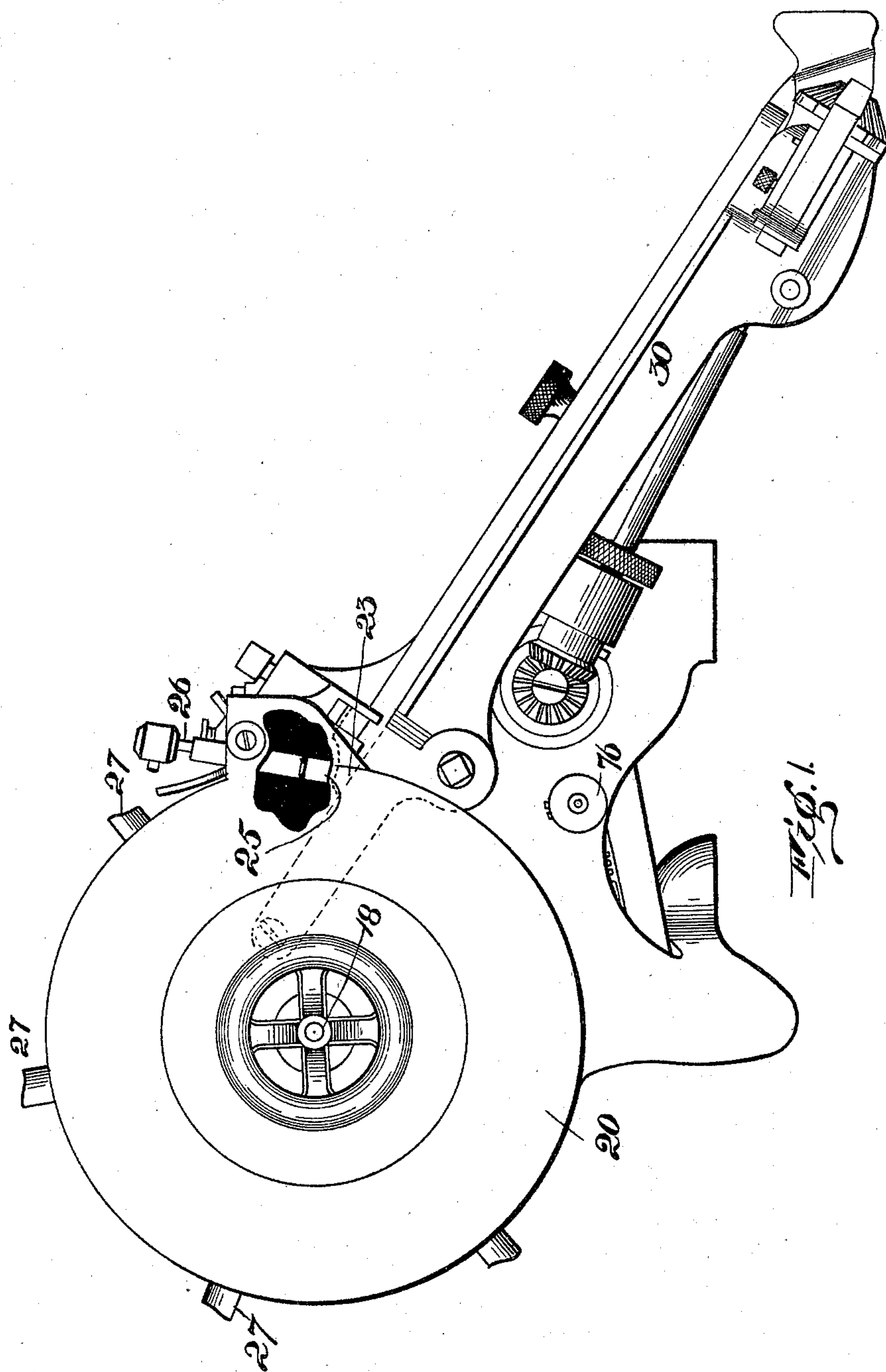
(No Model.)

4 Sheets—Sheet 1.

S. W. LADD & R. F. McFEELY.
MACHINE FOR SEPARATING AND FEEDING TACKS.

No. 584,743.

Patented June 15, 1897.



witnesses:
J. M. Fowler Jr.
J. Goodman.

Inventors,
S. W. Ladd and R. F. McFeely
By *C. A. Shutevant*
Attorney

(No Model.)

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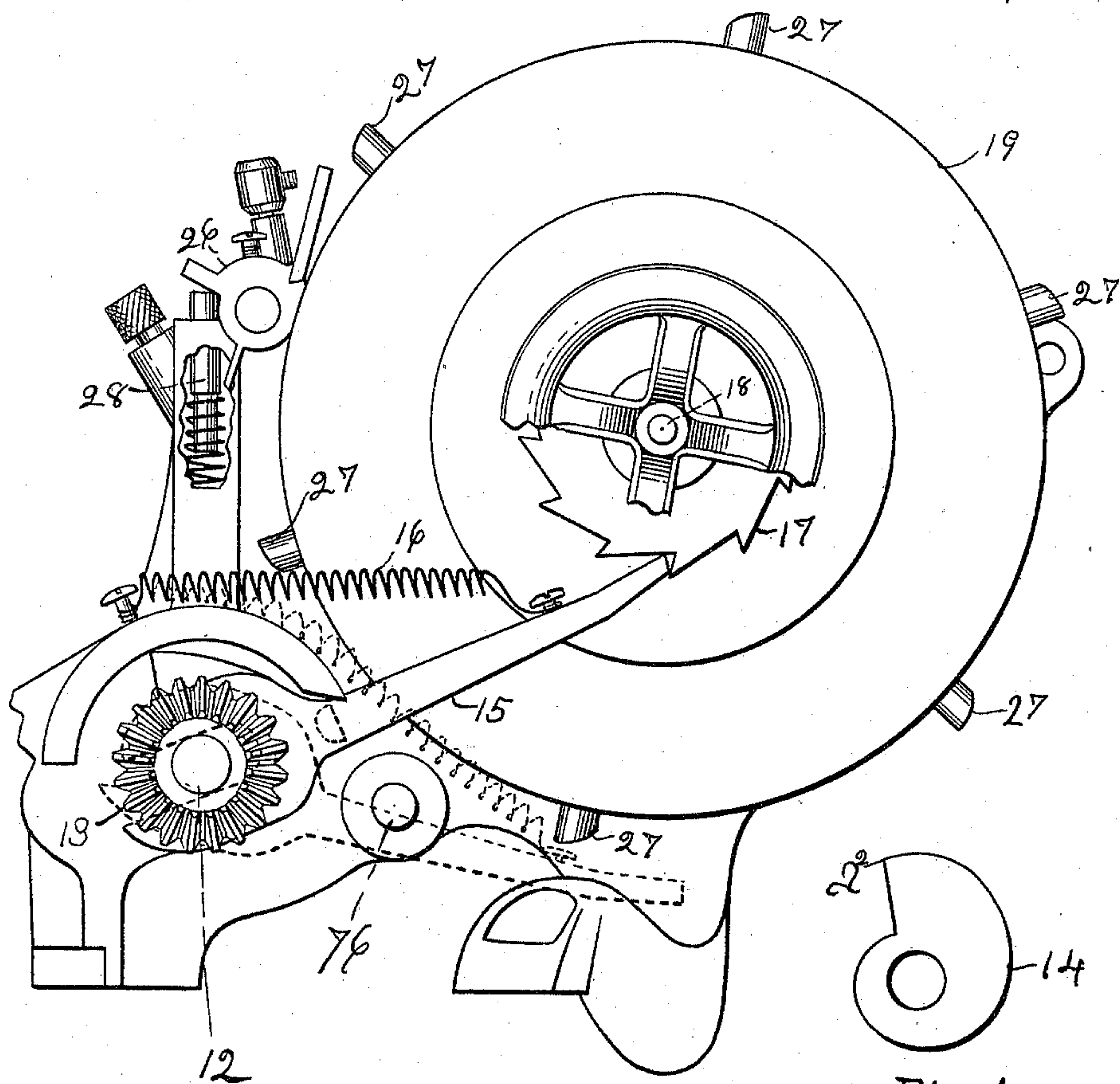


Fig. 2.

Fig. 4.

Witnesses.

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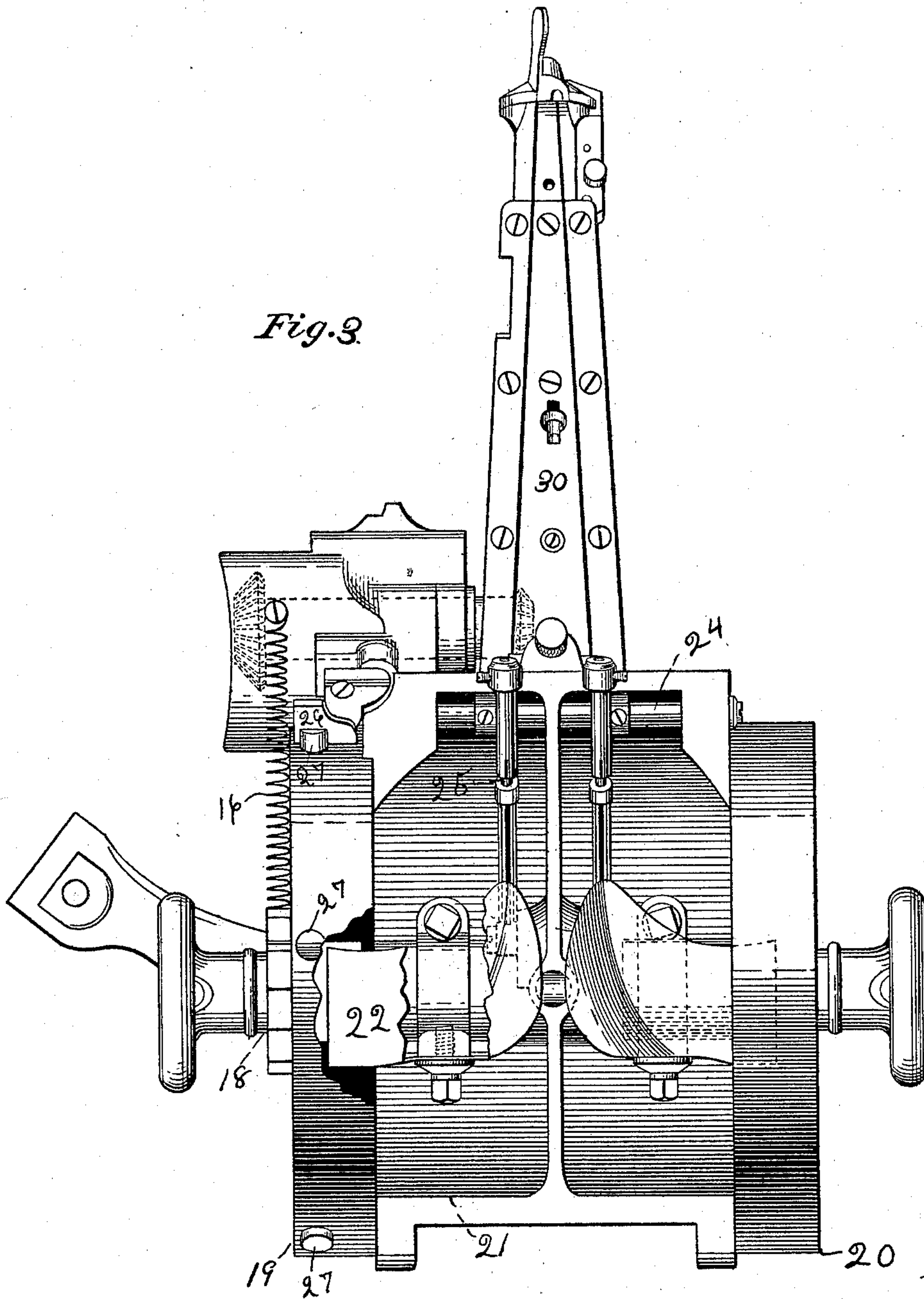
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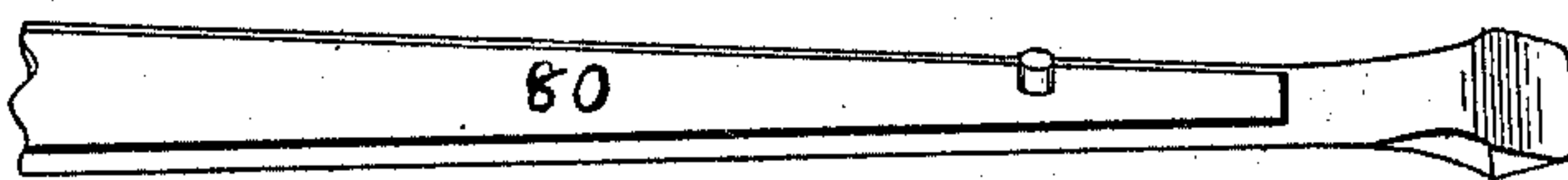
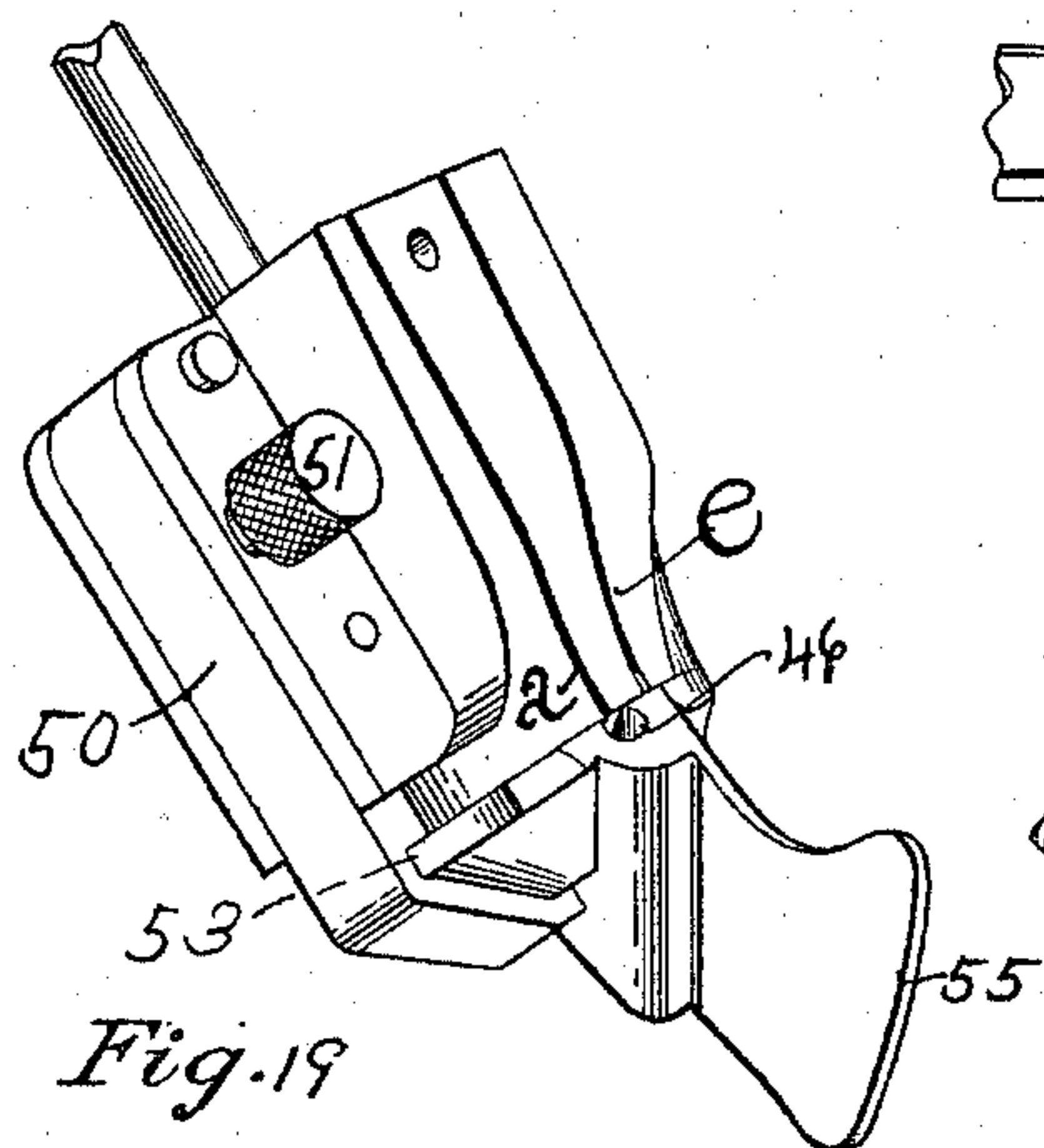


Fig. 18

Fig. 13

Fig. 14

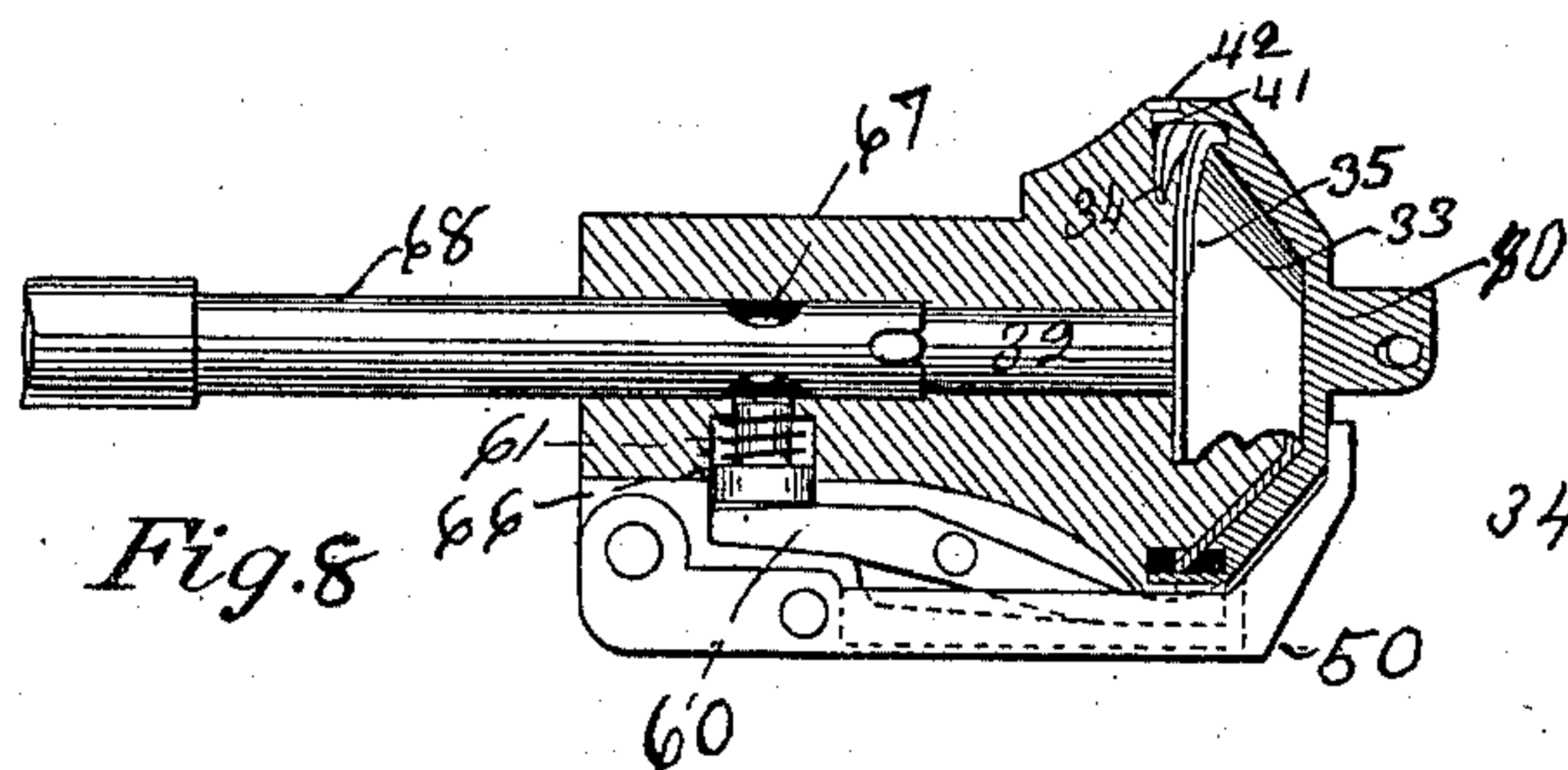
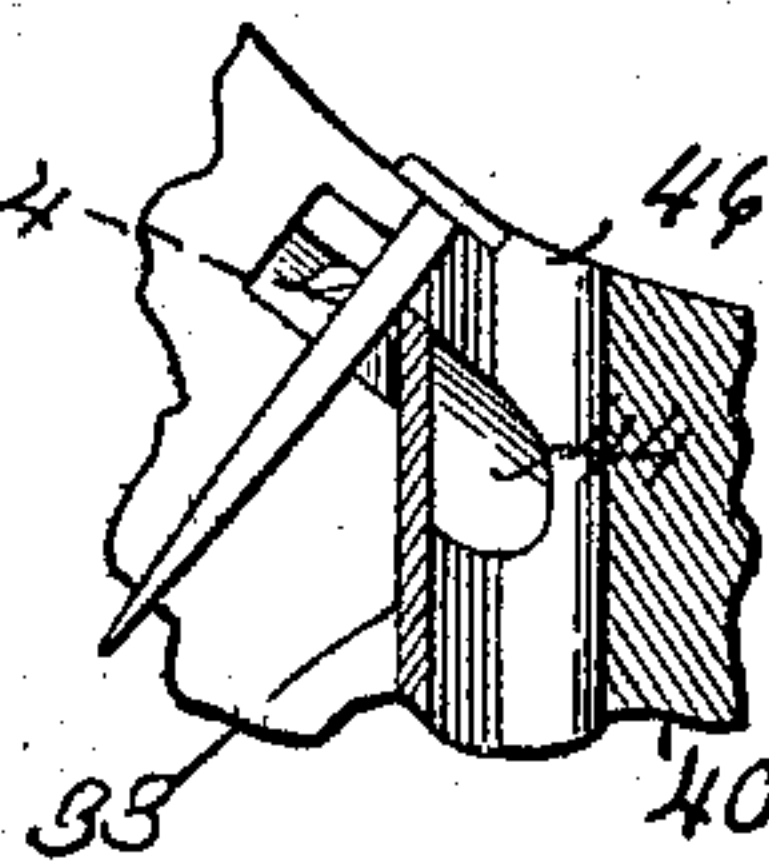
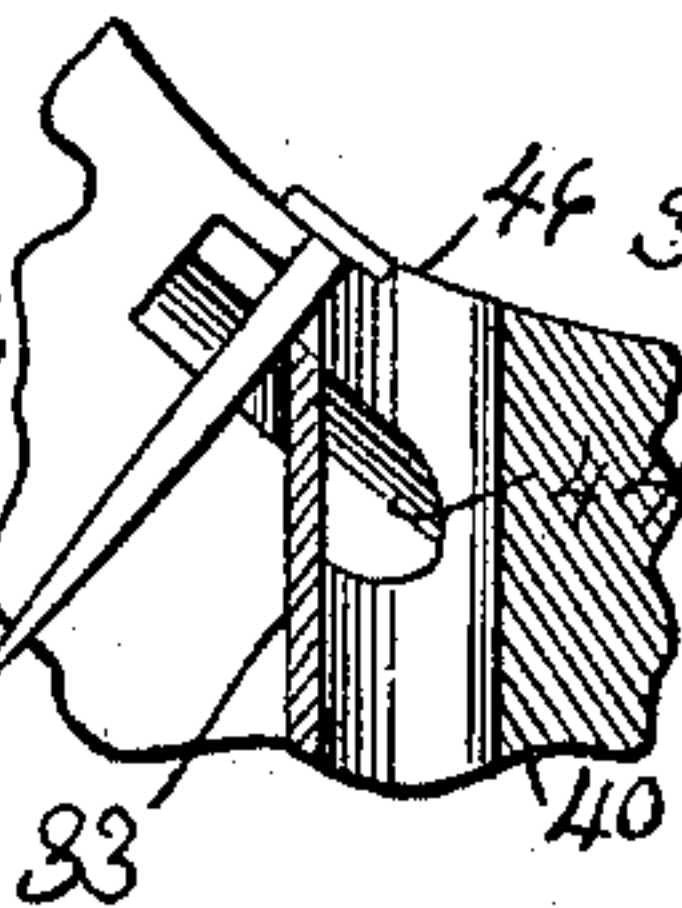
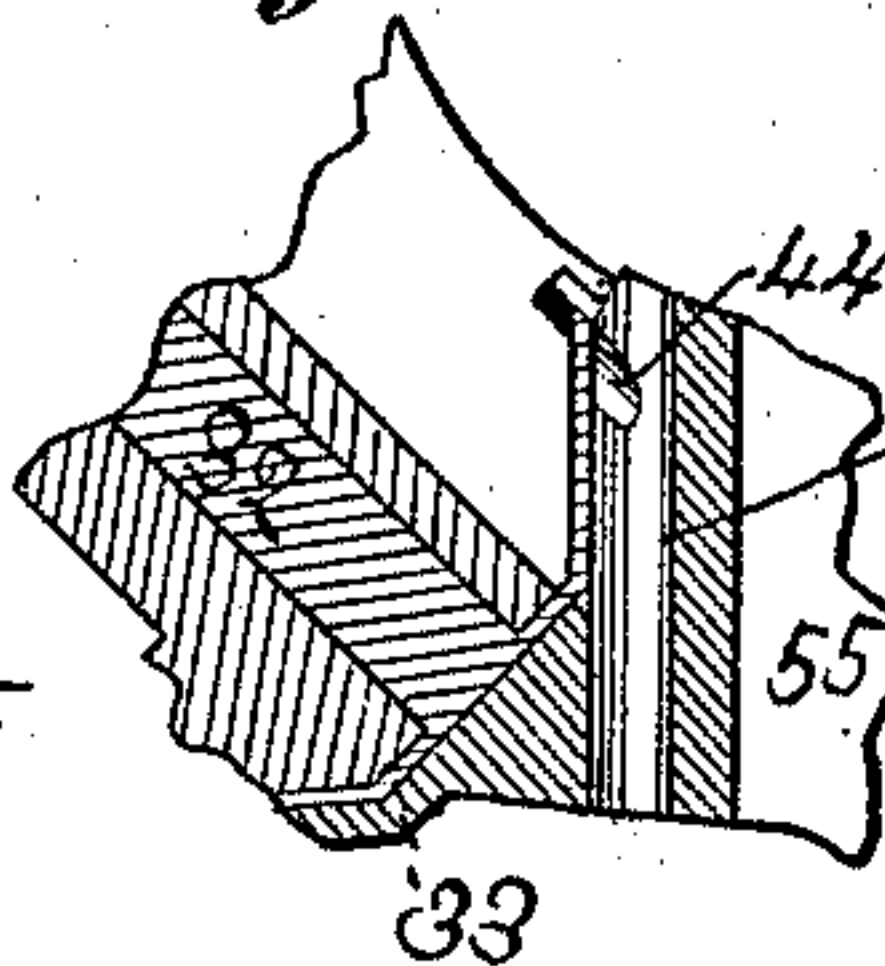


Fig. 15

Fig. 16

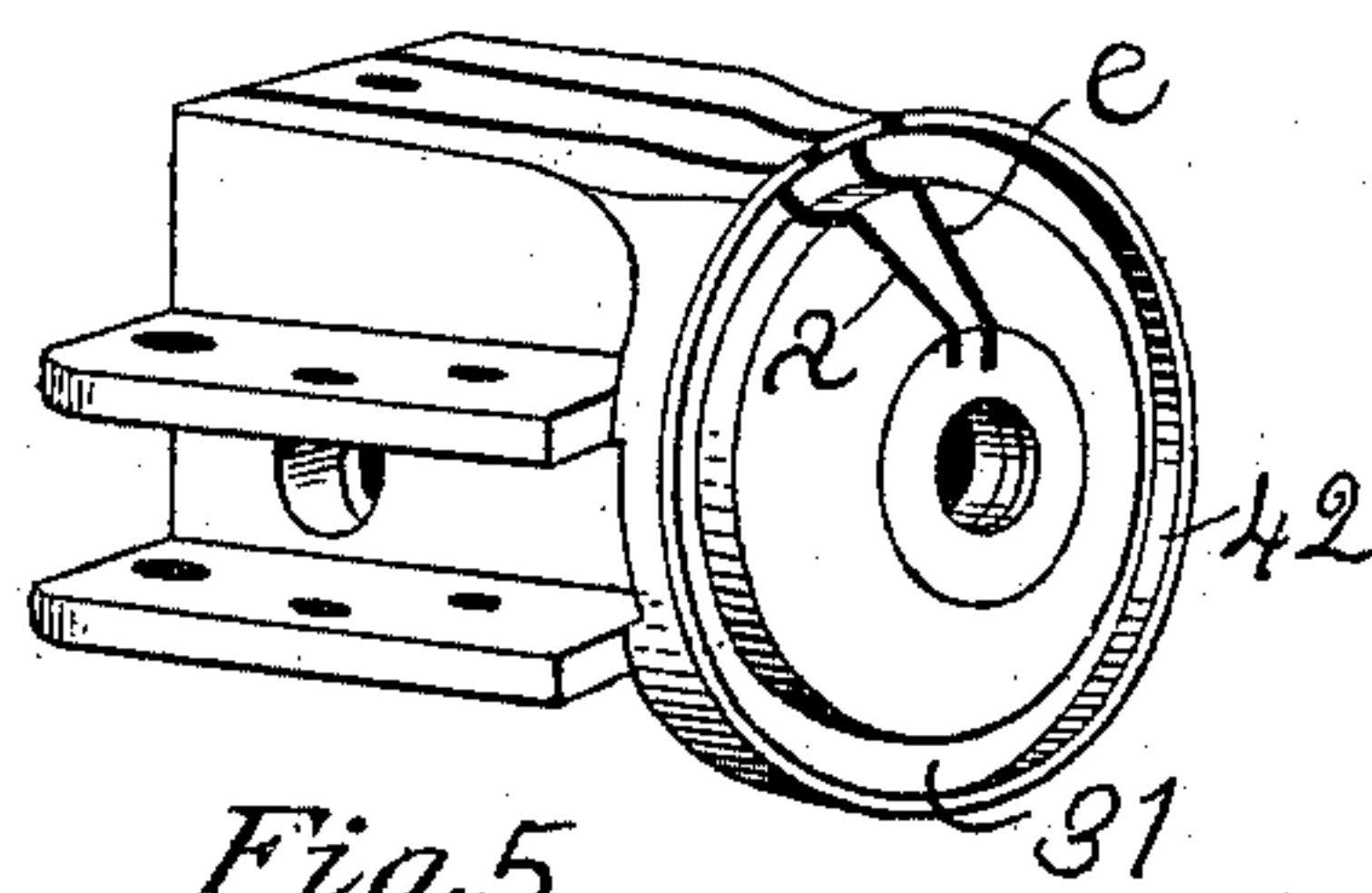
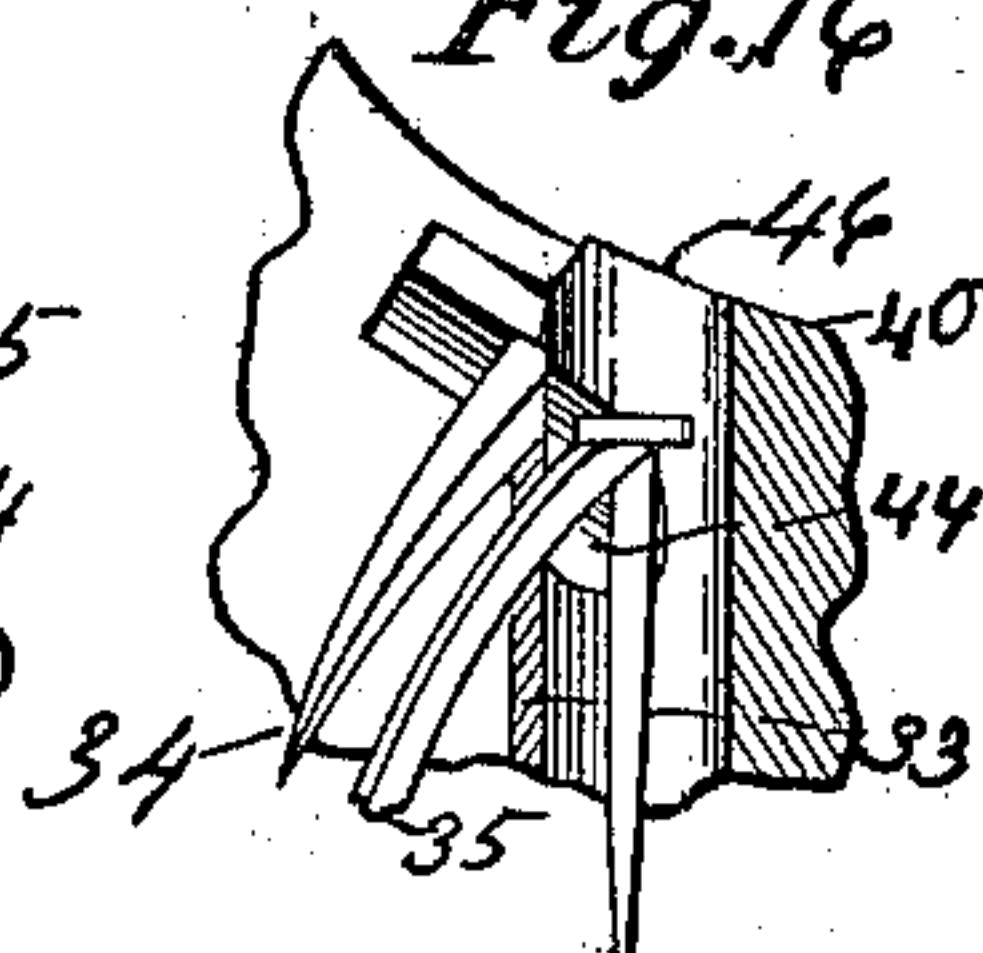
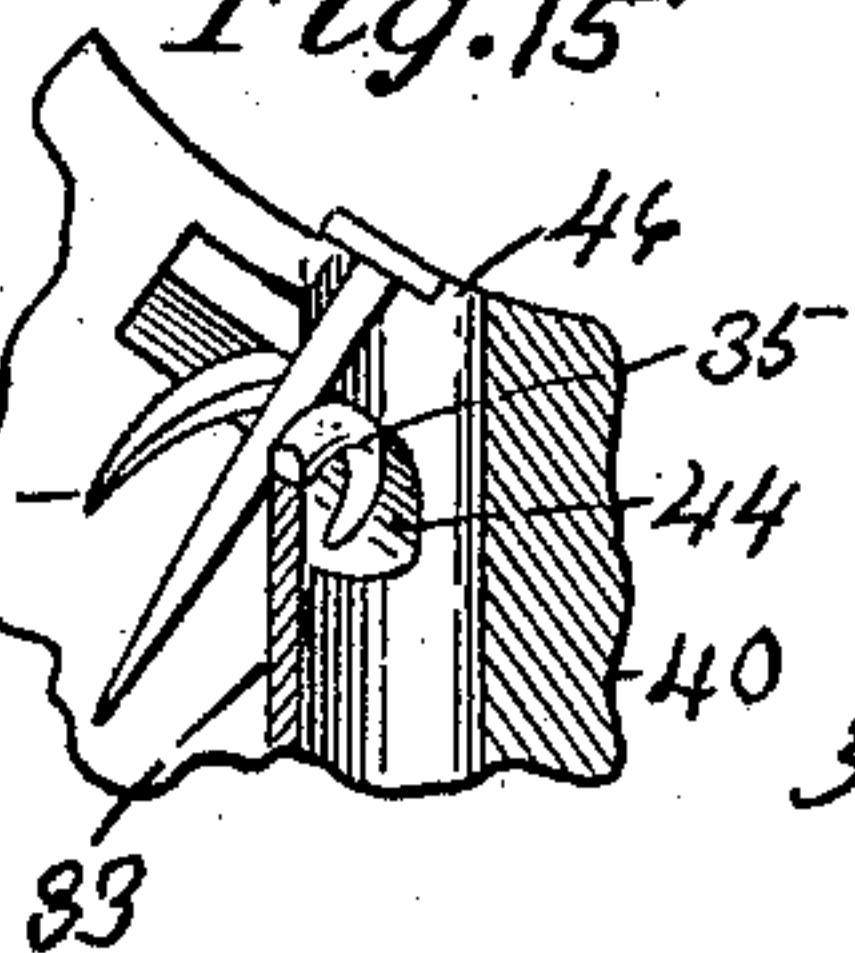


Fig. 6

Fig. 7

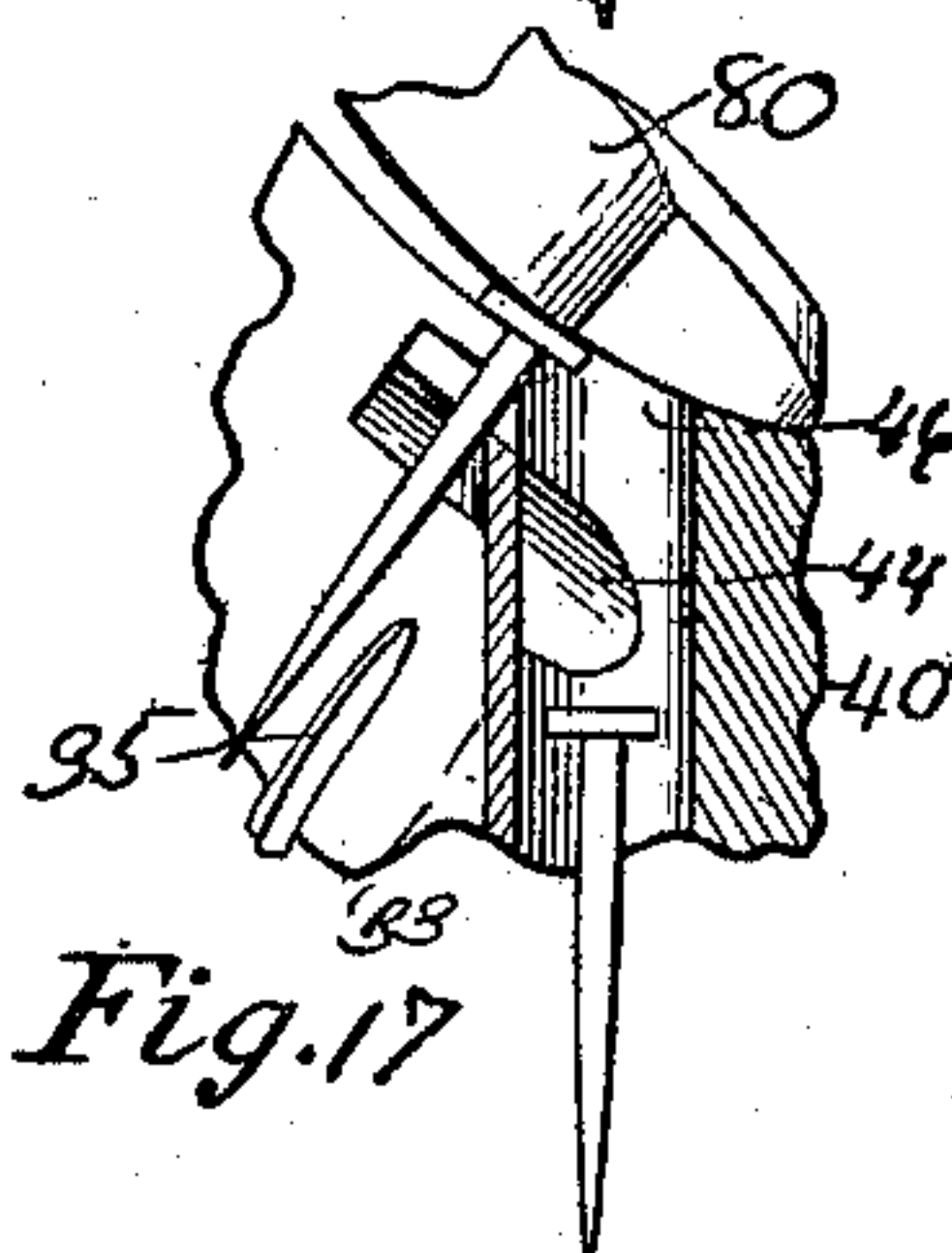
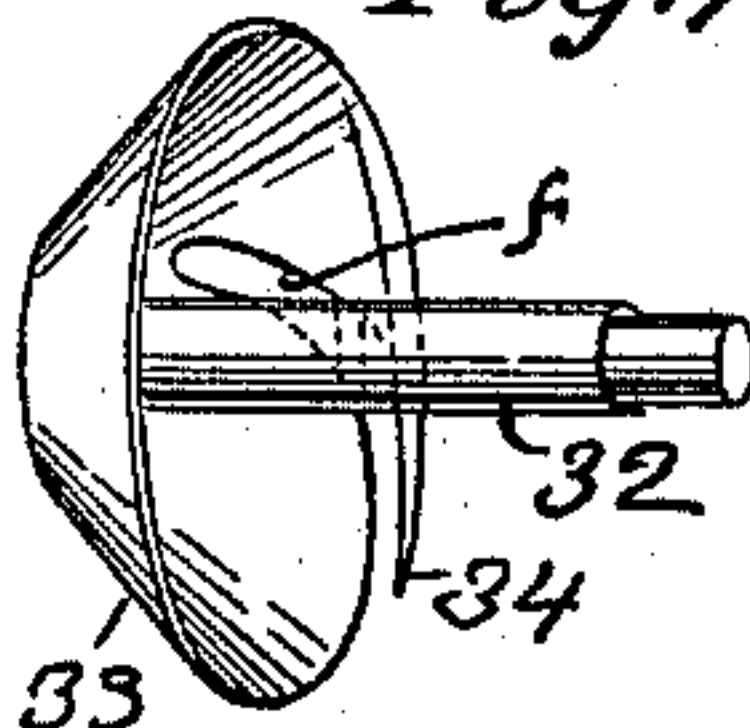
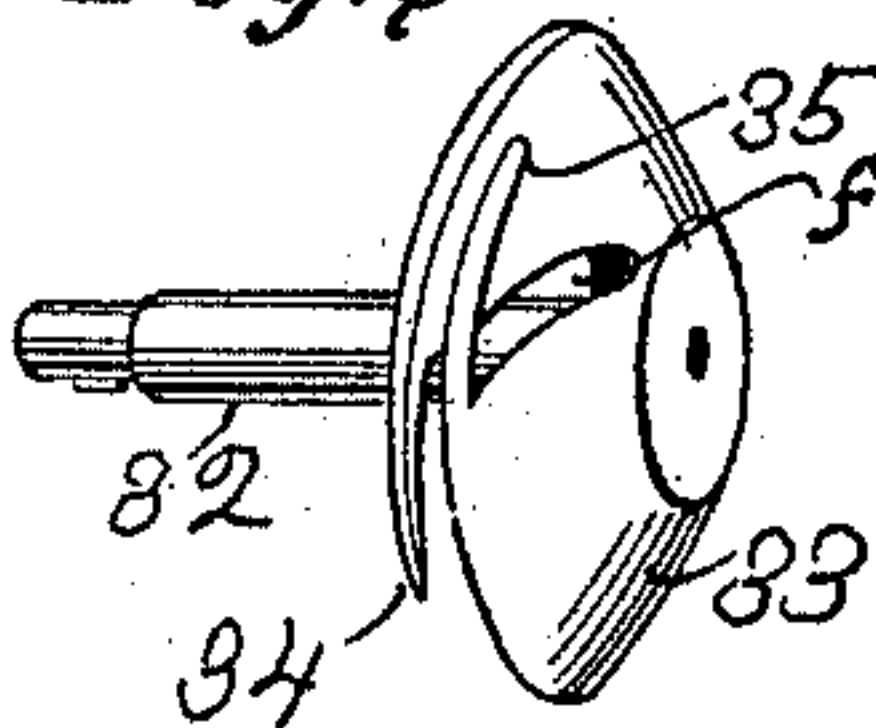


Fig. 5

Fig. 17

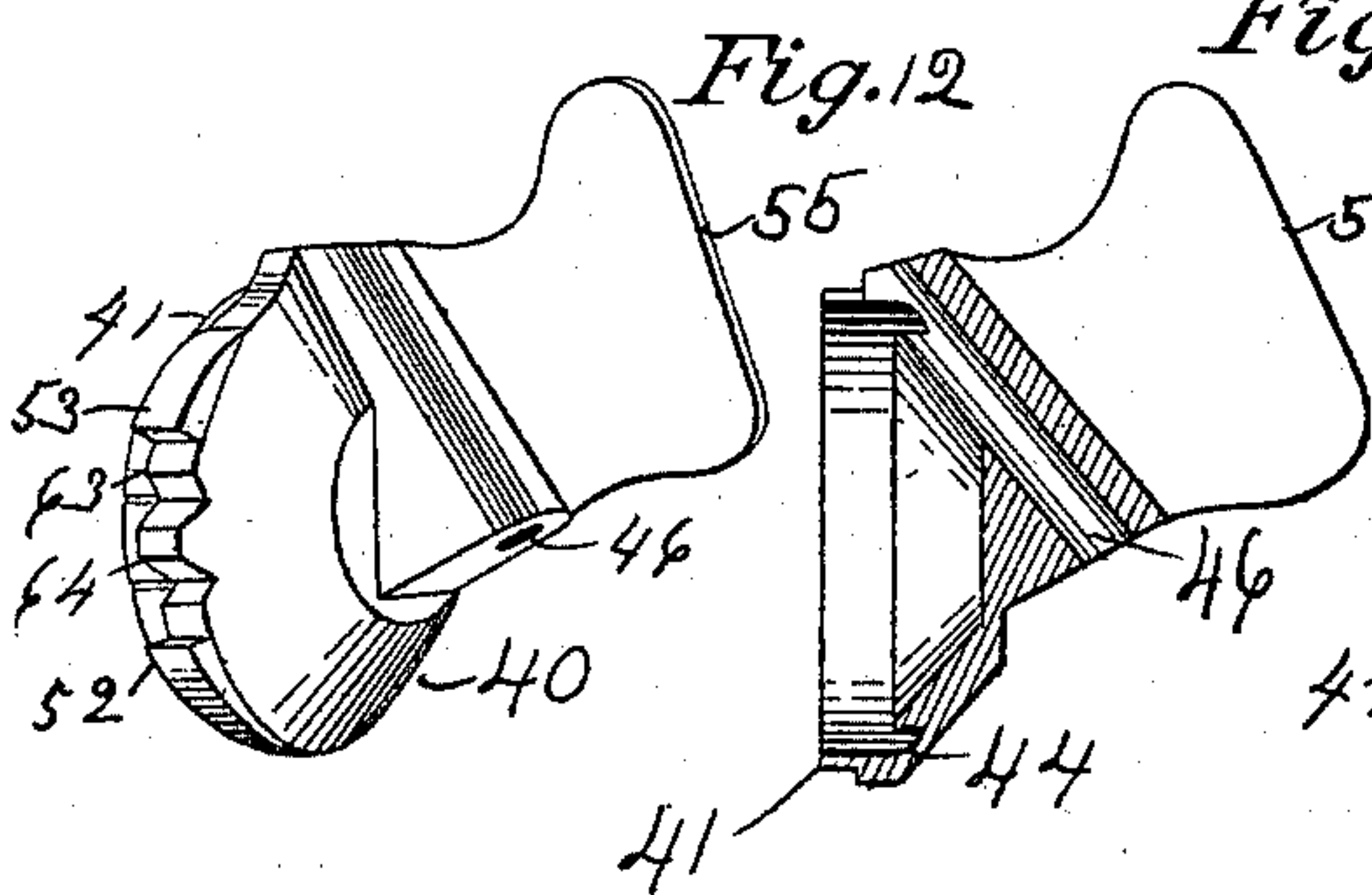


Fig. 11

Fig. 10

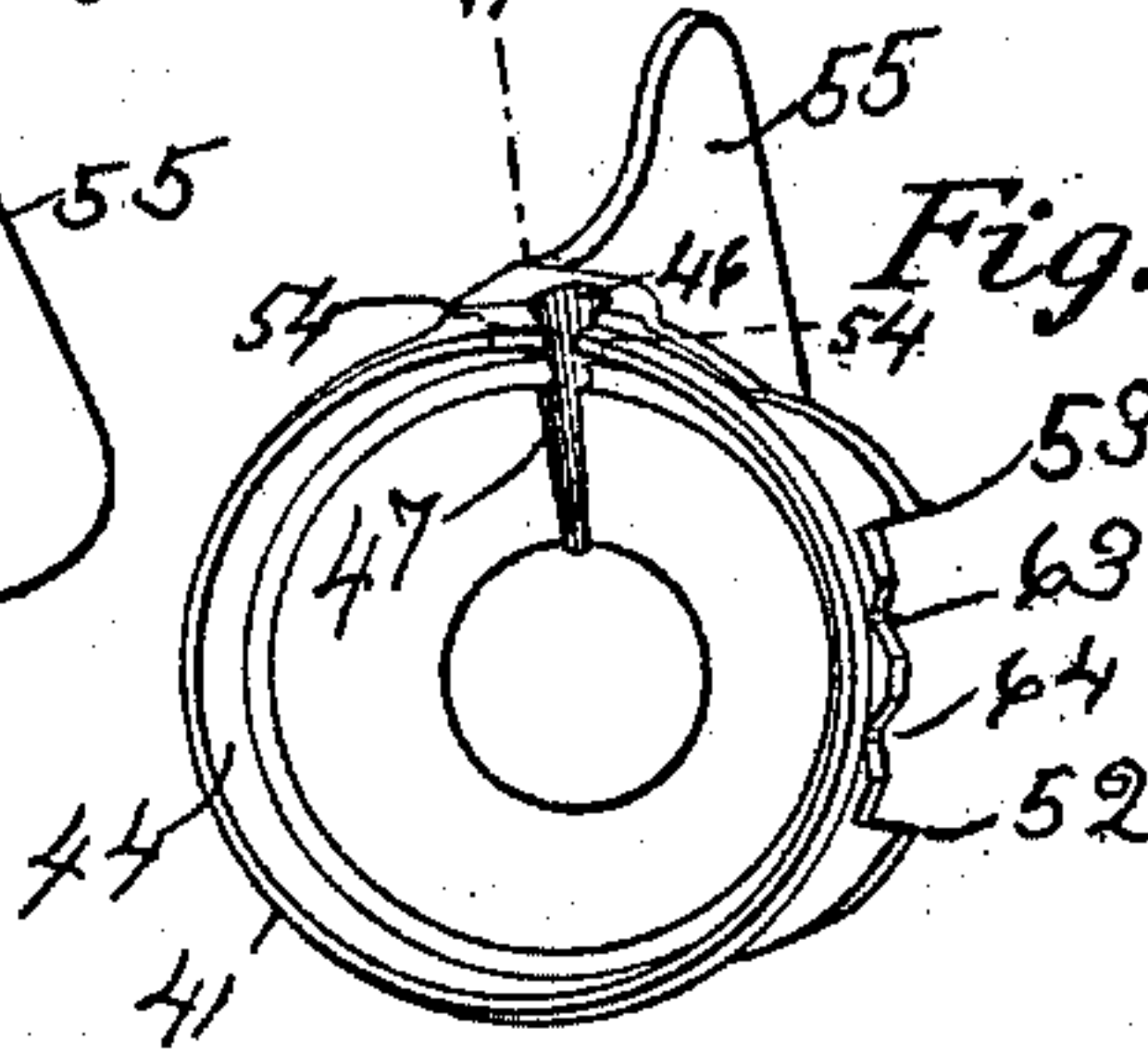
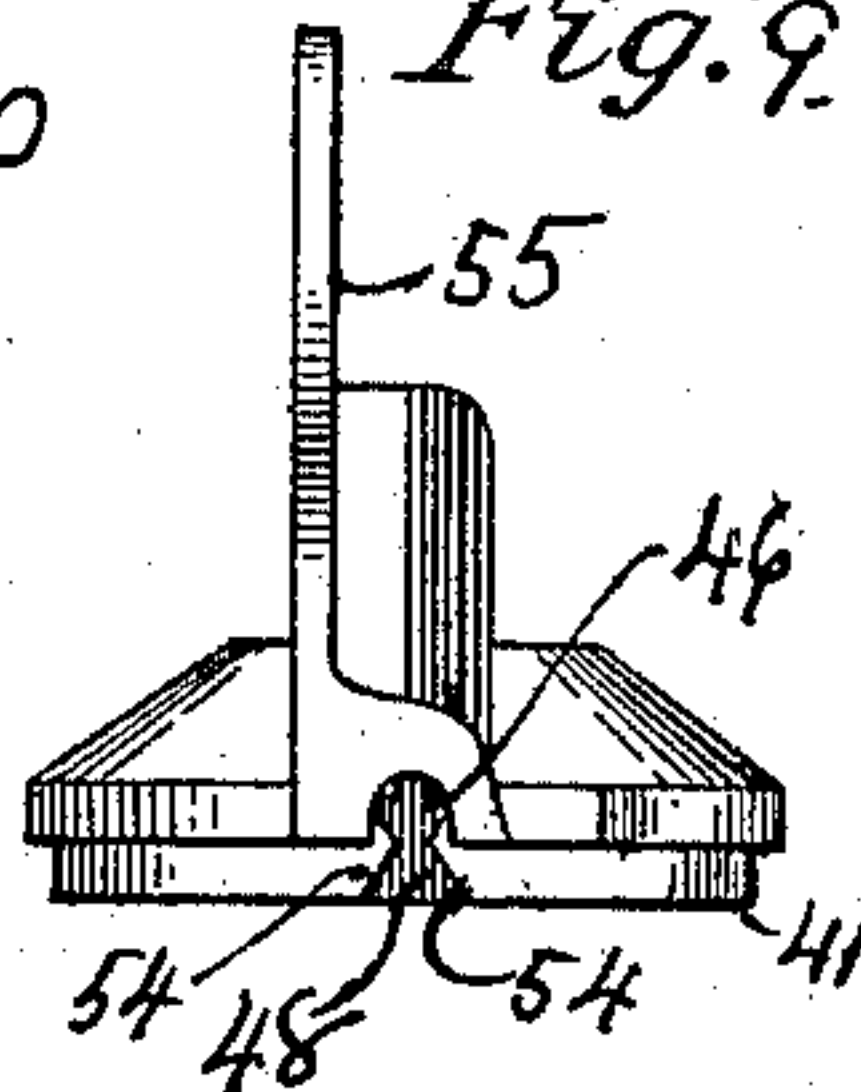


Fig. 9



Witnesses.

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UNITED STATES PATENT OFFICE.

SHERMAN W. LADD, OF SOMERVILLE, AND RONALD F. McFEELY, OF
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MACHINE FOR SEPARATING AND FEEDING TACKS.

SPECIFICATION forming part of Letters Patent No. 584,743, dated June 15, 1897.

Application filed April 17, 1895. Serial No. 546,155. (No model.)

To all whom it may concern:

Be it known that we, SHERMAN W. LADD, of Somerville, in the county of Middlesex, and RONALD F. McFEELY, of Beverly, in the county of Essex, Commonwealth of Massachusetts, have invented certain Improvements in Machines for Separating and Feeding Tacks or the Like, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to mechanism for separating and distributing tacks, nails, and other articles—such as buttons, eyelets, rivets, screws, &c.—that have heads or enlarged portions whereby to be suspended, as hereinafter more fully explained and described.

Referring to the drawings, Figure 1 is a perspective view of a mechanism embodying this invention. Fig. 2 is an elevation showing the opposite side of Fig. 1, the raceway part being cut away. Fig. 3 is a plan view of the machine with the cover thereof removed. Fig. 4 is a side elevation of the cam detached. Figs. 5, 6, and 7 are perspective views of details referred to hereinafter. Fig. 8 is a plan of a section, showing details. Fig. 9 is a plan, Fig. 10 a perspective, Fig. 11 a sectional elevation, and Fig. 12 a perspective, all showing different features and parts detached and are further described hereinafter. Figs. 13, 14, 15, 16, and 17 are sectional elevations, on an enlarged scale, and show different stages in the operation of the parts therein shown. Fig. 18 is an elevation of a section, showing a detail. Fig. 19 is a perspective showing the end of the raceway part and connections, and Fig. 20 is a perspective showing the bottom face of the terminal end of the cover to the raceway part.

The shaft 12 has on it a gear 13, Fig. 2, by which driving power is applied to the machine. On said shaft 12 is a cam 14, (shown detached in Fig. 4), which operates to move forwardly the pawl 15, for which purpose the rear end of said pawl is suitably notched for embracing the cam 14. Connected with the machine-frame at one end and with the pawl at its opposite end is a spring 16, by which the pawl is pressed rearwardly in bearing contact with the cam 14 and is moved quickly backward, when the pawl is released by the

let-off portion a^2 of the cam, the whole arrangement being such that the pawl is pushed forwardly against the ratchet-wheel 17 and drawn suddenly backward to engage a succeeding tooth of the ratchet-wheel during each revolution of the shaft 12, the effect being to intermittently rotate the shaft 18, Fig. 3.

The shaft 18, being suitably journaled in the machine-frame, has mounted thereupon a plurality of disks 19 20.

The disk 19 turns with the shaft, its open side being closely adjacent to and in sliding contact with the basin 21. The basin 21 has its bottom face inclined toward and opens into the disk. The tacks are placed in bulk in the basin and pass down its inclined faces into the disk and are lifted by ribs suitably connected with the disk to a point above the pan 22. The pan is supported adjustably and is provided with inclined faces converging to a point above the raceway. The tacks falling from the ribs strike into the pan and pass down its faces to the raceway and are suspended in the raceway with their points downward and their heads bearing upon the edges of the raceway-blocks. Tacks which do not strike in the raceway pass over the sides thereof into the basin and thence to the disk below, to be again lifted and dashed into the pan, as before.

On the raceway-block is a bridge 23, (see dotted lines, Fig. 1,) which obstructs the downward passage of all tacks not properly suspended in the raceway. Supported in a rock-shaft 24 is a tripper-arm 25, its bottom end bearing upon the raceway-block. Its bottom end is preferably grooved to receive the edges of the block. Said arm is supported to permit vertical movement, which allows it to be reciprocated along the raceway-block and onto the inclined end of the bridge 23. To this end an intermittent rocking movement is imparted to the shaft 24, which carries the tripper, by the revolving disk 19 through an intermittent rocking mechanism composed of cam-lever 26, Fig. 2, and engaging stops 27 on the disk for giving movement in one direction and the spring-actuated stud 28 for giving movement in the opposite direction. The rearward movement stops the tripper on the

incline of the bridge, as shown in Fig. 1, to permit the tacks properly suspended in the raceway to pass under the bridge.

The tripper is moved forwardly and backwardly at intervals, its action being harmless and of course useless except when tacks are in position for adjustment thereby. For a further understanding of this mechanism, and particularly the mechanism for supporting the pan 22 adjustably, see Letters Patent of the United States No. 423,921 and No. 510,978.

After passing the bridge the tacks gravitate downwardly along the raceway to the separating device described hereinafter. Connected with the disk 20 is a basin, a pan, and tripper connections in duplicate of those described as connected with the disk 19 and raceway connections in duplicate of those described as connected with the disk 19, the object being to provide for feeding tacks of one size by one set and tacks of another size by the other set of said duplicate mechanisms. In the present instance two such mechanisms are shown, but others may be added if occasion should require.

Fig. 5 is a perspective view representing the end portion of the raceway part 30. For convenience in manufacture this part is formed separately and after manufacture is suitably connected with the main portion 30. Said raceway part has in its end face an annular groove 31, Fig. 5. Connected with the raceway part is a block or part 40, shown detached in Figs. 9, 10, 11, and 12, Fig. 9 being a plan thereof, Fig. 10 a perspective showing the inner face and edge thereof, Fig. 11 being an elevation of a section on line 11 of Fig. 10, and Fig. 12 being a perspective showing the part as looked at in a direction obverse to Fig. 10. The part 40 is provided with a projecting flange 41, suitably formed to enter the annular groove 31 in bearing contact with the flange 42 of the raceway part, whereby a connection is established between the raceway part and the part 40, which operates to support the part 40 and permit movement thereof rotatively with relation to the raceway part. Said part 40 is provided with an annular recess 44, Fig. 11, conformable in diameter to the annular recess 31 of the raceway part, the effect being to produce a chamber partly in the raceway-block and partly in the block 40, as shown in Fig. 8. The raceway part has also a longitudinal opening to receive the spindle 32 of the separating and feeding device. Said device is shown in perspective by Figs. 6 and 7 as looked at in obverse directions. It comprises a spindle 32, disk 33, engaging prongs 34 35, an opening f through the disk and cam faces, as shown. The disk portion of said separator is concaved to receive the terminal end of raceway part, as shown in Fig. 8.

The operating-prongs 34 35 are supported to travel in the chamber formed by the union of the annular groove 31 of the raceway part

and recess 44 of the part 40. (See Fig. 8.) The part 40 has an inner chamber, the concaved walls whereof fit closely in sliding contact with the outer face-walls of the separator. It has a single passage 46, adapted for transit therethrough of articles entered thereinto from the raceways. Said passage has its bottom end located in the axis of rotation of said block, so that it remains in one position substantially while the part is rotated on its supporting-flange 41 to place the top or receiving end of said passage in alinement with the different raceways. Through the lateral wall of said passage, at the top end thereof, is an opening 47, through which articles are allowed to pass from the raceway to the passage 46.

In operation of the machine the part 40 is positioned with the opening 47 in alinement with the raceway from which articles are to be discharged. Said articles gravitate down the raceway till the foremost or end one thereof stands suspended by its head, bearing upon the surface-walls of the raceway part, its body portion in the opening 48, Fig. 9, of the part 40, and bearing against the edge of the separator-disk in position so that the prong 34, as it goes around by movement of the separator-disk, passes between said foremost tack and the one next to it, whereby the tack thus engaged is moved forwardly into the recess or opening of the separator-disk. As the separator continues moving rotatively the face-wall thereof adjacent said opening operates to swing forwardly the body portion of said tack, carrying it fully into the passage 46 of the part 40. The tack (its head portion being simultaneously moved into the passage) is supported to drop from the end of let-off prong 35 and gravitates downwardly, passing from the end of the passage into a receiver placed below, said receiver being made to pass from the passage to a driving mechanism whereby the tack is driven. Said receiving device and driving mechanism are fully described in United States Letters Patent No. 423,920, reference whereunto may be had.

Figs. 13, 14, 15, 16, and 17 show different stages in the operation of separating and feeding a tack from the raceway to the passage and are made on an enlarged scale. Fig. 13 shows the tack resting upon the raceway, its body portion bearing against the edge of separator-disk, in which position it stands directly in the path of the separator-prong 34, so that as said prong comes around it passes behind the tack, as shown in Fig. 14. The next stage is shown in Fig. 15. In Fig. 16 the separator has moved to a point where the tack is about to drop from the let-off prong 35. Fig. 17 shows the tack in transit through the passage 46 and the next foremost tack of the raceway-line in position for engagement by the separator.

The flange 41 of block 40 has been described as a means for supporting the block in connection with the raceway part. It is, how-

ever, made to serve an additional function—viz., that of withholding tacks from advancing in the raceway to a point or location in the separator part, except when the raceway is in alinement with passage 46 of the block, at which time the tacks are allowed to pass through opening 48, Fig. 9, to the separator. To the end of performing this function said flange is projected forwardly in the groove 31 of the raceway part to a plane beyond the path of engaging prong 34, as shown in Fig. 8.

It will be understood that in working operation a tack passes from the opening 48 by operation of the separator to the passage 46 of block 40, and immediately another tack advances into the opening 48 to bear against the edge face of the separator-disk and directly in the path of the separator-prong 34, preparatory for engagement as the separator next comes round.

To permit movement of the block 40 for shifting the passage 46 from operative relation with one to another of the raceways, provision must be made for moving the tack standing in the opening 48 at the time of making said shift. To this end the side walls of opening 48 are cut away, whereby beveled or cam faces 54 54 are formed, Fig. 9, which as the block is turned engage the body portion of the tack standing in the opening and cooperate with the raceway part to force the tack backwardly from the separator part into the raceway, where it is held in bearing contact with the edge face of flange 41 out of engagement by the separator until the opening 48 is again brought into alinement therewith. The separator, it will be observed, is brought into operative relation with each one of the raceways during each complete revolution of the separator-disk. To receive a tack from one of the raceways, it is only necessary to have the block 40 positioned with the opening 48 and passage 46 in alinement with the raceway from which the desired tack is to be taken, so that a tack in the raceway may advance into the opening 48 for engagement by the separator. It will now be observed that the block 40 and its opening 48 are shifted from one to another of the raceways by turning the block 40, to which end a handle connection 55 is provided that may be grasped by the workman for turning the block 40. Pivotally connected with the raceway part is a swinging lever 50, held in place adjustably by the pin 51. In working position this end bears in touch with the end face of block 40 and operates to hold the block against detachment from the raceway part. The body portion of said lever rests in the notch at the side of block 40. Movement of the block in one direction is stopped by the lever contacting with the side 52, Fig. 10, of the block 40, whereby the block is stopped in alinement with raceway *e*. Movement of the block in the opposite direction is stopped by the side 53 of the notch engaging with the opposite side of the lever 50, the block being thus stopped

in position of alinement with the raceway *a*. Removal of the pin 51 allows the lever 50 to swing backwardly for detachment of the part 40 from the raceway part.

Pivotally connected with the raceway part is a lever 60, Fig. 8. In the present instance this lever is shown as in a recess covered by the lever 50. A spring 61 under one end of said lever operates to press the other end thereof in yielding contact with the edge of part 40. Said part 40 is provided with notches 63 64, Figs. 10 and 12. The relation of these notches to the lever and part 40 is such that the end of said lever is located in one of said notches at the time of the part 40 being in operative relation with the raceway, so that to move the part 40 from operative relation with the raceway the end of lever 60 must be lifted against tension of the spring 61 out of the engaging notch, to which end the said walls of the notches are beveled to cooperate with the beveled face of the lever for automatically lifting the lever as the block 40 turns. This mechanism, it will be understood, performs the function of a yielding stop for stopping the movement of block 40 in alinement with the different raceways, and in case more than two raceways are to be employed this yielding stop connection would be more valuable than the above-described arrangement of lever 50. Said lever 60 and described connections operate to perform a further function—viz., that of automatically locking the part 40 against movement while an article is passing by operation of the separator from the raceway to the passage 46, to which end a pin 66, Fig. 8, is positioned beneath the end of lever 60, in alinement with a groove 67, formed in and partly surrounding the separator driving-shaft 68, the arrangement being such that as the lever 60 lifts from the described notches 63 64 in part 40 the pin 66 is projected into the groove 67. The relative arrangement is such that while the separator is engaged with and moving an article from the raceway to the passage 46 the shaft 68 has its full or ungrooved portion in alinement with the pin 66. Any attempted movement of the part 40 at this time operating to lift the lever 60 from its notch is prevented by the pin 66 bearing against the shaft 68, whereby it will be observed the block 40 is locked against movement except when the groove 67 is located to receive the projecting end of pin 66.

In Fig. 2 of the drawings the lever 15 is shown by dotted lines as depressed out of engagement with the ratchet 17 to a position therebelow, where it is held by a spring-actuated pin 76. This arrangement is provided in order that the mechanism for holding tacks in bulk may be moved rapidly when occasion requires it for filling the raceway leading therefrom previous to operation of the machine as a whole. When released from the position shown by dotted lines, the lever 15 is swung back to place and supported in bear-

ing contact with the ratchet 17 by the spring 16. The raceway part is represented as positioned at an angle of about forty-five degrees, this arrangement being preferable, as it has been found to best facilitate the gravitation of articles down the raceway. Fig. 19 shows the terminal end of the raceway connections looked at at this angle. This, as also Figs. 5, 6, 7, 8, 9, 10, 11, 12, and 18, are made on a scale of full size, as we prefer to make the parts therein shown. Above the raceways *a e* is a cover 80, its terminal end being extended forwardly to cover the top of passage 46, as shown in Fig. 17, whereby the article passing from the raceway to said passage 46 is prevented from lifting out of place and conducted quite to the point of being discharged.

Having thus described our invention, we claim and desire to secure by Letters Patent—

1. A device of the character indicated, having, in combination, a plurality of raceways, a single passage adapted for transit there-through of articles entered thereinto from the raceways, a flange projecting laterally from the part containing the single passage, whereby it is supported in connection with the raceway part, an opening from the single passage outwardly through said flange, wherethrough articles are admitted from the raceways to the single passage, said flange being engaged with the raceway part and closing the raceway ends, except through said opening and permitting movement for opening and closing the different raceways, at different times, and placing the single passage in operative communication therewith, substantially as described.

2. A device of the character indicated, having, in combination, a plurality of raceways, a single passage adapted for transit there-through of articles entered thereinto from the raceways, separator mechanism in operative relation with the raceways for separating and feeding articles therefrom to the single passage, stop mechanism adapted for staying the advance of articles in the raceways toward the separator, and permitting movement for opening and closing the raceways to the separator, the part containing the single passage also permitting movement adapted for placing the single passage in operative communication with the different raceways, at different times, connections operating in suitable time relations for simultaneously opening and closing the raceways to the separator, and means for automatically displacing articles located in the path of the separator, preliminary to closing the raceways thereto, substantially as described.

3. A device of the character indicated, having, in combination, a raceway, a separator mechanism for separating and feeding articles therefrom, stop mechanism adapted for staying the advance of articles in the raceway toward the separator, and permitting move-

ment for opening and closing the raceway to the separator, and means operating in suitable time relations therewith, for automatically displacing articles in the path of the separator, preliminary to closing the raceway thereto, substantially as described.

4. A device of the character indicated, having, in combination, a raceway, a separator, a stop mechanism for staying the advance of articles in the raceway toward the separator, and permitting movement for opening and closing the raceway to the separator, and means, actuated by movement of the stop in closing the raceway, for displacing articles in the path of the separator, preliminary to the closing of the raceway thereto, substantially as described.

5. A device of the character indicated, having, in combination, a raceway, a separator, a stop mechanism for staying the advance of articles in the raceway toward the separator, and permitting movement for opening and closing the raceway for displacing articles in the path of the separator, preliminary to the closing of the raceway thereto, substantially as described.

6. A device of the character indicated, having, in combination, a raceway, a separator adapted for separating and feeding articles therefrom, a stop for staying the advance of articles in the raceway toward the separator, and permitting movement for opening and closing the raceway to the separator, and provided with cam-faces to cooperate with the raceway parts for displacing articles located in the path of the separator, preliminary to the closing of the raceway thereto, substantially as described.

7. A device of the character indicated, having, in combination, a raceway, a part in connection with the raceway, provided with an opening wherethrough articles traversing the raceway to the discharge end thereof are allowed to pass, said part being adapted for staying the advance of articles through the raceway, except through said opening, and permitting movement for opening and closing the raceway, and means operating in suitable time relation therewith, for automatically displacing articles located in the opening, preliminary to movement of the part, for closing the raceway, substantially as described.

8. A device of the character indicated, having, in combination, a raceway, a part in connection with the raceway, provided with an opening wherethrough articles traversing the raceway to the discharge end thereof are allowed to pass, said part being adapted for stopping the advance of articles through the raceway, except through said opening, and permitting movement for opening and closing the raceway, and provided with beveled or cam faces 54 adjacent the opening, to cooperate with the raceway part for displacing articles located in the opening, preliminary to movement of the part for closing the raceway, substantially as described.

9. A device for taking tacks and the like from a raceway comprising a conical disk having a cam-slot therein, a prong for engaging a tack, said prong projecting from the side of the slot adjacent the tacks, and means for rotating said disk; substantially as described.

10. A device for taking tacks and the like from a raceway comprising a revoluble disk having a flange projecting conically therefrom, a cam-slot in said flange, and prongs as 34 and 35 projecting away from each other from opposite sides of the slot, whereby a tack is held between a prong and the top of the disk and then dropped, the cam-slot serving to throw the point of the tack forward while the back is thus held; substantially as described.

11. The separator composed of spindle, 32, disk, 33, an opening, *f*, through the disk, the engaging prong, 34, a carrying-surface, 33 and let-off, 35, substantially as described.

12. A separator and feeding device, including the flanged disk, 33, an opening therethrough, the engaging prong, 34, and carrying-surface, 33, substantially as described.

13. A device of the character indicated, including the flanged disk, 33, provided with an opening, *f* therethrough and carrying-surface, cooperating with the raceway part, for separating and feeding the articles therefrom, substantially as described.

14. A device of the character indicated, having, in combination, the raceways, *e, a*, leading to separate points for discharge, the part, 40, provided with the passage, 46, for transit therethrough of articles entered therein from the raceways and lateral opening, 47, wherethrough articles are admitted from the raceways to the passage, 46, a flange or other suitable extension projecting from the part, 46, into a groove or socket suitably formed in the raceway part, and supporting the part, 40, to permit movement rotatively, and a stop bearing against the part, 46, for holding it against detachment from the raceway part, substantially as described.

15. A device of the character indicated, having, in combination, the raceways, *e, a*, leading to separate points for discharge, the part, 40, provided with passage 46, for transit therethrough of articles entered therein from the raceways and lateral opening, 47, wherethrough articles are admitted from the raceways to the passage, 46, a flange, or other suitable extension, projecting from the part, 40, into a groove or socket suitably formed in the raceway part and supporting the part, 40, to permit movement rotatively, and a stop bearing against the part, 40, for holding it against detachment from the raceway part, and permitting movement by the workman, to allow detachment and removal of the part, 40, substantially as described.

16. A device of the character indicated, having in combination, the raceways, *e, a*, leading to separate points for discharge, the part, 40, having the passage, 46, adapted for transit

therethrough of articles entered therein from the raceways, and the lateral opening, 47, wherethrough articles are admitted from the raceways to the passage, 46, a connection between the parts, 40, and the raceway part, whereby the part, 40, is supported against the raceway part, to permit movement rotatively, for placing the passage, 46, in operative communication through the opening, 47, with the different raceways, at different times, the notch or recess, suitably formed in the part, 40, and a stop, 50, in said recess to engage the block at opposite sides of the recess and stop movement of the part as the passage, 46, moves into alinement with the raceways, substantially as described.

17. A device of the character indicated, having, in combination, the raceways, *e, a*, leading to separate points for discharge, the part, 40, having the passage, 46, adapted for transit therethrough of articles entered therein from the raceways, and the described or equivalent lateral opening, 47, wherethrough articles are admitted from the raceways to the passage, 46, a connection between the parts, 40, and the raceway part, whereby the part, 40, is supported against the raceway part to permit movement rotatively for placing the passage, 46, in operative communication through the opening, 47, with the different raceways, at different times, the notch or recess, suitably formed in the part, 40, and a stop, in said recess to engage the block at the opposite sides of the recess and stop movement of the part as the passage, 46, moves into alinement with the raceways, said stop being extended and bearing against the face of part, 40, for holding it in place to the raceway part, substantially as described.

18. A device of the character indicated, having, in combination, a plurality of raceways leading to separate points for discharge, the part, 40, having passage, 46, and opening, 47, wherethrough articles are admitted from the raceways to the passage, 46, a suitable connection between the part, 40, and the raceway part for supporting the part, 40, against the raceway part, and permitting movement of the part, 40, rotatively for placing the passage, 46, in communication through the opening, 47, with the different raceways, at different times, the lever, 60, suitably pivoted in the raceway part and bearing its outer end against the part, 40, and a spring applied to the lever, 60, whereby its end is pressed yieldingly into notches suitably formed in the part, 40, substantially as described.

19. A device of the character indicated, having, in combination, a plurality of raceways leading to separate points for discharge, the part, 40, having passage, 46, and opening, 47, wherethrough articles are admitted from the raceways to the passage, 46, a suitable connection between the part, 40, and the raceway part for supporting the part, 40, against the raceway part, and permitting movement of the part, 40, rotatively for placing the pas-

sage, 46, in communication through the opening, 47, with the different raceways, at different times, the lever, 60, suitably pivoted in the raceway part, and bearing its outer end
5 against the part, 40, and a spring applied to the lever, 60, whereby its end is pressed yieldingly into notches suitably formed in the part, 40, and the separator, having its rotating spindle provided with groove, 67, and a connection
10 under the lever, 60, in alinement with said groove and coöperating with the spindle

to lock the lever, 60, during a part of each rotation of the spindle, substantially as described.

Signed at Lynn, Massachusetts, this 16th 15 day of March, A. D. 1895.

SHERMAN W. LADD.
RONALD F. McFEELY.

Witnesses:

C. B. TUTTLE,
A. M. TUTTLE.