

No. 830,573.

PATENTED SEPT. 11, 1906.

H. E. DADE.
BINDER.

APPLICATION FILED AUG. 26, 1906.

3 SHEETS—SHEET 1.

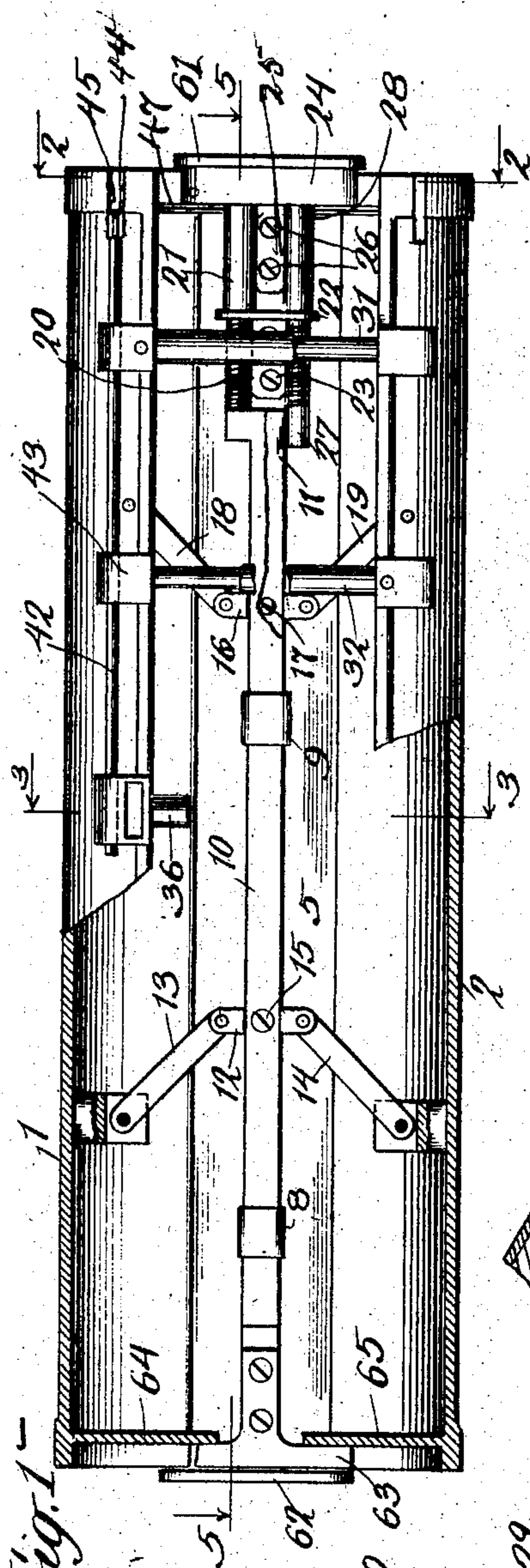


Fig. 1

WITNESSES:
Emily B. Prater
O. & W. C. Pike

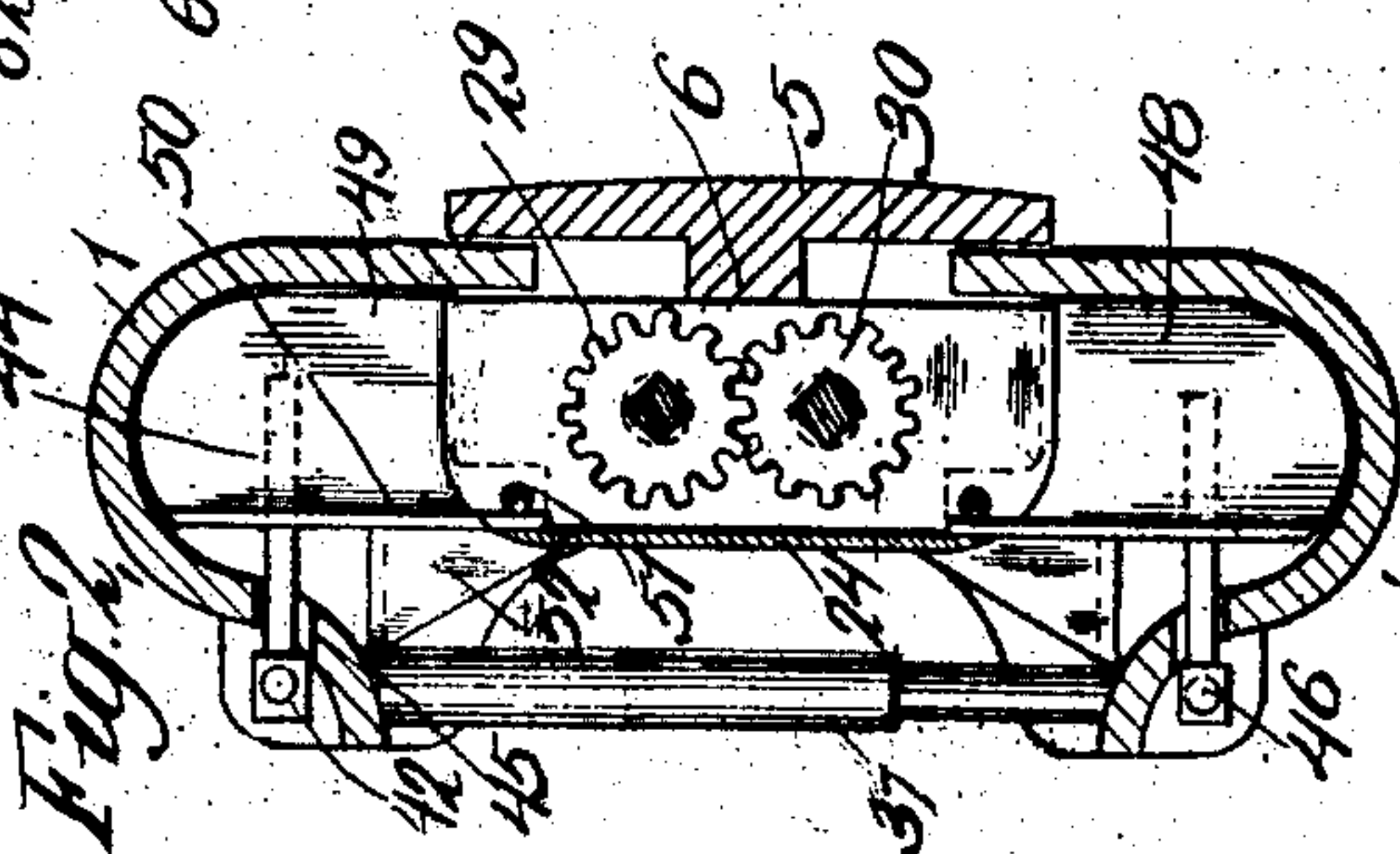


Fig. 2

Fig. 4

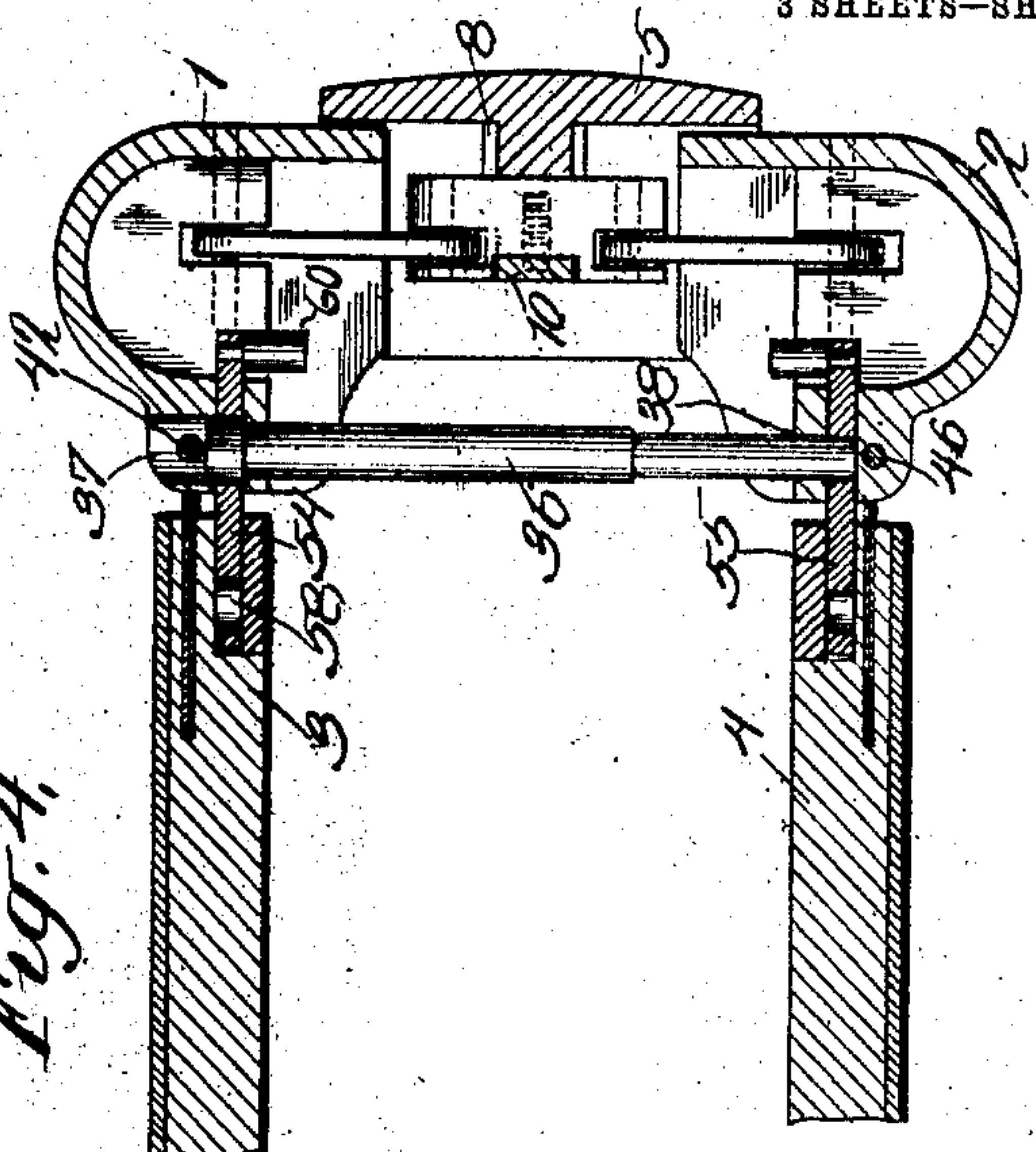


Fig. 3

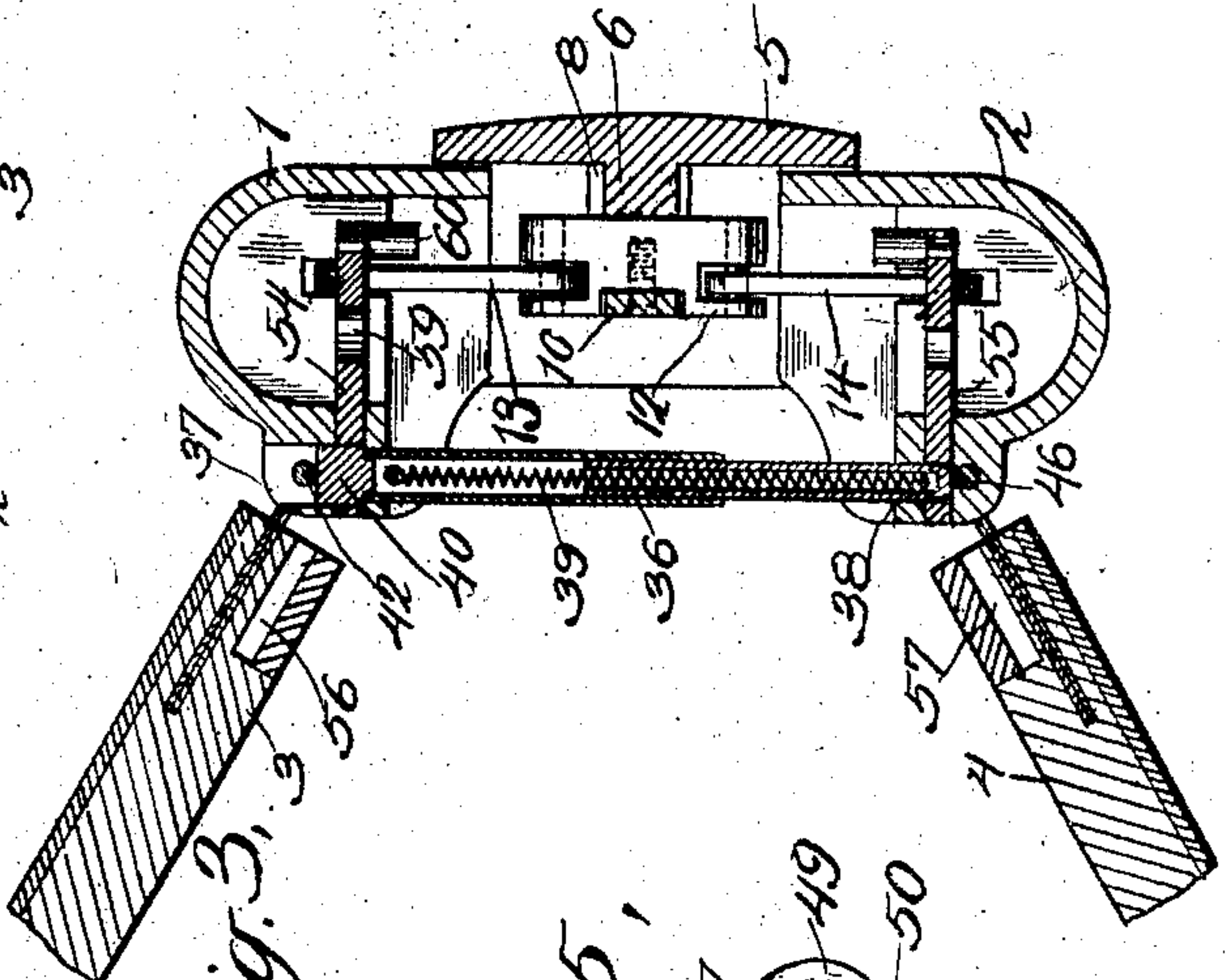
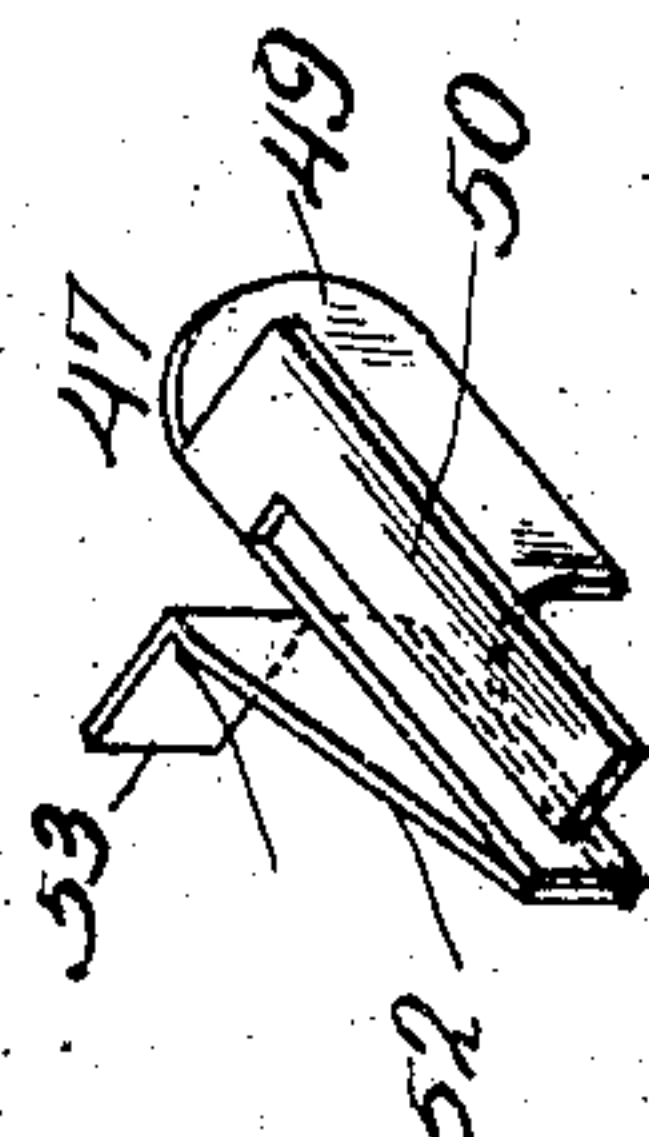


Fig. 15



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3 SHEETS—SHEET 2.

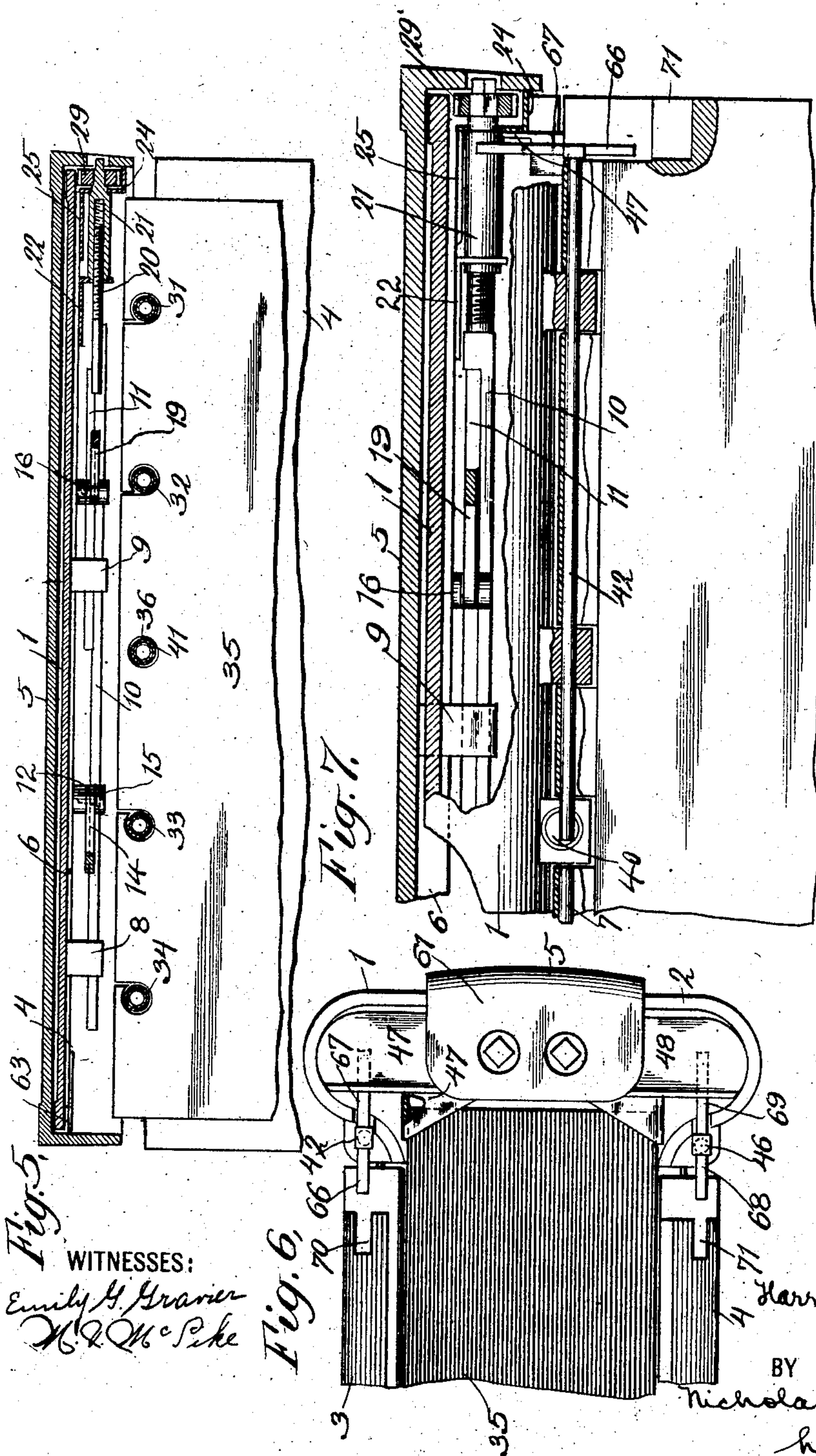


Fig. 5.

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Fig. 6.

Fig. 7.

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3 SHEETS—SHEET 3.

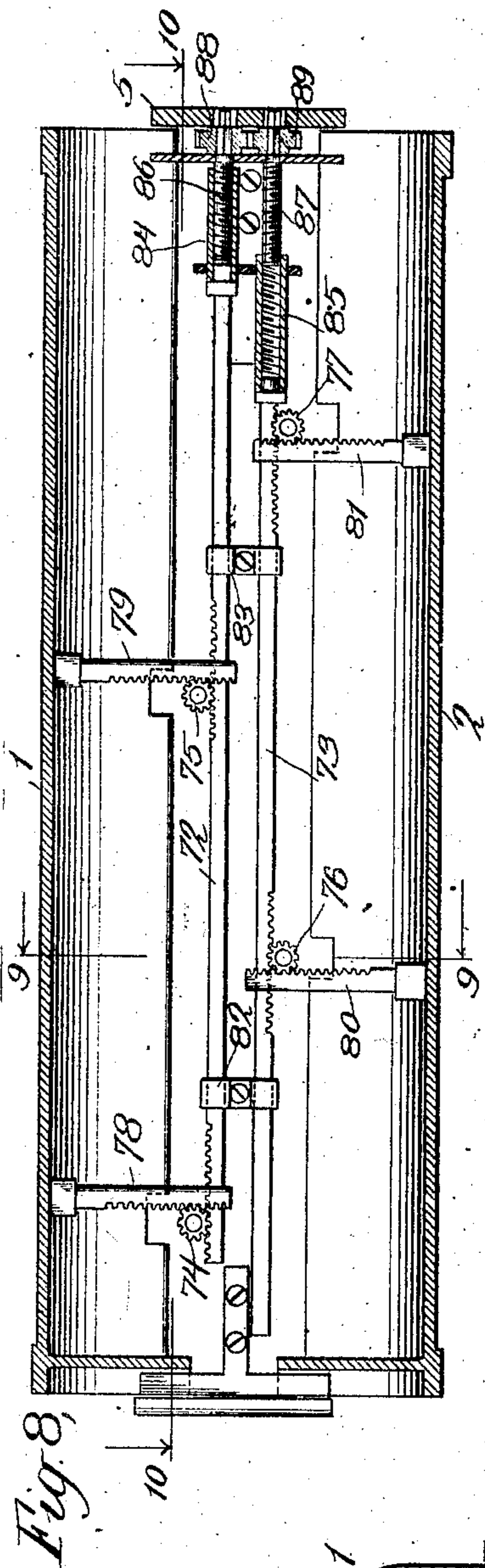


Fig. 8.

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Fig. 9.

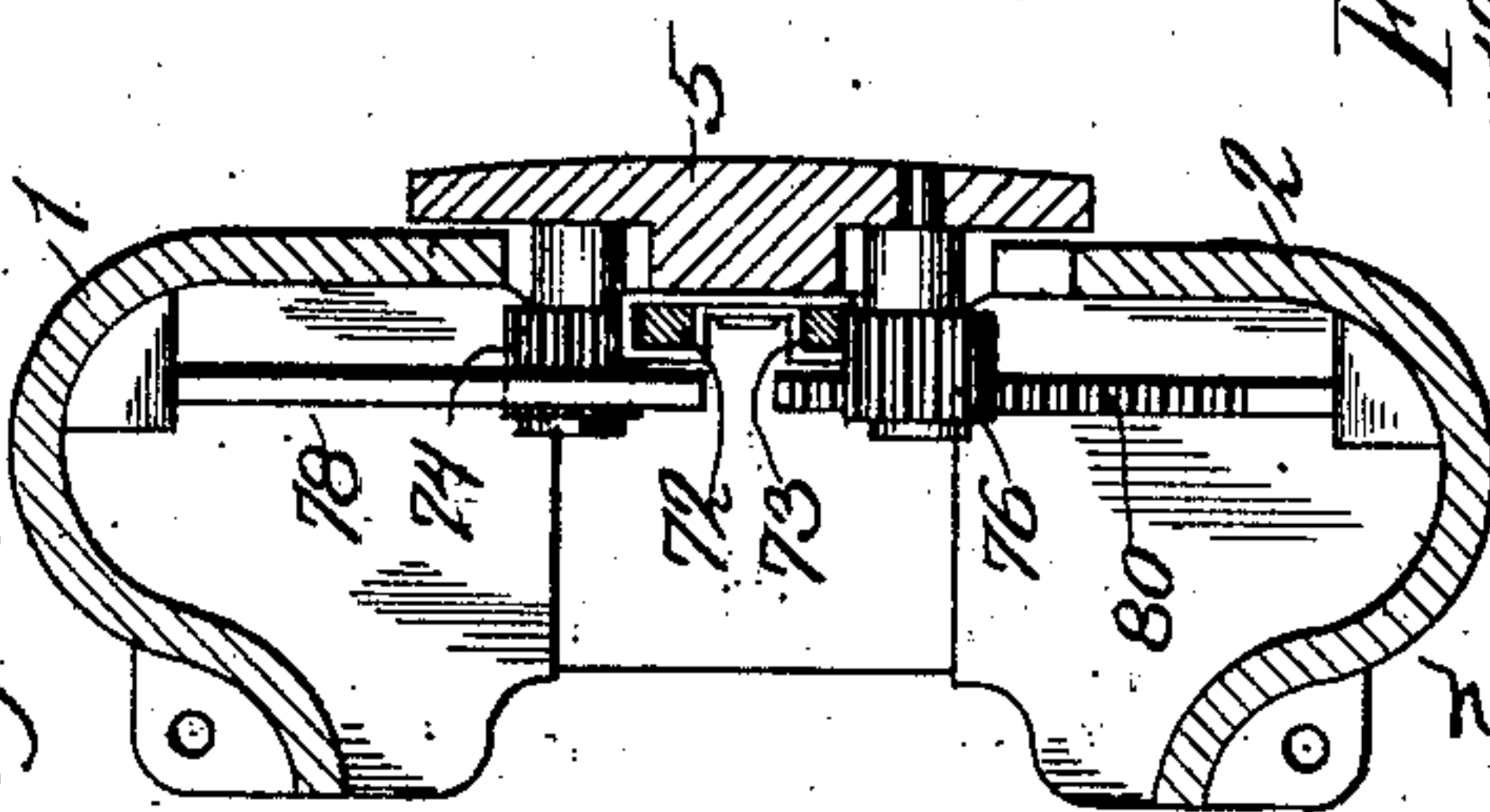


Fig. 10.

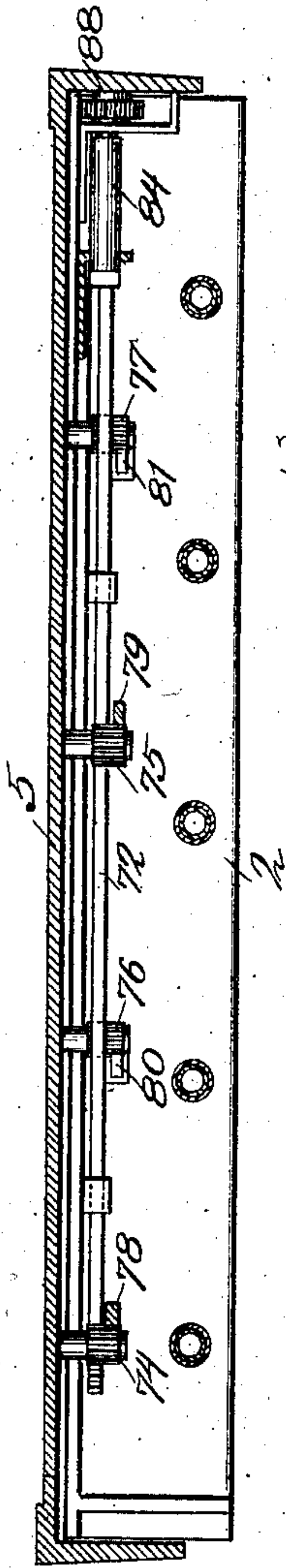


Fig. 11.

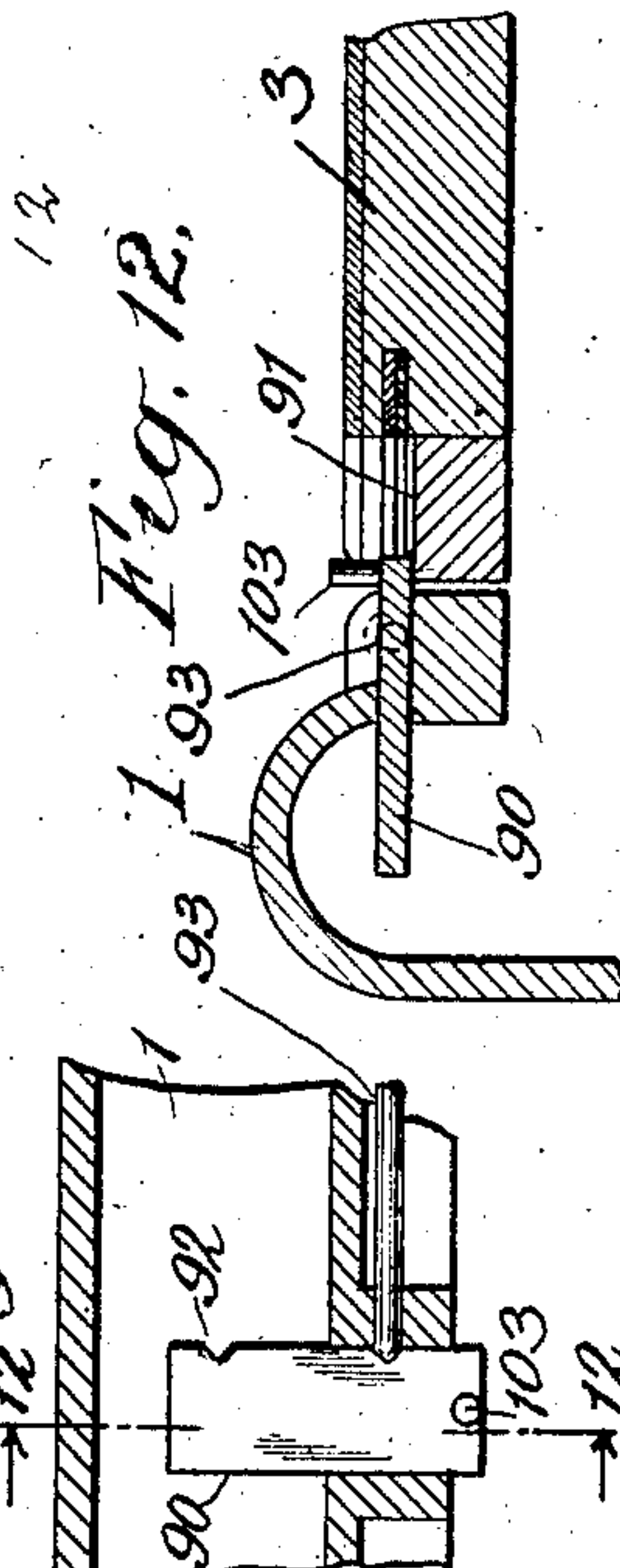


Fig. 12.

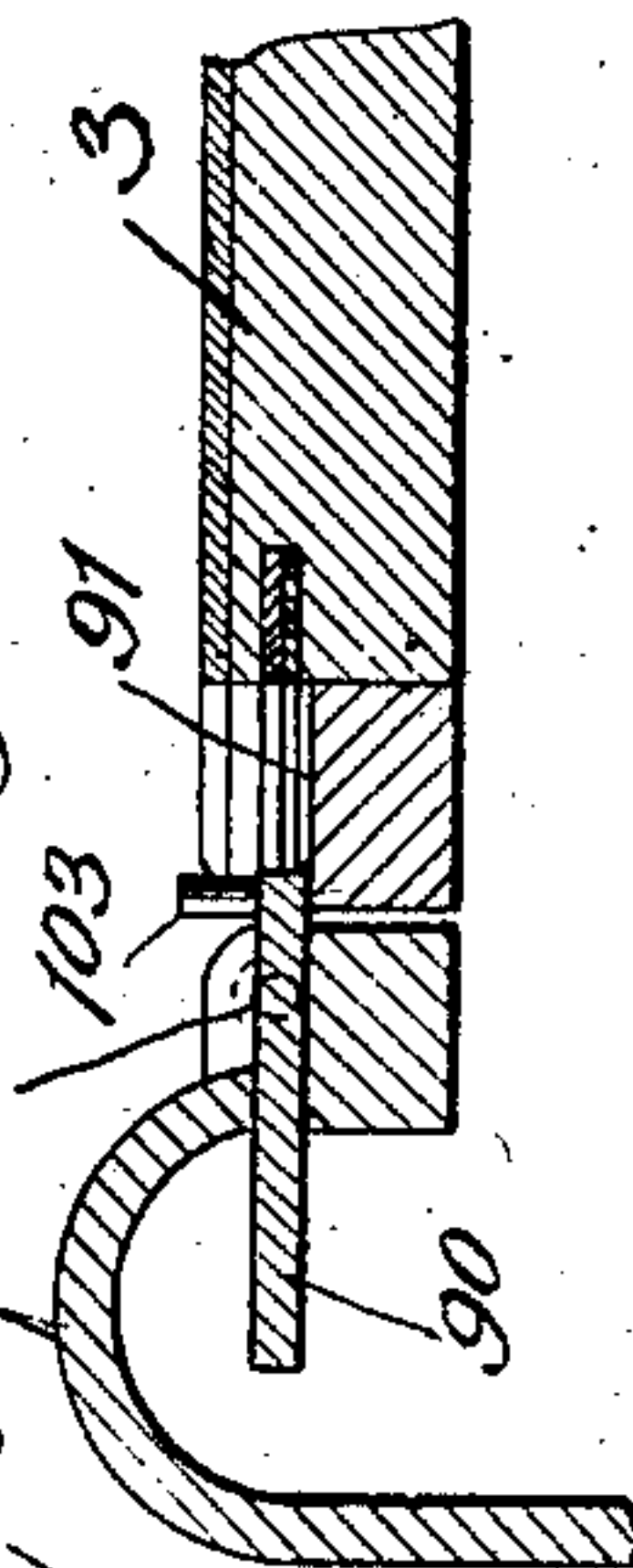


Fig. 13.

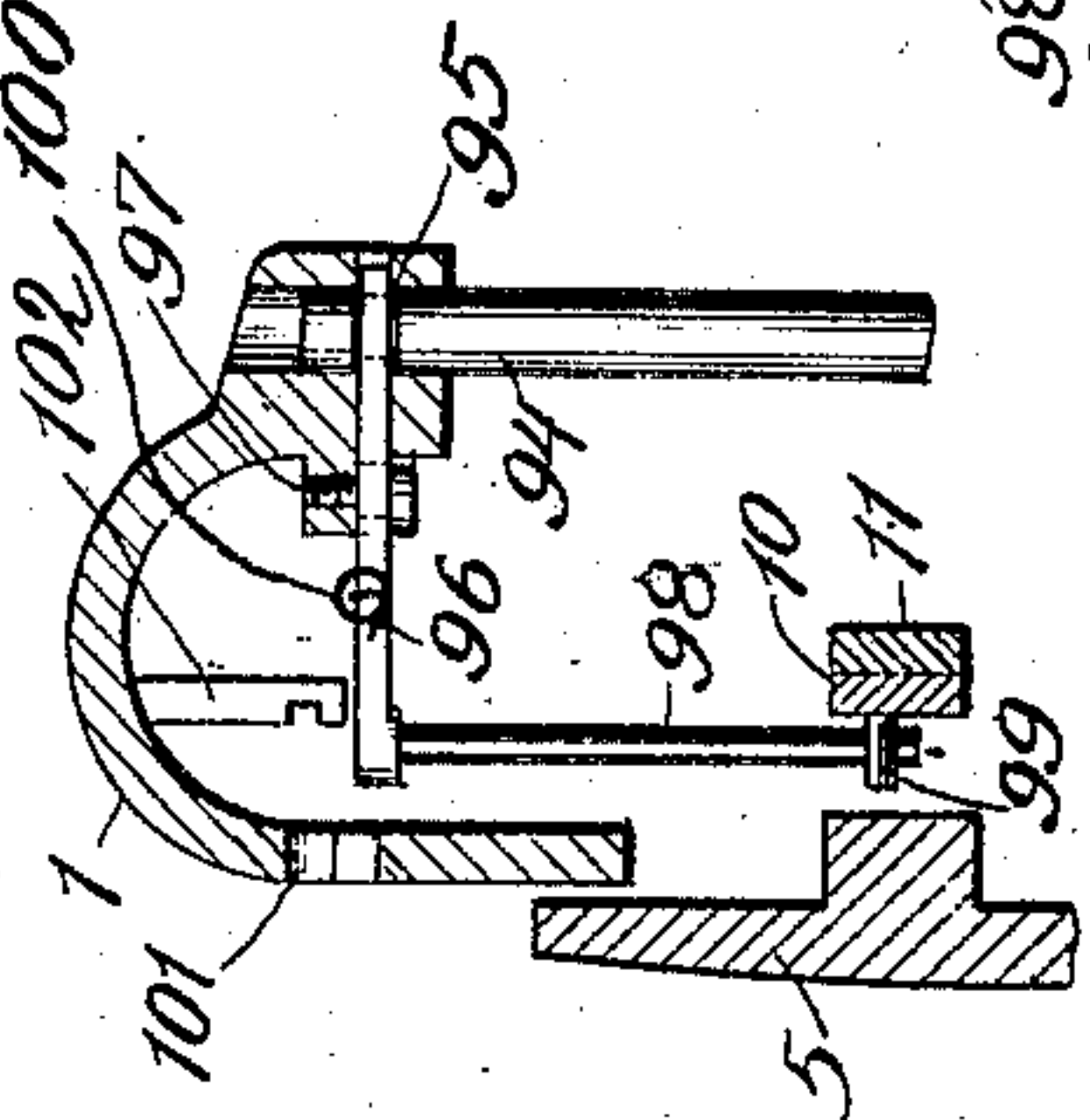
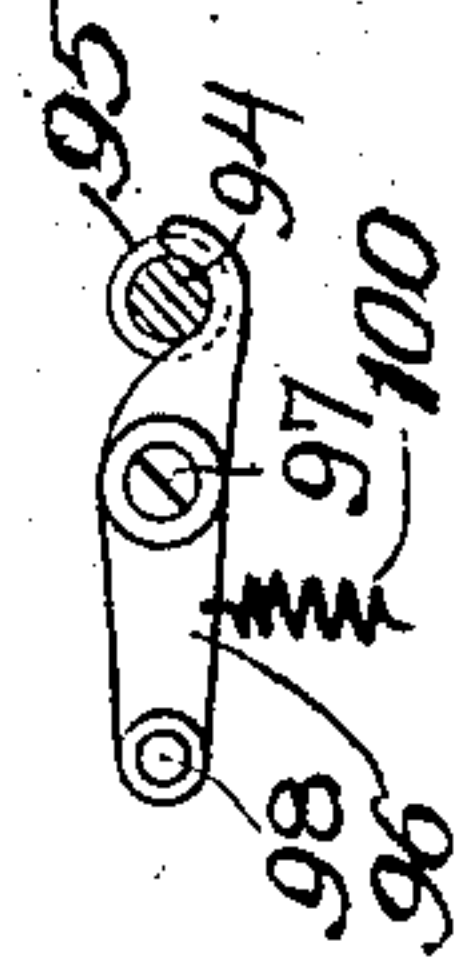


Fig. 14.



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UNITED STATES PATENT OFFICE.

HARRY E. DADE, OF CANAAN, CONNECTICUT.

BINDER.

No. 830,573.

Specification of Letters Patent.

Patented Sept. 11, 1906.

Application filed August 26, 1905. Serial No. 275,374.

To all whom it may concern:

Be it known that I, HARRY E. DADE, a citizen of the United States, and a resident of Canaan, in the county of Litchfield and State of Connecticut, have invented certain new and useful Improvements in Binders, of which the following is a specification.

This invention relates to improvements in binders in which sheets are adapted to be held removably in place, and more particularly to such as are designed for use as loose-leaf ledgers.

The invention relates to a novel arrangement for moving to and fro and locking in place the strips of the binder.

It also relates to certain novel means employed to lock the covers of the binder closed.

It also relates to certain structural features and their arrangement hereinafter pointed out.

In the accompanying drawings, forming part of this specification, and in which like reference-numerals designate corresponding parts, the invention is shown in its preferred embodiment and also in certain modifications.

In the drawings, Figure 1 is a plan view of the improved binder with the covers removed and partly broken away. Fig. 2 is a section on line 2 2 of Fig. 1. Fig. 3 is a section on line 3 3 of Fig. 1 and with the covers in slightly-opened position. Fig. 4 is a view similar to Fig. 3, but with the covers closed and locked down. Fig. 5 is a transverse sectional view taken on the line 5 5, Fig. 1. Fig. 6 is an end view showing the covers and sheets in place and a modified means for locking the covers closed. Fig. 7 is a partial longitudinal sectional view of half a binder with one of the expansible strips broken away and showing in sectional plan the modified means for locking the covers closed, which is illustrated in Fig. 6. Fig. 8 is a sectional plan view of a modification. Fig. 9 is a transverse section on the line 9 9 of Fig. 8. Fig. 10 is a longitudinal section on the line 10 10 of Fig. 8. Fig. 11 is a detail of a modified form of the means for locking the covers. Fig. 12 is a sectional view of such modified form of such locking means on line 12 12 of Fig. 11. Fig. 13 is a transverse section showing a modified means for locking the removable post in place. Fig. 14 is a detail of the locking means shown in Fig. 13, and Fig. 15 is a perspective view of the keeper herein-
after described.

Referring now more particularly to Figs. 1 to 5 of the drawings, 1 and 2 are the upper and lower strips of the binder, provided with hinged covers 3 and 4. 5 is the back, which covers the space between the abutting edges of the upper and lower strips 1 and 2. These parts are preferably made of cast metal. The back is provided with a central rib 6, to which is rigidly secured guides 8 and 9, in which work the slide-rods 10 and 11. Secured to the slide-rod 10 is a cross-head 12, to which and to the respective strips are pivotally connected links 13 and 14. This cross-head 12 is shown connected to slide-rod 10 by a screw 15. Rod 11 carries a cross-head 16, secured to it by screw 17. 18 and 19 are links pivotally connected to the ends of the cross-head 16 and to the upper and lower strips 1 and 2, respectively. Rod 10 carries a threaded extension 20, which works in a threaded rotatable tube 21. This tube is journaled at one end in an angle-bracket 22, fixed on the rib 6 of the back 5 by screws 23. It is journaled at its other end in a casing 24, which has a tongue 25 fixed to the rib 6 by screws 26. Rod 11 carries a threaded extension 27, similar to the extension 20, and which works in a threaded tube 28, similar to tube 21 and similarly journaled. The ends of these tubes are squared, so as to receive and be operated by a key. These threaded tubes carry intermeshing pinions 29 and 30, located inside of the casing 24. It will be seen that by the arrangement described when either of the threaded tubes 21 or 28 is rotated by the key the other tube is rotated in the opposite direction, so that the rods 10 and 11 move in opposite directions. This causes the cross-heads 12 and 16 to move toward or from each other, according to the direction in which the key is turned. When these cross-heads move toward each other, the upper and lower strips 1 and 2 are moved toward each other. When the cross-heads are caused to move from each other, the upper and lower strips are moved from each other, the back always maintaining its central position. The cross-heads 12 and 16, with their links, constitute toggles for the movement of the upper and lower strips. The strips 1 and 2 are provided with four fixed telescopic posts 31, 32, 33, and 34, designed to engage holes in the sheets 35. 36 is a removable telescopic post which extends through an aperture 37 in the strip 1 and into

a recess 38 in the lower strip, so as to engage the latter. The post 36 is tubular and is provided with an internal spring 39, tending to extend the post. 40 is the head of the post. This post 36 extends through closed holes 41 in the sheets 35 and must therefore be removed from the binder before the sheets can be detached from the fixed posts. 7 and 42 are the pintles for hinging the upper cover 3 to its strip 1. They pass through holes formed in the bosses 43 on strip 1, and pintle 42 extends over the removable post when the latter is in place, thereby locking it in position. When the pintle 42 is drawn part way out, it releases the removable post 36, so that the spring within the post projects the post above the opening 37, whereupon the post its outer end provided with an extension 44, may be readily removed. The pintle 42 has which when the pintle is in its innermost position enters a slot 45, formed at one end of strip 1. (See Fig. 2.) The lower cover 4 is secured in place by a pintle 46, which is arranged and constructed in a similar manner to pintle 42; but since it has no office to perform with reference to the removable post it may extend the full width of the binder. The pintle 42 is retained in position against unauthorized removal by a keeper 47, which works inside of the upper strip 1 and is guided and retained in position against the side of the casing 24. The keeper 47 consists of a flat body portion 49, which slides just outside of and against the side of the casing 24. The keeper is provided with a tongue 50, extending at right angles to the body portion 49, entering the casing 24 at one end just beneath its top and above a pin 51, passing through the casing. The tongue 50 serves to guide and retain the keeper in place. Secured to the inner side of the body portion 49 of the keeper is a wing portion 52, having a finger 53 turned over at a right angle. 48 is a keeper similarly constructed and arranged. When the stack of sheets is in place in the binder, the fingers of the keepers, such as 53, rest on the top and bottom of the sheets, and the body portion, as 49, of the keepers projects beyond the extensions, as 44, of the pintles, assuming that the upper and lower strips are in their normal working position and pressing against the sheets. When the parts are in this position, the pintles cannot be withdrawn, because they are retained in place by the keepers. In order to withdraw the pintles, the strips must be separated far enough to bring the projecting ends, as 44, of the pintles beyond the body portions of the keepers, whereupon the pintles may be drawn back. Thus when the sheets have been inserted in the binder and the post 36 has been inserted and locked against removal by sliding the rod or pintle 42 over its head then the mere contracting of the binding-strips 1 and 2 automatically locks the rod or pintle 42 in place. Likewise when the strips 1 and 2 are expanded the rod or pintle 42 is unlocked automatically. Therefore the means for locking said rod or pintle in place is automatically controlled by the expansion and contraction of the binder. The locking means may be considered as comprising both the projecting end 44 of the rod or pintle 42 and also the keeper 47, adapted to engage it. When the binder is expanded, the keeper retains a relatively fixed position, similar to that of the back 5, while, on the other hand, the rod or pintle 42 and its extension 44 move with the binder-strip 1 away from the keeper 47. The keeper 48 retains a similar position relatively to the binder. When the binder is contracted and after bringing the extension rod into locked position, the strips 1 and 2 engage the ends of the keepers 47 and 48, so as to press the fingers 53 against the bound sheets. The keeper 48 has no office to perform in the construction shown in Figs. 1 to 5 and now being described. It does have an office to perform with reference to Figs. 6 and 7 and 11, as will hereinafter be explained. 54 and 55 are latching-plates which work back and forth in the upper and lower strips, respectively. When they are in their forward positions, they enter recesses 56 and 57 in the upper and lower covers 3 and 4, respectively, for the purpose of locking the covers in their closed position. These plates 54 and 55 slide in the bosses through which passes the removable post 36. Plate 54 has two holes 58 and 59, and plate 55 has similar holes for the purpose of receiving the removable post 36. When these latching-plates 54 and 55 are in their inner position, as shown in Fig. 3, the covers are released and may be worked on the pintles. When these latching-plates 54 and 55 are in their forward position, as shown in Fig. 4, they enter the recesses 56 and 57 of the covers and lock them to the upper and lower strips and hold them rigidly in closed position. The latching-plates 54 and 55 are thus locked in their forward or in their rear position by the removable post 36. If it is not desired to use these latching-plates 54 and 55, they will be moved to their rear position, where they will not interfere with the covers and where they will be held out of the way. These latching-plates are provided with stops, such as 60, to prevent them from falling forward out of the recesses in which they work. In the arrangement as shown in Figs. 3 and 4 these latching-plates 54 and 55 move by gravity out of engagement with the covers when the removable post has been withdrawn; but they may be otherwise actuated. The back 5 has turned-up portions 61 and 62, which embrace the ends of the strips. The strips 1 and 2 are held firmly down at their ends against the back 5. The casing 24 performs this office at one end of the strips.

At the other end this office is performed by a plate 63, secured to the rib 6 of the back and projecting beyond the rib. 64 and 65 are flanges formed on the upper and lower strips at one end, respectively, and abutting against the edges of the sheets and located the same distance from the turned-up portion 62 as are the keepers 47 and 48 from the turned-up portion 61.

Referring now to Figs. 6 and 7, the pintles 42 and 46 instead of having extensions like the extensions 44 (shown in Fig. 2) have cross-pieces. The cross-piece for the upper pintle comprises the short extension 66 and the long extension 67. The cross-piece for the lower pintle comprises the short extension 68 and the long extension 69. The long extensions 67 and 69 are designed to enter recesses 70 and 71, respectively, in two outer edges of the covers at the rear, so as to lock the covers to the strips 1 and 2 and hold them in closed position. Thus these extensions on the pintles accomplish the function of the latching-plates 54 and 55, (shown in Figs. 3 and 4,) and these latching-plates would not be needed in the arrangement shown in Figs. 6 and 7. In Fig. 6 keepers 47 and 48 lock the pintles in position and against withdrawal. When extensions 67 and 69 are in engagement with the recesses 70 and 71, the extensions 66 and 68 of the pintles are on the inner sides of the keepers and the keepers prevent the withdrawal of the pintles. When the key has been applied to separate the strips, the extensions 66 and 68 are released from the keepers, so that the pintles may be withdrawn to disengage the extensions 67 and 69 from the recesses 70 and 71. When it is desired to lock the binder without locking the covers closed, then the pintles will be inserted so that the extensions 67 and 69 will project behind the keepers, as shown in Figs. 6 and 7. In this position the short extensions 66 and 68 will be clear of the recesses 70 and 71 and will not interfere with the movement of the covers, as shown in Figs. 6 and 7.

Referring now to Figs. 8, 9, and 10, these figures show a modified arrangement for moving the strips 1 and 2 to and from each other. 72 and 73 are two reciprocating rack-bars. The teeth of bar 72 meshes with pinions 74 and 75, carried on the back 5. The teeth of bar 73 meshes with pinions 76 and 77, carried also on the back 5. 78 and 79 are two rack-posts rigidly secured to strip 1 and meshing with pinions 74 and 75, respectively. 80 and 81 are two similar rack-posts secured to strip 2 and meshing with pinions 76 and 77, respectively. 82 and 83 are guides fixed on the back 5 for the bars 72 and 73. Bars 72 and 73 are provided with threaded tubes 84 and 85, respectively. In these tubes work screws 86 and 87, carrying meshing gears 88 and 89. When the key is applied to rotate one of the gears 88 or 89, the bars 72 and 73

are moved longitudinally in opposite directions, thereby rotating the pinions with which they mesh and actuating the upper and lower strips. When the key is turned in one direction, the strips are moved toward each other. When the key is turned in the opposite direction, the strips are moved apart.

Referring now to Figs. 11 and 12, 90 is a latching-plate having a handle 103 working back and forth in the strip 1 and operating to enter a recess 91 in the upper cover and lock it closed in the same way as does the latching-plate 54 in Figs. 3 and 4. Latching-plate 90 in Figs. 11 and 12 has back and front notches 92, in which the pintle 93 enters to lock the latching-plate in forward or rear position. The pintle 93 is of the same construction as the pintle 42, (shown in Fig. 2,) except that its inner end is arranged to engage the notches in the latching-plate 90. When the arrangement shown in Figs. 11 and 12 is used, there would be two latching-plates 90, one for each strip, and the removable post would not be used. Fig. 11 shows how the removable post might be dispensed with and the latching-plates for the covers still be locked in place.

Referring now to Figs. 13 and 14, 94 is a removable post having the same location and purpose as the removable post 36. (Shown in Figs. 1, 2, 3, and 4.) The removable post 94 has a notch 95 at its upper end, which is engaged by a latch 96, pivoted on the screw 97, fastened in the upper strip 1. The latch 96 is provided with a pin 98, arranged to be engaged by a lug 99 on the reciprocating rod 10. Latch 96 is provided with a spring 100, which tends to keep the latch in the position in which it engages the removable post. When the binder is unlocked, the movement of the rod 10 actuates the latch 96, thereby releasing removable post 94, whereupon the latter may be withdrawn from the binder. It may sometimes be desirable to remove the post 94 without unlocking the binder. For this purpose a keyhole 101 is provided. 102 is an abutment for the inner end of the key and is carried on the upper strip. By this arrangement the key may be inserted through the hole 101 to engage the latch 96 and move it from locking position.

There are many other modifications of the invention. For example, the extensions 20 and 27 and the meshing tubes 21 and 28, respectively, may have their threads so arranged as to cause the rods 10 and 11 to move in the same direction. In this case one of the toggles would be reversed and the upper and lower strips would be actuated to and from each other in the same manner as already described.

It is to be understood that the invention is not limited to the precise construction and arrangement shown in the drawings.

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

1. In a binder, the combination of upper and lower strips movable to and from each other; covers hinged to said strips; and means coacting with the covers and strips for locking the covers to the strips in closed position.

2. In a binder, the combination of upper and lower strips movable to and from each other and having recesses therein; covers hinged to said strips; and locking-pieces arranged to engage said covers and said recesses of the strips to lock the covers to the strips in closed position.

3. In a binder, the combination of upper and lower strips movable to and from each other and having recesses therein; covers hinged to the strips and having recesses therein; movable pieces arranged to enter the recesses of the strips and covers to lock the covers to the strips in closed position; and means for locking said movable pieces in locking position.

4. In a binder, the combination of upper and lower strips movable to and from each other and having recesses therein; covers hinged to the strips and having recesses therein; movable pieces arranged to enter the recesses of the strips and covers to lock the covers to the strips in closed position; and a removable post extending between said upper and lower strips and arranged to lock said movable pieces in locking position.

5. In an expansible and contractible binder, the combination of upper and lower strips; fixed posts extending between the strips; a removable post extending between the strips; a movable rod carried on the upper strip and arranged to lock the removable post in place; and means for locking said rod in place, said means being controlled by the expansion and contraction of the binder.

6. In a binder, the combination of upper and lower strips having hinged covers; fixed posts extending between the strips; a removable post extending between the strips; and a movable rod carried on the upper strip and arranged to lock the removable post in place, said rod acting also as a pintle for the upper cover.

7. In a binder, the combination of upper and lower strips having hinged covers; fixed posts extending between the strips; a removable post extending between the strips; a movable rod carried on the upper strip and

arranged to lock the removable post in place; and means for locking said rod in place, said rod acting also as a pintle for the upper cover.

8. In an expansible and contractible binder, the combination of upper and lower strips having hinged covers; fixed posts extending between the strips; a removable post extending between the strips; a movable rod carried on the upper strip and arranged to lock the removable post in place; and means for locking said rod in place, said means being controlled by the expansion and contraction of the binder, said rod acting also as a pintle for the upper cover.

9. In a binder, the combination of upper and lower strips; a back; a pair of rods carried by the back; means actuated by said rods for moving the strips to and from each other; and rotatable intermeshing members each engaging a rod for simultaneously actuating the rods.

10. In a binder, the combination of upper and lower strips; a back; a pair of slide-rods carried by the back and having threaded extensions; rotatable threaded members engaging said extensions; meshing gears on said members; and means for moving the strips to and from each other actuated by said rods, whereby when one of said threaded members is rotated the strips are moved.

11. In a binder the combination of upper and lower strips; a back; a pair of slide-rods carried by the back; toggles connected with said strips and actuated by said rods for moving the strips to and from each other; and rotating intermeshing members each engaging a rod for simultaneously actuating said slide-rods.

12. In a binder, the combination of upper and lower strips; a back; a pair of slide-rods carried by the back and having threaded extensions; rotatable threaded tubes on said extensions; meshing gears on said tubes; and toggles connected with said strips for moving the strips to and from each other actuated by said rods, whereby when one of said tubes is rotated the strips are moved.

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

HARRY E. DADE.

Witnesses:

NICHOLAS M. GOODLETT, Jr.,
EMILY G. GRAVIER.

It is hereby certified that in Letters Patent No. 830,573, granted September 11, 1906, upon the application of Harry E. Dade, of Canaan, Connecticut, for an improvement in "Binders," errors appear in the printed specification requiring correction, as follows: Page 2, lines 18 and 19 should be transposed, and page 3, line 78, the letter "t" should read *it*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 20th day of November, A. D., 1906.

[SEAL.]

F. I. ALLEN,
Commissioner of Patents.