

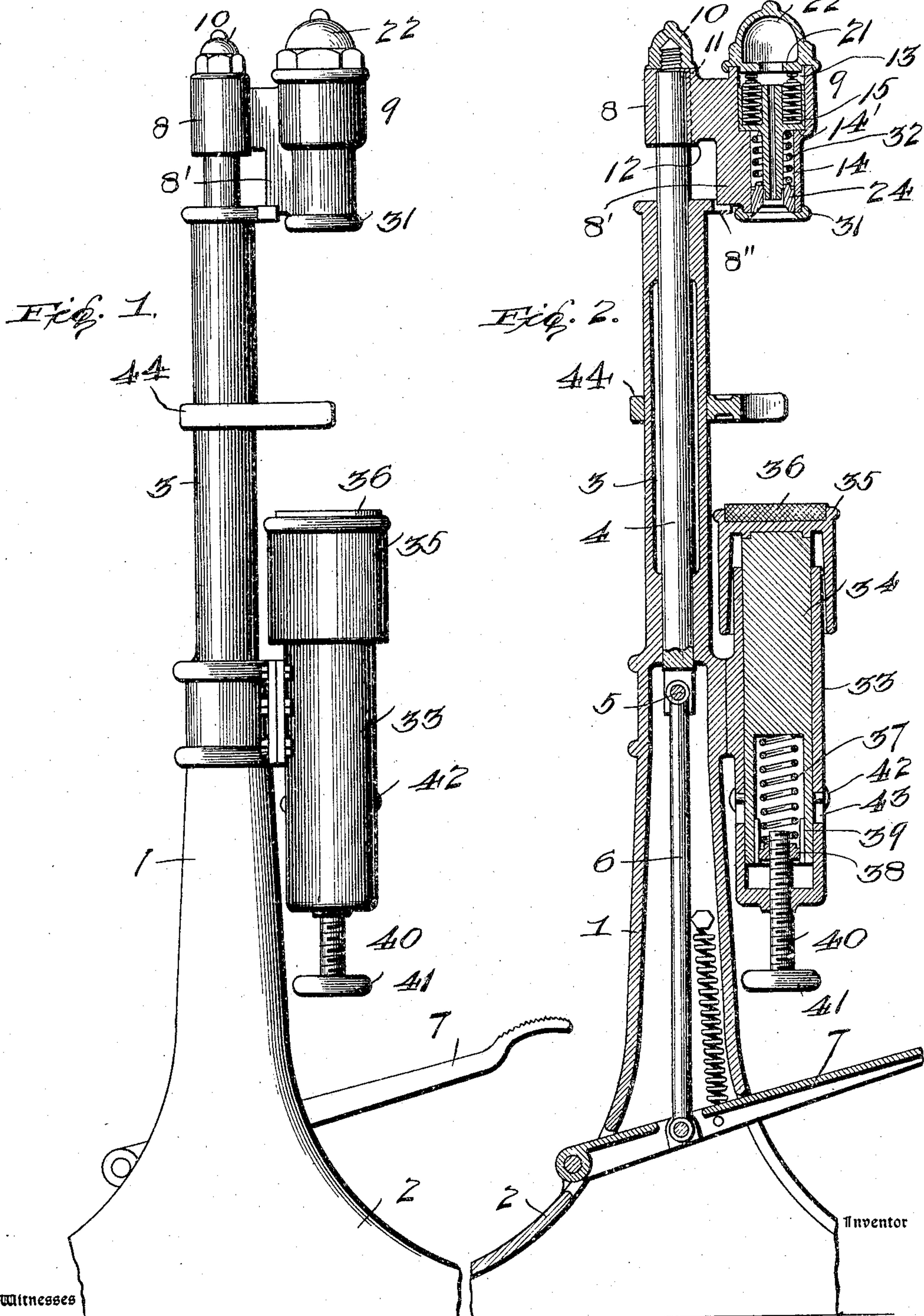
No. 789,675.

PATENTED MAY 9, 1905.

E. D. SCHMITT.  
MACHINE FOR APPLYING BOTTLE SEALS.

APPLICATION FILED SEPT. 1, 1904.

3 SHEETS—SHEET 1.



Witnesses  
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F. J. Johnson

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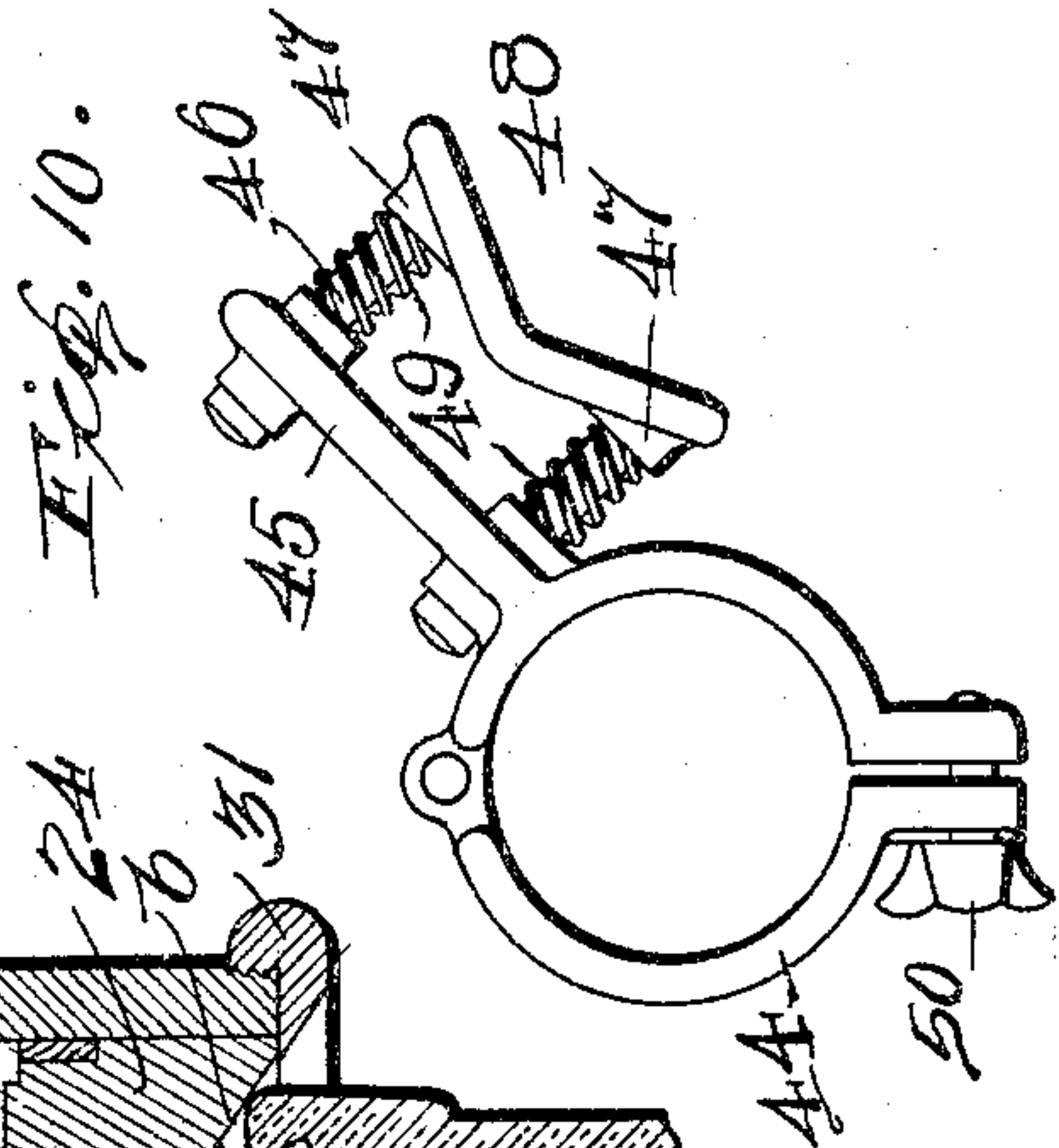
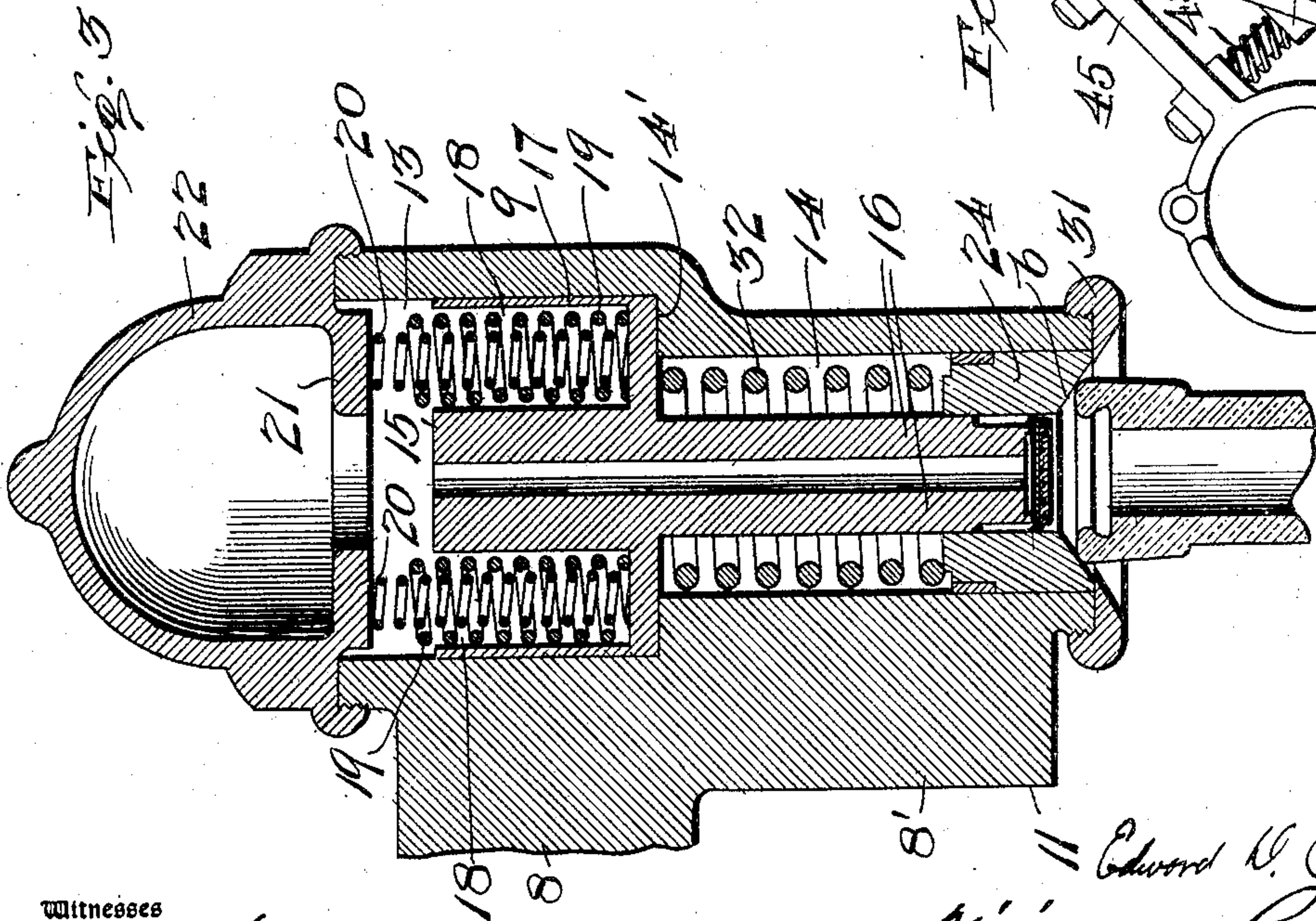
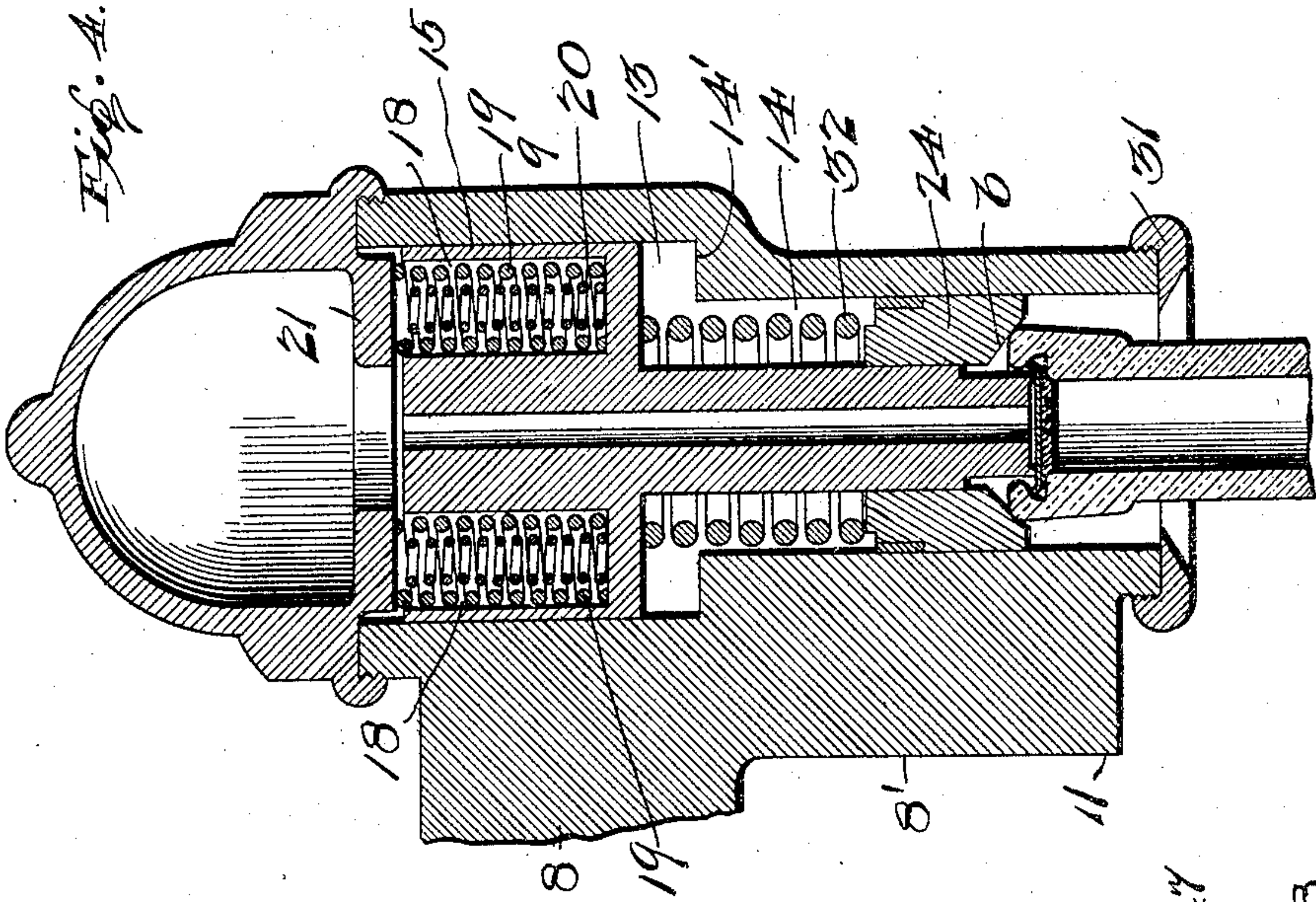
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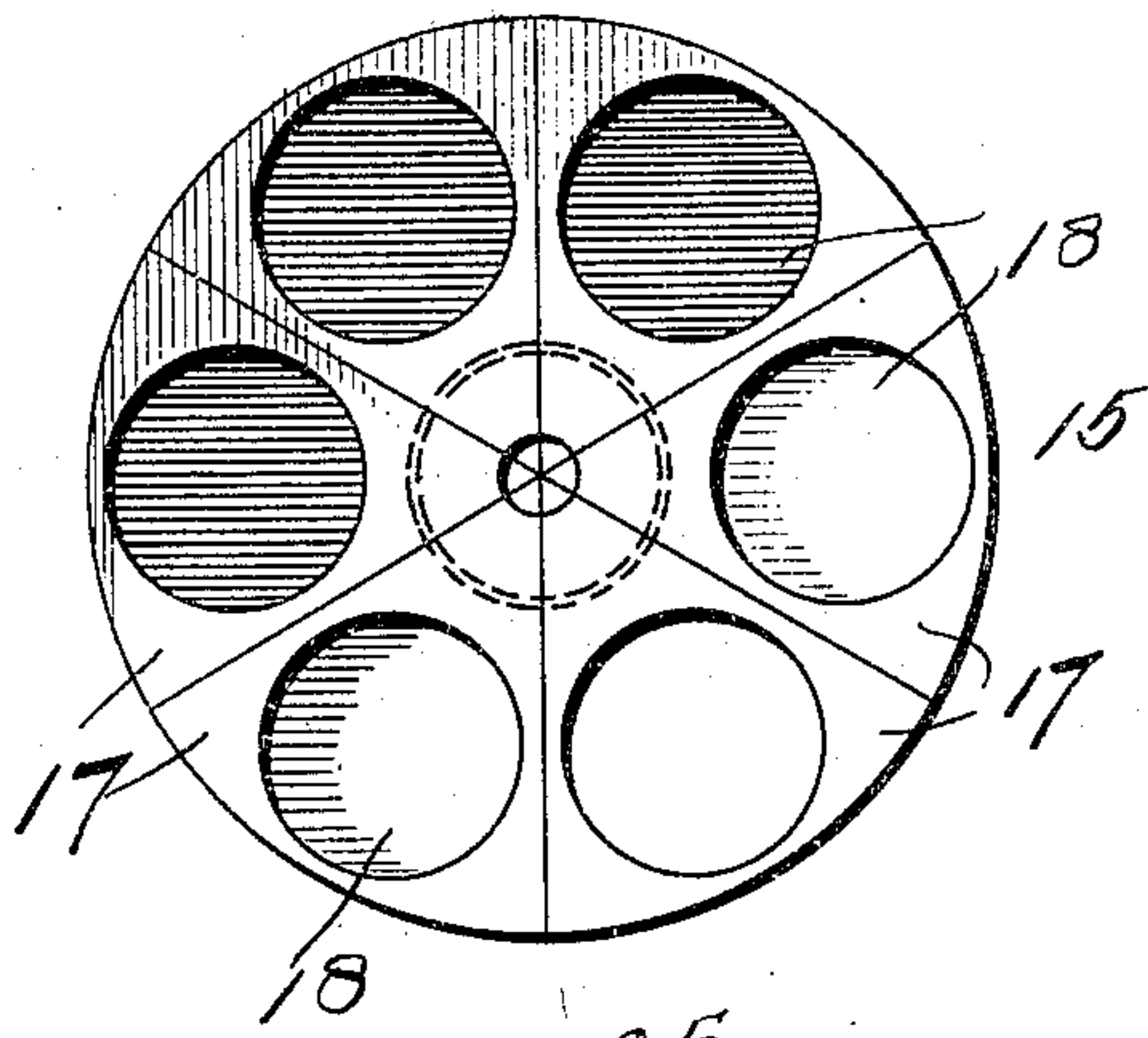


Fig. 5.

Fig. 6.

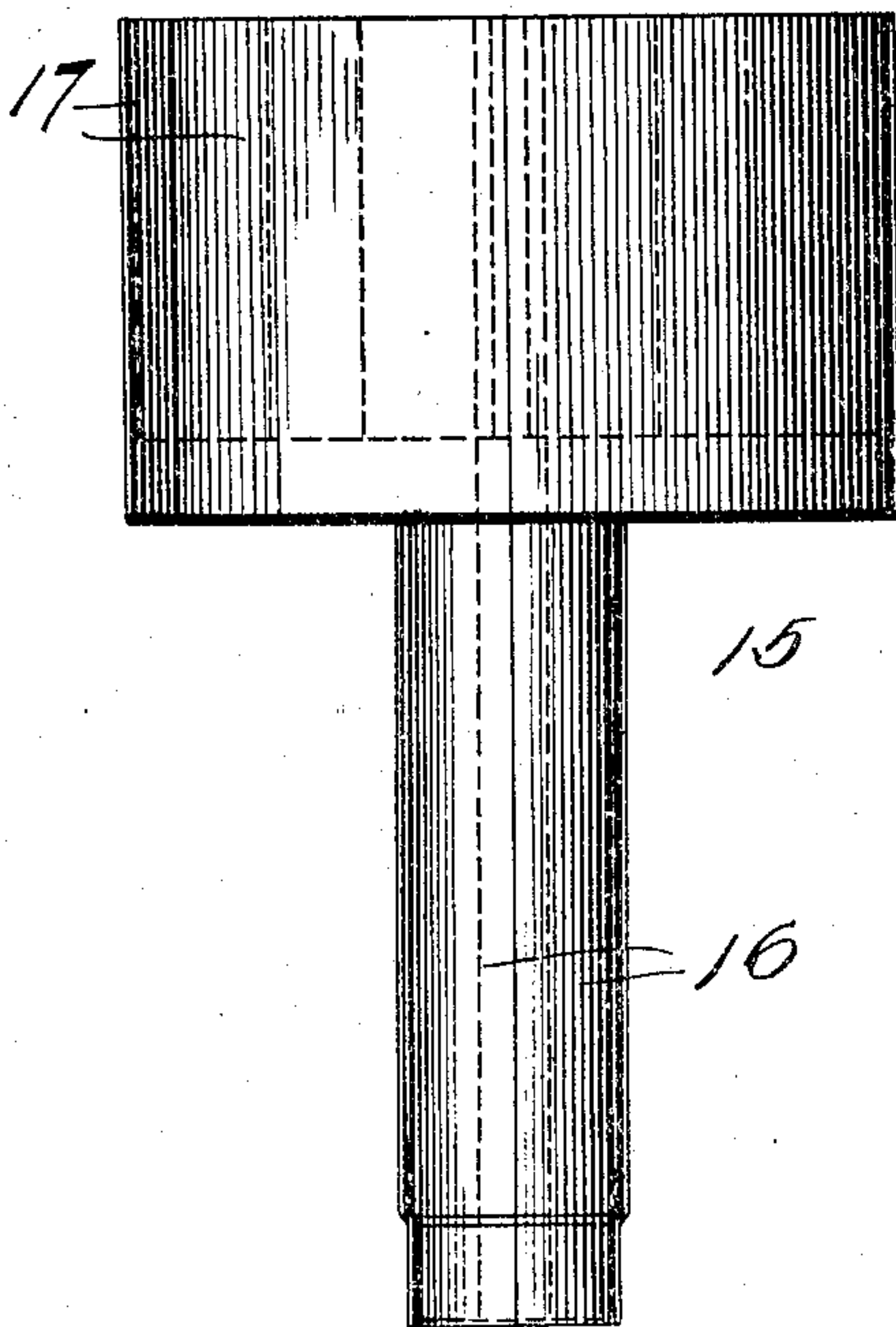


Fig. 8.

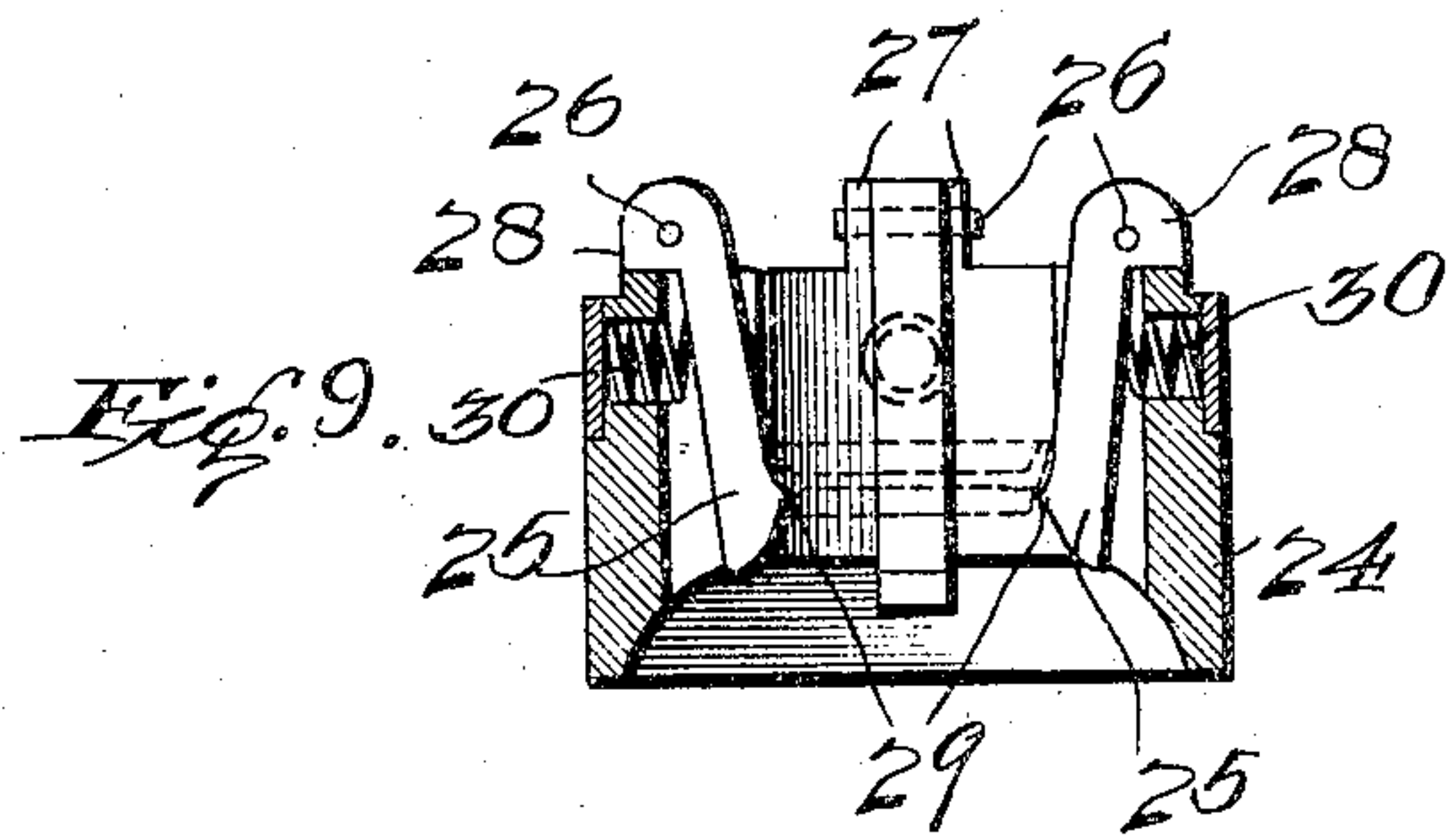
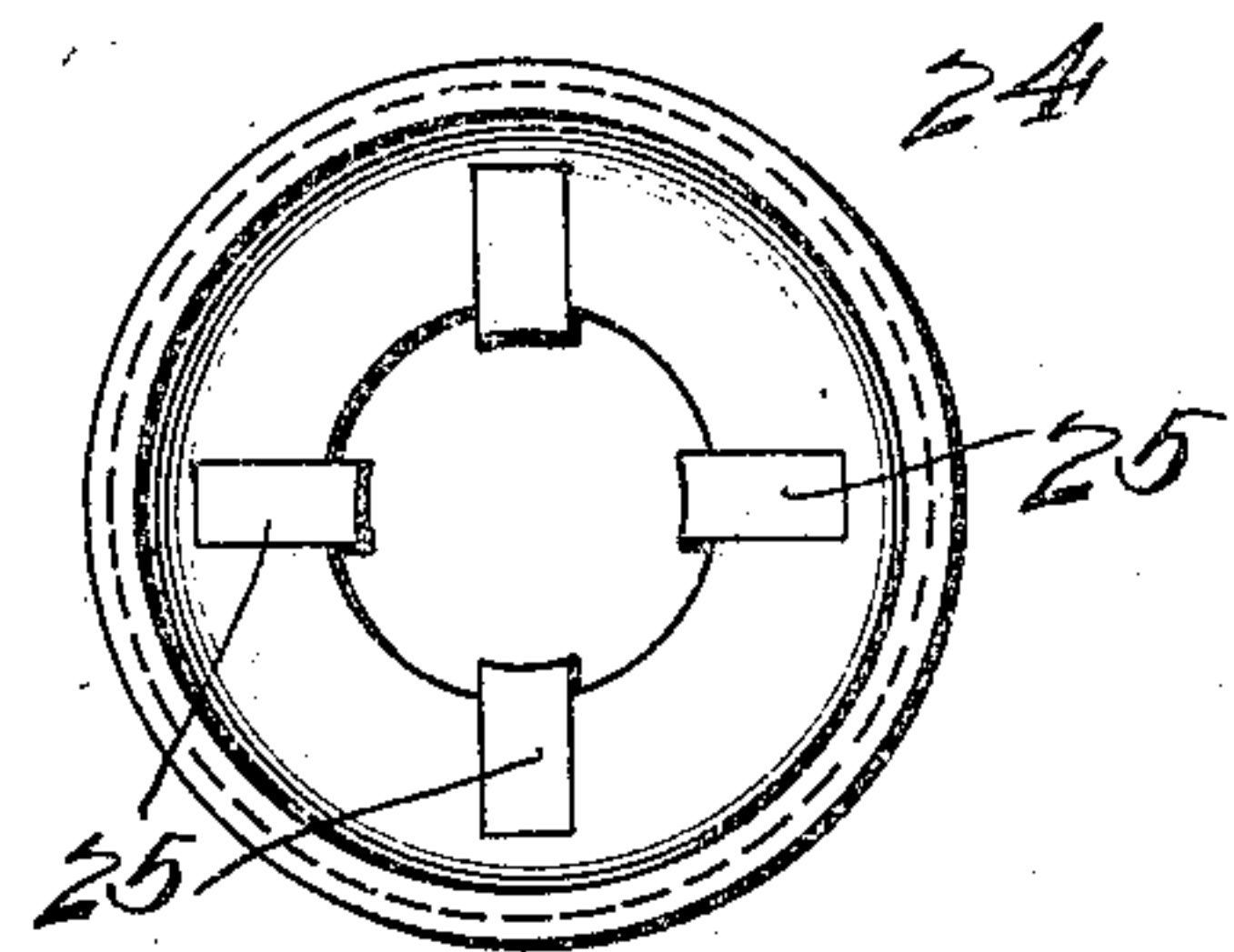


Fig. 9.

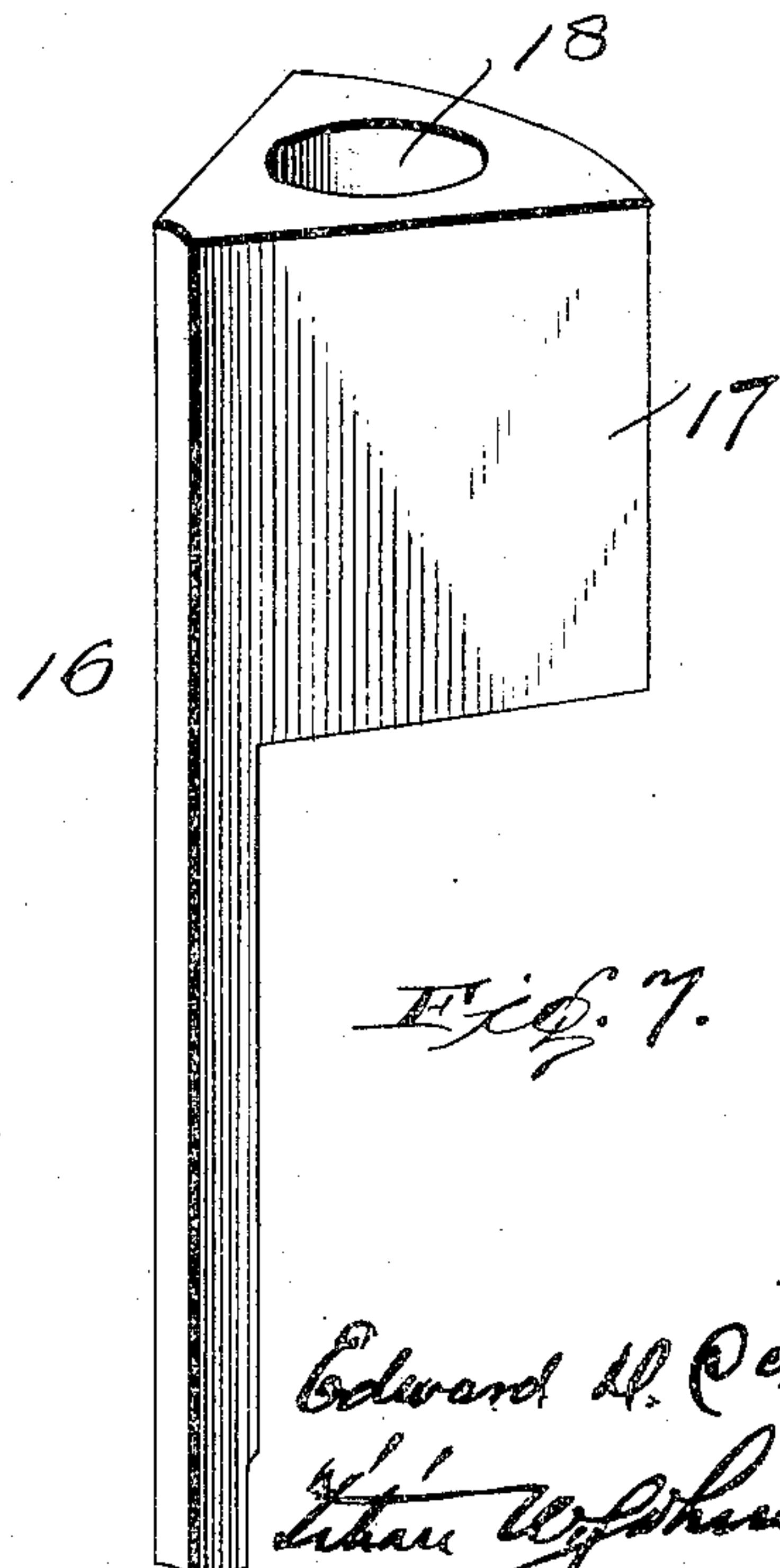


Fig. 7.

Witnesses

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# UNITED STATES PATENT OFFICE.

EDWARD D. SCHMITT, OF BALTIMORE, MARYLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CHAMPION SEAL COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

## MACHINE FOR APPLYING BOTTLE-SEALS.

SPECIFICATION forming part of Letters Patent No. 789,675, dated May 9, 1905.

Application filed September 1, 1904. Serial No. 223,016.

*To all whom it may concern:*

Be it known that I, EDWARD D. SCHMITT, a citizen of the United States, residing at Baltimore city, in the State of Maryland, have  
 5 invented certain new and useful Improvements in Machines for Applying Bottle-Seals, of which the following is a specification.

This invention relates to a machine for applying bottle-seals.

10 In the practical manufacture of bottles for beverages—such as mineral water, beer, &c.—variations of shape inevitably occur. Thus in those bottles that are sealed by a disk of cork compressed against a circular sealing  
 15 face or seat it has been found that the seats are not uniform. In many bottles one side of the seat is higher than the other. For this reason the cork disk is not uniformly compressed against all parts of the seat. It is  
 20 overcompressed against the high part and often not sufficiently against the low part to effect perfect sealing. Such defects occur in applying internal seals, like that shown herein, and outside seals, such as the well-known  
 25 "Crown" seal.

This invention provides that the plunger that compresses the sealing-disk against the sealing-seat shall be divided into sectors or segments—say six—each of which is backed  
 30 by a spring and capable of yielding axially, so that the ends of the several sections, while normally in the same plane, can yield axially, (vertically,) so that the plunger as a whole adapts itself to variations of height of the  
 35 sealing-seat and effects substantially uniform compression of the sealing-disk against all parts thereof.

The drawings illustrate the invention in a form adapted to apply internal seals having  
 40 a sealing-disk seated against a horizontal annular seat inside the bottle-mouth and a metallic flanged securing member the flange of which is of greater diameter than the bottle-mouth and after being forced therethrough  
 45 expands by reason of its own resiliency into locking engagement with the wall of the bottle above the sealing-seat. The same principle of construction may be applied to bottle-

sealing plungers designed to apply other forms of seals, either internal or external. 50

In the drawings illustrating the invention, Figure 1 is a side elevation of the machine. Fig. 2 is a central vertical section of the machine. Fig. 3 is an enlarged vertical sectional view of the sealing-head, the parts thereof  
 55 being in normal position with a seal in the seal-holder in the position it occupies just before being operated upon by the plunger. Fig. 4 is a similar view of the head, showing the position of the parts when the seal is ap-  
 60 plied. Fig. 5 is a top plan view of the plunger, the parts thereof being grouped. Fig. 6 is a side elevation of the plunger. Fig. 7 is a perspective view of one of the plunger parts. Fig. 8 is a bottom plan view of the  
 65 seal-holder for holding the seal preparatory to its being acted upon by the plunger. Fig. 9 is a transverse vertical section of this holder, showing more fully the triggers for holding the seal, a seal being shown in dotted lines  
 70 therein; and Fig. 10 is a top plan view of the device for centering the bottles upon the supporting-table.

Referring to the drawings, and particularly to Figs. 1 and 2, the numeral 1 designates the  
 75 frame of the machine, made preferably of cast metal, with a broadened base 2 and a cylindrical hollow upper portion 3 to receive the reciprocating rod 4, to the lower end of which is pivotally attached at 5 the connecting-  
 80 rod 6, which rod is in turn similarly connected at its lower end to the normally spring-raised treadle 7. To the upper end of the rod 4 is fitted the rearward extension 8 of the sealing-head 9. The head is rigidly attached  
 85 to the rod and held firmly in position by a nut 10 and is prevented from turning on the rod by a spline 11 fitting into a groove 12 in the extension 8. A web 8' forms a part of the head-casting, and, as shown in Figs. 1 and  
 90 2, fits in a recess 8'' in the top of the frame for the purpose of guiding the head in its vertical movement. The head is bored to form a cylindrical chamber 13, that communicates with the bore 14 in the lower part of  
 95 the head of less diameter than the chamber



13, thus forming an annular seat or shoulder 14'. Into this chamber is fitted the plunger 15, which may properly be termed a "compound" plunger, it being formed of a plurality of independently-movable segmental parts or members 16, preferably six in number. Each part of the plunger is formed with a lateral segmental extension 17, which fits snugly in the chamber 13, each extension having there-  
 10 in a cup or circular recess 18 for the reception of the stiff spiral springs 19 and the lighter shock-relieving springs 20, that constitute pressing means for each part of the plunger. The springs 19 are of such size as  
 15 to permit the others to be inserted in the space between their coils, and the springs 20 are somewhat longer than the springs 19, so that they will normally engage the under side of an inwardly-extending annular flange 21,  
 20 which forms a part of the removable screw-cap 22. This flange is also engaged by the heavy springs in the final sealing operation for the purpose of exerting a final considerable pressure to compress the sealing mem-  
 25 ber upon the sealing-seat. In the bore 14 the seal-holder 24 is fitted and arranged to slide vertically therein. This holder, as more clearly shown in Figs. 8 and 9, is provided with a plurality of triggers 25, pivoted at  
 30 26 between lugs 27 on its upper edge. The triggers are formed with upper rear extensions 28, which in conjunction with the upper edge of the holder serve to limit their inward movement, and are further provided  
 35 each with a hook 29, between which the seal is held before the sealing operation takes place. In the sides of the holder, behind each trigger are springs 30, that keep the triggers normally rocked toward the center of the  
 40 holder and cause them to grip and hold the seal. The downward movement of the holder is limited by a threaded ring 31, having a narrow ledge extending inwardly slightly beyond the bore 14. This ring is screwed to  
 45 the lower end of the casing, and interposed between the holder and the lateral extensions 17 of the plunger members is a spring 32 of sufficient strength to keep said holder nor-  
 50 mally seated on the ledge of the ring. Rigidly secured to the lower part of the machine-frame, directly below or axially in line with the head, is a cylindrical casing 33, in which is fitted the sliding table-support 34, to the  
 55 upper end of which is attached the bottle-supporting table 35, having fitted in a recess in the top thereof the usual rubber cushion or disk 36 for the purpose of relieving the shock of engagement between the sealing-head, or rather the plunger, and the bottle. The bot-  
 60 tle-support is recessed for the reception of the spring 37, that bears upon an adjustable nut 38, guided in the recess by a spline 39. Working in this nut is a screw-shaft 40, having a suitable handle 41, by which the shaft may

be turned to move the nut, and thereby vary 65 the tension of the spring 37. This spring keeps the pins 42 on the table-support in the upper ends of the slots 43 in the casing 33, the amount of movement of the table with each sealing operation depending with this 70 construction upon the tension of the spring 37. However, it is not essential to the successful operation of the machine that the spring 37 be used or that the bottle-support-  
 75 ing table be maintained yieldingly with relation to the head, as the table may obviously be rigidly maintained and the tension of the springs in the head, determining the pressure to be exerted upon the seal, may be varied as the exigencies of the case may require. The 80 bottle-supporting table is normally maintained sufficiently above the casing 33 as to permit of all necessary movement of the table-support, as shown in Fig. 2, and sufficient space is also left between the bottom of the 85 casing and said support to allow for this movement.

In Fig. 10 is shown a device for centering the bottle on the bottle rest or table. It consists of a hinged clamping-ring 44, to one of 90 the parts of which is an integral arm 45, bored for the passage of bolts 46, with their threaded ends passing through threaded bosses 47 on the rear side of an angle-plate 48, that oc-  
 95 cupies a position to one side and above the table and against which the bottle is placed to assure of its being axially in line with the sealing-plunger. In order that the plate may yield slightly, springs 49 are placed on the bolts between the plate and the arm 45. This 100 device may be adjusted both vertically and radially and secured in adjusted position by a set-screw 50.

In operation, attention being particularly called to Fig. 3, in which a seal is shown in 105 the seal-holder and a bottle maintained in position to receive the seal, and to Fig. 4, in which the parts are approximately in the position they occupy when the seal is applied, the treadle 7 is depressed, drawing down the 110 sealing-head until the upper edge of the bottle engages the concaved surface *b* of the holder, which engagement will cause the holder to move upward slightly in the bore 14 against the spring 32, and a further down- 115 ward movement of the head will cause the plunger to engage the seal and force it into the bottle-mouth initially against the pressure of the light springs 20, which will yield sufficiently to permit the heavier springs 19 120 to engage the flange 21 in the cap 22. A still further downward movement of the head under these conditions will compress the sealing member of the seal against the sealing-seat in the bottle, when the resilient flange of the 125 seal will expand into locking engagement with the locking-surface in the bottle. During the downward movement of the sealing-



head after engagement with the bottle the bottle-support yields slightly, due to the spring 37 and to the elasticity of the disk 36, which yielding of the spring, as before suggested, may be varied to meet the sealing requirements.

It will be seen from the foregoing construction of the sealing-plunger that should the sealing-seat be a little lower on one side than on the other the plunger member bearing upon the part of the seal immediately above this depression in the seat, the individual member of the plunger, or two or more members thereof would follow the seal down and compress the sealing member with a compression sufficient to assure perfect sealing contact between the sealing-seat and sealing member, or should any other irregularity in the sealing-seat or locking-surface be present that might cause the seal to be seated unevenly with a solid plunger the plunger members will individually operate to compensate for these irregularities.

I have shown and described the sealing-head as being movable; but it will be understood that the same result would be accomplished with the head stationary and the bottle-supporting table movable toward the head, both of which arrangements, however, are common in this art.

I claim—

1. In a machine for applying bottle-seals, the combination with a sealing-head, of a plunger in said head comprising a plurality of independent vertically-movable members adapted to bear simultaneously upon the seal, and an independent yielding sealing means for each member of the plunger.

2. In a machine for applying bottle-seals, the combination with a sealing-head, of a compound plunger in said head comprising a plurality of independent vertically-movable members adapted to bear simultaneously upon the seal, and independent sealing means for each member of said plunger whereby they act yieldingly upon the seal for the purpose set forth.

3. In a sealing-machine, the combination with a sealing-head, of a plunger in said head comprising a plurality of segmental members independently movable vertically, and adapted to bear simultaneously upon the seal, and an independent yielding seal-seating means for each of said members, substantially as described.

4. In a machine for applying bottle-seals, the combination with a movable sealing-head, a compound plunger in said head comprising a plurality of independent segmental members

capable of independent vertical movement and adapted to bear simultaneously on the seal, and a sealing-spring for each member of the plunger whereby they are caused to act yieldingly upon the seal.

5. In a machine for applying bottle-seals, a plunger comprising a plurality of independent vertically-movable members adapted to bear simultaneously upon the seal, a sealing-spring and a shock-relieving spring for each member adapted to operate substantially as and for the purpose specified.

6. In a machine for applying bottle-seals, a plunger comprising a plurality of independent vertically-movable members adapted to bear upon the seal simultaneously, each member having a rib or head on its underneath working face which when the plunger members are assembled form a substantially continuous vertically-extending rib or bead on the underneath working face of the plunger that compresses the seal against a horizontal sealing-seat on the bottle.

7. In a machine for applying bottle-seals, a plunger composed of a plurality of individually axially yielding parts, the working ends of which are normally in the same plane and adapted to bear simultaneously upon a seal to compress it against a horizontal sealing-seat on a bottle, and a sealing-spring for each of said plunger parts.

8. A machine for applying bottle-seals, comprising the combination of a seal-inserting plunger composed of a series of segmental parts, each capable of moving axially of the plunger, and all adapted to bear upon the seal at the same time, and each having an independent sealing-spring, and a support for holding a bottle, and a means for moving one of said parts relative to the other to force the seal into the bottle.

9. A machine for applying bottle-seals, the combination with the sealing-head, of the plunger comprising a plurality of independent vertically-movable parts adapted to bear upon the seal at the same time, a sealing-spring for each member, and a seal-holding device slidable in said head apertured for the passage of the plunger, said holder being provided with pivoted gripping-fingers to hold seal preparatory to its being operated upon, substantially as and for the purpose set forth.

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

EDWARD D. SCHMITT.

Witnesses:

KATHARINE MACMAHON,  
EDWARD C. DAVIDSON.