

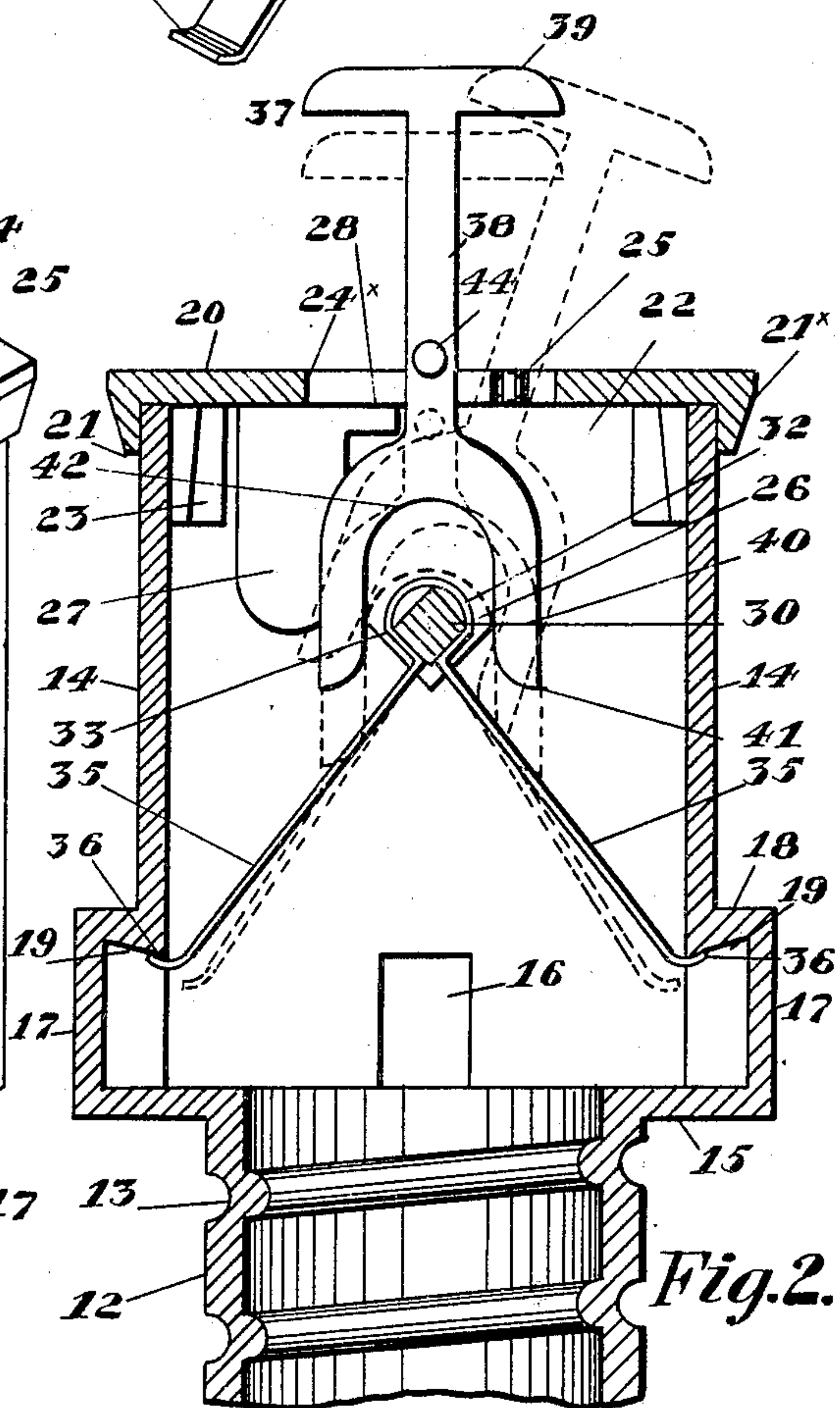
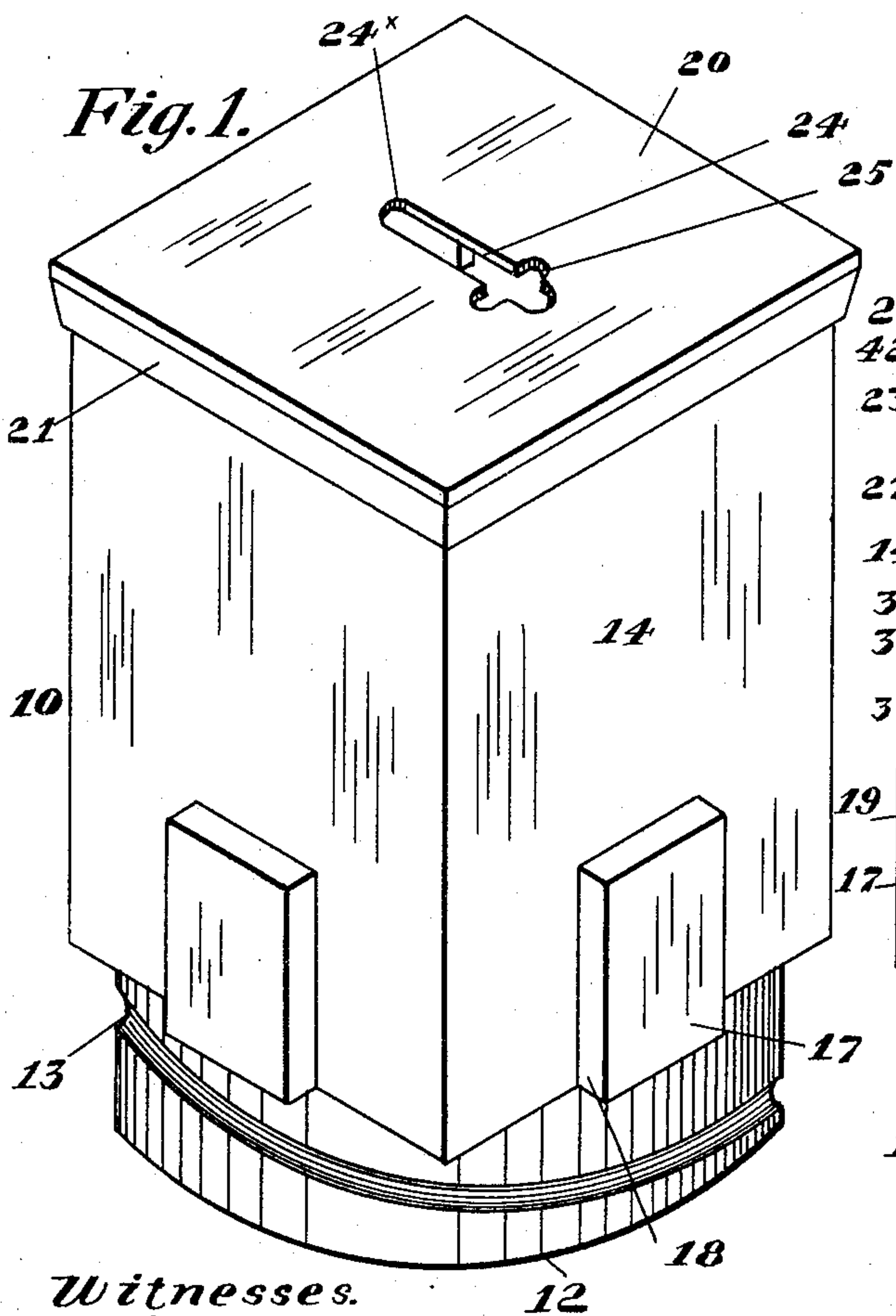
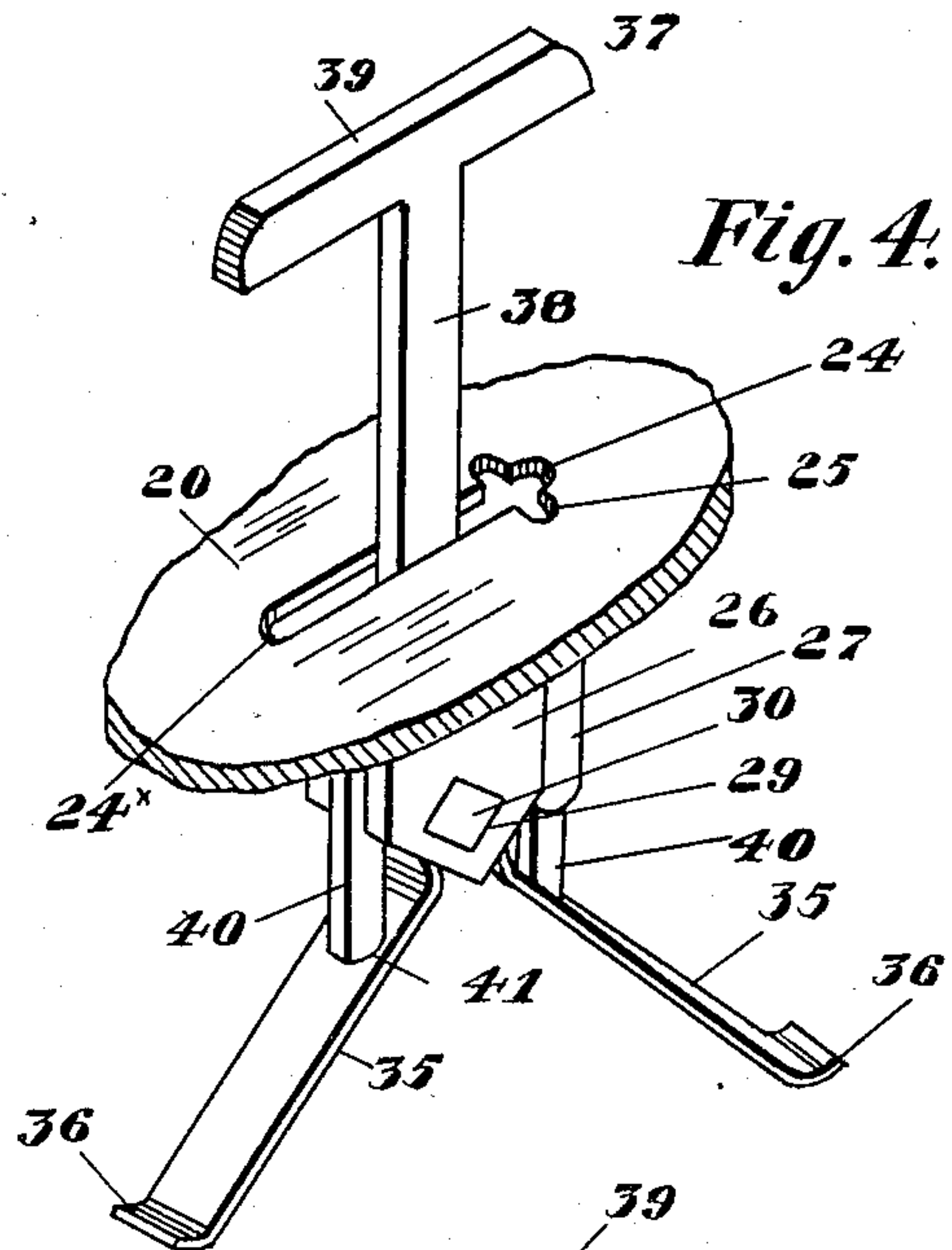
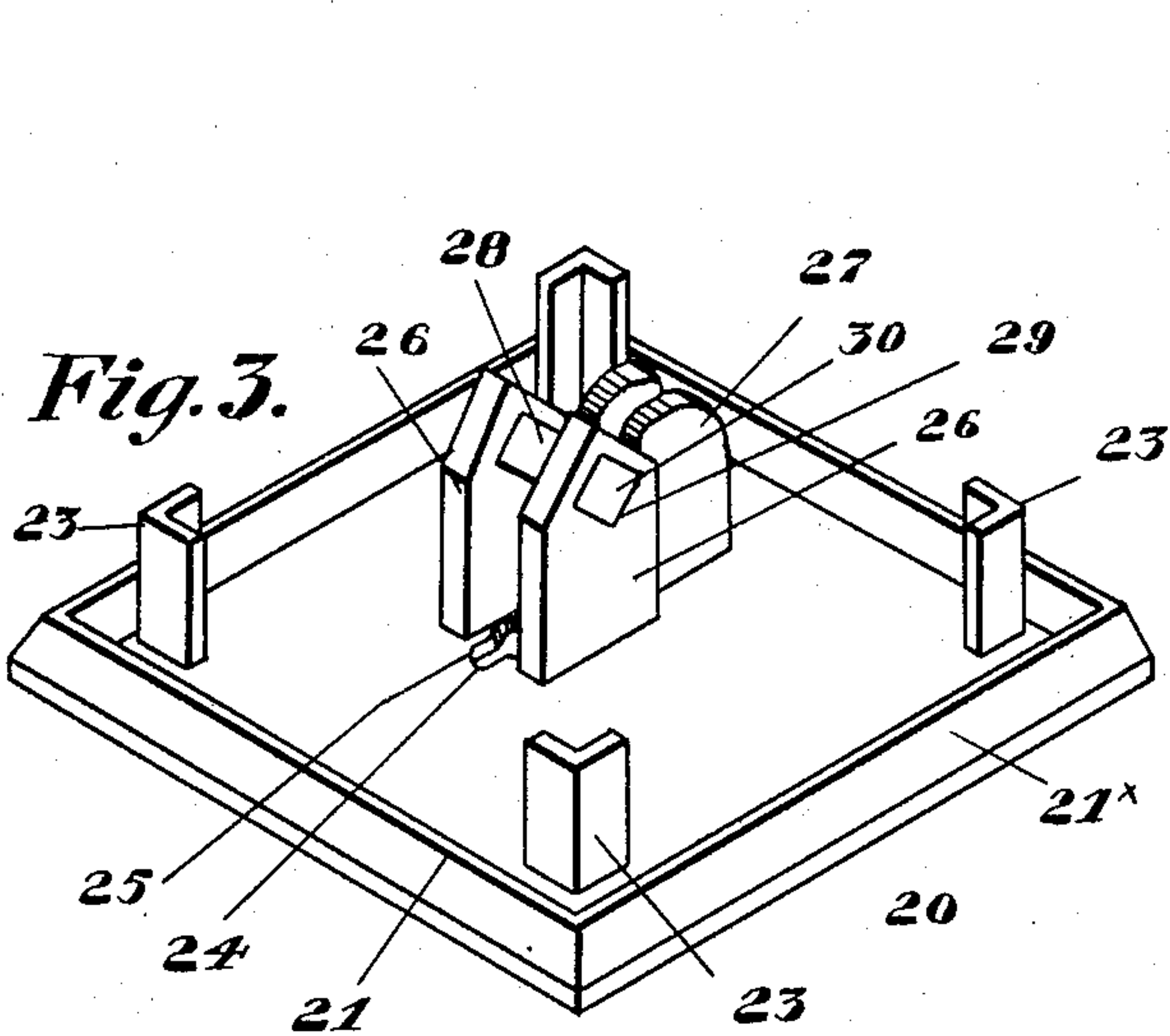
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LOCK FOR VAULT COVERS AND OTHER CLOSURES.

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Witnesses.

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LOCK FOR VAULT-COVERS AND OTHER CLOSURES.

No. 897,046.

Specification of Letters Patent.

Patented Aug. 25, 1908.

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To all whom it may concern:

Be it known that I, JAMES ARMSTRONG, a citizen of the United States of America, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Locks for Vault-Covers and other Closures; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others to make and use the same, reference being had to the accompanying drawings.

The invention relates to fastenings for the caps or covers to vault openings, and has particular reference to the covers for water and gas service boxes, which are employed to permit easy access to water or gas valves located at a considerable distance below the surface of the ground. The insecure fastening of these covers to the vault casing, when the covers are replaced after removal, is a source of considerable trouble, the fastenings hitherto being liable to corrode, and when operated become injured to such an extent as to leave the cover with an insecure fastening, and the cover becoming detached, the service box is soon filled with debris.

The object of my invention is to afford a lock for a closure to such or to any other opening, the release of which is accompanied with pressure, and it consists in the novel construction and combination of parts, such as will be first fully described and then specifically pointed out in the claims.

In the drawings: Figure 1. is an isometric view of the upper end of a casing to a service box, showing the cover in a closed position. Fig. 2. is a vertical, sectional view of the box and cover, as seen in Fig. 1, showing the lock securing the cover to the casing and the key within the opening, its operative position being shown in dotted lines. Fig. 3. is a view of the cover in an inverted position, and with the locking parts removed. Fig. 4. is a view, in perspective, of a broken portion of the cover adjacent to the opening for key, showing the lock and key, and the position of the key when the cover is removed.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

Referring to the drawings, 10 indicates a service box or casing, the lower portion 12, of which is cylindrical in form, and externally screw threaded at 13, in the usual

manner, for the purpose of connecting therewith an external screw threaded member (not shown), and of the desired length. The sides 14, of the upper portion of the casing are at right angles, and the lower portions of said sides are connected with the lower portion 12, of the casing, by the inwardly extended shoulder 15.

In the respective sides 14, of the upper portion of the casing, and extending upwardly from the horizontal line of the inner surface of the shoulder 15, at a point equidistant from the vertical lines of each side 14, is an opening 16. This opening is narrow in width, and extends upwardly a short distance in the direction of the upper end of said side 14, of the casing. Upon the outer surface of the sides 14, and extending over each opening 16, is a cover 17, upon which cover is an inwardly extended portion 18, extending to the casing and connected integral with the portions of said casing, adjacent to the upper end and sides of the opening 16, and also with the shoulder 15, at the lower end of said opening. Extending from the inner portion of the upper ends of the opening 16, within the inner portions 18, of the cover 17, are upwardly inclined surfaces, which form keepers 19, for the purpose hereinafter explained.

20 indicates the lock supporting plate and cover to the opening 22, in the upper end of the service box. Upon the inner surface and outer portions of the cover is a downwardly extended portion 21, which extends upon the outer surface of the sides 14, of the casing, and serves to exclude dust, the outer surface of which portion, however, is downwardly and inwardly inclined at 21° , so as to prevent injury to any adjacent material with which the sides 14, of the casing may be surrounded in the removal of the cover.

Connected rigidly with the inner surface of the cover, adjacent to the corners formed by the sides 14, are depending angle plates 23, which extend downwardly in the inner surfaces of the sides 14, of the casing, and with the outer portion 21, serve to hold the cover removably in place on the sides 14, of the casing. In the cover 20, to the opening 22, in the casing, is a key hole 24. This key hole is of considerable length, and narrow in width, and is located in the central portion of the cover, equidistant from and parallel with the downwardly extended portions 21, of the cover, transverse to each other. From the sides and near one end of the key hole ex-

tend, laterally, the openings 25, which are directly opposite in position, the sides of said openings being curved in the arc of a circle.

Upon the inner side of the cover, and adjacent to the sides of the opening 25, of the key hole 24, and parallel with the sides of said key hole, are connected rigidly the upper ends of the depending lugs or plates 26, the lower ends of which plates extend downwardly a considerable distance. The upper ends of the plates or lugs 26 extend in one direction, to a position opposite the extensions 25, of the key hole 24, and to within a short distance of the end 24^x, of the key hole in the other direction. Adjacent to the extreme end 24^x, of the key hole, are the depending key guiding plates 27, the inner surfaces of which plates are upon a vertical line with the sides of the key hole 24. These plates, at their upper ends, are formed integral with the cover 20, the lower ends extending downwardly about two-thirds the distance of that of the lower ends of the plates 26. Upon the upper, inner portions of the plates 27, are extended portions 28, of said plates 27, which extend upon the line of the sides of the key hole in the direction of the lateral extensions 25, of the key hole, and to a point intermediate the ends of said key hole.

In the lower ends of the plates 26, are transverse openings 29, the sides of which openings are at right angles, and the angles formed by two of said sides arranged in vertical planes. Within these openings 29, of each plate 26, is secured firmly the ends of a pin 30, the sides of which pin correspond to and fit within the sides of the openings 29.

The locking device consists of a narrow strip of spring metal, brass being preferred, as this metal is less liable to corrode. This strip of metal is of considerable length and at a point equi-distant from the ends is bent in an outwardly curved line, as at 32. The curved parts are then brought together and bent downwardly, and extended inwardly in inclined planes, as at 33. The curved part of the strip is extended between the plates 26 and over the pin 30, and upon the edge of said pin, and the inwardly inclined portions 33, caused to grasp the oppositely and inwardly inclined sides of said pin. The main portions or locking arms 35, of the spring plate, extend downwardly to a position opposite the upper portion of the opening 16, in the sides 14, of the casing, these main portions or arms of the strip being outwardly inclined, and the extreme ends 36, of said main portions 35, are bent outwardly and curved upwardly, in a slight degree, and extended to and in contact with the inclined upper surface of the upper end of the opening 16, and the inner surface 19, of the portions 18, of the cover 17, to said openings 16, the expansion of said portions 35, of the strip,

keeping the said ends 36 in engagement with said upper portions of the openings 16, in opposite position to each other, the cover 20 being thereby locked to the casing.

37 indicates the key to the lock, which is formed in one piece and is of uniform thickness. The shank 38, of the key, is made of considerable length and provided with a thumb piece at 39, at its upper end. The lower end of the key consists of two branches or forks 40, the outer surfaces of which curve outwardly, in a degree slightly less than the length of the key hole 24, in the cover 20, and then extend downwardly the requisite distance to bear upon the portions 35, of the spring plate, the lower ends of said forked portions being curved downwardly and outwardly, in a slight degree, as at 41. The portions of the key between said forked portions 40, in the direction of the shank 38 are curved in the arc of a circle, as at 42, this latter portion of the key being directly above the curved portion 32, of the locking plate, when the key is inserted within the key hole 24. Upon the sides of the shank 38, at a point a short distance above the point of connection of the shank and the forked portions 40, are outwardly extended, fixed lugs or pins 44.

In order to unlock the cover, its position being locked, as seen at Fig. 2, the forked portions 40, of the key, are inserted within the key hole until the pins 44, come into contact with the upper surface of the cover, the said forked portions of the key being guided by the key guides 27, one forked portion 40, passing upon one side of the pin 30, and resting upon one portion 35, of the spring plate, and the other forked portion upon the other portion of the spring plate. The upper end of the shank 38, is then moved into the inclined position, as seen in dotted line in Fig. 2, or in the direction of the end of the key hole having the lateral openings 25, and with the pins 44, on the shank 38, of the key, directly over said openings. Pressure is now applied to the cross bar 39, of the key, and the pins 44, pass within the opening 25, and to a position in line with the under surface of the cover 20. The shank 38 is then moved in the direction of the end 24^x, of the key hole, the pins or lugs 44 are moved on the lower surface of the cover 20, to a position in which the pins 44 come into contact with the projections 28, on the plates 27, and in which the shank 38 comes into a vertical position. In this movement of the shank the forked portions 40, of the key, bear down upon the portions 35, of the spring arms, and draw said portions inwardly, and the ends 36 out of the opening 16, in the sides 14, of the casing, and this pressure being equal upon both plates, releases both plates simultaneously from engagement with the keeper 19. The cover, with the aid of the key in position,

is now removed from the opening 22, in the casing, and upon replacing the cover, and releasing the pressure on the key, the portions 35, of the arms spring outwardly, and
 5 engage with the keepers 16, in the sides 14, of the casing as before, the cover being in a locked position. The thickness of the spring plate may be made so as to require the application of considerable power, in order to re-
 10 lease the portions of the plates from the keepers, the obvious advantage of the lock being such as to require the key described accompanied with pressure.

It is obvious that the lock may be applied
 15 to closures to any opening, and that keepers for the spring plates may be arranged at suitable distances inwardly from the opening in the casing.

Having fully described my invention, what
 20 I now claim as new and desire to secure by Letters Patent is:

1. The combination with a vault casing, and with the cover having a suitable aperture, and with keepers upon the interior of
 25 said casing, and with depending plates upon the inner side of the cover, a bearing connected with said plates, oppositely, and downwardly extended spring arms supported by said bearing and adapted to engage with
 30 said keepers, and releasing means extending through the aperture in the cover and adapted to bear upon both arms.

2. A vault cover having an opening in the central portion thereof, and lateral extensions of said opening, depending plates upon
 35 the inner side of said cover, adjacent to the sides of said opening, oppositely and downwardly extended spring arms connected with said plates, and a key having forked ends
 40 adapted to be extended within the opening in said cover, and lugs on said key adapted to be extended within said lateral extensions of said opening.

3. A vault box cover, having a central
 45 opening, depending plates upon the inner side of said cover and adjacent to the sides of said opening, outwardly movable locking arms upon said depending plate, a key adapted to control the inward movement of said
 50 arms, and key guiding plates adjacent to said depending plates and to one end of said opening in the cover.

4. A vault casing and a cover having a

centrally located opening, and lateral extensions of one end of said opening, keepers upon
 55 the inner side of said casing, depending plates upon the inner side of said cover, adjacent to the sides of said opening, oppositely and downwardly extended spring arms supported by said plates, adapted to
 60 engage with said keepers, a key plate having a forked lower end adapted to be extended within said opening in the cover, and lugs adapted to extend within the lateral extensions of said opening.
 65

5. A vault casing and a cover having a centrally located opening, and lateral extensions of said opening, keepers upon the inner side of said casing, depending plates upon
 70 the inner side of said cover, adjacent to the sides of said opening, oppositely and downwardly extended spring arms supported by said plates, adapted to engage with said keepers, key guiding plates upon the sides
 75 of and adjacent to one end of said opening, and a key plate having a forked end adapted to be extended within the opening to said cover, and lugs on said plate, adapted to be extended within the lateral extensions of
 80 said opening and bear upon the inner surface of said cover.

6. A vault casing and a cover having a centrally located opening, and lateral extensions of said opening, keepers upon the inner side of said casing, depending plates upon
 85 the inner side of said cover, adjacent to the sides of said opening, oppositely and downwardly extended spring arms supported by said plates, adapted to engage with said keepers, key guiding plates upon the sides
 90 of and adjacent to one end of said opening, and extensions of said latter plates in the direction of the sides of said lateral extensions of the openings in said cover.

7. In a lock supporting plate, having a
 95 centrally located opening, and lateral extensions of said opening, and with depending lugs upon the inner side of said plate, adjacent to the sides of said opening, locking devices carried by said lugs, and guiding
 100 plates at the sides and at one end of said opening, adapted to receive a key.

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Witnesses:

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