

No. 756,232.

PATENTED APR. 5, 1904.

W. E. HEATH.
SEALING DEVICE.

APPLICATION FILED DEC. 17, 1901. RENEWED SEPT. 14, 1903.

NO MODEL.

Fig. 1.

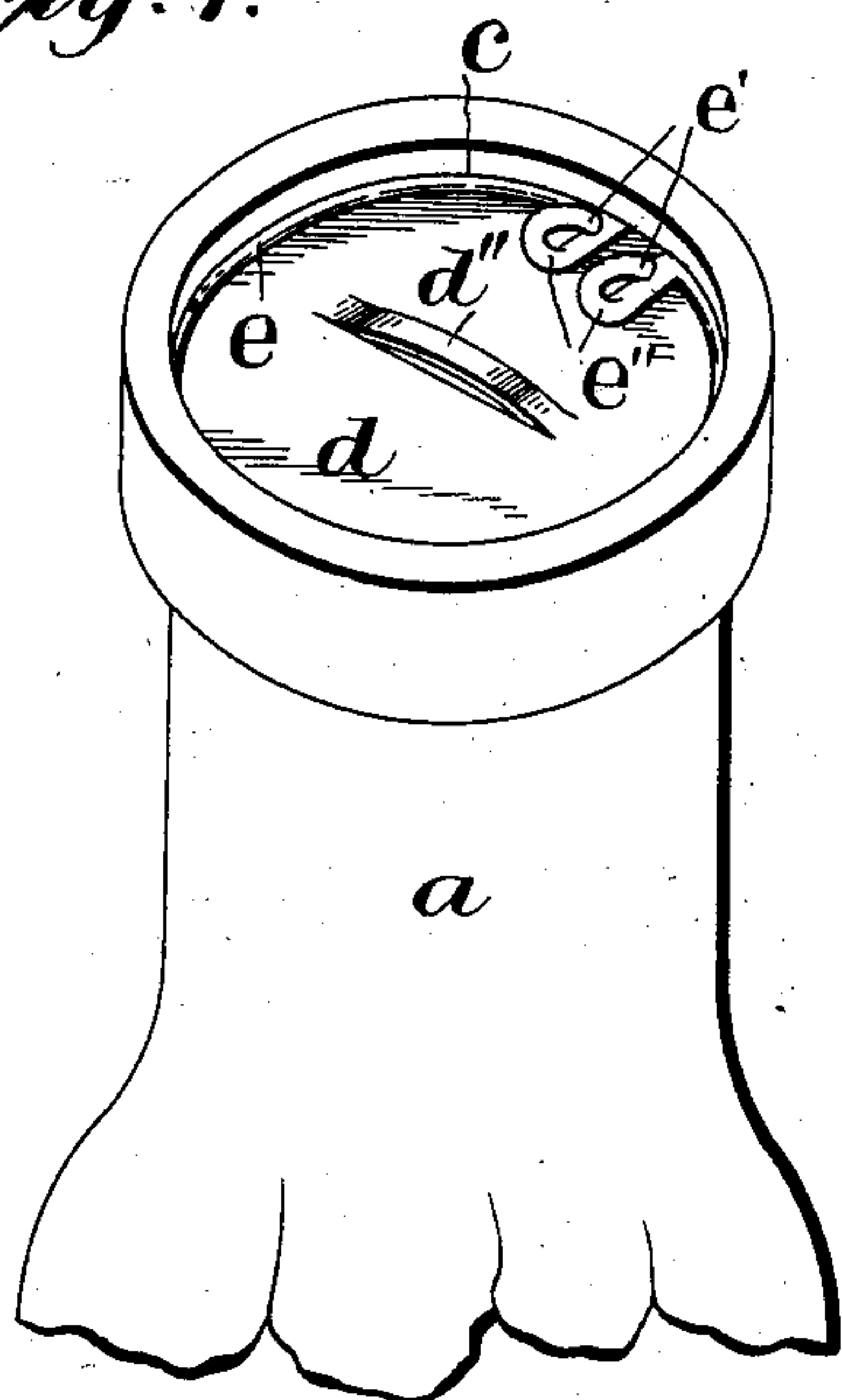


Fig. 2.

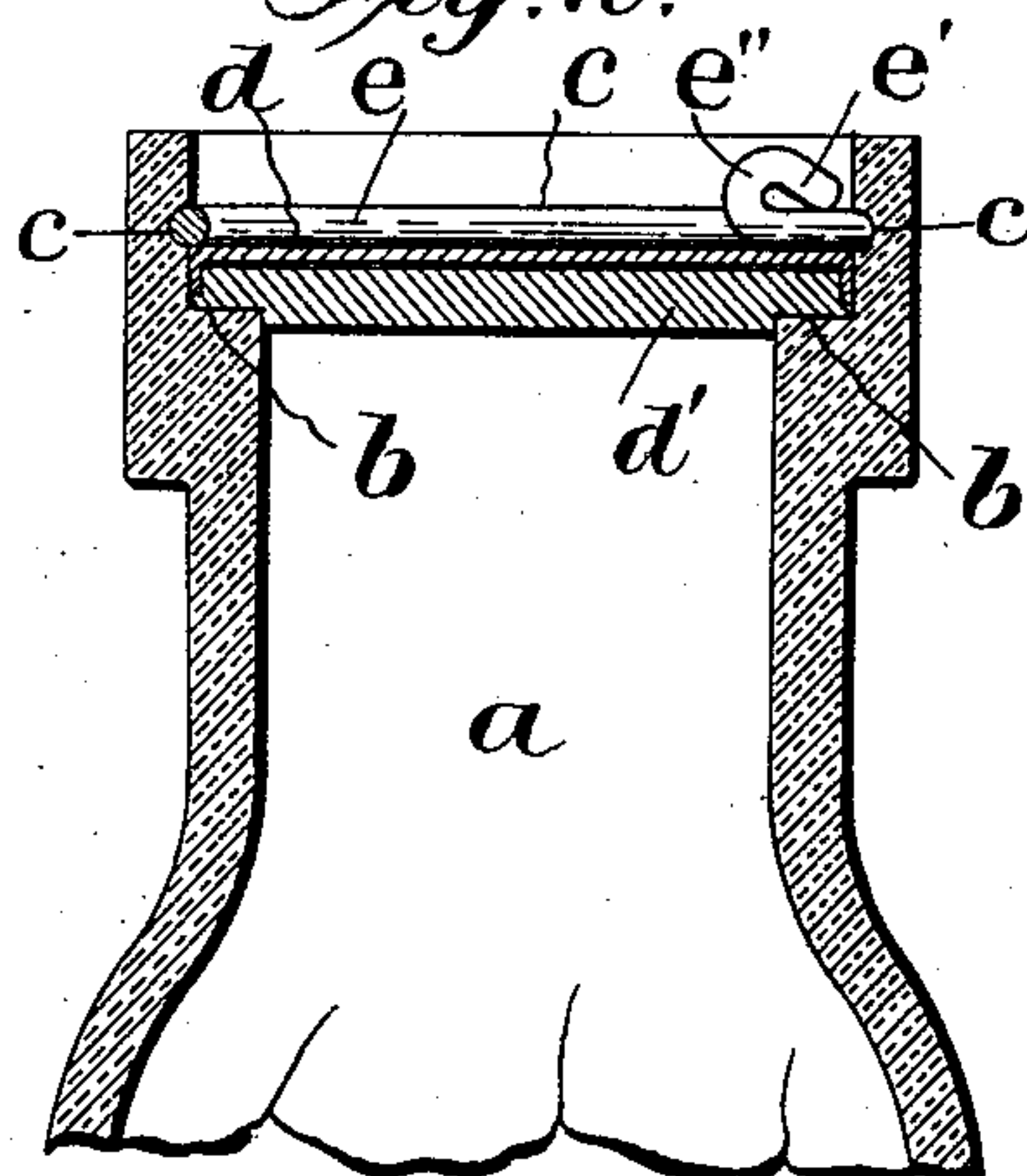


Fig. 4.

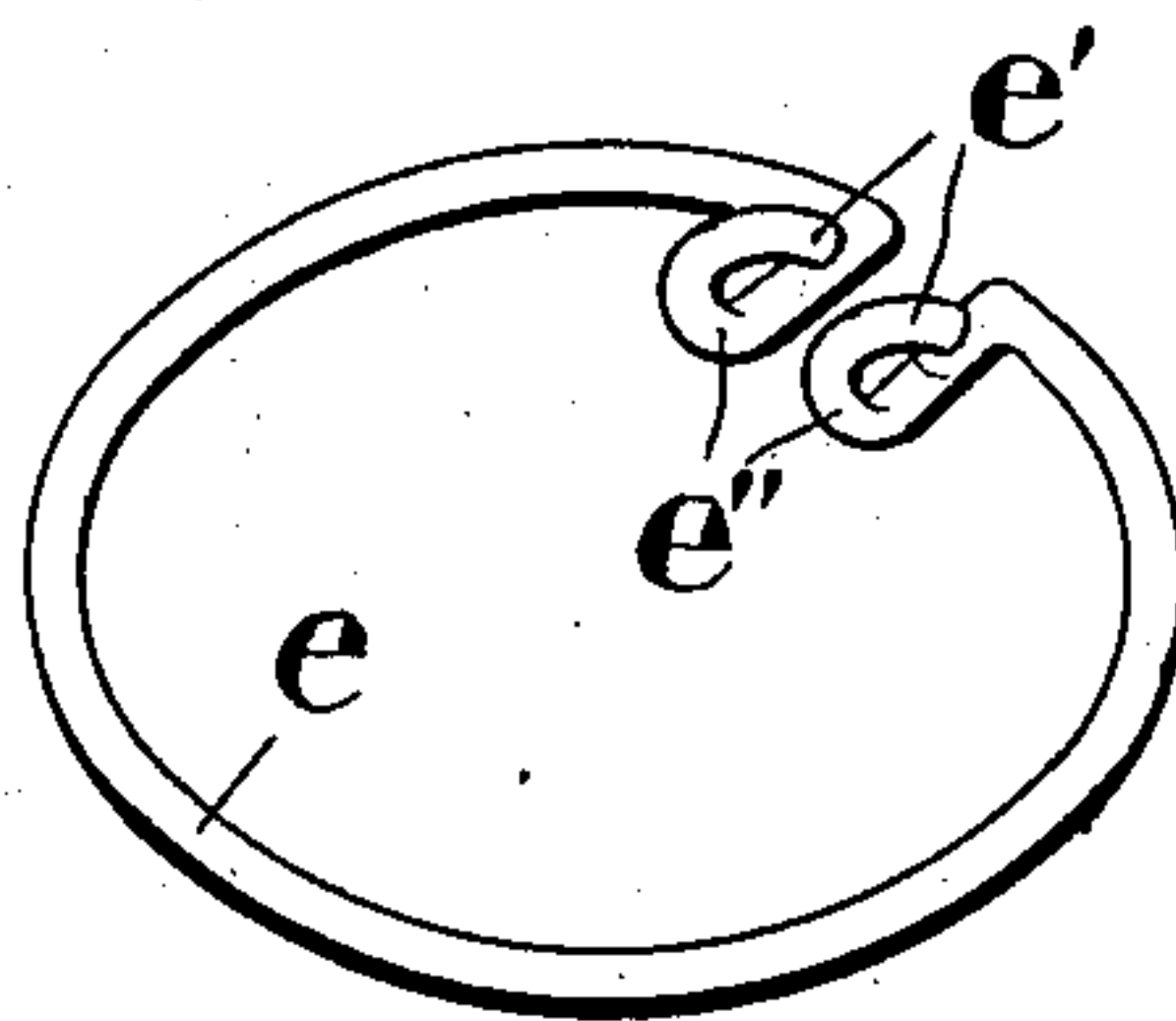
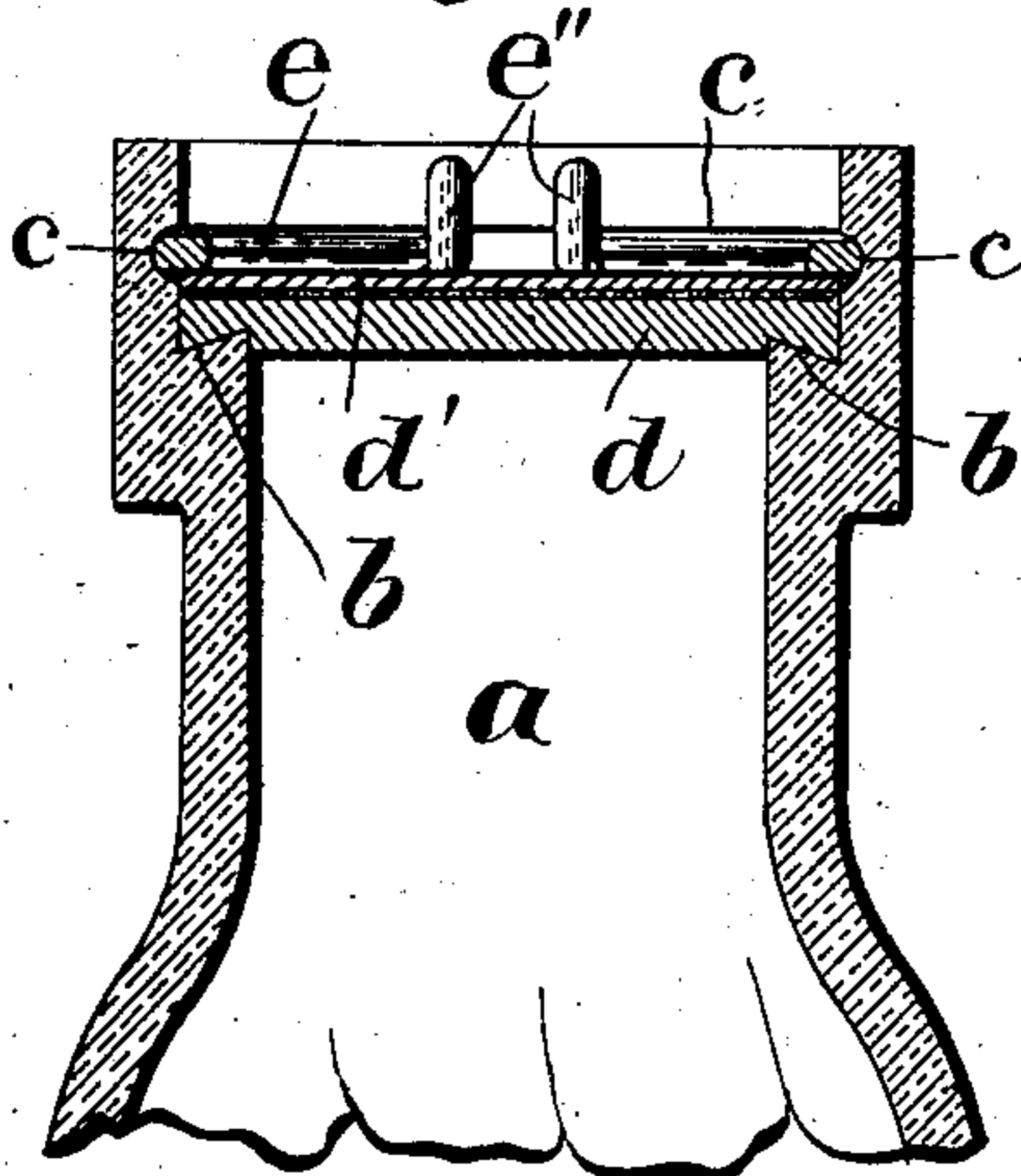


Fig. 5.



Fig. 3.



Witnesses

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WILLIAM E. HEATH, OF BALTIMORE, MARYLAND, ASSIGNOR TO STANDARD BOTTLE-CAP CORPORATION, OF WILMINGTON, DELAWARE, A CORPORATION OF DELAWARE.

SEALING DEVICE.

SPECIFICATION forming part of Letters Patent No. 756,232, dated April 5, 1904.

Application filed December 17, 1901. Renewed September 14, 1903. Serial No. 173,190. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. HEATH, a citizen of the United States, residing at Baltimore city, State of Maryland, have invented certain new and useful Improvements in Sealing Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in sealing devices, and relates more particularly to improvements in sealing devices particularly adapted for use in large-mouth jars or bottles or other large-mouth receptacles; and the objects and nature of my invention will be readily understood by those skilled in the art in the light of the following explanations of the construction shown in the accompanying drawings merely as an example of one device from among others within the spirit and scope of my invention.

My invention consists in certain novel features in construction and in combinations and in arrangements of parts, as more fully and particularly pointed out and specified hereinafter.

Referring to the accompanying drawings, Figure 1 is a perspective view of the mouth portion of a large-mouth bottle or jar sealed by devices in accordance with my invention. Fig. 2 is a vertical sectional view of the structure shown in Fig. 1. Fig. 3 is a corresponding sectional view to Fig. 2, but taken in a vertical plane at right angles to the plane of the section of Fig. 2 and showing the seat or shoulder within the bottle-mouth inclined or tapered. Fig. 4 is a detail perspective view of the spring-retainer ring, showing the same formed of wire round in cross-section. Fig. 5 is a detail sectional view of the spring-retainer ring, showing the same formed of flattened wire.

In the drawings, *a* is a bottle, jar, or other large-mouth receptacle having within its mouth and a distance below its top surrounding edge an annular sealing seat or shoulder *b*, above which the internal diameter of the

liquid-passage is enlarged, and above which the liquid-passage is preferably cylindrical, except for the annular locking-groove *c*, forming a downwardly-facing locking-shoulder above and opposing the said sealing-shoulder. The locking-shoulder is preferably formed in the cylindrical vertical wall of the liquid-passage a distance below the top surrounding edge of the bottle-mouth and the necessary distance, as hereinafter described, above the sealing seat or shoulder *b*. The floor of the annular sealing-shoulder can be flat, as shown in Fig. 2; but as at present advised by experience I prefer to form said floor of the sealing-shoulder about as shown in Fig. 3, wherein said annular floor tapers inwardly and upwardly from its outer surrounding edge to its inner surrounding edge, thereby forming the annular inner edge elevated and approximately sharp or abrupt.

d is the sealing cap or disk, formed of an elastic sealing medium capable of being compressed and preferably attached or cemented to a stiff top-facing disk or cap *d'* or held by friction in a cap, as shown in Fig. 2, said top-facing or cap usually composed of sheet metal, although my invention is not so limited. If desired, this top stiff facing of the sealing-disk can be provided with a central upwardly-projecting finger-hold *d''*, by means of which the sealing-disk can be lifted from the jar or bottle mouth by the fingers after the retainer has been removed. The sealing-disk is usually flat and circular and of an external diameter approximately equal to the interior diameter of the liquid-passage above the sealing-shoulder *b*, so that the said disk can be placed in the bottle-mouth, resting on said shoulder with its top facing above the locking-groove or so arranged with relation to the locking-groove as to require downward compression of the sealing-disk before the spring-retainer can be inserted, so that the spring-retainer will hold said disk locked in place and under compression to maintain the tight seal desired.

e is the retainer in the form of a split expansive spring-ring. This ring is preferably bent from spring-wire, so as to have a tend-

ency to expand or spring open, whereby when the ring is compressed and inserted in the bottle-mouth onto the flat top of the sealing-disk it, on being released, will automatically spring
 5 into the locking-groove and rest on the disk and hold the same down in sealing position. This ring can be formed of wire having its bottom and top faces flattened, as shown in Fig. 5 and other figures, or ordinary round
 10 wire can be used, as shown in Figs. 2 and 4. As at present advised by experience, I find that advantages are attained by employing flattened wire, as an extended bearing-surface on the sealing-disk top is secured and the
 15 wire is more firmly held and locked by the downwardly-facing annular shoulder formed by the locking-groove. The ends e' of the retainer-ring are separated from each other when the ring is in its expanded locking posi-
 20 tion and one or both ends are bent or deflected directly inwardly at an abrupt angle and provided with a finger piece, hold, or bearing e'' . Each end is preferably bent inwardly toward the open center of the ring and in the hori-
 25 zontal plane of the ring, and then the wire end is looped over and back to form an eye or loop arranged on edge and approximately radially of the ring. The two finger-holds thus formed are arranged approximately parallel
 30 with each other in the open center of the ring and a distance apart when the ring is expanded. By merely pressing these two finger-holds together or toward each other the re-
 35 tainer is most easily and readily compressed and released from the locking-groove and lifted from the bottle-mouth. The sharp or abrupt angles at the junctions between the ends e' and the circular portion of the ring permit
 40 said ring portion to fit in the locking-groove throughout its entire length or circle. Usually the said finger-holds are so formed as not to project above the horizontal plane of the top surrounding edge of the bottle-mouth. Advantages are also attained by the angular
 45 or inclined formation of the floor of the sealing-shoulder of the bottle-mouth as the sharp elevated edge enters the compressed sealing medium and the inclination of the floor crowds the sealing medium against the vertical wall
 50 of the bottle-mouth and forms a double seal.

It is evident that various changes might be made in the forms, constructions, and arrangements of the parts described without departing from the spirit and scope of my invention.
 55 Hence I do not wish to limit myself to the exact constructions shown.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

60 1. In a sealing device, a receptacle having an annular sealing-shoulder within its mouth formed with the inclined top face and elevated inner annular edge, and a locking-shoulder above said sealing-shoulder, in combination
 65 with a sealing-disk and a retainer bearing up

against said locking-shoulder and forcing and holding the sealing-disk down on said inclined floor and edge of said sealing-shoulder, substantially as described.

2. A bottle having a sealing-shoulder and a
 70 locking-shoulder above said sealing-shoulder, in combination with a sealing device seated on said sealing-shoulder, and a separate split spring-retainer ring seated on said device and expanded beneath said locking-shoulder and
 75 having a free end bent inwardly on the face of the sealing device and doubled back and over to form a finger-hold within the circle of said ring and below the plane of the top edge of the bottle-mouth, substantially as de-
 80 scribed.

3. In combination, in a sealing device, a large-mouth bottle or jar having an annular sealing-shoulder within its mouth and a locking-shoulder above the sealing-shoulder, a sealing-plug
 85 comprising a compressible or sealing medium disk adapted to seat on said sealing-shoulder, a split expansive retainer-ring resting on the top face of the plug and fitting under said locking-shoulder to hold said disk compressed,
 90 the free ends of said ring separated and extended inwardly along the top face of said plug to form normally separated finger-holds projecting upwardly within the circle of the ring, substantially as described.
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4. In a sealing device, in combination, a receptacle having an annular sealing-seat within its mouth and a locking-shoulder above said seat, a compressible sealing-disk on said seat, and an expanding spring-retainer ring under
 100 said shoulder and seated on said disk and having its separated ends formed into two separated handles or finger-pieces at points within the circle of the ring projecting above the plane of said circle and located below the top
 105 edge of the receptacle-mouth, whereby the ring can be released from the locking-shoulder by pressing said handles together and can then be lifted from the receptacle by said handles while holding the ring contracted, sub-
 110 stantially as described.

5. A sealing device comprising a sealing plug or closure and an expanding spring-retainer having its two ends normally sprung apart and both provided with adjacent normally
 115 separated finger-holds arranged substantially radial of and within the outer circumference of the retainer, said retainer normally resting from end to end flat on said plug and expanded under a locking-shoulder to hold the plug
 120 maintaining the seal, said finger-holds so arranged that they can be pressed toward each other while the retainer is on the plug and thereby contract the retainer and release the same from locking position whereby the re-
 125 tainer can be lifted and removed while held contracted through the medium of the finger-holds, substantially as described.

6. In a sealing device, the combination of a closure, and an expanding split-ring retainer
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having its two separated ends provided with adjacent normally separated finger-holds, within the outer circumference of the ring and projecting above but not below the plane of the ring, said finger-holds so arranged that on being pressed toward each other, the ring will contract and said holds will form handles by which the ring can be lifted from the clo-

sure while held thus contracted, substantially as described.

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

WILLIAM E. HEATH.

Witnesses:

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E. R. PECK.