

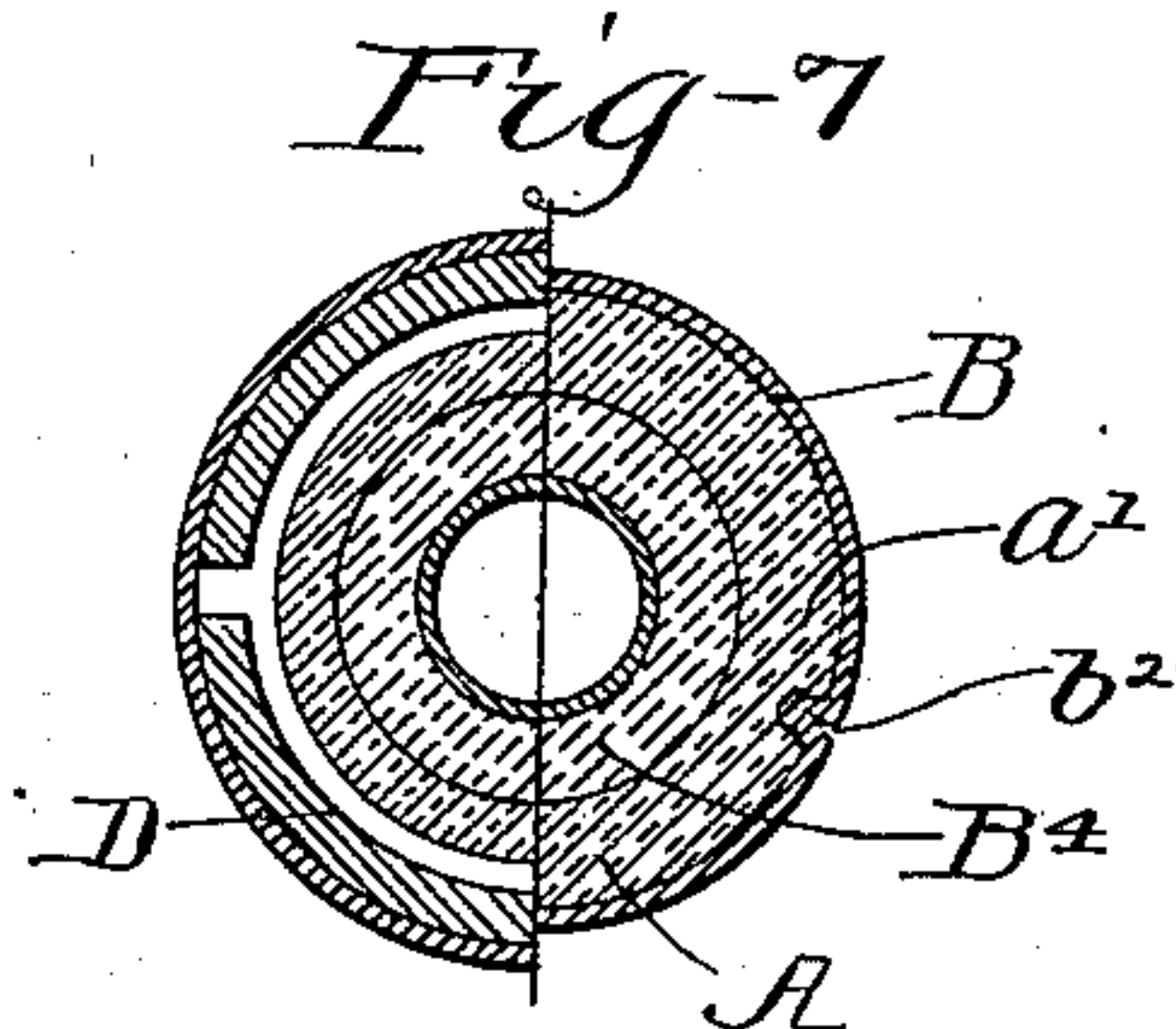
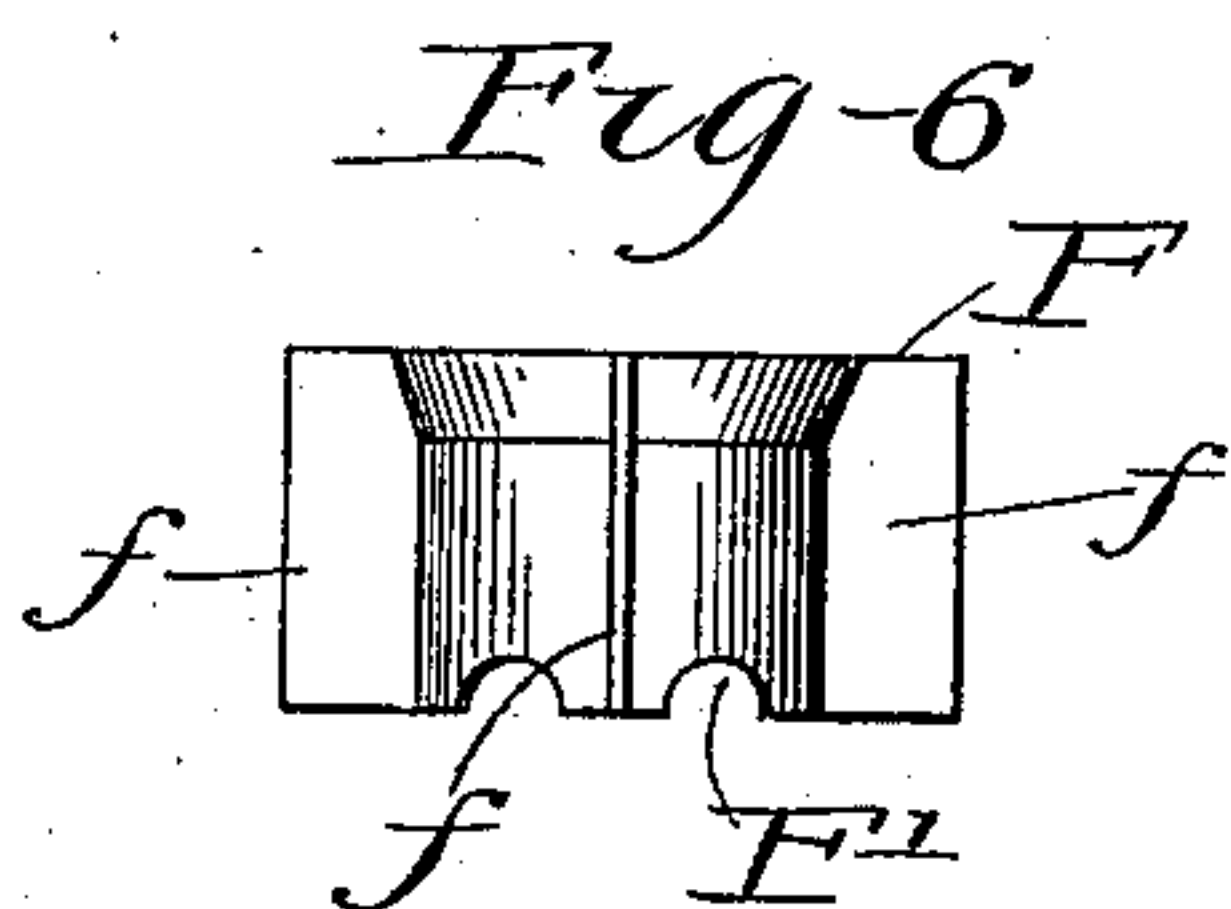
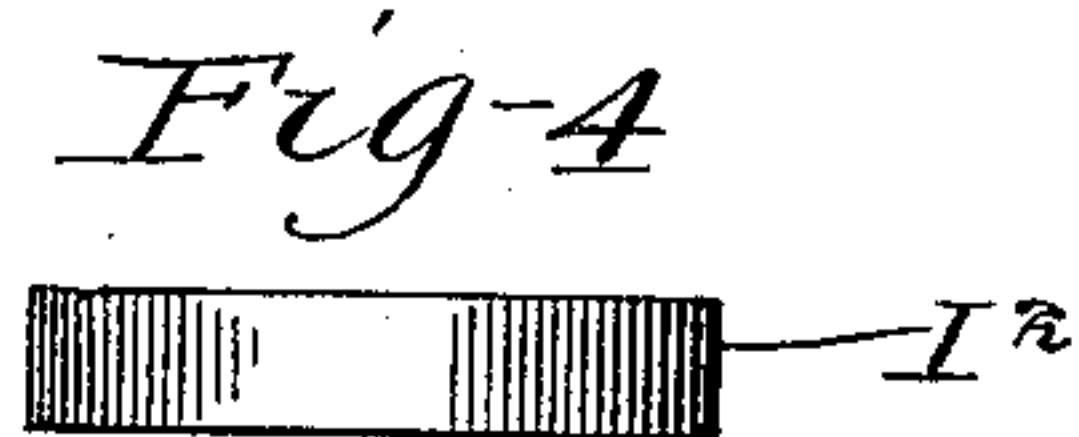
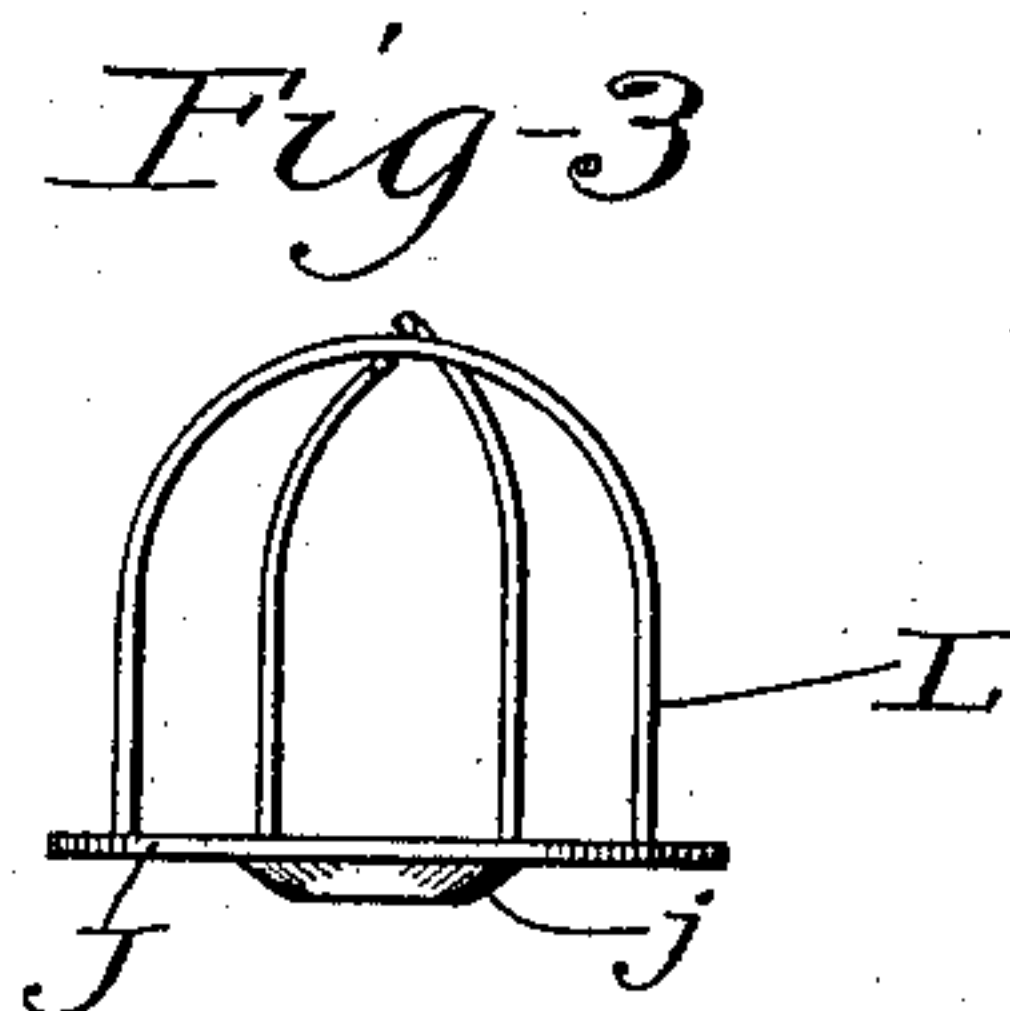
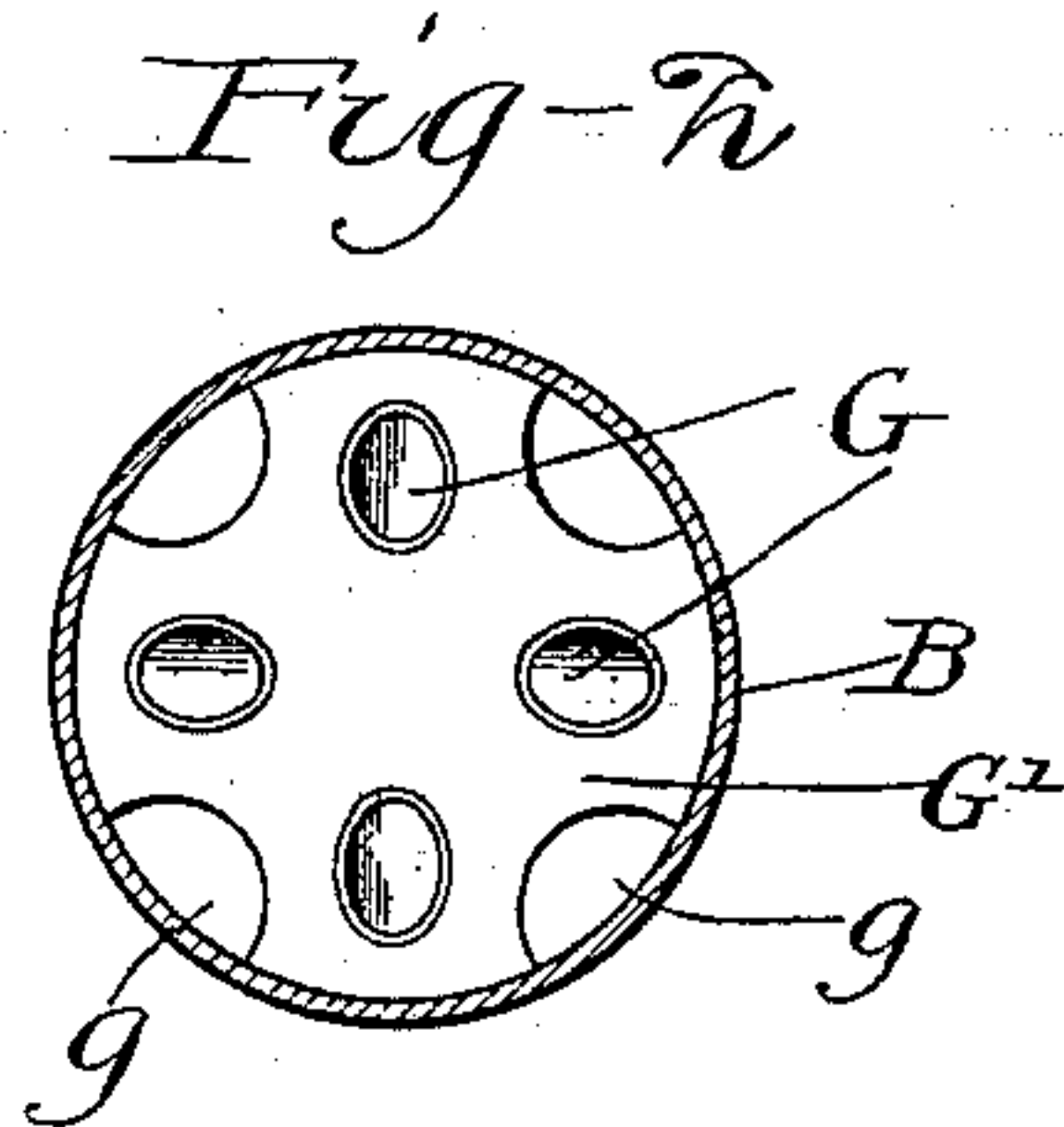
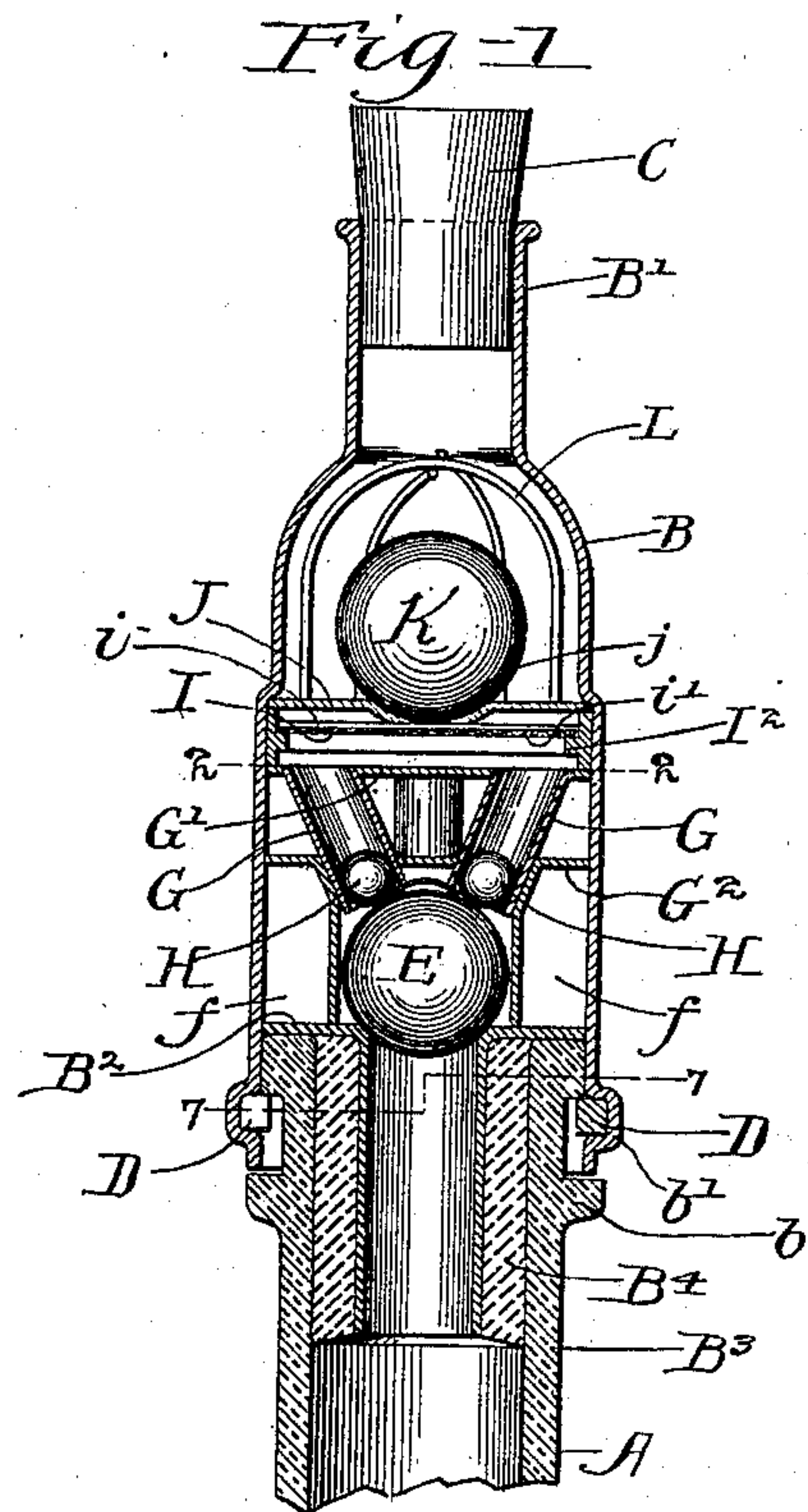
No. 624,235.

Patented May 2, 1899.

J. M. MOTT.
NON-REFILLABLE BOTTLE.

(Application filed Oct. 23, 1897.)

(No Model.)



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UNITED STATES PATENT OFFICE.

JOHN M. MOTT, OF CHICAGO, ILLINOIS.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 624,235, dated May 2, 1899.

Application filed October 23, 1897. Serial No. 656,191. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. MOTT, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Non-Refillable Bottles; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to an improved device intended to prevent a bottle from being refilled after having once been emptied, while at the same time permitting the free escape of liquid from the bottle in the ordinary use of the same.

The device herein shown as embodying my invention is adapted more especially for application to the neck of a bottle after the bottle has been filled with liquid, the device being attached thereto by means which prevent its removal without breaking the bottle or bottle-neck or the device itself. Certain features of the invention may, however, be used in connection with antirefilling devices located within the neck of the bottle.

The invention may be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is a view in central vertical section of a bottle-neck and device to prevent refilling, the same being constructed in accordance with my invention. Fig. 2 is a cross-section taken on line 2 2 of Fig. 1. Figs. 3, 4, 5, and 6 illustrate interior parts of the apparatus separate from the exterior part or casing. Fig. 7 is a sectional view taken on the indirect line 7 7 of Fig. 1, showing the device for attaching the casing of the device to the bottle-neck.

As illustrated in said drawings, A indicates the bottle-neck, which is provided at its upper end with an outwardly-extending rib or flange *a*.

B indicates the exterior casing of the attachment to prevent refilling, said casing being provided at its upper end with a tubular mouth or orifice *B'*, adapted to receive a removable stopper or closure, as the cork C. Within said casing B, at some distance from the bottom thereof, is located a partition or

diaphragm *B²*, which forms, with the lower part of the casing, a recess or socket adapted to receive the upper end of the bottle-neck. Said diaphragm *B²* is centrally apertured and provided with a valve-seat *b*. Attached to said diaphragm and depending therefrom is a short tube *B³*, which when the attachment is secured to the bottle-neck extends downwardly into the interior of the same and is surrounded by tubular packing *B⁴*, of cork or like material, which fits closely within the bottle-neck and by being compressed between the bottle-neck and the said sleeve makes a liquid-tight joint between said parts.

As a means of permanently securing the casing B to the bottle-neck said casing is provided near its lower margin with an annular interior groove or recess *b'*, the upper surface of which when the casing is in place upon the bottle-neck is flush with the lower surface of the flange *a* on said neck. Within said groove *b'* is located a split ring D, made of such size that it may be closed around the bottle-neck, below the flange thereof, at the time the casing is being applied, but will expand into said groove when the casing is in place in such manner as to be engaged at its outer edge with the groove at the same time that its inner portion is engaged by the said flange. The split ring thus constructed forms a locking device by which the casing is permanently attached to the bottle-neck, it being obviously impossible to contract the split ring in a manner to release it from the casing by the use of any ordinary tool or without injuring or destroying the casing. To prevent the casing from turning on the neck, the flange *a* is provided with notches *a'*, which are engaged by means of lugs *b²* on the casing B, as seen in Fig 7.

Within the casing and resting on the valve-seat *b* is a ball E, which serves as a valve-closure to prevent the entrance of the liquid to the bottle when resting on its seat, but which is adapted to move away from its seat and permit the outward flow of liquid when the bottle is reversed in discharging the contents thereof. Said ball E is surrounded by a cylinder or inclosure F, which serves to keep it in place and prevent lateral shifting thereof away from its seat. The said cylindrical casing is provided with openings *F'*, Fig. 6, through which the liquid may freely escape

while being poured from the bottle. Above the ball E are located a plurality (preferably four) of guideways or tubes G, which are arranged obliquely and are inclined upwardly and outwardly from the upper surface of said ball. Within said guides or guide-tubes G are located balls H, which normally rest in contact with the valve-ball E and serve, by reason of the inclined position of the guideways G, to hold said valve-ball against the seat when the bottle is resting upon its side or held in a horizontal position, as well as when upright. This action of said balls H will be understood from consideration of the fact that when the bottle is held horizontal or rests on its side the said ball E, being held from sidewise movement away from its seat by the inclosing cylinder F, will be pressed or forced toward its seat by the action or pressure of the ball or balls H which may be in contact with its upper part or surface. Above the guide-tubes G is located a perforated screen I, preferably consisting of a lower layer *i* of wire cloth and an upper layer *i'* of textile fabric or fibrous material located a short distance above said lower layer *i*. Above said screen I is located a plate J, having a central opening surrounded by a valve-seat *j*, and resting upon said valve-seat *j* is a ball K. The purpose of the ball K is to prevent any implement—a wire or the like—being inserted through the bottle-neck for the purpose of reaching the valve at the bottom part of the casing, and for this purpose the said ball K is preferably made of considerably-larger size than the neck B'. As a means of holding or confining the ball K in place a wire cage L is attached to the plate J in such manner as to surround or inclose the ball, said cage in the instance illustrated consisting of wires which are attached at their lower ends to the plate J and are curved over the ball where they intersect and are attached to each other in the manner illustrated.

As a means of securing in place within the casing B the several parts described a construction in said parts is provided, as follows: Above the plate J the casing B is reduced in diameter, and a shoulder is formed at the plane of the upper surface of said plate against which the latter rests or bears. Below the said plate is located a ring or annulus I², which is closely fitted within the casing and which is made of considerable vertical depth and in which the screens *i i'* are secured, said ring or annulus being fitted within the casing below and in contact with the plate J and being removable, together with the screens which are carried thereby. The inclined guides or tubes G are secured at their upper and lower ends in two horizontal plates G' G², which fit at their side margins within the casing, so as to center the tubes therein. The uppermost, G', of said plates bears at its margin against the ring or annulus I², while the lowermost plate rests in contact with the upper margin of the cylinder F, which surrounds the ball E. Both

of said plates are provided with openings or notches *g* to permit the passage of liquid in the discharge of the bottle. Said cylinder F rests at its lower end against the partition or diaphragm B², which latter is inserted and secured within the casing after the other parts have been placed therein. For the purpose of centering said cylinder F the same is provided with vertical spacing ribs or wings *f*, which engage the inner surface of the casing.

While the inclined guides G are designated as "tubular" it will be understood that they need not be complete tubes, but only of such construction as to confine the balls H in their inclined movement.

In the use of a bottle provided with the devices described the bottle is of course filled before the casing B and its contained parts are attached thereto, and the casing is then attached by the use of the split ring D, so as to prevent its subsequent removal without the breaking of the bottle-neck or the casing. The liquid may be easily poured from the bottle upon inverting the same, as the balls E and K will be moved away from their seats by gravitation and the pressure of the outflowing liquid. Any effort to pour liquid into the bottle when upright will be prevented by the said balls E and K, while any effort to force liquid into the bottle when the same is resting on its side or in an inverted position will be defeated by the pressure of the liquid on the ball E, which will force the same against its seat. The closing of the ball against its seat when the bottle is in a horizontal position will be greatly aided by the action of the balls H in the manner before described. The access of any implements through the orifice B' for the purpose of holding open the valve is entirely prevented both by the screen I and by the ball K in all positions of the bottle. Moreover, by the application of a fibrous or textile layer to the screen I the introduction of sand, any solid matter, or an adhesive material, such as mucilage, with a view of making the balls H and E stick in the upper parts of the tubes by adhesion to the latter is entirely prevented, such layer preventing the adhesive substance from being introduced into the tubes G or being carried into contact with the ball E. Obviously the insertion of any implement or a wire through the orifice B' and in a manner to affect the operation of the valve will be defeated by the presence of the ball K, which will deflect any such implement toward the outside of the casing.

The casing B is herein shown as made of sheet metal; but in practice it may be made of glass or partially of glass and partially of metal. An advantage gained by making the casing of glass is that in case an effort be made to remove the casing by force from the bottle-neck either the casing or the neck will be broken, thereby making it impossible to repair the parts or restore them into condition for use.

The main feature of the invention consists

in the ball-shaped valve-closure, combined with the obliquely-movable balls which act upon said closure to retain it in contact with its seat, and these parts may obviously be located in the bottle-neck instead of in a removable casing, it being manifest that this feature of the invention may be embodied in devices differing materially in details from the one herein illustrated.

10 I claim as my invention—

1. A device for the purpose stated, comprising a valve-seat, a ball-shaped valve-closure adapted to engage the seat, a plurality of separate inclined tubular guides above the
15 said valve-closure and balls moving in said guides and bearing against the valve-closure.

2. A device for the purpose stated, comprising a valve-seat, a ball-shaped valve-closure adapted to engage the seat, a plurality of
20 separate inclined tubular guides above the valve-closure, balls moving in said guides and bearing against the valve-closure, and a screen located above said guides to prevent access to said balls.

25 3. A device for the purpose stated, comprising a valve-seat, a ball-shaped valve-closure adapted to engage the seat, a plurality of inclined guides located above the valve-closure, balls moving in said guides and bearing
30 against the valve-closure, and a screen located above said guides, said screen being provided with a layer of fibrous or textile material.

35 4. A device for the purpose stated comprising a valve-seat, a ball-shaped valve-closure

adapted to engage the seat, a plurality of separate inclined tubular guides located above the valve-closure, balls moving in said guides and bearing against the valve-closure, a second valve-seat located outside of said inclined
40 guides and a valve-closure resting on said seat.

5. A device for the purpose described, comprising a casing having an orifice at its top and a diaphragm near its bottom provided
45 with a valve-seat, a ball-shaped valve-closure engaging said seat, separate inclined tubular guides located above said ball, balls in said guide-tubes, and a guide-cylinder surrounding the valve-closure.
50

6. The combination with a bottle-neck of a device of the character described, comprising a casing adapted for engagement with the bottle-neck, said casing being provided with
55 an orifice at its top and with a centrally-depending tube adapted to enter the bottle-neck, packing between said tube and the bottle-neck, a ball-shaped valve-closure adapted to close the opening through said tube, obliquely-movable balls acting on the valve-
60 closure and separate inclined tubular guides for said balls.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 20th day of October, 65
A. D. 1897.

JOHN M. MOTT.

Witnesses:

C. CLARENCE POOLE,
R. CUTHBERT VIVIAN.