

No. 645,971.

Patented Mar. 27, 1900.

C. B. OVERBAUGH.
NON-REFILLABLE BOTTLE.

(Application filed July 12, 1899.)

(No Model.)

Fig. 1.

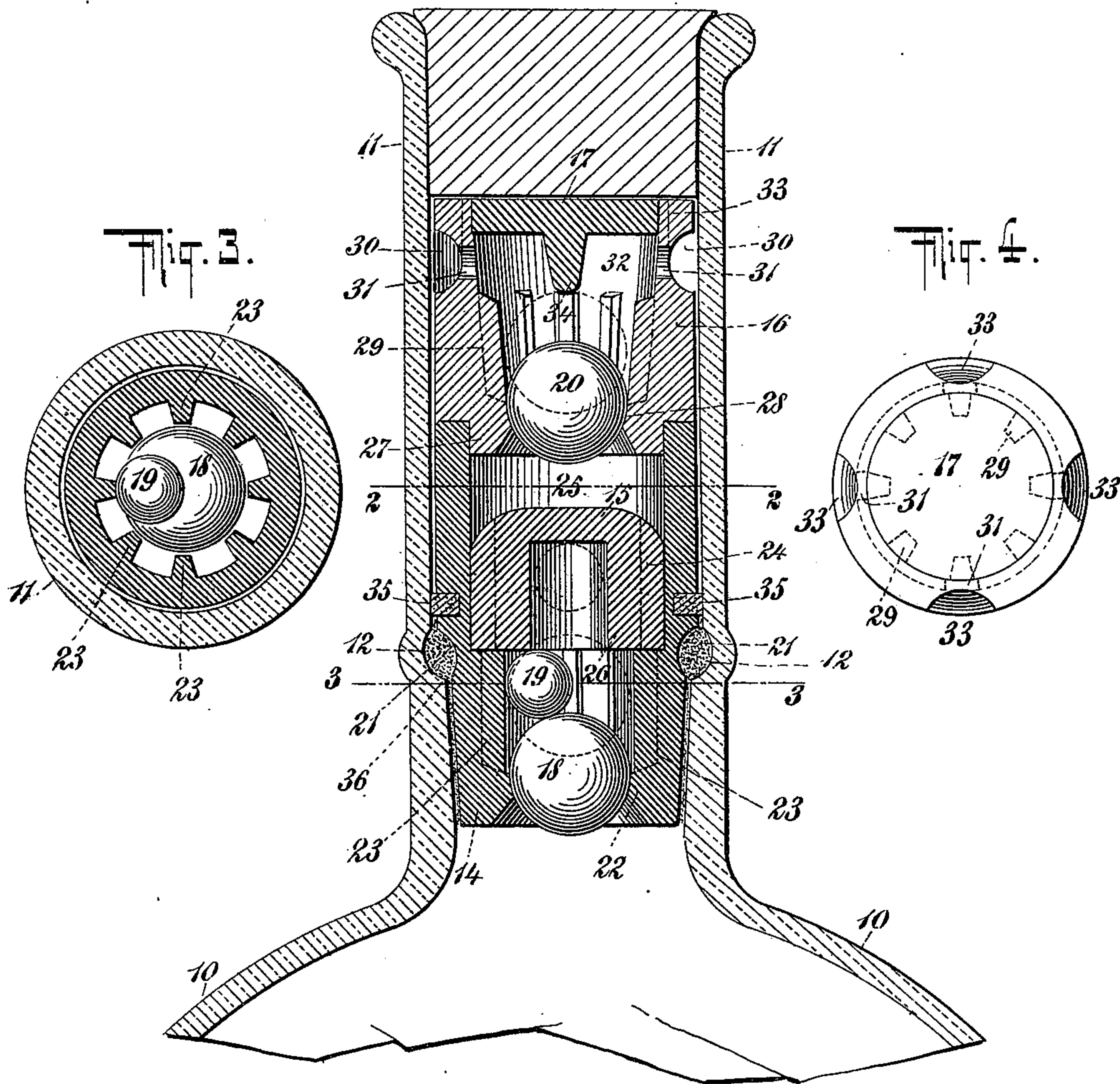


Fig. 3.

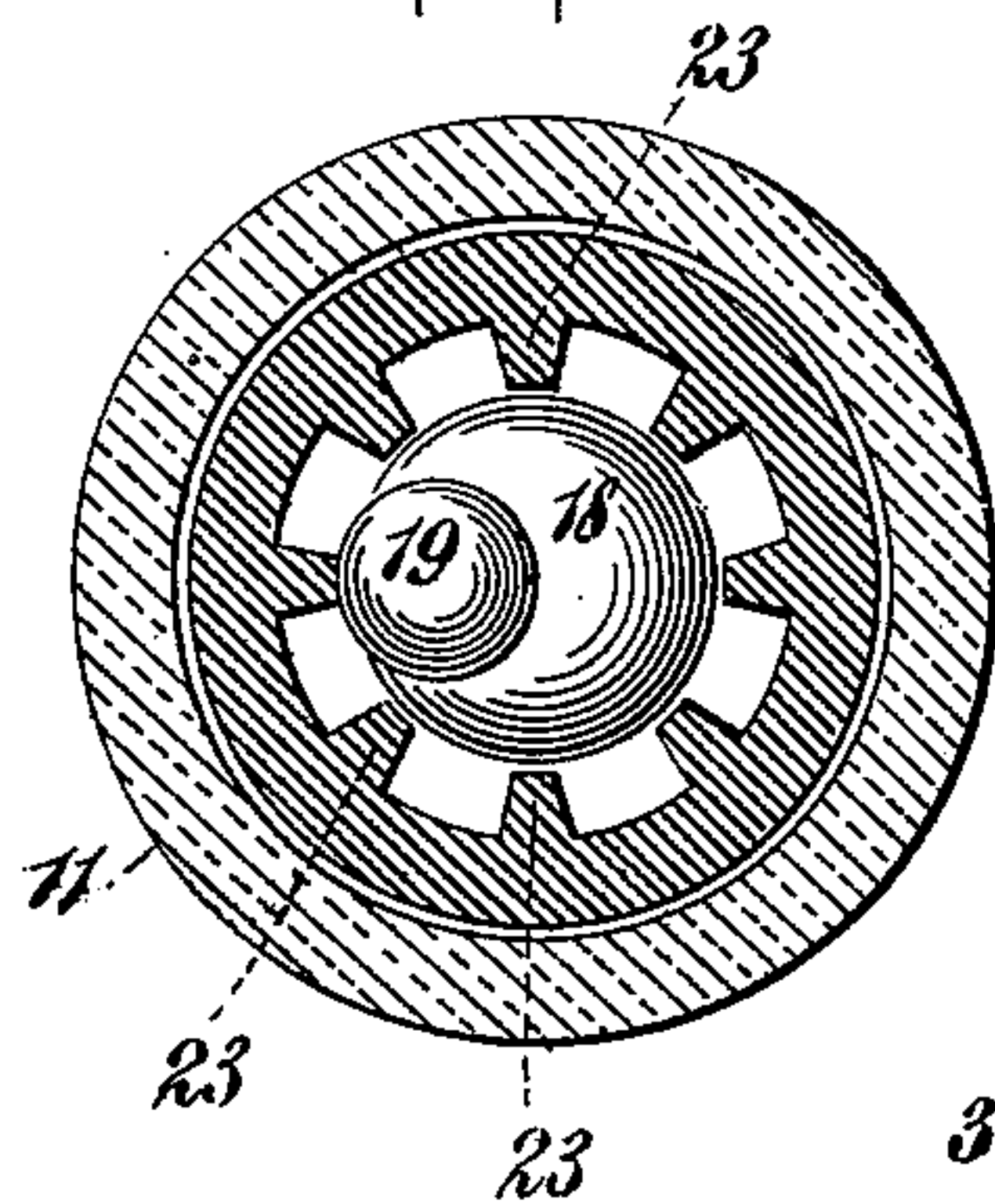


Fig. 4.

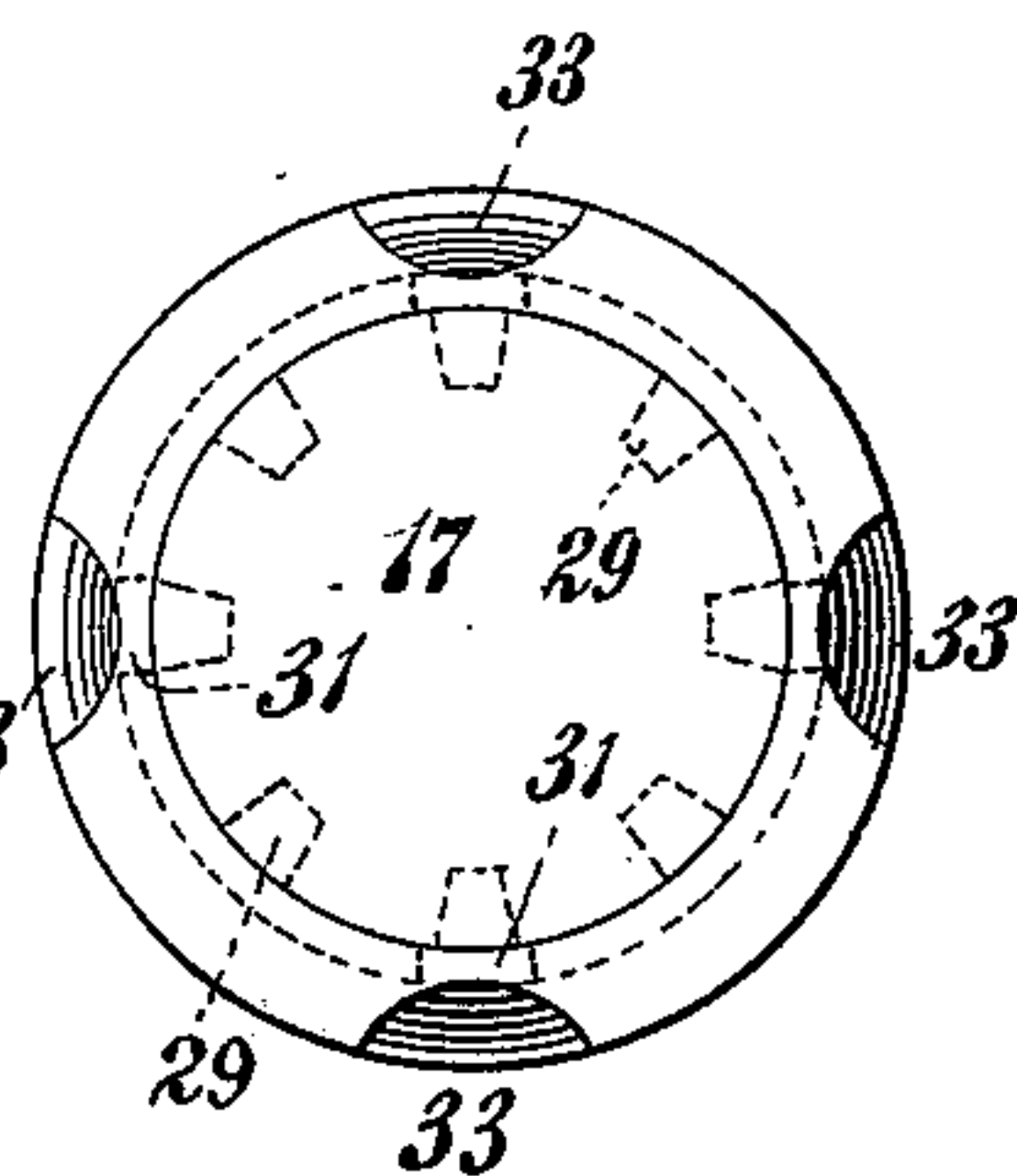
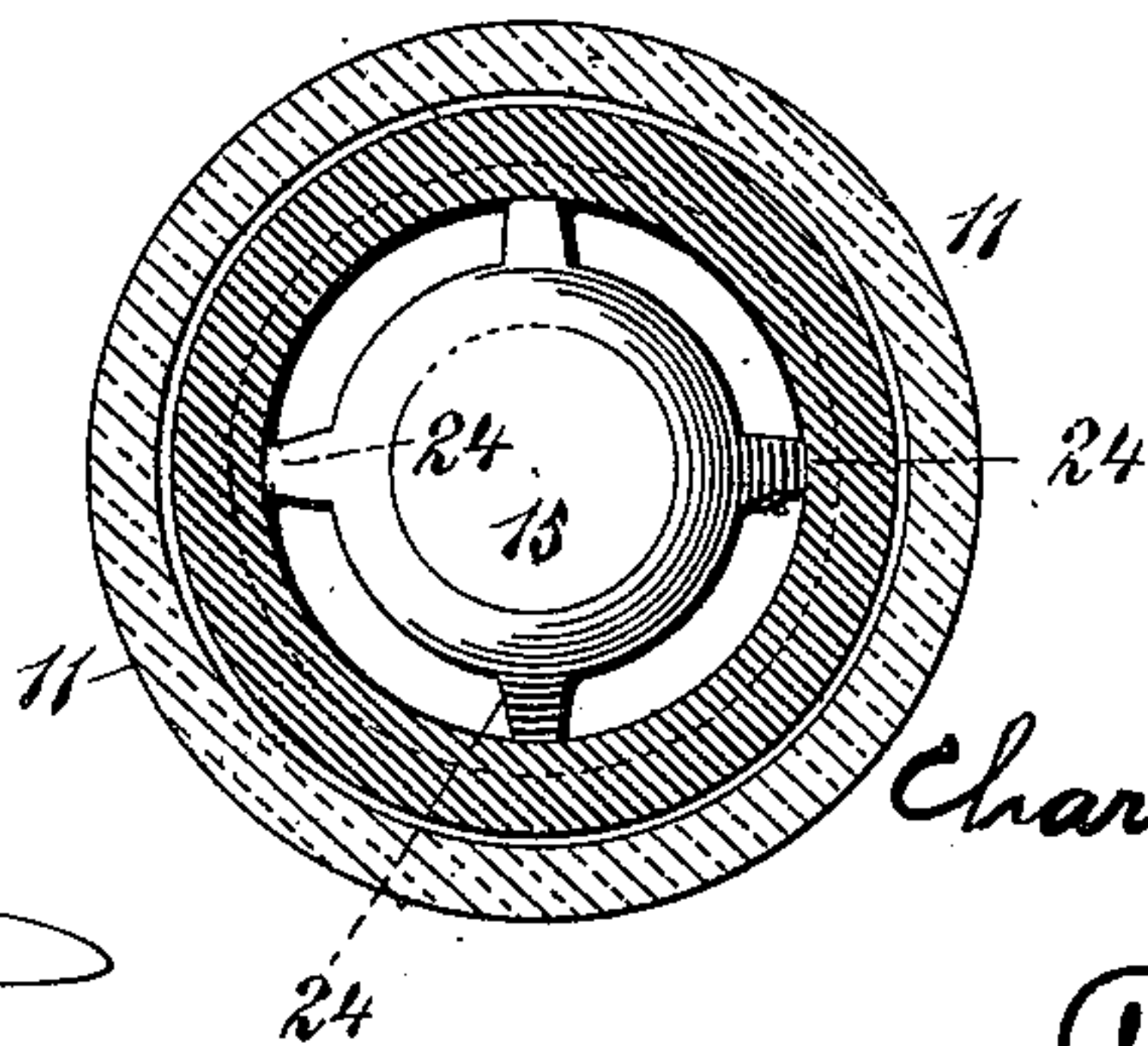


Fig. 2.



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NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 645,971, dated March 27, 1900.

Application filed July 12, 1899. Serial No. 723,545. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. OVERBAUGH, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a specification.

The invention relates to improvements in non-refillable bottles; and it consists in the novel features and combinations hereinafter described, and particularly pointed out in the claims.

The object of the invention is to produce a bottle which when once emptied cannot be refilled and which while containing the means for preventing refilling will permit of a proper flow of the liquid therefrom.

The invention will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a central vertical section of a bottle constructed in accordance with and embodying the invention, the body portion of the bottle being broken away. Fig. 2 is a horizontal section of the same on the dotted line 2 2 of Fig. 1. Fig. 3 is a like section of same on the dotted line 3 3 of Fig. 1; and Fig. 4 is a top view of the means provided within the neck of the bottle for preventing refilling, the bottle-neck being omitted.

In the drawings, 10 designates a portion of the bottle, whose neck 11 is of usual construction, with the exception that it is at a suitable point provided with the annular groove 12, below which said neck is slightly less in diameter than it is above said groove. The groove 12, as hereinafter more fully described, is intended to coöperate with cement in securing within the neck 11 the means hereinafter described for preventing the refilling of the bottle.

The means for preventing the refilling of the bottle consists of a plug comprising the three main parts numbered 14, 15, and 16, respectively, the latter being closed at its upper end by a cap 17, the said parts when brought together forming suitable interior chambers and valve-seats, as hereinafter described, and containing the lower balls 18 19 and upper ball 20, the balls 18 and 20 consti-

tuting valves, and the ball 20 being a float-valve, while the ball 18 is a heavy valve.

The part 14 of the plug is cylindrical in ex-

terior outline and is formed with the annular groove 21, adapted to pass into alinement with the annular groove 12 in the bottle-neck, and the exterior surfaces of the said part 14 closely conforming to the inner walls of the neck 11. Within the lower end of the part

14 is formed a central discharge-opening surrounded by the valve-seat 22, adapted to receive the ball 18, by which said opening, when the bottle is in a vertical position, is closed,

and which when the bottle is inverted will leave said seat 22 and permit the outflow of the liquid from the bottle. Above the valve-seat 22 the interior of the cylindrical part 14 is formed along its inner walls with the vertical

ribs 23, between which ribs are formed channels for the outflow of the liquid, and which ribs at their upper ends form seats for the hollow cap or part 15, which passes downward into the upper portion of the part 14, as shown in

Fig. 1, and is formed with ribs 24 to engage the walls of said part 14, the upper end of said cap being substantially below the upper edges of the part 14, so as to form within the upper portion of said part 14 the chamber 25.

The upper ends of the ribs 23 arrest the part 15 in proper position, and said part 15 is secured to the part 14 by cement. The lower inner edges of the cap or part 15 project inward beyond the vertical plane of the ribs 23

and form an annular shoulder 26, below which the ball 19 may partly pass when the ball 18 is on its seat 22. The interior of the cap or part 15 is of the proper dimensions to receive the ball 19 when the bottle is inverted and to exclude the larger ball 18, the

latter when the bottle is inverted being arrested on the edges of the shoulder 26, as indicated by the dotted lines. The inner vertical edges of the ribs 23 terminate directly

over the valve-seat 22, and said ribs 23 are therefore substantially in line with the sides of the ball 18, and said ball when the bottle is inverted will pass upward between said ribs and be guided by the same to the shoulder 26, the ball 18 moving freely between the ribs, but having no undue play. The part 16

of the plug is also cylindrical in outline and conforms substantially to the inner walls of

the neck B, and said part 16 is formed at its lower end with the inwardly-extending flange 27, which passes downward within the upper edges of the part 14 and is formed with the valve-seat 28 for the float ball-valve 20. The part 16 is hollow, and above said seat 28 is formed with the series of ribs 29, which extend upward substantially in line with the upper edges of said valve-seat, and between which ribs are formed the outlet-channels for the liquid from the bottle, said ribs 29 substantially corresponding with the ribs 23 of the part 14. The upper portion of the part 16 is formed with the annular groove 30 and with the transverse apertures 31, which lead from the interior chamber 32 of the part 16 into the said annular groove 30, which extends entirely around the part 16 and is in communication with the vertical grooves 33, through which the liquid finds its final outlet. The upper end of the part 16 is closed by the cap 17, which will have the downwardly-extending lug 34 to form a stop for the ball 20 when the bottle is inverted. The ribs 29 terminate slightly below the horizontal apertures 31 and are of such dimensions with respect to the ball 20 that when the bottle is inverted the said ball will be held centrally and not interfere with the free outflow of the liquid. The part 17 will be cemented within the upper end of the part 16, and the parts 14, 15, 16, and 17 will preferably be formed of glass.

Above the annular groove 21 the part 14 will be formed with an annular groove containing a cork ring 35, adapted to firmly contact with the inner walls of the bottle-neck 11.

After the parts of the plug have been brought together the plug will be cemented within the bottle-neck 11, and during this latter operation the cement will be applied around the lower exterior portions of the part 14 prior to the insertion of the plug within the bottle-neck. The cement will be liberally applied around the lower portion of the part 14 in order that upon the insertion of the plug into the bottle-neck the said cement during the downward movement of the plug will be scraped upward by the lower contracted portion of the bottle-neck to fill the annular groove 12 and annular groove 21 and form an annular cement bead filling said grooves and when hardened serving as a key, locking the plug within the bottle-neck. The annular cork ring 35 contacts with the inner walls of the bottle-neck 11 and prevents the cement moved upward on the part 14 from ascending unduly above the groove 12. It will be observed upon reference to Fig. 1 that the lower edge 36 of the groove 12 forms an annular shoulder, which sets inward beyond the inner walls of the bottle-neck 11 above the groove 12, and this shoulder 36 during the insertion of the plug into the bottle-neck will move upward a portion of the cement applied around the lower exterior surfaces of the part 14 of the plug, and this portion of the cement thus moved upward will fill the

annular grooves 12 and 21 and form the annular bead above referred to and indicated in Fig. 1, locking the plug within the bottle-neck.

When the parts of the plug are in position, as indicated in Fig. 1, and the bottle is in its upright position, the ball 18 will rest upon the seat 22 and the ball 20 will rest upon the seat 28 and the balls 18 and 20 will effectually close the passage through the plug. When the ball 18 is against its seat 20, the ball 19 will be partly below the shoulder 26 and partly against the upper surfaces of said ball 18, at one side of the center thereof, and this is an important feature of the invention in that the ball 19 when thus located serves as a locking medium to hold the ball 18 against its seat both while the bottle is in an upright position and until said bottle shall have been inverted beyond the angle at which, in the absence of the ball 19, the ball 18 would freely leave its seat. The ball 18 is a solid ball, and likewise is the ball 19 a solid ball. In the absence of the ball 19 and shoulder 26 the ball 18 would, as soon as the bottle was turned to a horizontal position, leave its seat 22; but the presence of the ball 19 and shoulder 26 results in the ball 18 being compelled to retain its seat until after the bottle has been tilted to an angle beyond a horizontal position and sufficient to cause the ball 19 to leave the shoulder 26 and pass into the cap or part 15, as denoted by the dotted lines. The tilting of the bottle to relieve the ball 18 from its seat 22 also results in the movement of the ball 20 from its seat 28, and when the bottle has been tilted and the balls 18 and 20 have left their seats 22 and 28, respectively, the liquid within the bottle may freely enter the part 14 of the plug and pass between the ribs 23 and 24 and into the chamber 25, whence the liquid will pass into the part 16 of the plug and, flowing between the ribs 29 thereof, will enter the chamber 32 at the upper portion of the part 16 and thence flow through the transverse opening 31 into the annular groove 30, whence said liquid may freely escape through the vertical grooves 33. The parts of the plug have been so designed that the balls 18 and 20 when the bottle is inverted shall form the least possible obstruction to the outflow of liquid and that when said bottle is in its upright position the said balls 18 and 20 shall effectually prevent any inflow of liquid into the bottle. The ball 20, being what may be termed a "float-valve," is particularly sensitive and will seat itself under even a light force applied at the upper end of the bottle-neck 11. The combination of the float-valve 20 and the solid ball-valve 18 in the construction presented prevents the refilling of the bottle, while at the same time a proper outflow of the liquid from the bottle is permitted.

Above the plug which prevents the refilling will be provided the usual cork stopper.

The parts of the plug are of that special con-

struction, as illustrated, permitting them to be accurately made of glass, and the arrangement of the outlet-channels admits of a substantial outflow of the liquid, the latter first passing into the lower end of the part 14, thence between the ribs 23, and thence between the cap 15 and part 14 and into the chamber 25, whence the liquid may freely pass into the upper part 17 and fill the same around the ball 20, finally escaping through the apertures 31 into the groove 30 and from said groove through the vertical grooves 33. The construction of the parts of the plug is also such that no instrument may be inserted into the same to hold the balls from having their due action, and the arrangement of the balls 18, 19, and 20 with respect to their coöperative parts is such that refilling of the bottle is prevented.

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

1. The bottle combined with the plug for preventing refilling, said plug comprising the parts 14, 15 and 16, and balls 18, 19 and 20, the part 14 having the valve-seat 22 for the ball 18, the part 15 being a cap adapted to receive the ball 19 and forming at its lower edges the shoulder 26 for restraining the ball 19, and the part 16 having the seat 28 for the ball 20 and outlet-passages above said ball; substantially as set forth.

2. The bottle, and the plug for preventing refilling, said plug being cylindrical in form and adapted to the inner walls of the neck of said bottle and having passages for the outflow of the liquid through the same, combined with the ball 18 adapted to the seat 22 at the lower end of said plug, the float ball-valve 20 adapted to the seat 28 formed within the upper portion of said plug, and the part 15 within said plug and intermediate the valve-seats 22, 28, and retaining the ball 18 in the lower portion of said plug; substantially as set forth.

3. The bottle combined with the plug for preventing refilling, said plug comprising the cylindrical part 14 having the valve-seat 22 and ribs 23, the intermediate part 15 inclosed within said part 14 and at its lower edges projecting inward beyond said ribs 23 to form the shoulder 26, the part 16 secured upon the upper edges of said part 14 and having the valve-seat 28, ribs 29, transverse apertures 31, annular groove 30 and vertical grooves 33, the ball 18 adapted to said seat 22, the ball 19 engaging said ball 18 and adapted to rest between said ball 18 and said shoulder 26, and the ball 20 adapted to said valve-seat 28; substantially as set forth.

4. The bottle and the plug for preventing refilling, said plug being adapted to enter the neck of said bottle and having the valved passages through it for the outflow of the liquid, and said neck having the annular groove 12 and below said groove being of smaller diameter than it is above said groove, whereby upon the application of cement to the lower

portion of said plug and the insertion of said plug into said neck, a portion of said cement will, by meeting the lower portion of said neck, be moved back upon said plug and enter said annular groove 12; substantially as set forth.

5. The bottle having the neck 11 formed with the annular groove 12 and below said groove being of reduced diameter, combined with the plug for preventing refilling, said plug having the valved passages through it and also having the annular groove 21 and packing-ring 35, the said plug and bottle-neck being so proportioned to one another that upon the application of cement to the lower exterior surfaces of the said plug and the insertion of said plug into said neck, a portion of said cement will, upon meeting the reduced diameter of said neck, be moved back to fill said annular grooves 12 and 21 and form, when hardened, a locking-bead to prevent the removal of said plug from the bottle-neck; substantially as set forth.

6. The bottle combined with the plug for preventing refilling, said plug comprising the parts 14, 15 and 16, and balls 18, 19 and 20, the part 14 having the valve-seat 22 for the ball 18 and ribs 23 above said seat, the part 15 being in the form of a cap adapted to receive the ball 19 and forming at its lower edges the restraining-shoulder 26 and also having the ribs 24 to engage the inner walls of said part 14, and the part 16 being upon the upper edges of said part 14 and having the seat 28 for the ball 20, the ribs 29 above said seat, the transverse apertures 31, the annular groove 30 and the vertical grooves 33, and said part 16 being closed at its upper end except at the said vertical grooves 33; substantially as set forth.

7. The bottle combined with the plug for preventing refilling, said plug comprising the part 14 having the valve-seat 22 and vertical ribs 23, the cap 15 within said part 14 and permitting the flow of the liquid around the same, the part 16 having the valve-seat 28, ribs 29, transverse apertures 31, and vertical grooves 33 communicating with the said apertures, the ball 20 confined within said part 16 and adapted to said seat 28, and the ball 18 within said part 14 and adapted to said seat 22; substantially as set forth.

8. The bottle combined with the plug for preventing refilling, said plug comprising the part 14 having the valve-seat 22 and vertical ribs 23 extending upward from about the upper edges of said valve-seat, the cap 15 within said part 14 and having its lower edges extending inward beyond the inner edges of said ribs 23 to form the annular shoulder 26, an upper part containing passages for the exit of the liquid passing by said cap 15, the ball 18 adapted to said seat 22, and the ball 19 adapted to pass into said cap 15 when the bottle is inverted, and when the bottle is in its upright position to pass below said shoulder

26 and against the ribs 23 and contact with
the ball 18 at one side of the center thereof,
whereby said ball 19 will retain said ball 18
against its seat 22 except when the bottle is
5 inverted beyond a horizontal position and to
a sufficient extent to send the ball 19 into the
cap 15; substantially as set forth.

Signed at New York, in the county of New
York and State of New York, this 11th day
of July, A. D. 1899.

CHARLES B. OVERBAUGH.

Witnesses:

CHAS. C. GILL,

GUNDER GUNDERSON.