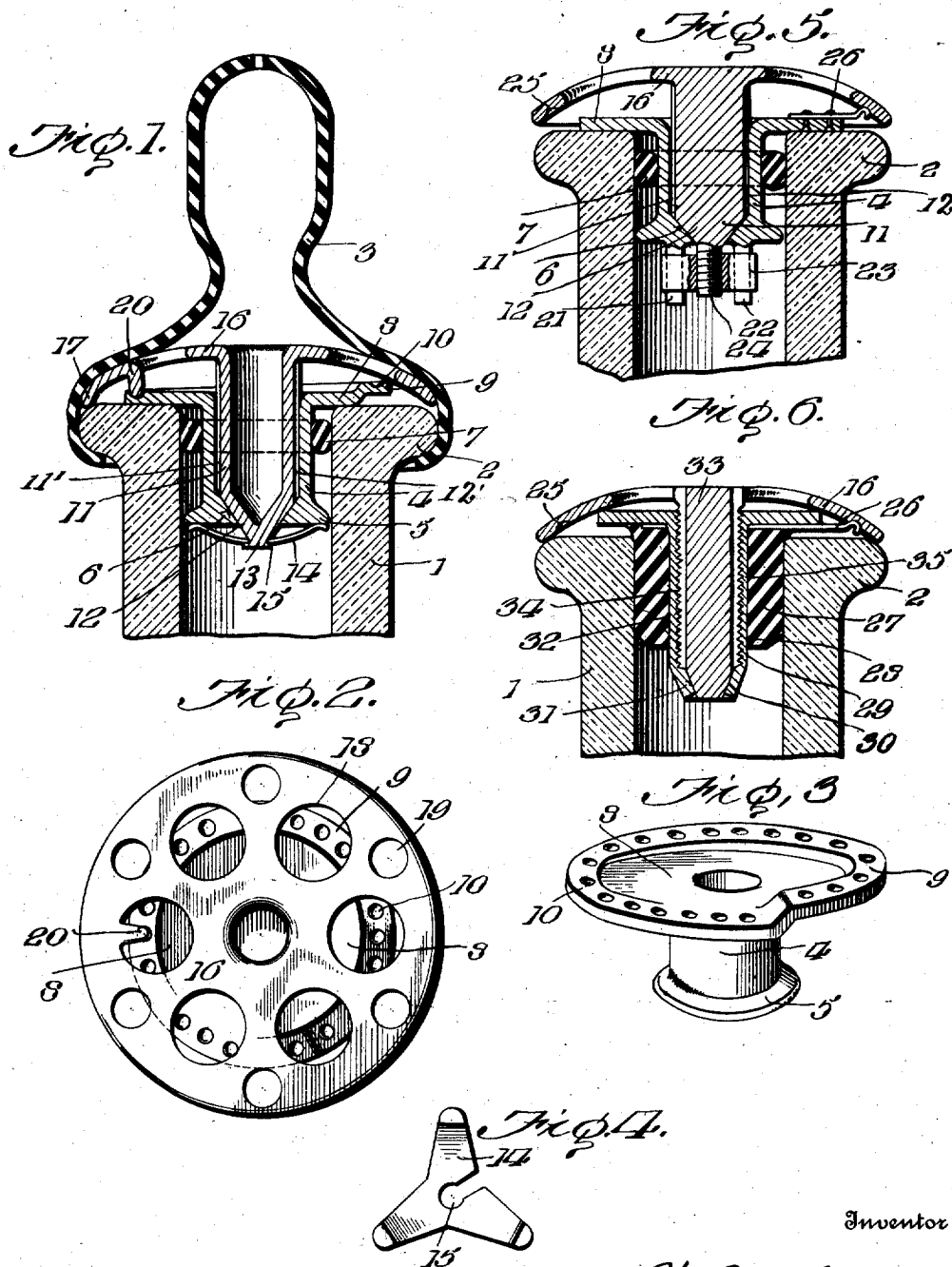


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 DEVICE FOR REGULATING THE FLOW OF LIQUID FROM NURSING BOTTLES.
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Patented Apr. 25, 1911.



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DEVICE FOR REGULATING THE FLOW OF LIQUID FROM NURSING-BOTTLES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM MAC-GLASHAN, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Devices for Regulating the Flow of Liquid from Nursing-Bottles, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in a device for regulating the flow of liquid from a nursing bottle.

The object of my invention is to provide an attachment of this character which can be applied to the ordinary nursing bottle and the nipple applied whereby the flow of liquid from the bottle is regulated, and said regulating means adapted to be operated by the turning of the nipple without removing the nipple from the bottle.

Another object of my invention is to provide a more simple, cheap and effective device to accomplish these results.

Figure 1 is a vertical sectional view of an ordinary nursing bottle with the nipple applied and showing my device applied in the mouth of the bottle. Fig. 2 is a top plan view of my improved device. Fig. 3 is a perspective view of the stopper showing more fully the cam arrangement for raising the valve. Fig. 4 is a detached view of the spring for holding the valve seated. Fig. 5 is a vertical sectional view similar to Fig. 1, of a modified form of my device. Fig. 6 is a vertical sectional view similar to Fig. 1, and showing a still further modified form of device.

Referring now to the drawings, 1 represents the upper neck of an ordinary nursing bottle having the usual flange 2 for retaining the nipple 3 thereon. Within the mouth of the bottle, I propose to place my improved regulating device, and it consists of a stopper 4, which is of an elongated sleeve-like form having the inner face reduced at its lower end 5 forming a valve-seat 6. This stopper is of a diameter considerably less than that of the mouth of the bottle, and in order to form a tight joint between the stopper and the mouth of the bottle, I place a rubber gasket or ring 7. This gasket or ring being of a circular form in cross-section, allows the stopper to be placed in bottles having different sized mouths, the gasket expanding to fit the

mouth. The outer end of the stopper 4, is provided with an annular flange 8 resting upon the upper end of the mouth of the bottle. The outer edge of the flange 8 is provided with an annular raised cam face 9, having a series of circular depressions 10 therein.

Fitting within the sleeve-like stopper 4 is a valve 11, having the inner wall reduced at its lower end 12, adapted to form a tight joint with the valve seat 6, and the extreme lower end of the valve extending below the lower end of the stopper 4. The valve is provided with vertically arranged passages 11' and 12' through which the liquid passes from the bottle. This extended end is provided with an enlarged head 13, adapted to carry the spring 14, which bears against the lower end of the stopper 4, and normally holds the valve 11 in its seated or closed position. In order that the valve may be readily removed, the spring 14 is provided with a keyhole slot 15, whereby it is readily removed or attached to the valve. For the purpose of lightening the valve, I have preferably made it of a hollow form, but if desired, it may be made solid. The upper end of the valve 11 is provided with an umbrella-flange 16, the outer edge 17 extending out in a vertical alinement with the outer edge of the flange 2, of the bottle. By this structure it will be seen that the nipple 3 of the bottle rests upon this flange 16 and the turning of the nipple on the bottle turns the flange and raises or lowers the valve 11, as will now be described.

The flange 16 is preferably formed with a series of large openings 18 and a second series of smaller openings 19 for reducing the weight of the flange. The metal of this flange 17 is turned downwardly at 20 within one of the openings and bears upon the cam surface 9, of the flange 8. This downwardly turned portion or tongue 20 has its lower end rounded and adapted to rest in one of the recesses 10 in the cam-face.

By the above description, it will be seen that by turning the nipple on the neck of the bottle the flange 16 is turned with the nipple as it has a large engagement therewith. This causes the tongue 20 to travel upwardly on the cam face 9 of the flange 8 and raising the contracted end 12 of the valve from the seat 6, and allowing the liquid to pass upwardly around the valve 11 into the nipple, the tongue 20 holding the

valve in its adjusted position by entering one of the depressions or recesses 10. The spring 14 when the valve is in this position has been compressed and further aids in holding the valve in its adjusted position. By turning the nipple in the opposite direction to that just described, the tongue 20 travels down the cam-face 9 of the flange 8, the spring 14 causing the valve 11 to seat itself upon the seat 6 of the stopper and thus cutting off the flow of liquid from the stopper. This arrangement allows the valve to be so adjusted that any desired amount of liquid can flow through the stopper as necessity may require.

While I have shown and described this specific form of regulating means, it will be understood that I do not care to limit myself to the same as numerous other forms of valves can be used without departing from my invention, such as are shown in Figs. 5 and 6 of the drawings.

In the modification shown in Fig. 5, the stopper 4 instead of having the cam face, has at its lower end extensions 21 and 22 upon which is vertically adjustable a nut 23, and the lower end of the valve 11 is provided with a screw-threaded extension 24 screwed into the nut 23. The umbrella-flange 16 is operated by a nipple in the same manner as is shown and described in Fig. 1, and thus by turning the flange 16 the valve is screwed up and down within the nut 23, causing it to seat and unseat itself, as is clearly shown in the drawings. In order to prevent the umbrella flange 16 from being accidentally turned the lower face thereof adjacent to its outer edge is provided with recesses 25, in which rests a spring member 26 carried by the flange 8 of the stopper. This arrangement allows of the ready turning of the umbrella-flange 16, yet prevents it from being accidentally turned.

In the modification shown in Fig. 6, I use an ordinary stopper 27, of an elongated form and preferably of rubber tightly fitting within the mouth of the bottle. This stopper has a central opening 28 through which a sleeve 29 passes forming a tight joint therein. This sleeve has a contracted lower end 30 forming a valve seat 31. Above the valve seat 31 the sleeve is internally threaded at 32. Fitting within the sleeve 28 is a valve 33 having a screw-threaded connection with the sleeve. The lower end of the valve is contracted and tightly fits the seat 31 of the sleeve. The valve is provided on opposite sides with vertically arranged passages 34 and 35, through which the liquid passes from the bottle. The umbrella-flange 16 is constructed the same as in Fig. 1, and is provided with recesses 25 and the spring member 26 working in the same manner, as shown in Fig. 5.

Having thus described my invention, what

I claim and desire to secure by Letters Patent is:

1. In a nursing bottle, the combination of a nipple, a stopper in the neck of the bottle and having a passage therethrough, a valve vertically movable in said passage, and means carried by the upper end of the valve and engaged by the nipple whereby the rotation of the nipple on the bottle will raise and lower the valve in said stopper.

2. In a nursing bottle, the combination of the nipple, a stopper in the mouth of the bottle and having a passage therethrough, a downwardly spring-held valve in said passage and closing the same, and means carried by the valve and engaged by the nipple whereby the turning of the nipple on the bottle raises and lowers the valve against the tension of the spring.

3. In a nursing bottle, the combination of a nipple, a stopper in the mouth of the bottle and having a passage therethrough, a downwardly spring-held valve normally closing said passage, a cam surface carried by the upper end of said stopper, a downwardly extending tongue carried by the valve for engaging the cam surface, and means carried by the valve and engaging the nipple whereby the rotation of the nipple on the bottle raises and lowers the valve.

4. In a nursing bottle, the combination of a nipple, a stopper in the mouth of the bottle and having a passage therethrough, a valve in said passage and a flange carried by the upper end of the valve and engaging the nipple, and means carried by the flange for raising and lowering the valve when the flange is rotated by the rotation of the nipple on the bottle.

5. In a nursing bottle, the combination of a nipple, a stopper in the mouth of the bottle and having a passage therethrough, a cam surface carried by the upper end of the stopper, a valve vertically movable in said passage and normally spring-held for closing said passage, a flange carried by the valve, a downwardly extending tongue carried by the flange for engaging the cam surface carried by the stopper, said flange adapted to engage the nipple whereby the rotation of the nipple on the bottle rotates the flange for raising and lowering the valve.

6. In a nursing bottle, the combination of a nipple, a stopper in the mouth of the bottle having a passage therethrough and having an outwardly extending flange provided with a cam upper face, a valve within said passage, means for normally holding said valve in a downward position closing the passage, means carried by the valve for engaging the cam surface of the stopper, and means carried by the valve for engaging the nipple on the bottle for raising and lowering the valve.

7. In a nursing bottle, the combination of a nipple, a stopper in the mouth of the bottle having a passage therethrough, said passage having an inwardly extending lower end, a valve within said passage and having a lower tapered end extending within the lower end of the passage, a spring removably attached to the lower end of the valve and bearing against the stopper, and the valve engaged by the nipple whereby the rotation of the nipple on the bottle operates the valve.

8. In a nursing bottle, the combination of a nipple, a stopper in the mouth of the bottle and having a passage therethrough, the upper end of the stopper having an outwardly extending flange provided with a cam upper face, said cam face having recesses therein, a valve downwardly spring-held within said passage, a flange carried by the upper end of the valve and engaging the nipple, and a downwardly extending tongue carried by the flange and traveling upon the cam surface of the stopper, whereby the turning of the nipple on the bottle raises and lowers the valve.

9. In a nursing bottle, the combination of a nipple on the bottle, a stopper in the mouth of the bottle having a passage therethrough, having an inwardly extending lower end, the upper end of the stopper having an outwardly extending flange provided with a cam upper face having recesses there-

in, a valve having a tapering end closing the lower end of the passage in the stopper, a flange carried by the upper end of the valve, a downwardly extending tongue carried by the flange, and traveling upon the cam face of the stopper and adapted to enter the recesses therein, said flange engaged by the nipple whereby the rotation of the nipple on the bottle rotates the flange for opening and closing the passage through the stopper.

10. In a nursing bottle, the combination of a nipple, a stopper in the mouth of the bottle and having a passage therethrough and having the inner face contracted at its lower end, the upper end of the stopper having an outwardly extending flange provided with a cam upper face having recesses therein, a valve having a tapering end closing the opening through the stopper, and passages between the stopper and valve, a flange carried by the upper end of the valve and a downwardly extending tongue carried by the flange and traveling upon the cam face of the stopper.

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

WILLIAM MacGLASHAN.

Witnesses:

CARL H. SALISBURY,
THOS. B. ARMSTRONG.