No. 816,744. PATENTED APR. 3, 1906.

S. D. RODGERS.

BOTTLE NECK AND STOPPER.

APPLICATION FILED FEB. 6, 1905.

Fig. 1.

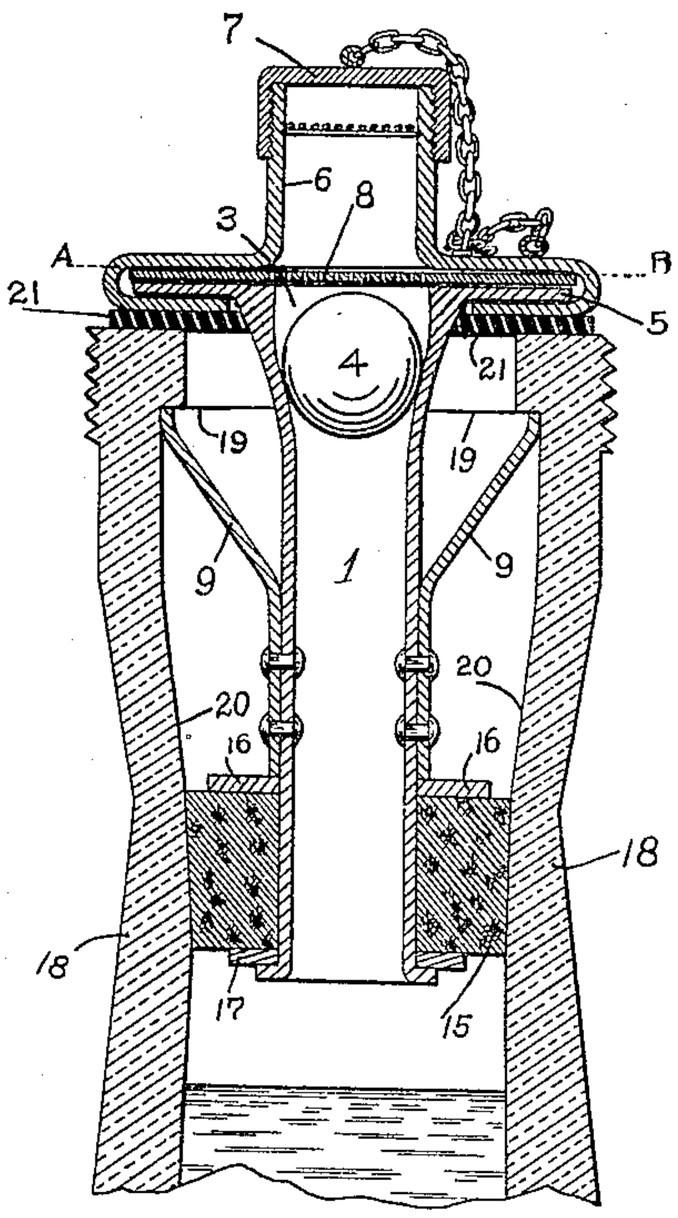
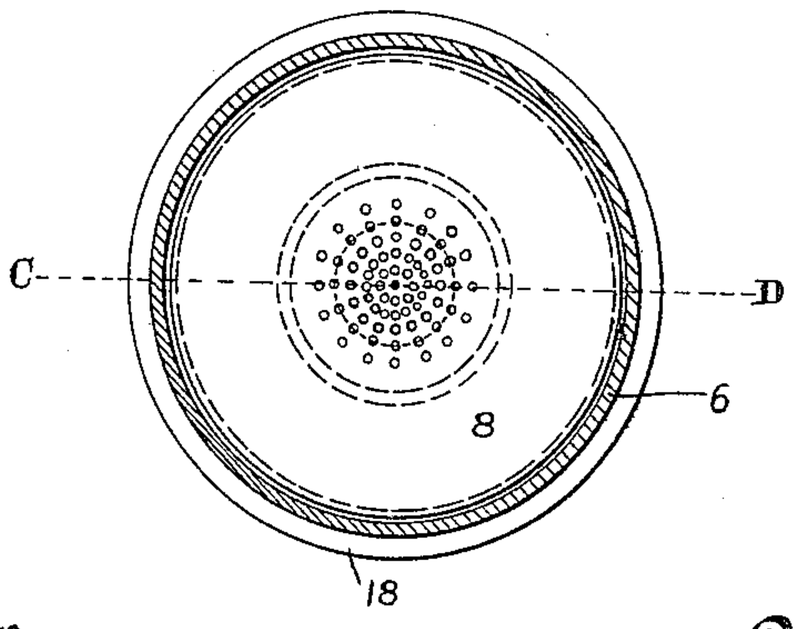


Fig. 2.



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UNITED STATES PATENT OFFICE.

STEPHEN D. RODGERS, OF ST. LOUIS, MISSOURI.

BOTTLE NECK AND STOPPER.

No. 816,744. Specification of Letters Patent. Patented April 3, 1906.

Application filed February 6, 1905. Serial No. 244,370.

To all whom it may concern:

Be it known that I, STEPHEN D. RODGERS, a citizen of the United States, residing at St. Louis, Missouri, have invented a new and useful Improvement in Bottle Necks and Stoppers, of which the following is a specification.

This invention relates to bottle necks and stoppers; and it consists of the novel construction, combination, and arrangement of parts hereinafter shown, described, and claimed.

As will be seen by reference to the drawings, the improvements in stoppers which I have invented are intended to be used in conjunction with certain improvements or features of construction in the necks of the bottles or other receptacles adapted to receive the aforementioned stoppers, which stoppers embody or contain the improvements which I have invented. The aforesaid improvements in the necks of bottles or receptacles will form the subject-matter of a future application for Letters Patent which I intend to make.

In the drawings, Figure 1 is a vertical cross-section of the neck of a bottle or other receptacle with the aforesaid stopper shown in final position in the neck. This section is taken on the line C D, Fig. 2. Fig. 2 is a horizontal cross-section taken on the line A B of Fig. 1 and looking downward.

My invention is particularly intended to provide a stopper which when used to seal a bottle or other receptacle containing liquid matter or solid matter in the form of lumps, grains, or powder will permit the removal of the contents of the bottle, but will make it difficult, if not impossible, to refill the aforesaid bottle with liquid or solid matter.

The essential features of my new stopper, the use of which would tend to prevent the refilling of the aforesaid bottles or receptacles, are as follows: The circular central passage-tube 1 is formed with a stem passing through the stopper 15. A valve-chamber 3 contains a ball or valve 4, which acts as a valve therein to prevent the introduction into the bottle or receptacle of any liquid or solid when the bottle is in an approximately vertical position. A lip or flange 5 of sufficient width to completely cover the orifice or mouth of the bottle or receptacle is on the upper end of the tube 1, and a neck or mouth 6, preferably made no larger (in diameter) than will be necessary for the proper egress of the contents of the bottle or receptacle, is clamped around the flange 5, as clearly shown in Fig. 1. This neck or mouth 6 is provided with a removable seal of any kind, such as a cork or plug or screw-cap 7 or any other convenient removable seal. The walls of the valve-chamber 3 are sloped or curved downwardly from the sides to the opening in the bottom of said chamber into the tube 1 in such a manner that the ball 4 will not roll away from or uncover said opening until the bottle or receptacle has been inclined or tipped to a position approximately horizontal. The passage-tube 1 contains, immediately over the ball or valve 4, a perforated grating or netting 8 of stiff wire or other material. The apertures in this grating or netting are large enough to permit the free egress of the contents of the bottle, but not large enough to permit the use of a rod, wire, or instrument to be used in holding the ball or valve away from the opening in the bottom of the valve-chamber 3 for the introduction of any liquid or other matter into the body of the bottle or receptacle without extreme difficulty. This grating 8 is secured immediately above the chamber 3 by being clamped between the flange 5 and the binding portion of the mouthpiece 6. The height of this grating 8 above the ball or valve 4 is to be sufficient to allow the free movement of the said ball or valve 4 when the receptacle or bottle is tipped or inclined to a position approximately horizontal.

The springs 9 are fastened to the outer side or wall of the tube 1 by any suitable means, as by pins or rivets, in such a manner that the tension of the springs will tend to spread or force their ends against the inner side or wall of the neck of the bottle or receptacle. The central passage-tube 1 is inserted through a suitable hole in the stopper 15. The stopper 15 is prevented from sliding on the passage-tube 6 by means of the washers 16 and 17, secured on the tube 1 above and below the stopper.

The neck 18 of the bottle or other receptacle is formed with an inwardly-projecting circular flange 19, which engages the ends of the springs 9 when my improved stopper is pushed into its final position in the neck of the bottle or receptacle, as shown in Fig. 1. The inner surface or wall of the neck 18 tapers or becomes narrower from the flange 19 downwardly toward the body (not shown) of the bottle or receptacle, as indicated at 20, so that the lower end or part of the stopper 15

will be compressed more than the upper end or part thereof, thus imparting to the stopper 15 as a whole a tendency to spring back out of the neck 18 of the bottle or receptacle. This will cause the ends of the springs 9 to press firmly against the lower surface of the flange 19. This wedging of the lower end of part of the stopper 15 will also produce a sufficient seal between the surface of the stopper 15 and the neck 18 of the bottle or receptacle and between the surface of the stopper and the central passage-tube 1 to prevent any leakage of the contents of the bottle or receptacle between the surface of the stopper 15 and the surfaces of the neck 18 or of the central passage-tube 1.

After the various parts have been provided the operation of assembling is as follows: The springs 9 are fastened to the lower part or stem of the central passage-tube 1, the ball or valve 4 is placed in position in the valve-chamber 3, the circular perforated grating or piece of netting 8 is placed in position on top of the flange 5, and the mouthpiece 6 is then placed over the grating and crimped or bent down over the under part of the flange 5, so as to clamp or fasten the grating 8 between the parts 5 and 6. The upper washer 16 is then slipped on over the tubular stem 1 as far as the ends of the springs 9, which act as shoulders to prevent the further passage of the washer. The tubular stem 1 is then forced through the circular hole in the stopper 15 until the stopper reaches the washer 16. The lower washer 17 is then slipped on the stem 1, and the bottom of the stem 1 is then expanded or burred over the washer 17, thus holding the stopper 15 securely in position.

In practice the bottle or receptacle is filled to a point about one-half inch below the point where the bottom of my improved stopper will come when placed in final position. The stopper is then forced downwardly into the neck 18 of the bottle or receptacle. In passing through the neck the springs 9 will be compressed inwardly toward the wall of the valve-chamber 3 while the springs are in contact with the upper inner wall of the flange 19 and will expand or spring back again to the position shown in Fig. 1 beneath the flange 19. The elastic circular washer 21 is placed between the flange 5 and the top of the neck 18 of the bottle or receptacle to insure a tight seal.

Having thus shown and described my invention, what I claim, and desire to secure by Letter Patent, is as follows:

1. In a bottle or receptacle, the combination with the neck having an internal flange, of a tube within the neck, springs fastened to the tube to abut against the flange, a perforated netting at the outer end of the tube, a device to secure the netting in position, a valve to control the passage through the tube, washers on the inner end of the tube, and an elastic stopper on the tube between the washers, substantially as specified.

2. In a bottle or receptacle, the combination with the neck having an internal flange, of a tube within the neck, springs fastened to the tube to abut against the flange, a perforated netting at the outer end of the tube, and a mouthpiece clamped onto the outer end of the tube outside the neck of the receptacle, substantially as specified.

3. In a bottle or receptacle, the combination with the neck having an internal flange, of a tube within the neck, springs fastened to the tube to abut against the flange, a mouthpiece clamped onto the outer end of the tube outside the neck of the bottle, a perforated netting between the mouthpiece and the tube, and a valve within the tube adjacent to the perforated netting, substantially as specified.

4. In a bottle or receptacle, the combination with the neck having an internal flange, of a tube within the neck, springs fastened to the tube to abut against the flange, a ball located within the outer end of the tube, a perforated netting against the outer end of the tube to hold the ball in the tube, a mouthpiece clamped upon the outer end of the tube and the netting, and an elastic stopper fastened to the inner end of the tube, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

STEPHEN D. RODGERS.

Witnesses:
STEVE QUINN,
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