

No. 803,860.

PATENTED NOV. 7, 1905.

C. C. SMITH.  
BOTTLE CLOSURE.  
APPLICATION FILED FEB. 13, 1905.

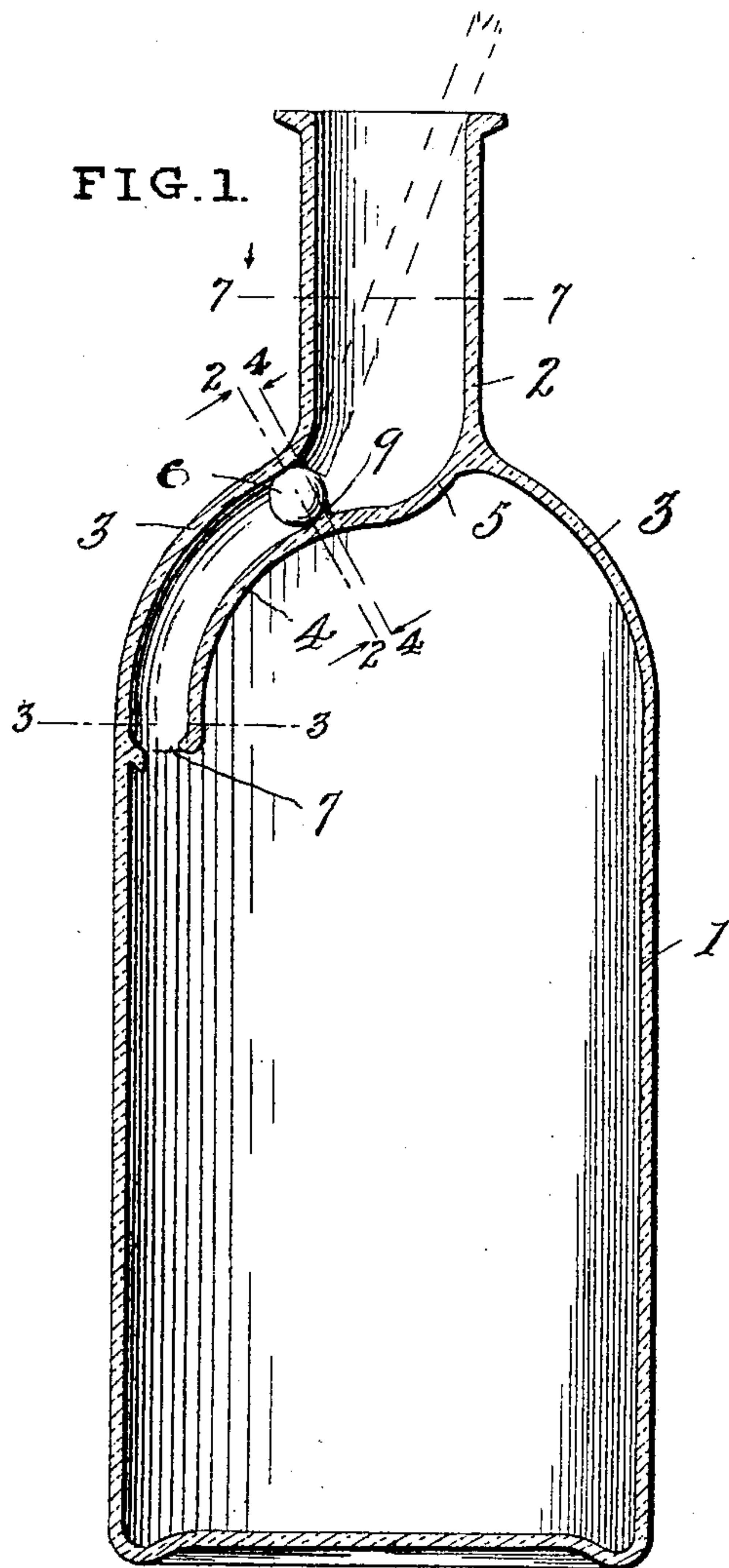


FIG. 7.

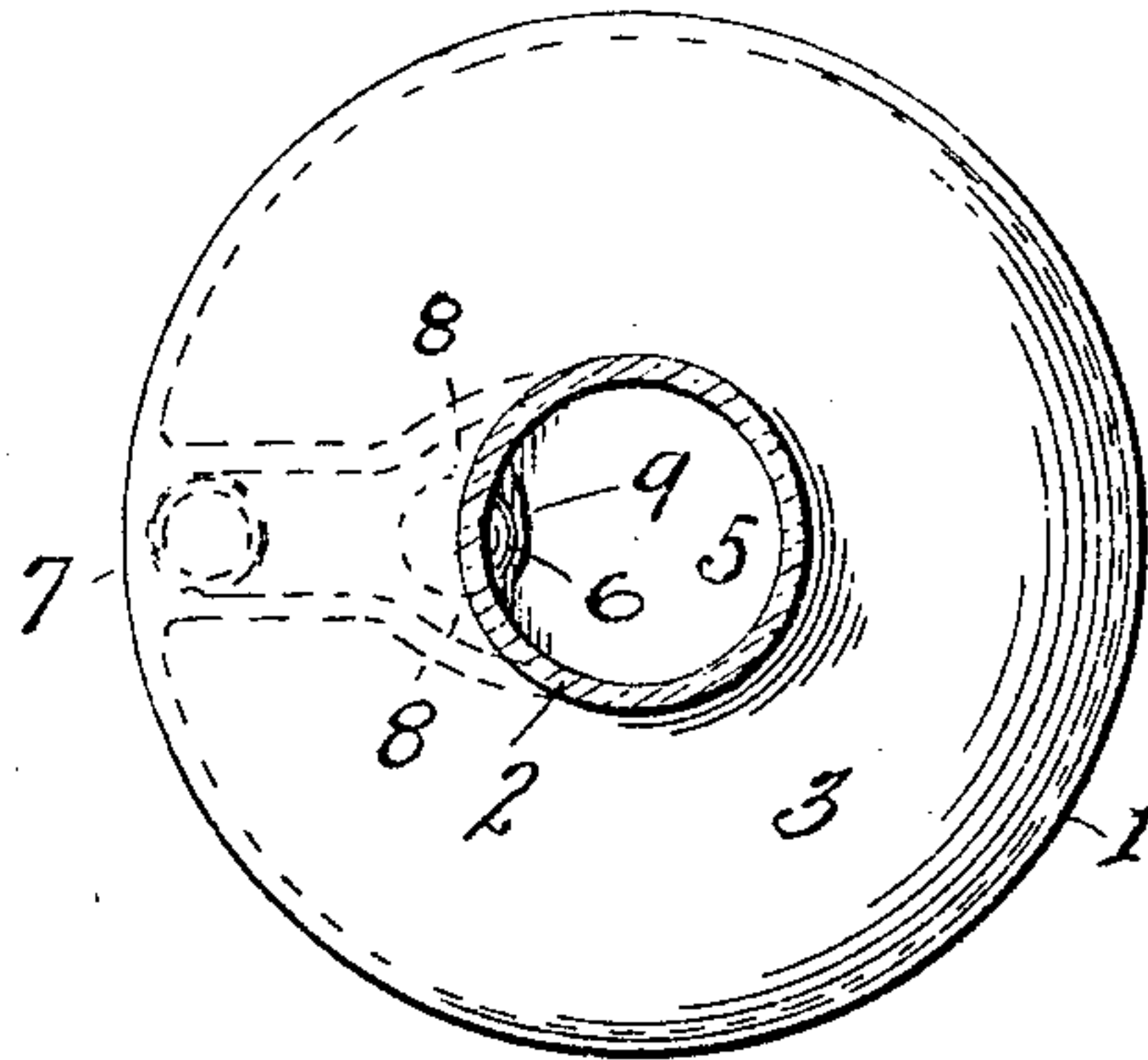


FIG. 5.

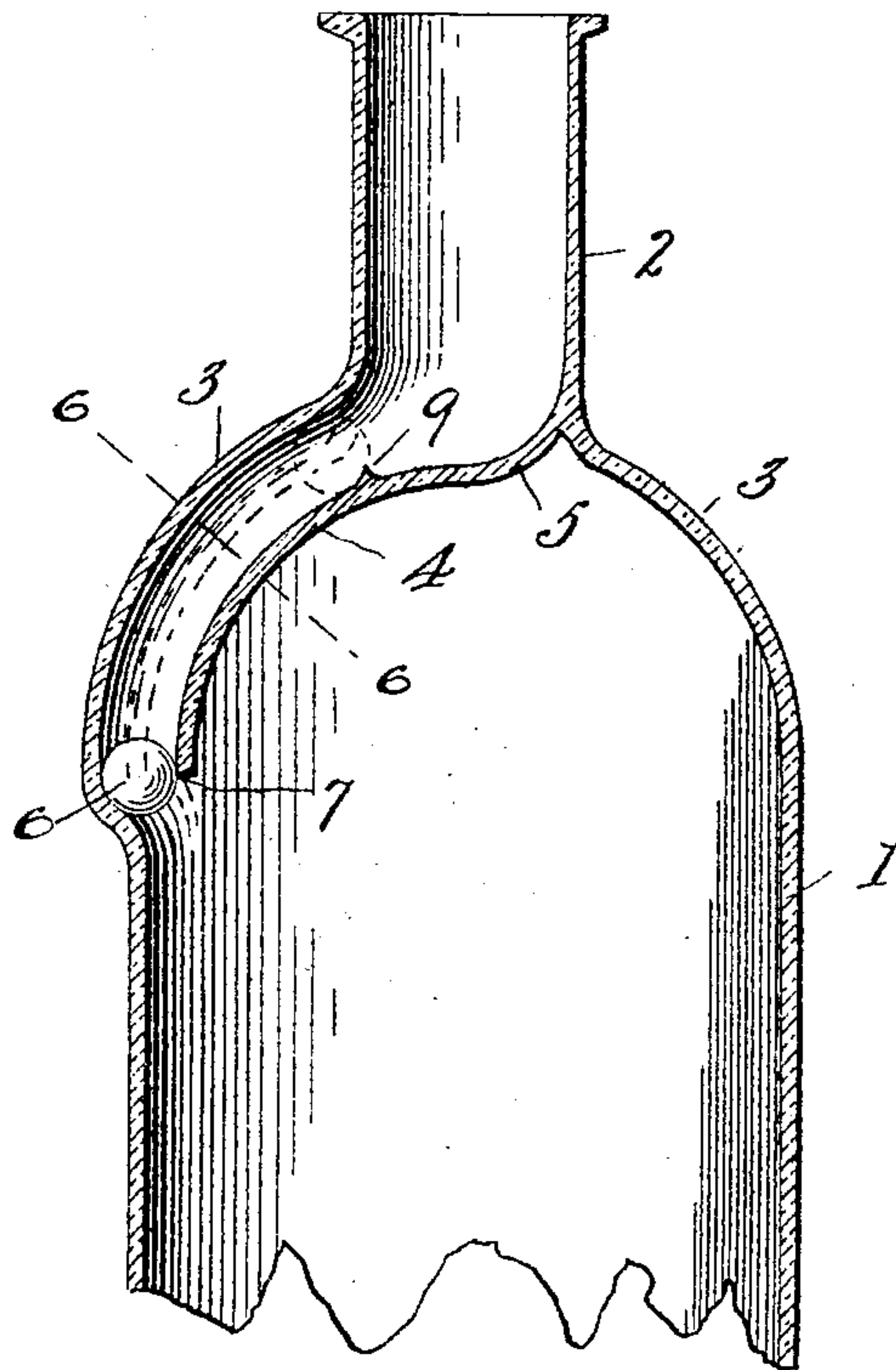


FIG. 2.

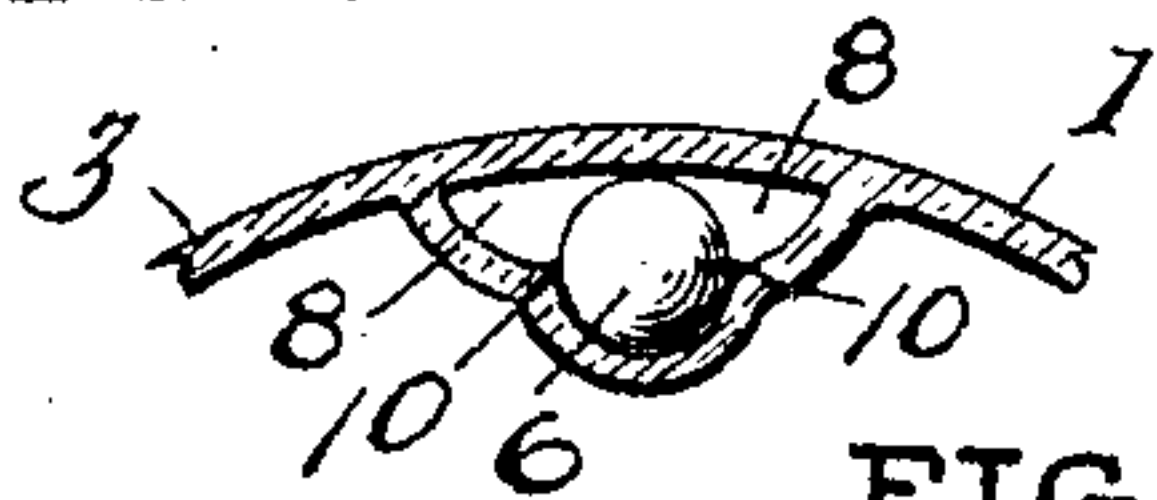
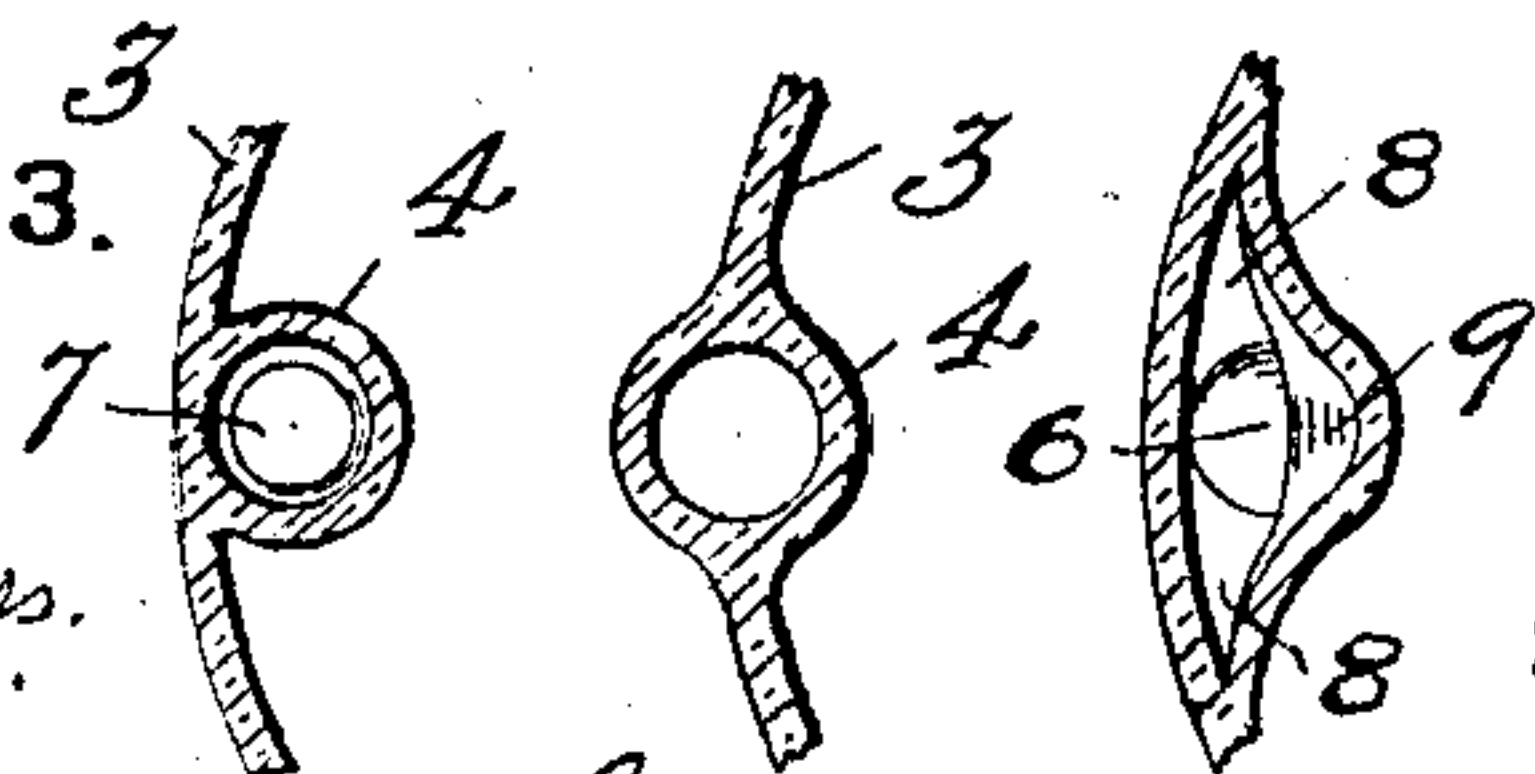


FIG. 6. FIG. 4.

FIG. 3.



Witnesses  
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# UNITED STATES PATENT OFFICE.

CHARLES C. SMITH, OF CAPE CHARLES, VIRGINIA.

## BOTTLE-CLOSURE.

No. 803,860.

Specification of Letters Patent.

Patented Nov. 7, 1905.

Application filed February 13, 1905. Serial No. 245,452.

*To all whom it may concern:*

Be it known that I, CHARLES C. SMITH, a citizen of the United States, residing at Cape Charles, in the county of Northampton and State of Virginia, have invented certain new and useful Improvements in Bottle-Closures, of which the following is a specification.

My invention relates to bottle-closures, and especially to that class of bottle-closures wherein the closing is controlled automatically by a weight-actuated valve.

The object of my invention is to provide a bottle with a closure so proportioned and disposed that the bottle may be filled in the ordinary manner and when once filled may be emptied conveniently and expeditiously, but cannot be refilled.

A further object of my invention is to provide a bottle with a ball-valve and ball-run so proportioned and disposed that the ball normally coöperates with the valve-seat in the ball-run to close the bottle and is held in such position except when the bottle is inverted.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a view of a bottle in vertical section embodying my improved closure and showing the ball-valve in the position for filling and where it is cemented until the bottle is filled. Fig. 2 is a transverse sectional view taken on line 2 2 of Fig. 1, showing the ball-valve cemented in the ball-race for filling. Fig. 3 is a transverse sectional view of the ball-race, taken on line 3 3 of Fig. 1 and adjacent to the valve-seat. Fig. 4 is a transverse sectional view taken on line 4 4 of Fig. 1, showing the ball and ball-race and the lug disposed in the ball-race to prevent the ejection of the ball from the ball-race while the contents are being discharged from the bottle. Fig. 5 is a vertical sectional view of a bottle embodying my bottle-closure in a form slightly different from the form shown in Fig. 1. Fig. 6 is a transverse sectional view of the ball-race, taken on line 6 6 of Fig. 5 and showing the modified form. Fig. 7 is a section on the line 7 7 of Fig. 1.

Like characters of reference designate corresponding parts throughout the several views.

My improved bottle-closure may be embodied in a bottle of the usual or any desired configuration, as the bottle 1, having the usual neck 2 and dome portion 3.

In its essential features my improvement comprises a ball-race 4, following the configuration of some portion of the bottle, as the dome 3, and extending entirely across and closing the neck, as at 5. The ball-race 4 is formed circular in cross-section, as shown at Figs. 3 and 6, throughout the greater portion of its length, and therein is disposed a ball-valve 6, proportioned to practically fill the ball-race and to move freely therein. At its lower end the ball-race 4 is provided with a valve-seat 7, with which the ball-valve 6 is adapted to coöperate and close the ball-race and bottle. At its upper end and adjacent the neck of the bottle the ball-race 4 is widened, as shown in Figs. 2 and 4, to form passages 8 to permit the outflow of a fluid past the ball-valve 6. To prevent the ejection of the ball from the ball-race, a lug 9 is interposed and may be formed to extend entirely across the ball-race, as shown in Figs. 4 and 7, or may simply extend above the surface of the diaphragm 5, closing the bottle-neck. To permit the unimpeded filling of the bottle, the ball-valve 6 is breakably secured in the position shown in Figs. 1 and 2 by cementing the said ball-valve to the sides of the ball-race, as shown at 10 in Fig. 2. This cementing is accomplished, preferably, by the use of a minute quantity of molten glass at the time of manufacture.

The operation of my improved bottle-closure is as follows: With the ball-valve cemented in the position shown in Figs. 1, 2, and 4 a liquid may be introduced into the neck of the bottle and, passing through the openings 8 and the ball-race 4, will pass into the bottle 1. When the filling has been completed, any convenient implement, as a small rod, may be passed into the neck 2 of the bottle, as indicated in Fig. 1, and a slight tap upon the ball-valve 6 will disengage the ball-valve from the retaining cement at 10 and permit it to fall freely in the ball-race 4. To discharge the contents of the bottle, the bottle is inverted in the usual manner and the fluid will pass through the ball-race 4 and openings 8, and thus out at the neck 2. When, however, pouring is discontinued or the bot-



tle is emptied and set in upright position, the ball-valve 6 will fall and be seated upon the valve-seat 7 and securely close the opening against the introduction of fluid therethrough.

5 As shown in the drawings, the ball-race may be formed wholly within the bottle, whereby the configuration of the bottle is not externally different from a bottle not provided with my bottle-closure, or the ball-race may be  
10 partly within and partly without the bottle, as indicated in Figs. 5 and 6.

While I have shown the ball-race as following the configuration of the dome of the bottle throughout its entire curvature, it is evident that the ball-race may be very much  
15 shorter than shown—as, for instance, it may be extended only to and the valve-seat located at line 6 6 of Fig. 5—and that other modifications in the form and proportion of my invention may be made without departing from  
20 the spirit of my invention or the scope of the claims.

Having thus described my invention, what I claim as novel, and desire to secure by Letters Patent, is—  
25

1. A bottle provided with a passage adjacent to one side thereof, a valve-seat in said passage and a valve adapted to seat in said valve-seat removably secured to the inner  
30 wall of said passage.

2. A bottle provided with a passage communicating with the neck and following the side of bottle, a valve-seat disposed within the lower end of the passage, a valve within  
35 the passage, and means adjacent the upper end of the passage to prevent the valve being ejected from the passage.

3. A bottle provided with a passage communicating with the neck and following the  
40 side of the bottle, a constriction in the walls of the passage to form a valve-seat adjacent the lower end thereof, a valve within the passage adapted to cooperate with the valve-seat, means adjacent the upper end of the passage  
45 adapted to prevent the ejection of the valve from the passage without preventing the flow of a fluid around the valve when at the upper end of the passage.

4. A bottle provided with a passage circular in cross-section throughout the greater  
50

part of its length communicating with the neck and following the dome of the bottle, a constriction in said passage adapted to form a valve-seat adjacent the lower end thereof, a ball of a diameter approximating the diam- 55  
metrical size of the passage, to cooperate with the valve-seat, a lug adjacent the upper end of the passage adapted to prevent the ejection of the ball therefrom, without preventing the flow of a fluid around the ball when  
60 at the upper end.

5. A bottle provided with a passage for filling and emptying the bottle, a valve-seat in said passage, and a valve detachably secured within the passage and capable of being dis- 65  
connected to move freely within the passage and to cooperate with the valve-seat.

6. A bottle provided with a passage adapted for filling and emptying the bottle, a valve-seat in said passage, a valve breakably secured to the inner sides of said passage and  
70 adapted when disengaged to cooperate with the valve-seat and close the passage.

7. A bottle-closure provided with a passage circular in cross-section throughout the  
75 greater part of its length communicating with the neck and following the dome of the bottle and provided at its lower end with a valve-seat, a ball diametrically approximating the size of the passage and breakably secured to  
80 the sides thereof adjacent the upper end and capable upon being disengaged from the sides of the passage of cooperating with and closing the valve-seat, and retaining means disposed in the upper end of the passage to pre- 85  
vent the ejection of the ball therefrom.

8. A bottle provided with a closure breakably cemented to the walls of the filling-passage.

9. A bottle-closure comprising a valve  
90 breakably secured to the walls of the filling-passage and capable when broken away of closing the bottle.

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

CHARLES C. SMITH.

Witnesses:

I. N. BUSCHER,

L. L. MORRILL.