

No. 876,259.

PATENTED JAN. 7, 1908.

M. A. BROWN.
NON-REFILLABLE BOTTLE.
APPLICATION FILED OCT. 8, 1908.

Fig. 1.

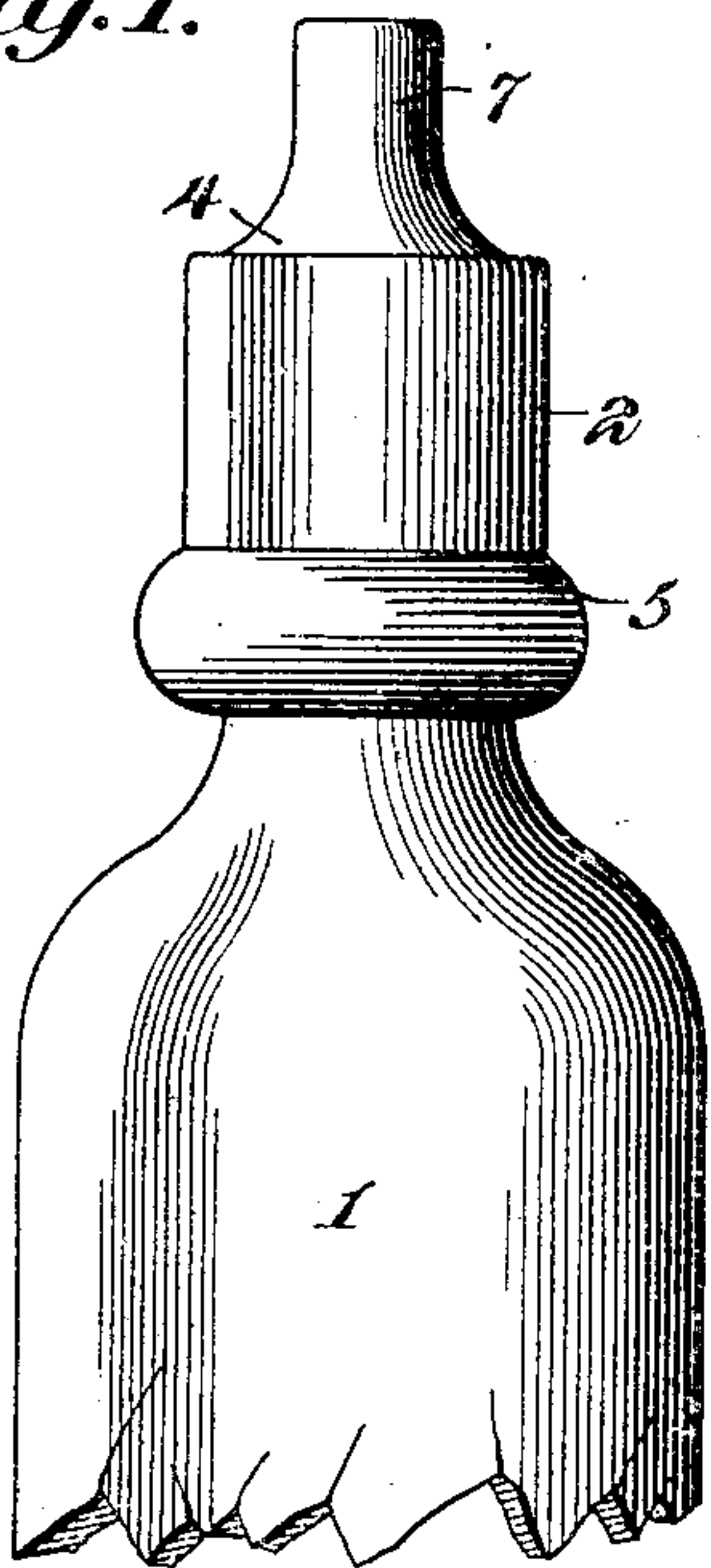


Fig. 2.

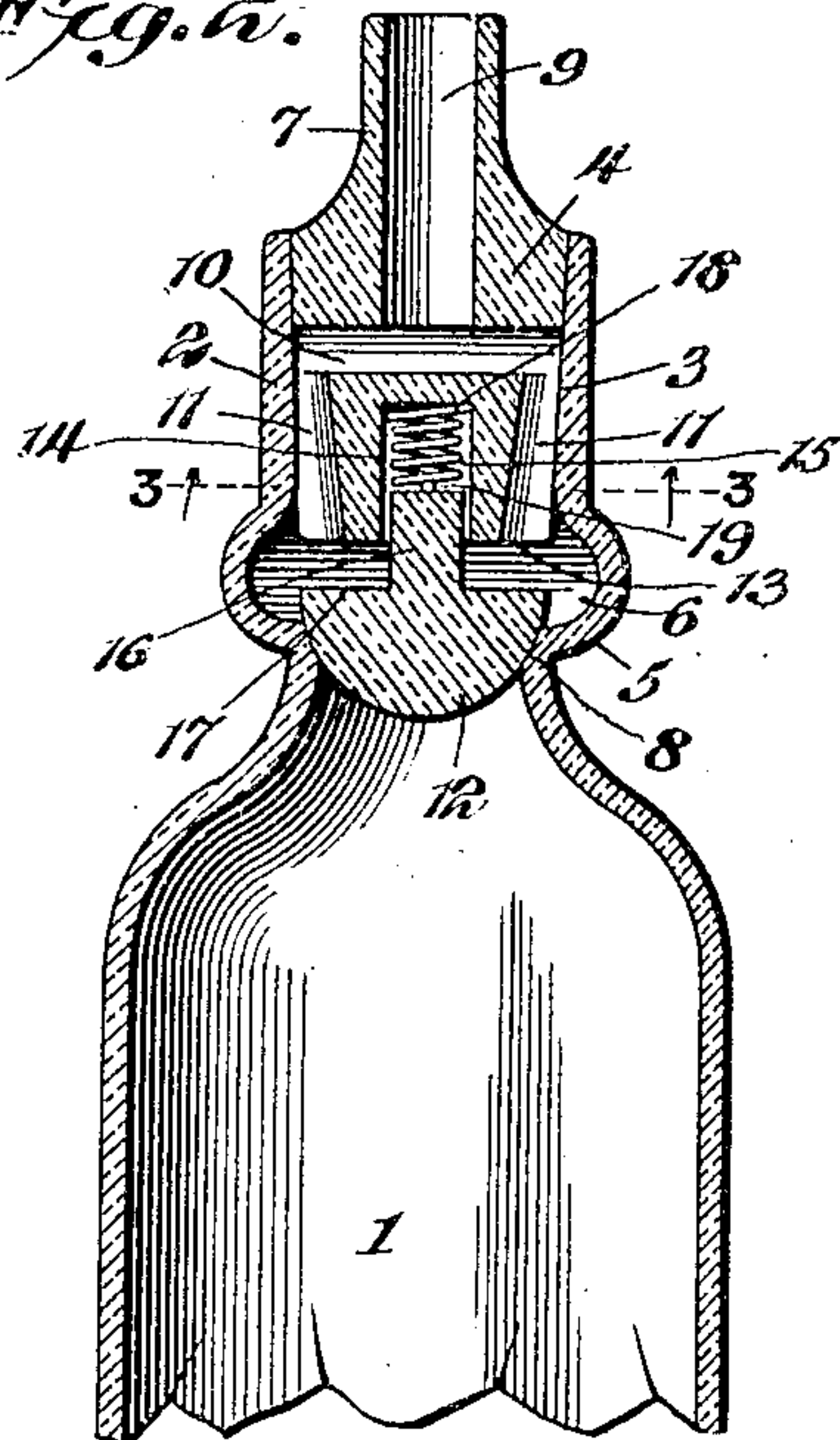


Fig. 3.

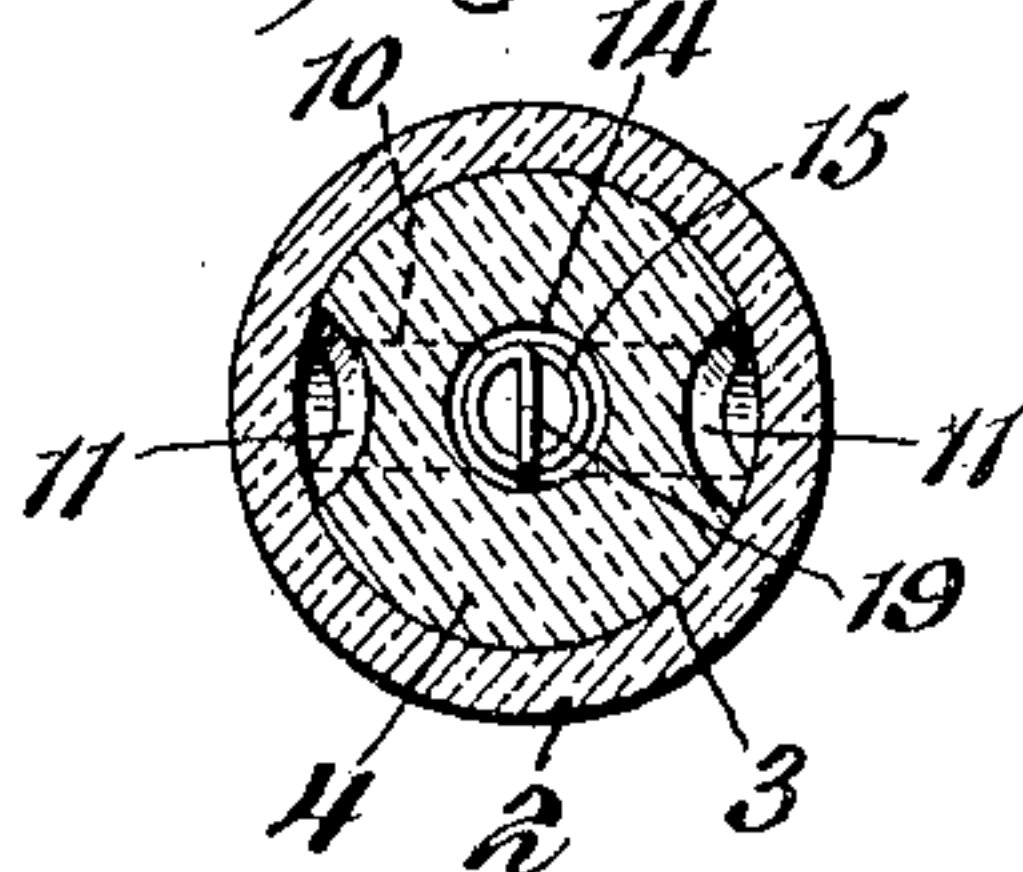


Fig. 4.

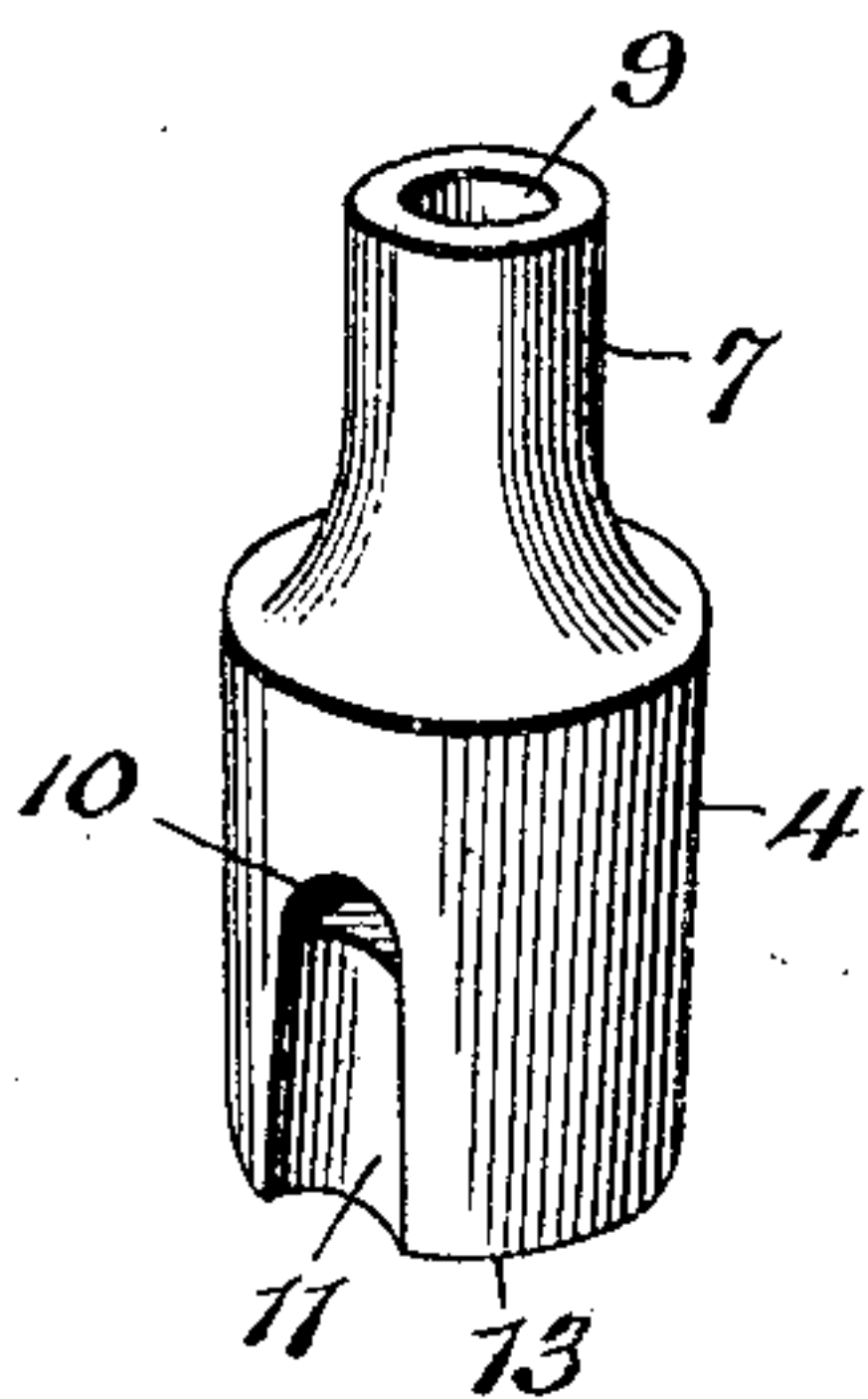


Fig. 5.

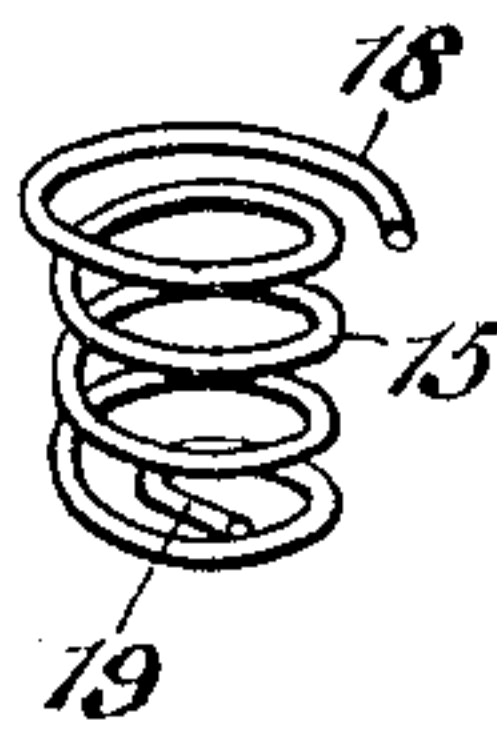
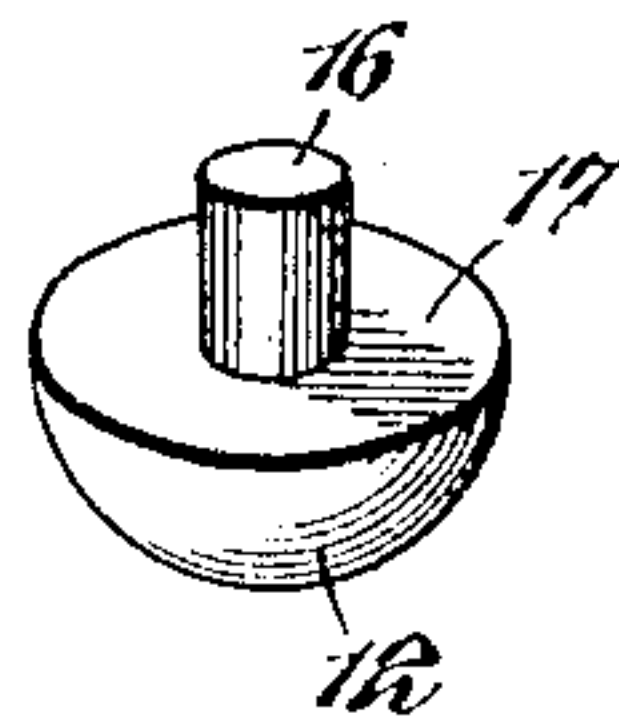


Fig. 6.



Witnesses
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UNITED STATES PATENT OFFICE.

MARK A. BROWN, OF SAVANNAH, GEORGIA.

NON-REFILLABLE BOTTLE.

No. 876,259.

Specification of Letters Patent.

Patented Jan. 7, 1908.

Application filed October 8, 1906. Serial No. 337,931.

To all whom it may concern:

Be it known that I, MARK A. BROWN, a citizen of the United States, residing at Savannah, in the county of Chatham and State of Georgia, have invented a new and useful Non-Refillable Bottle, of which the following is a specification.

The invention relates to improvements in non-refillable bottles.

The object of the present invention is to improve the construction of non-refillable bottles, and to provide a simple, inexpensive and efficient one capable of effectually preventing a liquid from being introduced into it after it has received its original contents.

A further object of the invention is to provide a non-refillable bottle designed particularly for sauce, catsup, and other liquid condiment, medicine, perfumes, and other liquids of which only a comparatively small amount is consumed at each use of the bottle, and capable of permitting such liquid to be readily shaken from it without liability of discharging too great a quantity.

Another object of the invention is to provide a bottle, which may be readily molded and which will not require any tool work on its exterior, whereby the cost of the bottle will be reduced to a minimum.

The invention also has for its object to provide a non-refillable bottle, having a spring actuated valve, and provided with means for preventing the spring from being injured and rendered inoperative by the shaking of the bottle to discharge its contents.

Furthermore, it is the object of the invention to arrange the parts, so that when the contents of the bottle are discharged, the valve will operate to exclude the liquid from the spring.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawing, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing:—Figure 1 is an elevation of a portion of a non-refillable bottle, constructed in accordance with this invention. Fig. 2 is a vertical sectional view of the same. Fig. 3 is a horizontal sectional view on the

line 3—3 of Fig. 2. Fig. 4 is a detail perspective view of the plug. Fig. 5 is a detail view of the spring. Fig. 6 is a detail view of the valve.

Like numerals of reference designate corresponding parts in all the figures of the drawing.

1 designates a bottle, but the improvements, herein shown and described, are also applicable to analogous receptacles having a neck. The bottle 1 is provided with a neck 2, having an interior taper, its inner face 3 being tapered downwardly or inwardly and adapted to receive a tapering plug 4. The neck is provided at its lower portion with an exterior annular swell 5, forming an interior annular groove 6, and located at the lower end of the interiorly tapered portion. The exterior of the neck above the swell 5 may be either cylindrical or tapered, and the plug 4, which is designed to be constructed of porcelain, or other suitable material, is tapered to fit the neck, and it is provided with a spout 7, extending beyond the neck. The inner face of the neck above the swell is ground, and the tapered portion of the plug is designed to be slightly roughened, and when the parts are assembled, the plug is secured within the upper portion of the neck by liquid glass, cement, or other adhesive material, the liquid glass being preferable as it quickly sets and effectually prevents the plug from being removed without breaking the neck. The swell 5 is, in practice, the weakest portion of the neck, and any attempt to remove the plug, after the same has been secured within the neck, will result in breaking the neck at the swell. The neck is provided below the bottom of the swell with a rounded valve seat 8, which, in practice, will be ground simultaneously with the grinding of the upper portion of the neck, a single tool being provided for this purpose.

The spout, which is of less diameter than the lower portion of the plug, is provided with a central longitudinal discharge opening or passage 9, which communicates at its upper and lower ends with a transverse bore or passage 10, and the latter extends entirely through the plug and communicates at its terminals with the upper ends of lower grooves or passages 11. The grooves or passages 11 converge slightly, being inclined downwardly and inwardly, and by this construction tortuous passages are provided to prevent a wire, or instrument from being in-

introduced into the bottle and affecting the operation of a valve 12. The plug, which is provided with a flat lower face 13, has a socket 14, which extends inwardly and upwardly from the lower end of the plug and which terminates short of the transverse passage 10. The socket, which is centrally located, is arranged equi-distant of the side recesses, and it receives a coiled spring 15, which engages a stem 16 of the valve 12. The socket not only forms a housing for the coiled spring, but it also serves as a guide for the stem of the valve.

The body of the valve is semispherical, and is provided with a flat upper face 17, and its lower rounded face is adapted to engage the valve seat, which is correspondingly rounded to fit the valve. By this construction the valve seat may vary considerably in diameter without affecting the operation of the valve, which will perfectly engage the seat after the same has been trued by the grinding tool. Owing to the particular construction of the valve, the bottle may vary considerably in thickness at the base of the swell, which will greatly contribute to both a rapid and cheap manufacture of the bottle. The particular construction of the valve also enables it to fit the seat perfectly, even although the stem should be slightly out of its central position, and the valve tilted to one side or the other. The particular form of the valve also possesses an additional advantage in that should a flexible wire be worked through the passages of the plug, the flat upper face of the valve and the rounded side faces will afford no means for enabling such a wire to lift the valve, or otherwise interfere with the operation thereof.

The stem 16, which is preferably round or cylindrical, extends upward from the center of the flat upper face of the body of the valve, and in practice the parts will be so proportioned, that when the flat upper face of the valve engages the flat lower face of the plug, there will be sufficient space between the upper end of the stem, and the upper wall of the socket to receive the spring in compressed form, and to relieve the spring of excessive pressure, whereby the spring will be prevented from being injured and rendered inoperative through any violent or rapid shaking of the bottle. When the bottle is shaken to discharge a portion of its contents, the valve is thrown against the lower end of the plug, and it thereby operates to close the socket and prevent the liquid from entering the same. Also the round or convex lower face of the valve will operate to shed the liquid, and cause the same to flow around the valve and out through the passages of the plug, without entering the socket. The swell provides ample space around the valve, and the opposite grooves or passages 11 will afford the necessary vent for the in-

ward passage of the air, and at the same time permit the contents of the bottle to be freely discharged.

In practice, the spring will be nicked, or otherwise coated to prevent it from affecting the contents of the bottle, or being affected by the same, and its upper coil 18 is of greater diameter than the other coils, and is compressed when the spring is introduced into the socket, whereby it will frictionally engage the walls of the socket and retain the spring in position. The lower coil of the spring is provided with a central diametrically arranged extension 19, which is adapted to fit against the upper end of the valve stem to prevent the same from being forced into the spring. The spring in practice will be of sufficient strength to hold the valve 12 on its seat, when the bottle is in either an upright or inverted position, so that in order to open the valve, it is necessary that a quantity of liquid contents of the bottle be in the same and be thrown against the valve, when the bottle is shaken. When the bottle is empty, the spring will maintain the valve securely on the seat and effectually prevent the bottle from being refilled in any position.

When the bottle is constructed for medicines, the passages, which may be of any desired size, may be made of a size, which will enable a predetermined quantity, such as a teaspoonful, to be discharged from the bottle at each operation thereof. The liquid in such an arrangement may be controlled by placing the finger over the mouth or outer end of the spout, and then shaking the bottle until the passages are filled. The liquid contained in the passages may then be poured into a spoon or other receptacle. The spout may receive a stopper, or be otherwise sealed for enabling the goods to be shipped, but the valve will form a sufficient closure when the bottle is in the hands of the consumer.

This invention has been given a practical test and has been found to fill the wants of those demanding protection against the unlawful refilling of the bottles.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A device of the class described comprising a receptacle having a neck provided with a valve seat, a plug fitted within the neck and provided with passages for the discharge of the contents of the receptacle, a valve arranged on the seat, and a spring engaging the valve, said spring being of sufficient strength to maintain the valve normally in engagement with the seat, when the receptacle containing a liquid is in any position, and the valve being adapted to be opened by shaking the receptacle.

2. A device of the class described com-

prising a receptacle provided with a neck having an interior groove and provided at the bottom thereof with a valve seat, a plug fitted in the neck above the groove and provided with passages for the discharge of the contents and having a flat face at its lower end and provided with a socket or chamber extending upwardly from the said flat face, a spring arranged within the socket or chamber, and a valve fitted on the seat and having a stem extending into the socket or chamber and engaged by the spring, said valve when at the limit of its outward movement operating to close the lower end of the socket or chamber to exclude a liquid therefrom.

3. A device of the class described comprising a receptacle having a neck and provided with a valve seat at the bottom thereof, a plug having passages and fitted in the neck above the valve seat and spaced therefrom and provided with a flat lower face and having a socket or chamber in the center thereof, a spring housed within the socket or chamber, and a valve provided with a stem extending into the socket or chamber and having its upward movement limited by the engagement of the valve with the lower end of the plug, whereby the lower end of the socket or chamber is closed and the spring is relieved of excessive pressure.

4. A device of the class described comprising a receptacle having a neck provided with a valve seat, a plug fitted in the neck and provided with passages for the discharge of the contents and having a socket or chamber, a spring housed within the socket or chamber and provided at one end with an enlarged coil frictionally engaging the walls of the chamber, the other end of the spring being provided with an inward extension and a valve arranged on the seat and having a stem extending into the socket.

5. A device of the class described comprising a receptacle having a neck provided with a valve seat, a plug fitted within the neck and provided with passages for the discharge of the contents of the receptacle and a recess or socket, a valve arranged on the seat and having a stem working in said socket, and a

spring engaging the valve stem and fitted within the said socket, said spring being of sufficient strength to maintain the valve normally in engagement with the seat, when the receptacle containing a liquid is in any position, and the valve being adapted to be opened by shaking the receptacle.

6. In a device of the class described, the combination of a receptacle having a neck provided with a valve seat, a plug fitted in the neck above the valve seat and having a passage at one side communicating with the exterior, said plug being also provided with a socket or chamber, a semispherical valve normally engaging the valve seat and having a stem, a spring arranged within the socket or chamber of the plug and engaging the upper end of the stem of the valve, the upper part of the valve being shaped to correspond with the lower end of the plug and arranged to close the lower end of the socket when the valve is at the limit of its outward movement to exclude a liquid from the socket and the spring.

7. A device of the class described comprising a receptacle having a neck provided with an interior groove and having a valve seat at the bottom thereof, a plug fitted in the neck above the groove and provided with passages which open into the space defined by the groove, said plug being also provided at its lower end with a socket or chamber, a spring housed within the socket or chamber, and a valve provided with a stem extending into the socket or chamber and having its upward movement limited by the engagement of the valve with the lower end of the plug, whereby it is adapted to close the lower end of the socket or chamber, said valve being of a diameter less than the groove, so as not to obstruct the flow of liquid when the valve is at the limit of its movement.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

MARK A. BROWN.

Witnesses:

JOHN H. SIGGERS,
E. G. SIGGERS.