

No. 749,385.

PATENTED JAN. 12, 1904.

H. KAHLMUS.
NON-REFILLABLE BOTTLE.

APPLICATION FILED FEB. 28, 1903.

NO MODEL.

Fig. 1.

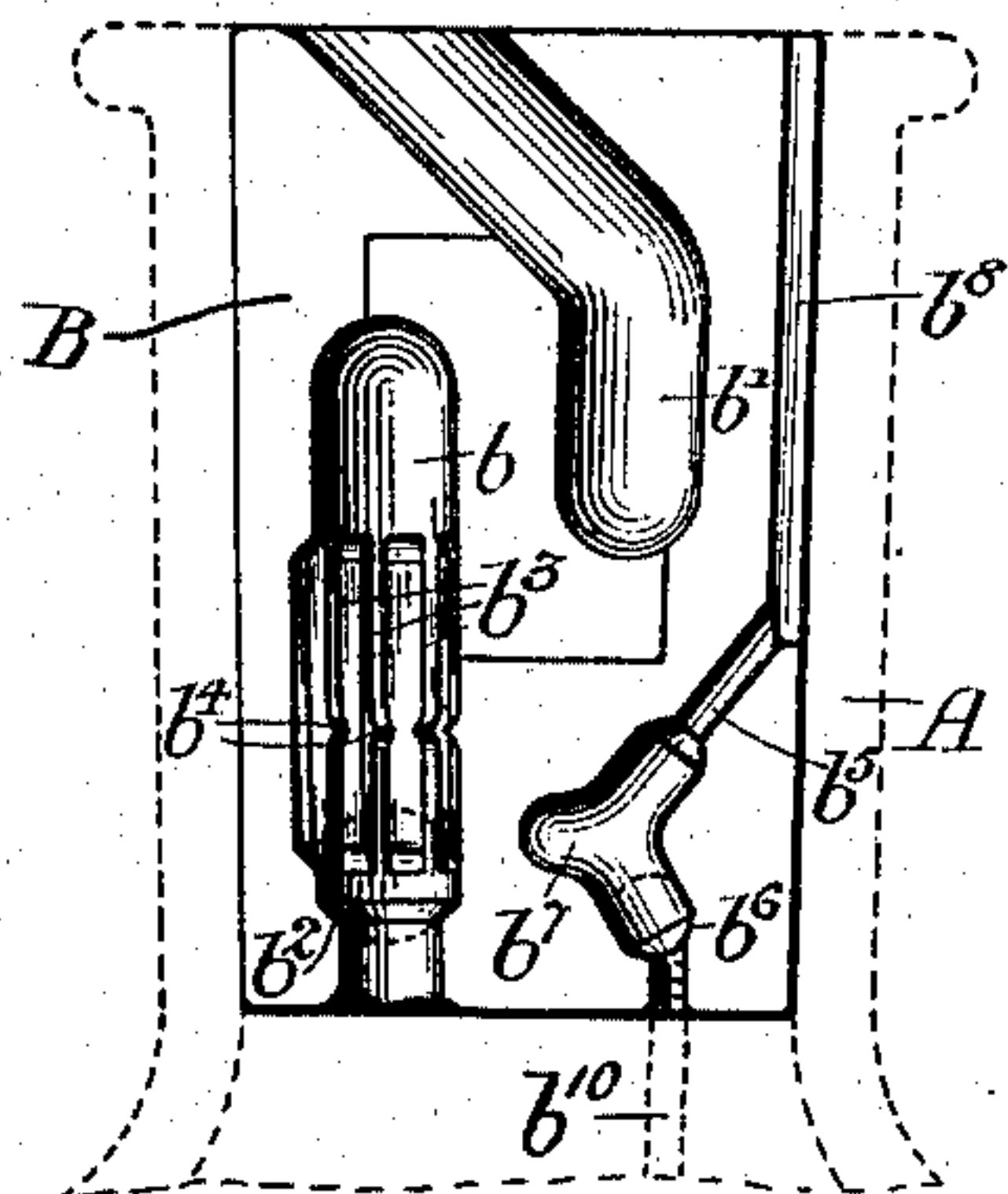


Fig. 2.

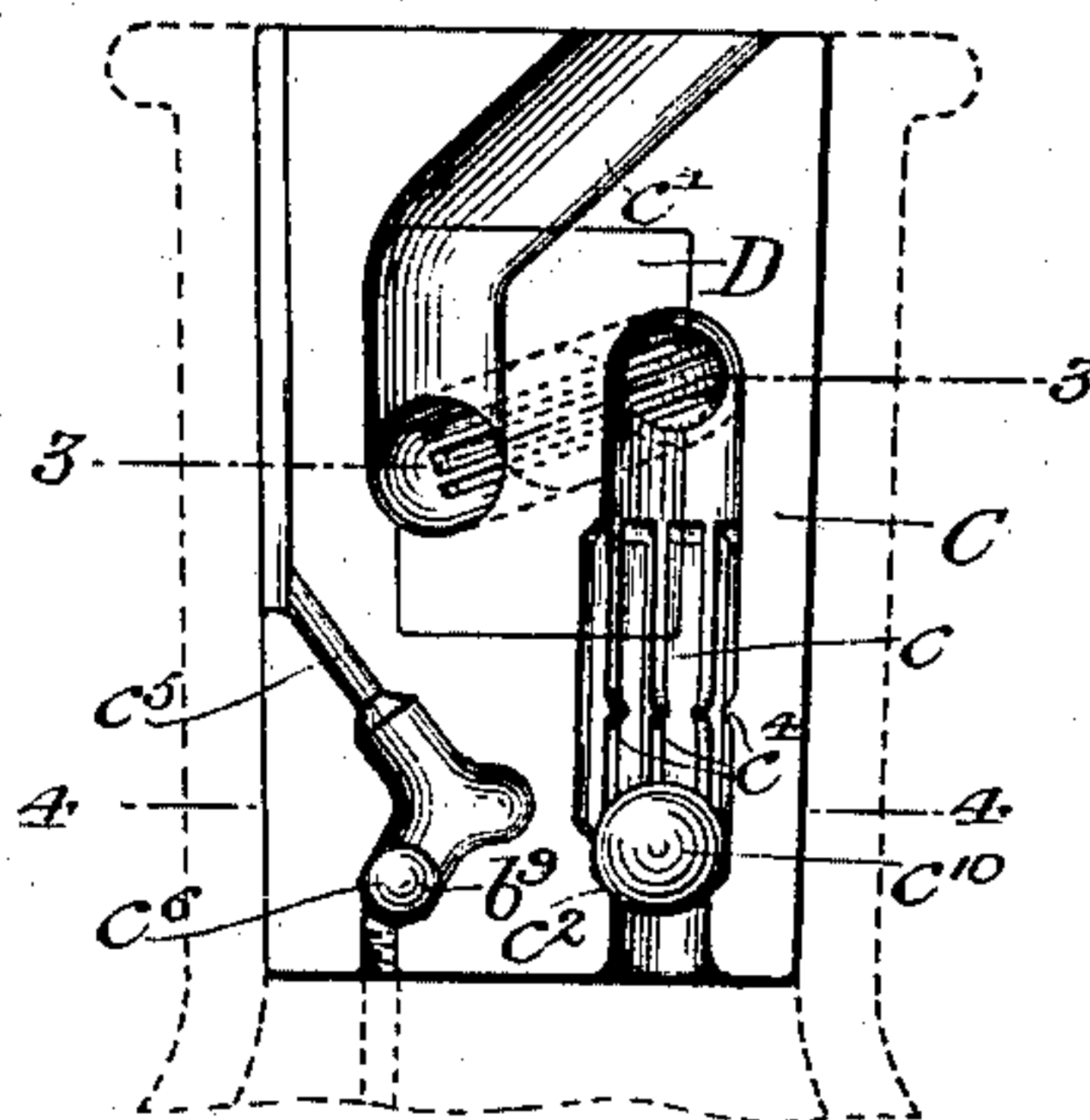


Fig. 3.

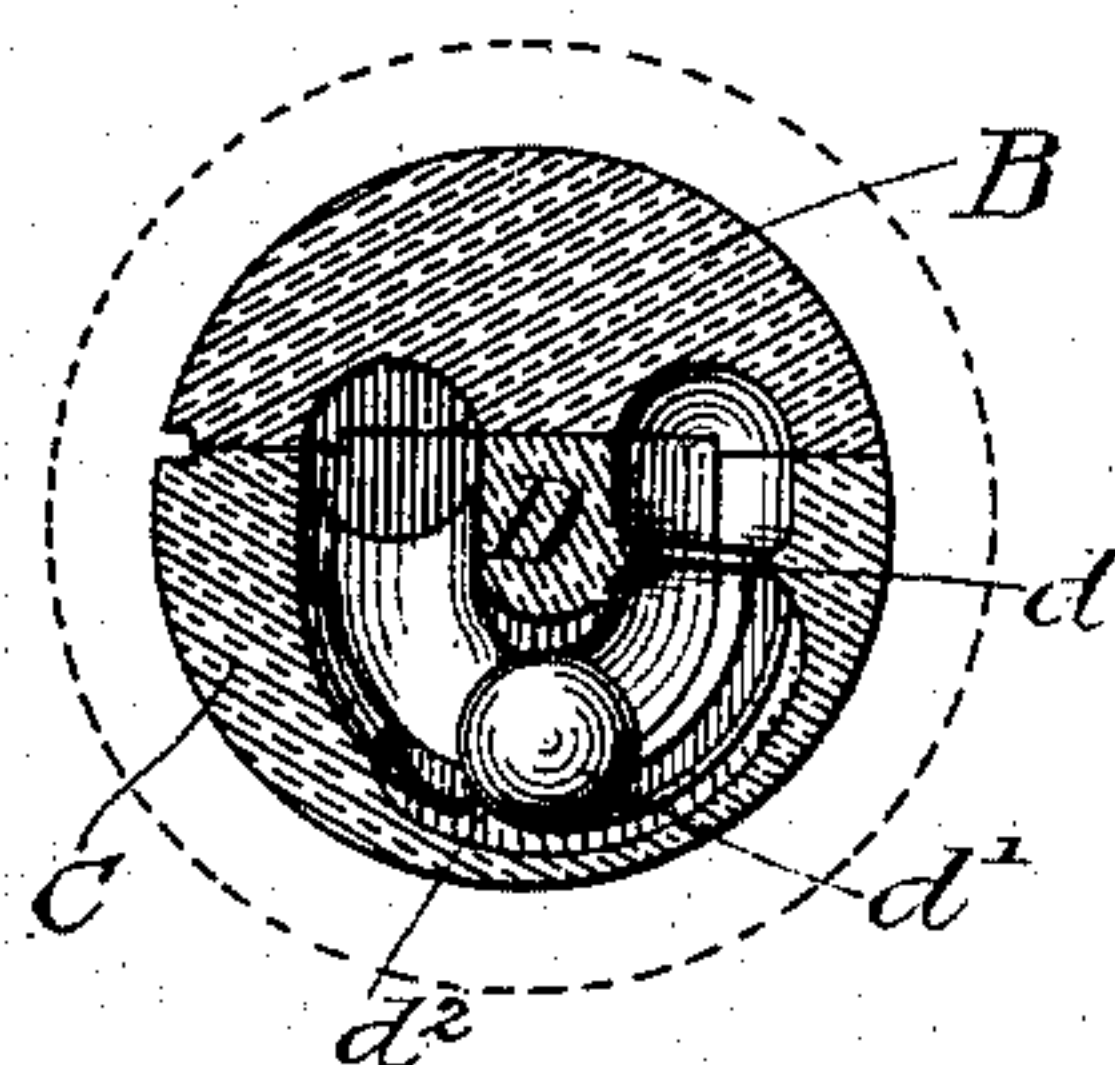
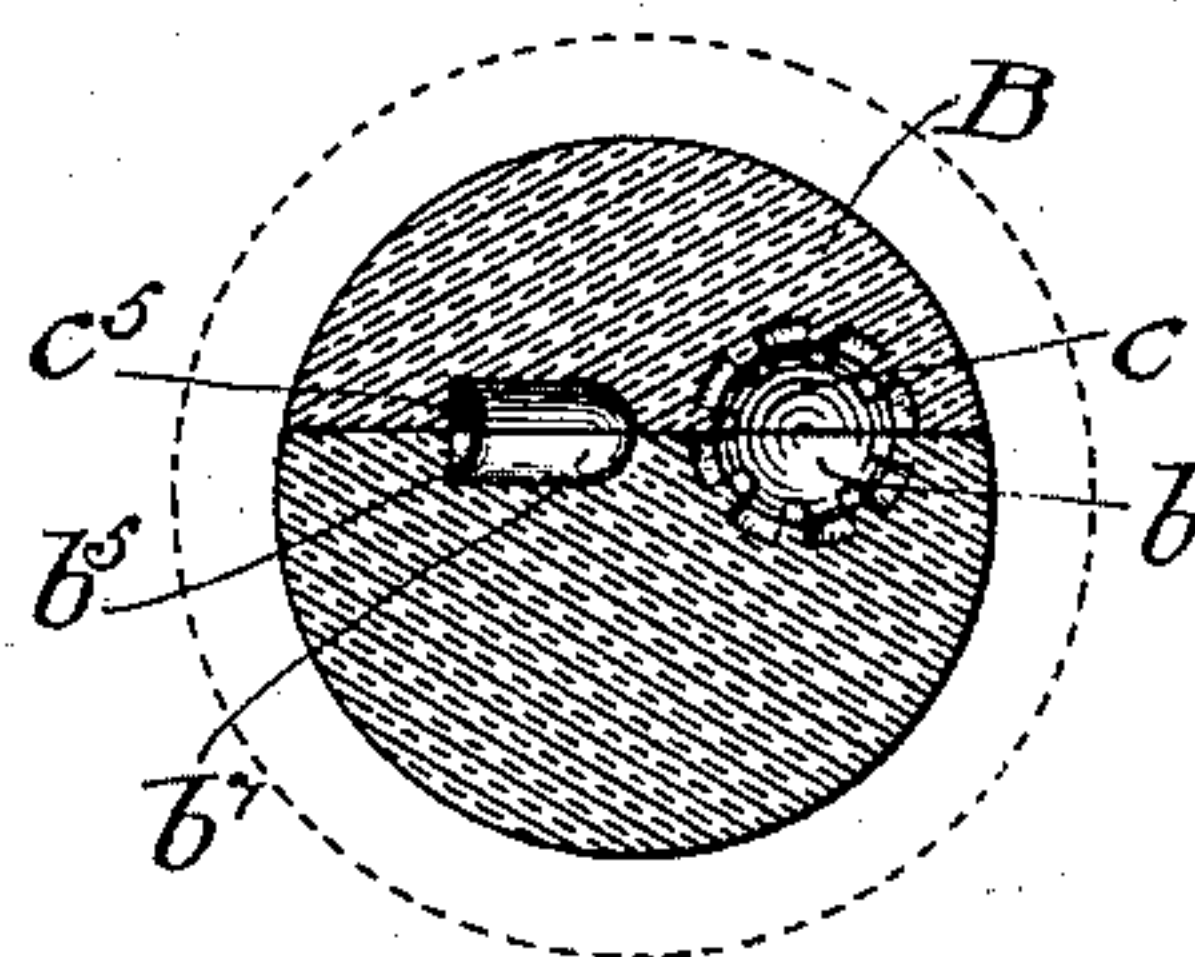


Fig. 4.



Witnesses:-

Chas. Wilson.

Herman E. Metcalf.

Inventor:-

Henry Kahlmus,

by his Attorneys,

Howman & Howman

UNITED STATES PATENT OFFICE.

HENRY KAHLMUS, OF PHILADELPHIA, PENNSYLVANIA.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 749,385, dated January 12, 1904.

Application filed February 28, 1903. Serial No. 145,551. (No model.)

To all whom it may concern:

Be it known that I, HENRY KAHLMUS, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Non-Refillable Bottles, of which the following is a specification.

My invention consists in an improved stopper for bottles, having for its object the provision of a device which while permitting the flow of liquid out of the bottle shall effectually prevent refilling thereof.

A further object of the device is to provide my improved construction with an auxiliary passage for the admission of air to the interior of the bottle, so as to permit of an increased outward flow of liquid from the main passage through the stopper, at the same time so constructing the auxiliary passage that it shall be impossible to introduce liquid into the bottle through the same.

These objects I attain as hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of one section or part of a bottle-stopper constructed according to my invention. Fig. 2 is a side elevation of the other section of the stopper shown in Fig. 1. Fig. 3 is a sectional plan view of my improved stopper, taken on the line 3 3, Fig. 2; and Fig. 4 is a sectional plan view taken on the line 4 4, Fig. 2.

In the above drawings, A indicates the neck of a bottle within which my improved stopper is held by any of the well-known methods known to the art—as, for example, by some form of cement or interlocking construction between the stopper and said neck.

My improved stopper is constructed, preferably, of three pieces, two of which (indicated by the letters B and C) are when together of a cylindrical form, in addition to which there is a third piece D, fitting within a suitable recess in the part C.

By reference to Fig. 1 it will be seen that the part B has formed within it two passages b and b' , preferably semicircular in section, the first of these being substantially straight and provided near one end with a valve-seat

b^2 , above which are a series of longitudinal flutings or projections b^3 , having at about their middle points inwardly-extending raised portions b^4 .

In the case illustrated the passage b' has its inner portion substantially parallel with the passage b , said portion being, however, extended and opening on the upper end of the stopper at an angle to the longitudinal axis thereof. The passage b opens on the lower face of the stopper and is independent of the passage b' .

There are in the portion C of the stopper passages c and c' , semicircular in section and forming complete and independent passages with the similarly-placed passages b and b' of the section B, it being, however, noted that a portion of the inner end of each of these passages c and c' is formed in a third part or piece D of the stopper, which may be described as being substantially semicylindrical in form and fitting in a corresponding recess in the part C. I preferably permit this third piece to project beyond the plane surface of the section C of the stopper and correspondingly countersink the face of the section B for the reception of the same.

There is a valve c^{10} fitting the two-part valve-seat $b^2 c^2$, there being similarly to the construction of the passage b flutings c^4 , so formed as to cooperate with the similarly-formed parts on the flutings b^3 for the prevention of undue motion of the said valve.

A third passage, lying in a plane at right angles to the plane of the two passages $b c$ and $b' c'$, extends within the portions D and C of the stopper in such a manner as to connect the inner ends of said two passages. Said third passage is formed partly in each of the above portions of the stopper and so unites the ends of the other passages that its plane lies at an angle to the planes of the upper and lower ends of the stopper. There is a valve-seat d formed in this third passage and a valve d therefor, there being flutings on the interior surface of said passage, so as to permit the passage of liquid past the valve as long as it is unseated, and also inwardly-extending points d^2 from

said flutings, by which the valve is retained within a limited portion of the passage.

In addition to the above passages there is an auxiliary passage $b^5 c^5$ formed in the two main sections B and C, which starting at an opening on the lower face of the stopper extends inwardly at an angle to said face. This passage is provided with a valve-seat b^6 , above which there is an enlarged portion b^7 , from whence said passage continues at an angle to its former course, finally opening into a groove b^8 in the outer cylindrical surface of the stopper, ending at the edge of the upper face of the stopper.

In Fig. 2 is shown the valve b^9 for coöperation with the valve-seat whose two parts are indicated at b^6 and c^6 , it being understood that when the two portions of the stopper are put together the portions of the passages described as semicircular in section fit together to make a passage circular in section and confine within them said valve b^9 .

When it is desired to pour liquid out of the bottle, it will be seen that the valve c^{10} will remain away from its seat as long as the bottle is inclined, and liquid tends to flow out while the valve d' , which rests upon its seat, is forced away therefrom by the pressure of said liquid to an extent sufficient to permit of a continuous flow. Such outflow is materially increased by the use of the passage $b^5 c^5$, through which air is free to enter when the bottle is inclined sufficiently, it being noted that when the stopper is in position in the neck of the bottle such neck forms one wall of this auxiliary passage.

If desired, a tube extending to the bottom of the bottle (shown in dotted lines at b^{10}) may be inserted in the air-passage, so as to admit air directly to the air-space within said bottle without requiring it to bubble through the liquid contained therein.

Should the attempt be made to force liquid into the bottle through either or both of the passages, it will be found that there is no position in which this can be accomplished without either one of the valves d' or c^{10} being seated or else being in such unstable position as to be forced to their seats immediately upon the passage of any fluid. It will further be seen that the specific arrangement of passages is such that it is impossible to positively hold the valves from being thus driven or forced to their seats by the inflow of fluid, which inflow is further hindered by the fact that the valve b^9 in the air-passage will interfere with the flow of air out of the bottle in almost any position of the latter except when it is upright, and this is immaterial, since in that position the valve c^{10} is seated. The bend shown in the passage $b^5 c^5$ makes it practically impossible to introduce a wire or similar means for preventing the valve b^9 from seating.

I claim as my invention—

1. A stopper for a non-refillable bottle consisting of two sections together forming a substantially cylindrical piece, a passage through said stopper having two portions separate from each other and each formed partly in one section and partly in the other, there being a portion wholly in one of the sections connecting said two parts of the passage, substantially as described.

2. A stopper for a non-refillable bottle consisting of two pieces together forming a substantially cylindrical body, one of said pieces having within it a recess with a third piece therein, said recessed piece having a passage partly formed in it and partly in the third piece and there being other passages extending partly in the first piece and partly in the second, from the ends of the first passage to the ends of the stopper, substantially as described.

3. A stopper for a non-refillable bottle consisting of three pieces, two of said pieces forming together a cylindrical body and one of the same being recessed for the reception of the third piece, a three-part passage extending through the stopper, the beginning and end of said passage being formed partly in each of the main pieces of the stopper and the middle portion of said passage being formed partly in one of said main pieces and partly in the piece contained within the recess of said piece, substantially as described.

4. A stopper for a non-refillable bottle having within it three passages forming a continuous channel-opening on each end of the stopper, two of said passages being united by the third passage, said third passage and one of the other passages each having a valve-seat and a valve, substantially as described.

5. A stopper for a non-refillable bottle consisting of three pieces, two of said pieces forming together a cylindrical body and one of the same being recessed for the reception of the third piece, a three-part passage extending through the stopper, the beginning and end of said passage being formed partly in each of the main pieces of the stopper and the middle portion of said passage being formed partly in one of said main pieces and partly in the piece contained within the recess of said piece, with a valve at the inner portion of the passage and a second valve in the central portion of the passage, substantially as described.

6. A stopper for a non-refillable bottle, the same consisting of two parts forming together a cylindrical body, and a third part held within a recess in one of the other parts of the stopper, a passage having three portions of which the first and last are formed partly in each of the two parts of the stopper forming the cylindrical body and the third is

formed partly in one of said pieces and partly
in the third piece, with two valves in said
passage, the walls of said passages being cor-
rugated adjacent to said valves and of a con-
5 figuration to limit the motion of the same,
substantially as described.

In testimony whereof I have signed my

name to this specification in the presence of
two subscribing witnesses.

HENRY KAHLMUS.

Witnesses:

WILLIAM E. BRADLEY,
JOS. H. KLEIN.