

No. 749,565.

PATENTED JAN. 12, 1904.

J. A. JONES.
BOTTLE STOPPER.
APPLICATION FILED JUNE 6, 1902.

NO MODEL.

FIG. 1.

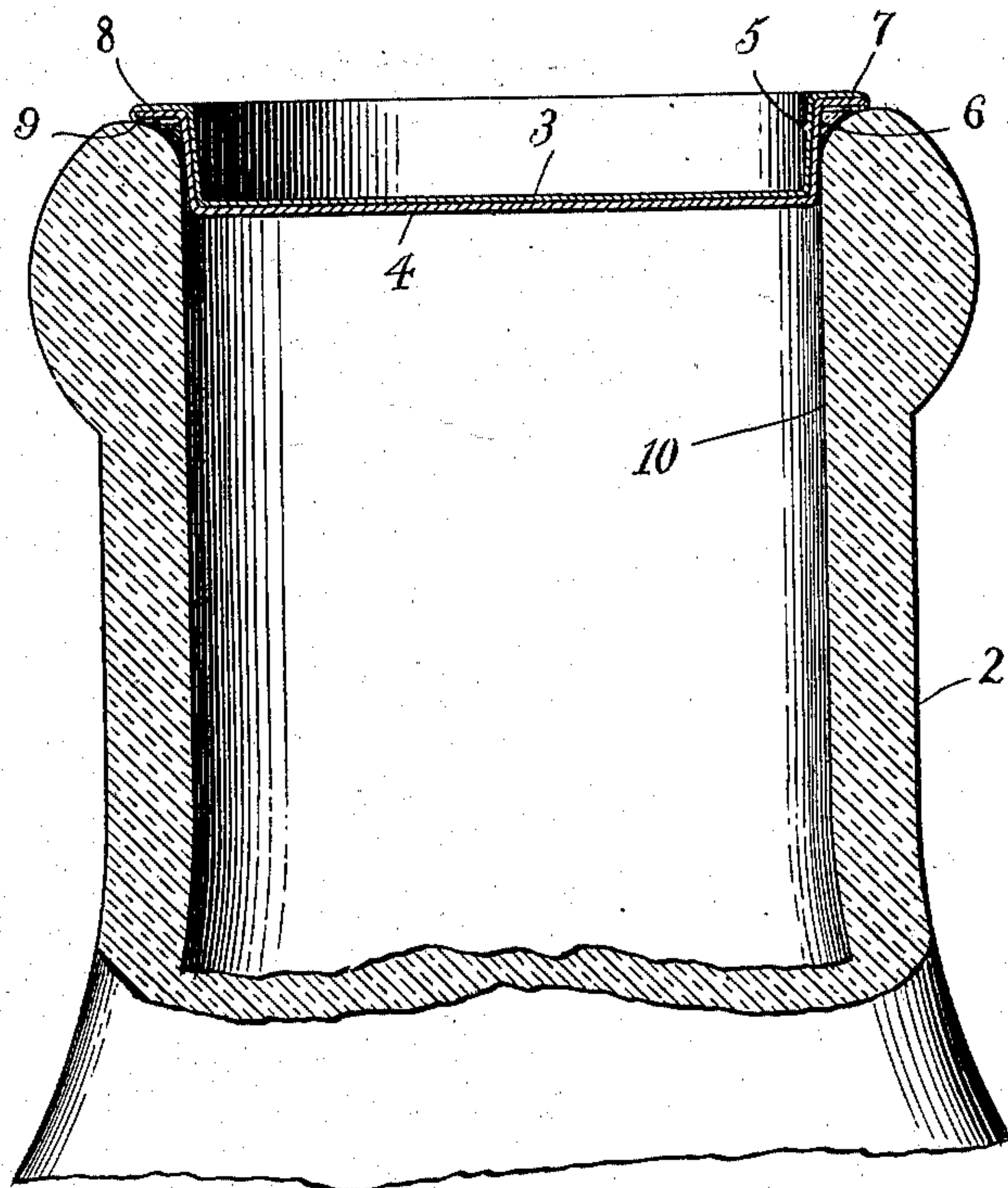
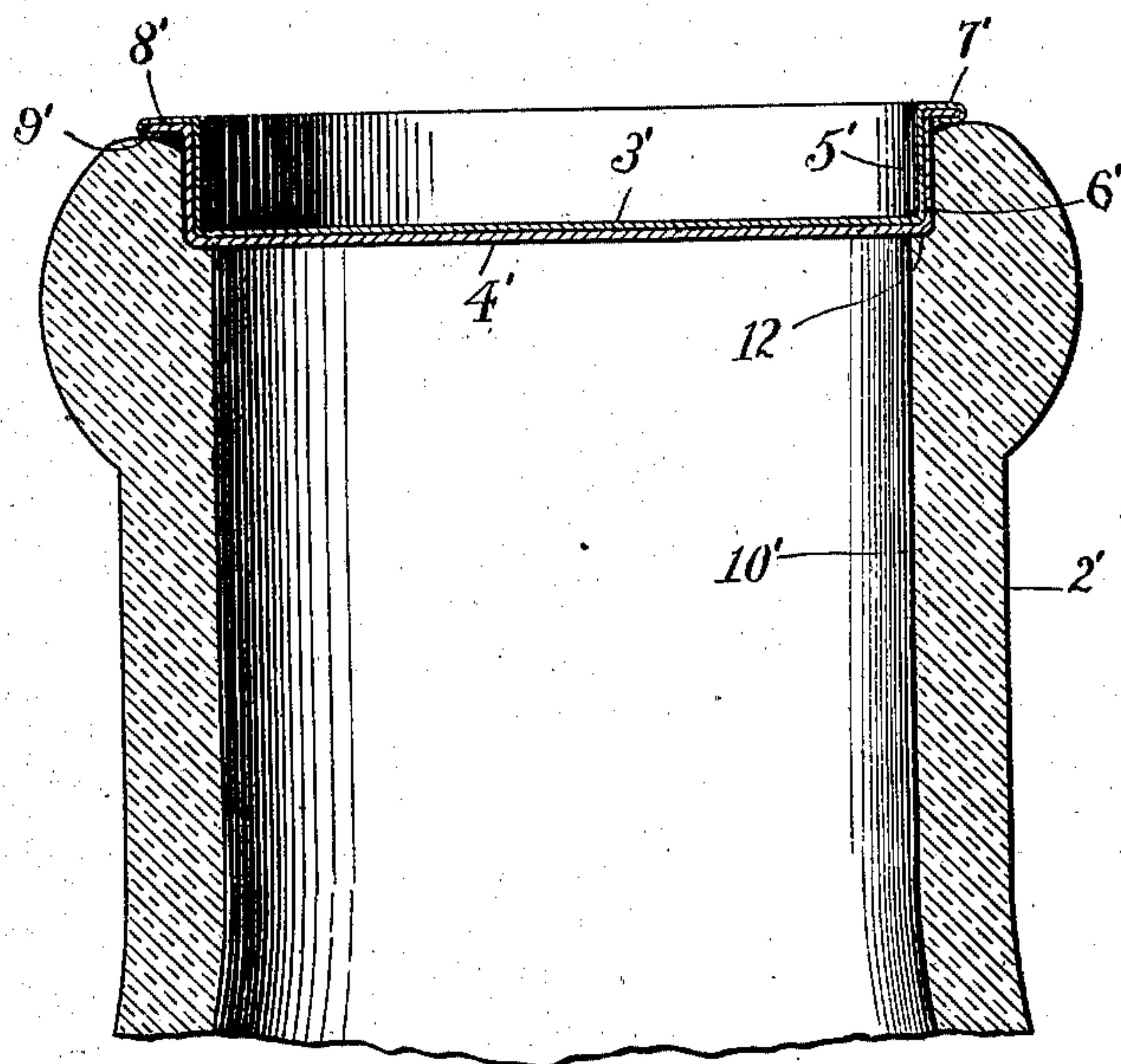


FIG. 2.



Witnesses

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JOHN A. JONES, OF NEW YORK, N. Y.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 749,565, dated January 12, 1904.

Application filed June 6, 1902. Serial No. 110,511. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. JONES, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Bottle-Stoppers, of which the following is a specification.

This invention relates to bottle-stoppers for closing the mouths of bottles and similar vessels; and its main object is to provide an improved stopper which can be readily removed, which will grip the inner walls of the bottle-neck firmly and maintain its position even when the bottle is subjected to rough treatment in handling or in transit, and which may be made at such a low cost that it need be used but once and can then be thrown away.

My improved bottle-stopper is especially adapted and intended for use as a stopper or cap for closing the mouths of milk-bottles and other wide-mouth bottles for holding dairy products and similar articles which require the utmost care in handling and bottling in order that they may be delivered to the consumer free from impurities. Nearly all bottled milk is put up in bottles that are closed either by means of a swinging metallic plate or "bail" having one or more layers of paper under the metal plate or by a stiff disk of paper ordinarily made from wood-pulp. The former of these two closers is used over and over again, is difficult to keep clean, and is frequently covered with rust when in use. The latter of these two closers is used but once and is always absolutely clean; but it can only be used locally and in good weather, for the reason that it absorbs moisture readily and would be easily punctured by the ice in which filled bottles closed by the bail type of fasteners are usually packed for shipment. My improved stopper combines the good features of both of these types of closers, because it is intended to be used but once and then thrown away, and is therefore a cleanly and sanitary stopper, and because it is strong and stiff, cannot be damaged by ice in shipment or by any amount of moisture, and retains its position and keeps the bottle tightly sealed under all conditions of rough handling and transit in good and bad weather.

The leading features of this bottle-stopper are a thin strengthening member, preferably of sheet metal, and a thin flexible sealing member, of paper or other suitable material, located substantially in a common sealing plane and of different diameters in such plane, the stiffening member being of slightly smaller diameter than that portion of the interior of the bottle-neck with which it is to cooperate, while the flexible sealing member or paper is of slightly larger diameter in the sealing plane at such point in order that it may fill and seal that portion of the bottle-neck and be held tightly in place by the stiffening member which reinforces and strengthens it. The particular construction of these two members may be varied, provided that the strengthening member is always of less diameter than the sealing member in the sealing plane; but I prefer to make use of a stopper having a strengthening member of slightly-larger diameter than that of a suitable seat of the bottle, on which seat the stopper will be supported. This seat may be the extreme outer end of the bottle-mouth, in which case the stopper should have a rim of sufficient diameter to seat itself, while the sealing portion of the stopper will of course be of smaller diameter.

In the drawings accompanying this specification and forming part of this application, Figure 1 is an enlarged central vertical section, partly in elevation, of the mouth of a milk-bottle embodying my invention and having my improved stopper applied thereto, the parts being shown on a scale of about twice the natural size. Fig. 2 is a similar view of a modification.

Similar characters designate like parts in the different figures of the drawings.

In order that my improved stopper may have sufficient strength to resist puncturing and yet be capable of manufacture at a very low cost, I prefer to make use of thin sheet metal as the strengthening member and a sheet of paper or light flexible material as the sealing member. In the construction shown in Fig. 1 the main strengthening portion of the stopper is a thin metallic disk, (designated by 3,) in contact with which is a sheet of paper or other flexible material, (designated by 4,)

these two disk-like portions of the stopper being located in substantially the same plane and the paper being of greater diameter in such plane than the metallic disk. The member 3 has a diameter slightly less than the internal diameter of the adjacent portion of the neck of the bottle 2, while the paper 4 at its outer edges is of greater diameter than the disk 3 and is sufficiently large to engage the walls of the bottle-neck and obtain a firm hold thereupon. The same relation between the strengthening and sealing members of the stopper exists in every plane which may be drawn through the stopper parallel with the parts 3 and 4 at every point where the paper is in contact with the walls of the bottle.

In the form of the device shown in Fig. 1 the disk 3 forms part of a sheet-metal cap, having slightly-tapering side walls 5 bent over at their upper ends and formed up into a rim 7 of much greater diameter than the disk 3 and the side walls 5. This rim, however, is preferably only large enough to extend to the highest point of the mouth of the bottle-neck in order that said stopper may just fill the mouth of the bottle and not project beyond the crown of the curve at the mouth thereof. The flexible sealing member or paper may also surround the side walls 5 of the strengthening member, as shown at 6, in addition to surrounding the disk portion 3 of the cap, and in the construction shown the sealing member or paper is of sufficient size to extend to the rim 7 to form a corresponding rim 8, which in this case is held firmly in place by a seam 9 at the edge of the rim 7, this seam being formed by turning over the extreme outer edge of the rim 7 and bending it into parallelism with the upper side of said rim. The metallic and flexible members thus locked together form a complete and unitary stopper, which may be stamped and drawn to form by suitable dies operating at a high rate of speed. Although quite stiff, the metal of the stopper being very thin is slightly elastic and if slightly larger than is necessary will yield sufficiently to enter the mouth of the bottle and will of course force the paper strongly against the walls of the bottle-neck and seal the same securely. Within limits this gripping action is increased by slightly tapering the side walls of the stopper as just described, and in actual practice a stopper of this type has such a hold upon the walls of the bottle-neck as to resist the "hammering" force exerted by the fluid when a quart bottle is half filled and inverted and then violently shaken up and down.

In Fig. 1 I have shown a milk-bottle having a perfectly-straight inner wall 10, this type of bottle being preferred by dealers generally, because it is more easily cleaned than a bottle having an inner seat. Here the crown of the curve at the mouth of the bottle forms the only seat used for locating the stopper in place, and access of moisture or other extra-

neous matter to the contents of the bottle is prevented by a sealing action at two different points, one point being that of contact of the seam 9 with the mouth of the bottle, while the other is the point of contact of the paper 6 with the inner walls 10 of the bottle-neck.

In Fig. 2 I have illustrated a modification of the device in which the disk portions 3' and 4' of the metal and paper caps rest on a special inner seat 12, which is characteristic of that type of bottle employing a disk of paper or wood-pulp as the sealing medium. The side walls 5' and 6' of the stopper are in this case straight, and hence seal the mouth of the bottle securely at all points from the seat 12 to the upper end of the corresponding straight wall of the bottle-mouth, the rims 7' and 8' of the cap and the seam 9' being substantially similar to the corresponding parts shown in Fig. 1, as are also the bottle 2' and the straight inner wall 10' below the seat 12.

A bottle-stopper constructed in accordance with my invention requires no special shaping of the bottle to enable it to seat itself in place, seats itself securely by merely inserting it in the mouth of the bottle, has no projecting parts, completely fills the mouth of the bottle so that no foreign substances can enter, is strong enough to resist any pressure to which it would be liable to be subjected or which a closer of the bail type would withstand, and its cost is so low that it need never be reused.

What I claim is—

1. The combination with a bottle, of a thin strengthening member and a thin flexible sealing member coöperative for sealing the mouth of the bottle and located substantially in a common sealing plane in which the sealing member is of greater diameter than the strengthening member and the strengthening member is out of contact with the walls of the bottle and is isolated from the contents of the bottle by the sealing member.

2. The combination with a bottle, of a sheet-metal stopper and a thin flexible sealing member coöperative for sealing the mouth of the bottle and located in a common sealing plane in which the sealing member is of greater diameter than the strengthening member and the strengthening member is out of contact with the walls of the bottle and is isolated from the contents of the bottle by the sealing member.

3. The combination with a bottle, of a thin slightly-elastic strengthening member and a thin flexible sealing member coöperative for sealing the mouth of the bottle and located substantially in a common sealing plane in which the sealing member is of greater diameter than the strengthening member and the strengthening member is out of contact with the walls of the bottle and is isolated from the contents of the bottle by the sealing member.

4. The combination with a bottle having a seat, of a thin strengthening member of greater

diameter than the internal diameter of said seat and a thin flexible sealing member cooperative for sealing the mouth of the bottle and located substantially in a common sealing plane in which the sealing member is of greater diameter than the strengthening member and the strengthening member is out of contact with the walls of the bottle and is isolated from the contents of the bottle by the sealing member.

5. The combination with a bottle having a seat, of a thin strengthening member adapted to be supported by said seat and out of contact with the walls of the bottle in the sealing plane, and a flexible sealing member cooperative with said strengthening member and of greater diameter than the adjacent portion of the strengthening member and serving to isolate said strengthening member from the contents of the bottle.

6. The combination with a bottle, of a sheet-metal cup, and a thin flexible sealing member surrounding and of greater diameter than the sealing portion of said cup and cooperative therewith for sealing the mouth of the bottle and serving to isolate said strengthening member from the contents of the bottle.

7. The combination with a bottle, of a sheet-metal cup having a tapering sealing portion, and a thin flexible sealing member surrounding and of greater diameter than the sealing portion of said cup and cooperative therewith for sealing the mouth of the bottle and serving to isolate said strengthening member from the contents of the bottle.

8. The combination with a bottle, of a sheet-metal cup having a rim of sufficient diameter to seat itself on the end of the bottle-mouth and also having a sealing portion of smaller diameter, and a thin flexible sealing member of greater diameter in the sealing plane than

the adjacent portion of said cup and cooperative with said cup for sealing the mouth of the bottle and serving to isolate said strengthening member from the contents of the bottle.

9. The combination with a bottle, of a sheet-metal cup having a rim of sufficient diameter to seat itself on the end of the bottle-mouth and also having a sealing portion of smaller diameter, and a thin flexible sealing member surrounding and of greater diameter than the sealing portion of said cup and cooperative therewith for sealing the mouth of the bottle and serving to isolate said strengthening member from the contents of the bottle.

10. A bottle-stopper comprising a thin strengthening member, and a thin flexible sealing member permanently secured thereto and of greater diameter in the sealing plane of the stopper than said strengthening member.

11. A bottle-stopper comprising a sheet-metal strengthening member having a seam, and a thin flexible sealing member in locking engagement with said seam and of greater diameter in the sealing plane of the stopper than said strengthening member.

12. A bottle-stopper comprising a sheet-metal cup, and a thin flexible sealing member secured to said cup and of greater diameter in the sealing plane of the stopper than said cup.

13. A bottle-stopper comprising a sheet-metal cup having a peripheral seam, and a thin flexible sealing member surrounding said cup and in locking engagement with said seam.

Signed at New York, in the county of New York and State of New York, this 5th day of June, A. D. 1902.

JOHN A. JONES.

Witnesses:

C. S. CHAMPION,
R. CHAMPION.