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RECEPTACLE FOR STORING VOLATILE LIQUIDS.

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1,174,880. Patented Mar. 7, 1916.

Fig. 1.

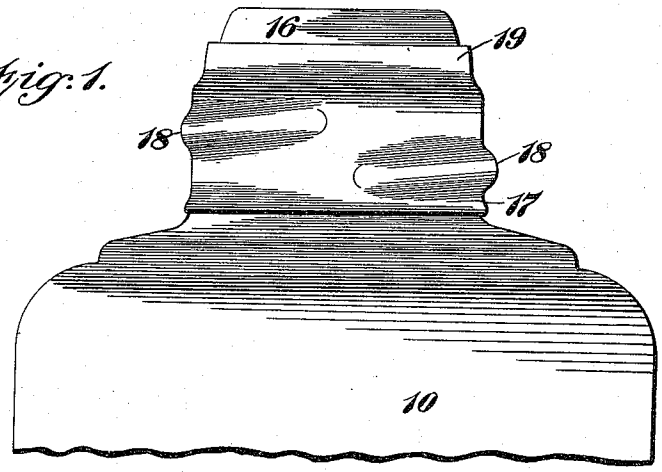


Fig. 2.

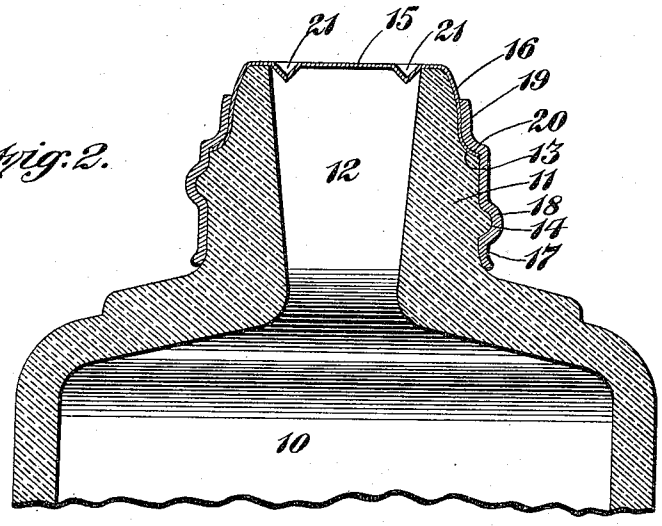
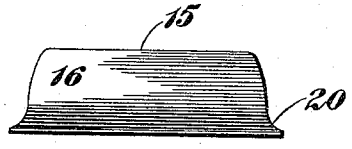


Fig. 3.



Attest:

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RECEPTACLE FOR STORING VOLATILE LIQUIDS.

1,174,880. Specification of Letters Patent. **Patented Mar. 7, 1916.**

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To all whom it may concern:

Be it known that I, CLARENCE D. LUKENS, a citizen of the United States, and residing at St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Receptacles for Storing Volatile Liquids, of which the following is a specification.

This invention relates to receptacles, and more particularly to receptacles for storing volatile liquids, such as ether, chloroform, etc.

It is highly essential that ether and chloroform, when used for anesthesia, be absolutely chemically pure. It is impossible to safely store either of the liquids in an ordinary bottle closed by a cork, since cork is too porous to hermetically seal such volatile liquids. It is also impossible to use rubber or other ordinary close-grained packing, since these liquids will dissolve or attack such packing, and not only render the liquid impure, but also unseal the receptacle. It has, therefore, been the practice heretofore to store such liquids in tin cans, which can be hermetically sealed by solder. There is, however, danger of fire or explosion when the hot soldering iron is used for closing the can. There is, however, another serious objection to the use of metal cans. The acid or flux used in soldering these cans, both for the seams and for soldering on the cap, adhere tenaciously to the inner surface of the can and cannot be removed by ordinary washing. These substances are soluble in ether and chloroform, and when these liquids are stored in the can for a while, the liquid is rendered impure, and therefore unsuitable for anesthetic purposes.

Some of the objects of this invention, therefore, are to construct a receptacle which will have none of the disadvantages of the receptacles used heretofore, in that the receptacle is closed by a cap which is so designed that the receptacle is hermetically sealed without the use of flux or solder and without the use of a soluble gasket.

In accordance with this invention, the receptacle body is constructed of glass or other suitable vitreous material, and this receptacle is closed and sealed by a pliable cap of a pliable, soft metal, such as soft tin. This cap is secured in position by a clamping member, so that the pliable cap is clamped and compressed between the receptacle and the clamping member to form its own gasket and seal the receptacle.

The invention will be more fully described in connection with the accompanying drawing in which:

Figure 1 is a side elevation of a receptacle embodying this invention, Fig. 2 is a vertical section, and Fig. 3 is a side elevation of the cap.

Referring to the accompanying drawing, 10 designates a receptacle body, preferably of glass, provided with a neck 11 having an opening 12. This neck has a circumferential shoulder 13, and threads 14. A cap 15 of a soft pliable metal, such as soft tin, has a flange 16, so as to fit over and closely conform to the neck of the receptacle, with a bell-mouthed part of its flange fitting over the shoulder 13. A metal clamping ring 17 of heavy and rigid construction is provided with a thread 18 engaging the thread 14 on the neck, and with a reduced portion 19 forming a shoulder 20, conforming to the shoulder 13. The cap 15 has formed therein indentations 21 positioned at and diametrically opposite points above the opening 12 in the receptacle.

In order to seal the receptacle, the cap 15 is placed in position on the neck, as shown in the drawing, and the clamping ring is screwed down. This will cause the shoulder 20 to engage the flange 16 of the cap and firmly clamp and compress this flange between the shoulder 13 on the receptacle and the shoulder 20 on the clamp. The metal being soft and pliable will flow under the pressure applied by the clamp and conform to the slight irregularities of the shoulders 13 and 20, and the rotary movement of the clamping ring will squeeze the metal into these irregularities, so that the metal will conform to the space between the shoulders 13 and 20 and form a true gasket. The cap will, therefore, form its own gasket so as to hermetically seal the receptacle, the indentations 21, which are formed by punching, leaving the metal thin at the points thereof, so that the cap may be readily perforated at these points. To open the receptacle for use the cap is perforated at the indentations, and by then placing the finger on one indentation and allowing the liquid to drip

through the other, the flow can be closely regulated.

It will, therefore, be seen that the invention accomplishes its objects. A receptacle, is formed in which the cap or closure not only hermetically seals the receptacle, but this sealing is obtained without the use of solder or flux which would be attacked and dissolved by the liquid contents of the receptacle. (Tin itself is, of course, not attacked by these liquids.) This result obtained by constructing the cap of a soft pliable metal which is clamped and compressed by a rigid clamping member against the receptacle, so that the cap will form its own gasket. This construction renders the use of a glass receptacle possible which has not heretofore been the case.

It is obvious that various changes may be made in details of construction without departing from the spirit of this invention; it is therefore to be understood that this invention is not to be limited to the specific construction shown and described.

Having thus described the invention what is claimed is:

1. A receptacle comprising a body of vitreous material, a cap of soft, pliable metal conforming closely to the open end of the body, and a rigid clamp for securing the cap in position on the body, a part of the cap being clamped and compressed between the body and the rigid clamp to form its own gasket and seal the receptacle.

2. A receptacle comprising a body of vitreous material, a cap of soft, pliable metal having a flange extending along and conforming closely to the open end of the body, and a rigid clamp for securing the cap in position on the body, the flange being clamped between the body and the rigid clamp to form its own gasket and seal the receptacle.

3. A receptacle comprising a body of vitreous material and having a circumferential shoulder below the open end thereof, a soft, pliable metal cap for sealing the receptacle, said cap having a flange conforming closely to and adapted to engage the shoulder, and a rigid clamping ring for securing the cap in position on the receptacle and having a shoulder, the flange being clamped and compressed between the shoulders on the receptacle and the ring to form its own gasket and seal the receptacle.

4. A receptacle comprising a body of vitreous material, a cap of soft, pliable metal conforming closely to the open end of the body, and a rigid clamp for securing the cap in position on the body, the cap being clamped and compressed between the body and the clamp to form its own gasket and seal the receptacle, said cap having a plurality of indentations above the receptacle opening, and being adapted to be ruptured at the indentations to form perforations.

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

CLARENCE D. LUKENS.

Witnesses:
J. H. BRUNINGER,
FRANKLIN MILLER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."