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C. L. GEBAUER.

RECEPTACLE FOR CONTAINING AND ADMINISTERING VOLATILE LIQUIDS.

(No Model.)

(Application filed Nov. 16, 1900.)

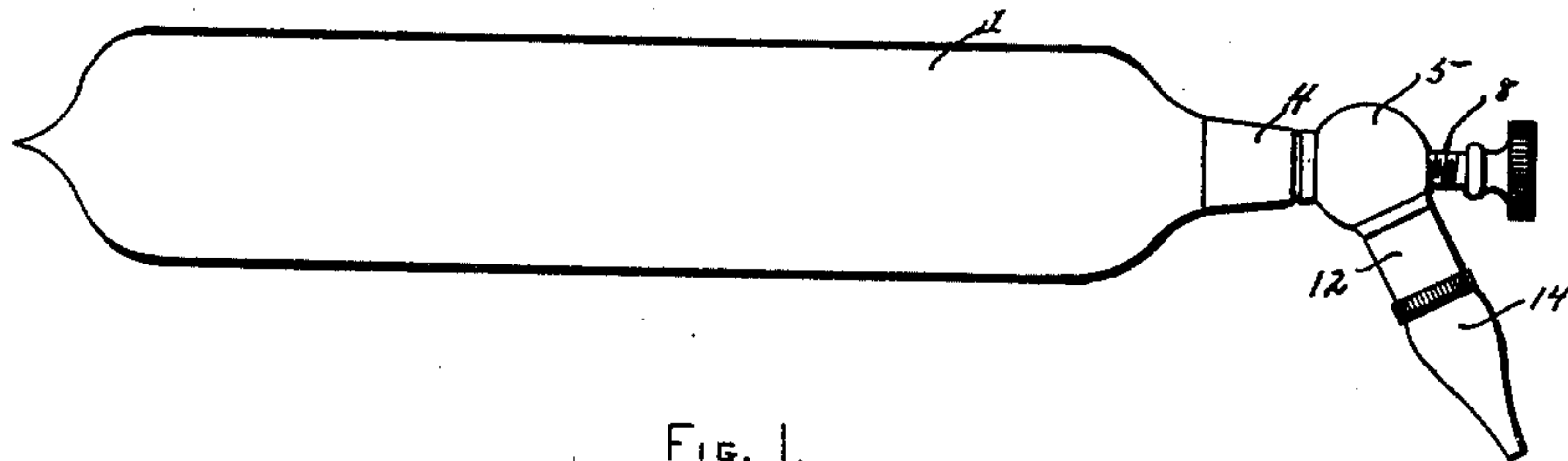


FIG. 1.

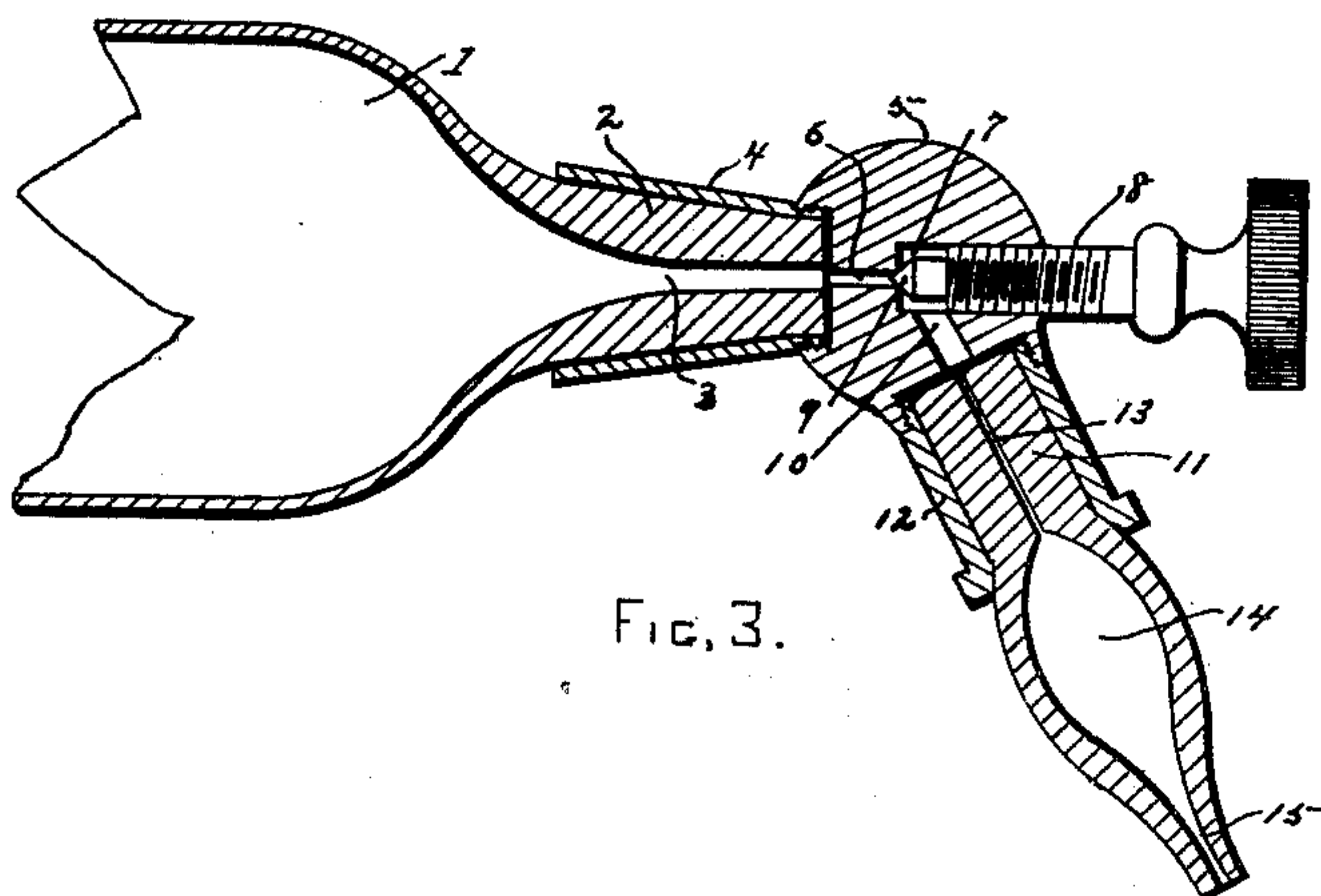


FIG. 3.

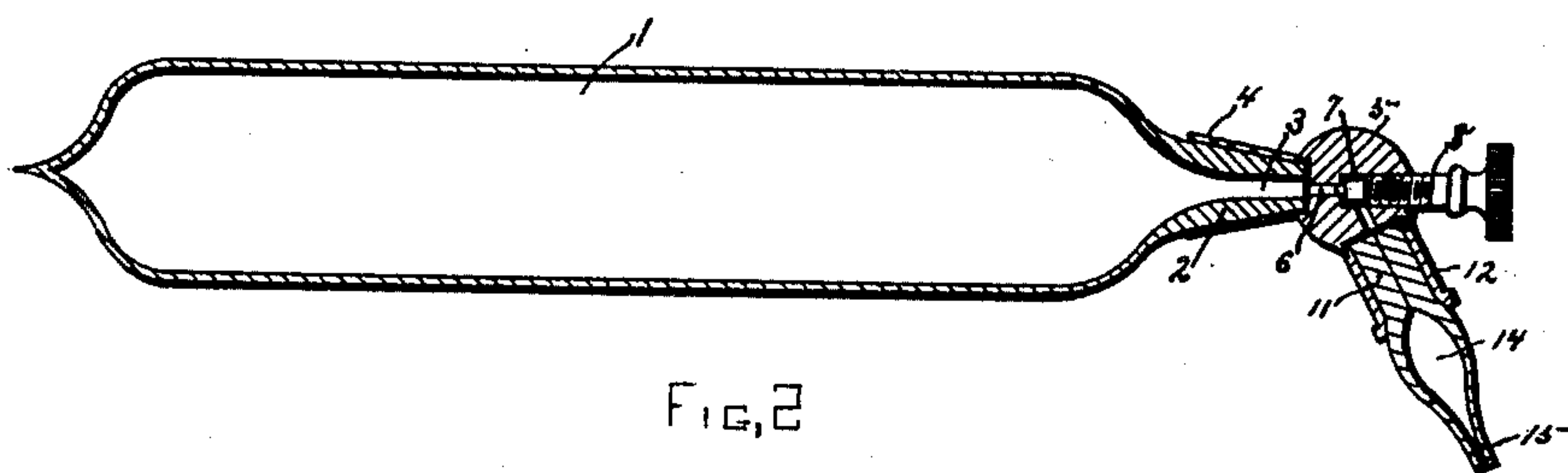


FIG. 2

WITNESSES.

Blanche M. Work.

Pearl B. Garrett.

INVENTOR.

Charles L. Gebauer.

By S. E. Foulis
Atty.

UNITED STATES PATENT OFFICE.

CHARLES L. GEBAUER, OF CLEVELAND, OHIO.

RECEPTACLE FOR CONTAINING AND ADMINISTERING VOLATILE LIQUIDS.

SPECIFICATION forming part of Letters Patent No. 668,815, dated February 26, 1901.

Application filed November 16, 1900. Serial No. 36,678. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. GEBAUER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Receptacles for Containing and Administering Volatile Liquids, of which the following is a specification.

This invention relates to receptacles for holding and administering volatile liquids, and has for its objects the production of a tube which is simple in construction, inexpensive in manufacture, and convenient and effective in operation. Heretofore receptacles of this character have generally been so formed that their contents are administered in a continuous stream. This is objectionable for the reason that the liquid falls upon the parts being treated substantially in one spot and so rapidly that it runs off in drops before it has time to evaporate. Furthermore, as the evaporation takes place from the outside of the drop the intense cold which is produced thereby is so far removed from the surface of the skin that it has a diminished effect thereon. To overcome these objections, I propose to eject the liquid in the form of a spray, which will extend over a greater surface and will cover the same in such a thin film that the evaporation must take place almost immediately and practically at the surface of the skin. A further objection to the receptacles of this character heretofore used is their great liability to become clogged in the capillary tube through which the liquid is ejected, which makes it impossible to use them any further. Some manufacturers in order to overcome this difficulty make their tubes with two or more outlets, the one to be employed when the others become clogged. This, however, adds very materially to the first cost and, besides, is only a makeshift, for the reason that all of the tubes are liable to become clogged. While I necessarily have a capillary tube in my receptacle, I place the same in a separable piece, from which the obstruction can be much more easily removed or which may be duplicated at a trifling expense if this is impossible. These various objects and advantages I secure by the construction which is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the receptacle and the valve therefor. Fig. 2 is a vertical longitudinal section through the same, and Fig. 3 is a similar view of the valve and of the receptacle on a larger scale.

Similar reference characters designate corresponding parts throughout the several views.

1 is the receptacle proper, in which the liquid to be administered is contained. This receptacle is preferably formed of glass, although any other suitable material may be employed. One end of this receptacle is entirely closed or sealed, the other end being constricted to form a neck 2, in the center of which is a tube 3. This tube is comparatively large in diameter, so that no dust which may be in the receptacle can clog the same. Surrounding the neck 2 of the receptacle when it is made of glass is a metallic collar or ferrule 4, which extends to the end of the neck and is there provided with screw-threads. Screwing onto this portion of the collar is a valve-piece 5, which is preferably made of metal and is substantially spherical in form. This valve-piece is provided with a seat which is forced tightly against a thin washer at the end of the neck in order to form a tight joint. Extending inwardly from the end of the neck is a small valve-passage 6, which opens into a larger threaded valve-socket 7. This socket extends outwardly through the valve-piece 5 and is fitted with a screw 8. This screw is provided with a conical end piece 9, which is adapted to enter the valve-passage 6 and to tightly close the same. Extending outwardly from the valve-socket 7, near the inner end thereof, is a valve-passage 10. Like the tube 3 these valve-passages are made of sufficient size to permit the passage therethrough of any solid matter that may be contained in the receptacle. That portion of the valve-piece 5 surrounding the opening of the valve-passage 10 is reamed out and screw-threaded to provide a seat for the end of the nozzle-piece 11. The inner end of the nozzle-piece is surrounded by a metallic thimble or ferrule 12, which is threaded at its inner end to fit the threads in the valve-piece. The nozzle-piece is provided opposite the valve-passage 10 with a capillary tube 13, which extends outwardly

to a point near the end of the thimble 12. At this point the nozzle-piece is expanded, so that the capillary tube may be greatly enlarged to form a vaporizing-chamber at 14.

5 Beyond this chamber the nozzle is again constricted and the chamber 14 reduced at 15 to a comparatively small passage. The liquids which are intended to be used in these receptacles have a very low boiling-point, and the
10 heat of the hand is sufficient to cause the same to evaporate and create an internal pressure in the tube when the same is in use.

From this description it will be understood that when the tube is grasped in the hand
15 the liquid will evaporate and create a pressure in the tube and that when the valve is opened and the receptacle is tilted so that the liquid covers the tube 3 in the neck the liquid will be forced out through the passages
20 6, 10, and 13. Were it not for the enlargement in the capillary tube 13 the liquid would issue from the end of the nozzle in a continuous stream. When it enters the chamber 14, however, the pressure is greatly re-
25 duced, so that a portion of the liquid is vaporized and issues from the end of the nozzle in a mixed condition—that is to say, part liquid and part vapor. This taken in connection with the effect of the shape of the
30 vaporizing-chamber upon the liquid passing through it presumably accounts for the fact that the liquid issues from the end of the nozzle in the form of a spray and is very finely and evenly distributed over the sur-
35 face of the part being treated.

By using a receptacle of this character it is possible to hold the end of the nozzle close to the part to be treated, which will prevent excessive evaporation before the liquid can
40 be applied. It also distributes the liquid over a comparatively large surface, thus giving it no opportunity to drop off and causing it to evaporate next to the surface of the parts being treated. By having the capillary tube in
45 a separable piece it is an easy matter to reach the inner end of the same, in which the obstruction would naturally lodge, and in case it is found impossible to clean out this tube a duplicate nozzle-piece may be procured at
50 small expense, when the tube will again be in condition for use.

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

55 1. In a receptacle for containing and administering liquids, a main receptacle, a capillary tube communicating therewith, and a

chamber connecting the tube with the outside air so that the liquid issuing through the tube into the chamber partially volatilizes 60 and is ejected therefrom in a spray.

2. In a receptacle for containing and administering volatile liquids, a main receptacle, valve-passages leading from said receptacle, a nozzle adjacent said valve-passages 65 and having a capillary opening communicating therewith, and a chamber in said nozzle communicating with the capillary opening and leading to the exterior of the nozzle.

3. In a receptacle for containing and administering volatile liquids, a main receptacle, and a separable nozzle therefor having a capillary passage and a vaporizing-chamber communicating therewith and with the exterior of the nozzle. 75

4. As a means for spraying liquids, a tube through which the liquid is forced under pressure and at a temperature above its boiling-point, a chamber communicating with said tube, and a passage larger than said tube and 80 substantially in line therewith connecting the chamber with the outside air, whereby the pressure is reduced in the chamber, the liquid partially volatilized, and discharged through the passage in a spray. 85

5. In a device of the character described, a main receptacle, a valve-piece connected with said receptacle and having valve-passages, a valve for closing one of said passages, a nozzle connected with said valve-piece and 90 having a capillary passage extending through a portion thereof, an enlarged chamber in the nozzle and communicating with the capillary passage and, through a larger passage, with the outside air. 95

6. In a device of the character described, a main receptacle, a valve-piece secured to said receptacle and having valve-passages therethrough, a screw entering said valve-piece and having a conical head to enter one 100 of said passages to close the same, a separable nozzle secured to the valve-piece and having a capillary tube communicating with the other of said passages, an enlarged chamber in the nozzle communicating on one side with 105 the capillary tube and on the other side with a larger tube leading to the outside air.

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

CHARLES L. GEBAUER.

Witnesses:

GEO. H. SCHEVAN,
ERNST C. SCHEVAN.