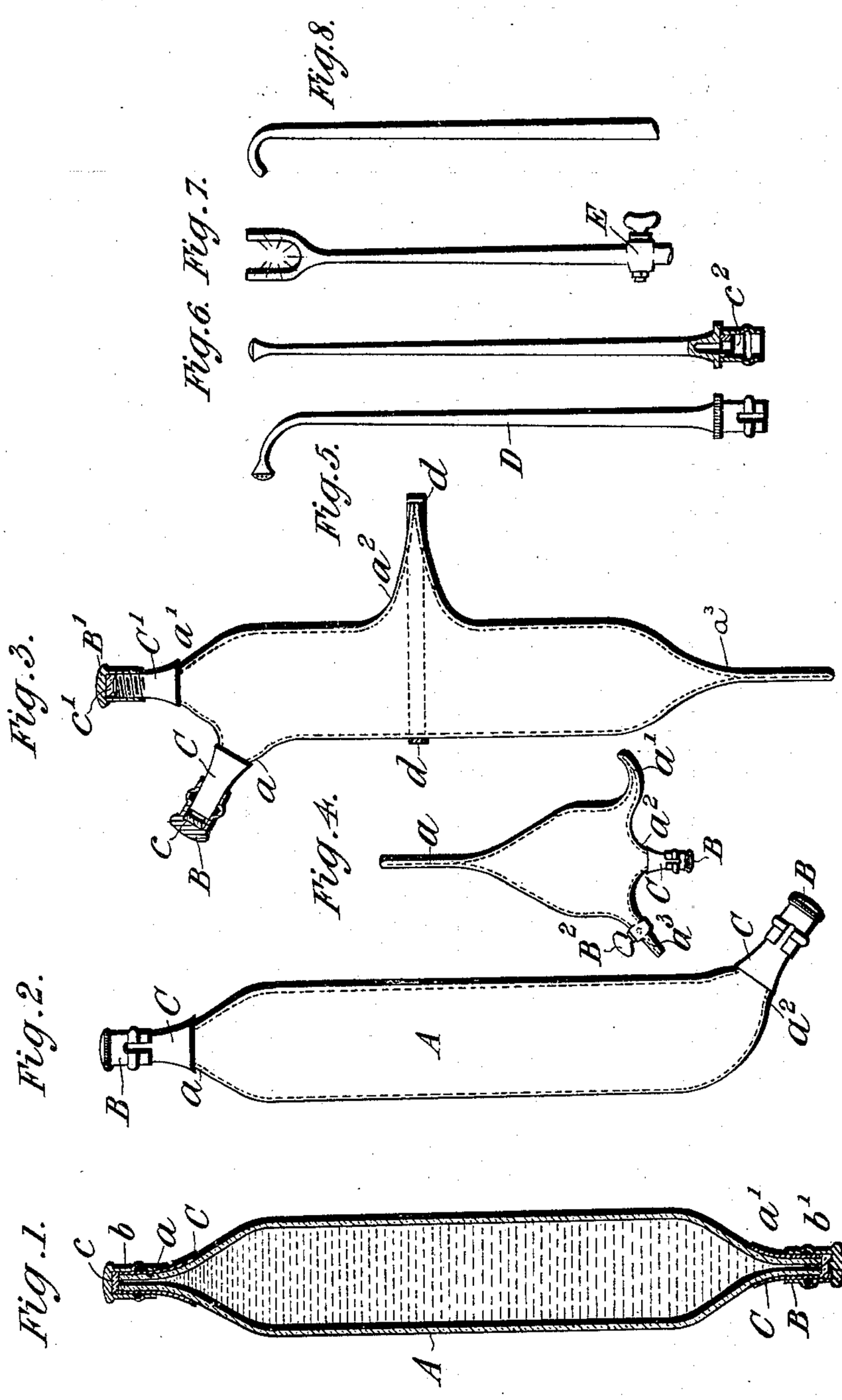
(No Model.)

# P. P. MONNET.

## VESSEL FOR CONTAINING AND ADMINISTERING VOLATILE LIQUIDS.

No. 604,191. Patented May 17, 1898.

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# UNITED STATES PATENT OFFICE.

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## VESSEL FOR CONTAINING AND ADMINISTERING VOLATILE LIQUIDS.

SPECIFICATION forming part of Letters Patent No. 604,191, dated May 17, 1898.

Application filed August 8, 1896. Serial No. 601,977. (No model.) Patented in France February 8, 1895, No. 244,976; in Switzerland February 9, 1895, No. 9,707; in Belgium February 11, 1895, No. 114,078; in England February 14, 1895, No. 3,268; in Germany February 19, 1895, No. 83,457; in Italy March 22, 1895, No. 38,247/102, and in Austria May 25, 1895, No. 45/1,847.

*To all whom it may concern:*

Be it known that I, PIERRE PROSPER MONNET, of Lyons, Department of the Rhône, France, have invented certain new and useful Improvements in Vessels for Containing and Administering Volatile Liquids, (for which Letters Patent have been granted in Great Britain, No. 3,268, bearing date February 14, 1895; in France, No. 244,976, bearing date February 8, 1895; in Belgium, No. 114,078, bearing date February 11, 1895; in Switzerland, No. 9,707, bearing date February 9, 1895; in Italy, No. 38,247/102, bearing date March 22, 1895; in Austria, No. 45/1,847, bearing date May 25, 1895, and in Germany, No. 83,457, bearing date February 19, 1895,) of which the following is a specification.

This invention has reference to vessels for containing and administering volatile liquids, and particularly chlorid of ethyl, chlorid of methyl, and other liquids of a very volatile nature; and its objects are to manufacture vessels in which such liquids can be conveniently carried, which will preserve them without alteration, which can be conveniently handled, and which will allow of their liquid contents being projected therefrom in the form of vapor or spray or in the form of a liquid jet and administered in a safe, practical, and simple manner in fractional or measured quantities. The means employed for delivering the liquids is the heat of the human hand holding the vessel or the heat of the atmosphere when the temperature is sufficient. Vessels as hitherto constructed for containing volatile liquids and for delivering therefrom by the heat of the hand or of the atmosphere have had a single neck or nozzle with a capillary or very fine outlet-orifice hermetically closed either by being sealed off or by means of a stretched rubber band or of a cap or other device by which the orifice can be opened and closed at will and allow any desired portion of the contents to be used at one time. Because these vessels have only one outlet-orifice it is not practicable to refill them. Again, the delivery from their orifice must always be practically the same in a given time and always in the same direction relatively to the body of the vessel.

Now with vessels constructed according to my invention refilling can be readily effected, the delivery can be varied in amount during a given time, and can take place in a variety of directions relatively to the body of the vessel. A single vessel will thus serve the purpose of a set of vessels, such as dentists or others now provide themselves with.

The invention consists in the combination, with the body of a vessel for containing and administering volatile liquids and adapted to be grasped by the hand, of two or more necks projecting from the said body in different directions and each of them provided with a capillary outlet-orifice which is normally closed by a suitable closing device. The said orifices in the respective necks are of differing sizes, so that the amount of liquid delivered from them respectively in a given time will correspondingly vary.

The invention further consists in the combination, with the body of a vessel for containing and administering volatile liquids and having two or more necks projecting from said body in different directions and each provided with a capillary outlet-orifice adapted to be closed hermetically, of extension or spraying cannulæ or nozzles adapted to fit tightly on the said necks, the said cannulæ being of various forms and lengths, so as to deliver the liquid in various directions, as may be required.

The accompanying drawings illustrate several modified forms of my improved vessels and of cannulæ to be used therewith.

In the drawings, Figure 1 is a vertical section of a vessel with a neck at each end. Fig. 2 is a side view of another vessel with a neck at each end, but of different form. Figs. 3 and 4 are side views representing, respectively, two vessels, each with four necks. Figs. 5, 6, 7, and 8 represent four different forms of cannulæ.

Referring first to Fig. 1, the vessel there shown for containing volatile liquid is in the form of a glass tube A, terminating at its two ends in tubular necks $a\,a'$, formed with capillary passages $b\,b'$. Each of these passages is hermetically closed by a removable metallic cap B, fitting by means of a bayonet-joint on

a metallic collar C, mounted on the corresponding neck $a$ or $a'$. The cap B is provided with an elastic packing $c$—such, for instance, as a rubber ring or washer—adapted to bear against the orifice of the passage in the tubular neck. It will be readily understood that a vessel of this kind may be refilled with volatile liquid as many times as desired, the arrangement being such that when it is immersed in the liquid in such a manner as to cause the liquid to enter through one of the passages $b$ or $b'$ the orifice of the other passage may be held out of the liquid, so as to allow the air contained in the vessel to escape.

The passages $b$ $b'$ may obviously be of different dimensions to enable the vessel to deliver liquid at either of two different rates.

In the modification shown in Fig. 2 the tubular neck $a^2$ instead of being in line with the neck $a$, as is the case with the neck $a'$ in Fig. 1, is bent or curved to one side, the orifices of these necks being, however, closed by metallic caps with an internal elastic packing in the same manner as is the case in Fig. 1.

In the modification shown in Fig. 3 the vessel is formed with four different tubular necks $a$ $a'$ $a^2$ $a^3$, each provided with a different closing device for the orifice therein. The neck $a$ is closed by a metallic cap B with packing $c$, the said cap being held by a bayonet-joint on a metal collar C on the tubular neck. The tubular neck $a'$ is closed by means of a cap B′, provided with an internal packing $c'$ and with a female thread screwing onto a screw-threaded metallic collar C′ on the neck. The tubular neck $a^2$ has its orifice closed by means of an annular band or rubber $d$, which passes around the body of the vessel. The tubular neck $a^3$ is closed by its end having been sealed in a flame.

In the modification shown in Fig. 4 the vessel is pear-shaped and is also provided with four tubular necks $a$ $a'$ $a^2$ $a^3$. The tubular necks $a$ and $a'$ are closed at their free ends by sealing, the tubular neck $a$ being also bent or curved. The tubular neck $a^2$ is closed by a metallic cap B with a packing inside, which cap is held by means of a bayonet-joint on a metallic collar C on the neck, and the tubular neck $a^3$ is closed by means of a tap $B^2$.

Referring now to the extension of spraying nozzles or cannulæ shown by way of example in Figs. 5 to 8, Fig. 5 shows a nozzle D with an upper curved end, terminating in a spraying-rose. Its lower end is constructed to fit by means of a bayonet-joint upon the metallic collars C of the vessel above described instead and in the place of the caps B. The nozzle shown in Fig. 6 is the same as that shown in Fig. 5, with the difference that its upper end is not curved, while instead of the rose it may have a plain opening. As shown in Fig. 6, the lower end of these nozzles may be provided with an elastic annular packing $c^2$, adapted to form a hermetical joint between the nozzle and the tubular neck of the vessel upon which it fits. In the nozzle shown in part in Fig. 7 the upper end has a branch or fork (or it may have more than one) and is provided with a large number of outlet-openings. In the nozzle shown in Fig. 8 the upper end is simply bent or curved. The lower ends of these nozzles are of course suited to the devices employed for closing the tubular necks. Thus, instead of being arranged as in Figs. 5 and 6, the lower end of the nozzles may be provided with a female screw-threaded socket inclosing an elastic annular packing in such a manner as to enable these nozzles to be screwed instead and in place of the cap B′, (shown in Fig. 3;) or the lower end of the nozzle may be ground or bored in a suitable manner, so as to fit simply, but in a sufficiently tight manner, upon tubular necks, such as those shown at $a^2$ $a^3$, Fig. 3, or $a$ $a^3$, Fig. 4. These nozzles are preferably provided with a tap E, as shown by way of example in Fig. 7, or a similar tap may be provided in the tubular necks of the vessels on which the nozzles are to be fitted.

Vessels of the class to which my invention relates are distinguished from that class of vessels known as "dropping-bottles," which are used for delivering medicaments in drops or streams without internal pressure. Such well-known bottles customarily have two large openings, the one to admit air and the other to permit outflow of the liquid. In such bottles neither opening is capillary, as that would neutralize the force of gravitation, which is relied upon to cause outflow of liquid, and in their use both openings must be open when discharging, as there is no internal pressure. Their openings are so large that the opening through either one is sufficient to permit refilling while the other is closed. Hence there could be no internal pressure when either was open.

What I claim, and desire to secure by Letters Patent, is—

1. The improved vessel for containing, vaporizing and administering, volatile liquids under internal pressure, consisting of a vessel-body of such size and form that it may be grasped by and inclosed in the hand, having a plurality of necks projecting from said body in different directions, and having a plurality of capillary outlet-orifices, one in each of said necks, and closing devices for said orifices, whereby either of said orifices can be opened for ejecting the liquid, and said vessel can be refilled when both said orifices are open, substantially as and for the purposes set forth.

2. The improved vessel for containing, vaporizing and administering, volatile liquids under internal pressure, consisting of a vessel having a body of such size and form that it may be grasped by and inclosed in the hand, having a plurality of necks projecting from said body in different directions, having a capillary outlet-orifice in each neck, and having a closing device for each orifice, one of said capillary orifices in one neck differing in di-

ameter from that of the orifice in another neck, whereby either of said orifices can be opened for ejecting the liquid, and said vessel can be refilled when both said orifices are open, substantially as and for the purpose set forth.

3. The improved vessel for containing, vaporizing and administering, volatile liquids under internal pressure, consisting of a vessel having a plurality of necks projecting from it in different directions, and having in each neck a capillary aperture, means for closing said orifices hermetically, and cannulæ, substantially as described, for fitting tightly on the necks of said vessel as set forth, said necks having fastenings for said closing means and said cannulæ, and each of the latter having fastenings reciprocal to and fitting those of the necks, whereby either of said orifices can be opened for ejecting the liquid, and said vessel can be refilled when both said orifices are open.

4. The improved vessel for containing, volatilizing and administering volatile liquids under internal pressure, consisting of a thin glass body adapted to be grasped by and inclosed in the hand, whereby the heat of the hand can volatilize the contents of the vessel for generating an internal pressure therein, such vessel having an integral neck having a capillary orifice-opening at its outer end, an external metal collar fixed on and surrounding said neck, and a cap closing said orifice, embracing the end of said neck, and held thereon by said collar.

5. The improved vessel for containing, volatilizing and administering volatile liquids under internal pressure, consisting of an elongated body for containing the liquid, adapted to be grasped by and inclosed in the hand, whereby the heat of the hand may volatilize the liquid to generate an internal pressure, said body having an elongated neck extending from it angularly of its longitudinal axis, a capillary orifice traversing and opening at the end of said neck, a cap enveloping the end of said neck and closing said orifice, and fastening provisions on the exterior of said neck engaging said cap for holding it thereon, whereby said orifice can be opened and closed by removing and applying said cap, and the liquid can be discharged through said neck when said body is inclined toward the horizontal.

6. The improved vessel for containing, volatilizing and administering volatile liquids under internal pressure, consisting of a glass body adapted to be held in the hand, whereby the heat of the hand can volatilize the liquid and generate an internal pressure in the vessel, having two integral necks, having capillary orifices traversing and opening at the end of each neck, an outer metal collar surrounding and fixed to each neck, and a cap for each neck closing the orifice therethrough, inclosing the end of the neck and engaging the collar thereon.

7. In vessels for containing, volatilizing and administering volatile liquids, a vessel-body for containing the liquid, adapted to be grasped by and inclosed in the hand, whereby the heat of the hand can volatilize the liquid to generate an internal pressure, said body having two independent outwardly-projecting necks, the one angular in its projection relatively to the other, capillary orifices traversing and opening through said necks respectively, fastenings on the exteriors of said necks, and caps for closing said orifices enveloping the ends of said necks respectively and held thereon by said fastenings, whereby the liquid can be discharged in different directions relatively to the longitudinal axis of said body.

8. The improved vessel for containing, volatilizing and administering volatile liquids under internal pressure, consisting of a vessel-body of suitable size and form to be grasped by and inclosed in the hand, whereby the heat of the hand can be used to volatilize the liquid for generating an internal pressure in the vessel, having two necks, the one axial and the other angular in extension relatively to the longitudinal axis of the body, a capillary orifice traversing and opening through each of said necks, fastenings on the exteriors of said necks respectively, and caps for closing said orifices, and enveloping the ends of said necks respectively, and held thereon by said fastenings.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

PIERRE PROSPER MONNET.

Witnesses:
FRANK E. HYDE,
G. PERKEW.