T. A. DE VILBISS.

COMBINED ASPIRATING AND VAPORIZING INSTRUMENT.

APPLICATION FILED JUNE 16, 1916.

1,266,228. Patented May 14, 1918.

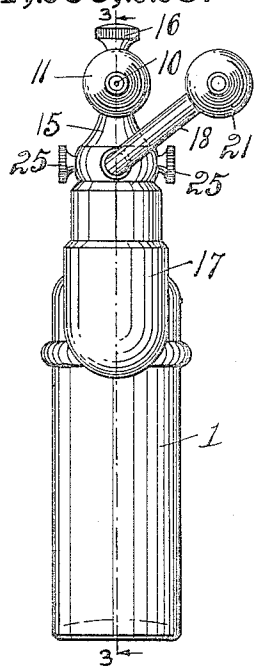


Fig. 2.

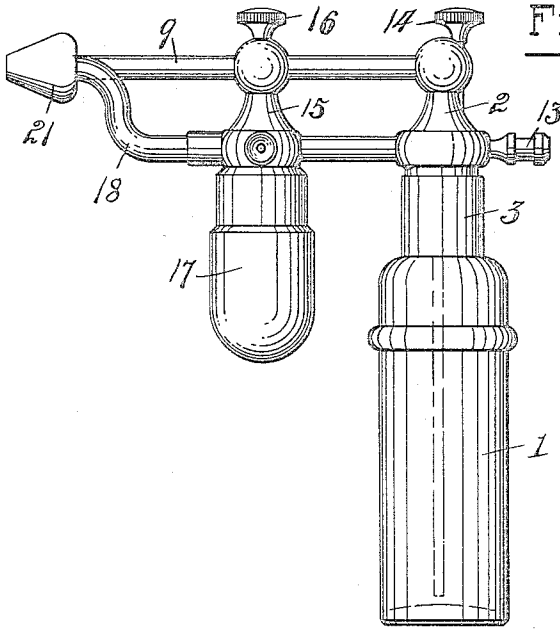


Fig. 1.

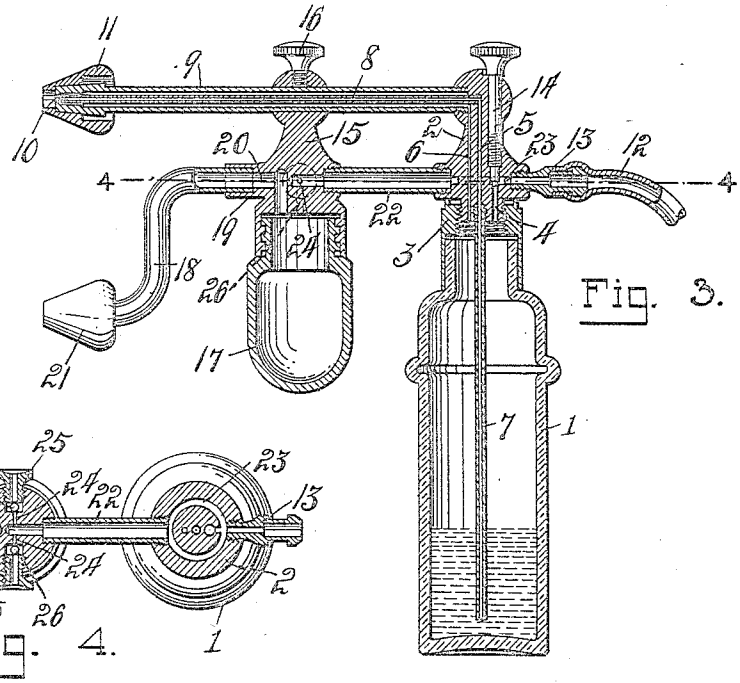


Fig. 3.

Fig. 4.

INVENTOR.

Thomas A. DeVilbiss,

By Owen, Owen & Crampton,

His attys.

UNITED STATES PATENT OFFICE.

THOMAS A. DE VILBISS, OF TOLEDO, OHIO, ASSIGNOR TO THE DE VILBISS MANUFACTURING COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO.

COMBINED ASPIRATING AND VAPORIZING INSTRUMENT.

1,266,228. Specification of Letters Patent. Patented May 14, 1918.

Application filed June 16, 1916. Serial No. 103,947.

To all whom it may concern:

Be it known that I, THOMAS A. DE VILBISS, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Combined Aspirating and Vaporizing Instrument; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to medical appliances, and particularly to an instrument which combines the actions of both a vaporizing instrument and an aspirator.

The object of my invention is the provision of a simple and efficient appliance, more particularly, but not necessarily, for use by the medical profession, which appliance combines an aspirator and a spraying or vaporizing means capable of use together, whereby, for instance, matter in liquid or powder form may be sprayed into one nostril of the nose and a suction or aspirating action at the same time set up in the other nostril, or the two devices may be used separately, if desired.

A further object of my invention is the provision of means for relatively adjusting the ejecting and suction nozzles of the instrument to facilitate a reversal of the treating, cleaning or irrigating action within the nasal passages. Further objects and advantages of the invention will be apparent to persons skilled in the art from the following detailed description.

The invention is fully described in the following specification, and while, in its broader aspect, it is capable of embodiment in numerous forms, a preferred embodiment thereof is illustrated in the accompanying drawings in connection with a liquid atomizing instrument, in which drawings—

Figures 1 and 2 are different side elevations of an instrument embodying the invention. Fig. 3 is a section on the line 3—3 in Fig. 1, with the suction nozzle turned down, and Fig. 4 is a section on the line 4—4 in Fig. 3, with the aspirator nozzle also in section.

Referring to the drawings, 1 designates a receptacle, the upper open end of which is closed by a head 2, which head, in the present instance, has its lower end of plug form and threaded into a ferrule 3 secured to the receptacle neck. The head 2 has three passages 4, 5 and 6 therein which, in the present instance, are vertically disposed and open at their inner ends into the interior of the receptacle. The passage 5 is continued down into the receptacle 1 to adjacent its bottom by a tube 7, which is carried by the head 2 with its passage in register with the lower end of the head passage 5. The outer ends of the passages 5 and 6 have communication respectively with the passages in a pair of tubes 8 and 9, respectively, which are carried by and project, in the present instance, transversely from the head 2 one within the other. The outer end of the tube 8 terminates within the outer end portion of the tube 9 in register with a restricted discharge orifice 10 therein whereby the discharge of air from the tube 9 through said orifice around the discharge end of the inner tube 8 will tend to set up a suction action within the tube 8 so that liquid is drawn from the interior of the receptacle 1 through the tube 7, passage 5 and tube 8 and discharged from the nozzle ends of the tubes 8 and 9 in vapor or spray form, as is common in liquid atomizing instruments. 11 designates a nasal tip which is secured to the outer end of the tube 9.

Air under pressure is introduced into the receptacle 1 through a tube 12, which has connection with any suitable source of air pressure supply and is connected at one end to a heel piece 13 projecting transversely from the head 2 with the passage thereof in communication with the passage 4.

It is thus evident that air under pressure may be introduced into the receptacle 1 through the passage 4 and cause a compressing action to be set up on the top of the liquid within the receptacle and a consequent forcing of the liquid out through the tube 7, passage 5 and tube 8. A portion of the air within the receptacle escapes therefrom through the passage 6 and tube 9 and is discharged from said latter tube, past the discharge end of the liquid tube 8 to set up a suction therein, as hereinbefore described, whereby to assist the compressive action

within the receptacle in discharging the liquid in vaporized form from the receptacle. The air outlet passage 6 is smaller in size than the air inlet passage 4 so as to utilize a portion of the air introduced into the receptacle for compressing the liquid. A valve 14 threads down through the head 2 and has its lower end seating in a portion of the passage 4 to close the communication through said passage between the heel-piece 13 and the interior of the receptacle.

A head 15 is carried by the tube 9, being fixedly secured thereto, in the present instance, by a set-screw 16, and a receptacle 17 is removably carried by said head, being, in the present instance, threaded into a socket in the lower end thereof. A tube 18, in the present instance of Z-form, has its inner end rotatably connected to the forward side of the head 15, as by fitting into a socketed part 19 thereof and communicating with the interior of the receptacle 17 through an angled passage 20 in said head. The tube 18, which may be termed a suction tube, is preferably attached to the head 15 below the tube 9 so that the outer end of the tube 18, which carries a nasal tip 21, may be positioned at either side of the nasal tip 11 as it may be desired to insert the tip 11 into either nostril of the nose and the tip 21 into the other nostril thereof.

A tube 22 connects the two heads 2 and 15 and has communication at one end with the passage in the heel-piece 13 through a passage 23 of annular form provided in the head 2 around the passages 4, 5 and 6. The other end of the tube 22 has communication with a pair of opposed air discharge orifices 24 disposed transversely in the head 15 with their outer ends opening to the atmosphere through enlarged passages provided in discharge plugs or nozzles 25, which are threaded into opposite sides of the head 15. The air in its discharge from the passages 24 plays across the adjacent ends of passages 26, which project transversely from the passages 24 into communication with the interior of the receptacle 17 at its upper end, and cause air to be drawn or exhausted from the interior of the receptacle 17. It is evident that the exhaust of air from the receptacle 17 through the passages 26 and nozzles 25 will cause an inward suction to take place through the tube 18, thereby causing it to act in the manner of an aspirator. It will be noted that the passages 24, 24 and the passages in the nozzles 25 longitudinally aline so that a wire may be inserted entirely through said passages for cleaning purposes.

In the use of my appliance for the treatment of nasal troubles, for instance, catarrh, cold in the head, or the like, the tip 11 on the discharging means is inserted into one nostril of the nose, and the tip 21 of the aspirating device is inserted into the other nostril of the nose, and air pressure then turned into the instrument through the supply tube 12. The valve 14 being open permits a portion of such air under pressure to enter the receptacle 1 through the passage 4 and to act on the liquid within the receptacle to force it therefrom through the tubes 7 and 8 and passage 5 and also to pass in part through the outlet passage 6 and air tube 9 and be discharged from the tip 11 together with the liquid which is forced and drawn from the receptacle 1 in a vaporized thoroughly broken-up condition, as is well understood in the art. A portion of the compressed air also passes through the restricted discharge orifices 24, 24 in the head 15 over or past the passages 26, which communicate with the receptacle 17, thus exhausting air from said receptacle and setting up a suction action therein through the tube 18. It is thus evident that a vaporized liquid is discharged into one nostril of the nose by the liquid atomizing or vaporizing means, and that liquid and other matter is drawn from the other nostril of the nose and deposited in the receptacle 17, thereby effecting a thorough cleaning, cleansing and irrigating of the nasal passages. After a cleansing action has been effected in one direction through the nasal passages the position of the aspirator tube 21 is reversed with respect to the tip 11 so that a reverse circulation can be set up within the nasal passages.

If it is desired to use the aspirator alone the valve 14 may be moved to close the air inlet passage 4 to the receptacle 1; or if it is desired to use the atomizing attachment alone the aspirator tube 18 may be swung to a position which will not interfere with the use of the atomizer nozzle.

While I have shown my aspirating attachment as used in connection with an atomizer, it is not intended to restrict its use in this respect, as the means illustrated herein as forming a liquid vaporizing means might be an atomizer, nebulizer, or a powder-blower wherein a liquid or powder is discharged from the receptacle by the action of air, it being understood that the invention broadly contemplates the utilization in a single instrument of a fluid under pressure for creating an aspirating action in one part thereof, and a matter discharging action in another part thereof.

I also wish it understood that my invention is not limited to any specific construction, arrangement or form of the parts, as it is capable of numerous modifications without departing from the spirit of the invention as defined in the claims.

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

1. An appliance embodying a liquid vaporizing means and an aspirating means, both operated by fluid pressure and having a common source of fluid pressure supply.

2. An appliance embodying means for discharging matter in finely broken-up form and an aspirating means, both operated by fluid pressure and having a common source of fluid pressure supply.

3. An appliance embodying a liquid vaporizing means and an aspirating means, both being simultaneously operable by fluid pressure and having a common source of fluid pressure supply.

4. An appliance having two nozzles for simultaneous insertion into the nostrils of the nose, and means operable by fluid pressure to discharge matter from one nozzle and to create an inward suction action through the other nozzle.

5. An appliance having two relatively adjustable nozzles, and means operable by fluid pressure to simultaneously discharge matter from one nozzle and to create an inward suction action through the other nozzle.

6. An appliance having two nozzles mounted to permit a reversal of the position of one with respect to the other, and means operable by fluid pressure to simultaneously discharge matter from one nozzle and to create an inward suction action through the other.

7. An appliance having two nozzles with one mounted for swinging movements to permit it to be placed at either side of the other nozzle, and means operable by fluid pressure to simultaneously discharge matter from one nozzle and to create an inward suction action through the other.

8. The combination with a liquid vaporizing instrument, of an aspirator carried by said instrument and having a suction nozzle disposed at a side of the instrument nozzle and adjustable with respect thereto.

9. The combination with means having a discharge nozzle and operable to discharge liquid in vapor form therefrom, an aspirating means carried by said first means and having a nozzle which is swingingly adjustable to permit it to be placed at either side of the nozzle of said first means.

10. In an instrument of the class described, two receptacles, and fluid operated means operable to discharge matter from one receptacle and to create a suction action within the other receptacle.

11. In an instrument of the class described, two receptacles, and means operable by fluid pressure to discharge matter from one of said receptacles and to create a suction action within the other, said means having discharge and suction nozzles disposed in adjacent relation.

12. In an instrument of the class described, two receptacles, and means operable by fluid pressure to discharge matter from one of said receptacles and to create a suction action in the other, said means having relatively adjustable discharging and suction nozzles disposed in adjacent relation.

13. In an instrument of the class described, two receptacles, means connected to one of said receptacles and operated by fluid pressure to discharge liquid therefrom in vapor form, and means connected to the other of said receptacles and operated by fluid pressure to create a suction action therein, said vaporizing and suction means having a common source of fluid pressure supply.

14. In an instrument of the class described, two receptacles, means connected to one of said receptacles and operated by fluid pressure to discharge liquid therefrom in vapor form, and means connected to the other of said receptacles and operated by fluid pressure to create a suction action therein, said vaporizing and suction means having a common source of fluid pressure supply and having respective nozzles disposed in adjacent relation.

15. In an instrument of the class described, two receptacles, means connected to one of said receptacles and operated by fluid pressure to discharge liquid therefrom in vapor form, and means connected to the other of said receptacles and operated by fluid pressure to create a suction action therein, said vaporizing and suction means having a common source of fluid pressure supply and having respective nozzles disposed in adjacent relation and mounted for relative adjustment and for movements to reverse the relative positions thereof.

16. An instrument of the class described embodying a liquid vaporizing means and an aspirating means, both operated by fluid pressure and having a common source of fluid pressure supply, and means operable to stop the action of the vaporizing means without interfering with the action of the aspirating means.

17. In an instrument of the class described, fluid operated means for discharging a liquid in vapor form, said means having a passage in communication with a source of fluid pressure supply, and an aspirator having connection with said fluid passage and operated by fluid from said source of supply.

18. In an instrument of the class described, fluid operated means for discharging a liquid in vapor form and having a passage in communication with a source of air pressure supply, and an aspirator having a receptacle and having communication with said passage and operable by fluid pressure therein to create a suction action within said receptacle.

19. In an instrument of the class described, fluid operated means for discharg-

ing a liquid in vapor form and having a fluid pressure supply passage, a receptacle, separate from said means, an inlet tube leading into said receptacle, and means having communication with said fluid supply passage and operable by the passage of fluid under pressure therethrough and during an operation of said first means to create a suction action within said receptacle.

20. In an instrument of the class described, means having a receptacle and operated by fluid pressure to discharge liquid in vapor form from said receptacle, said means having a fluid pressure supply passage, a member carried by said means, a receptacle removably carried by said member, means providing communication between said fluid pressure supply passage and the atmosphere and also with the interior of said last named receptacle to create a suction within the receptacle when fluid is discharged through said last means to the atmosphere, and an inlet in communication with said receptacle.

21. The combination with fluid operated liquid vaporizing means, of aspirating means having connection with the source of fluid operating supply for said first means and operating when said first means is operated.

22. The combination with a fluid operated liquid vaporizing means having a head part and a discharge nozzle projecting therefrom, said head part having a fluid passage in communication with a source of fluid supply, means projecting from said head in communication with said passage and having a suction nozzle, said last means being operable by fluid pressure in said passage to effect a suction through its nozzle.

In testimony whereof I have hereunto signed my name to this specification.

THOMAS A. DE VILBISS.