Sept. 7, 1948. J. F. HUNTER 2,448,803

NASAL SPRAYER

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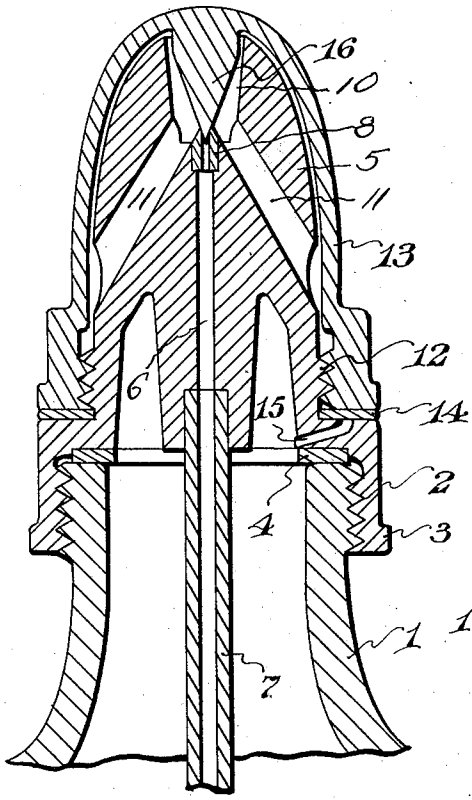


Fig. 1

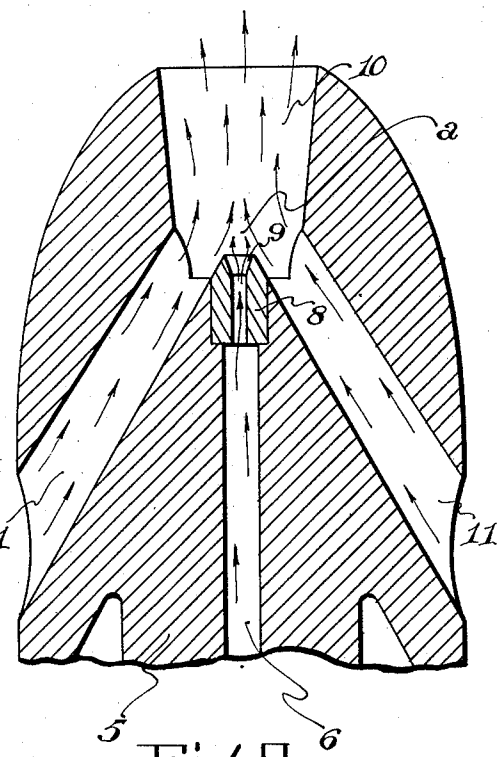


Fig. 2

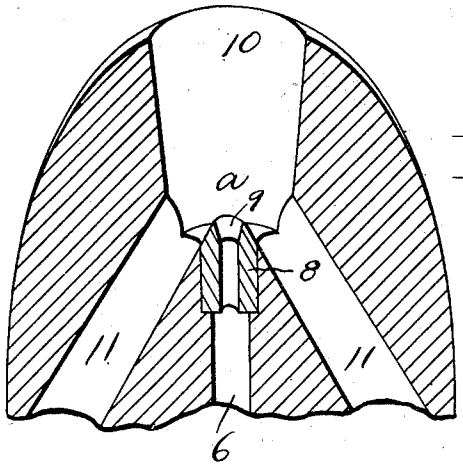


Fig. 3

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NASAL SPRAYER

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1 Claim. (Cl. 128—239)

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The invention relates to nasal sprayers and has for its object to provide a device of this kind wherein the spraying nozzle is detachably connected to a receptacle in which liquid may be placed, and the nozzle provided with a discharge orifice in a mixing chamber and between upwardly converging air passages, through which air passes to the mixing chamber when the user inhales, thereby creating a vacuum at the discharge nozzle, and breaking up the liquid into a fine spray.

A further object is to dispose the air passages at an acute angle to the axis of the orifice, and to constrict the upper ends of the air passages, thereby creating a maximum amount of vacuum at the discharge orifice.

A further object is to provide a closure for the nozzle having a downwardly extending needle valve, which extends through the mixing chamber and seats in the orifice to prevent leakage.

A further object is to outwardly taper the mixture chamber to increase the breaking up of the particles of liquid into a fine spray.

With the above and other objects in view the invention resides in the combination and arrangement of parts as hereinafter set forth, shown in the drawing, described and claimed, it being understood that changes in the precise embodiment of the invention may be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawing:

Figure 1 is a vertical transverse sectional view through the inhaling nozzle, showing the same applied to a receptacle, and the closure cap in position.

Figure 2 is a vertical transverse sectional view through the nozzle, showing the closure cap removed and the nozzle in condition for use.

Figure 3 is a view similar to Figure 2, but showing the device in perspective.

Referring to the drawing, the numeral 1 designates the neck of a bottle or receptacle, and threaded on said neck, at 2, is the threaded lower end 3 of the nozzle body, there being a gasket 4 for forming a pipe connection between the bottle neck and the nozzle.

The main body 5 of the nozzle is ogival shaped and is provided with an axial port 6, in the lower end of which port is secured in any suitable manner a capillary tube 7, which tube extends downwardly into the liquid to be sprayed.

Disposed in the upper end of the passage 6 is a bushing 8 having a flared discharge orifice 9 at its upper end, which allows the liquid to be discharged in a flared direction into the upwardly flared mixing chamber 10 of the nozzle. Extending upwardly and converging to the lower end of the mixing chamber 10, adjacent the orifice 9 are air ports 11, which are at an acute angle to the port 6 and preferably are of a reduced diameter adjacent the orifice 9 to create a maximum vacuum, at *a*, in the lower end of the mixing chamber 10. The nozzle is inserted in the nostril and the user inhales, and this action will cause an inrush of air through ports 11 to the lower end of the mixing chamber 10, and these converging air streams will create a vacuum, at *a*, which will suck liquid through the orifice 9 and break the same up into small particles, and this is further accentuated by upward flared shape of the mixing chamber 10.

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Threaded onto the nozzle body, at 12, is a removable cap 13, the lower end of which engages a gasket 14 and closes the vent 15 to the bottle chamber, thereby preventing leakage when the device is not in use. Depending from the upper end of the cap 13 is a needle valve 16, extending through the mixing chamber 10 and seats in the orifice 9, thereby preventing leakage when the device is not in use. Although the device has been shown attached to a bottle, it is obvious it could be attached to any kind of receptacle for use and carried in the pocket if desired. It will also be understood that different size nozzles may be used.

From the above it will be seen that a nasal sprayer is provided which is simple in construction, the parts reduced to a minimum, and the parts so shaped and positioned whereby a maximum vacuum is created thereby breaking up the liquid into a fine spray.

The invention having been set forth, what is claimed as new and useful is:

A nasal spray nozzle comprising a body member adapted to be placed on a receptacle, a discharge port through said nozzle, a discharge orifice above said discharge port, the upper end of said nozzle above the orifice having an upwardly flared mixing chamber, upwardly converging gradually diminishing air ports at opposite sides of the discharge port and terminating in the lower end of the mixing chamber adjacent the discharge orifice, an annular shoulder carried by the lower end of the nozzle, an air vent extending through said shoulder, a gasket on said shoulder normally covering the air vent, a closure cap for said nozzle threaded on the nozzle above the shoulder and cooperating with the gasket, said closure cap having a depending tapered valve extending through the mixing chamber and cooper-

ating with the orifice for closing the orifice and preventing leakage when the cap is threaded onto the nozzle.

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