Aug. 23, 1932. J. B. SCHMITT 1,873,337

SPRAYING DEVICE

Filed June 20, 1929

Fig. 1

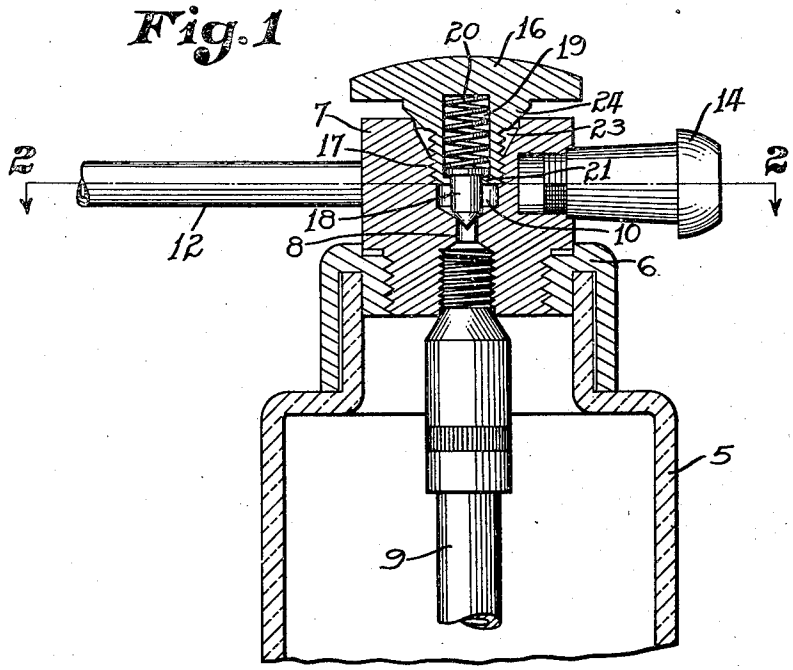


Fig. 2

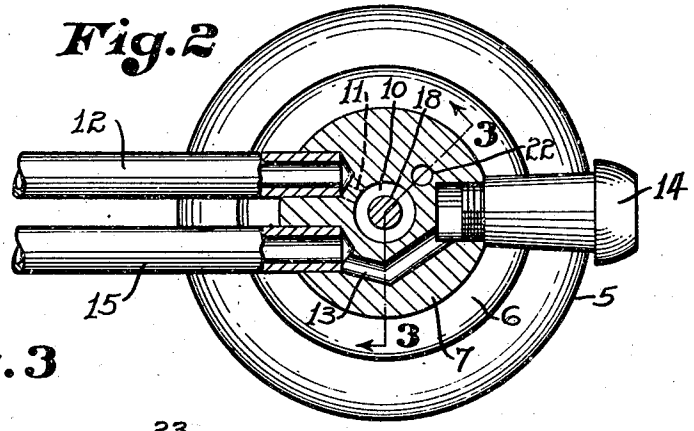
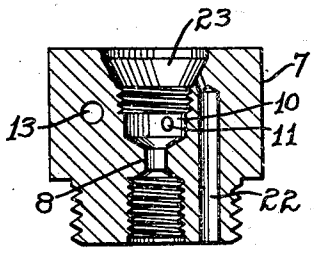


Fig. 3



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UNITED STATES PATENT OFFICE

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SPRAYING DEVICE

Application filed June 20, 1929. Serial No. 372,258.

This invention relates to a spraying device, and especially to one of the type adapted to be used in spraying medicinal preparations, perfume or the like. These are usually operated by squeezing a rubber bulb or the like, and an air vent is provided in the top of the receptacle containing the liquid to be sprayed, so that normal atmospheric pressure is always maintained within the receptacle.

The object of the present invention, generally stated, is to provide simple and improved means for effectively closing the liquid passageway and the air vent simultaneously by the operation of a single adjusting member, so that the receptacle containing the liquid may be packed for traveling or left untouched for an indefinite time without any liquid escaping or evaporating, notwithstanding the fact that such closure may necessitate the independent and simultaneous seating of two valves or other closure members.

The invention will be more fully explained in connection with the accompanying drawing, in which—

Figure 1 is a vertical sectional view of the invention.

Figure 2 is a horizontal section taken substantially on the line 2—2 of Figure 1.

Figure 3 is a sectional view taken on the line 3—3 of Figure 2.

As illustrated in the drawing, which shows one embodiment of the invention, the spraying device is associated with a bottle or similar receptacle 5 having at its upper end a collar 6, with which a top member 7 has a threaded connection. The member 7 has a central bore 8 through which the liquid is adapted to pass from a tube 9 extending from a point near the bottom of the receptacle. At the upper end of the bore 8 there is a small chamber 10 from which a discharge port 11 leads to a liquid discharge conduit 12, the outer end of which may be connected to a spray head. The member 7 also has an air passageway 13 at one side of the liquid passageway and communicating at one end with an inlet nipple 14 and at the other end to an air discharge tube 15, the outer end of which may be connected to the spray nozzle. For supplying air under pressure, a rubber bulb may be connected with the nipple 14.

The top member 7 is provide with a head 16, which has an adjustable screw threaded connection therewith as shown at 17. A valve-like member 18 is carried at the lower end of the head 16 and is formed with a tapered seating portion adapted to engage an annular seat at the outlet end of the bore 8. The member 18 is formed with a head disposed within a cylindrical cavity 19 formed in the head 16 and a coil spring 20 within this cavity is adapted to urge the member 18 downwardly so that the head of this member engages an inturned flange 21 at the lower end of the head 16. Whenever it is desired to close the liquid outlet passage 8, the head 16 is screwed downwardly until the member 18 is caused to seat by the pressure of the spring 20. When the head 16 is screwed upwardly, however, the flange 21 engages the head of the valve member 18 and positively lifts it from its seat and allows liquid to flow from the receptacle under the influence of the air which is forced through the spray head.

In order to maintain atmospheric pressure within the receptacle 5 at all times, an air vent 22 is provide in the member 7, connecting the interior of the receptacle with an annular chamber 23, which is separated from the liquid chamber 10 by the threaded portion of the head 16. In order that the air vent 22 may be closed, as well as the liquid outlet 8, when the spraying device is packed for traveling or is left untouched for a considerable time, the head 16 is formed with a tapered seating portion 24 which is adapted to seat against the upper rim of the chamber 23.

The top 7 is so constructed that when the head 16 is screwed downwardly, the valve member 18 is first seated. Upon further downward movement of the head 16, the spring 20 allows the valve member 18 to yield until the tapered portion 24 of the head is seated against the rim of the chamber 23, and the air vent, as well as the liquid outlet from the receptacle, is tightly closed. By this construction both closures may be effected by

a single adjustment, and no great precision need be observed in gaging the distance between the two seats or the tapered surfaces engaging the same.

Although I have shown and described specifically one form in which the invention may be embodied, it is apparent that the same may be considerably modified, the essential feature being the provision of a stopper having two separate seating portions to engage different seats, one of said portions or one of the seats being yieldable.

What I claim is:

1. A receptacle top having a bore threaded for a portion of its length, said bore being formed with two annular seats coaxial with the bore and facing in the same direction and spaced from the threaded portion on opposite sides thereof, said top being formed with two passageways intersecting the bore at opposite sides of the threaded portion, a head having a threaded shank engaging the threaded portion of said bore and having an integral seating portion cooperating with one of said seats, a valve carried by said head, and resilient means for urging said valve into engagement with the other of said seats as said integral seating portion is moved into engagement with its seat.

2. A receptacle top having a bore threaded for a portion of its length, said bore being formed with two annular seats coaxial with the bore and facing in the same direction and spaced from the threaded portion on opposite sides thereof, said top being formed with two passageways intersecting the bore at opposite sides of the threaded portion, a head having a threaded shank engaging the threaded portion of said bore and having a shoulder adapted to engage one of said seats as the head is screwed down, a valve carried by said head, resilient means for urging said valve into engagement with the other of said seats as said shoulder is moved into engagement with its seat, and means on the head for positively withdrawing said valve from its seat as the head and its shoulder is adjusted away from its seat.

3. A receptacle top having a bore threaded for a portion of its length, said bore being formed with two annular seats coaxial with the bore and facing in the some direction and spaced from the threaded portion on opposite sides thereof, said top being formed with two passageways intersecting the bore at opposite sides of the threaded portion, a closure having engagement with the threaded portion of said bore, said closure being formed with a recess and with a lateral seating surface engageable with one of said seats, a valve having a head within said recess, a spring within said recess bearing against said head to urge the valve against the other seat as said closure is moved to bring its lateral seating surface into engagement with its seat, and a flange at the side of the recess engageable with said head to withdraw the valve from its seat as the screw threaded closure is withdrawn.

4. A receptacle top having a bore threaded for a portion of its length and formed with two internal annular seats coaxial with the bore and spaced from the threaded portion on opposite sides thereof, a closure having a threaded connection with said bore between said seats and having seating portions engageable with the respective seats, one of said seating portions being self adjustable with respect to the other, said top having a liquid passageway leading upwardly through the lower seat and thence laterally from the top, an air vent opening between the upper seat and the screw threaded connection, and a compressed air passageway extending laterally through said top at one side of the liquid passageway and air vent.

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

JOY B. SCHMITT.