No. 608,391. Patented Aug. 2, 1898.

F. M. GROPLEY & E. H. PETERS.

SPRAYER.

(No Model.) (Application filed Mar. 11, 1898.)

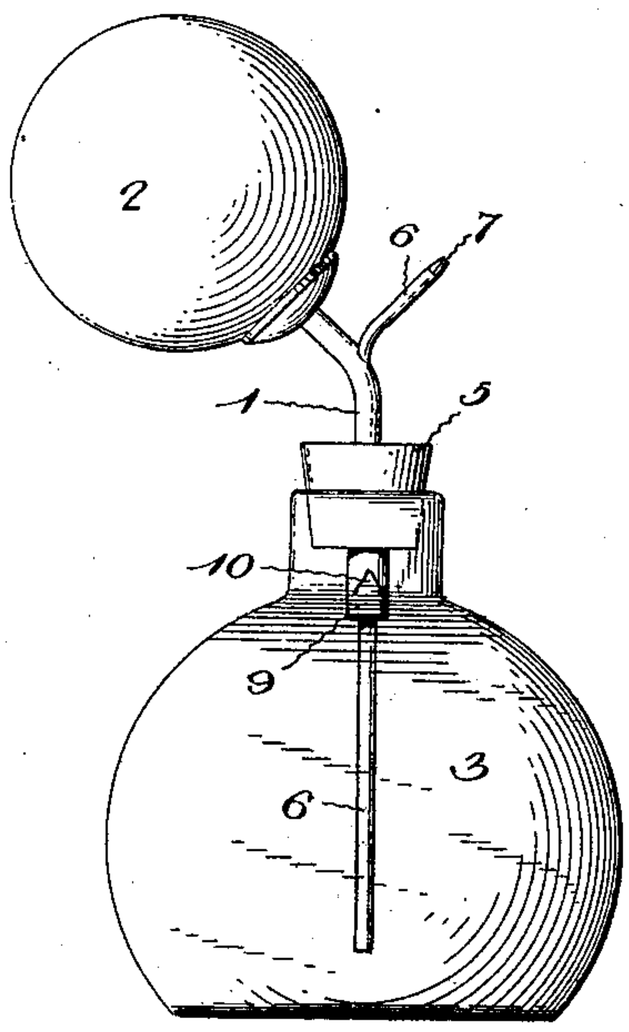

Fig. 1.

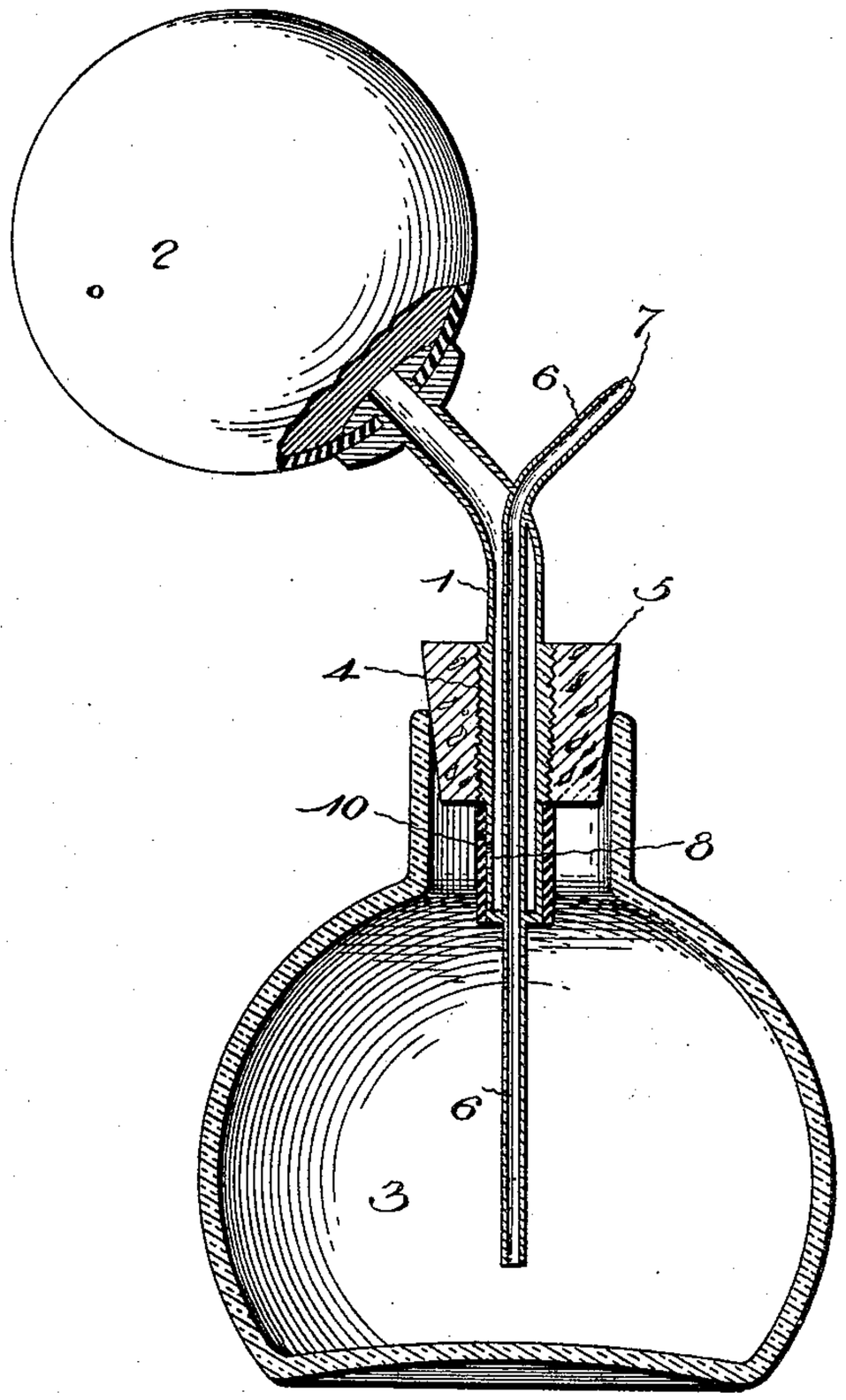

Fig. 2.

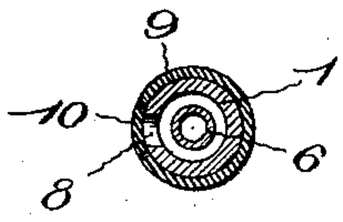

Fig. 3.

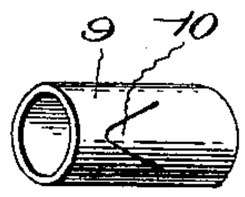

Fig. 4.

Witnesses
J. Caulfield Underwell,
[illegible]

Frank M. Gropley and
Edward H. Peters, Inventors.
By their Attorneys,
C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

FRANK M. GROPLEY AND EDWARD H. PETERS, OF CINCINNATI, OHIO.

SPRAYER.

SPECIFICATION forming part of Letters Patent No. 608,391, dated August 2, 1898.

Application filed March 11, 1898. Serial No. 673,507. (No model.)

To all whom it may concern:

Be it known that we, FRANK M. GROPLEY and EDWARD H. PETERS, citizens of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Sprayer, of which the following is a specification.

The invention relates to sprayers, and particularly to a spraying attachment for perfumery and other bottles; and the object in view is to provide an improved construction of conveyers whereby backward pressure into the compressible bulb and evaporation through the same channel may be prevented.

Further objects and advantages of this invention will appear in the following description and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a side view of a spraying device constructed in accordance with this invention applied in the operative position to a perfumery-bottle. Fig. 2 is a sectional view of the same. Fig. 3 is a detail transverse section of the air-tube in the plane of the feed-opening and check-valve. Fig. 4 is a detail view of the valve-sleeve detached.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

In the attachment embodying this invention, 1 designates an air-tube, with which communicates a compressible bulb 2, the lower end of said air-tube, which in operation is arranged within the bottle or other receptacle 3, being closed. At an intermediate point the air-tube is provided with a threaded enlargement 4, adapted to be fitted in a stopper 5, of cork, rubber, or other similar material, and extending through the air-tube and permanently attached thereto is a discharge-tube 6, of smaller diameter than the air-tube and communicating at its upper end with a spray-nozzle 7, which projects through the wall of the air-tube. Obviously the discharge or spray tube is permanently fixed to and extends through an opening in the otherwise-closed inner extremity of the air-tube, whereby in order to apply the attachment to a stopper it is simply necessary to perforate the latter and insert the tube longitudinally, the threading of the enlarged portion of the air-tube into the opening of the stopper serving to properly connect the parts.

The air-tube is provided between the threaded enlargement and its inner extremity with a lateral feed-opening 8, and fitted upon this inner or inclosed portion of the air-tube is a contractile sleeve 9, consisting of a rubber band or its equivalent, provided with a V-shaped flap 10, constituting a check-valve, which is arranged in operative relation with the feed-opening and is adapted to allow the introduction of air from the bulb and prevent back pressure into the latter. Hence in operation, while pressure may be applied to the surface of the contents of a bottle or other receptacle by the manual compression of the bulb, to force the liquid contents through the discharge-tube and nozzle, as in the ordinary practice, any back pressure from the interior of the receptacle into the bulb is prevented, and hence the liquid contents of the receptacle are excluded from the bulb, and at the same time the evaporation of the contents of the receptacle through the same channel is rendered impossible.

It will be seen that inasmuch as the spray or discharge tube is arranged within the contour of the air-tube and is of smaller diameter than the same the application of the attachment to a stopper is facilitated, and hence the stopper may be renewed or the sprayer may be applied to different receptacles by the consumer.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described our invention, what we claim is—

1. A sprayer having an air-tube in communication with a compressible bulb, and provided in its inclosed portion with a lateral feed-opening, and a contractile sleeve fitted upon said tube and having a flap-valve to control the feed-opening, substantially as specified.

2. A sprayer having an air-tube in communication with a compressible bulb, and provided with a closed inner end and, at an intermediate point, with means for attachment to

a stopper, said tube, between its inner end and the stopper-engaging device, being provided with a lateral feed-opening, and a contractile sleeve fitted upon said tube and having a flap-valve to control the feed-opening, substantially as specified.

3. A sprayer having an air-tube in communication with a compressible bulb, and provided at an intermediate point with a threaded enlargement for engagement with a stopper, and also provided in its side wall, between said threaded enlargement and its inner end, with a valve-controlled feed-opening, substantially as specified.

4. A sprayer having an air-tube in communication with a compressible bulb, and provided at an intermediate point with a threaded enlargement, and a spray or discharge tube of smaller diameter than and extending through the air-tube, and in communication at its outer end with a spray-nozzle, said air-tube being provided below said threaded enlargement with a lateral valve-controlled feed-opening, substantially as specified.

5. A sprayer having an air-tube in communication with a compressible bulb, a discharge-tube in communication with a discharge-nozzle carried by the air-tube, said air-tube having a lateral feed-opening, and a sleeve removably fitted upon the inclosed portion of the air-tube and provided with a flap forming a valve for controlling said feed-opening, substantially as specified.

6. A sprayer having an air-tube in communication with a compressible bulb, and provided in its inclosed portion with a lateral feed-opening, a discharge-tube in communication with a spray-nozzle carried by the air-tube, and a contractile sleeve fitted upon the inclosed portion of the air-tube and provided with a flap forming a valve for controlling said feed-opening, substantially as specified.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

FRANK M. GROPLEY.
EDWARD H. PETERS.

Witnesses:
WILHELMINA ANDERS,
HENRY GROTIUS.