C. WEED.

Syringe Apparatus.

No. 206,653. Patented July 30, 1878.

Fig: 1.

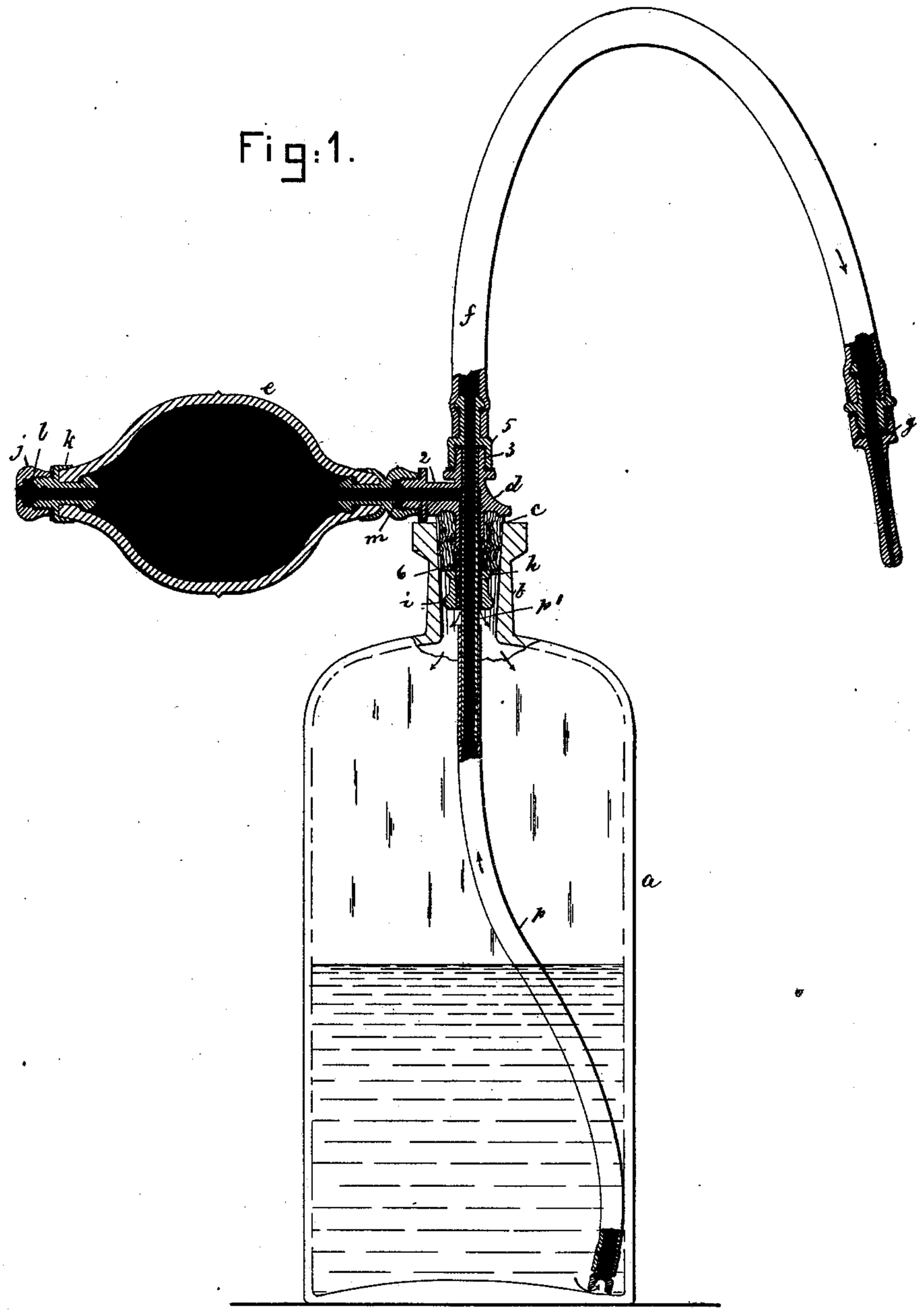

Fig: 2.

Witnesses.

L. F. Connor.

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by Crosby & Gregory Attys

UNITED STATES PATENT OFFICE.

CHARLES WEED, OF CHARLESTOWN, ASSIGNOR TO DAVIDSON RUBBER COMPANY, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN SYRINGE APPARATUS.

Specification forming part of Letters Patent No. **206,653,** dated July 30, 1878; application filed May 3, 1878.

To all whom it may concern:

Be it known that I, CHARLES WEED, of Charlestown, county of Middlesex, State of Massachusetts, have invented an Improvement in Syringe Apparatus, of which the following is a specification:

This invention relates to improvements in syringes; and consists in a syringe composed of a liquid-holding vessel, a stopper provided with projections, as hereinafter described, an elastic bulb, an air-tube in communication with the bulb, through which, by the bulb, air is forced into the vessel and liquid-conducting tubes or pipes, the air forced into the vessel above the liquid therein acting upon the surface of the liquid with sufficient power to cause the liquid to pass from the vessel out through the flexible discharging-pipe.

Figure 1 represents, in side elevation and partial section, a syringe apparatus constructed in accordance with my invention. Fig. 2 represents, in detail, the connection between the bulb and stopper, to illustrate one method of permitting the escape of the compressed air when it is desired to check the flow of the liquid.

The vessel *a*, as shown, represents one ordinary form of glass bottle. Such vessel may be of any desirable shape or material so long as it has an opening at its neck, *b*, of proper shape to receive tightly the gasket *c* attached to the metallic stopper *d*, composed of projections 2, 3, and 6.

The projections 2 3 are preferably screw-threaded, the former to receive the metallic portion 4 at one end of the bulb *e*, and the other the metallic portion 5, to which is attached the flexible discharging-tube *f*, provided at the end with a suitable discharging-piece, *g*, and in this present instance the projection 6 is also screw-threaded to receive the washer *h* and nut *i*, to permit them to be moved over the projection to expand the gasket *c*, of cork, rubber, or other flexible or expansive material.

At the outer end of the bulb *e* are inlet devices *j k*, between which is located a valve, *l*, and at the opposite end of the bulb is a check-valve, *m*, to prevent air forced from the bulb into the passage formed in projection 2, and then down into the vessel through the projection or tube 6, from returning into the bulb. This check-valve permits the air to be forced into the vessel above the liquid therein with such force as to drive the liquid from the vessel up and through the liquid-conducting pipe *p*, through the metallic portion *p'*, connected with the projecting portion 3, and thence out through the discharging-pipe *f*.

It will be noticed that the air-tube or projection 6 and the pipe *p'* extend through the same opening at or near the center of the gasket.

It is obvious that the stopper and its attached bulb and pipes may be used in connection with any usual bottle, and that the syringe may be easily and conveniently used in bed or otherwise.

The screw-threaded portion of the projection 2 is provided with a series of openings or air-outlets, 7, (see Fig. 2,) so that when the portion 4 and the bulb are rotated and moved backward over such projection 2, the holes 7 will be uncovered, and the air compressed in the vessel will be permitted to escape.

By this mechanism and the check-valve it is possible to so thoroughly compress the air, and force it upon the surface of the liquid as to cause the liquid to flow from the discharging-piece *g* in a uniform steady stream.

Instead of making the stopper of metal it may be made of hard rubber or other suitable material.

I claim—

1. In a syringe apparatus, the stopper *d*, provided with projections 2 3 6 and with a liquid-receiving tube having a connected tube, *p*, combined with an elastic bulb, a check-valve, and a flexible liquid-discharging pipe, *f*, all substantially as and for the purpose described.

2. As an improved article of manufacture, a syringe apparatus consisting of the following elements, viz: a bottle, an elastic bulb provided with an air-inlet, a check-valve to prevent the passage of air from the bottle back into the bulb, and a stopper provided with a connected flexible discharging-pipe and also with a liquid-receiving tube, and with an opening communicating with the interior of the bottle and of means to close the said

opening while the liquid passes from the discharging-pipe and to uncover the said opening to permit the escape of air compressed above the surface of the liquid in the bottle to check the flow of liquid therefrom, substantially as described.

3. The combination of the bulb and its portion 4 with the screw-threaded portion 2 of the stopper, provided with openings 7, to operate substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES WEED.

Witnesses:
G. W. GREGORY,
N. E. WHITNEY.