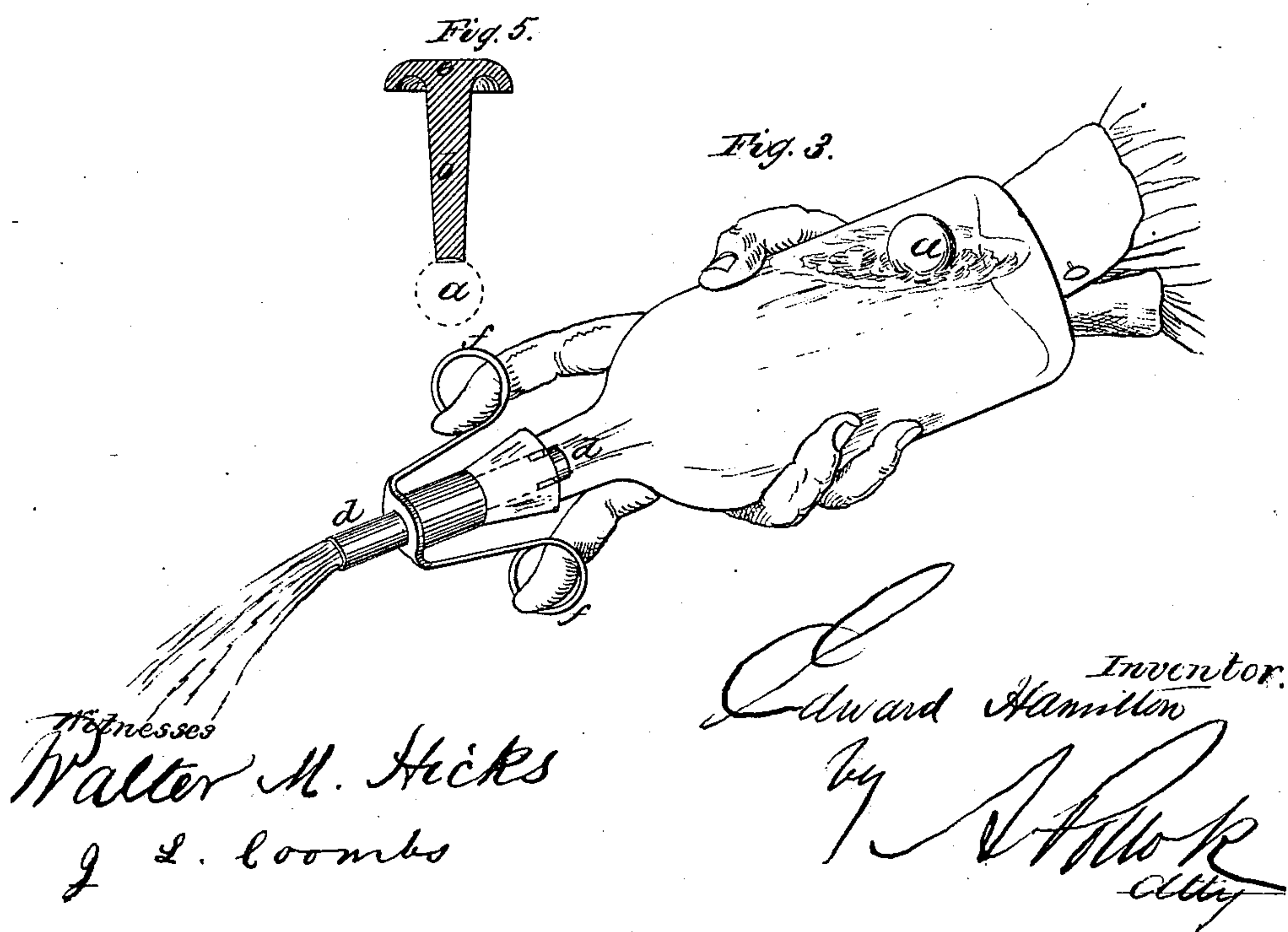
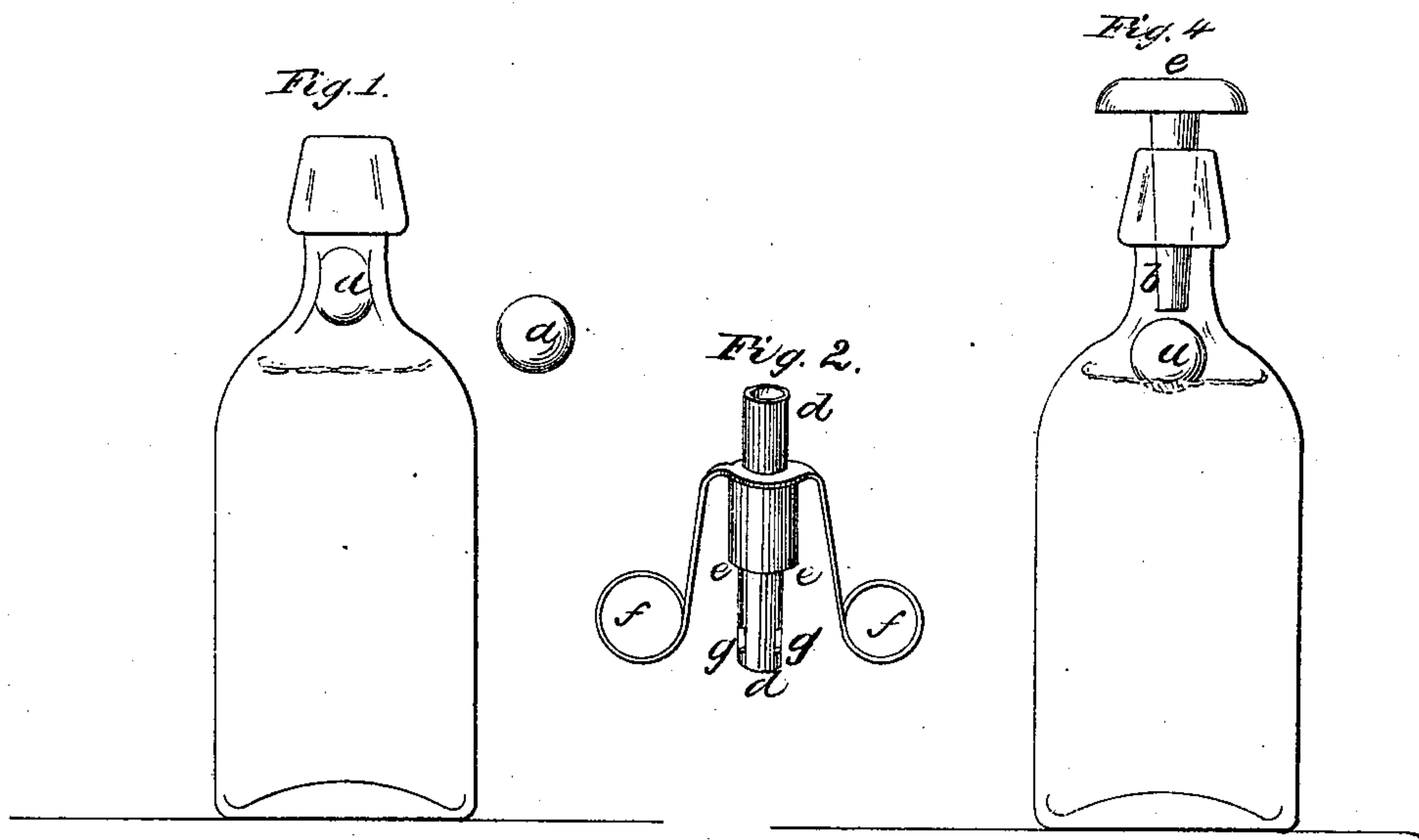


*E. Hamilton,*  
*Bottle Stopper,*  
*N<sup>o</sup> 41,067.* *Patented Jan. 5, 1864.*





# UNITED STATES PATENT OFFICE.

EDWARD HAMILTON, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND HENRY B. GOODYEAR.

## IMPROVEMENT IN CLOSING BOTTLES.

Specification forming part of Letters Patent No. 41,067, dated January 5, 1864.

*To all whom it may concern:*

Be it known that I, EDWARD HAMILTON, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Stopping Bottles Containing or Designed to Contain Liquids Charged with Gases; and I do hereby declare that the following is a full, clear, and exact description of the same.

To reduce the cost and labor attending the bottling and corking of soda-water, or other liquid charged with gases, many stopping contrivances were devised, in some of which the expansive force of the gases is made use of to act against a plug or stopper to aid a spring with which it is combined to close its orifice of the bottle from the inside thereof. These contrivances are of costly construction, and in all or nearly all instances a fixture on the bottles, which is a source of much inconvenience in cleansing them after use.

My invention relates to stoppers which are acted upon from within the bottle by the pressure of the gases, its object being to dispense with springs and other contrivances to hold the plug in the proper position to be acted upon by the gases from within; also to permanently connect with the bottle its stopping device, yet to afford no impediment to cleansing or rinsing the bottle. I have accomplished this by a simple inexpensive device, which is self-operating in its nature, neither liable to corrode nor interfering with the washing of the bottle, although permanently connected therewith; and my invention consists in the employment of a ball or stopper made of a light elastic substance forced into the bottle.

To enable others to make and use my invention, I shall now proceed to describe the manner in which the same is or may be carried into effect; and to more fully illustrate my invention I shall describe it applied to an ordinary soda-water bottle shown in Figures 1, 3, and 4.

I use a ball made of vulcanized india-rubber in molds. The composition should be such as will produce a light, spongy texture throughout the interior of the ball, while upon its outside a smooth skin will be formed, preventing water or gases from penetrating the

interior of the ball, and thereby from escaping through the ball. The method of compounding the rubber, sulphur, and other ingredients used in the manufacture of these balls to combine lightness and imperviousness is familiar to those acquainted with the manufacture of india-rubber goods. I deem it proper to mention that the ball should be lighter than water, so as to float on its surface. These balls are made of a diameter somewhat larger than the inside diameter of the neck of the bottle, so that a pressure greater than that exerted by the gases of the soda-water shall be required to force them into the bottle. On charging or filling the bottle with soda-water the ball *a* will, by the expansion of the gases, be forced up the neck and wedge against the conical seat, as shown in Fig. 1. The bottle will then remain stopped for any desired length of time, the stopping being the more effectual the greater the tendency of the gases to escape—*i. e.*, the greater the pressure against the ball. To open the bottle for the purpose of using the contents thereof, it is only necessary to push the ball down the throat of the bottle. The moment the ball is off its seat the gas that shall have been kept in place escapes, and the ball, now surrounded upon all sides by the same pressure, will fall, and remain floating on the surface of the water. (See Figs. 3 and 4.) To do this I use a little wooden plunger (shown in Figs. 4 and 5) composed of a stem, *b*, of the length of the neck of the bottle, and of a cap, *c*, grooved underneath to fit the rim of the neck of the bottle, so that on forcing in the ball the escape of gases may be checked until a tumbler is ready to receive the water.

Another device for opening the bottle stopped in accordance with my invention is represented in Figs. 2 and 3. It consists of a tube, *d*, provided with shoulder *e*, lined or not with rubber, and made to fit the neck of the bottle. Rings *f* extend laterally and downward, so as to be easily seized by two fingers of the hand holding the bottle, as shown in Fig. 3. At the lower end the tube is perforated to allow of the escape of the gases when the end of the tube rests on and presses the rubber ball.

The operation of this device will be under-



stood from the drawings. I would observe that neither of these devices are essential to the operation of my invention. Any stick, rod, or any instrument whatsoever with which the ball may be reached and pressed down into the bottle will answer the purpose. If the neck of the bottle be large enough to admit of the introduction of a finger, no instrument is required to open the bottle.

Having thus fully described my invention, what I claim is—

1. The method of stopping bottles containing liquids charged with gases by the employment, in connection with a bottle, of a ball or other stopping-plug made of a light elastic substance impervious to water and gas, so that the gases within the bottle may, without the aid of springs or other mechanical contrivances, force the ball or plug up the neck of the bottle, and maintain it in position her-

metically to close the bottle, substantially as herein shown and described.

2. As a new article of manufacture, the herein-described self-stopping bottle, the same consisting of a bottle containing a ball or plug of requisite shape made of an elastic and light substance, but impervious to liquid or gaseous fluids.

3. The combination of a bottle with an elastic ball of such diameter in relation to that of the neck of the bottle as that the force required to introduce the ball into the bottle from without shall exceed that exerted by the gases from within.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

Witnesses:

E. HAMILTON.

A. POLLOK,

JOHN S. HOLLINGSHEAD.