

(No Model.)

E. A. FELLOWS.

MEANS FOR CLOSING THE OPENINGS IN RUBBER BOTTLES AND
OTHER SIMILAR RUBBER ARTICLES.

No. 321,491.

Patented July 7, 18

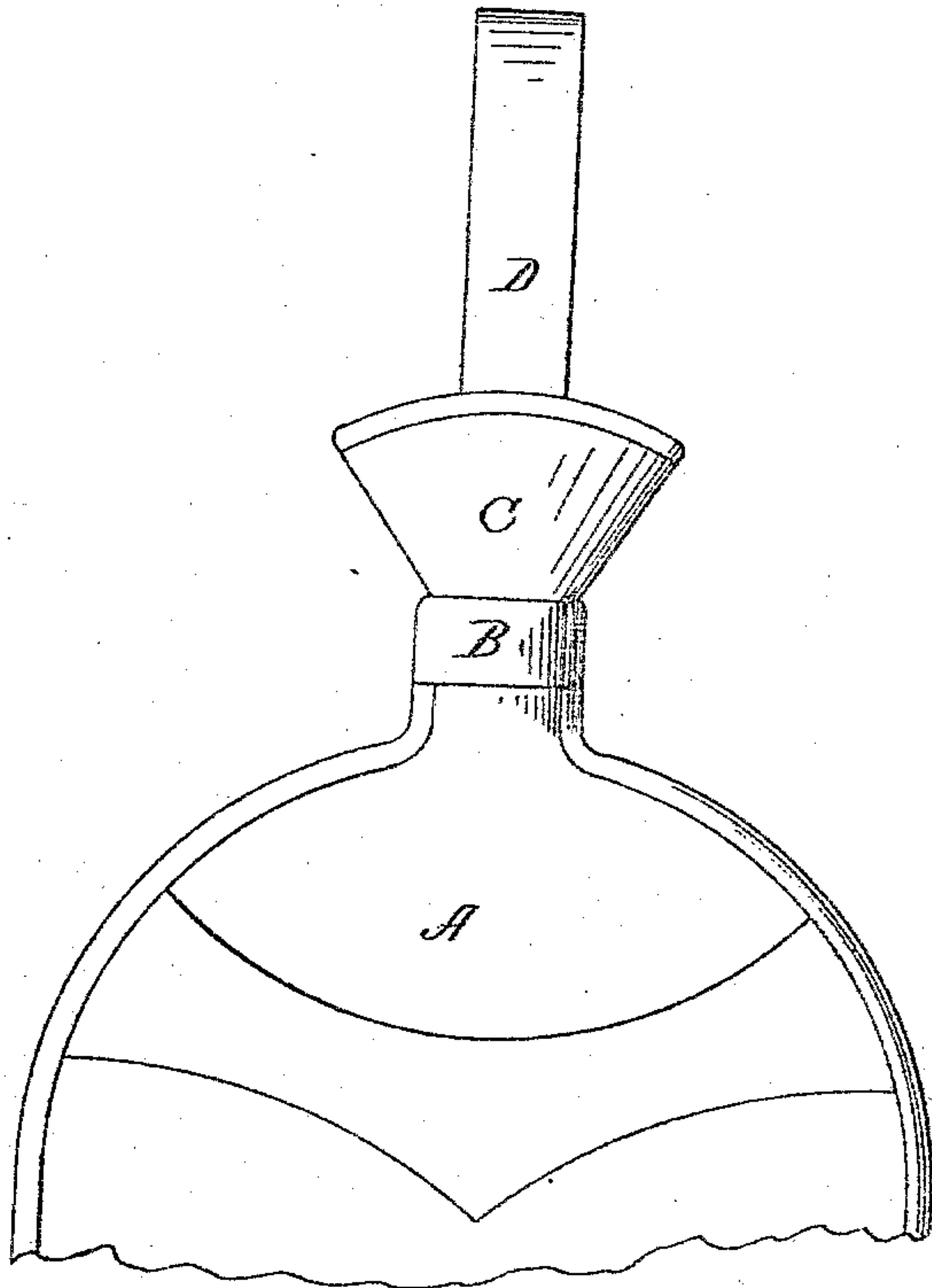


Fig. 1.

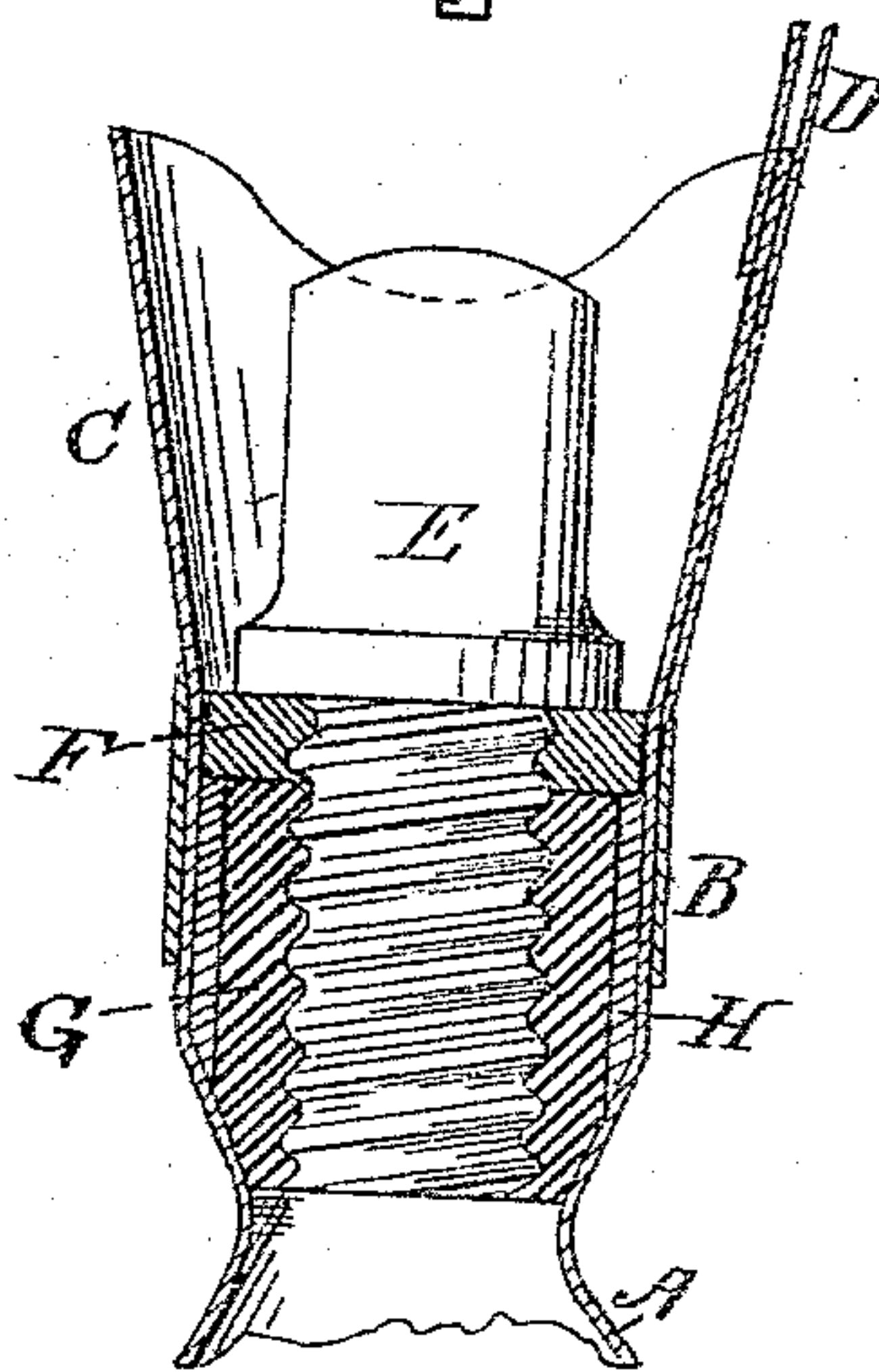


Fig. 2.

WITNESSES
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UNITED STATES PATENT OFFICE

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MEANS FOR CLOSING THE OPENINGS IN RUBBER BOTTLES AND OTHER SIMILAR RUBBER ARTICLES.

SPECIFICATION forming part of Letters Patent No. 321,491, dated July 7, 1885.

Application filed October 31, 1884. (No model.)

To all whom it may concern:

Be it known that I, EDWARD A. FELLOWS, a citizen of the United States, residing at Reading, in the county of Middlesex and Commonwealth of Massachusetts, have invented a new and useful Improvement in the Means for Closing the Openings in India-Rubber Bottles and Other Similar Articles Made of India-Rubber, such as air-cushions, syringes, life-preservers, &c., of which the following is a specification.

My invention relates to the form, construction, and material of the neck or opening of an india-rubber bottle, or other similar article made of india-rubber, and of a plug or stopple for closing such opening. The stopple and neck of the bottle adjacent thereto are both made of hard inelastic india-rubber composed, preferably, of plumbago, sulphur, and rubber, in the proportion of four pounds of plumbago, one pound of Para rubber, and one ounce of sulphur.

Heretofore in making india-rubber bottles and other similar articles of india-rubber, in which there is an opening to be closed tightly when the article is in use, a tube or bushing of metal, with a screw-thread either on the inside to receive a screw-plug, or on the outside to be covered with a cap with a screw-thread on the inside of it, has been inserted in the rubber neck or opening. The objection to this method is that it is almost impossible to join the rubber and metal securely together, and the tendency of the parts to become loose, in consequence of the softness of the metal used, makes the joints imperfect. The neck or opening and the stopple have also both been made of soft vulcanized rubber, which is flexible, with more or less elasticity. This latter method is objectionable, as a flexible stopple is not easily inserted in or removed from a flexible neck or opening, and the joint in this case also is not always perfect. I do not use in my invention any metal tube or bushing, nor do I make either the neck or stopple of soft vulcanized rubber.

In the accompanying drawings, Figure 1 is a perspective view of the neck of my improved india-rubber bottle. Fig. 2 is a sectional view of the neck or opening of the bottle with the stopple inserted therein.

A represents the bottle itself; B, a strength-

ening-band about the neck of the bottle; C, the tunnel of the bottle; D, a strap for carrying or suspending the same; E, the stopple or plug of hard inelastic india-rubber; F, a soft rubber ring or washer adjusted and fitted to the top of the neck; G, the neck or opening of hard inelastic india-rubber. H is a rubber covering adjusted and fitted to the neck or collar.

The improved neck or opening of my rubber bottle I make by molding from the compound above described, when it is in the form of sheets and unvulcanized, properly shaping it upon a screw.

I have found by experiment a more perfect union is attained between the hard-rubber collar, as I make it, and the soft rubber of the bottle, if before I place the hard rubber collar in its position in the bottle, as shown, I surround it by a nearly pure coating of rubber. I do this by placing the rubber covering around the hard-rubber collar, when both are preferably slightly warm, and then subject the two, so joined, with a molding-screw in it, to a heat of sufficient temperature to just semi-cure the outside covering and the neck within. I find that in this way the outside covering is joined by partial vulcanization, so that the two adhere firmly together. I then fit and cement to the top of the hard-rubber neck a washer of soft uncured rubber. Finally, the hard-rubber neck, so prepared, is cemented within the neck of the bottle, which is as yet uncured, in the position as shown, and the whole is then vulcanized or cured thoroughly.

The stopple is made of the same compound as the hard-rubber neck, being rolled up and shaped in the pattern desired in a mold, and while in the mold is subjected to heat to thoroughly vulcanize and cure it.

I am thus enabled to use a collar or neck and stopple, both having firm screw-threads, and while I obtain the well-known advantages from their positiveness in their mechanical action, I do away with the disadvantages peculiar to stoppers as generally made out of hard materials.

The compound out of which I make my improved collar and stopple has a special value for its particular purpose on account of one of its constituent parts—plumbago—being a lu-

bricator. The collar and stopple could be made of hard rubber—that is, half sulphur and half rubber—but they are cheaper and far better made as described.

5 The soft-rubber washer, which I place on top of the collar against which the stopple presses, allows the plug to exactly and tightly fit itself to the collar, and prevents any possibility either of leakage or that the plug should
10 become loosened.

I am aware that heretofore a stopper with a solid core surrounded by soft rubber, in which a screw-thread is formed, has been used in connection with a corresponding internal
15 screw of hard material.

I am also aware that it is old to use a stopper with a screw-thread formed of hard material, in connection with a collar secured on the outside of the bottle-neck, and provided
20 with an internal elastic screw-thread.

In my invention both the stopper and the collar or the neck of the bottle are formed of hard inelastic india-rubber made out of the compound, as described, and are, by reason of
25 the manner in and material out of which they are made, perfect in their action. It will be also noticed that the neck or collar and all the parts are formed into one integral whole. As is common in closing bottles and articles
30 of like nature, I could reverse the male and female parts of the joints, so that I could have

the screw-threads on the outside of the neck of the bottle and a cap to screw on over the end of the neck.

What I claim, and desire to secure by Letters Patent, is— 35

1. An india-rubber bottle or similar article, with its neck or opening provided with a collar vulcanized thereon, having an inelastic screw-thread of hard rubber, in combination
40 with a stopple or plug having a corresponding inelastic screw-thread, substantially as described.

2. An india-rubber bottle or similar article having in its neck the hard inelastic rubber
45 collar provided with a soft-rubber washer vulcanized thereon, in combination with a stopper or plug of hard inelastic rubber, substantially as described.

3. An india-rubber bottle or similar article
50 of soft rubber, with a neck provided with a hard inelastic rubber collar having a soft-rubber covering and washer all vulcanized so as to be integral with each other, substantially as described. 55

In witness whereof I have hereunto set my hand.

EDWARD A. FELLOWS.

Witnesses:

WM. B. H. DOWSE,
L. BACON.