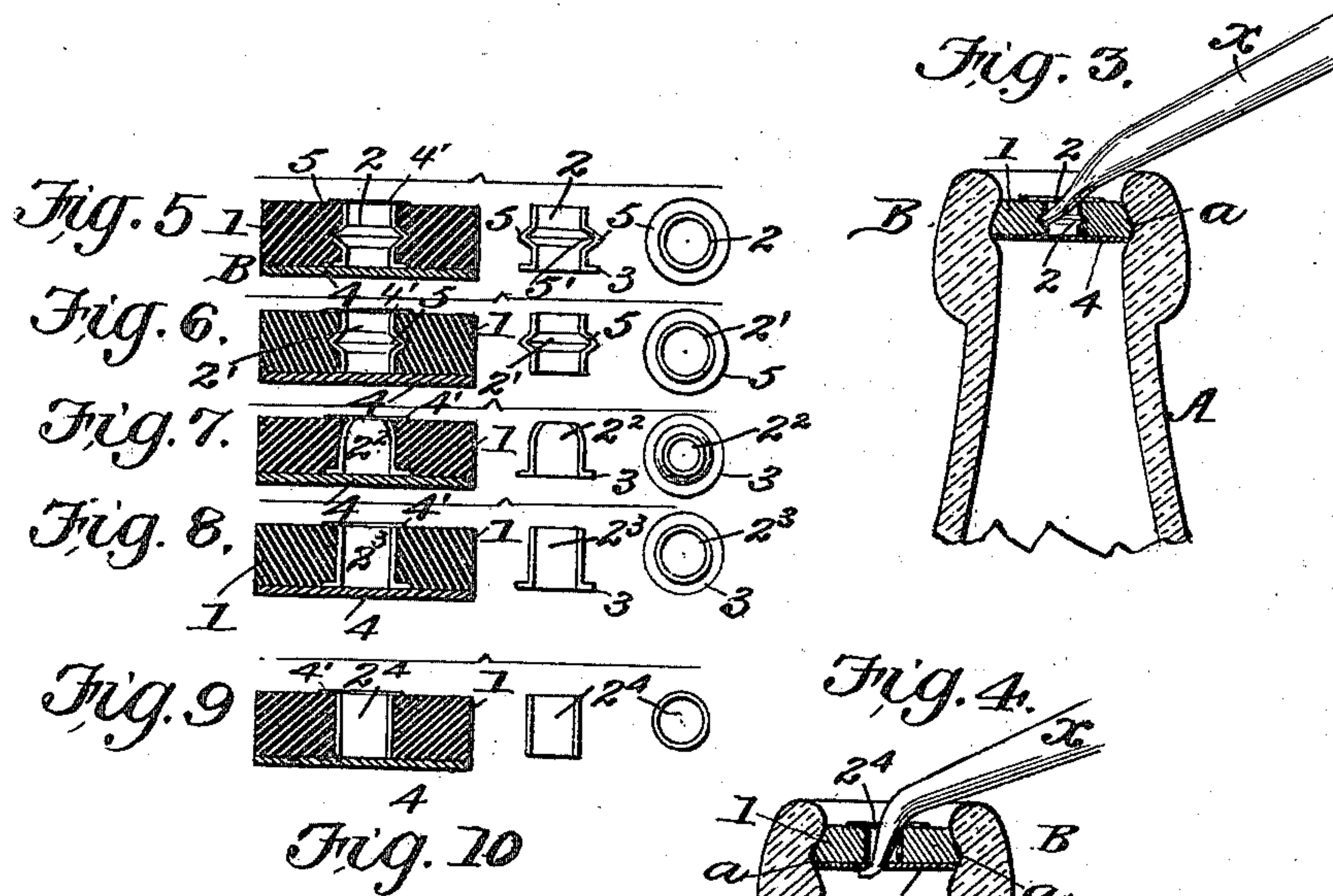
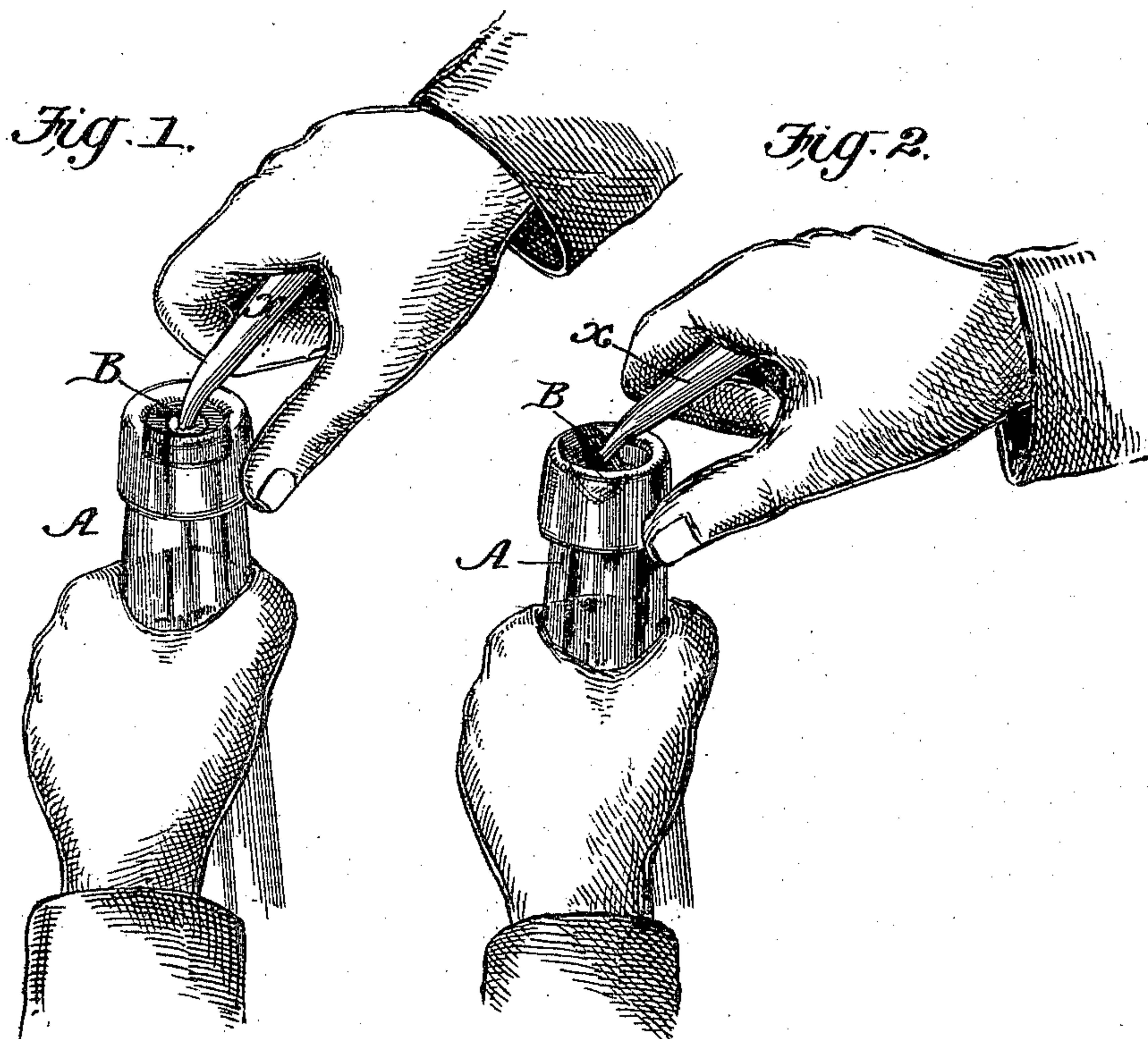


(No Model.)

A. L. BERNARDIN.
BOTTLE STOPPER.

No. 572,951.

Patented Dec. 15, 1896.



WITNESSES:
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ALFRED L. BERNARDIN, OF EVANSVILLE, INDIANA.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 572,951, dated December 15, 1896.

Application filed April 25, 1896. Serial No. 589,069. (No model.)

To all whom it may concern:

Be it known that I, ALFRED L. BERNARDIN, of Evansville, in the county of Vanderburg and State of Indiana, have invented a new and useful Improvement in Bottle-Stoppers, of which the following is a specification.

The object of my invention is to provide an improvement in the class of bottle-stoppers known as "seals," and consisting of an elastic disk which is driven into a bottle-neck by mechanical pressure, and then performs its function when forced upward against an annular seat by the pressure of the gas thus confined in the bottle. The two most popular and extensively-used varieties of such seals or seal-stoppers are characterized by the following-stated construction: One variety is known as the "loop-seal," and consists, chiefly, of a rubber disk having a wire loop which serves as a means for extracting it. The ends of the said loop pass through the disk and are bent up on its under side. It has been found difficult to so cover and protect such ends of the loop as to effectively prevent the contact of the liquid contents of bottles with them, which induces rust and results in injury to the quality of the beverage. The disk likewise often collapses under pressure, which entails loss of the contents of the bottle. In large beer-bottling establishments this has often constituted a very large item of expense in putting their beer on the market.

The seal-stopper of the other class above referred to is composed of a rubber disk having a central portion which is cut out, and thus still forms an integrant part of the body of the stopper, but is displaceable, or intended to be so, to allow insertion of an extracting-tool. The invention, however, often fails to operate as intended, since when the stopper is forced into the narrower bottle-neck it is compressed laterally to such a degree that the central plug adheres to the surrounding portion of the disk with great tenacity, and often to such a degree that it becomes for the time being a practically-integrant portion of the perforated body of the disk or seal, and cannot, therefore, be displaced—i. e., forced downward—by the application of pressure by means of a suitable tool or implement.

I have devised a seal or seal-stopper which possesses the good qualities while avoiding

the defects and objections of those above noted.

The construction of my improved seal is as hereinafter described, and shown in accompanying drawings, in which—

Figures 1 and 2 are perspective views illustrating the operation of removing the seal-stopper from a bottle. Figs. 3 and 4 are vertical sections illustrating the position of the extracting-tool at the beginning of such operation with reference to different forms of the stopper. Fig. 5 includes a central transverse section of my preferred form of stopper, also a like section and plan view of the tube forming part of the stopper. Figs. 6 to 9, inclusive, are like views of modifications of the invention. Fig. 10 is a plan view of the seal-stopper.

I will first describe the preferred form of my seal-stopper. (Shown in Figs. 3 and 5.)

The bottle-neck A is provided with an annular recess *a*, as shown, to receive the seal-stopper B. The body of the latter is a rubber disk 1, having a central transverse opening in which is fitted a rigid tube 2, having, preferably, a lateral flange 3 on its lower end, as shown. The disk has an under lining or cover 4, composed of some material, preferably muslin, linen, or other thin strong fabric, coated with a substance that renders it impervious to liquids used as beverages. I preferably coat such fabric with a solution of rubber on one side and on the other with a mineral wax, such as paraffin. Such lining or cover 4 effectually prevents contact of the beverage with the body of the disk 1, and also with the metal tube 2, which does not perforate the lining 4, as in the case of the loop-seal, before referred to, but offers a smooth surface to the lining. The latter likewise prevents escape of the beverage through the opening in the disk 1. It is therefore an effective guard against corrosion of the metal and impairment of the quality of the beverage. The body of the tube 2 has a circumferential swell 5, which provides an internal groove or recess 5', adapted to receive the point of an extracting-tool *x*, as shown in Fig. 3. In Fig. 6 the tube 2' is shown without a base-flange. In Fig. 7 the tube 2² is shown provided at the top with an inwardly-projecting annular lip or flange which provides an

engaging shoulder for the tool, as will be readily understood. In both these forms, Figs. 3, 5, 6, and 7, the tool x is not inserted through the under lining or cover 4, and hence the latter remains intact after the stopper B has been extracted, so that the latter could be used again, if desired.

The tube 2³ (shown in Fig. 8) is constructed with a cylindrical body or without a tool-engaging portion, and hence in such case the tool x must be inserted through, and therefore ruptures, the under lining or protector 4, as shown in Fig. 4. The operation is obviously the same in the case of a tube 2⁴ having no base-flange, as shown in Fig. 9. The flanged tubes are the preferred forms, since the flange 3 forms a shoulder or abutment whose contact with the body of the disk 1 prevents, or tends to prevent, displacement of the tube, and the flange also renders the disk proper more rigid, so that it is not liable to be bulged upward by the pressure of gas within the bottle. It will be seen, therefore, that the tube forms a hollow core for the body of the seal which stiffens it and prevents it from collapsing and popping out of the bottle when under pressure; also, that the tube enables the seal to be easily extracted from the bottle by means of the tool x , which engages the internal shoulder of the tube, Fig. 3, or else punctures the protective base lining or cover 4, Fig. 4, and, lastly, that no metal is exposed to the beverage.

Thus the chief point or advantageous feature of my invention is that the same construction and means for stiffening the disk or body of the seal without unduly impairing its elasticity also enables the seal to be bodily extracted with great ease, while corrosion of metal and leakage are entirely prevented.

I desire it to be understood that by use of the term "rubber" as the material from which the seal-disk is made I do not necessarily restrict myself to pure rubber or caoutchouc, but merely indicate a material having a due degree of elasticity.

What I claim is—

1. As an improved article of manufacture, the seal-stopper formed of a soft, flat rubber body, or disk, having a central vertical opening, the rigid tube which lines said opening, and is adapted for reception of an extracting-tool, the sides of the disk being extended radially free of or beyond said tube, as shown, whereby the disk is adapted for compression

within a bottle-neck and direct engagement with a shoulder therein, and an independent protector applied to and secured on the lower side of the disk and covering the open end of the tube, substantially as shown and described.

2. The improved seal-stopper composed of a soft-rubber body portion, having a central opening, or passage, a rigid tube, lining said opening and extending completely through said body, and a protective lining applied over the tube and opening, on the under side of the stopper, substantially as shown and described.

3. The improved seal-stopper composed of a soft-rubber disk, having a central opening, a rigid tube extending entirely through it and provided at its middle with an internal shoulder for engagement of an extracting-tool, and a protector for the under side of the disk and tube, substantially as shown and described.

4. The improved seal-stopper composed of an elastic disk, having a central, transverse opening, or passage, extending through it, a rigid tube provided with an exterior circumferential projection on its body, which is embedded in the surrounding portion of the disk, and a protective lining for the under side of the disk, as shown and described.

5. The improved seal-stopper composed of an elastic disk, having a central, transverse opening, a rigid tube provided with a circumferential, annular swell and a coincident interior recess or groove, said swell fitting in a recess in the disk, and a protector for the under side of the disk, as shown and described.

6. The improved seal-stopper composed of an elastic disk provided with a central transverse opening, or passage, a sheet-metal tube fitted in the latter and extending through it, and provided with a lateral base-flange, a central, circumferential, internal groove, and an exterior circumferential swell, or projection, and a protective lining for the under side of the stopper, as shown and described.

7. As an article of manufacture, a tube for use in connection with an elastic disk forming a seal-stopper, the same having a body provided with a lateral base-flange and a circumferential exterior swell and corresponding internal groove, as shown and described.

ALFRED L. BERNARDIN.

Witnesses:

K. RAUCH,
JACOB HAAS.