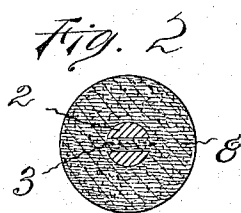
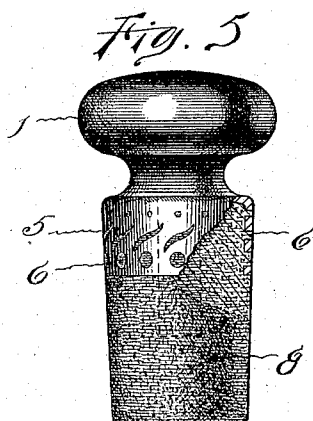
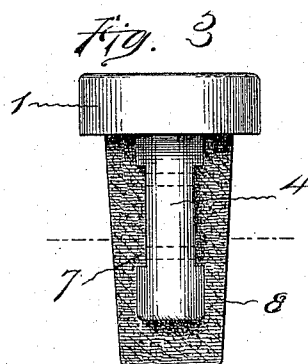
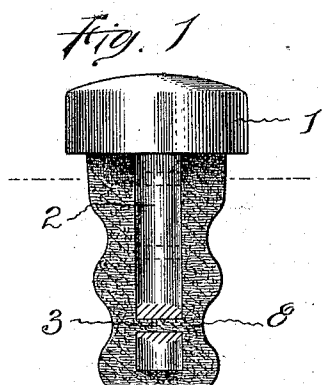


(No Model.)

F. C. ROCKWELL.
BOTTLE STOPPER.

No. 573,239.

Patented Dec. 15, 1896.



Witnesses:

E. J. Hyde,

C. Buckland.

Inventor:

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by
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att'y.

UNITED STATES PATENT OFFICE.

FREDERICK C. ROCKWELL, OF HARTFORD, CONNECTICUT.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 573,239, dated December 15, 1896.

Application filed December 10, 1895. Serial No. 571,676. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK C. ROCKWELL, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Bottle-Stoppers, of which the following is a specification.

The invention relates to that class of stopper that has a comparatively soft packing-body for sealing the mouth of the bottle or other receptacle in which it is placed, and a cap or head which provides an ornamental finish, and a means that can be grasped for removing the stopper from the mouth of the bottle or other receptacle.

The object of the invention is to produce a simple and cheap stopper which will have a soft yielding exterior packing-body portion formed in such a manner and of such materials that it will make an easy yet tight seal against the walls of the bottle in which it is placed and will not absorb liquid from the contents of the bottle, and to provide such a body with a hard, strong ornamental head or cap which cannot be pulled from the body in an attempt to remove the stopper from position in a bottle or other receptacle.

To this end the invention resides in a stopper consisting of a cap or head of hard material having a projecting portion with a cushioning factitious compound forming the packing-body material molded and compressed in position so as to engage the projecting portion of the head and be securely held thereto, as more particularly hereinafter described, and pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is an elevation of one form of the stopper with the cushioning or packing body portion cut in central section to show the interior. Fig. 2 is a transverse section of the form shown in Fig. 1 on the plane denoted by the broken line in that figure. Fig. 3 is an elevation of another form with the cushioning or packing body portion cut in central section. Fig. 4 is a transverse section of the form shown in Fig. 3 on the plane denoted by the broken line of that figure, and Fig. 5 is a side elevation of another form of the stopper with a portion broken away to illustrate the construction.

In the views, 1 indicates the head or cap of

the stopper, which may be made of metal, as silver or nickeled or oxidized iron, brass, or copper, or which may be made of porcelain or wood. This head is usually formed circular in outline, as in the views; but it may be given any desirable configuration that will present an attractive appearance and provide an enlarged part that can be readily grasped by the hand.

The head has a projecting part about or into which the body of cushioning material is molded. This projecting part is shown as circular in cross-section, and in the forms illustrated in Figs. 1 and 3 it is made in the shape of a central depending stem, while in the form illustrated in Fig. 5 this part is made as an exterior hollow stem. The circular stem 2 of Fig. 1 may be provided with perforations 3, through which the factitious material may flow when molded, so that it will be firmly held in place, and, if desired, the stem 4 of Fig. 3 may be perforated, as indicated by the dotted lines in that figure, while in the form of Fig. 5 the circular portion extending from the head, that is, the hollow stem 5, is perforated with any suitable number of openings 6, arranged in the form of an ornamental design, into which openings the factitious material will flow when molded, so that the head and cushioning-body part will be securely held together. The stems made in the forms of Figs. 1 and 3 or the dotted outline in Fig. 5 may also, if desired, be cut away or slabbed off for a portion of their length, as at 7 in Fig. 3, to form recesses into which the factitious material will flow when molded and in this manner prevent the head from being pulled from the body part.

The body material that forms the cushioning-packing of the stopper is formed of broken or ground particles of cork and a binding-gum, as rubber or shellac, that is set by heat and pressure to form the material into a compact mass. In forming this body material the broken or ground particles of cork are given a thin coating of the binding-gum, as by spraying them with or mixing them into liquid rubber or shellac. After these gum-coated particles of cork have become dried they are placed in molds or dies in which the heads have been previously located and there subjected to considerable pressure and heat,

so that the gum partially softens and then hardens and thoroughly cements the mass together. When the gum and the cork particles are softened under the heat and pressure, they flow into and about the stem portions depending or extending from the head and into all of the perforations or recesses therein, so that when the gum hardens the material fills these recesses in such manner that it cannot be pulled therefrom. The pressure applied is considerable and thoroughly compacts the cork, so as to give it a firm texture, but of course the pressure is not sufficient to destroy or eliminate all of the elasticity of the cork, while the heat applied is sufficient to solidify the gum and bind the particles together very securely.

The exterior of the cushioning-body may be roughened, grooved, or corrugated, as shown in Fig. 1, so that a very tight seal may easily be made against the walls or mouth of the bottle or other receptacle into which the stopper is placed. In this form the arched parts of the outer surface of the stiffened cork make close contact with the walls of the receptacle, the recesses or lower portions allowing the arched parts to yield slightly and permit them to fit closely against the walls of the bottle, so as to make a tight seal. This is particularly desirable in the case where the factitious compound is molded very dense and firm, for of course this compound can be solidified and pressed so that the texture is far more firm and dense and yet more elastic than the original cork. With this form of exterior the body material can be made firm, dense, and durable, and yet a tight seal can be easily made without exerting as much force in driving the stopper into a bottle as would be necessary to drive the stopper in and make a close fit if it had a smooth exterior like the common soft cork. This cushioning material can be readily and cheaply made and molded to or into the stems or parts projecting from the hard heads, and when thus molded this material will securely cling to these parts, for they are molded into the openings or depressions or recesses and cannot be pulled therefrom without destroying the entire body material. In the first form the material passes through the perforations in the central stem and this prevents the stem from being pulled from the cushioning-body if the latter should stick tight in place in the mouth of a bottle or other receptacle. In the second form the cushioning material flows into the recesses in the sides of the stem and thus holds in place, while in the third form the material flows through the perforations, which may be ar-

ranged in the part that depends from the head in a design to present an artistic effect, and the material in these holes will form a contrasting substance with the head and thus bring out the effect of the design and at the same time will securely hold the head from being pulled from the material that fills the holes.

A stopper made according to this invention is simple, cheap, and durable. The heads are easily made, are strong, and can be made ornamental, while the cushioning or sealing material can be simply made and molded to the heads in such manner as to prevent the removal of the sealing material or pulling the heads therefrom accidentally; and, furthermore, this material can be made waterproof, so that it will not soak up or absorb liquid from the contents of the bottle or receptacle in which it is placed. This cushioning-body material that forms the seal can be made very durable, for the density of the material can be regulated by the amount of the binding-gum used and the heat and pressure applied in the process of forming, so that this cushioning or packing body material will have a firmer and stronger texture than the ordinary cork and yet be properly elastic to form a tight seal. A stopper formed in this manner and of these materials can be used many times without becoming compressed and valueless and does not have the cracks or soft veins that run through with the grain of the natural soft-cork stopper, which soft streaks are somewhat porous and invite capillary attraction, for the entire packing-body of this stopper is of equal density.

I claim as my invention—

1. A bottle-stopper consisting of a hard head with a depending hollow stem having perforated walls and an elastic sealing-body formed of a composition of cork and a binding-gum molded and pressed in a plastic condition to the stem whereby the composition flows through the perforations and there solidifies into a sealing-body having a homogeneous texture of uniform density, substantially as specified.

2. A stopper consisting of a hard head with a depending perforated stem and an elastic sealing-body with a corrugated or grooved exterior surface formed of cork and a binding-gum molded and pressed in a plastic condition into the perforations in the stem, substantially as specified.

FREDERICK C. ROCKWELL.

Witnesses:

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E. J. HYDE.