

(No Model.)

J. F. WITTEMANN.
BOTTLE STOPPER.

No. 581,898.

Patented May 4, 1897.

Fig. 1.

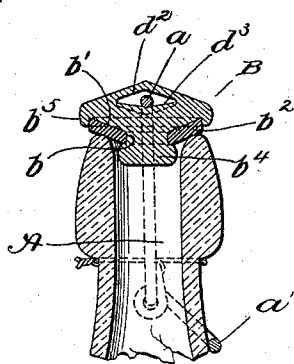


Fig. 2.

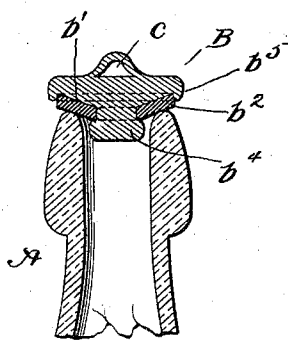


Fig. 3.

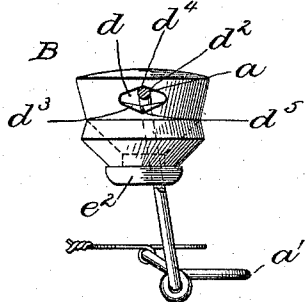


Fig. 4.

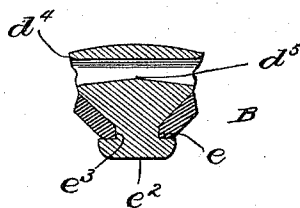


Fig. 5.



Witnesses

Wm. D. Wallace Jr.
Charles E. Riddon

Inventor

Jacob F. Wittemann
By Butterworth & Dowell, his Attorneys.

UNITED STATES PATENT OFFICE.

JACOB F. WITTEMANN, OF BROOKLYN, NEW YORK, ASSIGNOR TO
WITTEMANN BROTHERS, OF NEW YORK, N. Y.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 581,898, dated May 4, 1897.

Application filed February 25, 1896; Serial No. 576,864. (No model.)

To all whom it may concern:

Be it known that I, JACOB F. WITTEMANN, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Bottle-Stoppers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to plugs for bottles, but more particularly to that class of bottles and stoppers in which a plug, ball, or similar device may be guided and locked to the bottle-mouth by a bail or carrier.

Heretofore it has been the common practice to provide a plug with a bearing surface or seat of an arbitrary outline and a circular piece of rubber, usually in the form of a flat disk, having a central opening to receive a projection from the plug and adapted to engage the mouth of the bottle when locked thereto, so as to close the same; but in such devices dirt and foreign matter are liable to lodge upon the peripheral portion of the disk and become wedged in between the same and the plug or seat portion of the latter, so as to prevent a perfect sealing of the bottle, often entirely destroying the efficiency of the packing. Furthermore, flat packing-disks are liable to be expanded in their inner orifices and to be crimped when pressed into conical form in the bottle-mouth, so as to leave air-vents through which atmospheric air may enter or the gas confined within the beverage in said bottles may escape and thus spoil the contents of the bottle. Moreover, flat packings arranged horizontally to stopper-plugs and engaging bottle-lips on top do not make a reliable seal, owing to the liability of such bottle-lips to become chipped slightly in consequence of the usual quick handling to which they are exposed in the cleaning process, &c. Other usual arrangements of an elastic packing-rim or packing of uneven thickness offer an uneven resistance and do not retain an even elasticity throughout the surface thereof in contact with the plug, which results in an unreliable seal owing to the impossibility of adjusting plugs with accuracy during the nec-

essarily quick application of said plug to bottle-lips.

The primary object of my invention is to overcome these objectionable features by providing a plug having a bearing-surface exactly parallel with the inner surface of an elastic packing, such elastic packing being of an even thickness and having an even bearing against the seat portion or body of the plug over its entire inner surface, so as to effectually prevent the accumulation of dirt or other foreign matter between the packing and the plug or seat, the packing being also so arranged on the plug that an even elastic resistance shall be obtained when in locking engagement with the bottle-mouth at any arbitrary angle.

Another object is to devise a plug providing effective tightening or sealing surfaces with a packing thereon composed of semiporous elastic material, such as thin cork, instead of rubber or its equivalent, which would be liable to affect the flavor of the contents of the bottles, such semiporous material being necessary for all articles which may be affected by the use of rubber.

A further object is to provide a plug which will center itself on the bail-wire when first brought into position for locking engagement with the bottle-mouth and while swinging on the bail, also while the bail is being locked to the bottle.

The invention will first be hereinafter more particularly described with reference to the accompanying drawings, forming a part of this specification, and then pointed out in the claims at the end of the description.

In the drawings, Figure 1 represents a vertical sectional view of a bottle-neck with a plug embodying my invention in locking engagement therewith. Fig. 2 is a vertical sectional view similar to Fig. 1, illustrating a modified form of bail slot or opening and guide. Fig. 3 is a detail view in elevation of a modified form of plug. Fig. 4 is a vertical sectional view of the plug shown in Fig. 3, and Fig. 5 is a perspective view of the dished washer detached.

A may designate a bottle-neck of the usual form, in the mouth of which a plug B is adapted

ed to be locked by means of a suitable bail-wire a and eccentric lever a' in the usual manner or by any preferred form of locking mechanism. This plug may be of any suitable material and may have a conical or dished body portion b' , against which the inner surface of a conical annular washer or packing b^2 is adapted to abut and form a tight joint, said body portion terminating in a pendent projection having an annular groove b and an annular terminal flange or lip forming a button b^4 , the edge of the central aperture of said washer being forced over the projection or button b^4 into the annular groove b , so as to be rigidly held therein. A depending annular marginal flange b^5 is preferably provided on the plug B in order to engage and overlap the upper and outer edge of the packing b^2 , so as to provide an even resistance and hold said packing rigidly to its seat, yet permitting it to yield sufficiently to form a perfect seal when in locking engagement with the bottle-mouth. By the described construction the washer or packing may be of any suitable yielding material adapted to form a seal between the plug and the bottle-mouth, and the washer is provided with a bearing-surface against the plug on three of its sides, to wit, the upper side thereof and its outer and inner edges, its outer edge being overlapped by the depending flange b^5 , while its lower side is also slightly overlapped by the lip of the button b^4 , so as to effectually prevent displacement of the washer or the accumulation of foreign matter between the same and the plug.

To properly aline the plug upon the bail-wire before and while locking the same to the bottle-mouth, I may provide a slot or opening c in the upper portion and centrally of said plug, as shown in Fig. 2, through which said bail-wire may pass, though I prefer to form a diamond-shaped slot d therethrough, as shown in Figs. 1, 3, and 4. This opening or slot d is arranged transversely of the plug, passing through the vertical axis thereof, and has two opposed guiding-surfaces d^2 d^3 , having, preferably, slightly-rounded outer portions and formed with centering portions or apexes d^4 and d^5 , respectively. The lower surface of the slot d is preferably provided with two converging sides, which incline downwardly from the central axis thereof to the periphery of the plug in order to narrow the guiding-surface at the center of the opening for the bail-wire and to provide a single central point or apex, as d^5 , for engagement with said bail-wire when locked to the bottle-mouth, both apexes d^4 and d^5 being located in the same vertical plane as the vertical axis of the plug and serving to center said plug when first placed in position and while swinging on the bail-wire, and also to center the plug when said bail-wire is forced downward to lock said plug to the bottle-mouth. The guiding-surfaces d^2 and d^3 of the slot serve as lateral guides for the bail when the eccentric is open but before it is entirely raised and, furthermore, give lateral play to

the plug, allowing the same to turn on its own axis while resting on the bottle-lip. This construction not only prevents the plug from canting sidewise in the act of being brought into position and locked to the bottle-mouth, but overcomes the difficulty of centering the plug, thus saving considerable time and strain on the hand.

The operation and manner of using the invention will be readily understood from the foregoing description when taken in connection with the accompanying drawings. By pressing the bail-wire a sidewise with the thumb the upper portion of said bail-wire will slide along the guide-surface d^3 of the slot d , permitting the plug to be turned on its own axis by the pressure of the fore or second finger of the same hand. The end of the plug at this time rests upon the bottle-lip, and by a further tilting of the same may be readily thrown to the side of the bottle to permit the contents of the latter to be removed. In sealing the bottle the reverse of the movement described is made, the apexes d^4 d^5 of the guiding-surfaces serving to guide and center the plug both prior to and while being locked to the bottle-mouth.

I thus provide a plug which may be properly alined before and while being placed into locking engagement with the bottle-mouth, so as to prevent it from being locked in a canted position, which will cause leakage by reason of the uneven tension on the washer, and the construction and arrangement of the washer or packing will also effectually prevent the accumulation of dirt or other foreign matter between the inner surface of said packing and the body portion of said plug, whereby a perfect seal is formed and stretching or distortion of the washer is prevented. I also provide an elastic packing of any suitable material of such shape as to give the most effective seal on the inner and more protected surface of bottle-lips and which is adapted to engage with an even tension such bottle-mouths, although the plug may become locked in a somewhat canting position. It will also be observed that by causing the packing-disk to rest upon and engage only the inner edge of the bottle-mouth, as shown in Figs. 1 and 2, a perfect seal may be formed without liability of causing the disk to pucker or leave air-vents, which result from the use of packing-rings adapted to fit down into the bottle-mouth, as in ordinary constructions.

In Figs. 3 and 4 the body portion of the plug has a greater inclination than in the forms shown in Figs. 1 and 2 and the depending flange on said body portion is dispensed with. The annular dished washer or seal in this case may have a central opening provided with a V-shaped lower edge e , adapted to be forced over the projection or button e^2 into an annular groove or recess e^3 , so that the washer may be held in such manner as to form a tight joint with the body portion of the plug.

The bottle-stopper washer of the form shown

in Figs. 1 and 2, as will be observed, consists of a dished or substantially conical section of a hollow tube having the sides of its circular opening and those of its outer edge parallel to the vertical axis of the tube and plug, while the walls of the washer are of an even or uniform thickness throughout and the inner upper surface of said packing exactly conforms to the bearing-surface provided therefor by the conical pendent body portion of the plug. These latter features of construction are also present in the washer shown in Figs. 3 and 4, except that the outer marginal edge or sides of the circular washer are not exactly parallel with the sides of the central circular opening therethrough, but are flush with the bearing-surface of the plug at the junction of the plug and washer.

A preferred construction is illustrated in Fig. 5, wherein the conical formation of the washer is more pronounced than in Figs. 1 and 2, the latter having more of a dish-shaped formation than the former, though the upper and lower surfaces thereof are parallel and arranged at an angle to the axis of the plug.

In Fig. 5 the washer more nearly describes a true conical section of a hollow tube having the sides of its central circular opening and also the sides of its outer edge or marginal wall parallel to the vertical axis of the tube and plug, the washer being of an even thickness between said inner and outer walls or sides. This washer may be made of semiporous elastic material, such as thin cork, instead of rubber or its equivalent, which latter is liable to affect the flavor of the contents of the bottle, so that cork or similar semiporous material is necessary for all articles which may be affected by the use of rubber.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. As an article of manufacture, a plug or stopper for bottles, having an elongated approximately diamond-shaped opening extending transversely through the body thereof adapted to facilitate the insertion of the hooked end of the bail-wire and to permit the latter to play freely therein when in operative position; said opening being formed with up-

per and lower guiding-surfaces each having a centering portion arranged centrally of the longitudinal axis of the opening, in the plane of the vertical axis of the plug; the upper and lower guiding-surfaces on opposite sides of said centering portions converging toward the side of the plug and merging in a rounded portion or curve remote from said centering portions so as to permit a sidewise movement of the bail-wire to an eccentrical position, whereby the plug is guided and centered on the bail-wire when brought to position for locking engagement with the bottle-mouth, and also when moved into engagement therewith, and is adapted to be turned on its axis and moved sidewise so as to throw the bail-wire to one side of its center in opening or closing the bottle, with but a slight vertical movement, substantially as described.

2. As an article of manufacture, a plug or stopper for bottles, having an approximately diamond-shaped opening extending transversely through the body thereof formed with upper and lower guiding-surfaces, each having a centering portion arranged centrally of the longitudinal axis of the opening, in the plane of the vertical axis of the plug; the upper and lower guiding-surfaces on opposite sides of said centering portions converging toward the side of the plug and meeting at a point remote from said centering portions so as to permit a sidewise movement of the bail-wire to an eccentrical position, and the lower surface of the slot or opening being provided with two converging sides which incline downwardly from the central axis thereof to the periphery of the plug, substantially as and for the purpose described.

3. As an article of manufacture, an elastic bottle-stopper washer consisting of a dished or conical section of a hollow tube having the sides of its central circular opening and those of the outer edge parallel to the vertical axis thereof and having a wall of an even thickness throughout, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JACOB F. WITTEMANN.

Witnesses:

HERMANN COLBERG,
CHAS. SPINDLER.