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D. S. HAYNES.

BOTTLE NECK AND ATTACHMENT THEREFOR.

APPLICATION FILED JULY 22, 1907.

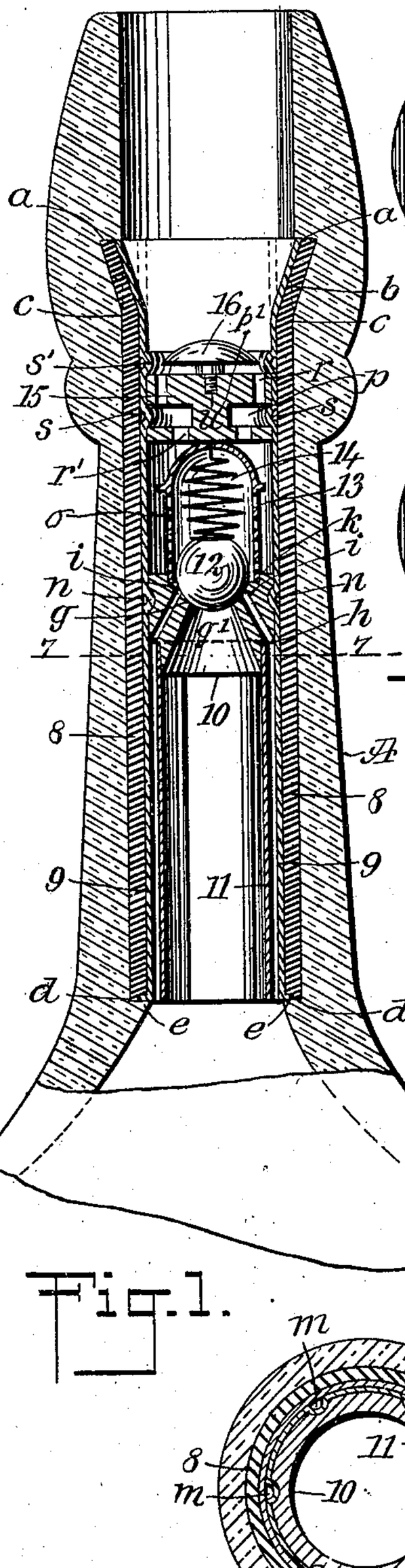


Fig. 1.

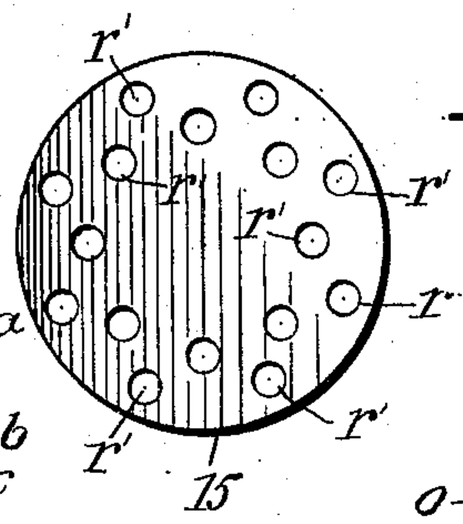


Fig. 2.

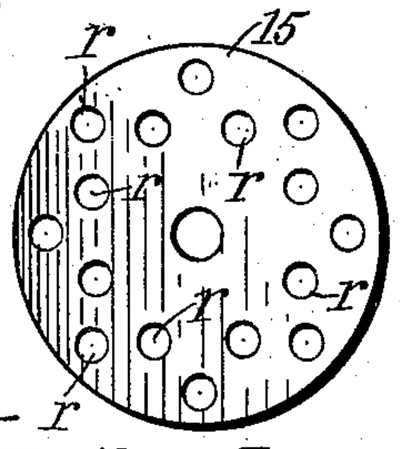


Fig. 3.

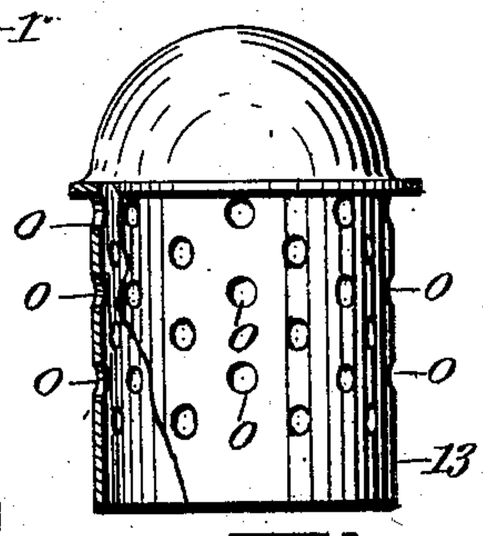


Fig. 4.

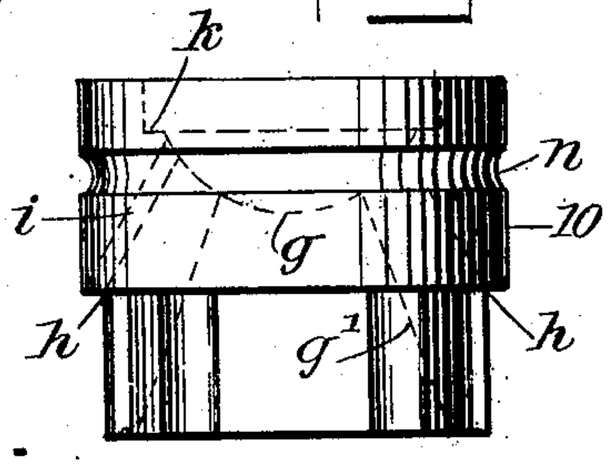
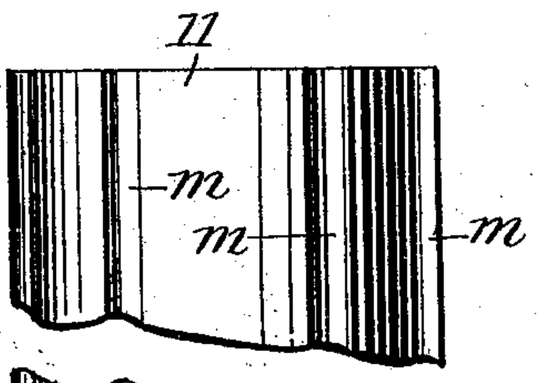


Fig. 5.



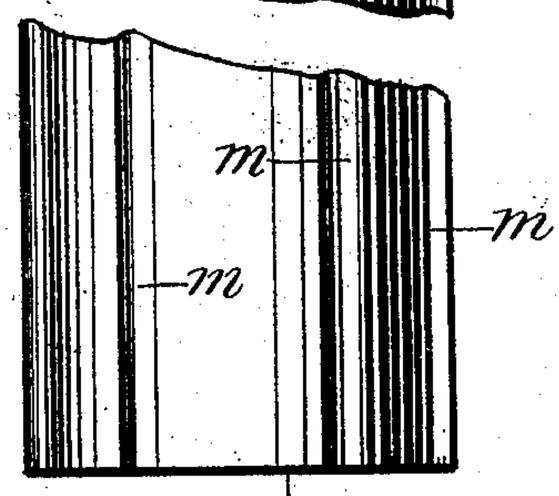


Fig. 6.

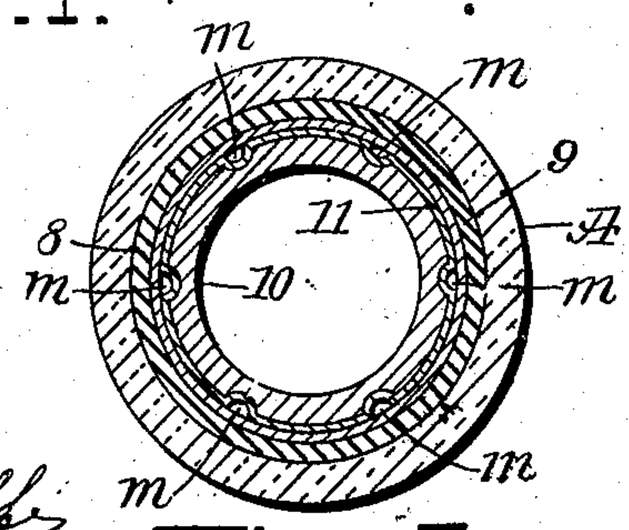


Fig. 7.

WITNESSES

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BOTTLE-NECK AND ATTACHMENT THEREFOR.

No. 889,682. Specification of Letters Patent. Patented June 2, 1908.

Application filed July 22, 1907. Serial No. 384,969.

To all whom it may concern:

Be it known that I, DAVISON SHANKLIN HAYNES, a citizen of the United States, and a resident of Evansville, in the county of Vanderburg and State of Indiana, have invented new and useful Improvements in a Bottle-Neck and Attachment Therefor, of which the following is a full, clear, and exact description.

The purpose of this invention is to provide a novel feature of construction for the neck of a bottle, and a novel insertible attachment therefor, which when in place, will prevent the refilling of the bottle after its contents have been removed.

The invention consists in the novel construction and combination of parts, as is hereinafter described and defined in the subjoined claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a longitudinal axial section of the neck of a bottle, and of the improved insertible attachment shown in position within the bottle neck. Fig. 2 is a reverse plan view of a baffle plug that is a detail of the invention. Fig. 3 is a top plan view of the baffle plug. Fig. 4 is a partly sectional side view of a valve cage, that is a detail of the attachment. Fig. 5 is a detached enlarged side view of a valve seat block that is a coacting detail of the attachment. Fig. 6 is a side view in part of a lining sleeve which is the interior wall of the attachment, and Fig. 7 is a transverse sectional view, substantially on the line 7—7 in Fig. 1.

For the proper embodiment of the improvement with the neck of a bottle, said neck is constructed as shown in Fig. 1; and it will be seen that an off-set shoulder *a* is formed in the cylindrical inner wall of the neck by undercutting the same. From the shoulder *a*, the side wall of the neck is contracted giving it inverted coniform shape, as shown at *b*, this short coniform portion of the inner wall of the neck terminating at *c*, from which point the bore of the neck extends toward the body B of the bottle, terminating in an offset shoulder *d*. A cylindrical packing joint tube 8 is employed, that exteriorly fits closely in the major portion of the bore in the bottle neck A, and has a length equal to the distance between the shoulders *a* and *d*, so that the joint tube may be slid into the bore and closely contact therewith between the points *c* and *d*. The tube 8 is formed of any suitable material that is slightly elastic. Within the joint tube 8, a main lining shell 9 is closely fitted, said shell of cylindrical form having its upper end cylindric when inserted and terminating at the lower end in a radial flange *e*.

Before insertion within the neck of the bottle, other coöperative parts are fitted in the lining shell 9, that will be described consecutively. One of said details is a valve seat block 10, which as shown in Figs. 1 and 5, consists of a circular metallic block, having parallel end walls and a longitudinal opening therethrough. In the normally upper end wall of the valve seat block 10, a cupped valve seat *g* is formed that is intersected by a coniform walled opening *g'*, the smaller end of said opening merging into the valve seat mentioned. At a proper distance below the valve seat *g*, the exterior diameter of the block 10 is reduced somewhat, forming an annular shoulder *h*, and from the valve seat *g* to said shoulder *h*, a series of spaced perforations *i* is formed in the body of the valve seat block, which are arranged around the coniform opening *g'* and incline nearly parallel therewith. Upon the lower end of the valve seat block 10 or portion of reduced diameter, one end of a thin inner lining tube 11 is fitted and secured by any suitable means.

In the thin cylindrical wall of the lining tube 11, a number of longitudinal air ducts or grooves *m* are formed by indentations in the exterior surface thereof. The grooves *m* equal in number the perforations *i* and are similarly spaced apart, the grooves and perforations being disposed respectively opposite each other, whereby they are rendered practically continuous air ducts, arranged at intervals around the body of the lining tube 11 and in the body of the block 10.

The relative diameter of the valve seat block 10 and interior diameter of the main lining shell 9, is such that the block will fit neatly when forced therein to a point near the longitudinal center of said lining shell, as shown in Fig. 1; and preferably as a reliable means for securing the block at a selected point, there is an annular channel *n* formed in the valve seat block when it was constructed, said groove receiving an indentation or annular rib that is produced on the

shell 9 by suitable means, and which when closely embedded therein, holds the blocks firmly in place.

As the inner lining tube 11 has been already affixed upon the lower end of the valve seat block 10, it will be inserted within the shell 9 along with the valve seat block 10, and as shown in Fig. 1 is of a length that will dispose its lower end flush with the lower end of the main lining shell, thus adapting the air ducts *m* and *i* to receive air from the bottle body or transfer air thereinto from the neck of the bottle.

A light spherical ball valve 12 is employed, having a diameter that adapts it to seat closely upon the valve seat *g* and afford a liquid tight joint. An annular rabbet is formed in the upper end wall of the valve seat block 10, adjacent to the cupped seat therein, and in said rabbet or shallow recess *k*, the lower true end of a valve cage 13 is seated and thus disposed concentric with the center of the valve seat block. The upper end of the valve cage 13 is closed, preferably by the formation or attachment of a dome-like top wall which is devoid of perforations, but in the cylindrical side wall of the cage, a plurality of small apertures *o* are formed, as shown in Figs. 1 and 4. Within the cage 13, a coiled spring 14 is placed, that bears at its ends respectively upon the inner surface of the cage and upon the valve 12, this spring having just sufficient tension to adapt it to hold the ball valve upon its seat when the bottle is empty, and the body and neck thereof are inverted or disposed horizontally.

Over the valve cage 13 and impinging thereon, is a baffle plug 15, having a circular periphery and flat parallel end walls. The baffle plug 15 is of a diameter that adapts it to fit closely within the main lining shell 9, and as shown in Fig. 1 said plug is practically divided into two sections by a deep peripheral groove *p*, that leaves a central connecting stem *p'*, intact with the sections. In the upper section of the baffle plug 15, a plurality of perforations *r* are formed which may be arranged in concentric circles, and in the lower section thereof a double series of small holes *r'* are formed, which are not opposite those in the upper section. When the parts are assembled, the plug 15 must be secured in place by solder or equivalent means.

In the wall of the main lining shell 9 two indented beads *s* are formed, that project inwardly and into the groove *p* formed in the baffle plug, and the lining shell is beaded at *s'* above the baffle plug 15, and it will be seen that when the baffle plug is secured in place within the lining shell, it will hold the cage 13 firmly seated on the valve seat block 10. A guard disk 16 is mounted centrally upon the baffle plug 15 by means of a depending threaded shank *u*, which is centrally affixed in the disk, the latter being preferably formed of porcelain or glass, so that its removal is impossible without injury thereto, and upon the top surface of the disk the trademark or other identifying brand of the contents of the bottle is placed.

When the several parts of the device are assembled within the main lining shell 9, as hereinbefore described, the entire attachment along with the joint tube 8 thereon, are together forced down into the bore of the bottle neck, until the radial flange *e* on the lower end of the shell 9 is seated upon the shoulder *d*. This will dispose the upper ends of the joint tube and lining shell opposite the undercut shoulder *a* in the bottle neck. By application of a suitable instrument, the upper ends of the shell 9 and joint tube 8 are now pressed outwardly, and caused to occupy the space adjacent to the coniform wall on the bottle neck, defined by the flaring wall between the shoulder *a* and the point *c* of the bore of the bottle neck.

It will be obvious that the liquid contents of the bottle B are to be placed in it before the improvement is placed and secured in the neck A. Sufficient space above the disk 16 in the neck A is provided for reception of an ordinary cork, not shown, or other means for temporarily sealing the neck, and thus preventing an escape of the contents until the bottle is broached for use of the liquid it holds. As there are a number of spaced air ducts *i*, *m*, provided for the free introduction of air down into the body of the bottle when it is opened and tipped, it will be seen that without regard to the side of the bottle toward which it is tipped, a free flow of air will enter the bottle through one or more of said ducts, to take the place of the liquid that is poured from the bottle.

It is claimed that it will be impossible to refill the bottle for the following reasons: As the ball valve 12 is normally held upon its seat by the spring 14, liquid cannot pass the valve except when the contents of the bottle are removed by tipping it so as to elevate the bottle body and depress the neck A. Owing to the construction and relative positions given to the valve cage 13, spring 14, and baffle plug 15, it will be impossible to introduce a wire or other instrument for lifting the valve 12 or obstructing the spring 14, so that the valve will remain seated and consequently prevent liquid from passing it downward into the bottle. Furthermore, the air passages in the valve seat block 10 are so positioned, where they cut through the valve seat, that they will be sealed by the ball valve when this valve is pressed on its seat. As the upper end of the lining shell 9 is forced below and into close contact with the shoulder *a* on the bottle neck A, it will be evident that the attachment cannot be removed from the neck A without injury thereto, which would expose such an attempt at fraud as the

removal and replacement of the device after the bottle has been refilled.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. An attachment for a bottle neck, embodying a lining shell, a valve seat block secured in the lining shell having an opening forming a valve seat, a longitudinally grooved lining tube secured on the lower portion of the valve seat block, said block having air passages therein that are opposite the grooves in the lining tube, a ball valve normally seated over said opening in the valve seat block, a spring pressing the valve upon its seat, and a baffle plug having devious passages therein and secured in the lining shell above the valve.

2. An attachment for a bottle neck, embodying a lining shell fitting into the neck, means for securing said shell in the neck, a valve seat block fixed in the shell intermediate its ends, a longitudinally and exteriorly grooved inner lining tube secured by one end on the lower end of the valve seat block and by its contact with the main lining shell, forming spaced vertical air ducts, the valve seat block having a corresponding number of air passages therein that register with the air ducts, a ball valve, a spring, a valve cage on the valve seat block, the spring pressing between the top of the cage and the ball valve, a baffle plug secured in the lining shell above the valve cage, and a guard disk secured upon the baffle plug, said plug having devious liquid and air passages therein.

3. A bottle neck having an upwardly and outwardly flaring interior formation, producing an annular shoulder in the neck near its pouring end, a like shoulder in the neck near its junction with the bottle body and a cylindrical wall surface extended between the flaring formation and the lower shoulder, in combination with an attachment for preventing the refilling of the bottle, embodying a pliable joint tube in the neck between the shoulders therein, a metal lining shell in the joint tube having a flared upper end that engages the top edge thereof below the upper shoulder, said shell containing means adapted for preventing the introduction of liquid into the bottle down through the neck.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DAVISON SHANKLIN HAYNES.

Witnesses:
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G. G. BILLMAN.