W. THOMAS.

Vent for Barrel and Keg.

No. 210,821. Patented Dec. 10, 1878.

FIG. 1.

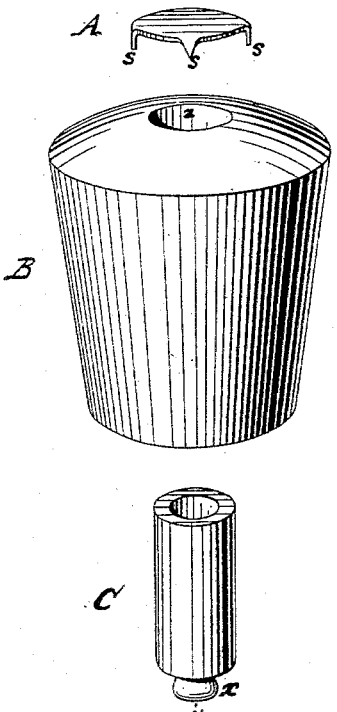


FIG. 3.

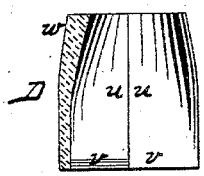


FIG. 4.

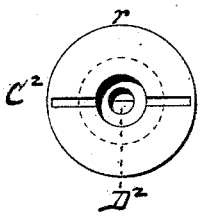


FIG. 5.

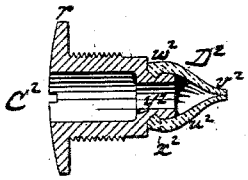


FIG. 8.

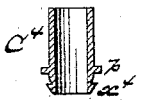


FIG. 6.

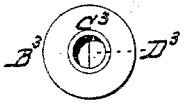


FIG. 2.

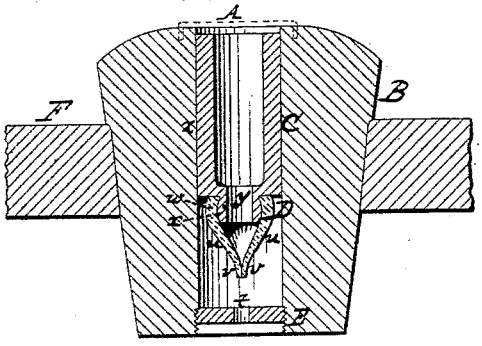
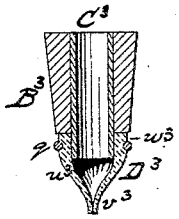


FIG. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM THOMAS, OF JERSEY CITY, NEW JERSEY.

IMPROVEMENT IN VENTS FOR BARRELS AND KEGS.

Specification forming part of Letters Patent No. **210,821**, dated December 10, 1878; application filed September 12, 1878.

To all whom it may concern:

Be it known that I, WILLIAM THOMAS, of Jersey City, in the county of Hudson, New Jersey, have invented a new and useful Improvement in Vents for Barrels and Kegs, of which the following is a full, clear, and exact specification:

My present invention relates to the preservation of beer and like liquors on tap by precluding the escape of gas through the air inlets or vents of the barrels or kegs from which the liquors are drawn.

Said invention consists, first, in a superior elastic valve, constructed in the form of a hollow wedge, with an expansible neck at its large outer end, thin sensitive lips at its inner extremity, thick cheeks to support said lips, a molded chamber extending between said cheeks, and a cut aperture between said lips, in combination with a supporting vent-tube, over the inner end of which said neck is stretched, said cutting aperture being opened to admit air by atmospheric pressure within said chamber, and closed gas-tight, owing to its intimately-matched sides, by the pressure of gas against said lips, aided by the pressure and support which are afforded by the internal vent-tube through said neck and cheeks; secondly, in an elastic vent-valve, when the same is made of vulcanized rubber, and combined with a metallic tube, of brass or its equivalent, and a compressible bung or plug, of wood or its equivalent, the same coacting in peculiar manner to prevent the escape of gas, as hereinafter more fully set forth.

Figure 1 of the accompanying drawing is a perspective view of the several parts of a combined bung and vent, illustrating this invention. Fig. 2 is an axial section of the same as united and applied to a barrel or keg. Fig. 3 is a sectional elevation of the vent-valve on a larger scale. Fig. 4 is an end view, and Fig. 5 an axial section, of another vent, illustrating certain modifications. Fig. 6 is an end view, and Fig. 7 an axial section, of a vent-plug and vent, illustrating other modifications; and Fig. 8 is an axial section of a vent-tube, illustrating a last modification.

Like letters of reference indicate corresponding parts in the several figures.

The parts of the combined bung and vent illustrated by Figs. 1, 2, 3 are, first, a long wooden bung, B, of ordinary make, having a cylindrical axial bore, *z;* second, a cylindrical metallic tube, C, preferably of brass, having a contracted bore, *y*, and a convex nipple, *x*, at its lower end; third, an elastic vent-valve, D, of vulcanized rubber, molded in one piece, in the form of a hollow wedge, having a thick circular inlet-neck, *w*, which is slightly contracted, as shown in Fig. 3, so as to embrace the convex nipple *x*, thin sensitive lips *v*, which are separated at their parting edge by a knife-cut, as indicated by shading in Fig. 3, so as to close perfectly gas-tight under a very light upward pressure, and thick cheeks *u*, which prevent introversion, and transmit, as levers, the expansion of the neck *w* by the nipple *x*, so that the same tends to press the lips together; fourth, a screw-plug, E, having a small orifice, *t*, to partially close the lower end of the bung-orifice, so as to protect the valve from injury before the bung is inserted, and to remain in position; and, fifth, a cap, A, of sheet metal, having marginal spurs *s* to close the upper end of the bung-orifice, so as to protect the valve above until the barrel or keg is tapped, when said cap is readily removed and need not be preserved. In practice simple stoppers of any description may take the place of either or both of these protecting devices E A.

The only peculiarity in the manufacture of the parts B C D, as regards process, relates to the production of the valve D, and has already been alluded to.

A matrix adapted to give the desired external shape and a core of wedge shape to mold the interior of the valve are made and used in ordinary manner, except that the thin end of the said core is located about one-thirty-second of an inch (more or less) away from the corresponding end of the matrix. The thin edge of the product is consequently solid or imperforate.

To form the aperture between the lips, or, in other words, to separate the latter at their parting edge, a sharp knife or a like cutting-instrument, is employed, a single cut being made therewith through the said end of the

valve into the thin edge of the core and along the latter, this being done before the core is withdrawn.

The cutting may, of course, be done upon any other like internal support of wedge shape, or the cutting may be from within, outward, without material change of effect, the object being to form the said aperture by cutting, in contradistinction to molding, so as to adapt the opposing surfaces of the lips of the valve to close against each other absolutely gas-tight under the lightest pressure.

The union and operation of the parts above described are illustrated by Fig. 2. The valve D is first applied to the tube C, and these parts are inserted downward into the bung B. The latter is then driven tightly into the bung-hole of a barrel or keg, F, and the vent is immediately ready to operate automatically for the admission of air and the retention of the gas above the beer or other liquor.

Owing to the employment of a metallic tube within a wooden bung, the latter being compressible, the joint between the two is rendered gas-tight in the act of driving the bung; and, owing to the thick elastic neck of the valve, with its contraction and the convexity of the nipple of said tube, or any equivalent construction of these parts, the valve is adapted to hold itself gas-tight on any metallic tube without tying, while if a tube of brass be employed, as proposed, in combination with a valve of vulcanized rubber, the latter, owing to the affinity of brass and sulphur, will adhere chemically to the tube.

To obtain access to the valve D for inspecting or replacing the same before using the combined bung and vent a second time, the screw-plug E, or its equivalent, is removed, the bung being out of the barrel or keg, and, by the aid of a stick or the like, the tube C, with the valve attached, is readily driven downward through the cylindrical orifice of the bung. The tube is reinserted in the upper end of the bung with the same or a new valve attached, and is tightened when the bung is driven, as before.

By introducing a jet of water into the upper end of the bung, and then into its lower end, the valve can be thoroughly washed in the bung without injuring it.

The modifications illustrated by Figs. 4 and 5 consist in the employment of a screw-threaded tube, C^2, with or without a flange, r, to compress a gasket on the outer end of a bung or its equivalent, and in the employment of a grooved nipple, x^2, and a beaded neck, w^2, on the said tube and on a valve, D^2, respectively, for insuring a tight-joint between the same, the valve to be otherwise like the valve D. In this or an equivalent way the improved vent-valve may be applied to a vent-orifice in a stave or head of a barrel or keg, or in a vent-peg instead of in a bung, if preferred.

The modifications illustrated by Figs. 6 and 7 consist in employing a tube, C^3, of simple brass tubing, in combination with a compressible plug, B^3, of rubber, cork, or wood, into which said tube is driven, so as to project at its lower end, and in the employment of a valve, D^3, substantially like the valve D, but tied on the plain projecting end of said tube by means of a ligature, q, of thin wire, or its equivalent. The plug B^3 may be driven into a bung like the bung B, or into a short bung, or into a vent-orifice of any description.

The modifications illustrated by Fig. 8 consist, first, in the employment of a short metallic tube, C^4, having a circumferential flange, p, for attaching one of my improved vent-valves to the bottom of a bung as the valve D^3 is attached to the bottom of the plug B^3. The tube C^4 is inserted in a cylindrical bore, and the flange p prevents it from being drawn upward by the driving blows on the top of the bung. Said tube C^4 is also constructed with a nipple, x^4, beveled and grooved, so as to provide a square shoulder to more securely hold within the elastic neck of the valve.

In connection with a valve attached to the bottom of the bung, as last described, or within the same in any preferred way, the bung may have an L-shaped bore, (the upper end being lateral,) to prevent the insertion of straws or the like, or the accidental entrance of dirt.

I am aware that my vent-valve, as regards its general form, is constructed on the same principles as the old Perreaux pump-valve, patented in England in 1856, No. 1,076; but the latter and all the modifications of the same with which I am acquainted have had lips separated by molded orifices, being only designed for coarse use, and they have never been adapted, by cut orifices, or in any equivalent way, to be used as sensitive valves in vents or for like uses, nor to be attached to a metallic tube by the elasticity of a thick inlet-neck, as above described.

I am also aware that elastic vent-valves have been made of rubber, with slits and punctures designed to close by the elasticity of the rubber, either by simple contraction or against a wooden or metallic surface. Valves of this description are not practicable for insertion in ordinary bungs, for the reason that beer and other liquors soften the rubber and cause the thin edges to lose their shape and elasticity in a comparatively short time, besides penetrating such orifices and rendering them permanently open as regards the escape of gas. My valve is constructed on a different principle, as above set forth.

The following is what I claim as new and of my own invention, and desire to secure by Letters Patent, namely:

1. As an improvement in vents for barrels and kegs, the improved automatic valve above specified, constructed in the form of a hollow wedge, with an expansible neck at its large outer end, thin sensitive lips at its inner extremity, thick cheeks to support said lips, a molded chamber extending between said

cheeks, and a cut aperture between said lips, in combination with a supporting vent-tube, over the inner end of which said neck is stretched, substantially as herein shown and described, for the purpose set forth.

2. The combination of an elastic vent-valve, of vulcanized rubber, in the form of a hollow wedge, having thin sensitive lips *v v* and a neck, *w*, at its respective extremities, a non-compressible tube of brass having a nipple end, to which said neck is applied, and a compressible bung or plug having a cylindrical bore to receive said tube, substantially as herein specified, for the purposes set forth.

WM. THOMAS.

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