(Model.)

J. P. GRUBER.

BUNG, BUSH, AND VENT.

No. 367,391. Patented Aug. 2, 1887.

Fig. 1.

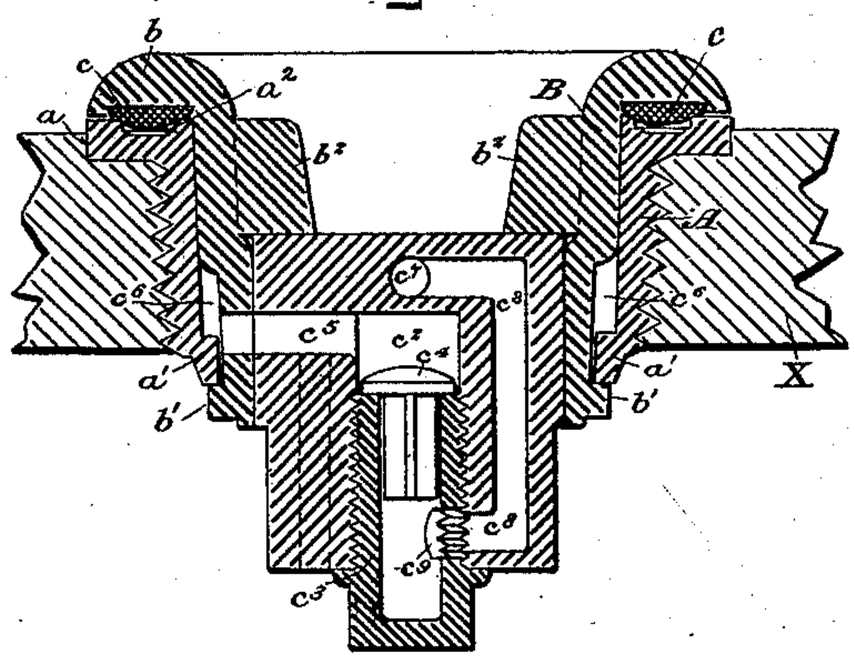


Fig. 2.

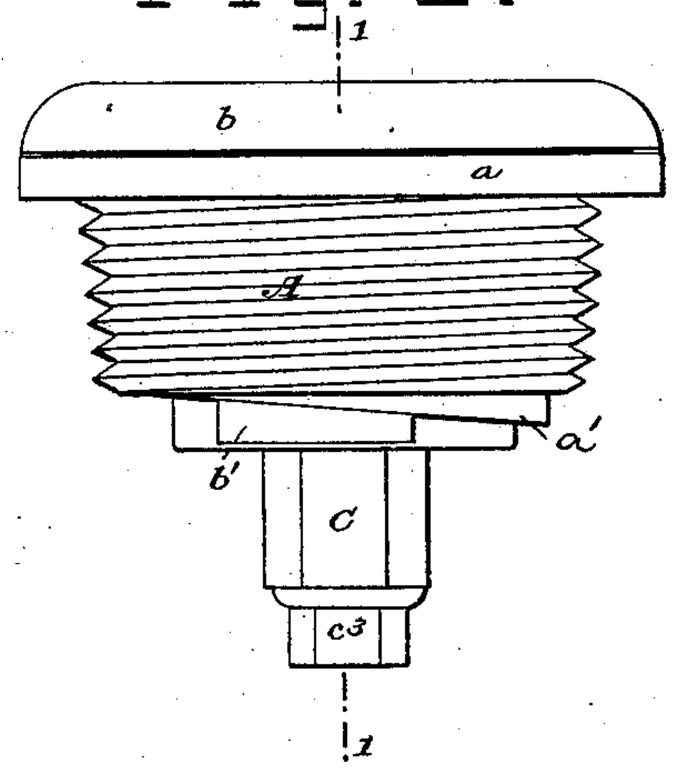


Fig. 3.

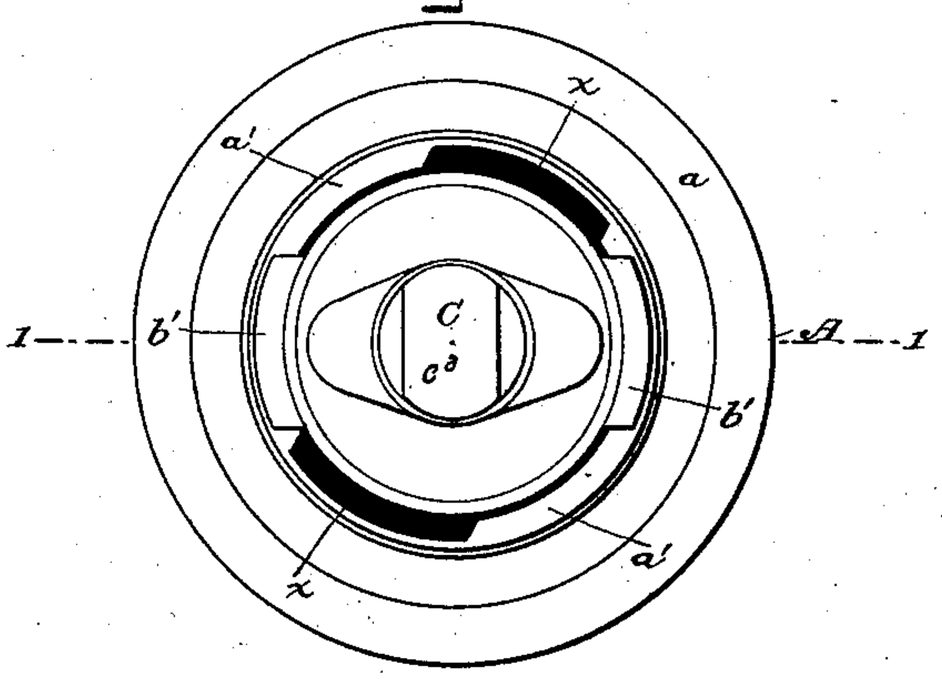


Fig. 4.

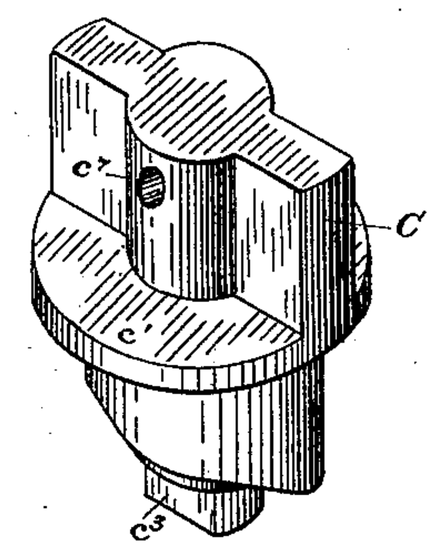


Fig. 5.

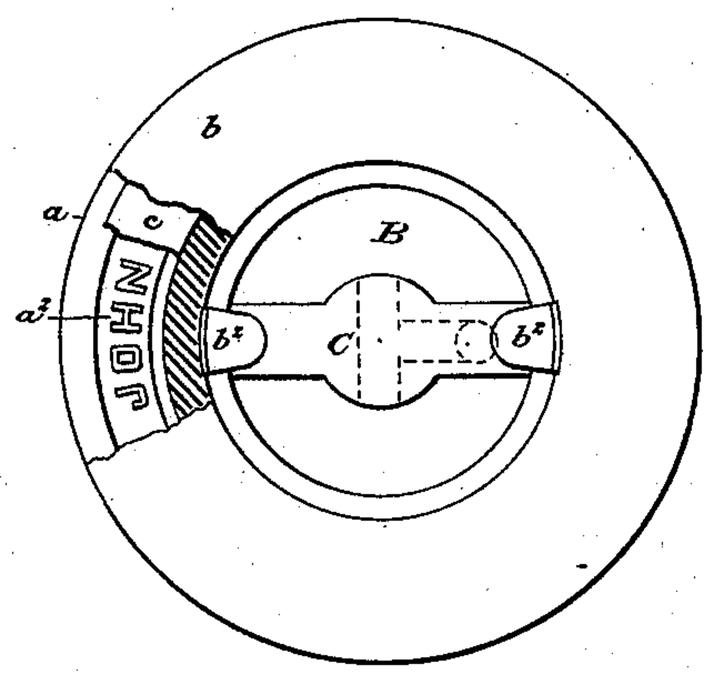
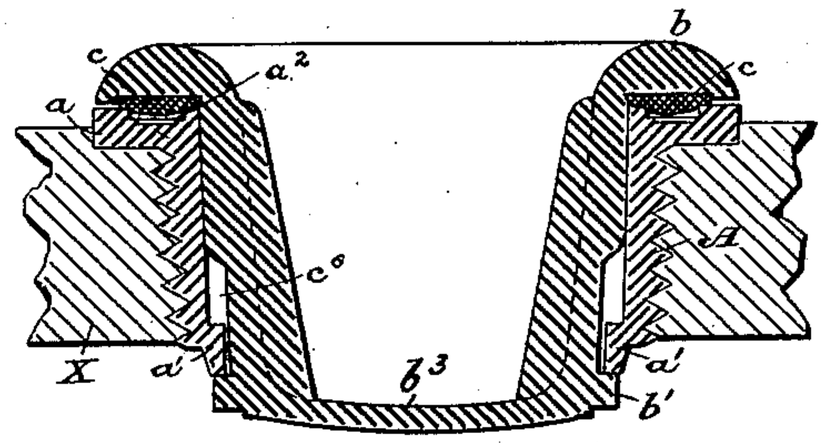


Fig. 6.



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BUNG, BUSH, AND VENT.

SPECIFICATION forming part of Letters Patent No. 367,391, dated August 2, 1887.

Application filed November 12, 1886. Serial No. 218,689. (Model.)

To all whom it may concern:

Be it known that I, JOHN P. GRUBER, a citizen of the United States, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented certain Improvements in a Bung, Bush, and Vent, of which the following is a specification.

My invention relates in part to a metallic bung and bush for casks, and in part to a vent to be employed in connection with said bung and bush, and combined with said bung.

The combined bung, bush, and vent is primarily designed for use in casks for malt liquors; and, so far as relates to the bung and bush, the object of my invention is to produce a cheap, simple, and durable bung, that may be readily inserted and removed, that will stand the roughest usage without injury, and that will close the bung-aperture hermetically.

So far as relates to the vent and its combination with the bung, my object is, in the main, to improve the construction of the vent illustrated in my Letters Patent No. 271,236, dated January 30, 1883, and to combine such improved vent with my improved bung. Thus I provide a bush that may receive either a metal or wooden bung, and a bung adapted to fit said bush and provided with an improved vent.

My invention will be hereinafter fully described, and its novel features carefully defined in the claims.

In the drawings, which serve to illustrate my invention, Figure 1 is an axial section of my improved bung, bush, and vent, the plane of the section being indicated by line 1 1 in Figs. 2 and 3. Fig. 2 is a side elevation of my combined bung, bush, and vent; and Fig. 3 is a bottom view, or view of the inner end of same. Fig. 4 is a perspective view of the vent detached from the bung. Fig. 5 is a plan of the combined bung, bush, and vent, part of the flange of the bung being broken away to disclose the recess in the flange of the bush and the packing-ring. Fig. 6 is a sectional view of the bung and bush as constructed when the vent is not employed.

X, in Figs. 1 and 6, represents a stave of a cask in which is fixed my improved bung and bush.

A represents the bush, which is screw-threaded exteriorly to enable it to be screwed into a screw-threaded aperture formed in stave X, and provided with a flange, *a*, at its outer end, which takes over and rests on the stave, the latter being by preference recessed to receive it. At its lower or inner end the bush is provided with two oppositely-arranged lips, *a' a'*, which project inward, (usually about one-eighth of an inch,) and occupy each about one-third of the circumference of the lower end of the bush. These lips have inclines formed on their lower faces, as best seen in Fig. 2.

In the upper face of the flange *a* on the bush is formed an annular recess, a^2. (Seen best in Fig. 5.) In the bottom of this recess it is proposed to form in relief the letters of the name of the brewer—for example, to whom the cask belongs. If the letters were formed in relief on the face of the flange, their sharp edges would cut and wear the rubber packing-ring, which rests on said flange, and which will be described hereinafter.

B is the bung, the body of which is made slightly conical to fit the conical bush. It is provided with a flange, *b*, at its outer end, which takes over the flange *a* on the bush when the bung is in place. In the under side of this flange *b* is formed an annular slightly undercut or dovetail recess, in which is fitted a packing-ring, *c*, of rubber or like material. It will be seen by inspection of Figs. 1 and 6 that the recess a^2 in the bush-flange is deep enough to prevent the rubber ring from chafing on the edges of the recessed letters when the bung is screwed in.

On the margin of the inner end of the metal bung B are formed two outwardly-projecting lips, *b' b'*, oppositely arranged and of such length and projection that they will pass through the bush A and between the adjacent ends of the lips *a'* thereon. The spaces between the lips *a'* on the bush are indicated at *x x* in Fig. 3. The upper sides of lips *b'* on the bung are provided with inclined faces, the degree of inclination corresponding to that on the lips *a'*, and when the bung is inserted in the bush far enough for flange *b* to rest on flange *a*, and then rotated axially, the inclined faces of the lips *b'* on the bung take over the inclined faces of the lips *a'* on the bush, as seen in Fig. 2, and rotation of the bung serves to draw its flange *b* down upon flange *a* in a manner to clamp the packing *c* tightly

between them and form a hermetic joint. Within the hollow of the bung are two lugs, b^2 b^2, which are attached to the wall of the bung, and usually formed integral therewith in the casting of the bung. These serve as abutments, shoulders, or projecting parts to receive a wrench in screwing in the bung.

C represents the main part or body of the vent, which is seen detached from the bung in Fig. 4. I prefer to make this vent separately, and secure it to the bung by means of brazing or soldering. It would be possible, however, to form it integrally with the bung. When the two are formed separately and afterward brazed together, I form the bung with an open inner end and the vent C with a flange like projection, c', which is made to fit snugly into the bung.

The vent is inserted at the open inner end of the bung until its upper or outer end strikes the lower or inner ends of lugs b^2, when it is soldered or brazed fast. It then forms a substantially integral part of the bung. The arrangement of the valve, valve seat, and gas-passages of the vent C is similar to those described in my Patent No. 271,236, before mentioned, but there are some improvements in the arrangement and construction which I will now point out. In my former vent portions of the passages were formed in the large head of the plug, the tubular stem of which screwed into the body to form a valve-seat. It was found very difficult to maintain communication between the passages in the plug and those in the body, as in screwing in the plug tightly in order to make a hermetic joint, the passages were thrown out of coincidence or register. Moreover, in the former construction, where the gas-passage from the cask to the valve-chamber opened out at the inner end of the vent-body, the foam and liquid would rise in said passage and tend to choke it and stick the valve to its seat. In my present vent I obviate these defects by a change of construction, which will be understood from the following description. In the body C of the vent is formed a cylindrical valve-chamber, c^2, which is open at its lower end and provided with a female-screw. In this chamber is screwed a hollow tubular or chambered plug, c^3, which is provided with a small flanged head that fits snugly agains the lower or inner end of the body of the vent. In chamber c^2, and resting on the end of plug c^3 as a seat, is a valve, c^4, constructed the same as that in my former patent. From the upper part of the valve-chamber c^2 a gas-passage, c^5, extends out laterally through the wall of the vent-body and the wall of the bung, opening out of the bung into an annular space between the bung and bush formed by contracting the diameter of the bung at its inner end. This space is represented by c^6 in Fig. 1. Transversely through the upper part of the vent-body C is formed a passage, c^7, and this passage is connected by an angular passage, c^8, with the hollow of plug c^3, below the valve c^4, through an opening, c^9, in the wall of said plug. This opening c^9 is so placed as to register with the lower end of passage c^8 when the plug is screwed in tight, and in order to insure this coincidence, I usually enlarge or widen the opening c^9, so that considerable rotary movement of the plug may be effected in screwing it in tight without affecting the register of the said opening with said passage. Thus it will be seen that I avoid forming any portion of the gas and air passages in the flanged head of the plug, such as are seen in my former patent. It is true the chamber in the plug is usually made to extend down into the head thereof, but this is only to reduce the metal by "coring out." The flange on the head has a very slight projection, being only required to form a seat or shoulder.

The operation is as follows: When the bung is placed in the cask, the gas from the beer enters the valve-chamber c^2, through passage c^5, by way of spaces x and annular recess c^6, and presses down the valve. When this pressure is sufficiently relieved by drawing beer from the cask, the air may enter passage c^7 and flow through passage c^8 and opening c^9 to the hollow of plug c^3, raise the valve, and pass by way of chamber c^2 and passage c^5 to the interior of the cask.

I may make the vent-body C and its plug c^3 of any metal that will not readily rust or corrode under the action of moisture and gases from the beer, as block-tin, brass, or alloys of a similar nature; or I may make it of iron and coat it interiorly and exteriorly with some impervious substance that will resist corroding agents. The bush and bung will usually be made of malleable iron and tinned.

A vent is not ordinarily employed or required in casks to contain ale, and in making my bush and bung for such casks I usually follow the construction illustrated in Fig. 6.

This bung is precisely the same as that just described, except that the vent is omitted and the bottom of the hollow bung closed by a web, b^3, cast integrally with the bung. The bush is the same as that before described.

By placing the lips a' on the extreme inner end of the bush A the whole inner face of the bush is left smooth and free from obstruction, and is thus adapted to receive, under certain circumstances and in certain contingencies, the ordinary wooden bung, which is already a well-known article of trade. Where the inner wall or face of the bush has projections, the wooden bung cannot be entered, and where said wall is grooved or recessed, as it is in some forms of bushes, the wooden bung will not stop the opening.

I am aware that a bung and bush similar to mine, so far as respects the smooth inner face of the bush and the arrangement of the inclined lips at their inner ends are concerned, is shown in the Patent to Calhoun, No. 85,903, of January 19, 1869, and these features I do not broadly claim.

The packing strip or ring c, being fitted into

an undercut recess in the bung-flange, cannot of itself get loose and be lost off the bung, but is firmly held in place by expansion into the wider part of the recess. If ruptured or worn out, however, it may be readily removed and replaced, as such rings are a common and well-known article of trade and do not require to be specially made.

The vent may have, in addition to the passage c^5, another passage for the same purpose extending from passage c^5 down to the inner end of the vent, as indicated by dotted lines in Fig. 1. When the vent is thus provided with an auxiliary passage, either may become stopped without affecting the operation of the vent.

I am well aware that vents have been combined with bungs heretofore in various ways, a type of which may be seen in the patent of Powers, No. 248,347, of October 18, 1881, and I do not of course claim this, broadly. So far as combining the bung and vent is concerned, the main idea of my invention is to construct them separately, whereby they may be made from different metals and to better advantage than if made integrally and then joining the two permanently and fixedly together.

Having thus described my invention, I claim—

1. The combination, with a metal bung provided with a projecting flange, *b*, having an annular undercut recess in its lower face, and a packing-ring, *c*, arranged in said recess, of a bush provided with a flange, *a*, having an annular recess in its upper face, on which said packing-ring rests, and having raised letters a^2 at the bottom of said recess, substantially as and for the purposes set forth.

2. The combination, with an open-ended metallic bung, of the vent-body C, provided with a circular flange, *c'*, constructed to fit into the open end of said bung, with a valve and valve-chamber, and with the necessary passages for gas and air controlled by said valve

3. The vent-body C, provided with a valve-chamber, c^2, a tubular plug, c^3, a valve, c^4, a gas-passage, c^5, leading from the valve-chamber out through the wall of body C, a transverse passage, c^7, and a passage, c^8, connecting the passage c^7 with the hollow in the plug under the valve, through an aperture, c^9, in the side wall of the said plug, as set forth, whereby the formation of portions of the air and gas passages in the head of the plug is avoided.

4. The combination, with the bush A, having inwardly-projecting lips *a'* and spaces *x* between them, of the bung B, contracted in diameter at its inner end, whereby an annular space, c^6, is left between it and said bush, and said bung provided with a vent having a valve-chamber and valve, a passage leading from under said valve to the atmosphere, and a lateral passage, c^5, leading from the valve-chamber out through the wall of the bung into the annular space c^6, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN P. GRUBER.

Witnesses:
HENRY CONNETT,
FRANK MOULIN.