

W. W. JACKSON.

BUNG FOR CASKS, BARRELS, &c.

No. 280,931.

Patented July 10, 1883.

Fig. 1.

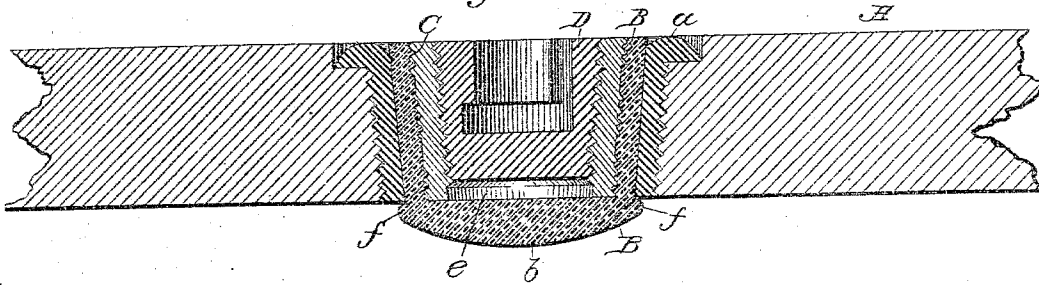


Fig. 2.

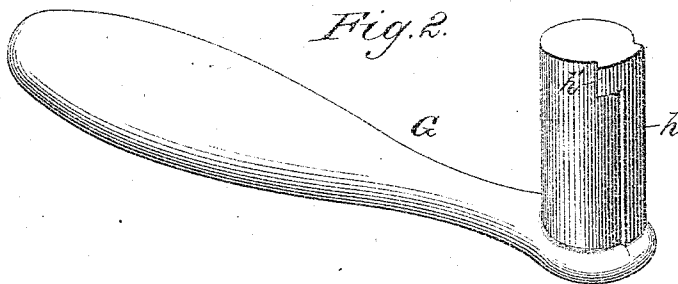


Fig. 3.

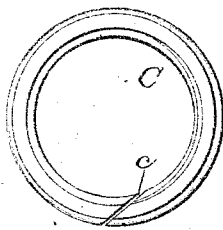
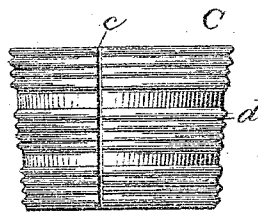


Fig. 4.



Witnesses.

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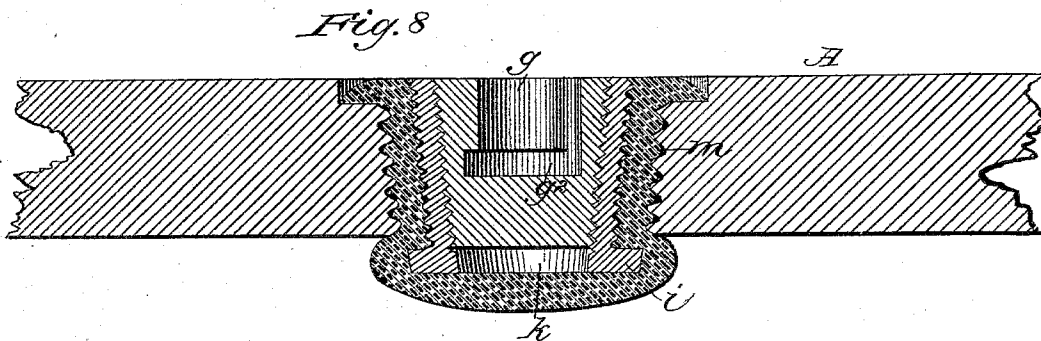
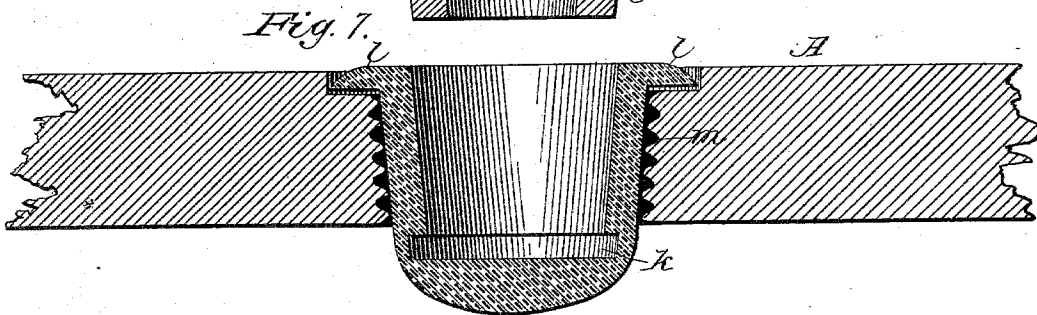
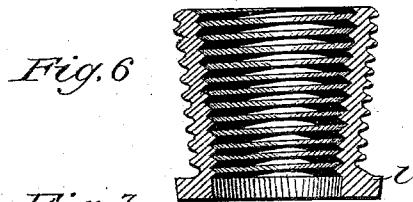
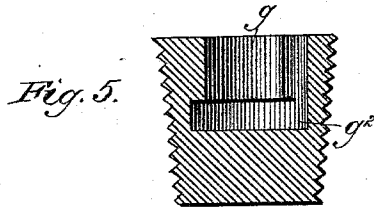
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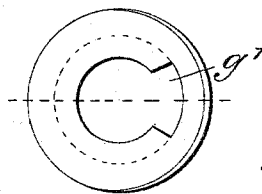
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*Fig. 9.*



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# UNITED STATES PATENT OFFICE.

WILLIAM W. JACKSON, OF CHICAGO, ILLINOIS.

## BUNG FOR CASKS, BARRELS, &c.

SPECIFICATION forming part of Letters Patent No. 280,931, dated July 10, 1883.

Application filed December 18, 1882. (No model.)

### *To all whom it may concern:*

Be it known that I, WILLIAM W. JACKSON, brewer and malter, a citizen of the United States, residing in Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Bungs for Casks, Barrels, &c., of which the following is a specification.

My invention relates to improvements in bungs or stoppers for closing the filling-orifice or bung-hole usually located in the side of a cask or barrel, which bungs or stoppers are commonly composed of wood, are driven to place by blows from a mallet, and are removed by blows directed on the staves of the cask or barrel.

The objects of my invention are, first, to provide a bung which not only avoids the necessity of blows, either directly or indirectly, to insert or remove it from its operative position, but which does not permit of its insertion or removal by blows; second, to provide a bung adapted to be readily inserted or removed from the bung-hole of a cask or barrel, whether or not said cask or barrel is provided with a bung-bushing metal, or otherwise, and whether or not the bushing or the walls of the bung-hole are tapering or straight; third, to provide a bung or stopper which may be readily inserted in the bung-hole or filling-orifice, and afterward expanded so as to be effectually tightened in the same by a lateral internal pressure; fourth, to provide a bung adapted to be easily inserted in the bung-hole, and which, when projected into the cask and tightened against the staves or bushings thereof, will expand laterally on the sides of its projecting end, so as to form a substantially right-angular flange impinging against the inner walls of the cask, thereby locking the bung to the cask and against the outward pressure of the contents of the cask, and at the same time more effectually seal the cask, but which bung may be readily removed when desired and be afterward effectually used in the same or any other cask having a bung-hole substantially of the same diameter; fifth, to provide an elastic bung with expanding devices which, when operated to expand the bung, are not liable to accidental detachment, and protect the essential parts of the bung from foreign substances and from the destructive effects of the atmos-

phere; and, finally, to provide a bung with an air-chamber next its inner end, whereby the expansive force of the gases or pressure of the liquid contents of the cask will compress the inner end of the bung, and in doing so spread the bung laterally and tighten it in the cask in the same proportion as such pressure is increased or diminished. I attain these objects by devices illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of a bung and tightening devices for the same embodying my invention, all of said parts being shown in their operative position in a detail of a cask provided with an ordinary metallic bushing; Fig. 2, a perspective of a wrench employed in tightening the bung; Fig. 3, a plan view of the expansion-core employed in connection with my bung; Fig. 4, a side elevation of the same; Fig. 5, a longitudinal section of the tightener or mandrel employed for expanding the core; Fig. 6, a similar view of a modification of the core; Fig. 7, a longitudinal section of a modification of my bung in its operative position before being tightened directly against the staves of and in a cask not provided with a bushing; Fig. 8, a similar view of the bung, the core, and the tightener in their operative position in the cask last referred to; and Fig. 9, a top plan view of the tightener or mandrel.

Similar letters of reference indicate the same parts in the several figures of the drawings.

A represents a cask or barrel stave, and, referring to Fig. 1, *a* is an externally and screw-threaded tapering bushing of the ordinary construction.

B represents a bung cup-shaped in form, and composed, preferably, of rubber, but may be of leather, paper-pulp, or other flexible material rendered impervious to moisture by any of the well-known solutions adapted for that purpose, or else covered externally with a thin film of sheet-rubber. The length of this bung is sufficient so that when inserted to place in the bushing with its outer edge flush with the periphery of the cask the inner and closed end, *b*, will project beyond the inner walls of the cask, the diameter of the bung being such that it may be dropped to this position in the bushing. Corresponding substantially with the inner diameter of the bung, and adapted

to be dropped therein, is a core, C, split longitudinally, but obliquely on one side, as shown at *c*, and provided with a series of circumferential ribs, *d*, which ribs, when the core 5 is expanded, as hereinafter described, press themselves into and take such a hold upon the bung that the core and bung are prevented from slipping upon each other, hence preventing the core from moving outwardly when expanding it, and causing a positive lateral pressure of the core on the bung. This expanding 10 core is provided with internal screw-threads, in which works a correspondingly screw-threaded and tapering tightener or mandrel, D, but the screw-threads of the core terminate 15 a short distance above its inner end; hence an air space or chamber, *e*, is formed between the end of the tightener and the inner end, *b*, of the bung when the tightener has reached the limit of its stroke in tightening the bung, as clearly shown in Fig. 1. When the expanding 20 core is in its normal and contracted condition, as shown in Fig. 6, the inner diameter at its upper end is such that after the tightener is projected in the core about a quarter of its length its further forward movement will gradually expand the core until by the time the tightener has reached the limit of its stroke in the core, as shown in Figs. 1 and 8, the bung 30 will be expanded and secured in its operative position in the cask. The lateral expansion of the sides of the bung produces a lateral expansion of its closed end, and the result is that a shoulder or flange, *f*, is formed on the side 35 of the projecting end of the bung, which shoulder, binding upon the inner walls of the cask, materially and effectively aids the tightening devices in sustaining the bung against accidental detachment, but does not prevent the ready removal of the bung when it is released 40 from the pressure of such devices. When the bung is composed of rubber, it will of course assume its normal form, and the shoulder disappear when the pressure of the tightening devices is removed; but when composed of leather, paper, &c., having a less degree of flexibility, the shoulder will remain to a certain extent; but, notwithstanding this fact, the bung, 45 owing to its hollow and contractible form, may be easily removed from the cask.

As a convenient means for manipulating the tightener it is cored out, as shown at *g*, one side of the cored-out portion being enlarged by a dovetailed groove, *g'*, and the bottom of the cored-out portion being also enlarged by 55 an annular groove, *g''*, to adapt the tightener for receiving a corresponding wrench, G, provided with a longitudinal rib, *h*, corresponding with the groove *g'*, said rib being provided at its extremity with a lateral extension or lug, 60 *h'*, which, when the wrench is inserted and partially turned, enters the annular groove *g''*, thereby locking the wrench in the tightener against accidental detachment while in operation. No special stress is laid upon this particular means for operating the tightener, for 65 any other convenient form may be substituted

without departing from the spirit of my invention, and in this connection it should be added that the cored-out or recessed portion 70 may be closed by a removable stopper of any kind for excluding foreign substances, if deemed necessary or desirable.

For the purpose of forming a more clearly defined shoulder on the bung than that shown 75 in Fig. 1, the inner end of the expansible core (see Fig. 6) may be provided with an external right-angular flange, *i*, in which case the inner end of the bung is correspondingly grooved 80 at *k* to receive the flange, and when so constructed the core is projected with the bung beyond the inner walls of the cask, as shown in Figs. 7 and 8, so that its flange is free to be expanded laterally inside the cask.

Constructed in the above manner, the core 85 cannot be dropped to place in the bung, as in the former construction; but, owing to the flexibility of the bung, a slight pressure of the hand upon the core is all that is necessary for this purpose. 90

It will be observed that the orifice of the cask-stave shown in Figs. 7 and 8 does not contain a bushing, and hence the bung is provided at its outer end with a flange, *l*, seated in the usual depression in the cask; but I do 95 not consider such a flange absolutely necessary, except for the purpose of sustaining the bung from dropping into the cask when inserting it and its tightening devices to their operative position. In order to more effectively 100 tighten the bung in the orifice of a cask, when a metallic or other bushing is not employed, the walls of the orifice—that is to say, the staves—are corrugated, as shown at *m*, so that when the bung is expanded it will fill 105 these corrugations, thus virtually locking the bung to the walls of the cask; but it should be observed that any other form of depression in the staves will answer the same purpose; hence I do not limit my invention to the corrugations, nor is it absolutely essential that 110 depressions of any kind should be formed in the staves.

My invention is shown as applied in bung-holes and bushings having a tapering form; 115 but, owing to the almost unlimited pressure that may be exerted upon the bung by the particular tightening devices shown and described, it is obvious that my bung can be effectively employed in bung-holes and bush- 120 ings the walls of which are straight. Nor do I limit my invention to its application as a bung, for it will operate equally as effective, without any substantial departure from the spirit thereof, as a bottle-stopper. 125

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a cask the staves of which surrounding the bung-orifice are corrugated, of an elastic cup-shaped bung, and means for tightening the same in said orifice, 130 substantially as described.

2. The combination, with the elastic bung,

of an expansible core composed of a single piece, provided with a single slot extending from end to end, and means for expanding said core, substantially as described.

5 3. The combination, with the elastic bung, the core, and the tightener, of an air-chamber intermediate the tightener and inner end of the bung, substantially as described.

10 4. The combination, with a cask, of an elastic bung projecting into the same, and pro-

vided with an internal annular groove, and of an expansible core, composed of a single piece, provided at its inner end with a flange, and fitting in said bung, and means for expanding said core, substantially as described.

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Witnesses:

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