

(No Model.)

T. KLINGHAMMER.

METHOD OF AND MEANS FOR CLOSING VESSELS.

No. 512,036.

Patented Jan. 2, 1894.

Fig: 1.

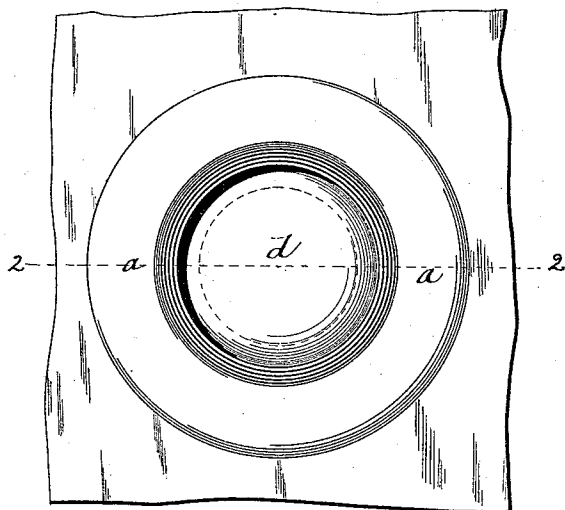


Fig: 2.

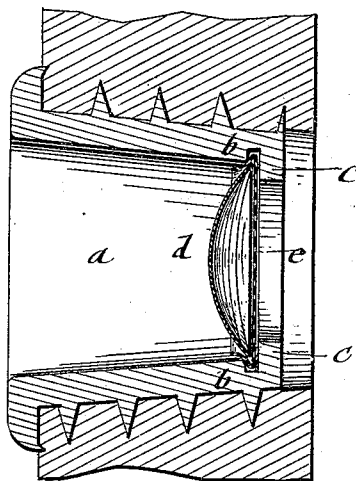


Fig:3.

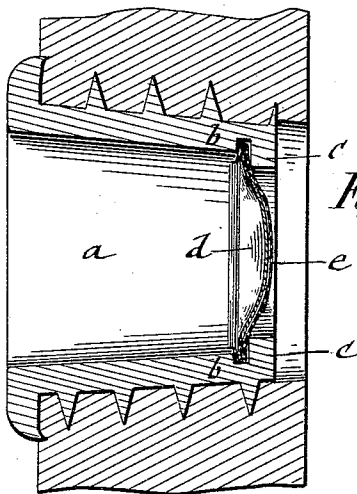


Fig:4.

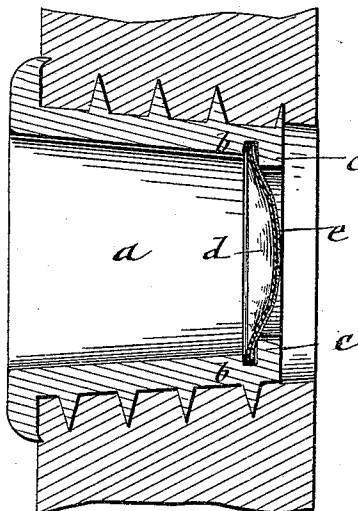
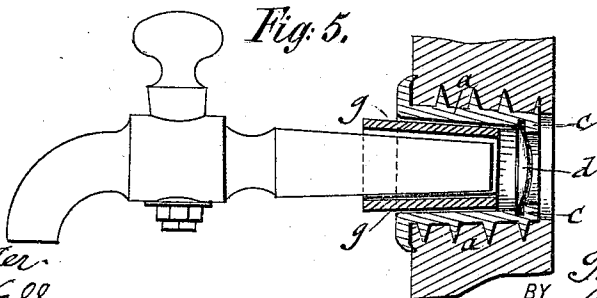


Fig. 5.



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METHOD OF AND MEANS FOR CLOSING VESSELS.

SPECIFICATION forming part of Letter Patent No. 512,036, dated January 2, 1894.

Application filed December 31, 1892. Serial No. 456,933. (No model.) Patented in Germany April 9, 1891, No. 64,133.

To all whom it may concern:

Be it known that I, THEODOR KLINGHAMMER, a subject of the Emperor of Germany, and a resident of Speyer, in the Kingdom of Prussia and Empire of Germany, have invented certain new and useful Improvements in Methods of and Means for Closing Vessels, (for which I have obtained Letters Patent in Germany, dated April 9, 1891, No. 64,133,) of which the following is a specification.

This invention relates to an improved device for closing vessels of all kinds, it being adapted for closing the faucet holes of kegs, sheet metal cans, &c.

The object of the invention is to provide a simple and cheap closing device which is absolutely tight and which will yield and become displaced on the insertion of a faucet.

In the accompanying drawings, Figure 1 represents a front-view of my improved closing device, shown as applied to the bushing of a keg. Fig. 2 is a vertical central section of the same, on line 2 2 of Fig. 1, showing the closing diaphragm in position before it is driven in. Figs. 3 and 4 are also vertical central sections of the closing device, shown as driven into its seat in the bushing, the diaphragm of one bushing, being provided with a separate packing while the diaphragm of the other bushing is provided with a packing which is applied permanently to the inner surface of the diaphragm, and Fig. 5 is a vertical transverse section, showing the closing diaphragm ready to be driven into the keg by the faucet.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, *a* represents a metallic bushing, which is provided with an exterior screw-thread by which the same is screwed into the faucet-hole of a beer or other keg. The bushing *a* is provided with an interior opening having an internal shoulder *c* and an interior groove *b* adjacent to the inner shoulder *c* on the outer side thereof. A sheet metal convexo-concavo diaphragm *b* of a diameter equal or nearly so with the diameter of the inner part of the bushing at the groove *b*, is inserted into the bushing until it rests on the shoulder *c*, and is then driven in by a suitable tool until it is collapsed and the middle portion of the diaphragm assumes a

concave shape, while the circumference is forced in an outward direction and retained by the groove so as to close tightly the bushing *a*. For producing the hermetical closing of the diaphragm *d*, a packing preferably in the form of a disk *e* of suitable textile fabric which is preferably saturated with grease or other suitable substance is employed. As the convexity of the diaphragm before it is driven into its seat is greater than the concavity of the same after it is driven in, it follows that it has spread sufficiently to close the bushing in a very tight and reliable manner and as the concave side is reversed in form, said packing disk is caused to be stretched over its assumed convex form and it is thereby firmly secured in the groove. It is also capable of resisting a considerable interior pressure, so that it is well adapted for vessels in which an interior pressure has to be sustained.

In tapping the keg, a conical rubber sleeve *g* is first inserted into the bushing *a*, the faucet being then inserted into said sleeve and driven in so that the inner end of the faucet forces the metallic diaphragm into the interior of the keg. During the driving in of the faucet the conical rubber sleeve produces the tight fitting of the faucet to the bushing, so as to prevent any escape of fluid. The shape of the closing diaphragm, as well as of the grooves into which the same is driven, can be varied, also different kinds of packing material can be used, such as, for instance, an elastic ring which is placed either around the circumference of the diaphragm or inserted into the groove of the bushing. The metallic diaphragm can also be faced with lead, soft rubber or other suitable soft material, as shown in Fig. 4, in which case this facing produces a tight fit at the circumference of the diaphragm and dispenses then with any other packing material. The diaphragm may be provided with radial corrugations or ribs, or may be pressed into suitable form so that it possesses, even when made of thin material, considerable resistance, which enables it to be more easily driven into the groove of the bushing. In addition to the diaphragm, the bushing can be closed by a cork-stopper or plug in front of the diaphragm, which is advisable when the kegs have to be shipped to considerable distances. The disk being in

a continuous curve, when pressure is applied to the center thereof the force is distributed along the curve to the extremity or edge of the disk and expands the latter tightly into the groove.

Besides its application to the bushings of the faucet-holes of kegs, the closing device can also be used for other vessels, such as sheet metal cans and the like, in which the vessel has to be provided with a grooved rim into which the diaphragm which forms the closing device is inserted into position in the manner described, in connection with a suitable packing material.

I am aware that it has heretofore been proposed to effect the closure of a faucet-hole bushing by means of a diaphragm of dished-form, that is to say by one in the shape of a disk having an annular flaring flange, the edge of said flange being entered into an internal annular groove of the bushing, and do not therefore claim that construction broadly; but—

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

1. The method of closing a tube which consists in placing a convexo-concave disk against a shoulder in said tube, the convex surface of the disk being on the outer face thereof, and then subjecting said disk to pressure until it is reversed into concavo-convex shape, the convex surface being then

on its inner face and the periphery of said disk being set in said tube, substantially as set forth.

2. The combination of a tube provided with two adjacent internal shoulders and with an interior groove between said shoulders, the diameter of the bore of the outer shoulder being greater than the bore of the inner shoulder, and a closure consisting of a concavo-convex diaphragm expanded into said groove between said shoulders and having its convex surface on its inner side, substantially as set forth.

3. The combination of a tube provided with two adjacent internal shoulders and with an interior groove between said shoulders, the bore of the outer shoulder being larger than that of the inner, and a closure consisting of a concavo-convex diaphragm and a packing disk of larger diameter than said diaphragm and overlapping the edge thereof, said diaphragm and disk being expanded into said groove between said shoulders and having their convex surfaces on their inner sides, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

THEODOR KLINGHAMMER.

Witnesses:

ALVIN KOCH,
JULIUS LISSTENBERGER.