

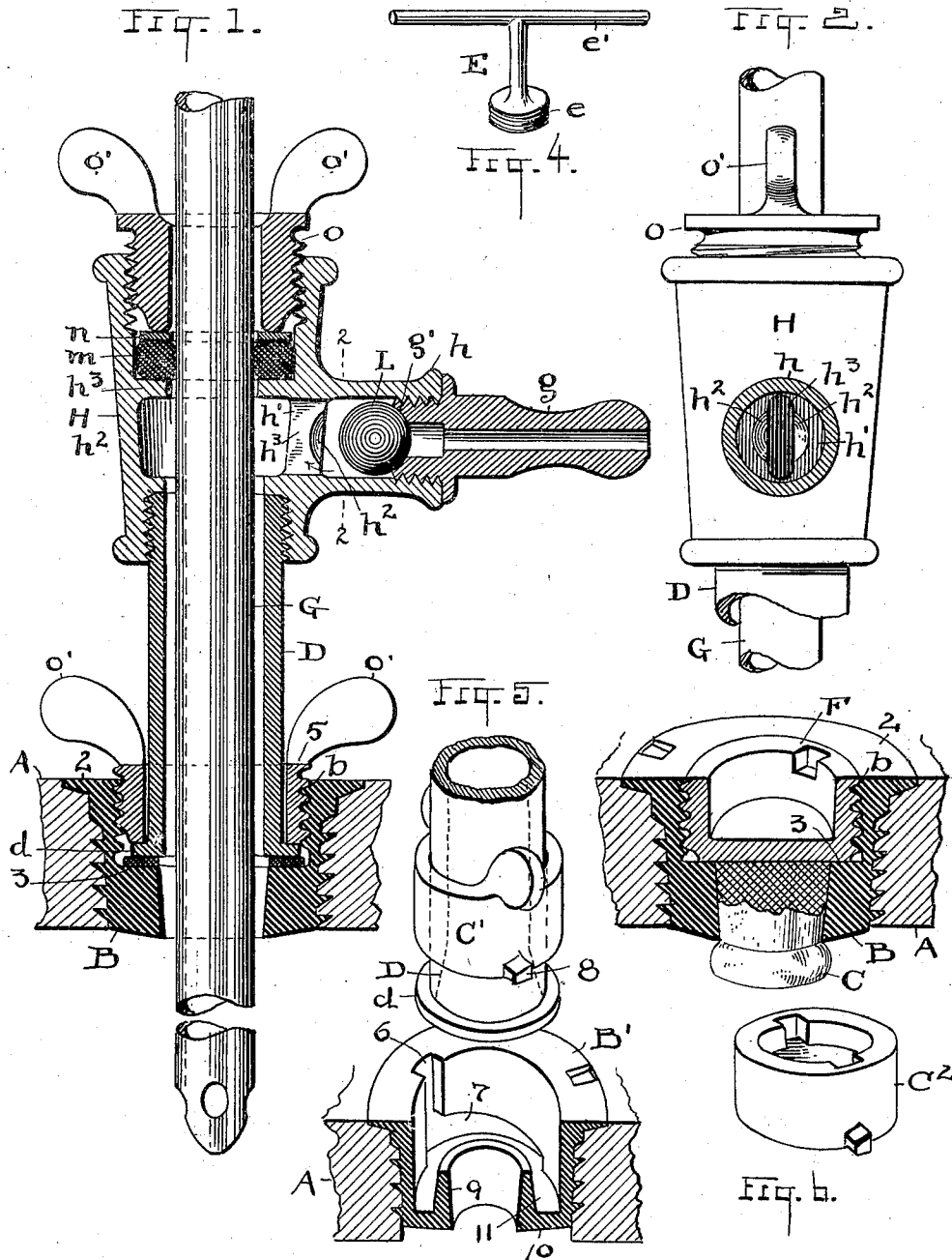
No. 655,672.

Patented Aug. 7, 1900.

H. ENGEL.
LIQUID TAPPING APPARATUS.

(Application filed Feb. 5, 1900.)

(No Model.)



ATTEST
W. B. Moser
H. C. Mendenhall

INVENTOR
Henry Engel
BY J. V. Fisher
ATTY

UNITED STATES PATENT OFFICE.

HENRY ENGEL, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF TO ADAM LINN, OF SAME PLACE.

LIQUID-TAPPING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 655,672, dated August 7, 1900.

Application filed February 5, 1900. Serial No. 3,959. (No model.)

To all whom it may concern:

Be it known that I, HENRY ENGEL, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Liquid-Tapping Apparatus; and I do declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in liquid-tapping apparatus—such as is used for tapping beer, porter, cider, ale, mineral water, and other liquids which are under pressure in barrels, kegs, and the like for preservation and draft—all substantially as shown and described, and particularly pointed out in the claim.

In the accompanying drawings, Figure 1 is a vertical sectional elevation of the said apparatus or tapping mechanism and a plain elevation of the draft-tube, all substantially as hereinafter fully described. Fig. 2 is a plain elevation of the upper portion of the said mechanism with the valve-arm removed on line 2 2, Fig. 1. Fig. 3 is a perspective elevation of one form of the bushing for the barrel or keg in which there is also shown a cork and a retaining-plug therefor. Fig. 4 is a perspective view of a screw-threaded wrench for fastening the bushing into position in the barrel. Fig. 5 is a perspective elevation of a modified form of bushing and of the hand-nut which is used therewith, and Fig. 6 is a perspective of a modified form of plug adapted to this bushing.

In the constructions thus shown, A represents a section of what may be a beer, ale, or other cask, keg, or barrel or vessel, and B is a metallic and permanently-attached bushing set into the bung-hole or top of the said vessel, barrel, or keg. Hereinafter the word "barrel" will be used to express the vessel. In the present case the said bushing has substantially a single size or diameter exteriorly, being of about the same cross-section from its outer flange 2 to its inner end and threaded about its body its full depth. On its inside it has two diameters or two sizes of bore, the upper one of which forms a space

serving several purposes, as we shall see, and the lower diameter providing a seat for the liquid-confining cork C. Between these two diameters there is a decided offset or shoulder 3 all around, so that relatively the bore for the cork is considerably smaller than the bore above, which is threaded about its inside at *b* in the form shown in Figs. 1 and 3. The bore for the cork is smooth and may have even greater depth than here shown if preferred. A single size of hole bored in the barrel suffices for this style of bushing, and the bushing is screwed to place in the barrel by means of the form of wrench E, (shown in Fig. 4,) which has a threaded head *e*, adapted to engage in the threaded top of the bushing, and handles *e'* to turn it to place.

When the bushing has been put in place and it is desired to store or ship the barrel, the cork C is inserted, and the cork-confining plug F is screwed in the bushing over the cork, relatively as seen in Fig. 3. The cork cannot now possibly work out nor can it be tampered with, so that the barrel is perfectly secure in these respects for an indefinite period and until the plug is purposely removed for tapping.

The third use of the internal thread *b* in the top of the bushing is shown in Fig. 1, where it is engaged by the ring-shaped nut or thumb-screw 5, which confines the coupling and air-conducting tube D. This tube has a flange *d* about its bottom, with a washer beneath to make a liquid-tight joint, and the nut 5 is turned down tight on said flange, so as to hold the said tube firmly in place. Threaded upon the upper end of this tube is a hub H of a construction peculiar to itself and adapted to serve both as a support for the draft-tube G and as an air or gas pressure connection from the nipple *g* thereon. Usually for the drawing of beer, ale, and the like, which is under internal pressure from its own gases, the pressure is automatically maintained at an equilibrium corresponding to the normal pressure or higher, so that the contents can be drawn off at an elevation above the barrel, and the introduced air or pressure will replace the liquid withdrawn and hold the initial pressure uniform to the end. To facilitate the admission of air or other medium

under pressure for this purpose, the interior diameter of tube D is made proportionately larger than the exterior diameter of draft-tube G, thus leaving a space between them, which opens into the barrel. The hub H has a tubular arm h , with which the nipple g is connected, and within the arm is a free ball-valve L, adapted to be driven against the rounded seat g' on the inner end of nipple g under the back pressure from the barrel and to yield on its seat as the air or gas which is forced in against it enters to replenish the barrel. The said ball thus plays in its chamber in arm h between its seat g' and the rear slotted stop h' , and there is room enough about the ball for the air to pass inward. However, the instant the superior inward pressure through nozzle g is relaxed the back pressure from the barrel drives the ball to its seat, thus preventing possible escape of air or gas in this direction. An annular space h^2 within hub H about tube G completes the free communication between the nozzle g and the valve-chamber with the space, leading thence to the barrel about tube G. Above this annular space or chamber h^2 in hub H there is an inwardly-projecting flange h^3 , and above this the said hub is interiorly threaded. This enables me to make a simple but very secure packing and support for the draft-tube, which otherwise is loose in its place and can be easily withdrawn; but when inserted in the barrel, as usual, it is packed and fastened by means of a ring-shaped packing or gasket m , preferably cylindrical in cross-section and resting on flange h^3 . On this packing I place a flat circular collar n , which forms a protecting-bearing for the locking-nut o , which is turned down onto collar n and by spreading the packing-ring closes the same tightly against tube G and prevents possible leakage about it, as well as securing said tube in place.

Both nut o and nut 5 for the bushing B are preferably constructed to be turned by hand, having long fingers or projections o' , which the hand can grip and turn thence to place. This is convenient and desirable.

If preferred, the form of bushing B' shown in Fig. 5 may be used. Here I show a construction having opposite slots 6 on its inside running down to inclined spiral channels 7 at their bottom and taking the place of the threads in the other bushing. These channels 7 are engaged by the lugs 8 on the nut C', corresponding to nut or thumb-screw 5 in Fig. 1. This avoids the internal threads b shown in the other bushing and is preferred by some who do not like the threads, because there is fear of their becoming mutilated when instruments are inserted to drive in the cork C. In this form of bushing the cork is held by the circular flange 9, which extends upwardly from the bottom 10, forming a chan-

nel 11, in which the rubber gasket is laid. The flange d of tube D bears on this gasket, as in the other form of bushing; but a much greater compression and better sealing is obtained herein, because the gasket is confined upon all sides and completely fills the space, and when under compression of nut C' the sides, as well as the top and bottom, are sealed. The outer surface of the neck or flange 9 is slightly tapering or inclined from top to bottom, and the inner and lower end of tube D is made to correspond to this taper to effect a better sealing-joint. Otherwise bushing B' does not differ from bushing B, and the exterior surfaces of the so-called "bushing-wrench" E and the plug F and nut 5 are made to conform to this change.

The ball-valve L is preferably made of soft rubber to assure a perfect sealing against the rounded seat g' , and as the back-plug of the ball against a flat-sided stop would wear the rounded surface of the ball flat and uneven in places, and thus destroy a perfect sealing-surface, it is necessary to form a concave or rounded seat h^2 in the face of the stop h' at each side of its central slot h^3 . This prevents an uneven wearing of the ball, and the ball will last an indefinite period and always give the best results.

The tube D is threaded into the lower end of the hub H and is removable to allow the nut or thumb-screw 5 to be sleeved over it. This makes all the parts separable and provides a construction which allows ready repairs to be made, as well as convenient accessibility for cleaning of the interior.

What I claim is—

In apparatus substantially as described, the hub having an integral tubular arm and a nipple having a rounded valve-seat on its inner end threaded into said arm, a loose rubber ball-valve in said arm adapted to roll against said seat, a rear stop having a central slotted passage communicating with a chamber in said hub, and a seat on each side of said slot conforming with the curvature of the ball to prevent the flattening of said ball in places, a tube threaded in the lower portion of said hub, a coupling-nut on said tube, an expanding-nut threaded in the upper portion of said hub, an inward annular flange above the central hub-chamber, a rubber packing-ring on said flange, a flat metal bearing-ring between the nut and the packing-ring, and a draft-tube of smaller exterior diameter than the interior of the coupling-tube and extending through said tube, hub and expanding-nut, substantially as described.

Witness my hand to the foregoing specification this 31st day of January, 1900.

HENRY ENGEL.

Witnesses:

H. E. MUDRA,
R. B. MOSER.