No. 731,038. PATENTED JAN. 31, 1905.

M. WARREN.

APPARATUS FOR FILLING RECEPTACLES WITH LIQUIDS UNDER PRESSURE.

APPLICATION FILED NOV. 4, 1903.

5 SHEETS—SHEET 1.

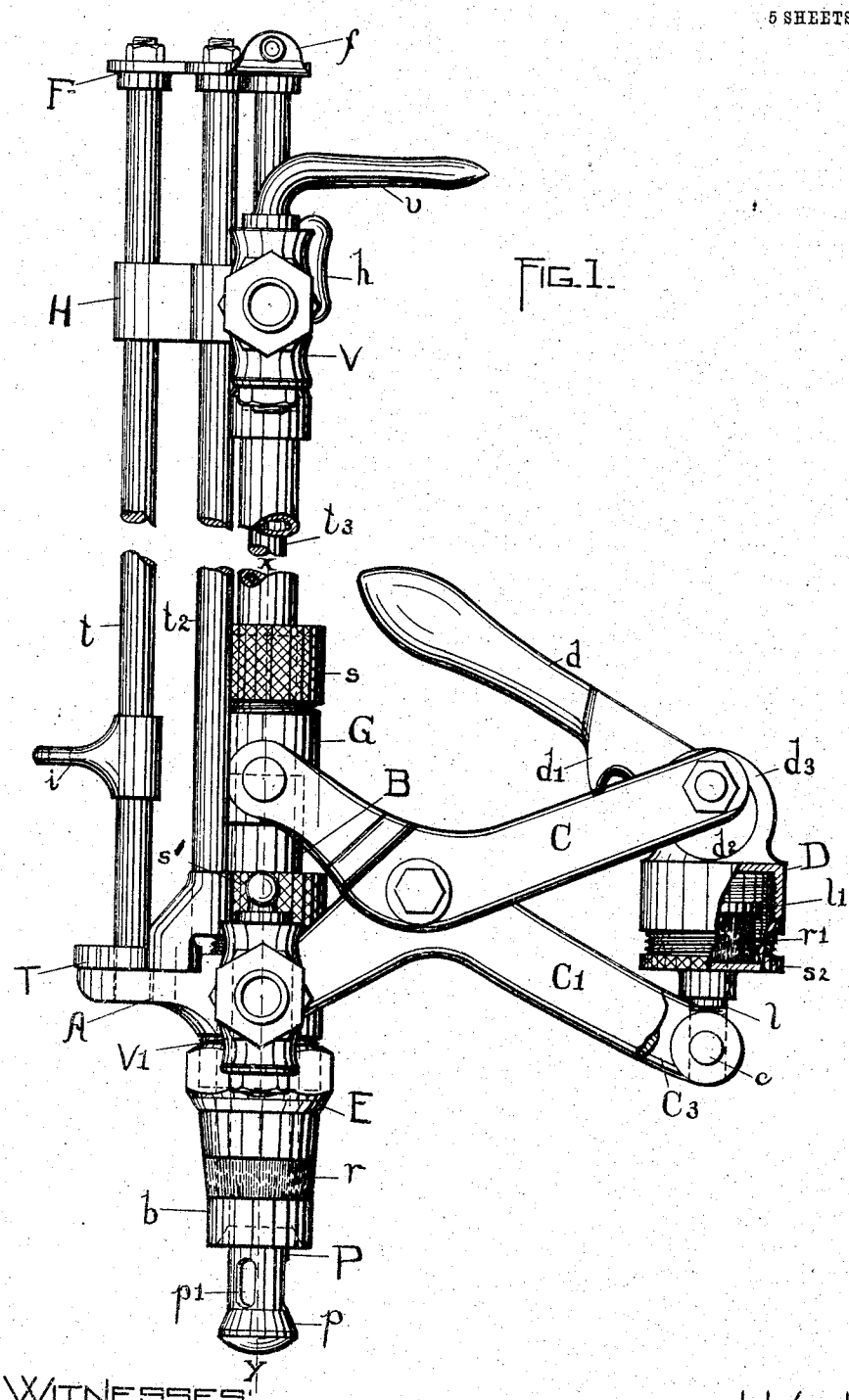


FIG. 1.

WITNESSES:
Clara Sinnet.
Osborne F. Gurney.

INVENTOR:
Marion Warren.
by Wm. K. Cooley.
atty.

PHOTO-LITHOGRAPHED BY SACHETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 781,038. PATENTED JAN. 31, 1905.

M. WARREN.

APPARATUS FOR FILLING RECEPTACLES WITH LIQUIDS UNDER PRESSURE.

APPLICATION FILED NOV. 4, 1903.

5 SHEETS—SHEET 2.

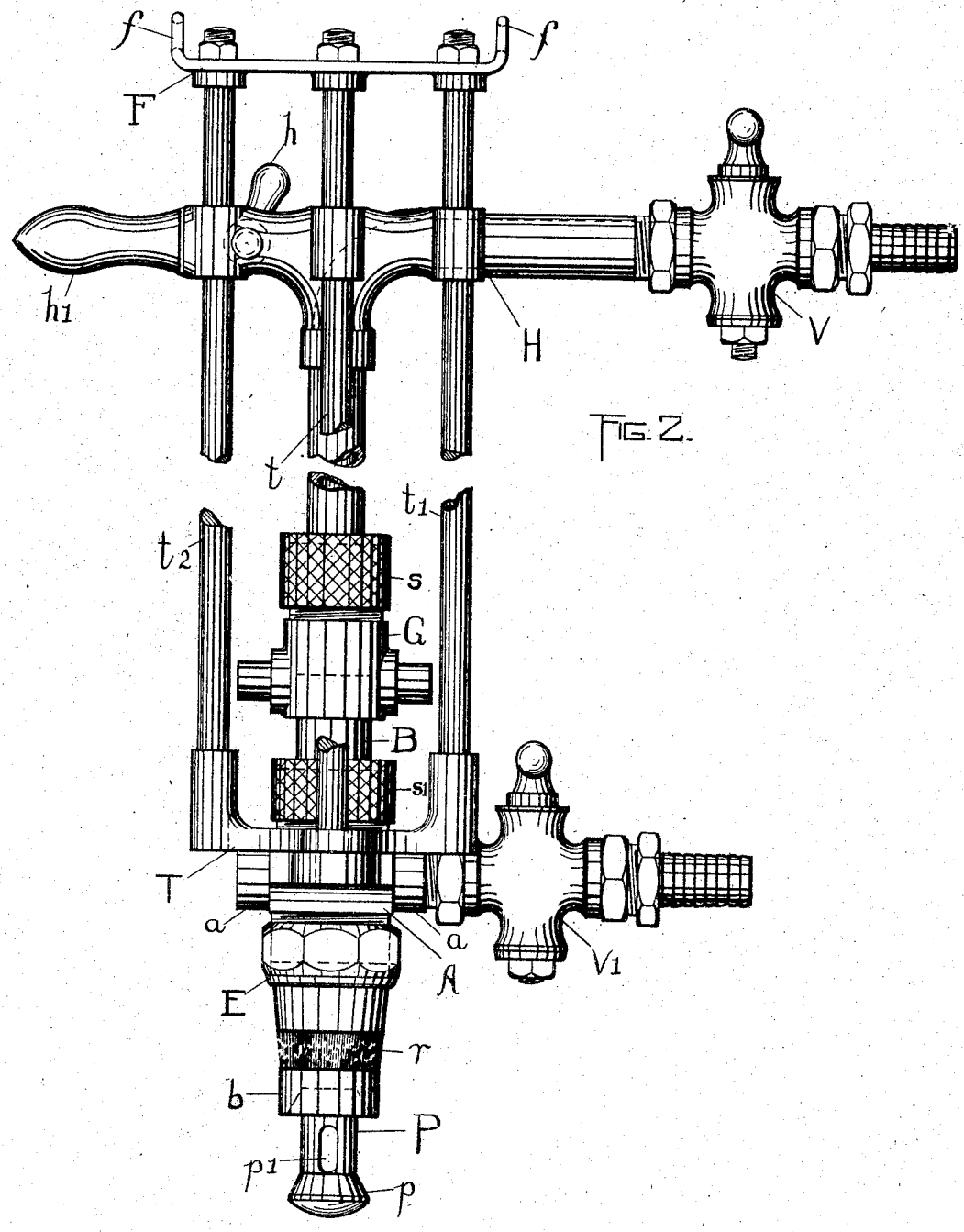


FIG. 2.

WITNESSES:
Osborne F. Gurney
Clara Sicum.

INVENTOR:
Marion Warren.
per Wm. H. Cooley
Atty.

PHOTO LITHOGRAPHED BY SACHETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 781,038. PATENTED JAN. 31, 1905.

M. WARREN.

APPARATUS FOR FILLING RECEPTACLES WITH LIQUIDS UNDER PRESSURE.

APPLICATION FILED NOV. 4, 1903.

5 SHEETS—SHEET 3.

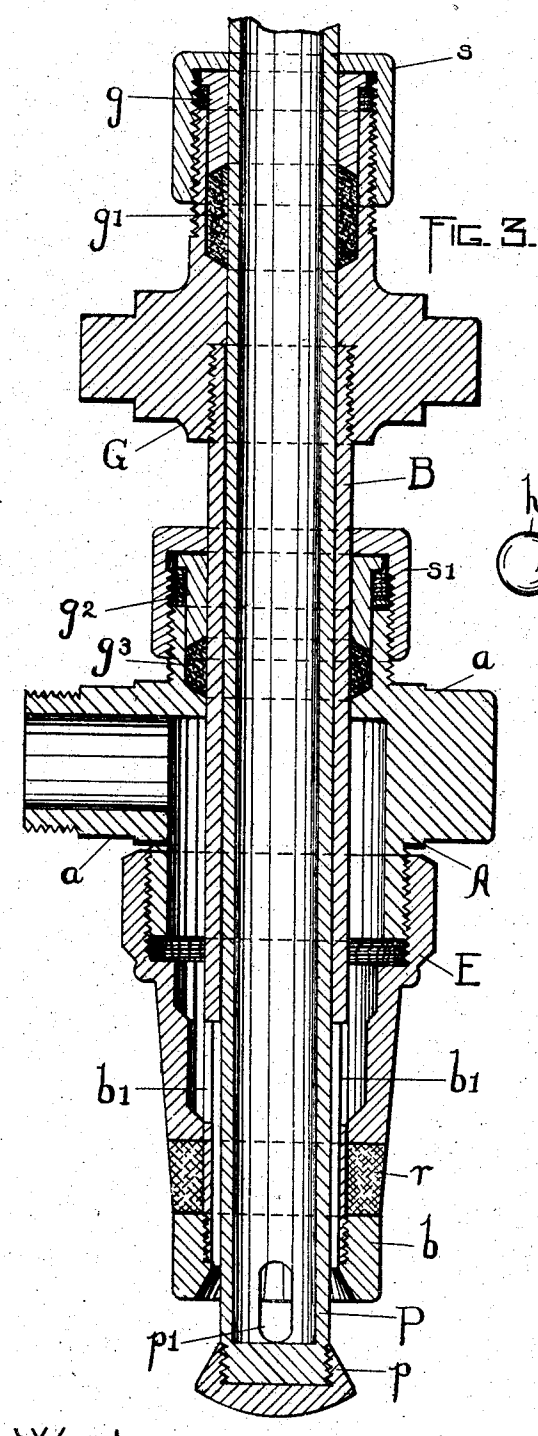


FIG. 3.

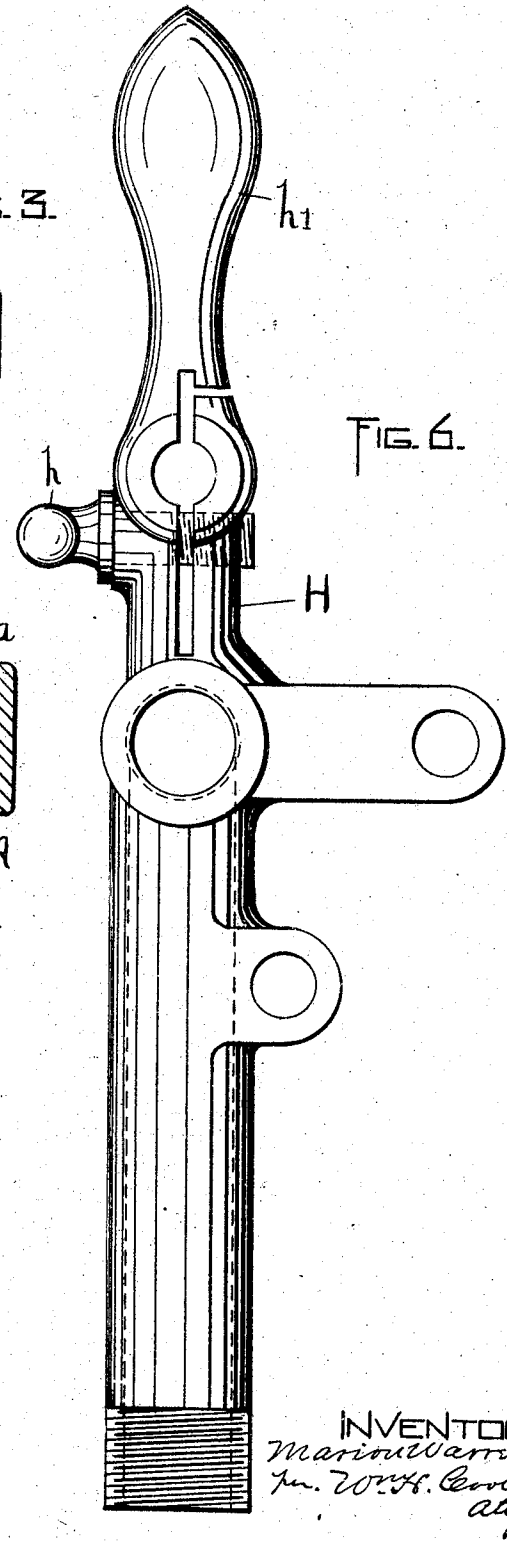


FIG. 6.

WITNESSES:
Osborne F. Gurney
Lara Sisur

INVENTOR:
Marion Warren
by Wm. W. S. Cooley
Atty.

PHOTO-LITHOGRAPHED BY SACHETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 781,038. PATENTED JAN. 31, 1905.

M. WARREN.

APPARATUS FOR FILLING RECEPTACLES WITH LIQUIDS UNDER PRESSURE.

APPLICATION FILED NOV. 4, 1903.

5 SHEETS—SHEET 4.

FIG. 4.

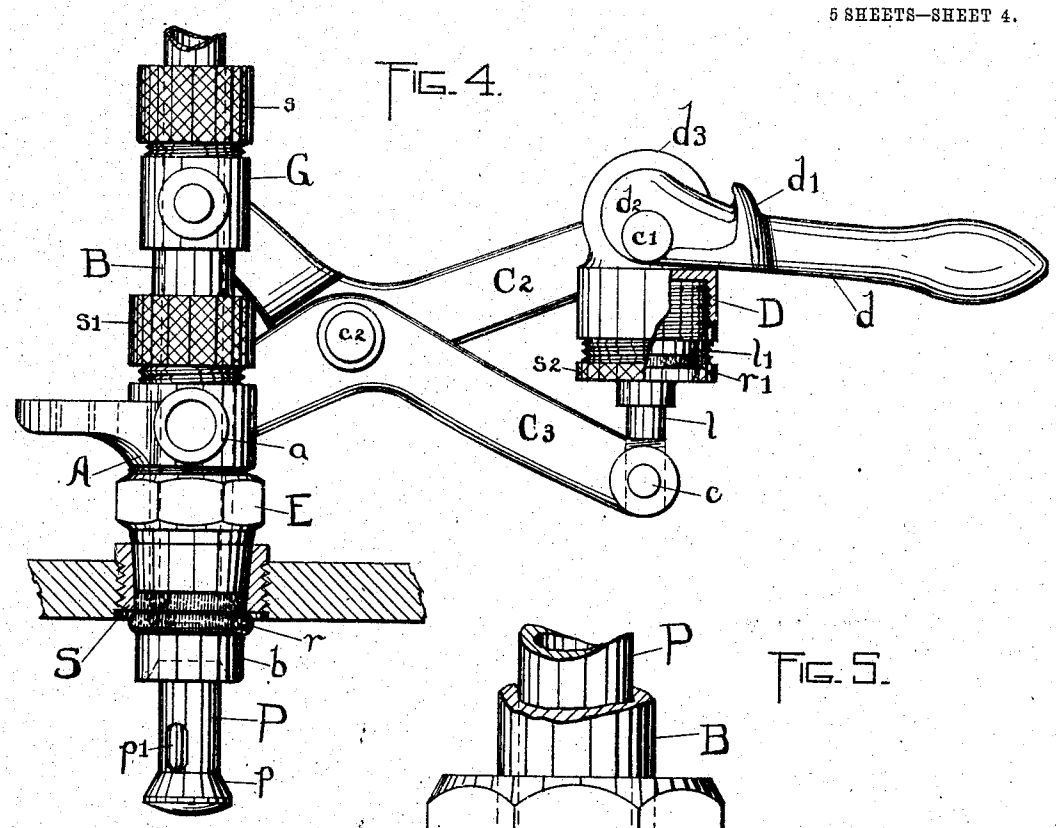
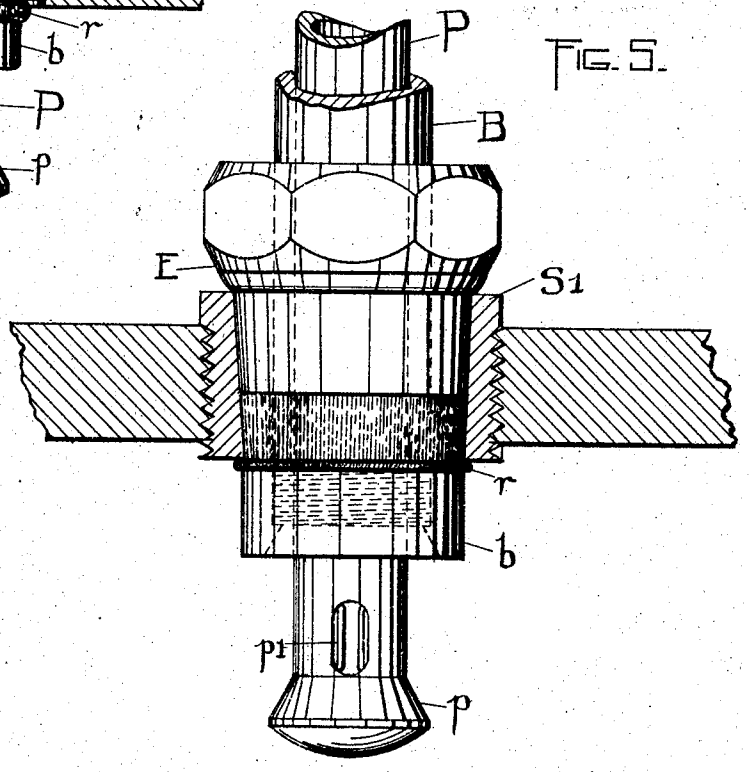


FIG. 5.



WITNESSES:
Osborne F. Gurney.
Clara Stuart

INVENTOR:
Marion Warren.
per W. S. Cooley.
Atty.

PHOTO-LITHOGRAPHED BY JACKLET & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 781,038. PATENTED JAN. 31, 1905.

M. WARREN.

APPARATUS FOR FILLING RECEPTACLES WITH LIQUIDS UNDER PRESSURE.

APPLICATION FILED NOV. 4, 1903.

5 SHEETS—SHEET 5.

FIG. 7.

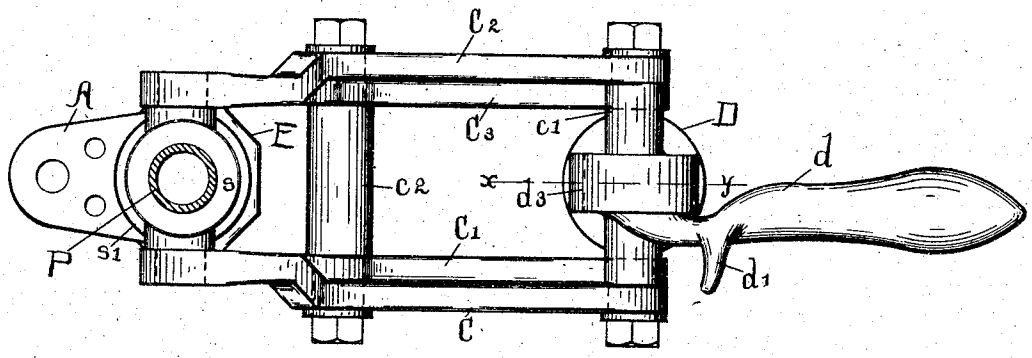
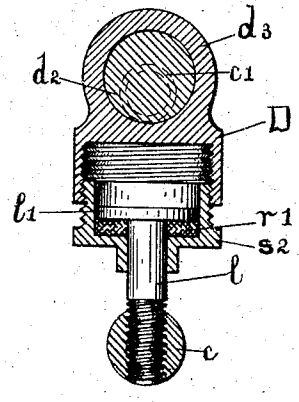


FIG. 8.



WITNESSES:
Osborne F. Gurney
Clara M. Turner

INVENTOR:
Marion Warren
by Wm. Cooley Atty.

No. 781,038. Patented January 31, 1905.

UNITED STATES PATENT OFFICE.

MARION WARREN, OF ROCHESTER, NEW YORK, ASSIGNOR TO ROCHESTER BUNGING APPARATUS COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

APPARATUS FOR FILLING RECEPTACLES WITH LIQUIDS UNDER PRESSURE.

SPECIFICATION forming part of Letters Patent No. 781,038, dated January 31, 1905.

Application filed November 4, 1903. Serial No. 179,767.

To all whom it may concern:

Be it known that I, MARION WARREN, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented a new and Improved Apparatus for Filling Receptacles with Liquids Under Pressure, of which the following is a specification.

In charging vessels or receptacles with liquids under pressure it is common to charge the receptacle with air or gas under a pressure slightly less than that to which the liquid is subjected in being forced into such receptacles, the difference between the pressure of the gas or air and that to which the liquid is subjected being sufficient to cause the liquid to flow into the receptacle. In many instances it is desirable to charge the receptacle—such, for instance, as a barrel, keg, or cask—with the gas or air under pressure and also with the desired liquid under pressure, both through a common orifice—such, for instance, as the bung-hole to a barrel or cask. In filling the kegs or barrels in this way it is necessary that a tight joint be made with the bung-hole of the barrel or keg and that through such bung-hole there be inserted two pipes, one for the passage of the air or gas both to and from the barrel or keg and the other for the passage of the beer or ale with which such keg or barrel is to be filled. It is preferable in such an apparatus as just above outlined to have the two pipes concentrically arranged the one within the other and to have the inner one slide longitudinally through and so supported within the outer tube or pipe as to furnish a free passage around such inner tube to and from the barrel through the outer tube or pipe. It will of course be understood that in such an arrangement as just above outlined there must be provided some means for making a tight joint between the outer tube and the bung-hole of the barrel or keg. Such a tight joint has usually heretofore been secured by means of a mechanism for forcing downwardly upon the barrel and at the bung-hole therein a packing medium connected with the outer tube or pipe. Such an arrangement necessitates, of course, that the keg or barrel be accurately located, so that the bung-hole may come directly under and be in alinement with the outer tube when forced down against the same. It also necessitates that there be provided some means for support against the upward thrust of the mechanism, whereby a downward pressure is secured against the keg or barrel sufficient to produce a tight joint at the bung-hole therein, so that the process for filling the keg or barrel may be conducted without the escape of gas or air and of the desired liquid. The difficulties in locating the keg or barrel in proper alinement and of providing a means for securing the desired pressure downward upon the keg or barrel of the packing medium around the outer tube readily adjustable to the different sizes in the kegs or barrels have constituted serious objections to the use of such an arrangement. Added to these objections there has also been the further objection that such mechanism is cumbersome and not readily attachable to and detachable from the barrel. It has also usually involved the moving of heavy parts, operating to greatly increase the time necessary for filling a keg with the desired liquid.

It is the purpose of my present invention to overcome these difficulties above enumerated and to provide instead of the mechanism heretofore used for such purposes one that shall be capable of almost instantaneous attachment to and detachment from a barrel or keg regardless of the exact location of the keg or of the height of the bung-hole thereof and an apparatus which can be easily handled and one also in which the weight of the parts to be handled may be practically balanced by suitable counterweights. Such an arrangement I have shown in the accompanying drawings, in which—

Figure 1 is a side elevation of my apparatus, and Fig. 2 a front elevation of the same with portions through the center of the apparatus broken away in such figures. Fig. 3 is a vertical sectional view of a part of the lower portion of my apparatus, taken along the dot-

ted line *x y* of Fig. 1 and with the operating-levers removed. Fig. 4 is a side elevation of the lower portions of my apparatus with the operating-levers C and C′ toward the observer removed and with such apparatus inserted in a bung-bushing and a seal or air-tight joint formed therewith by such apparatus. Fig. 5 is an enlarged side view of only the lower end of my apparatus, shown as inserted in a bung-bushing differing somewhat in proportion from that shown in Fig. 4. In each of these Figs. 4 and 5 the bung-bushing and the portion of the stave of the barrel carrying the same are shown in vertical sectional views. Fig. 6 is an enlarged view of the upper connecting piece to my apparatus as viewed from the under side. Fig. 7 shows in plan view the operating mechanism for my apparatus, consisting in the levers C, C′, C^2, and C^3 and their connections and the operating-handle *d* and the connections between such handle and such levers. Fig. 8 is a vertical section of the parts of the connecting devices between the handle *d* and the system of operating-levers for my apparatus, taken along the dotted line *x y* of Fig. 7.

Similar letters refer to similar parts throughout the several views.

Referring to the drawings, B is a brass tube working freely through a stuffing-box of the usual construction consisting of the following elements—viz., the threaded cap-piece *s*′, screwed onto the threaded extension formed on the lower connecting-piece A and operating against the follower g^2 to compress the packing g^3. This connecting-piece A carries trunnions *a a*, the left hand one of which, as seen in Fig. 3, is tubular and opens into a chamber within this connecting-piece A. The outer end of the left-hand trunnion *a*, as seen in Fig. 3, is threaded to receive a valve V′, the outer end of which is arranged to make connection with a suitable hose. The tube B extends through the chamber just referred to in this connecting-piece A and is screwed into a head-piece G, having trunnions on either side thereof, as indicated. This head-piece G terminates at its upper end in a stuffing-box of the usual construction consisting in the threaded cap-piece *s*, coöperating with the threaded upward extension on this head-piece G and working against the follower *g* to compress the packing *g*′ tightly around the tube P. This tube P extends upward, as indicated in the drawings, and is screwed into the tubular connecting-piece H, carrying, as indicated in Fig. 2, on its left-hand end, a handle *h*′, and at its right-hand end the valve V, the outer end of which is arranged to make connection with a suitable hose. The tube P terminates at its lower end in an inclosing foot-piece *p* and has also orifices *p*′ therethrough, as shown, for the beer or ale to flow through into the barrel or cask to be filled. This tube P works freely through the tube B. The connecting-piece A carries a plate T, having two arms thereon into which are screwed the two guiding-rods *t*′ and t^2, shouldered at their upper ends, as indicated, and passing through holes therefor in a top plate F and secured thereto by means of nuts threaded onto the upper end of these rods *t*′ and t^2. A third rod *t* is screwed through the plate T and into an extension on connecting-piece A and is also secured to top plate F in a way similar to rods *t*′ and t^2. This top plate F carries suitable ears *f* to receive cords by means of which the apparatus may be suspended in any suitable way, (not shown,) preferably by means of such cords passing over suitable pulleys and carrying at their other ends a suitable counterweight, such mechanism forming no part of my present invention and being already well known in the art is not illustrated herein. The end of the upper connecting-piece H next to the handle *h*′ thereon is shown as split or divided in such a way that the clamping-screw *h* serves to rigidly clamp such connecting-piece H in any desired position of vertical adjustment upon the rods *t*, *t*′, and t^2, upon which such connecting-piece H is free to move vertically, being guided by means of the arms or ears carried thereby and having holes therethrough for such guide-rods. I prefer to make use of a third guide-rod *t* for the purpose of stiffening the entire mechanism, and on this third guide-rod *t* I locate a sliding eyepiece *i*, to which there may be secured a cord when desired, secured to a weight, passed over a pulley to the rear of the operator and against the framework of the racking apparatus, so as to pull the entire mechanism slightly backward and away from the operator when raised and disconnected from the barrel to be filled. This tube B extends downwardly through the connecting-piece A and into and through the cylindrical and chambered element E. This cylindrical and chambered element E is internally threaded at its upper end to screw onto the threaded lower end of the connecting-piece A. This tube B has the bore thereof enlarged at its lower end commencing at a point about midway in height of the cylindrical and chambered element E and has openings *b*′ through the wall thereof at the upper end of such enlargement in this bore, such openings making connection between the chamber in the cylindrical and chambered element E and the enlarged bore of such tube B. This tube B extends downwardly through the cylindrical and chambered element E and also through a sealing or packing collar *r*, loosely carried thereon just below the lower end of the cylindrical and chambered element E, and is threaded into the clamping-collar *b*.

Articulating with the trunnions formed on the connecting-piece A are seen the levers C′ and C^3, (shown more fully in Figs. 1 and 4,) and articulating in a similar way with the

trunnions formed on the head-piece G are seen the levers C and C^2. Levers C and C′ articulate with each other upon one end of a common bolt c^2, passing through suitable holes therein and extending also through suitable holes in the lever C^2 and C^3, which also articulate with each other upon the other end of this bolt c^2. A rod c is arranged to work freely within the holes therefor in the levers C′ and C^3 at their outer ends, and secured to this rod c is seen the stud l, carrying at its upper end an enlarged cap-piece l', working freely within the cylindrical case D, threaded internally, as shown in the drawings, to receive the screw-follower s^2, supporting a suitable rubber cushion r', upon which the cap-piece l' is arranged to bear lightly for the inoperative position of the handle d. The handle d is secured to a bolt c', working freely in holes therefor in the outer ends of the levers C and C^2. This bolt c' carries an eccentric cam d^2, working in a suitable hole therefor in the upward extension d^3, formed on the case D. The coöperation of the parts just described, it will at once be understood, is such that with the handle d over to the left, as indicated in Fig. 1, the outer ends of the levers C and C′ and C^2 and C^3 are permitted to be drawn apart. When, however, such handle d is turned over to the right, as indicated in Fig. 4, the case D is raised and the screw-follower s^2 is carried therewith and also the cushion r' and the cap-piece l' and stud l, secured thereto, and thereby also the outer ends of the levers C′ and C^3 through the connection between such levers already described and such stud l. In Figs. 1 and 4 part of case D is broken away to show internal apparatus and connections. The result of this motion of the handle d over to the right is that the head-piece G is raised relatively to the connecting-piece A—that is, such connecting-piece A and head-piece G are forced apart—causing the screw-collar b on the lower end of the tube B to be drawn upward against the packing or sealing collar r, compressing the same in a vertical direction between such collar b and the lower end of the chambered cylindrical element E, threaded onto the connecting-piece A, as indicated in Fig. 2. The result of this action is to enlarge the packing-collar r in radial directions, so as to force the same out against the inside periphery of the bung-bushing S or S′ and form therewith an air-tight joint. The conformation which this packing washer or collar r usually receives when the apparatus is inserted within the bung-hole of a barrel is such as indicated either in Fig. 4 or Fig. 5. In Fig. 4 the apparatus is shown as making connection with a bung-bushing of considerably less depth than that shown in Fig. 5. In either case, however, the operation is substantially the same, as more or less of the packing-collar is enlarged around about the lower or inner edge of the bung-bushing, as indicated in such figures.

Attention is called to the following points: With a hose attached to the outer end of the valve V, and with the valve V open, and with the tube P lowered, so that the lower end thereof will be at the bottom of the cask or receptacle to be filled, connection is made between the outer end of the valve V and the barrel or cask at practically the lowest point therein, and also that around the tube P there are openings in tube B above clamping-collar b upward into the chambered element E and through the connecting-piece A and outward through valve V′, secured thereto, when such valve V′ is open.

In using my apparatus, preferably after the same has been suitably suspended by cords and pulleys, the upper connecting-piece H when the apparatus is not in use is raised to its upper position, carrying with it the tube P connected thereto. The apparatus is then swung over the barrel, and the chambered element E, with the sealing or packing collar r and the clamping-collar b, is lowered through the bung-bushing to the position as indicated either in Fig. 4 or Fig. 5. At this time it will of course be understood that the handle d is over to the left, as indicated in Fig. 1, in which position it is normally held by means of a lug d thereon engaging the upper edge of the lever C. After the apparatus has been inserted in the bung-bushing the lever d is moved over to the right to the position indicated in Fig. 4, and thereby by means of the coöperation of the parts already described the clamping-collar b is raised and the packing or sealing collar r is caused to assume a shape substantially such as shown in either Fig. 4 or Fig. 5, making an air-tight joint with such bushing S or S′. Then the clamping-handle h on the upper connecting-piece H is released and such connecting-piece H forced downward by means of handle h' thereon until the cap-piece p at the lower end of the tube or pipe P is practically at the bottom of the barrel or receptacle to be filled. Then the valve V′ is opened, and the air or gas under pressure from a suitable source of supply is forced into the barrel through a suitable hose, making connection between such source of supply and the outer end of the valve V′ in the usual way. When the receptacle has been filled with the gas or air under pressure, then by means of suitable connections, (not shown and forming no part of my present invention, and being so well known in the art as to call for no further reference or illustration herein,) the apparatus is disconnected from the source of gas or air under pressure, and the valve V is opened, permitting the desired liquid from a suitable source under pressure to enter through this valve and the tubular connecting-piece H, for which purpose it will of course be understood that the

outer end of the valve V is suitably connected, by means of a hose in the usual way, with the source of supply for such liquid.

The liquid is forced in through the valve V, connecting-piece H, tube P, and out through the orifices p', seen at the lower end thereof, and into the barrel, forcing the gas or air under pressure which was in the barrel out through the space around such tube P and within the enlarged bore at the lower end of the tube B and through the orifices b' near the lower end thereof into the chambered element E and into and through the tubular connecting-piece A and out through the valve V', screwed thereon, into either a chamber therefor or through a suitable pressure-relief valve into the open air, as the case may be. Such adjuncts to a racking system being already well known in the art and variously modified to meet the different requirements of the racking system employed and forming no part of my present invention are not herein shown and described.

I desire to call attention to the following points especially: that my apparatus consists in a packing or sealing collar and means for forcing the same outwardly against a bung or bung-bushing, so as to form an air-tight joint therewith, and that such means is operable from without the barrel, and also that such means is independent of any external support for receiving the thrust of such operating mechanism, that such seal is formed by the coöperation of levers acting to enlarge or expand such packing ring or collar radially to form such air-tight joint, and also that through such packing-ring there is provided an ingress and egress passage for the gas or air under pressure and also independent therefrom a passage for the beer, ale, or other liquid with which the receptacle is to be filled, and that such passage is adjustable to deliver the liquid at any desired point in height in the barrel or cask to be filled. The function of the cushion r', it will at once be understood, is to apply a yielding pressure to the sealing-collar r. By the use of such a cushion I have found that the life of the sealing-collar r may be prolonged and the action of the part is rendered much more satisfactory. By means of the adjustable follower s' I am enabled to vary as desired and at once the pressure exerted upon the sealing-collar r by means of the varied pressure exerted upon the cushion r', as well as also to compensate for any reasonable amount of wear or compression of such parts.

What I claim is—

1. In an apparatus for filling a receptacle with liquid under pressure, an elastic packing or sealing collar, two relatively movable elements one on either side of such elastic collar and constituting means for supporting the same within the walls of a suitable opening in such receptacle, an operating-lever external to such receptacle and an adjustable connection between such lever and such elements whereby the operation of such lever compresses such packing or sealing collar more or less forcibly as desired against the walls of such opening and forms an air-tight joint therewith.

2. In an apparatus for filling a receptacle with liquid under pressure, an elastic packing or sealing collar, two relatively movable elements one on either side of such elastic collar and constituting means for supporting the same within the walls of a suitable opening in such receptacle, an operating-lever external to such receptacle and an elastic or yielding connection between such lever and such elements whereby the operation of such lever compresses such packing or sealing collar forcibly against the walls of such opening and forms an air-tight joint therewith.

3. In an apparatus for filling a receptacle with liquid under pressure, an elastic packing or sealing collar, two relatively movable elements one on either side of such elastic collar and constituting means for supporting the same within the walls of a suitable opening in such receptacle, an operating-lever external to such receptacle and an adjustable and elastic or yielding connection between such lever and such elements whereby the operation of such lever compresses such packing or sealing collar more or less forcibly as desired against the walls of such opening and forms an air-tight joint therewith.

4. In an apparatus for filling a receptacle with liquid under pressure, an elastic packing or sealing collar, two relatively movable elements one on either side of such elastic collar and constituting means for supporting the same within the walls of a suitable opening in such receptacle, an operating-lever external to such receptacle, an adjustable connection between such lever and such elements whereby the operation of such lever compresses such packing or sealing collar more or less forcibly as desired against the walls of such opening and forms an air-tight joint therewith, a tube connected to the lower one of such elements and slidable axially through the upper one of such elements and means for making an air-tight connection between such tube and such upper element in any position of axial adjustment therein.

5. In an apparatus for filling a receptacle with liquid under pressure, an elastic packing or sealing collar, two relatively movable elements one on either side of such elastic collar and constituting means for supporting the same within the walls of a suitable opening in such receptacle, an operating-lever external to such receptacle, an elastic or yielding connection between such lever and such elements whereby the operation of such lever compresses such packing or sealing collar forcibly against the walls of such opening and forms an air-tight joint therewith, a tube connected

to the lower one of such elements and means for making an air-tight connection between such tube and such upper element in any position of axial adjustment therein.

6. In an apparatus for filling a receptacle with liquid under pressure, an elastic packing or sealing collar, two relatively movable elements one on either side of such elastic collar and constituting means for supporting the same within the walls of a suitable opening in such receptacle, an operating-lever external to such receptacle, an adjustable and elastic or yielding connection between such lever and such elements whereby the operation of such lever compresses such packing or sealing collar more or less forcibly as desired against the walls of such opening and forms an air-tight joint therewith, a tube connected to the lower one of such elements and means for making an air-tight connection between such tube and such upper element in any position of axial adjustment therein.

7. In an apparatus for filling a receptacle with liquid under pressure, an elastic packing or sealing collar, two relatively movable elements one on either side of such elastic collar and constituting means for supporting the same within the walls of a suitable opening in such receptacle, an operating-lever external to such receptacle, an adjustable connection between such lever and such elements whereby the operation of such lever compresses such packing or sealing collar more or less forcibly as desired against the walls of such opening and forms an air-tight joint therewith, a first tube connected to the lower one of such elements and slidable axially through the upper one of such elements, means for making an air-tight connection between such first tube and such upper element in any position of axial adjustment therein, a second tube slidable axially through such first tube and means for making an air-tight joint between such first and second tubes for any position of relative axial adjustment between them.

8. In an apparatus for filling a receptacle with liquid under pressure, an elastic packing or sealing collar, two relatively movable elements one on either side of such elastic collar and constituting means for supporting the same within the walls of a suitable opening in such receptacle, an operating-lever external to such receptacle, an elastic or yielding connection between such lever and such elements whereby the operation of such lever compresses such packing or sealing collar forcibly against the walls of such opening and forms an air-tight joint therewith, a first tube connected to the lower one of such elements, means for making an air-tight connection between such first tube and such upper element in any position of axial adjustment therein, a second tube slidable axially through such first tube and means for making an air-tight joint between such first and second tubes for any position of relative axial adjustment between them.

9. In an apparatus for filling a receptacle with liquid under pressure, an elastic packing or sealing collar, two relatively movable elements one on either side of such elastic collar and constituting means for supporting the same within the walls of a suitable opening in such receptacle, an operating-lever external to such receptacle, an adjustable and elastic or yielding connection between such lever and such elements whereby the operation of such lever compresses such packing or sealing collar more or less forcibly as desired against the walls of such opening and forms an air-tight joint therewith, a first tube connected to the lower one of such elements, means for making an air-tight connection between such first tube and such upper element in any position of axial adjustment therein, a second tube slidable axially through such first tube and means for making an air-tight joint between such first and second tubes for any position of relative axial adjustment between them.

10. In an apparatus for filling a receptacle with liquid under pressure, an elastic packing or sealing collar, two relatively movable elements one on either side of such elastic collar and constituting means for supporting the same within the walls of a suitable opening in such receptacle, an operating-lever external to such receptacle, an adjustable connection between such lever and such elements whereby the operation of such lever compresses such packing or sealing collar more or less forcibly as desired against the walls of such opening and forms an air-tight joint therewith, a first tube connected to the lower one of such elements and slidable axially through the upper one of such elements, means for making an air-tight connection between such first tube and such upper element in any position of axial adjustment therein, a second tube slidable axially through such first tube, means for making an air-tight joint between such first and second tubes for any position of relative axial adjustment between them and means independent of such first tube for supporting and guiding such second tube therein.

11. In an apparatus for filling a receptacle with liquid under pressure, an elastic packing or sealing collar, two relatively movable elements one on either side of such elastic collar and constituting means for supporting the same within the walls of a suitable opening in such receptacle, an operating-lever external to such receptacle, an elastic or yielding connection between such lever and such elements whereby the operation of such lever compresses such packing or sealing collar forcibly against the walls of such opening and forms an air-tight joint therein, a first tube connected to the lower one of such elements, means for making an air-tight connection between

such first tube and such upper element in any position of axial adjustment therewith, a second tube slidable axially through such first tube, means for making an air-tight joint between such first and second tubes for any position of relative axial adjustment between them, and means independent of such first tube for supporting and guiding such second tube therein.

12. In an apparatus for filling a receptacle with liquid under pressure, an elastic packing or sealing collar, two relatively movable elements one on either side of such elastic collar and constituting means for supporting the same within the walls of a suitable opening in such receptacle, an operating-lever external to such receptacle, an adjustable and elastic or yielding connection between such lever and such elements whereby the operation of such lever compresses such packing or sealing collar more or less forcibly as desired against the walls of such opening and forms an air-tight joint therewith, a first tube connected to the lower one of such elements, means for making an air-tight connection between such first tube and such upper element in any position of axial adjustment therein, a second tube slidable axially through such first tube, means for making an air-tight joint between such first and second tubes for any position of relative axial adjustment between them and means independent of such first tube for supporting and guiding such second tube therein.

MARION WARREN.

Witnesses:
CLARA LIENER,
OSBORNE F. QUINCY.