

M. WARREN.
TAP FOR BARRELS OR CASKS.

APPLICATION FILED DEC. 19, 1903.

NO MODEL.

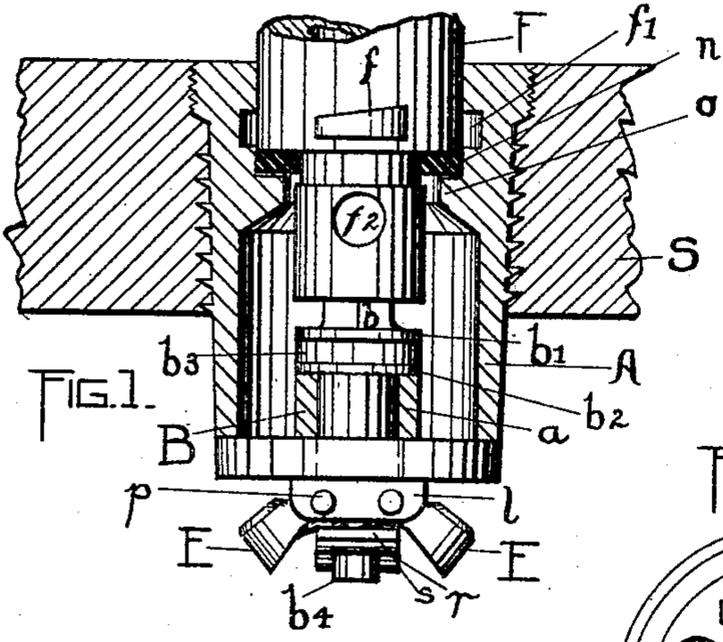


FIG. 3.

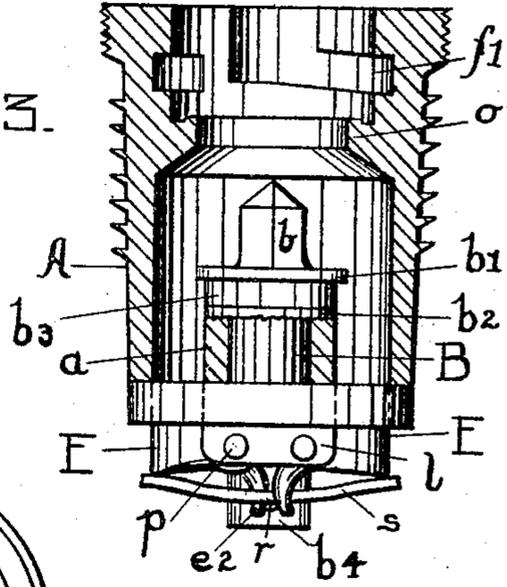


FIG. 5.

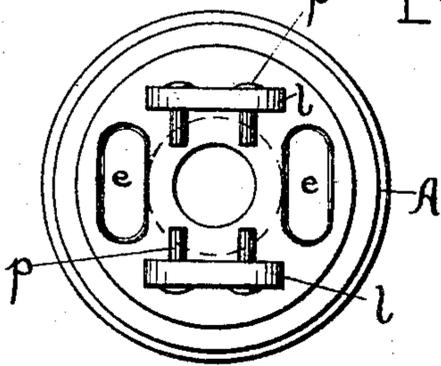


FIG. 4.

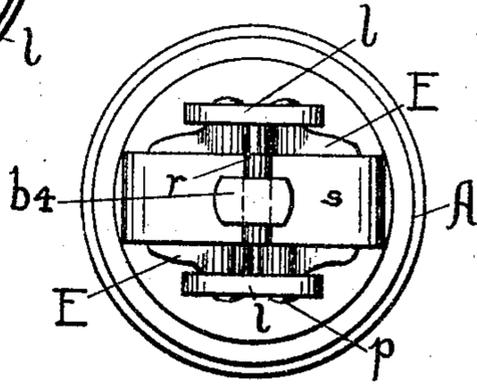


FIG. 2.

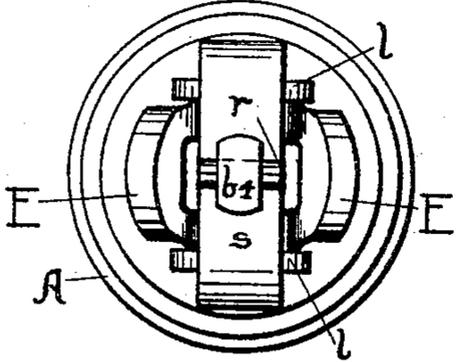


FIG. 8.

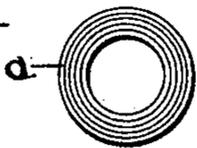


FIG. 11.

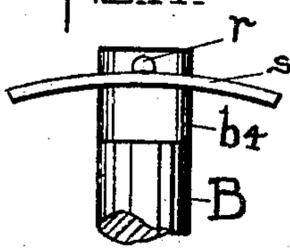


FIG. 9.

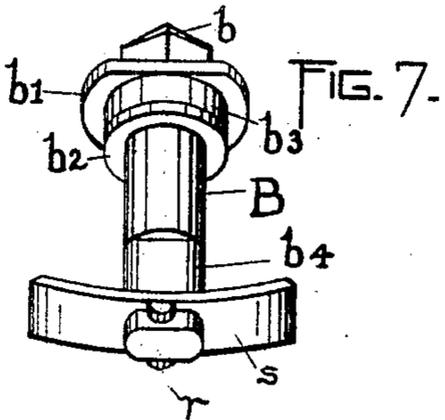
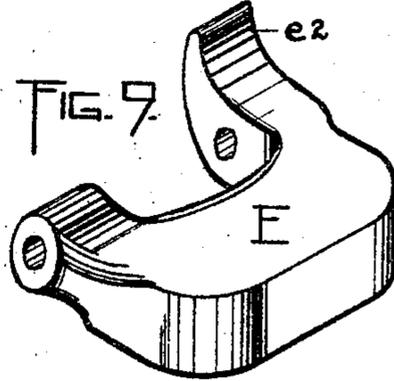


FIG. 6.

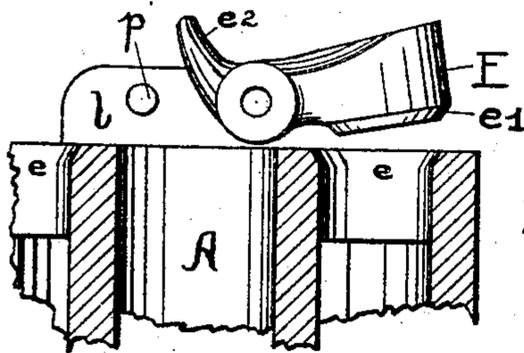
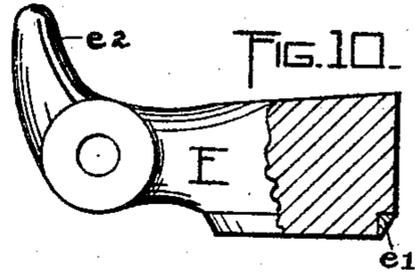


FIG. 10.



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INVENTOR:
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 by *Wm. H. Cowley Atty.*

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.

TAP FOR BARRELS OR CASKS.

SPECIFICATION forming part of Letters Patent No. 773,175, dated October 25, 1904.

Application filed December 19, 1903. Serial No. 185,802. (No model.)

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 an Improved Tap for Barrels or Casks, of which the following is a specification.

This invention relates to taps for barrels, casks, &c., and particularly to that class of taps for such purposes in which there is located or contained a valve arranged to be operated by a suitable wrench from without the cask or barrel.

Taps for beer or ale barrels or casks as now made are frequently provided with a valve arranged to be operated from the outside of the barrel, usually by means of a combined faucet and wrench of such a construction and so arranged to cooperate with features of the tap, bung, or bushing for the barrel that when the combined faucet and tap-wrench is so turned as to open the valve such faucet is firmly held within the bushing, so as to make a tight joint therewith, and in order to remove the combined tap-wrench and faucet from the bushing it is necessary to first so turn such combined tap and wrench as to close the valve in such bushing or tap. Such a combined tap-wrench and faucet is usually connected by means of a hose to a source of supply for gas or air under pressure for charging the barrel therewith before the racking of the beer or ale into the barrel or cask, and the beer or ale is forced into such cask under pressure slightly in excess of that of the gas or air with which the barrel is first charged. The barrel is then filled with the beer or ale through another bushing and by means of a combined tap-wrench and faucet cooperating therewith and being connected by means of a suitable hose to a source of supply for such beer or ale under pressure, and by the removal of the combined tap-wrenches and faucets the valves in the bushings or taps in the barrels or casks are closed. The character of the motion which is imparted to the combined tap-wrench and faucet in opening and closing the valve in such a tap or bushing for a bar-

rel or cask is preferably of a rotary character, and on this account heretofore rotary valves have been used in such taps to a large extent. To the use of a rotary valve under such circumstances there has frequently arisen a serious objection on account of the friction between the valve and its seat and the liability of the valve to stick and also in the uneven wear of the parts, causing such valve to leak after a little use. To overcome these objections, and at the same time take advantage of the rotary motion of the combined faucet and wrench to open and close a valve upon the inside of the bushing or tap, is the object of my present invention.

Another object of my invention is to provide a valve which will be firmly retained in its closed position by a strong spring or the action of an elastic medium and with such pressure of such spring or elastic medium at its maximum when the valve is closed. This feature of construction in my valve results in overcoming the difficulty usually encountered in rotating valves, in that such valves frequently need tightening in order to prevent their leakage, resulting in a still further complication to render such tightening possible.

Another feature of my present invention consists in providing a valve and its seat of such a character that a tight joint between such valve and its seat may be readily secured by means of heavy pressure, causing them to exactly conform to each other, and this same pressure I take advantage of to secure the necessary cooperating position of the parts for their proper assembling.

In the accompanying drawings I have shown my invention as applied to that style of a tap or bushing for a barrel or cask in which the valve is arranged to be operated by a combined tap-wrench and faucet such as above mentioned and having a quadrangular socket for engaging a similarly-conformed operating-head on the valve-operating rod.

Such drawings are as follows: Figure 1 is a vertical central section of a bushing constructed in accordance with my invention and with the bottom or inside end wall of the

bushing shown as full. In this figure the valves at the bottom of such bushing are shown opened, and there is also shown in this figure the extreme lower end of a combined tap-wrench and faucet so turned as to open such valves. Fig. 2 is a view from the under side of the parts as seen in Fig. 1 with the portion of the stave S, in which such bushing is inserted, omitted from Fig. 2. Fig. 3 is a view similar to Fig. 1, but with the combined tap-wrench and faucet removed and with the valves shown as having been closed by the turning of such faucet and tap-wrench before its removal. Fig. 4 is a view from the under side of the parts as seen in Fig. 3. Fig. 5 is a view of the under side of my bushing or tap and with the valves and the operating-rod and cross-bar removed. Fig. 6 is a sectional view of a portion of the lower end of my bushing or tap, showing only one of the valves in position therein as partly open and with the operating-rod and cross-piece also removed. Fig. 7 is a perspective view of the operating-rod and cross-piece used in my tap or bushing. Fig. 8 is a top or plan view of the upper end of the tubular extension *a*, formed on the bottom of the bushing. Fig. 9 is an enlarged perspective view of one of the valves detached. Fig. 10 is a side view of one of such valves, showing, partially in section, also the manner of forming the bearing-surface of such valve. Fig. 11 is a side view of the cross-piece secured to the operating-rod B for the valves of my bushing.

Similar letters refer to similar parts throughout the several figures.

Referring to the drawings, my tap or bushing consists of a shell A, threaded exteriorly, so as to be screwed into the stave S of the barrel or cask, as indicated in section in Fig. 1. This bushing is chambered interiorly, as indicated, and has formed therein the inwardly-projecting rim *o*, which is turned off true to form a seat for the elastic packing-ring *n*, secured on the operating-faucet and tap-wrench F. On this tap-wrench F are seen projections *f*, arranged to engage inclined grooves *f'* therefor in the body of the bushing A and so cooperating therewith that the turning of the combined faucet and tap-wrench F over to the right forces the same downwardly, so as to secure a tight joint between the packing-ring *n* and the seat *o* therefor. This combined tap-wrench and faucet F is hollow, as indicated, and at its lower end is formed a socket for the operating-head *b* of the valve-operating-rod B. Suitable openings *f''* are provided in the lower end of this combined tap-wrench and faucet F for the passage therethrough and into the bore of such faucet of the beer or ale from or to the barrel or of the air or gas under pressure to or from the barrel or cask.

The parts as thus far described are substantially those in use to-day in many places and already well known in the art.

Projecting upwardly from the base of the bushing A is seen a tubular projection *a*, bored out on the inside to fit the valve-rod B and corrugated on its upper end surface, as indicated in Fig. 8, to make a tight joint with the block-tin washer *b''*, secured upon the under side of the enlarged portion *b''*, which is formed integrally with the rod B. Also formed integrally with this rod B is seen the projecting section *b'*, which is of such a diameter that it can just pass through the opening in the seat *o* of the bushing A. The purpose of this last section *b'* is to prevent the opening of the valves E by a rod or stick being passed down within the bushing and caused to engage such valves and press them downwardly. Hence this section *b'* is so located that its longest extensions lie over the valves E when such valves are closed. Within the bottom of the bushing A are seen two openings *e*, arranged to be closed by the valves E in the manner to be explained, such openings being shown in Figs. 5 and 6. The conformation and construction of these valves E is more clearly indicated in Figs. 6 to 9 and 10. Each of these valves E, as indicated more clearly in Fig. 10, has a block-tin section *e'*, suitably secured in a rabbet therein and arranged to come in contact with the valve-seats in the openings *e*. The purpose of this block-tin section *e'*, as will be explained, is to provide a medium which will be caused to so conform to the valve-seat in the opening *e* as to secure a tight joint therewith by pressure, and preferably pressure exerted at the same time that the parts of the valve-operating mechanism are secured together. As indicated in the drawings, these valves E are suitably hinged to ears *l*, extending downwardly from and formed integrally with the bottom of the bushing A, such hinging mechanism consisting in the pins or rivets *p*, secured tightly in the ears *l* and working freely in suitable holes therefor in the valves E.

The valve-operating mechanism for my bushing or tap consists in the following elements, viz: The operating-rod B has a head *b*, conformed to fit and be engaged by the socket therefor in the lower end of the combined faucet and tap-wrench F, and beneath this operating-head *b* is seen the projecting section *b'*, the purpose and function of which has already been described, and beneath this the section *b''*, carrying the block-tin washer *b''*, secured thereto, which under pressure, as will be explained, is caused to conform to the corrugations on the upper end surface of the tubular section *a*. This rod B, as explained, works freely through the tubular extension *a* and has thereon a flattened portion *b''*, commencing just even with the lower surface of the lower end of the bushing A. This flattened portion *b''* extends downwardly and through a suitable opening therefor in the cross-piece *s* and is held therein by means of

the pin r , passed through a hole therefor in the lower end of this flattened portion b^4 of the rod B. This pin r is slightly flattened on its upper surface where it engages the cross-piece s , and the spring of this cross-piece s , as will be explained, forces the same downwardly against the flattened portions of the pin r lying just each side of the flattened portion b^4 of the rod B, so as to prevent such pin r from either turning or being withdrawn from the hole therefor in this flattened portion b^4 of the rod B.

I will now describe the manner of assembling the parts of my bushing.

15 The valves E are hinged to the ears l in the manner already described by means of the pins p therefor. The operating-rod B, with the cross-piece s and the pin r removed therefrom, is passed down through the tubular element or projection a and until the washer of block tin b^2 comes in contact with the tubular projection a , and then the valves E are closed and the cross-piece s is placed over them and subjected to heavy pressure, so as to
25 spring such cross-piece s out nearly straight, at which time the pin r may be freely inserted in the hole therefor in the flattened portion b^4 of the rod B and so turned that the flattened portions of such pin r will be engaged
30 by the adjacent sides of the cross-piece s and firmly held in position thereby when the pressure has been removed from such cross-piece and the same allowed to spring back as far as permitted by this pin r . Preferably before
35 the assembling of the parts the valves E should be subjected to a sufficient pressure against the seats therefor in the openings e to cause the block-tin sections e' to conform perfectly to such seats, so as to make a tight joint there-
40 with. The parts are so assembled that when the valves E are closed the cross-piece s rests firmly against the enlarged and flattened portions of such valves and on the under side thereof, the spring of the cross-piece s operating to firmly hold such valves E closed
45 tightly against their seats. For this position of the parts the tap-wrench and faucet F may be inserted over the head b of the rod B. Each of these valves E carries an outwardly-
50 projecting horn or cam e^2 , arranged to be engaged by this cross-piece s , and thus open the valves E, as indicated in Figs. 1 and 2, when this rod B is turned a quarter of a revolution by the faucet and tap-wrench F. The con-
55 formation and coöperation of the parts just described is such that the spring cross-piece s is subjected to maximum tension at the time when it is holding the valves E in their closed positions.

60 What I claim is—

1. A tap for a barrel or cask comprising the following elements, viz., a hollow bushing having an opening in the wall thereof, a valve for closing such opening hinged to such bushing
65 and arranged to open inwardly relatively to

the cask or barrel, a rotatable valve-operating rod, a bearing for such rod carried by such bushing, spring or elastic connections between such rod and such valve whereby a motion upon its axis of such rod in one direction
70 opens such valve and in the other direction closes such valve.

2. A tap for a barrel or cask comprising the following elements, viz., a hollow bushing having an opening in the wall thereof, a valve
75 for closing such opening hinged to such bushing and arranged to open inwardly relatively to the cask or barrel, a rotatable valve-operating rod, a bearing for such rod carried by such bushing, spring or elastic connections
80 between such rod and such valve whereby a motion upon its axis of such rod in one direction opens such valve and in the other direction closes such valve with maximum pressure exerted thereon when in its closed position.
85

3. A tap for a barrel or cask comprising the following elements, viz., a hollow bushing having openings in the wall thereof, valves
90 for closing such openings hinged to such bushing and arranged to open inwardly relatively to the cask or barrel, a rotatable valve-operating rod, a bearing for such rod carried by such bushing, spring or elastic connections be-
95 tween such rod and such valves whereby a motion upon its axis of such rod in one direction opens such valves and in the other direction closes such valves.

4. A tap for a barrel or cask comprising the following elements, viz., a hollow bushing
100 having openings in the wall thereof, valves for closing such openings hinged to such bushing and arranged to open inwardly relatively to the cask or barrel, a rotatable valve-operating rod, a bearing for such rod carried by
105 such bushing, spring or elastic connections between such rod and such valves whereby a motion upon its axis of such rod in one direction opens such valves and in the other direction closes such valves with maximum pres-
110 sure exerted thereon when in their closed position.

5. A tap for a barrel or cask comprising the following elements, viz., a hollow bushing
115 containing a cam-surface and having an opening in the wall thereof, a valve for closing such opening hinged to such bushing and arranged to open inwardly relatively to the cask or barrel, a rotatable valve-operating rod, a bearing for such rod carried by such bushing,
120 spring or elastic connections between such rod and such valve whereby a motion upon its axis of such rod in one direction opens such valve and in the other direction closes such valve, in combination with a combined tap-
125 wrench and faucet insertible and rotatable within such bushing and arranged to operate such valve-rod and having a cam-surface thereon coöperating with the cam-surface in such bushing to make a tight joint between
130

such bushing and such combined tap-wrench and faucet when such tap-wrench is turned to open such valve and also operating to prevent the removal of such tap-wrench and faucet except when such valve is closed thereby.

6. A tap for a barrel or cask comprising the following elements, viz., a hollow bushing containing a cam-surface and having an opening in the wall thereof, a valve for closing such opening hinged to such bushing and arranged to open inwardly relatively to the cask or barrel, a rotatable valve-operating rod, a bearing for such rod carried by such bushing, spring or elastic connections between such rod and such valve whereby a motion upon its axis of such rod in one direction opens such valve and in the other direction closes such valve with maximum pressure exerted thereon when in its closed position, in combination with a combined tap-wrench and faucet insertible and rotatable within said bushing and arranged to operate such valve-rod and having a cam-surface thereon cooperating with the cam-surface in such bushing to make a tight joint between such bushing and such combined tap-wrench and faucet when such tap-wrench is turned to open such valve and also operating to prevent the removal of such tap-wrench and faucet except when such valve is closed thereby.

7. A tap for a barrel or cask comprising the following elements, viz., a hollow bushing containing a cam-surface and having openings in the wall thereof, valves for closing such openings hinged to such bushing and arranged to open inwardly relatively to the cask or barrel, a rotatable valve-operating rod, a bearing for such rod carried by such bushing, spring or elastic connections between such rod and such valves whereby a motion upon its axis of such rod in one direction opens such valves and in the other direction closes such valves, in combination with a combined tap-wrench and faucet insertible and rotatable within such bushing and arranged to operate such valve-rod and having a cam-surface thereon cooperating with the cam-surface in such bushing to make a tight joint between such bushing and such combined tap-wrench and faucet when such tap-wrench is turned to open such valves and also operating to prevent the removal of such tap-wrench and faucet except when such valves are closed thereby.

8. A tap for a barrel or cask comprising the following elements, viz., a hollow bushing containing a cam-surface and having openings in the wall thereof, valves for closing said openings hinged to such bushing and arranged to open inwardly relatively to the cask or barrel, a rotatable valve-operating rod, a bearing for such rod carried by such bushing, spring or elastic connections between such rod and such valves whereby a motion upon its axis of such rod in one direction opens such valves and in

the other direction closes such valves with maximum pressure exerted thereon when in their closed position, in combination with a combined tap-wrench and faucet insertible and rotatable within such bushing and arranged to operate such valve-rod and having a cam-surface thereon cooperating with the cam-surface in such bushing to make a tight joint between such bushing and such combined tap-wrench and faucet when such tap-wrench is turned to open such valves and also operating to prevent the removal of such tap-wrench and faucet except when such valves are closed thereby.

9. A tap for a barrel or cask comprising the following elements, viz., a hollow bushing having an opening in the wall thereof, a valve for closing such opening hinged to such bushing and arranged to open inwardly relatively to the cask or barrel, a rotatable valve-operating rod, a bearing for such rod carried by such bushing, such bearing contained within the opening through such bushing for the ingress and egress of gas or liquids to and from such barrel or cask, connections between such rod and such valve whereby a motion upon its axis of such rod in one direction opens such valve and in the other direction closes such valve.

10. A tap for a barrel or cask comprising the following elements, viz., a hollow bushing having openings in the wall thereof, valves for closing such openings hinged to such bushing and arranged to open inwardly relatively to the cask or barrel, a rotatable valve-operating rod, a bearing for such rod carried by such bushing, such bearing contained within the opening through such bushing for the ingress and egress of gas or liquids to and from such barrel or cask, connections between such rod and such valves whereby a motion upon its axis of such rod in one direction opens such valves and in the other direction closes such valves.

11. A tap for a barrel or cask comprising the following elements, viz., a hollow bushing containing a cam-surface and having an opening in the wall thereof, a valve for closing such opening hinged to such bushing and arranged to open inwardly relatively to the cask or barrel, a rotatable valve-operating rod, a bearing for such rod carried by such bushing, such bearing contained within the opening through such bushing for the ingress and egress of gas or liquids to and from such barrel or cask, connections between such rod and such valve whereby a motion upon its axis of such rod in one direction opens such valve and in the other direction closes such valve, in combination with a combined tap-wrench and faucet insertible and rotatable within such bushing and arranged to operate such valve-rod and having a cam-surface thereon cooperating with the cam-surface in such bushing to make a tight joint between such bushing and such

combined tap-wrench and faucet when such tap-wrench is turned to open such valve and also operating to prevent the removal of such tap-wrench and faucet except when such valve is closed thereby.

12. A tap for a barrel or cask comprising the following elements, viz., a hollow bushing containing a cam-surface and having openings in the wall thereof, valves for closing such openings hinged to such bushing and arranged to open inwardly relatively to the cask or barrel, a rotatable valve-operating rod, a bearing for such rod carried by such bushing, such bearing contained within the opening through such bushing for the ingress and egress of gas or liquids to and from such barrel or cask, connections between such rod and such valves whereby a motion upon its axis of such rod in one direction opens such valves and in the other direction closes such valves, in combination with a combined tap-wrench and faucet insertible and rotatable within such bushing and arranged to operate such valve-rod and having a cam-surface thereon cooperating with the cam-surface in such bushing to make a tight joint between such bushing and such combined tap-wrench and faucet when such tap-wrench is turned to open such valves and also operating to prevent the removal of such tap-wrench and faucet except when such valves are closed thereby.

13. A tap for a barrel or cask comprising the following elements, viz., a hollow bushing having an opening in the wall thereof, a valve for closing such opening hinged to such bushing and arranged to open inwardly relatively to the cask or barrel, a rotatable valve-operating rod, a bearing for such rod carried by such bushing, such bearing contained within the opening through such bushing for the ingress and egress of gas or liquids to and from such barrel or cask, spring or elastic connections between such rod and such valve whereby a motion upon its axis of such rod in one direction opens such valve and in the other direction closes such valve.

14. A tap for a barrel or cask comprising the following elements, viz., a hollow bushing having an opening in the wall thereof, a valve for closing such opening hinged to such bush-

ing and arranged to open inwardly relatively to the cask or barrel, a rotatable valve-operating rod, a bearing for such rod carried by such bushing, such bearing contained within the opening through such bushing for the ingress and egress of gas or liquids to and from such barrel or cask, spring or elastic connections between such rod and such valve whereby a motion upon its axis of such rod in one direction opens such valve and in the other direction closes such valve with maximum pressure exerted thereon when in its closed position.

15. A tap for a barrel or cask comprising the following elements, viz., a hollow bushing having openings in the wall thereof, valves for closing such openings hinged to such bushing and arranged to open inwardly relatively to the cask or barrel, a rotatable valve-operating rod, a bearing for such rod carried by such bushing, such bearing contained within the opening through such bushing for the ingress and egress of gas or liquids to and from such barrel or cask, spring or elastic connections between such rod and such valves whereby a motion upon its axis of such rod in one direction opens such valves and in the other direction closes such valves.

16. A tap for a barrel or cask comprising the following elements, viz., a hollow bushing having openings in the wall thereof, valves for closing such openings hinged to such bushing and arranged to open inwardly relatively to the cask or barrel, a rotatable valve-operating rod, a bearing for such rod carried by such bushing, such bearing contained within the opening through such bushing for the ingress and egress of gas or liquids to and from such barrel or cask, spring or elastic connections between such rod and such valves whereby a motion upon its axis of such rod in one direction opens such valves and in the other direction closes such valves with maximum pressure exerted thereon when in their closed position.

MARION WARREN.

Witnesses:

OSBORNE F. GURNEY,
CLARA M. LIENER.