J. F. FERRY.

LIQUOR TAPPING DEVICE.

APPLICATION FILED APR. 21, 1910.

1,004,638.

Patented Oct. 3, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

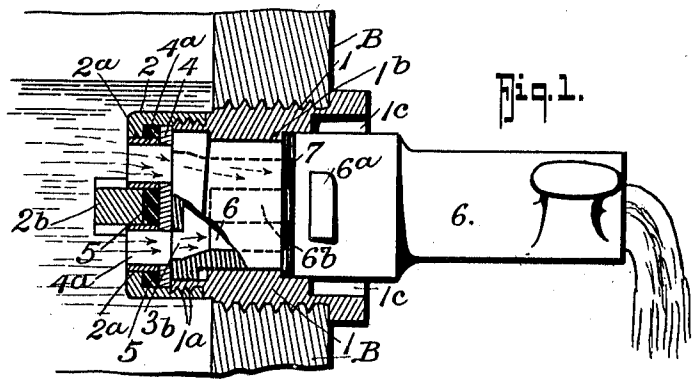


Fig. 6.

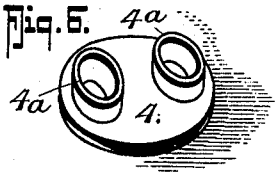


Fig. 3.

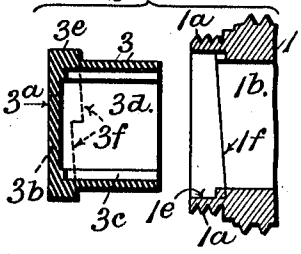


Fig. 2.

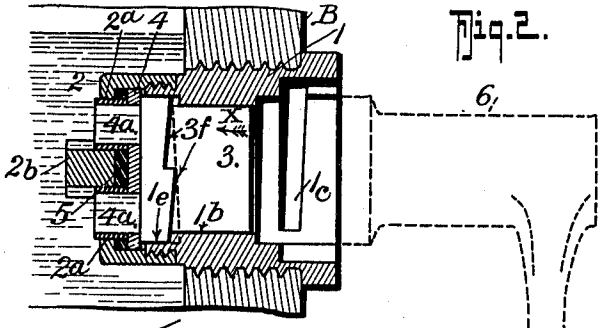


Fig. 4.

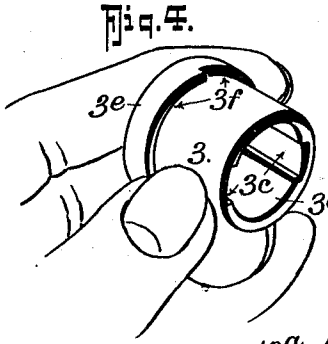


Fig. 5.

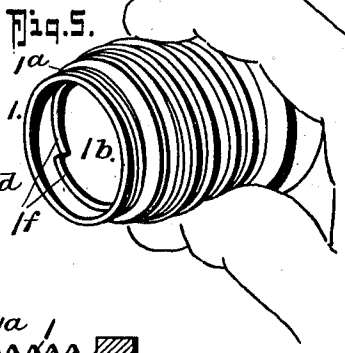


Fig. 8.

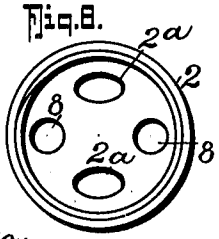


Fig. 7.

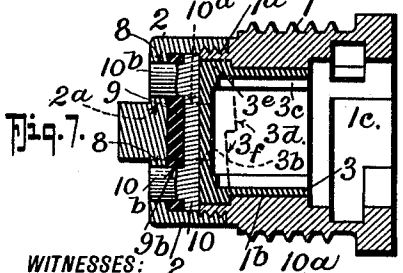


Fig. 9.

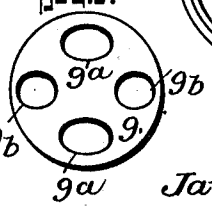


Fig. 10.

WITNESSES:

John T. Schrott

Charles H. Wagner.

INVENTOR

James F. Ferry.

BY

Fred G. Peterich & Co.

ATTORNEYS.

J. F. FERRY.

LIQUOR TAPPING DEVICE.

APPLICATION FILED APR. 21, 1910.

1,004,638.

Patented Oct. 3, 1911.

2 SHEETS—SHEET 2.

Fig 11.

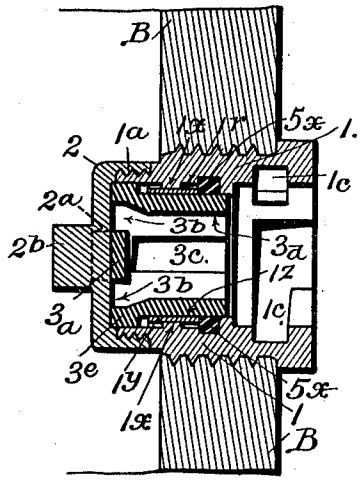


Fig 12.

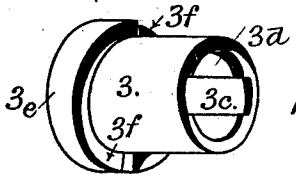


Fig 13.

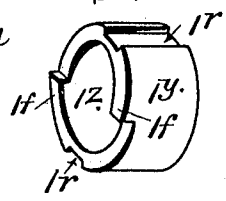


Fig 14.

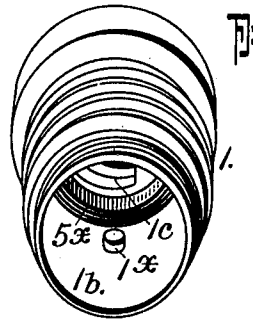


Fig 15.

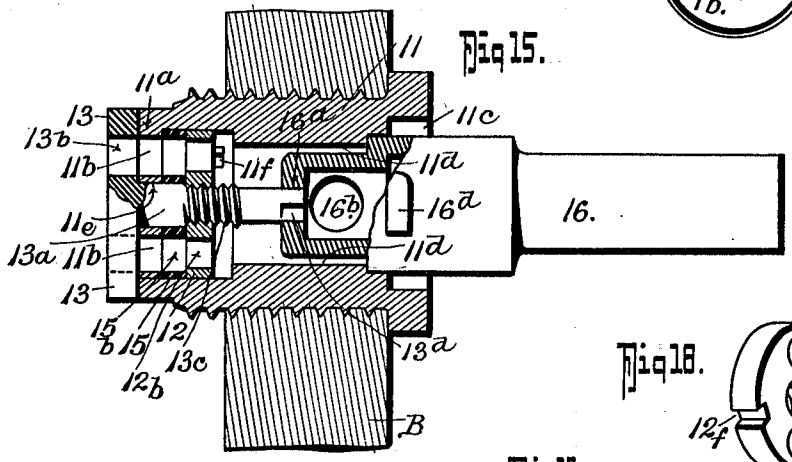


Fig 16.

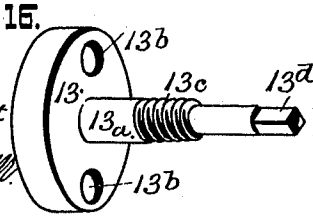


Fig 17.

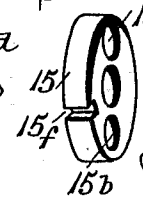
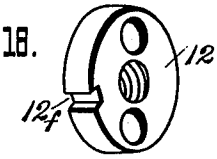


Fig 18.



WITNESSES:

John C. Schrott

Charles H. Wagner

INVENTOR

James F. Ferry.

BY

Fred G. Dieterich & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JAMES F. FERRY, OF LEADVILLE, COLORADO, ASSIGNOR OF ONE-HALF TO CARL HARDING, OF DENVER, COLORADO.

LIQUOR-TAPPING DEVICE.

1,004,638. Specification of Letters Patent. Patented Oct. 3, 1911.

Application filed April 21, 1910. Serial No. 556,682.

To all whom it may concern:

Be it known that I, JAMES F. FERRY, residing at Leadville, in the county of Lake and State of Colorado, have invented certain new and useful Improvements in Liquor-Tapping Devices, of which the following is a specification.

My present invention has for its object to provide a simple and effective liquor tapping valve device wherein means are provided to render the device more leak proof and tight when it is closed than when it is open, or in other words, to provide a device wherein a rotary disk valve, although always held against its seat, is held against such seat with greater force when the valve is in the closed position, than when it is in its open position. I also provide flexible means for relieving the strain on the metallic parts of the valve when under pressure.

In its more subordinate nature the invention also includes those novel details of construction, combination and arrangement of parts, all of which will be first fully described, then be specifically pointed out in the appended claims, and illustrated in the accompanying drawings, in which:

Figure 1, is a central longitudinal section and part elevation of one form of my invention showing the position of the parts when the valve is open. Fig. 2, is a similar view, the key being removed and the valve being in its closed position. Fig. 3, is a detail view of the valve and bushing, showing the coöperative cam portions for forcing the valve against its seat when closed. Fig. 4, is a detail perspective view of the valve. Fig. 5, is a similar view of the bushing. Fig. 6, is a detail perspective view of the valve seat. Fig. 7, is a central vertical longitudinal section of a modified form of the invention. Fig. 8, is an end view looking into the cap, the valve seat and resilient member being removed. Fig. 9, is a plan view of the resilient member. Fig. 10, is a face view of the valve seat used in the form of invention shown in Fig. 7. Fig. 11, is a central vertical longitudinal section of another modification of the invention. Fig. 12, is a perspective view of the valve used in the form shown in Fig. 11. Fig. 13, is a perspective view of the cam ring. Fig. 14, is a perspective view of the bushing used in the form of my invention disclosed in Fig. 11. Fig. 15, is a central vertical longitudinal section of a further modification of the invention. Fig. 16, is a perspective view of the valve used in the modification shown in Fig. 15, Fig. 17, is a perspective view of the resilient washer. Fig. 18, is a perspective of the threaded nut disk that coöperates with the threaded valve stem.

Referring now to the accompanying drawings in which like letters and numerals of reference indicate like parts in all of the figures, the externally threaded bushing 1 screws into the keg B, as shown in Figs. 1 and 2, of the drawings, and the bushing 1 is provided at its inner end with a reduced threaded portion 1^a to receive the cap 2 which has fluid passages 2^a and a wrench receiving portion 2^b.

The bushing 1 has an internal chamber 1^b enlarged at its front end and provided with bayonet slots 1^c to receive the holding lugs 6^a of the key 6.

Within the bore 1^b of the bushing 1, the hollow valve 3 turns, the valve 3 having a bore 3^d closed at one end by a web 3^a through which fluid ports 3^b are formed.

The bushing 1 at its inner end is counterbored at 1^e and formed with cam surfaces 1^f to coöperate with the cam surfaces 3^f on the head 3^e of the valve 3, so that as the valve 3 is turned the cam surfaces 1^f—3^f will impart axial movement to the valve 3 in the bore 1^b of the bushing 1, as will be more clearly apparent hereinafter.

The valve 3 has internal longitudinal grooves to receive the lugs 6^b of the key 6, whereby the turning movement of the key 6 will serve to turn the valve 3 from its open to its closed position, and vice versa. A resilient washer 7 of rubber, or other suitable material, is carried by the key 6 to effect a leak-proof joint between the key 6 and the bushing 1.

Within the cap 2 is a resilient washer 5 having apertures to permit passage of the tubular portions 4^a of the valve seat disk 4 so that such tubular portions 4^a will project through the fluid passages 2^a of the cap and thereby hold the disk 4 from turning, the tubular portions 4^a serving as a fluid conduit from the interior of the receptacle B into the valve 3, the fluid passing through the ports 3^b in the valve head 3^e.

The parts are assembled as shown in Figs. 1 and 2, the valve being shown closed in Fig. 2. When the valve is in its closed

position the longitudinal grooves 3^c of the valve aline with the longitudinal portions of the bayonet slots so that the key 6 may be inserted. Also when the valve is in its closed position, by reason of the cam surfaces 3^f and 1^f the valve 3 will be forced in the direction of the arrow X in Fig. 2 to press against the valve seat disk 4 and tend to force it tighter into the cap 2, effecting a more leak-proof and tighter joint between the valve and its disk when closed than occurs when the valve is open, as shown in Fig. 1. When the valve is in its open position the cam surfaces 3^f and 1^f are in a position to relieve the pressure on the valve disk 4.

In Figs. 7, 8, 9 and 10, I have disclosed a modification of the form shown in Fig. 1, the difference residing in the omission of the tubular members 4^a of the valve disk 4, and in lieu thereof providing lugs 10^b in the valve disk 10 that project through apertures 9^b in the resilient washer 9 and through corresponding apertures 8 in the cap 2, the cap 2 having the usual fluid passages 2^a, the washer 9 having corresponding fluid passages 9^a, the valve disk 10 having corresponding fluid passages 10^a, and the washer 9 being held from turning and the cap being held from turning by the lugs 10^b projecting through the apertures 9^b and 8, respectively, as shown in Fig. 7.

The modified form shown in Fig. 11, differs from the form shown in Figs. 1, 2 and 7, in that the cams 1^f are formed on a ring 1^y which is bored at 1^z and which fits within the bore of the bushing 1, the ring 1^y having longitudinal grooves 1^r to receive the lugs 1^x of the bushing 1 to prevent turning of the ring 1^y. The valve 3, used in the form shown in Fig. 11, is of the same construction as that shown in Figs. 1, 2 and 4 and is provided with cam portions 3^f to coöperate with those 1^f of the ring 1^y. In the form shown in Fig. 11 also I omit the washer 5 and valve seat disk 4 of the form shown in Figs. 1 and 2 and have the cap 2 perform the valve disk function, that is to say, the cap 2 has its inner surface bored to coincide with that of the end of the valve 3 and the fluid passages 2^a of the cap 2 will register with those 3^b of the valve 3 when the valve is open. The function of the resilient washer 5 of the form shown in Fig. 1, is performed by the resilient washer 5^x in the form shown in Fig. 11.

In Fig. 15, a further modification of the invention is shown which while embodying the same principle of operation of the foregoing forms differs considerably in its detailed construction. In this form the bushing 11 has a bore 11^d closed at the inner end by a web 11^a in which the fluid passages 11^b are formed. The web 11^a is also bored at 11^e to receive the valve stem 13^a of the valve 13, whose ports 13^b register with those 11^b of the bushing web 11^a when the valve is open. 12 is a nut disk that is threaded to receive a thread portion 13^c of the valve stem 13^a, a resilient washer 15 being interposed between the nut 12 and the web 11^a, the nut 12 having fluid passages 12^b and the washer 15 having fluid passages 15^b to register with those 11^b in the web 11^a. In order to prevent turning of the nut 12 within the bushing 11 a feather 11^f may be formed in the bushing to enter a groove 12^f in the nut 12 and a similar groove 15^f in the washer 15 to prevent turning of such parts.

The valve stem 13^a may be provided with a squared end 13^d to fit the squared aperture 16^a of a hollow key 16 which has fluid passing ports 16^b and key lugs 16^d, the lugs 16^d coöperating with the bayonet slots 11^c in the bushing 11.

The operation of the forms shown in Figs. 1 to 11 inclusively is essentially the same, that is, when the valve is moved from its open to its closed position, the cams 1^f and 3^f serve to impart a motion to the valve 3 toward the cap 2 to effect a tight contact between the valve 3 and the valve seat 4 in the form shown in Figs. 1 and 2 between the valve 3^c and the valve seat 10 in the form shown in Fig. 7 and between the valve 3 and the cap 2 in the form shown in Fig. 11, and conversely, as the valve is moved from its closed to its open position, the cam portions 1^f and 3^f will permit the resilient washer 5 in the form shown in Figs. 1 and 2, and the washer 9 in the form shown in Fig. 7, and the washer 5^x in the form shown in Fig. 11, to move the valve in an opposite direction until more or less of the compression of the resilient members 5, 9 and 5^x is relieved to loosen the contact between the valve and the disk, or cap, as the case may be, so that the contact between the valve and its seat may not be so tight when the valve is open, as when it is shut.

The form shown in Fig. 15 operates on the same principle, that is to say, when the key 16 is turned to open the valve 13 the nut 12 will be unscrewed to increase the distance between it and the valve 13 to relieve the tightness of the contact between the valve 13 and the web 11^a, and conversely, as the valve is closed the nut 12 will thread up toward the valve, compressing the washer 15 and causing a tighter contact to take place between the valve 13 and the web 11^a. The nut 12 being held from rotation by the spline 11^f entering the groove 15^f, as the key 16 is turned to loosen the valve 13, the valve 13 and the nut 12 will move farther apart from one another, the resiliency of the washer 15 serving to hold the valve 13 in contact with the seat 11^a until the limit of expansion of

the washer 15 has been reached, at which time the valve 13 may be moved off the seat 11ª, but as at this time the valve will be open to permit the liquor flowing out, it will be of no consequence whether or not the valve 13 contacts the seat 11ª. On the other hand, when the key is turned to screw the nut 12 and valve 13 toward one another against the washer 15, the washer 15 will hold the valve 13 in contact with the seat 11ª. Only a slight turn from the position shown in Fig. 15, is required to shut the valve 13, as will be obvious upon a reading of the drawing.

From the foregoing description taken in connection with the accompanying drawings, it is thought the complete construction, operation and advantages of my invention will be readily understood by those skilled in the art to which the invention appertains.

What I claim is:

1. In a device of the character stated, a bushing including a valve seat, a rotary disk valve held in contact with said seat, said seat and said valve having alinable fluid passages, means to turn said valve while maintaining said valve in contact with said seat, means for imparting longitudinal movement to said valve to increase or decrease its pressure against said seat; and resilient means for forcing said valve seat toward said valve.

2. In a beer tap, a bushing to enter the receptacle and having an end web with fluid passages, a rotary valve within the bushing having a disk head provided with fluid passages, a valve seat contacting said head, means for turning said valve, means for forcing said valve into tighter engagement with said seat when in one position than in another, and a resilient member between said end web and said seat to engage said seat, said resilient member also having fluid passages.

3. In a beer tap, a bushing to enter the receptacle and having an end web with fluid passages, a rotary valve within the bushing having a disk head provided with fluid passages, a valve seat contacting said head, means for turning said valve, means for forcing said valve into tighter engagement with said seat when in one position than in another, a resilient member between said end web and said seat to engage said seat, said resilient member also having fluid passages, and means preventing turning of said valve seat and said resilient member with relation to one another.

4. In a beer tap, a bushing to enter the receptacle, a rotary valve within the bushing having a disk head provided with fluid passages, a valve seat engaging said head, means to turn said valve, means for forcing said valve into tighter engagement with said seat when in one position than when in another, and means for holding said valve seat against said valve while permitting said valve seat to be moved in the direction of said force.

5. In a beer tap, a bushing to enter the receptacle, a rotary valve within the bushing having a disk head provided with fluid passages, a valve seat engaging said head, means to turn said valve, means for forcing said valve into tighter engagement with said seat when in one position than when in another, said last named means comprising cam portions carried by the valve and the bushing to force the valve toward the seat when turned in one direction, and resilient means for opposing the pressure on the valve seat.

6. In a beer tap, a bushing to enter the receptacle, a rotary valve within the bushing having a disk head provided with fluid passages, a valve seat engaging said head, means to turn said valve, means for forcing said valve into tighter engagement with said seat when in one position than when in another and resilient means continuously tending to oppose said pressure on the valve seat.

7. In a beer tap, a bushing to enter the receptacle, a rotary valve within the bushing having a disk head provided with fluid passages, a valve seat engaging said head, means to turn said valve, means for forcing said valve into tighter engagement with said seat when in one position than when in another, said last named means comprising cam portions carried by the valve and the bushing to force the valve toward the seat when turned in one direction, and resilient means continuously tending to oppose said pressure on the valve seat.

8. A liquor tap comprising a threaded bushing, a disk valve seat at one end thereof having fluid passages, a rotary disk valve in contact with said seat and having fluid passages, means coöperatively connecting said valve with said bushing in virtue of which when said valve is turned in one direction axial movement will be imparted to said valve to vary the degree of contact between the valve and its seat, and yieldable means for opposing the pressure on said valve seat.

9. In a liquor tapping device, a threaded bushing, a removable cap having fluid passages secured over the inner end of said bushing, a separate valve seat disk carried within said cap, a rotary valve within said bushing having a disk head to engage said valve seat, said seat and said valve having alinable fluid passages, and means for forcing said valve into tighter contact with said valve seat when said passages are moved out of alinement by turning the valve.

10. In a liquor tapping device, a threaded bushing, a removable cap having fluid passages secured over the inner end of said bushing, a separate valve seat disk carried within said cap, a rotary valve within said bushing having a disk head to engage said

valve seat, said seat and said bushing having alinable fluid passages, and means for forcing said valve into tight engagement with said seat increasing in degree in proportion to the turning movement of said valve from the open to the closed position.

11. In a liquor tapping device, a threaded bushing, a removable cap having fluid passages secured over the inner end of said bushing, a valve seat disk carried within said cap, a rotary valve within said bushing having a disk head to engage said valve seat, said seat and said bushing having alinable fluid passages, means for forcing said valve into tighter contact with said valve seat when said passages are moved out of alinement by turning the valve, and a yieldable member in position between said cap and said valve seat disk.

12. In a liquor tapping device, a threaded bushing, a removable cap having fluid passages secured over the inner end of said bushing, a valve seat disk carried within said cap, a rotary valve within said bushing having a disk head to engage said valve seat, said seat and said bushing having alinable fluid passages, means for forcing said valve into tighter engagement with said seat increasing in degree in proportion to the turning movement of said valve from the open to the closed position, and a resilient member in position between said cap and said valve seat disk.

13. In a liquor tapping device, a threaded bushing, a removable cap having fluid passages secured over the inner end of said bushing, a valve seat disk carried within said cap, a rotary valve within said bushing having a disk head to engage said valve seat, said seat and said bushing having alinable fluid passages, means for forcing said valve into tighter contact with said valve seat when said passages are moved out of alinement by turning the valve, and means between said cap and said disk continuously tending to move said seat in one direction.

14. In a liquor tapping device, a threaded bushing, a removable cap having fluid passages secured over the inner end of said bushing, a valve seat disk carried within said cap, a rotary valve within said bushing having a disk head to engage said valve seat, said seat and said bushing having alinable fluid passages, means for forcing said valve into tighter contact with said valve seat when said passages are moved out of alinement by turning the valve, and resilient means between said cap and said seat disk, continuously tending to move said seat disk in one direction.

JAMES F. FERRY.

Witnesses:
WILLIAM L. JACOBS,
FRED N. DICKERSON.