(No Model.) 3 Sheets—Sheet 1.

A. E. FEROE.

APPARATUS FOR BARRELING AND BUNGING BEER.

No. 568,133. Patented Sept. 22, 1896.

Fig 7

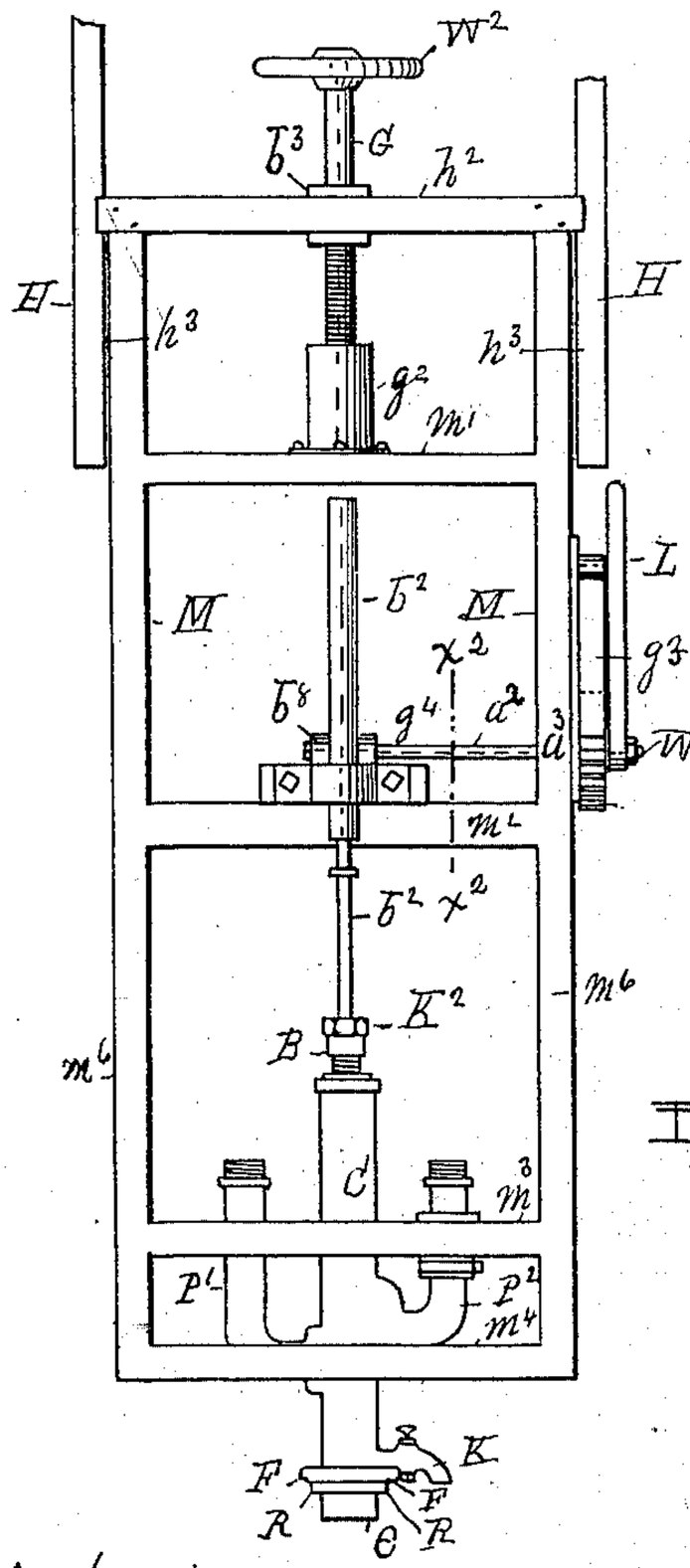
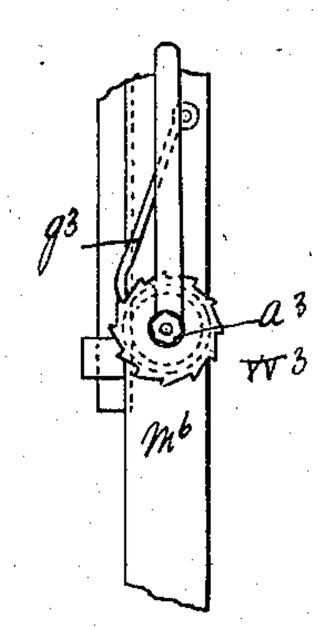


Fig 6



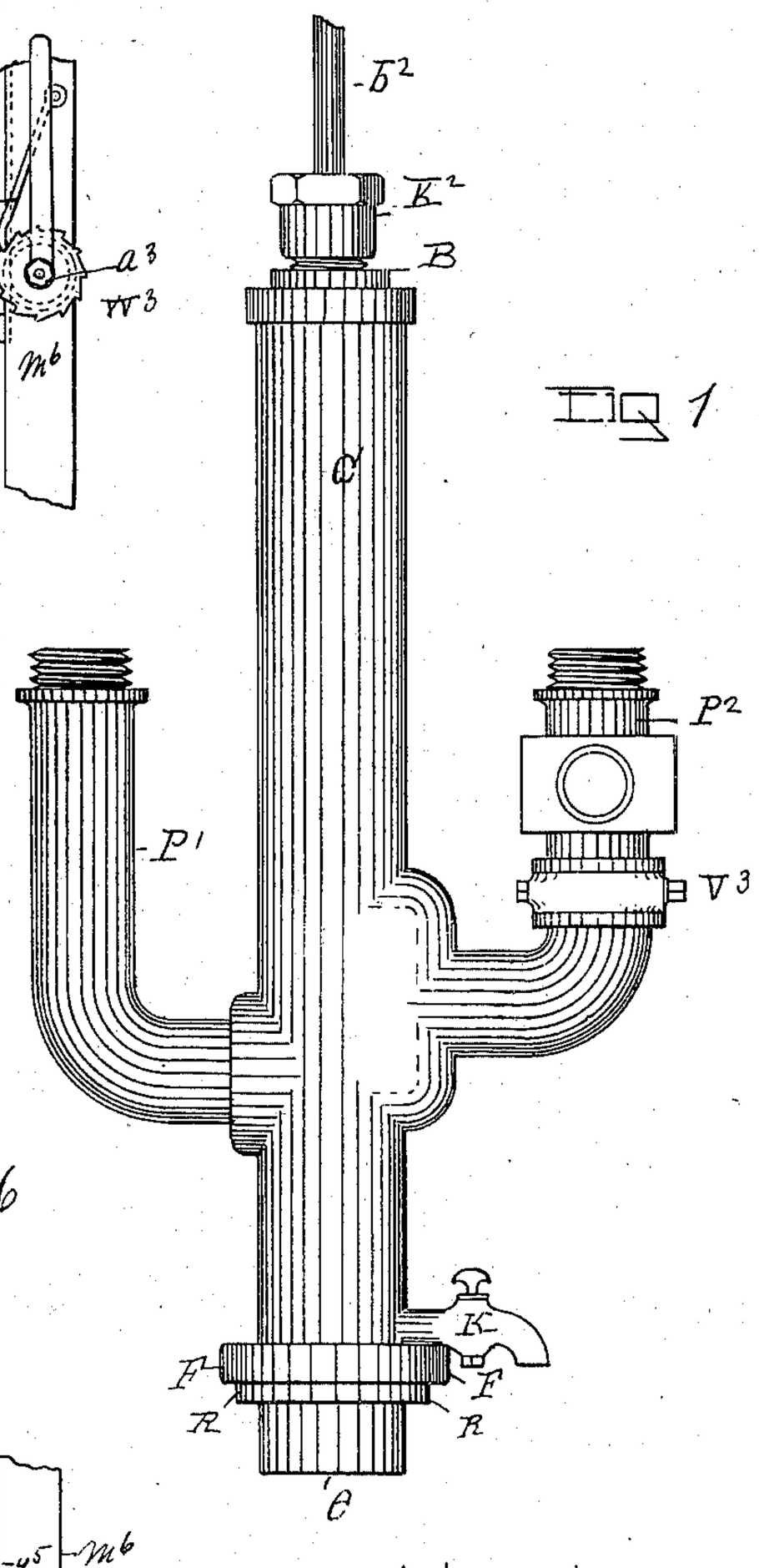


Fig 1

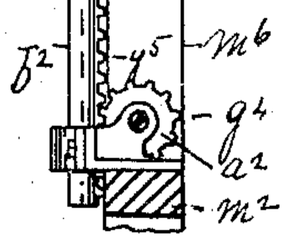


Fig 8

WITNESSES

William A. Swett

Charles S. Brinkhall

INVENTOR

Alfred E. Feroe

by W. E. Hagan Atty

(No Model.) 3 Sheets—Sheet 2.

A. E. FEROE.

APPARATUS FOR BARRELING AND BUNGING BEER.

No. 568,133. Patented Sept. 22, 1896.

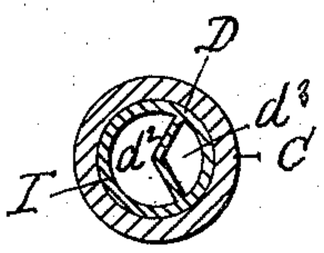


FIG 4

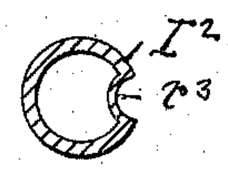


FIG 5

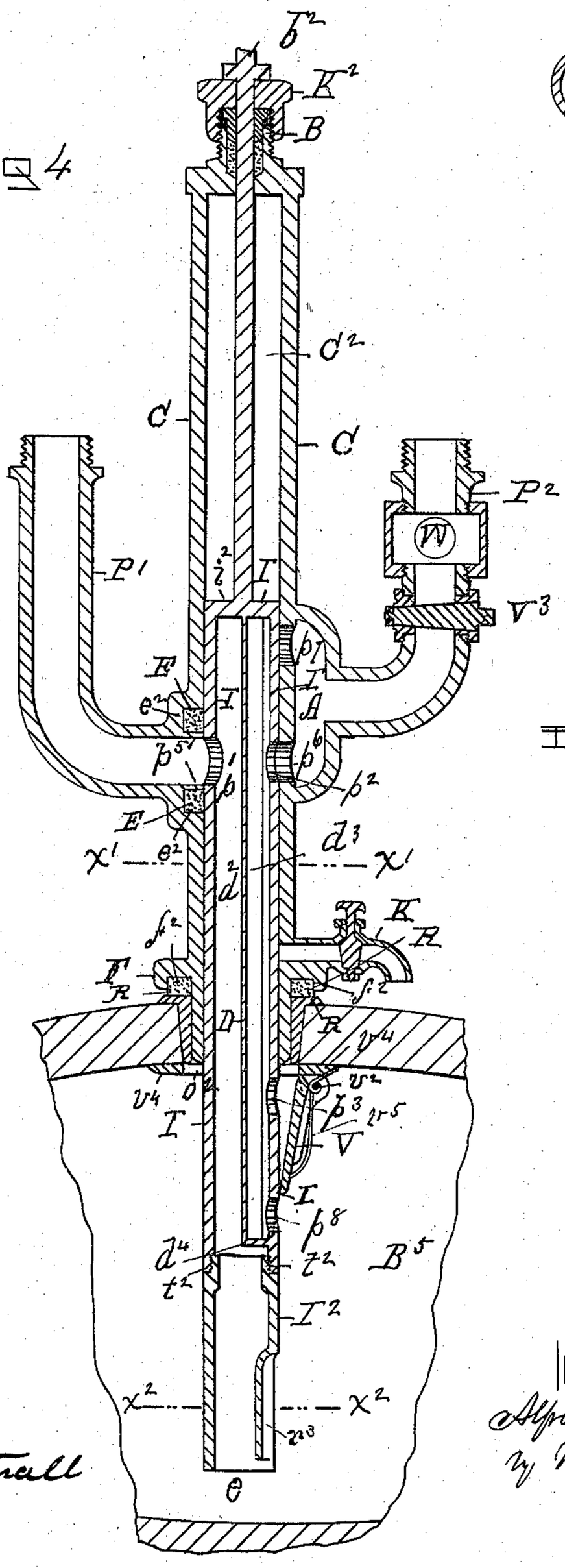


FIG 2

WITNESSES

William A. Sweet

Chester B. Brintnall

INVENTOR

Alfred E. Feroe

by Webb & Gaw,

his Attys

(No Model.) 3 Sheets—Sheet 3.

A. E. FEROE.

APPARATUS FOR BARRELING AND BUNGING BEER.

No. 568,133. Patented Sept. 22, 1896

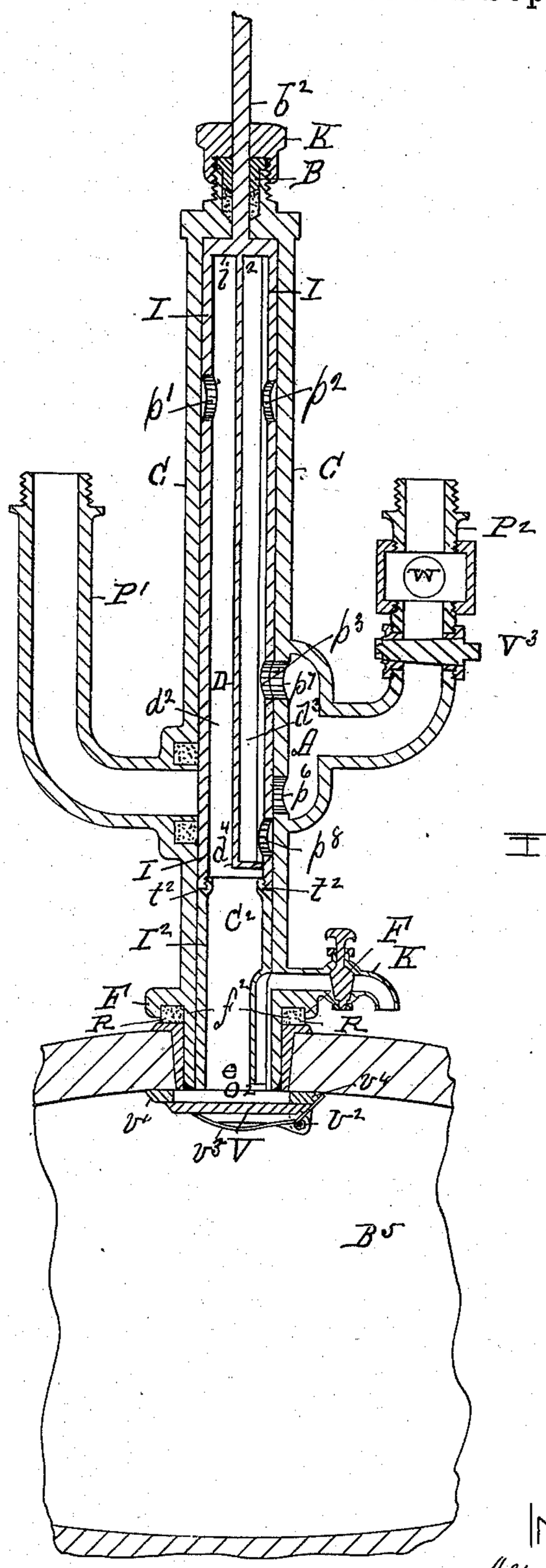


FIG 3

WITNESSES

William A. Lovett

Charles S. Bintnall

INVENTOR

Alfred E. Feroe

by W. E. Hagan

atty

UNITED STATES PATENT OFFICE.

ALFRED E. FEROE, OF MADALIN, NEW YORK, ASSIGNOR TO FEROE BROTHERS & CONWAY, OF TROY, NEW YORK.

APPARATUS FOR BARRELING AND BUNGING BEER.

SPECIFICATION forming part of Letters Patent No. 568,133, dated September 22, 1896.

Application filed January 14, 1896. Serial No. 575,464. (No model.)

To all whom it may concern:

Be it known that I, ALFRED E. FEROE, of Madalin, Tivoli village, Dutchess county, State of New York, have invented new and useful Improvements in Apparatus for Barreling and Bunging Beer, of which the following is a specification.

My invention relates to an apparatus for barreling and bunging fermented liquors, and the object and purpose of my invention is to produce a means whereby carbonated liquors may be barreled and confined by any kind of bung without the loss of liquor or gas during the operation.

Accompanying this specification, to form a part of it, there are three plates of drawings containing eight figures illustrating my invention with the same designation of parts by letter-reference used in all of them.

Of the illustrations, Figure 1 is a side elevation of the apparatus shown as separated from the mechanism employed to operate it. Fig. 2 is a central vertical section of the apparatus shown at Fig. 1, with the interior parts in the position they occupy when the apparatus is being employed to barrel beer. Fig. 3 is another central vertical section of the apparatus shown at Fig. 1, with the interior parts in the position they occupy after the filling of the barrel or cask has been completed and before removing the latter. Fig. 4 is a cross-section taken on the line x' x' of Fig. 2. Fig. 5 is another cross-section taken on the line x^2 x^2 of Fig. 2. Fig. 6 is a side elevation of the apparatus, including the means to operate the latter to connect with the barrel or cask which is to be filled, as well as the mechanism employed to operate the interiorly-placed port-opening and port-closing mechanism. Fig. 7 is a side view of that part of the frame on which a ratchet-wheel and detent are arranged; and Fig. 8 is a section taken on the line x^2 x^2 of Fig. 6, with the pinion shown in side elevation.

The several parts of the apparatus thus illustrated are designated by letter-reference, and the function of the parts is described as follows:

The letter C designates a stand-pipe having the upturned connecting branch pipes P′ and P^2, the former of these branch pipes connecting with the stand-pipe interior C^2 by means of an entry-port p^5, and the branch pipe P^2, opening out from a chamber A, formed on the side of the stand-pipe, said chamber connecting with the interior of the latter by means of the ports p^6 and p^7. The branch pipe P′ is used for the delivery of liquor under pressure to the stand-pipe C, and the branch-pipe P^2 is used to charge the cask or barrel to be filled with air or gas, and it is by the operation of its ports, as opened or closed, adapted to furnish a passage for the escape of air or gas from the barrel being filled with liquor into the chamber A and thence into the pipe P^2.

The letter W designates a window formed in the upturned branch pipe P^2, through which the level of the liquor may be seen, and the letter K designates a cock by which the liquor remaining in the stand-pipe may be drawn off.

The upper end of the stand-pipe C is provided with a stuffing-box B and a cap K^2, and the lower end of the stand-pipe C is provided with an encircling flange F, and the letter f^2 designates an annular recess formed therein. The letter R designates a packing-ring of rubber arranged in said annular recess, by which as the stand-pipe is forced downwardly to enter a bung-hole or bung-bushing under pressure the ring R will form an air-tight joint thereat.

The letter I designates a port-opening and port-closing pipe which is arranged within the stand-pipe C and constructed to make a sliding piston-form engagement with the inner surface of the stand-pipe. This pipe I has a closed top i^2 and is provided with a piston-rod b^2, passing through the stuffing-box B and cap K^2, by the operation of which piston-rod this port-opening and port-closing pipe I can be moved upwardly and downwardly in the stand-pipe by mechanism which will be described hereinafter. This pipe I is provided with a port-opening p' on one side and with port-openings p^2, p^3, and p^8 on the other side.

The letter D designates a vertical partition which divides the interior area of the pipe I into the parts indicated at d^2 and d^3. This partition is angular in cross-section, as shown at Fig. 4, and it is closed at the bot-

tom, as indicated at d^4, and it separates all that interior area of the pipe I indicated at d^3 (in which the ports p^2, p^3, and p^8 are located) from the area d^2 of the interior of the pipe I.

The letter I^2 designates an attachable or detachable extension of the pipe I, which extension attaches to the latter by a threaded connection at t^2, by which differing lengths of such extension may be used to adapt the apparatus for filling casks having differing diameters, and by which the liquor may be delivered to the cask interior below the point at which the air displaced by the entering liquor emerges, and thus prevent the oppositely-moving currents of liquor and air from intermingling to produce foam. This pipe extension I′ is at its lower end recessed at r^3, so as to form a passage to connect with the cock K when the pipe is raised.

The letter E designates a rubber ring arranged in a circular recess e^2, formed in the stand-pipe interior, to encircle the entry-port of the branch pipe P′, and the function of this ring is to pack the pipe I, so as to have it move in an air-tight connection with the entry-port of the stand-pipe.

The letter V designates the bung-valve, which at one of its side edges is hinged to ears V^2, formed on the valve-seat rim V^4, the valve having the passage O^2, and the letter V^3 designates a spring against the force of which the valve is forced downwardly to open. This valve, independently of its combination with the other factors with which it coöperates, forms no part of my invention. As thus constructed and arranged to be operated, to fill the barrel B^5 with gas or air before filling it with liquor the stand-pipe is moved downwardly until its packing-ring R makes an engagement with the edge of the bung-hole, when the piston-rod b^2 is actuated to move downwardly the pipe I sufficiently to open the bung-valve V and to have its port p^8 open out within the barrel and the port p^2 of the pipe I to register with the port p^7 of the chamber A when the valve v^3 on the branch pipe p^2 is opened, and air or gas will enter the cask or barrel until the pressure upon the latter is equal to that upon the tank from which liquor is supplied to the branch pipe p', the air or gas creating the pressure upon the cask or barrel entering from the chamber A through its port p^6, and the part of the pipe I where inclosed by the partition D to pass down through the area d^3 thus inclosed to enter the barrel or cask through the port p^8. When the pressure upon the barrel or cask is equal to that in the tank from which the pipe P′ is supplied, then the pipe I is moved down far enough to have its port p' register with the port p^5 of the branch pipe P′, when the liquor will by gravity descend through the pipe I and its extension I^2 to fill the cask or barrel, the air or gas in the latter passing out through the port p^8 into the area d^3 and by means of the port p^2 in the pipe I through the port p^6, leading into the chamber A and through the branch pipe P^2. The pipe P^2 connects with the tank from which liquor is supplied to the pipe P′ by a pipe not shown. When the barrel or cask is thus filled, the valve v^3 on the branch pipe P^2 is closed, the pipe I is raised, allowing the spring bung-valve to close to retain the pressure, the liquor remaining in the stand-pipe is drawn off through the cock K, and a bung is driven into the bung-hole above the spring-valve.

To operate the stand-pipe and its connected parts to engage with the bung-hole or bung-hole bushing of a barrel, the following mechanism is used:

The letter H designates a frame pendent from an attachment at its upper end, which is not shown, and this frame is provided with a stationary cross-bar h^2.

The letter M designates another frame arranged to slide vertically in the sides h^3 of the frame H.

The letters m', m^2, m^3, and m^4 designate cross-bars, and the letters m^6 the sides of the frame M.

The letter G designates a stem provided with a hand-wheel W^2 at its upper end, and this stem is threaded into a block b^3, connected to the stationary cross-bar h^2, and at its lower end it is arranged to turn in a socket g^2, secured to the top of the cross-bar m' of the frame M. The stand-pipe and its branch connections are secured to the bottom cross-bars m^3 and m^4. With the frame parts thus constructed, and a barrel or cask is placed beneath the frame with the bung-hole of the former in vertical alinement with the stand-pipe C at its lower end, and the wheel W^2 is turned, the frame M and its attached stand-pipe and branches are moved downwardly, with the lower end e of the stand-pipe entering the bung-hole, and the rubber ring R making an air-tight connection between the stand-pipe and the barrel or cask.

To operate the pipe I to descend within the stand-pipe, the following mechanism is used:

The letter a^2 designates a shaft having its bearings in the side m^6 and block b^8 of the frame M at a^3, and this shaft is provided with a detent-wheel W^3 and a detent pawl or dog g^3, and on its inner end this shaft is provided with a pinion g^4, which meshes into a rack g^5, constructed upon the side of the piston-rod b^2, which connects with the pipe I.

The letter L designates a crank-arm connected to the shaft a^2, by which the latter, its detent-wheel, and its pinion operating the rack g^5 will move the piston-rod b^2 and the pipe I, the pawl or dog overrunning the teeth of the detent-wheel when operated to move the piston-rod downwardly and engaging with the teeth to prevent its reversing movement. By holding the dog away from engagement with the detent-wheel the shaft a may be, by the crank-arm, actuated to raise the pipe I.

While I have shown a mechanism for thus operating the apparatus to engage with the bung-hole of a cask or barrel and mechanism to operate the pipe I to rise and descend, I do not limit my invention of the combined stand-pipe and its port-closing and port-opening pipe I to their combination with the means which I show for operating them, as any other mechanism which will operate them in the same manner may be used.

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

1. In an apparatus for barreling beer or other fermented liquors the combination with a stand-pipe adapted at its lower end to make an air-tight connection with the bung-hole of a barrel, and having a connecting branch pipe for the ingress or egress of air or gas; of the interiorly-placed port-opening and port-closing pipe I, having its interior vertically divided into the areas d^2, and d^3, the latter provided with the ports p^2, p^3, and p^8 and the area d^2, having the port p'; and means to operate said pipe I, to move downwardly for opening the ports p^2, p^3, and p^8 to charge the barrel with gas or air, and then to move down still farther enough to have the port p', register with the liquor-supplying pipe by which liquor may fill the barrel and the air replaced by the liquor pass through the port p^8, from the barrel to enter the area d^3, and thence to the air or gas branch pipe substantially in the manner as and for the purpose set forth.

2. The combination with the stand-pipe C, provided with the rubber packing-ring R, and having the connecting branch pipes P′, and P², of the port-opening and port-closing pipe I, having the piston-rod b^2, and adapted to make a piston engagement with the interior of the stand-pipe C, and having the vertical partition D, dividing its interior into the areas d^2, and d^3, the latter having the ports p^2, p^3, and p^8, and the area d^2, having the port p', adapted to open out from the area d^2, constructed and arranged to operate substantially in the manner as and for the purposes set forth.

3. The combination with the stand-pipe C, constructed to make an air-tight engagement at its lower end with the bung-hole of a barrel, and having the offset branch pipes p', and p^2, of the pipe I, having the vertically-divided-off areas d^2, and d^3, arranged therein and the ports p^2, p^3, and p^8, opening out from the area d^3, and the port p', opening out from the area d^2, with said pipe I adapted to make a piston engagement with the interior of the stand-pipe; and the pipe extension I², adapted to attach to, or be detached from the lower end of the pipe I below its areas d^2, and d^3, substantially in the manner as and for the purposes set forth.

4. The combination with the bung-hole valve V, located on the barrel interior beneath the bung-hole, and operated by a spring to close the latter, of the stand-pipe C, having the rubber packing R, at its lower end, and actuated to descend into said bung-hole above the valve to make an air-tight connection therewith, and provided with a draw-off cock K; and the pipe I, making a piston engagement with the stand-pipe interior, and vertically recessed at r^3, and means whereby said pipe may be operated to move downwardly to open said valve, substantially as and for the purposes set forth.

5. In an apparatus for barreling fermented liquors under pressure, the combination with a stand-pipe constructed to make an air-tight connection with the bung-hole of a barrel, and provided with two branch pipes, each having a valve, with one of said branch pipes being adapted to supply liquor to the stand-pipe, and the other to supply air-pressure to the barrel to be filled, and to return said air to the tank from which the liquor is supplied, as the same is displaced by the entering liquor; of a pipe constructed to make a piston engagement with the stand-pipe interior, and provided with ports opening into said branch pipes, whereby as said interior pipe is raised, pressure may be applied to the barrel interior, and when moved downwardly liquor will pass into the barrel, and the air therein as displaced by the entering liquor, will be returned to the tank from which the liquor is supplied, substantially as shown and described.

Signed at the city of Troy, New York, this 3d day of January, 1896, in the presence of the two witnesses whose names are hereto written.

ALFRED E. FEROE.

Witnesses:
W. E. HAGAN,
CHARLES S. BRINTNALL.