

No. 631,008.

Patented Aug. 15, 1899.

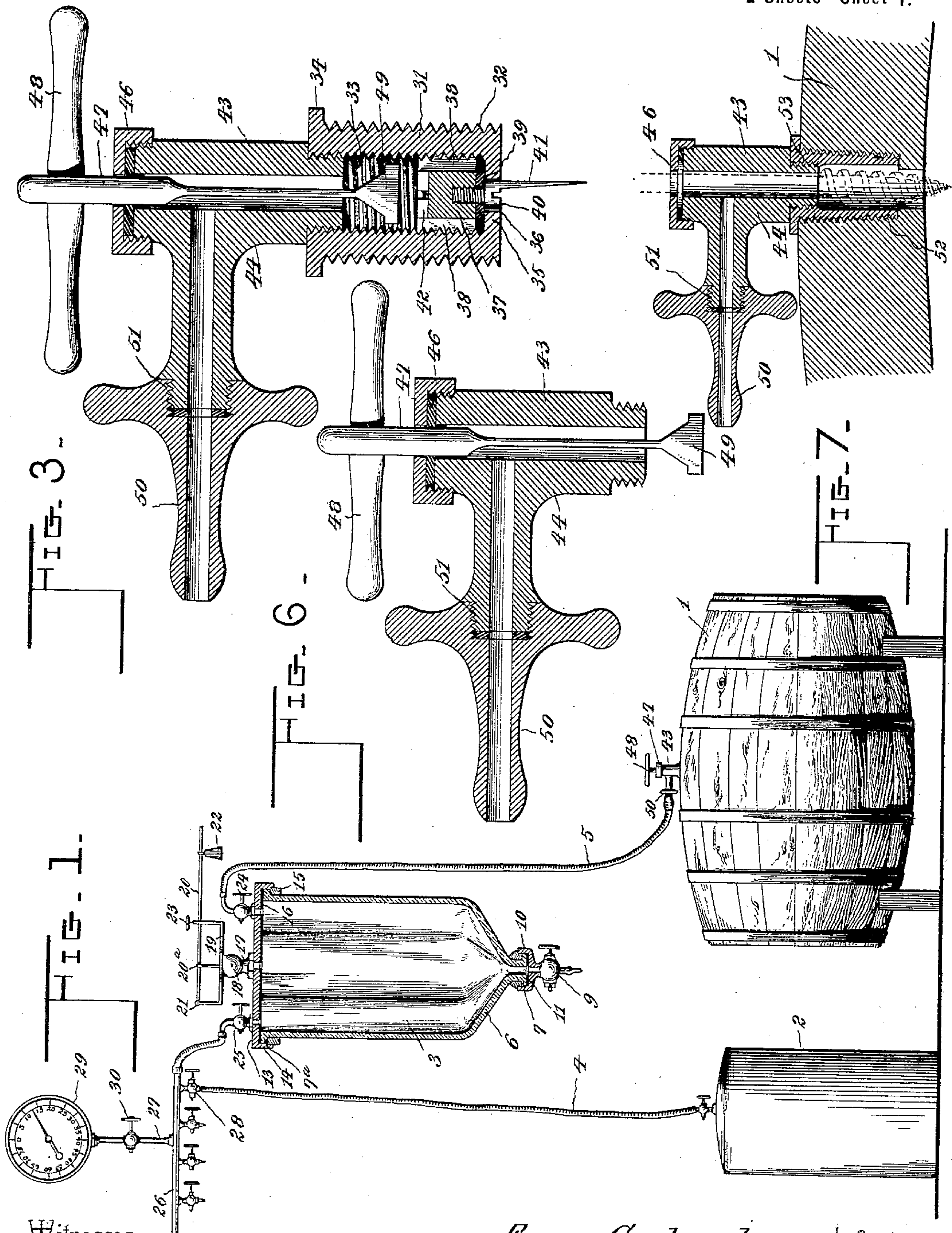
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APPARATUS FOR FORCING LIQUIDS CHARGED WITH CARBONIC ACID GAS.

(Application filed Apr. 18, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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By his Attorneys,

Emery Goodamote

Inventor

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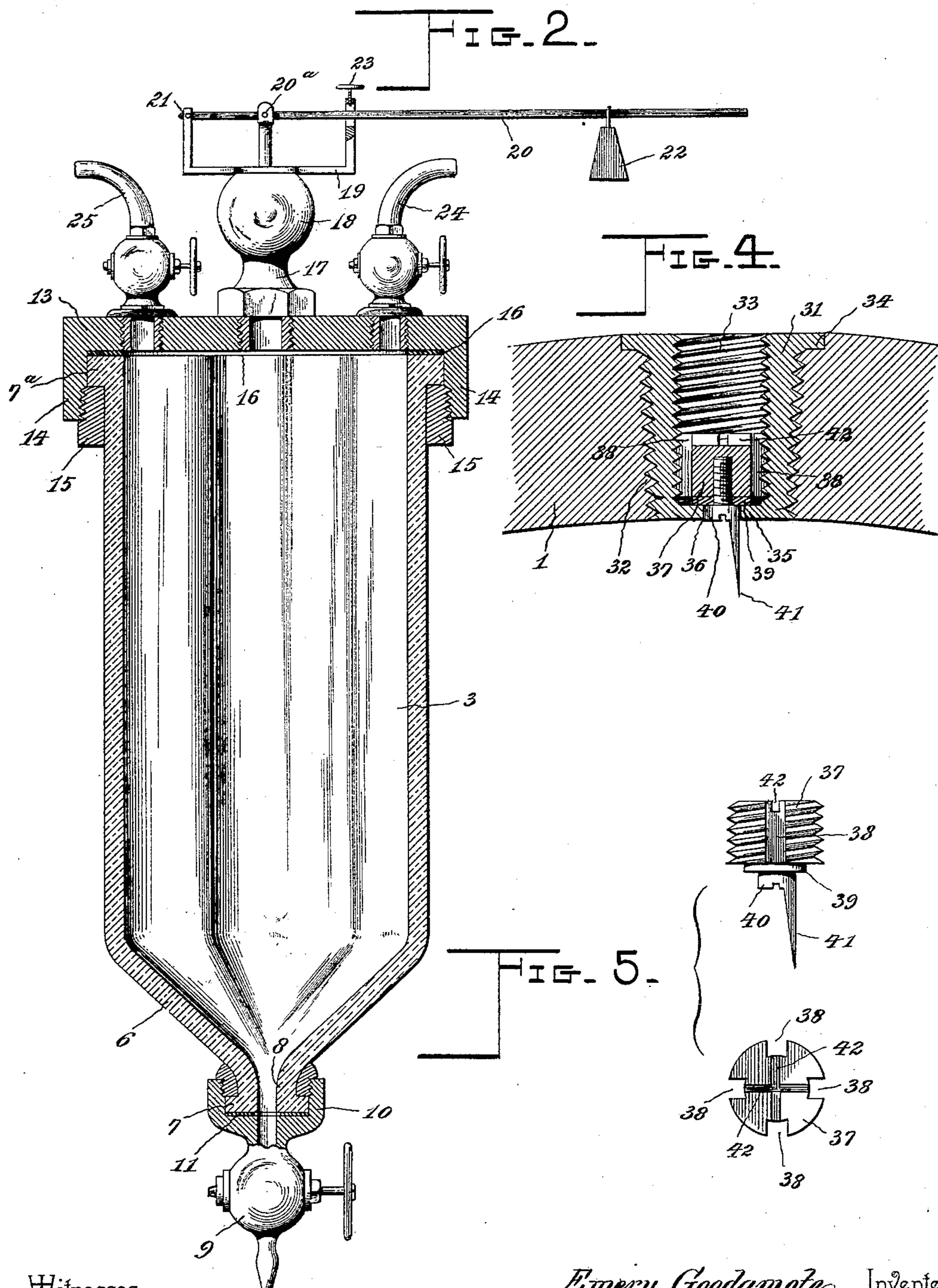
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UNITED STATES PATENT OFFICE.

EMERY GOODAMOTE, OF GLOVERSVILLE, NEW YORK, ASSIGNOR OF ONE-FOURTH TO WILLIAM E. BERRY, OF SAME PLACE.

APPARATUS FOR FORCING LIQUIDS CHARGED WITH CARBONIC-ACID GAS.

SPECIFICATION forming part of Letters Patent No. 631,008, dated August 15, 1899.

Application filed April 18, 1898. Serial No. 678,015. (No model.)

To all whom it may concern:

Be it known that I, EMERY GOODAMOTE, a citizen of the United States, residing at Gloversville, in the county of Fulton and State of New York, have invented a new and useful Apparatus for Forcing Liquids Charged with Carbonic-Acid Gas, of which the following is a specification.

My invention relates to improvements in apparatus for forcing liquids charged with carbonic-acid gas particularly adapted for dispensing malt liquor, such as ale, which, as is well known, leaves a gummy residue in the pipes or tubes and the faucets through which it flows; and the objects that I have in view are to provide means by which the escape and pressure of gas from a cask may be noted by the bartender without going into the apartment in which the cask is stored, to provide for the storage of gas which may escape from the cask when it is first vented, so that the gas may be used for charging the liquid drawn from the cask when partly emptied and its pressure is reduced, or said reserved gas may be used in charging liquids drawn from other casks, and to provide for the attachment of the vent to and its disconnection from a cask without loss of the gas-pressure or the escape of the liquid, particularly when the cask is fresh vented.

With these ends in view my invention consists in the novel construction and arrangement of parts and in the combination of devices, which will be hereinafter fully described and claimed.

To enable others to understand the invention, I have illustrated the same in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a sectional elevation of the apparatus. Fig. 2 is an enlarged section through the gas-receiver and its connections. Fig. 3 is an enlarged sectional view through the vent-valve, illustrating the vent-coupling applied thereto. Figs. 4 and 5 are detail views of the improved type of the vent-valve. Fig. 6 is a detail sectional view of the vent-coupling detached from the vent-valve and embodying the device for opening and closing said valve. Fig. 7 is a detail view of a modified form of bushing and vent-nipple which

may be used in connection with my apparatus.

Like numerals of reference denote like and corresponding parts in each of the several figures of the drawings.

Referring to Fig. 1, the apparatus is illustrated in its entirety, in which 1 indicates a cask in which malt liquors are contained. 2 is the reserve-gas tank. 3 is the gas-receiver, situated between the cask and the reserve-gas-tank. 4 is the pipe or tubing connecting the reserve-gas tank and the gas-receiver 3, and 5 is the pipe or tubing connecting the cask with the gas-receiver 3.

The receiver 3 is supported in a vertical position by any suitable means, and it is made of glass or other suitable transparent material, said receiver being placed in a position within the view of the bartender or other attendant to enable him to ascertain at a glance the progress of the venting or escape of the gas from the barrel, as well as determine the pressure of the gas by a suitable gage. This glass receiver is provided with a conical bottom 6, which terminates in a contracted neck 8 and is formed with the annular offstanding flange 7 below said contracted neck. At its upper open end said receiver is formed with an offstanding flange 7^a, the purpose of which will presently appear. At the conical lower end of the receiver 3 is arranged a draw-off cock 9, having the flange-base 10 fitted around the flange 7 of the neck 8, and between the base of this cock and the lower terminal of the receiver is interposed a gasket or packing 11 of any suitable material. On the neck 8 of the receiver, above the flange 7 thereon, is fitted a collar to which is screwed or otherwise connected the flange on the base 10 of the cock 9, thus detachably fitting said cock to the glass receiver. To the upper open end of the receiver 3 is fitted the head 13, which is provided with a circumferential pendent flange 14, that incloses the flange 7^a of said receiver, and beneath this flange is arranged the collar 15, to which is connected the flanged head 13. A gasket or packing 16 is interposed between the edge of the receiver 3 and the head 13 to maintain a gas-tight joint between said head and the receiver, a similar joint being provided by

the gasket 11 between the lower flanged extremity 8 of the vessel and the draw-off cock 9.

To the receiver-head 13 is fitted an automatic safety-valve 17, the shell 18 of which is suitably attached in a central position to said head 13. Said shell 18 is constructed with a yoke-shaped support 19, to one arm of which is hinged or fulcrumed, as at 21, the valve-lever 20, the stem of the valve being pivotally attached to said lever, as at 20^a. The free end of the lever carries a weight 22, which is adjustable lengthwise on the lever to enable the valve to open under varying pressures of gas in the receiver, and said lever plays in a hole or slot in the other arm of the yoke 19, which carries a screw 23, adapted to impinge against the lever and to limit its upward movement and the area of the valve-port, so as to restrict the escape of gas for the purpose of permitting said gas to escape slowly or rapidly as desired.

To the receiver-head 13, at one side of the safety-valve, is attached a valve-nipple 24, to which is connected one end of the pipe or tube 5, which leads to the cask, and to the receiver-head 13, on the opposite side thereof from the nipple 24, is provided another valve-nipple 25, connected to the branch pipe 26. This branch pipe has a series of valves 28, to one of which is attached the tubing 4, which leads to the reserve-gas tank 2. To this branch pipe 26 is attached the pipe 27, having a suitable valve and communicating with the pressure-indicator 29, the valve 30 in said pipe 27 serving to cut off communication between the pipe 26 and the indicator. In my apparatus the communication between the gas-receiver and the reserve-gas tank 2 may be cut off by closing the valve 28, to which the tubing 4 is attached.

The cask 1 is designed to be equipped with a vent-valve which is peculiarly constructed to render the same self-clearing from the sediment which may accumulate therein owing to solidification of the gummy residue present in malt liquors, thus overcoming one of the serious objections heretofore experienced in apparatus designed for use in connection with the liquor known as "ale." The vent-valve is provided with a bushing or sleeve 31, which externally is of conical shape and is provided with a male screw-thread 32 to enable said bushing to be screwed tightly into one of the staves of the cask and to remain a permanent fixture thereon. The interior of the vent-bushing is of cylindrical contour and provided with a female thread 33, and at its outer end said bushing is formed with an integral flange or shoulder 34, which is designed to lie flush with the face of the cask-stave and to strengthen the joint between said cask and the bushing. The outer end of the bushing is open, but its inner end is provided with a head 35, through which is formed a central port 36, adapted to permit of the passage of liquid and gas from the cask

to the tubing or pipe 5, which leads to the gas-receiver 3. Within the bushing is fitted the valve-plug 37, which is externally screw-threaded to engage with the female thread 33, and this valve-plug is made in a single piece of metal with a plurality of longitudinal equidistant recesses 38, forming a series of vents for the passage of gas or liquid, or both, when the plug 37 is screwed away from the port in the head 35. To the lower face of the valve-plug is fitted a packing-disk 39, which is adapted to be pressed upon the head 35 of the bushing when the valve is screwed down into the bushing in order to make a tight joint between the head of the bushing and the valve-plug, and this packing is detachably secured in place by means of a central single screw 40, which passes through the packing or gasket and is embedded in the solid plug. To render the valve-plug self-clearing, I provide the same with a clearer prong or spur 41, which is rigidly attached or made integral with said valve-plug and is located at a point at one side of the vertical axis thereof. This clearer-spur is thus eccentrically joined with the valve-plug, and it depends a suitable distance below said plug, so as to pass through the port 36 in the head of the bushing, and when the valve is rotated in order to adjust it toward or away from the bushing-head the clearer prong or spur is adapted to sweep close to or in actual contact with the wall of the port 36, and thereby positively remove any sediment which adheres to the plug and has a tendency to clog the port 36 and restrict the passage of gas or liquid there-through. In the upper exposed head of the valve-plug are provided the notches 42, arranged at right angles to each other and adapted to receive the point of an implement by which the valve may be adjusted for opening or closing the gas and liquid passage through the vent-bushing. With this vent-bushing is combined a coupling 43, which may be attached to said bushing preliminary to opening the vent, and said coupling is equipped with means to positively open or close the vent-valve after the coupling has been attached to the bushing and before it is disconnected therefrom. This coupling consists of a right-angled body 44, one arm of which has a threaded flange to screw into the open outer end of said bushing, thus detachably connecting the coupling to the bushing. At the juncture of its arms this right-angled body has a stuffing-box 46, through which passes the shank of a screw-driver 47. The extremity of the driver-shank protrudes beyond the stuffing-box and is equipped with a handle 48, by which the screw-driver may be readily adjusted into engagement with the valve-plug and rotated in order to turn said plug in the bushing to or from the seat formed by the head 35. This adjuster 47 for the valve-plug has its inner end widened and pointed, as at 49, to engage with the notched face of said valve-plug and said valve-ad-

juster or screw-driver 47 is a permanent fixture on the coupling 43, so that when the coupling is attached to the bushing the valve-adjuster is always in position to be used by the operator in opening or closing the valve. The coupling 43 is further provided with a detachable nipple 50, to which may be connected one end of the tube or pipe 5, which leads to the gas-receiver 3, and the joint between the detachable nipple 50 and the right-angular coupling-body is rendered gas-tight by the employment of a coupling 51.

The bushing 31 is designed to be permanently attached to the barrel or cask, and its threaded and shouldered construction strengthens the stave at the point where the hole is formed therein to receive the bushing. By providing the clearer spur or prong at the inner end of the valve to pass through the port in the bushing the said port is kept free from accumulations of sediment. The elastic washer or gasket on the valve-plug may be replaced at any time by a new washer in order to keep the joint tightly closed. The longitudinal recesses 38 on the threaded circumferential face of the valve-plug provide an enlarged port for the free escape of the gas, and should the recesses become clogged at any time the accumulation may be loosened by thrusting into the recesses a wire or other implement which is always accessible. The employment of the metallic bushing strengthens the stave of the cask so that the staves are not liable to become bowed or broken every time the barrel is emptied, thereby saving the cost of a new stave. The valve-adjuster in the coupling forms a part thereof and is always in place for service. The valve-plug may be tightly closed when the cask is emptied or filled, and in the latter instance the cask is kept tightly closed against the admission of air to prevent the contents thereof from becoming sour or musty, said valve also serving to prevent the hops and dregs from running out through the bushing and over the floor or sidewalk when the empty cask is removed from the cellar. My improvement permits the tubing 5 to be readily disconnected from the coupling after the vent-valve shall have been closed by the adjustment of the screw-driver, after which the coupling may be detached from the bushing of one barrel, then applied to the bushing of another barrel, the tube 5 attached thereto, and the valve-adjuster operated to open the valve in the fresh cask. This cask is placed in a position where its gas is free to escape through the tube 5 into the receiver, and the disconnection of the coupling from the filled cask to the empty cask may be effected without soiling the clothing or the loss of the liquid and does not require the employment of any special tools such as bit-braces, tongs, wrenches, or any other implement. The valve-adjuster is not liable to get out of order, and the simple rotation of such adjuster provides for the proper opening or closing of the plug-valve.

By connecting the coupling to the bushing and the tubing or pipe 5 and attaching said tubing or pipe to the valve-nipple of the receiver 3, which is placed in full view of the attendant, the latter is able at any time to ascertain whether any clogging takes place in the apparatus and to locate the obstruction. The attendant is also able to note the progress of venting the barrel and to ascertain whether the liquid flows from the cask along with the gas. If liquid is carried to the receiver 3, it accumulates in the bottom thereof and can be drawn off at any time by the cock 9, thereby keeping the cocks free from liquid and effecting a saving of the liquid which may escape from the cask with the gas. The employment of the pressure-gage enables the operator to determine the number of pounds of pressure to which the gas may be reduced, and by connecting the receiver with the storage-tank the latter may be charged with the natural carbonic gas which escapes from the liquor contained in the cask when the latter is first opened. The valve 28 in the branch pipe to the tubing or pipe 4, which leads to the gas-reserve tank 2, can be closed to keep the gas therein in reserve until it is required to be used, while the remaining gas can be drawn off through the cocks for use until the pressure in the cask and receiver is drawn down to the desired point at which it is desired to maintain the gas-pressure in the cask. The plug-valve can be closed and the coupling disconnected at any time when it is desired to lay aside one cask and bring another cask into service, and the contents of the first cask may be charged with carbonic gas stored in the reserve-gas tank 2. This adaptation of the apparatus is advantageous in the art, because it enables the ale or other liquid to be charged with the natural carbonic gas instead of forcing therein foul air from the refrigerator or apartment, and my apparatus permits all of the escaping gas to be stored for subsequent use in connection with liquor which may be deprived, more or less, of its natural gas. In case it is desired to allow of the escape of the gas from the receiver the safety-valve will allow the gas when it attains a certain pressure to flow through the port provided in its shell, and the pressure of gas may be kept at the desired point or varied by adjusting the weight on the valve-lever toward or away from its fulcrum. The employment of the receiver and the safety-valve attracts the attention of the bartender, who is able to ascertain the condition of the venting without going into the cellar or apartment in which the cask is stored.

In Fig. 7 of the drawings I have represented another bushing which may be used in connection with my apparatus in lieu of the device shown by Figs. 4 and 5. In this device I dispense with the valve and the adjuster in the nipple, which enables the nipple to be used in connection therewith. This bush-

ing 50 is of conical form, externally threaded to screw into the barrel-stave, and it is interiorly threaded at its upper end, as at 51. In applying the bushing a hole of the proper diameter is bored part way through a barrel-stave, and the boring-tool is then withdrawn. The bushing is now screwed into the partly-bored hole, and a bit of a certain diameter is fitted in the bushing, as shown by dotted lines in Fig. 7, after which the nipple is screwed into the bushing, so as to inclose the shank of the boring-bit. The bit is operated through the bushing to remove enough of the barrel-stave material beneath the bushing to form an opening which communicates with the interior of the barrel and with the bushing for the gas to pass to the vent-valve. It is not necessary that the bushing shall pass entirely through the barrel-stave, nor is it necessary that the boring-bit shall be removed, a perforated cap 46 being employed in the construction shown by Fig. 7 similarly to the construction illustrated by Figs. 3 and 6.

As no novelty is herein claimed for the means for withdrawing the liquid from a barrel, I have not deemed it necessary to illustrate such drawing devices, as any suitable appliance known to the art may be use for this purpose.

I am aware that changes in the form and proportion of parts and in the details of construction may be made by a skilled mechanic without departing from the spirit or sacrificing the advantages of the invention, and I therefore reserve the right to make such modifications as fall within the scope of the invention.

Having thus described the invention, what I claim is—

1. In a liquor-drawing apparatus, a vent consisting of a bushing having a valve-seat and a port, a valve-plug adjustable in said bushing, and a clearer movable with the valve

and extending through the port in the bushing to sweep the wall of said port, substantially as described.

2. In a liquor-drawing apparatus, a vent for the cask or barrel consisting of an internally-threaded bushing, a threaded valve-plug screwed in said bushing, and a clearer prong or spur carried by the valve-plug in a position eccentric to the axis thereof and adapted to sweep adjacent to the wall of the valve-port when said plug is rotated in the bushing, substantially as described.

3. In a liquor-drawing apparatus, a barrel or cask vent comprising an internally-threaded bushing having a valve-seat at its inner end, a threaded valve-plug screwed into said bushing and provided with the longitudinal recesses in its cylindrical threaded face, and with the transverse notches in its exposed face, a packing detachably secured to the inner end of the valve-plug, and a clearer-prong carried by said plug and passing through the valve-port, substantially as described.

4. The combination with a cask, of a bushing fixed to said cask and having an axial opening at its lower end of a diameter to permit the passage of a tool therethrough into the cask, a right-angular body having a single offstanding arm and a vertical passage, a tool within said bushing to pass through the axial opening at the lower end thereof, a cap which closes the upper end of the passage in said body, and a nipple, 50, screwed detachably to the single offstanding arm of the body, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

EMERY GOODAMOTE.

Witnesses:

LAWRENCE FAY,
JOHN C. WASHBURN.