

No. 694,477.

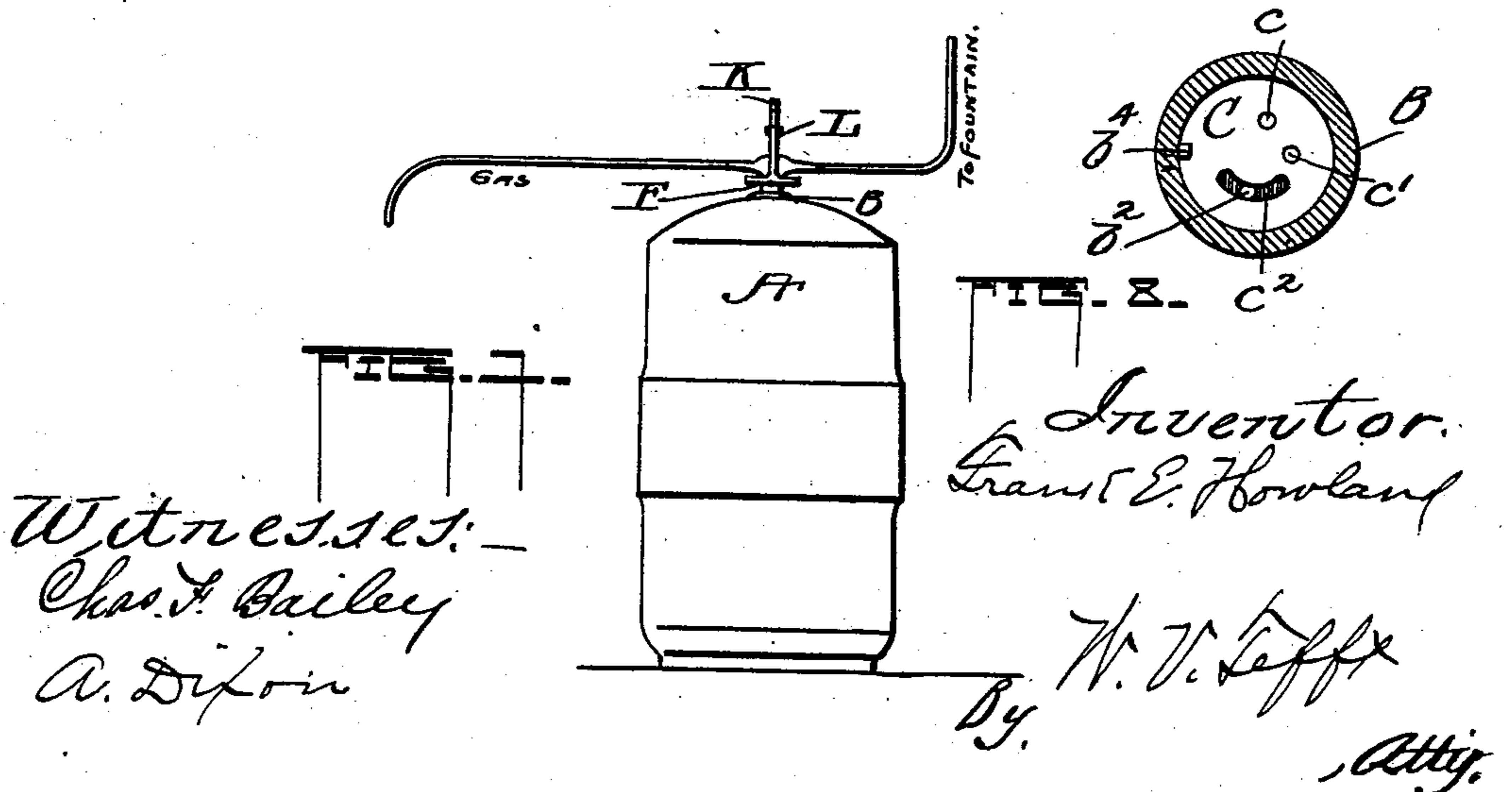
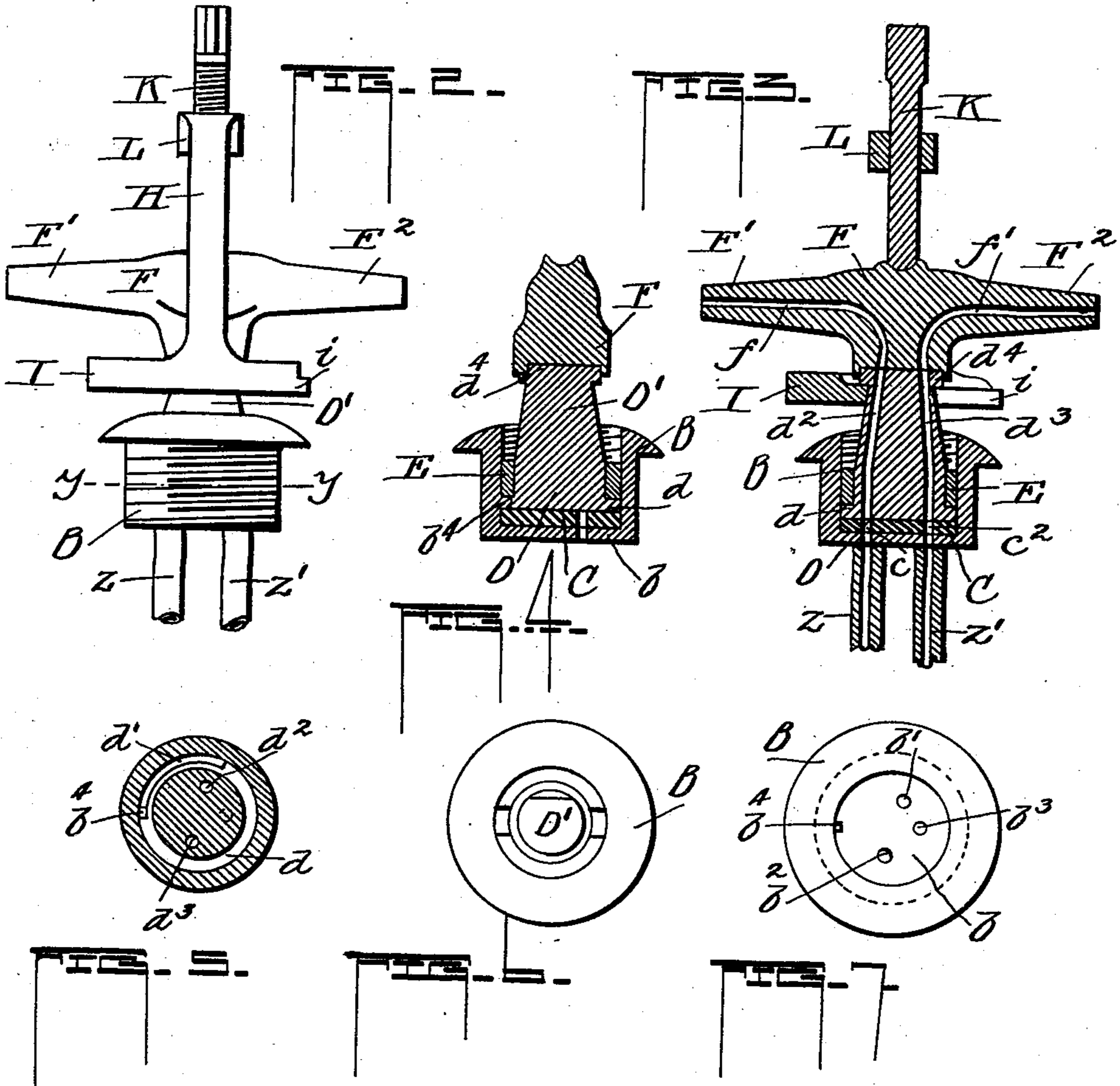
Patented Mar. 4, 1902.

F. E. HOWLAND.

VALVE.

(Application filed Mar. 11, 1901.)

(No Model.)



# UNITED STATES PATENT OFFICE.

FRANK E. HOWLAND, OF PEORIA, ILLINOIS.

## VALVE.

SPECIFICATION forming part of Letters Patent No. 694,477, dated March 4, 1902.

Application filed March 11, 1901. Serial No. 50,746. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK E. HOWLAND, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Valves; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in apparatus for carbonating and dispensing liquids.

More particularly, my invention relates to a device adapted to be applied to casks, kegs, or other receptacles whereby in its use it is practicable to completely fill the receptacles in the first instance and in such filling and as the liquid is dispensed a constant recarbonating process is instituted which continues until all of the liquid is withdrawn from the receptacle.

The device is adapted to a receptacle being filled, and by a certain manipulation of the valve part of the device an inlet into the receptacle, which permits the filling, and a vent or air-escape is provided, thus enabling the receptacle to be completely filled.

That my invention may be more fully understood, reference is had to the drawings, in which—

Figure 1 is a side elevation of a soda-cask with my device attached thereto. Fig. 2 is a side elevation of the device, showing the parts thereof assembled, but the complete device detached from the receptacle. Fig. 3 is a vertical section illustrating the manner of assembling the parts. Fig. 4 is a detailed sectional view of the valve part and seat therefor on a plain at right angles from that shown in Fig. 3. Fig. 5 is a section on the line *y y* of Fig. 2. Fig. 6 is a plan view of the valve part and seat or housing therefor, omitting from the complete device a certain clamping standard and screw part. Fig. 7 is a top view of the valve-seat with the valve, gasket, and other parts removed. Fig. 8 is a section through the plug just above the leather valve-seat or gasket.

The general idea of construction involved in carrying out my invention contemplates a plug adapted to be secured to a cask or keg

that is purposed to contain fluids for drinking purposes, such as soda-water, mineral water, beer, &c., which said fluids are invariably charged or carbonated. This plug may be of any suitable form that will adapt it for such attachment and will also form a seat for a valve, said valve being adapted to shift within the plug to match openings in said plug, and as I construct the device I desire to interpose a gasket having openings matching with openings in the bottom of the plug, so that a connection may be made with said valve from a gas generator or supply, and also to open simultaneously an outlet or discharge-opening from the receptacle whereby as the liquid is discharged the gas enters and fills the space thus vacated by the liquid, which will result in a constant recarbonation of the liquid therein contained, rendering the liquid fresh, sharp, and pungent. The valve may be likewise manipulated to establish an inlet-opening in filling the receptacle and an outlet or vent to permit the escape of air as the receptacle is being so filled.

A detailed description of the parts is herein given by reference to the drawings, in which like letters in the different figures refer to the same parts.

In the drawings, A is a soda-cask selected to illustrate in a general way the application and use of my device; but it may be applied to a keg, barrel, or any other suitable receptacle adapted to contain liquid purposed to be dispensed in a carbonated condition.

B is a metal plug-screw, threaded on its outer surface, adapting it to be screwed into a suitable opening in the receptacle. The interior portion of the plug is open, the bottom portion being closed with the diaphragm *b*, provided with three small openings *b'* *b*<sup>2</sup> *b*<sup>3</sup>, there being provided the supplemental bottom piece or valve-seat C, which may be of leather or other suitable material, provided with perforations or ports *c* and *c'*, corresponding in number and position with perforations or ports *b'* *b*<sup>2</sup> *b*<sup>3</sup> in the diaphragm *b*. In the gasket or valve-seat C is provided the slot *c*<sup>2</sup>, which is so placed as to bear over one of the ports or perforations in the diaphragm and so that one of the ports of the valve may bear over said slot so as to facilitate some shifting of the valve without cutting off

the communication between these particular matching ports while the opposite port is completely closed.

Z Z' are pipes attached to the diaphragm 5 *b* at the openings *b'* *b*<sup>2</sup> and depend into the cask and preferably near to the bottom thereof. The pipe Z, as herein arranged, compared with Fig. 1, is a gas-inlet pipe, and Z' is the outlet or dispensing pipe. This arrangement, however, is only adopted for the 10 purposes of illustration, and it is obvious that in practice the reverse use may as well be adopted. Within the interior open space in the plug the valve D is adapted to be inserted and rests upon the valve-seat C or gasket, 15 which said valve is provided with the flange *d*, adapted to meet and fit closely up against the wall of the plug, except a portion representing approximately one-third of the circumference of the flange, which is cut away, 20 as at *d'*, and provides a way or clearance for the lug or stop *b*<sup>4</sup>, integral with the wall of the plug and is adapted to restrict the movement of the valve.

E is a take-up nut adapted to be screwed 25 into the plug B and down upon the flange *d* of valve D. Any suitable wrench may be used to turn the nut into position. The valve D is provided with the perforations *d*<sup>2</sup> *d*<sup>3</sup>, 30 which said perforations are adapted to meet or to be turned into coincidence with the perforations or certain of them in the valve-seat C and diaphragm *b* to facilitate the carbonating and dispensing the liquid and also to 35 facilitate the escape of air during the filling operation. Likewise the turning of the valve from such coincidence of perforations will close the cask and suspend the above said operations.

F is a socket-wrench formed to match the 40 segmentally-formed upper end of the valve-stem D, the said wrench being provided with the extended arms *F'* *F*<sup>2</sup>, there being provided the perforations *ff'*, through the wrench and the arms thereof, which when the wrench 45 is placed on the valve-stem match with the perforations *d*<sup>2</sup> *d*<sup>3</sup> in the valve and valve-stem and are continuously so matched during such juncture of ports.

A suitable clamp is necessary to be used 50 to secure the wrench to the valve-stem. This may be of a suitable form; but the one I have shown and prefer to use consists of the frame or standard II, provided with the base I, having the inwardly-extending flange *i'*, adapted 55 to engage the flange *d*<sup>4</sup> on the valve-stem, and the screw K, carried in the threaded head L at the upper end of the standard. The screw K is screwed downwardly into contact with 60 the wrench F and rests in a seat in the upper face thereof, substantially as shown. Any suitable wrench may be used to operate the screw.

The parts of my device so assembled and 65 attached to a suitable receptacle are in readiness to be utilized for the purposes above enumerated—viz., for the purpose of filling an

empty cask, keg, or other receptacle, and when so filled and the connection is made 70 with the gas-supply under the proper pressure and also connected up with a fountain, faucet, or other dispensing element to be dispensed at will and in desired quantities and simultaneous with such dispensing, the space 75 of the discharged liquid will be filled with gas and the remaining liquid will be thus continually recharged, rendering the liquid always sharp and pungent at all times and at all stages of the emptying of the receptacle.

I claim—

1. In a valve the combination with a plug adapted to fit in an opening in a receptacle having an open threaded interior and a closed bottom portion provided with three perforations, of an inlet and outlet tube depending 85 from said plug, a valve seated in the opening in the plug provided with perforations therethrough adapted to be shifted to and from coincidence with the perforations in the bottom of the plug, mechanism connecting 90 with the valve provided with ducts communicating with the perforations in the valve and suitable means for shifting the said valve, as described.

2. In a valve, the combination, with a plug, 95 adapted to fit in an opening in a receptacle, provided with an open interior the same being exteriorly and interiorly threaded and provided with a closed bottom portion having three (3) perforations therein, two (2) pipes or ducts 100 communicating with two (2) of said perforations and depending into the receptacle a gasket fitting in the bottom portion of the plug provided with two (2) perforations matching with two (2) of the said perforations in the bottom portion of the plug and 105 a slot matching with the threaded perforation in the bottom part, a valve seated in the interior of said plug and secured therein by means of a suitable take-up nut and provided 110 with two (2) perforations therethrough, a suitable wrench connected with said valve having perforations therethrough matching with the perforations in the valve adapted to turn the valve in the plug to cause the 115 matching of the perforations in the valve with those in the gasket and the bottom portion of the plug and also to turn the said valve from such matching relation of the perforations substantially as shown and described. 120

3. In a valve a plug adapted to fit in an opening in a receptacle and having an open interior and provided with perforations in the bottom portion thereof ducts or pipes matching with 125 two (2) of the openings and depending therefrom a valve seated in the plug and provided with perforations therein, a leather gasket interposed between the valve and the bottom of the plug provided with perforations 130 matching with the perforations in the bottom of the plug, a wrench having radiating arms seated on the upper end of the valve-stem and having perforations one in each arm

matching with the perforations in the valve, means for securing the valve in position and means for securing the wrench to the valve-stem substantially as shown and described.

5 4. In a valve, the combination with a plug adapted to fit in an opening in a receptacle, provided with perforations in the bottom portion thereof, comprising a gas-inlet, a liquid-outlet and an air-vent respectively, of a valve  
10 seated in an opening in the plug and provided with perforations therethrough intermittently caused to coincide with the gas-inlet and liquid-outlet and the air-vent when being filled with liquid, suitable inlet and outlet  
15 mechanism communicating with the perforations in said valve and means for shifting said valve, substantially as shown and described.

5 5. In a valve the combination with a plug adapted to fit an opening in a receptacle having an open interior with a closed bottom portion provided with three (3) perforations, of  
20 ducts or pipes communicating with two (2) of the perforations and depending into the receptacle, a gasket in the bottom of the plug provided with two (2) perforations matching  
25 with two (2) of the perforations in the plug and a slot therein matching with the threaded perforation, a valve seated in the plug and  
30 provided with two (2) perforations therethrough, a take-up nut adapted to be screwed into the interior of the plug and down upon flanges of the valve suitable inlet and outlet  
35 mechanism having openings matching the openings in the valve and means for turning the valve.

6. In a valve the combination with a plug adapted to fit an opening in a receptacle having an open interior with a closed bottom portion provided with three (3) perforations of  
40 ducts or pipes communicating with two (2) of the perforations and depending into the receptacle, a gasket in the bottom of the plug provided with two (2) perforations matching  
45 with two (2) of the perforations in the plug and a slot therein matching with the threaded perforation, a valve seated in the plug and provided with two (2) perforations therethrough, a take-up nut adapted to be screwed  
50 into the interior of the plug and down upon flanges of the valve, a wrench having radiat-

ing arms seated on the valve and having perforations therethrough and through the said arms, and means for securing the said wrench to the valve, substantially as shown and described. 55

7. In a valve the combination with a plug adapted to fit an opening in a receptacle having an open interior, with a closed bottom portion provided with three (3) perforations of  
60 ducts or pipes communicating with two (2) of the perforations and depending into the receptacle, a gasket in the bottom of the plug provided with two (2) perforations matching with two (2) of the perforations in the plug  
65 and a slot therein, matching with the threaded perforation, a valve seated in the plug and provided with two (2) perforations therethrough, a take-up nut adapted to be screwed into the interior of the plug and down upon  
70 flanges of the valve, a wrench having radiating arms, seated on the valve and having perforations therethrough and through the said arms, a suitable standard or clamping-frame adapted to engage the valve and continuing  
75 above, the wrench adapted to carry a screw purposed to engage the said wrench to hold it in place on the valve substantially as shown and described.

8. In a valve the combination with a plug 80 B provided with the bottom piece or diaphragm  $b$ , having the perforations  $b'$ ,  $b^2$ ,  $b^3$ , of the pipes or ducts  $Z$ ,  $Z'$ , communicating with the perforations  $b'$ ,  $b^2$ , in the bottom piece  $b$ , the gasket C provided with the perforations  
85  $c$ ,  $c'$ , and the slot  $c^2$ , the valve D having the flange  $d$  and cut away as at  $d'$  and provided with the perforations  $d^2$ ,  $d^3$ , therethrough, the stop  $b^4$ , on the plug, the take-up nut E, the wrench F having the arms  $F$   $F'$  provided with  
90 the perforations  $f$   $f'$  therethrough, the stem H having the base I provided with flange  $i$  and the threaded head L at its upward portion and the screw K, all substantially as described and shown. 95

In testimony whereof I affix my signature in presence of two witnesses.

FRANK E. HOWLAND.

Witnesses:

W. V. TEFFT,  
A. DIXON.