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Patented June 11, 1901.

G. H. KOCH & H. A. HALL.

APPARATUS FOR FILLING CARBONATED WATER HOLDERS.

(Application filed May 31, 1900.)

(No Model.)

Fig. 1.

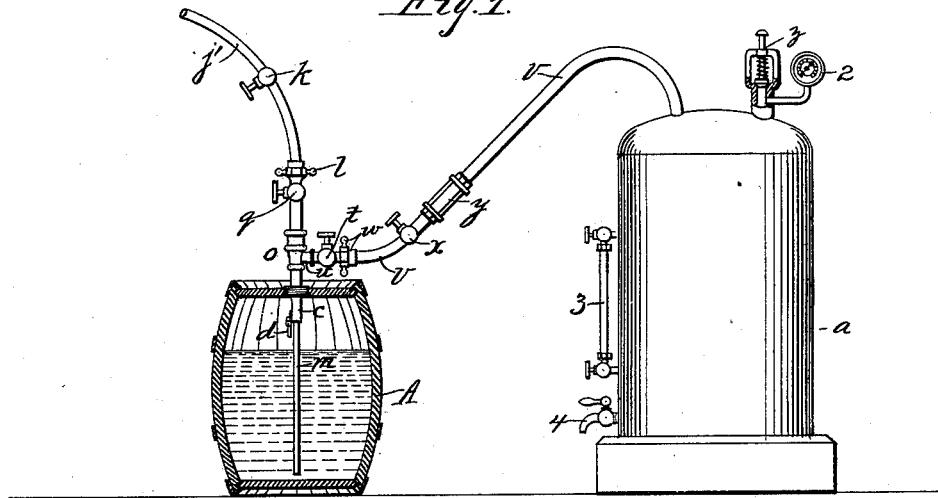


Fig. 2.

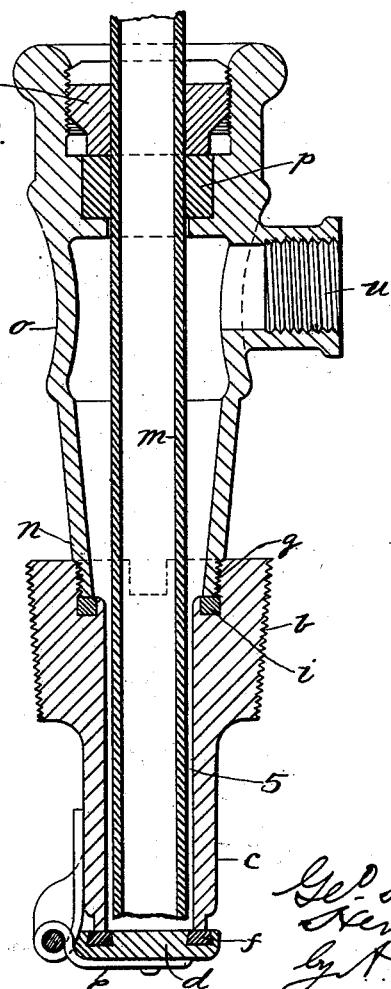


Fig. 3.

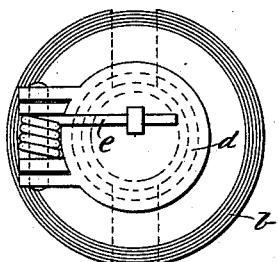
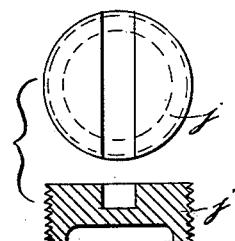


Fig. 4.



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# UNITED STATES PATENT OFFICE.

GEORGE H. KOCH AND HENRY A. HALL, OF NEW YORK, N. Y.

## APPARATUS FOR FILLING CARBONATED-WATER HOLDERS.

SPECIFICATION forming part of Letters Patent No. 676,366, dated June 11, 1901.

Application filed May 31, 1900. Serial No. 18,508. (No model.)

*To all whom it may concern:*

Be it known that we, GEORGE H. KOCH and HENRY A. HALL, citizens of the United States of America, and residents of New York city, county and State of New York, have invented 5 certain new and useful Improvements in Apparatus for Filling Carbonated-Water Holders, of which the following is a specification.

The object of our invention is to provide 10 apparatus for filling casks, retorts, bottles, and other vessels for holding carbonated waters in a way to avoid as much as possible the escape of gas from the water, especially when detaching the filling apparatus from a filled 15 vessel, and to afford simple apparatus that may be readily manipulated. Our improved apparatus for this purpose is represented in the accompanying drawings.

Figure 1 is an elevation of the apparatus 20 and a vertical section of a cask being filled. Fig. 2 is a vertical section of part of the filling apparatus and of the bung employed as part of the apparatus and for retaining the contents of the filled vessel. Fig. 3 is a plan 25 view of the bung inverted. Fig. 4 is a plan and vertical section of the stopper of the bung.

A, Fig. 1, represents a barrel or cask to be filled with carbonated water, and *a* represents a tank that is employed as a means of opposing 30 and largely preventing the escape of gas from the charged water entering cask A. The cask is provided with a centrally-perforated bung *b*, which is screwed into the head or other part of the cask, flush with the same, 35 or thereabout, said bung having a neck *c*, of reduced size, projecting inward, on the inner end of which a check-valve *d* is hinged, so as to be forced open from the exterior by an instrument inserted through the perforation, 40 and the valve is provided with a spring *e* for closing it and also provided with an annular elastic packing-ring *f* for closing tightly against the end of the neck *c* of the bung. The extension of the neck into the cask is intended 45 to trap a certain quantity of gas and prevent the cask from filling entirely with water, which is desirable for maintaining a body of free gas above the water, which preserves the lively effervescent condition of the

water and affords pressure to force out the 50 water when drawn from time to time. The outer end of the bung has a screw-threaded socket *g*, concentric with the central perforation, in the bottom of which is an elastic packing-ring *i*, and a plug *j* is screwed into this 55 socket down on the packing *i* for more effectually preventing escape of gas from the vessel when filled than the valve *d* is competent for, said valve being mainly for temporary use preparatory to inserting the plug. 60

The carbonated water is supplied to the vessel A through pipe *j'* from the source of supply, whatever it may be, said pipe being coupled at *l* to a nozzle *m*, inserted through the bung and reaching nearly to the bottom 65 of said vessel A. Said pipe is also provided with a stop-valve *k*. For so inserting the nozzle and providing a gas-tight connection for preventing waste of the gas while filling and also for providing for displacement of gas 70 accumulating above the water, so that vessel A may be entirely filled with water to the bottom of the bung, and especially to provide for disconnecting the filling apparatus from a filled vessel without a momentary free opening, 75 permitting escape of gas, a pipe-fitting practically in the form of a T is provided, of which end *n* of the head *o* of the T is threaded and otherwise fitted to screw into the socket *g* of the bung when plug *j* is detached. The other 80 end of said head *o* is formed as a stuffing-box, with packing *p* and a gland *s* to pack the nozzle *m* tightly, said nozzle being fitted through the T-head and being of suitable length to reach the bottom of the vessel to be filled. 85 Near the upper end of the nozzle *m* it is provided with a stop-valve *q* to prevent escape of gas when pipe *j'* is disconnected after filling and while the nozzle is being raised above valve *d* to permit it to close when the cask is 90 full and the nozzle is to be removed.

*u* represents the outlet of the T-coupling, to which a stop-valve *t* is connected, and to this stop-valve a pipe *v* is coupled at *w*, which connects with the gas-tank *a* and has a stop-valve *x*. It also has a glass or other transparent section *y*, through which visual notice 95 may be had when the vessel A is full of water

by the excess escaping into tank *a*. Tank *a* is provided with a relief-valve *z*, a pressure-gage *2*, a sight-gage *3*, and an outflow-cock *4*.

The center bore *5* of bung *b* is slightly larger than the diameter of nozzle *m* to afford space for the gas to vent through said space when the filling-nozzle is inserted and the valve *d* is open and the cask is being filled.

The casks or other holders to be filled are each provided with a bung *b* as a permanent attachment.

The operation is as follows: In the first place the plug *j* is removed from the socket of the bung, the **T**-coupling, disconnected from pipes *j'*, is screwed into the bung, then nozzle *m* is inserted and pushed down to the bottom of the cask, pipes *j'* and *v* are then coupled with the nozzle and coupling, respectively, and valves *t* and *x* are first opened to admit gas from the reservoir. Then valves *q* and *k* are opened to admit the water to the cask. To facilitate inserting the nozzle, gland *s* is screwed out sufficiently to relax the grip of packing *p* and is again tightened up after inserting the nozzle. In the first operation tank *a* will only contain air of normal atmospheric pressure, and this will be the case at all times with the casks to be filled. Water entering through nozzle *m*, extended to the bottom of the cask, will not lose as much gas as if released at the top, owing to the more quiet action; but at best some will escape from the surface of the water as it rises in the cask, and in the first operation more will escape than afterward, when there is back pressure from the tank *a*. The gas passes upward through bung *b*, outside of nozzle *m*, into tank *a* through pipe *v* and is there accumulated until the pressure equals the pressure in cask *A*, or thereabout, which in practice will be about fifty pounds per square inch, and thus escaping from said cask allows the cask to fill with water. The first cask filled may perhaps lose a larger percentage of gas for lack of back pressure of gas from the tank at the beginning of the filling process; but afterward the casks will first be filled with gas from the tank, so that the water at once meets back pressure of gas, and thus loses but little of its gas. The back pressure will not, however, quite equal the water-pressure, owing to depletion of tank-pressure by the backflow into the cask. The difference in pressures, however, will be less in proportion as the tank is larger than the cask. When a cask is full, valves *q*, *t*, *k'*, and *x* are all closed, pipes *v* and *j'* detached, nozzle *m* is pulled out to allow valve *d* to close, the **T**-coupling is screwed out of the bung, and the plug *j* screwed into said bung, which completes the operation.

If water accumulates in tank *a*, it may be drawn off from time to time through cock *4*.

It will be seen that valve *d* closes before head *o* is detached from the bung, so that

valve *t* being closed there is no waste of gas from the cask except the trifle contained in the coupling and the nozzle, and valves *k* and *x* prevent waste from the source of supply and from tank *a* while changing the nozzle from one to another of the casks to be filled.

It is to be understood that the apparatus is alike useful for any liquid containing gas under pressure, and we do not limit ourselves to the use of it for water only.

We are aware of the British Patent No. 18,470 of 1897, in which apparatus is represented for ejecting the liquid contents of a vessel by compressed air, said apparatus comprising a discharge-pipe inserted through a valved bung and a pipe-coupling **T**, one end of which connects with the bung, and the other end has a stuffing-box for the discharge-pipe, with an inlet-pipe connection for admitting compressed air into the coupling intermediate of its ends; but this is distinguished from our apparatus in that there is no inlet to our coupling, but an outlet, and the valve of said patent is of a construction absolutely preventing any such operation as venting of gas from the vessel while the function of the apparatus is in progress or while the discharge-pipe is inserted, which is the purpose and operation of our device, while the purpose and sole operation of the apparatus of said patent is the discharge of the contents of the vessel through the pipe. If it were assumed to connect the supply-tank of our apparatus with pipe *E* of said patent, the gas in the vessel being filled would compress the valve and could not escape.

We are also aware of the United States Patents to Albach, No. 477,096, and Torchiani, No. 558,438; but these are entirely lacking in any means of preventing free escape of the gas while detaching the filling-nozzle, which is one of the essential features of our invention.

What we claim as our invention is—

In apparatus for filling vessels with carbonated water, the combination with a bung in the vessel to be filled having a central perforation, a screw-threaded socket in the outer end, and a neck projecting inwardly of the vessel and having a self-closing valve on the inner end for the said central perforation, of the pipe-coupling **T** having one end of the head adapted to connect with the bung-socket; the stuffing-box in the other end, and the outlet-pipe connection intermediately of said ends, a filling-nozzle insertible through the stuffing-box, and the valve, and connected by an inlet-pipe with the water-supply tank, and the gas-tank connected with the outlet of the **T**-coupling by a pipe, and suitable cocks controlling the pipe connections, the constructions and arrangements being such that the vessel to be filled is first charged with gas from the gas-tank through the **T**-coupling and valve and when water is entering

the said vessel, the gas therein is freely vented therefrom through the valve and the T-coupling into said gas-tank allowing the vessel to fill with water to the limit controlled by the inwardly-projecting valve, and a body of gas to be trapped and retained in the space above the valve.

Signed by us at New York this 12th day of May, 1900.

GEORGE H. KOCH.  
HENRY A. HALL.

Witnesses:

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