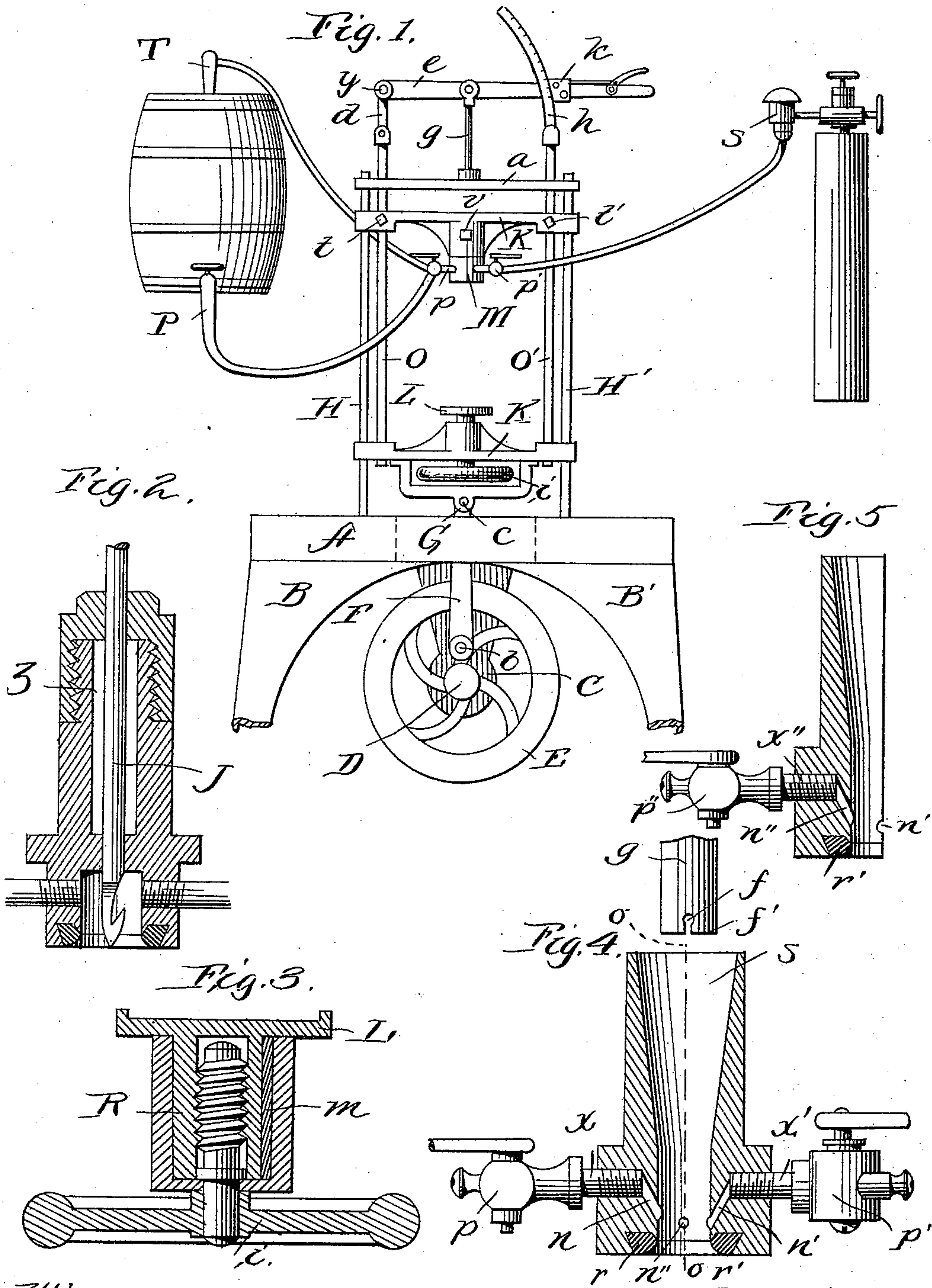


(No Model.)

W. H. FOYE, Jr. & W. H. FOYE, Sr.
BOTTLING MACHINE.

No. 441,477.

Patented Nov. 25, 1890.



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UNITED STATES PATENT OFFICE.

WILLIAM H. FOYE, JR., AND WILLIAM H. FOYE, SR., OF CHICAGO, ILLINOIS.

BOTTLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 441,477, dated November 25, 1890.

Application filed November 7, 1889. Serial No. 329,596. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM H. FOYE, JR., and WILLIAM H. FOYE, Sr., citizens of the United States, residing at Chicago, county of Cook, State of Illinois, have invented a new and useful Bottling-Machine, of which the following is a specification.

Our invention relates to improvements in bottling-machines used in bottling fermented liquors and other fluids which contain carbonic-acid gas or are to be charged with the same.

Our objects are, first, to provide a machine capable of adjustment to any size or shape of bottle; second, to force out the atmospheric air contained in the bottle and fill the same with carbonic-acid gas; third, to fill the bottle with fluid and prevent the same from coming in contact with atmospheric air, if desired, thereby preventing the escape of carbonic-acid gas and preserving the life and aroma of the fluid; fourth, to saturate the fluid with carbonic-acid gas, when required, by pressure and agitation, and, fifth, to cork and secure the same by wiring before removing the bottle from the machine, if desired.

We accomplish these objects by mechanism illustrated in the accompanying drawings, wherein similar reference-letters apply to same or corresponding parts.

Figure 1 is a front elevation of the apparatus. Fig. 2 is a cross-section in the direction of its length of a device for stoppering bottles where inside stoppers are used. Fig. 3 is a cross-section in the direction of its length of the bottle-seat. Fig. 4 is a cross-section in the direction of its length of the corking-tube. Fig. 5 is a cross-section in the direction of its length of the corking-tube on the line *o o*, Fig. 4.

In Fig. 1, the bed-plate *A*, standards *B B'*, and hanger *C* constitute the lower stationary frame. Turning in hanger *C* is shaft *D*, provided at its outer end (not shown) with cranks or pulleys by which it is actuated. On the inner end of shaft *D* is fly-wheel *E*, near the center of which is a boss, to which connecting-rod *F* is secured by crank-pin *b*. The upper end of connecting-rod *F* passes through bed-plate *A* and is secured to cross-head *G* by wrist-pin *c*. The standards *H H'* are secured at their lower ends to bed-plate

A and at their upper ends to cross-piece *a*, which constitute the upper stationary frame. The standards *O O'* and cross-pieces *K K'* constitute agitating-frame. The cross-pieces *K K'* are provided with double bosses at their outer ends. The standards *O O'* at their lower ends are secured to lower cross-piece *K'* by nuts on the inner bosses and pass through inner bosses of upper cross-piece *K* and cross-piece *a* of the upper stationary frame. The outer bosses of the cross-pieces *K K'* are fitted to slide up and down on the standards *H H'* of the upper stationary frame. In the center of lower cross-piece *K'* is bottle-seat *L*, raised and lowered by wheel and screw *i*. In center of upper cross-piece *K* is the corking-tube *M*, held in position by set-screw *V*. Bottle-seat *L* and corking-tube *M* are illustrated in Figs. 3 and 4. On the top of left-hand standard *O* of the agitating-frame is link *d*, secured by pin *y* to corking-lever *e*. Secured to corking-lever *e*, directly over and above corking-tube *M*, is the cork-follower *g*, which forces the cork through corking-tube *M* into the neck of the bottle. On the outer end of lever *e* is ratchet *k*, which engages rack *h*, secured to the standard *O'* of agitating-frame and permits lever *e* to be secured in any position required. The upper cross-piece *K* of the agitating-frame is capable of being raised or lowered to any desired height and secured to standards *O O'* of the agitating-frame by set-screws *t t'* on inner bosses.

Fig. 2 is a cross-section in the direction of its length of a device for stoppering bottles, having inside stoppers which are not wired down. *z* is a stuffing-box, which is packed to resist heavy pressure of gas. *J* shows portion of shaft which passes through stuffing-box *z*, and is provided with a hook at its lower end, which engages loop of bottle-stopper and closes same. The shaft *J* is attached to lever *e*, Fig. 1, similar to cork-follower *g*, Fig. 1. The device is secured to the upper cross-piece *K* of the agitating-frame by set-screw *V*, similar to corking-tube *M* of Fig. 1.

Fig. 3 is a cross-section of the bottle-seat in direction of its length. The seat *L* is forced up and down by means of wheel and screw *i*, which engages thread on inside of shaft *R*. The slot and feather *m* prevent the bottle-

seat L from turning around by the action of the screw. A cam or eccentric may be substituted for hand-wheel and screw, if desired.

Fig. 4 shows a cross-section in direction of its length of the corking-tube and a portion of the cork-follower *g*, in which *f f'* are holes and slots, through which wire is passed when securing cork in bottle. *s* is the opening into and through which cork is forced by lever *e*, Fig. 1, acting on follower *g*, Fig. 1, and is compressed to the size of the neck of the bottle by the gradual contraction of the passage-way. *n n' n''* are inclined openings, through which fluid, gas, or air may flow, as desired. These openings are inclined inward and downward to avoid cutting of cork by its expansion into the openings *n n' n''*, and consequent friction would occur (were these openings not inclined) against their sharp edges, causing pieces of cork to enter the bottle with the fluid. The lower end of corking-tube has recess *r r'*, which is fitted with elastic packing, against which top of bottle is firmly secured by action of hand-wheel and screw *i*, Fig. 1, on the bottle-seat L, Fig. 1. On the outside of corking-tube, intersecting inclined openings *n n' n''*, are horizontal openings *x x'*, into which stop-cocks *p p'* are secured. To the outer ends of stop-cocks *p p'* are attached flexible tubes leading to vent T, Fig. 1, tap P, Fig. 1, and the governor S, Fig. 1, of gas-flask.

Fig. 5 is a cross-section in direction of its length of the corking-tube on the line *o o*, Fig. 4, in which *p''* is the air-cock. (Not visible on the corking-tube M, Fig. 1.)

Referring now to Fig. 1, it will readily be seen with the construction there shown that when shaft D is turned around the connecting-rod F throws the agitating-frame O O' K K' up and down, which is supported and guided by sliding on the standards H H' of the upper stationary frame.

In the operation of our machine, first place the bottle on bottle-seat L, adjust upper cross-piece K of the agitating-frame to the desired height from top of bottle, and secure it to standards O O' of the agitating-frame by set screws *t t'*, indicated on inner bosses. Raise corking-lever *e*, thus lifting cork-follower *g*, place a cork in corking-tube M and force it down by means of lever *e* and follower *g* almost to the inclined openings *n n' n''*, Fig. 4. Force bottle up against the elastic packing *r r'*, Fig. 4, by turning hand-wheel and screw *i*. This makes the connection of the bottle with the corking-tube M gas and liquid tight. We now open gas-cock *p'* leading to governor S of gas-tank, and admit slight flow of gas, which, being of greater weight than the atmospheric air in the bottle and under pressure, forces the air into the neck of the same. Open air-cock *p''*, Fig. 5, on the farther side of the corking-tube M, allowing air to escape.

The bottle now contains only carbonic-acid gas. Shut air-cock *p''*, Fig. 5, on farther side of corking-tube M and open fluid-cock *p* leading to tap P in barrel, and fill bottle. Should liquid not flow freely in consequence of pressure in bottle and vacuum in barrel, open gas-cock *p* leading to vent T in barrel, thus creating pressure on surface of fluid contained therein. When bottle is full, shut off fluid-cock *p* leading to tap P in barrel and gas-cock *p'* leading to governor S of the gas-tank.

Should it be desired to charge the fluid in the bottle with more gas than it now contains, open gas-cock *p'* leading to governor S of gas-tank, which is set at the required pressure. Start the machine, agitate for a few seconds, and it will be found that the fluid will have taken up or absorbed the amount of gas at which the governor S of the gas-tank was set. Shut off gas-cock *p'* leading to the governor S of gas-tank, after having stopped the machine, force cork into the neck of the bottle by pulling down lever *e*, and turn hand-wheel and screw *i* down, still pulling down on corking-lever *e* till the follower *g* shows the holes and slots below the corking-tube M for passing wire. The corking-lever is now firmly held in place by ratchet *k*, leaving both hands free to pass wire through the slots and holes *f f'*, Fig. 4, in end of cork-follower *g*, and secure cork in neck of bottle by twisting wire. Release lever *e* and remove bottle.

We prefer to operate our machine horizontally when filling or charging heavy vessels, thus avoiding a correspondingly-heavy counterbalance on driving-wheel.

We are aware that prior to our invention machines have been used for mixing fluids by agitation.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In combination, the bottle-supporting frame comprising a lower seat, a corking-tube to bear upon the mouth of the bottle, a cork-follower working through the said cork-tube, means for operating said cork-follower, valved flexible connections leading from said tube, all of said parts being movable vertically, and means for giving them vertical agitating movement, substantially as described.

2. In combination, a bottle-holding frame, with means for applying the cork, connections to a reservoir and to a gas-supply, and means for agitating the bottle-frame, substantially as described.

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