

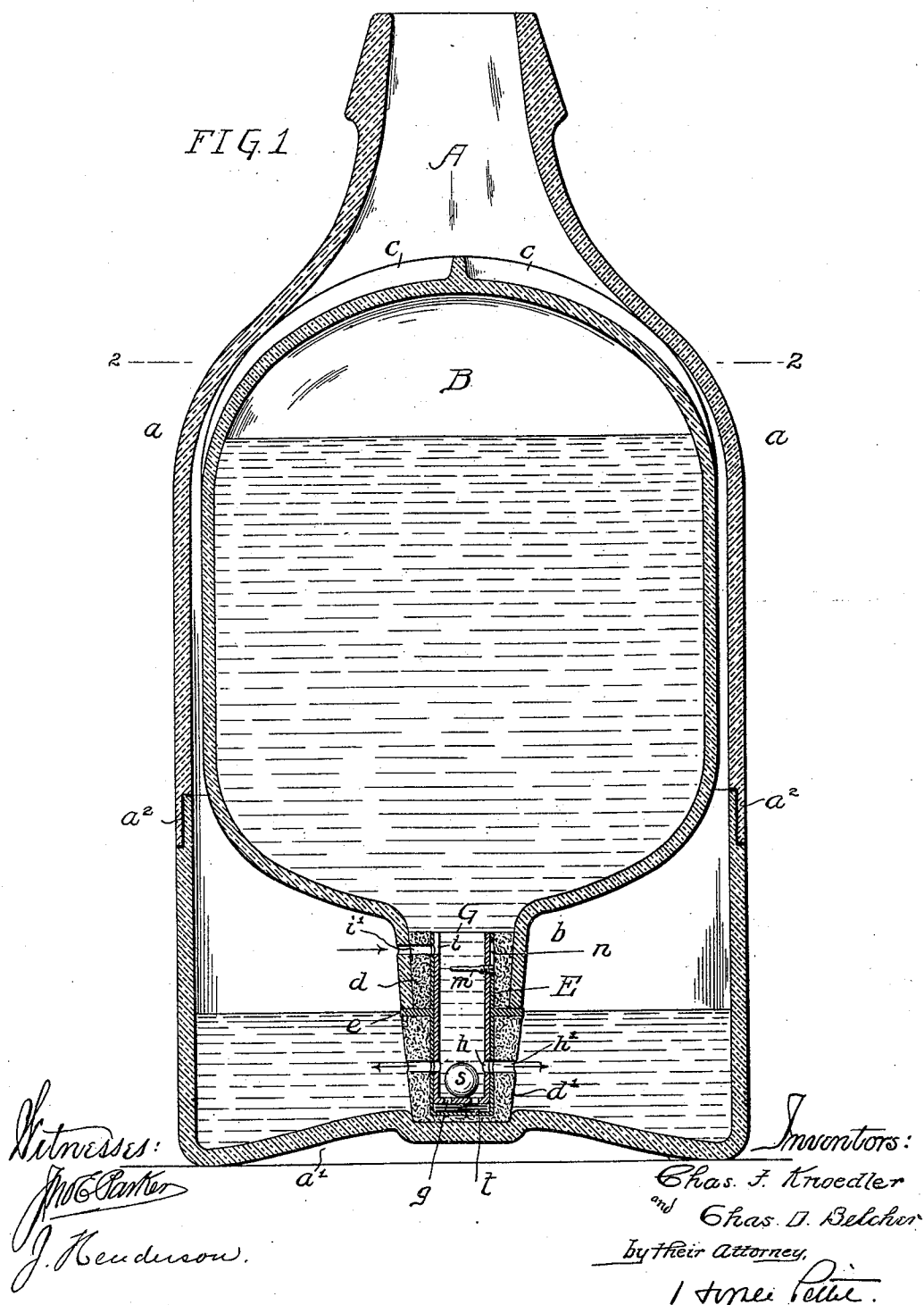
(No Model.)

2 Sheets—Sheet 1.

C. F. KNOEDLER & C. D. BELCHER.
NON-REFILLABLE BOTTLE.

No. 583,488.

Patented June 1, 1897.



(No Model.)

2 Sheets—Sheet 2.

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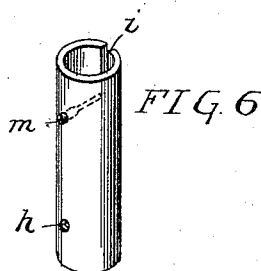
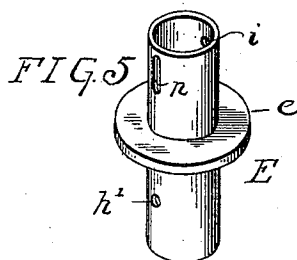
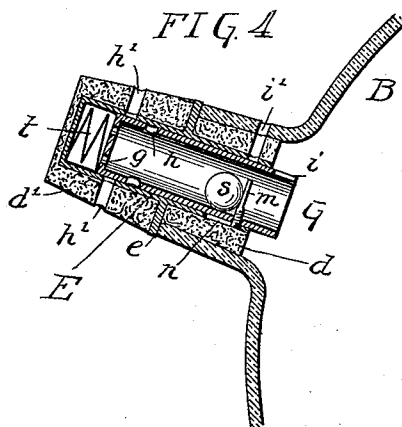
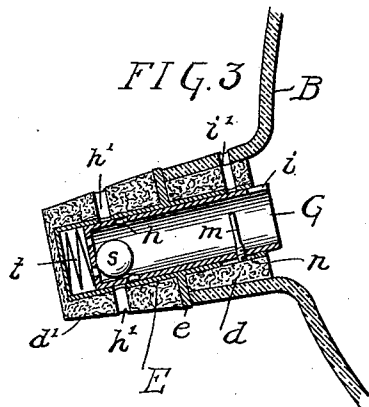
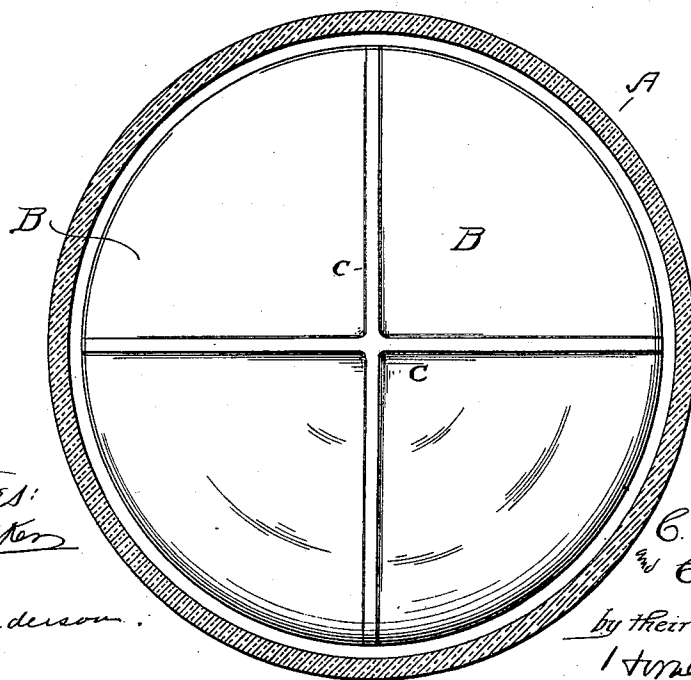


FIG. 2



Witnesses:
J. M. Parker
J. Henderson.

Inventors:
C. F. Knoodler
C. D. Belcher
by their Attorney
James Pettie -

UNITED STATES PATENT OFFICE.

CHARLES F. KNOEDLER AND CHARLES D. BELCHER, OF PHILADELPHIA,
PENNSYLVANIA.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 583,488, dated June 1, 1897.

Application filed February 18, 1897. Serial No. 623,925. (No model.)

To all whom it may concern:

Be it known that we, CHARLES F. KNOEDLER and CHARLES D. BELCHER, citizens of the United States, and residents of the city of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

The object of our invention is to provide an improved liquid receptacle or bottle which, having been once emptied, cannot be refilled without breaking the outer bottle or casing.

In the accompanying drawings, Figure 1 is a sectional elevation of a non-refillable bottle constructed in accordance with our invention. Fig. 2 is a sectional plan view of the same on the line 2-2, Fig. 1. Figs. 3 and 4 are sectional elevations of a portion of the structure, showing the operation of the closing-valve; and Figs. 5 and 6 are detached perspective views of the valve and valve-casing.

Referring to the drawings, A represents the outer casing or bottle proper, formed in two sections *a a'*, which are cemented together at *a²*. Within the bottle fits a liquid-receptacle B, having at its lower end a neck *b*, filled by a suitable cork and valve mechanism more particularly referred to hereinafter, the lower end of the receptacle resting in a suitable depression or between guiding-lugs of any suitable character formed in or on the bottom of the bottle A. The outer diameter of the receptacle B is smaller than the inner diameter of the bottle A, to leave a free space for the passage of the liquid between the two, and the top of the receptacle is provided with ribs *c*, which bear against the inner surface of the bottle A, leaving a clear passage for the liquid in the space between the ribs and at the same time keeping the inner receptacle tightly seated in position.

In the neck B fits a hollow cork *d*, through which extends a tubular valve-casing E, preferably closed at its lower end and provided about midway of its length with an annular flange *e*, which rests against the end of the neck *b*. The lower end of the valve-casing, which projects beyond the neck *b*, is also cov-

ered by a cork *d'*, which prevents direct contact between the casing E and the bottle. Within the valve-casing is a tubular valve G, in the lower end of which are openings *g*, to permit the passage of liquid by preventing the formation of a partial vacuum and thus give freedom of movement to the valve. Near the lower end of the valve are liquid-escape openings *h*, which normally are in alignment with similar openings *h'* in the valve-casing, and near the upper end of the valve is an air opening or slot *i* normally in line with a similar opening *i'* in the valve-casing, both of the openings *h' i'* extending out through the encircling corks, so that the passages between the bottle A and the receptacle B are clear.

The valve G is movable, its range of movement being limited by a screw *m*, extending through a threaded opening in the side of the valve, the head of the screw traversing a slot *n* in the valve-casing. Within the valve is a ball *s*, the weight of which, supplementing the weight of the valve, keeps the latter in the normal open position (shown in Fig. 1) against the action of a hair-spring *t*, which, placed between the bottom of the valve and the casing, tends to elevate and close the valve.

When assembling the parts, the receptacle B is first filled with liquid and placed within the sectional bottle A, which is then cemented or fused in such manner that the two parts cannot be separated without breakage. When in the normal position, as illustrated in Fig. 1, the liquid will escape from the receptacle B through the openings *h h'*, and air will enter the receptacle through the openings *i i'* until in accordance with the recognized theory of the equilibrium of fluids the hydrostatic pressure of the liquid in the bottle A is equal to that in the receptacle B and the flow of liquid ceases, leaving in the bottle a comparatively small quantity of liquid, which may be poured from the mouth of the bottle.

When the bottle is inverted in pouring, the approach to the horizontal position, as in Fig. 3, relieves the valve of the major portion of the weight of the bottle, and the hair-spring *t* will act, as illustrated in Fig. 3, to move the valve and close the air and liquid

ports. In the further movement of the bottle the ball, in accordance with the law of gravity, will run along the inner surface of the valve until it reaches the screw *m*, which
 5 acts as a stop, and the resultant shock added to the weight of the ball and the valve moves the latter to the fully-closed position, as shown in Fig. 4. This fully-closed position of the
 10 valve is retained during all the time the bottle is inverted in pouring and the valve cannot again open until the bottle is placed in the position shown in Fig. 1. When again in the normal position, more liquid flows from the receptacle B into the bottle A, and this
 15 continues, as from time to time the liquid is used, until the entire volume of liquid in the receptacle B is discharged.

The receptacle B cannot be refilled without breaking the bottle A. If liquid were
 20 introduced into the bottle under pressure, the air in the receptacle B would prevent its being filled with liquid, and if the bottle be inverted in the attempt to run the liquid into the receptacle B the valve would close.

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

1. In combination, a bottle having a top discharge-mouth, a liquid-receptacle contained within the bottle and having a bottom
 30 discharge-mouth, and a valve in the mouth of said receptacle.

2. In combination, a bottle, a liquid-receptacle therein, a valve-casing at the lower end
 35 of the liquid-receptacle, a hollow valve in said casing there being ports in the valve and casing, and a spring normally tending to close said valve.

3. In combination, a bottle, a liquid-receptacle therein, a ported valve-casing at the
 40 lower end of the liquid-receptacle, a hollow ported valve in said casing, a spring normally tending to close said valve, and a sliding weight within and adapted to close the valve
 45 when inverted, substantially as specified.

4. In combination, a bottle, a liquid-receptacle contained therein, a ported valve-casing
 50 at the lower end of the liquid-receptacle, a ported valve within the casing, a stop for limiting the movement of the valve, a spring

normally tending to close the valve, and a ball within said valve, substantially as specified.

5. In combination, a bottle, a separate liquid-receptacle contained therein, a valve in
 55 said liquid-receptacle, and integral spacing ribs or lugs provided between the liquid-receptacle and the bottle to prevent contact between the walls of the two vessels and to afford a free passage for the liquid.

6. A non-refillable bottle comprising in combination an outer bottle, A, an inner liquid-receptacle, B, a ported valve-casing, E, provided at the lower end of the inner liquid-receptacle, a ported sliding valve, G, within
 60 the casing, E, a stop for limiting the movement of the valve, a spring, *t*, provided in the casing, E, adapted to bear against the lower end of the valve, G, tending normally to close said valve, openings, *g*, in the end of
 65 said valve, G, a ball, *s*, within said valve and ball-retaining stop in said valve, substantially as described.

7. A non-refillable bottle comprising in combination an outer bottle, A, an inner liquid-receptacle, B, a ported valve-casing, E, provided at the lower end of the inner liquid-receptacle, a ported sliding valve, G, within the
 75 casing, E, a stop for limiting the movement of the valve, openings in the end of said valve, G, ball, *s*, within said valve and ball-retaining stop in said valve, substantially as described.

8. A non-refillable bottle comprising in combination an outer bottle, A, an inner liquid-receptacle, B, a ported valve-casing, E, provided at the lower end of the inner liquid-receptacle, a ported sliding valve, G, within the
 85 casing, E, stop for limiting the movement of the valve, a ball, *s*, within said valve and ball-retaining stop in said valve, substantially as described.

In witness whereof we have hereunto set our hands this 17th day of February, A. D. 1897.

CHARLES F. KNOEDLER.
 CHARLES D. BELCHER.

Witnesses:

HORACE PETTIT,
 FREDRIK KNOEDLER.