S. B. & C. BATSFORD.

BOTTLE.

APPLICATION FILED FEB. 12, 1912.

1,050,091.

Patented Jan. 14, 1913.

2 SHEETS—SHEET 1.

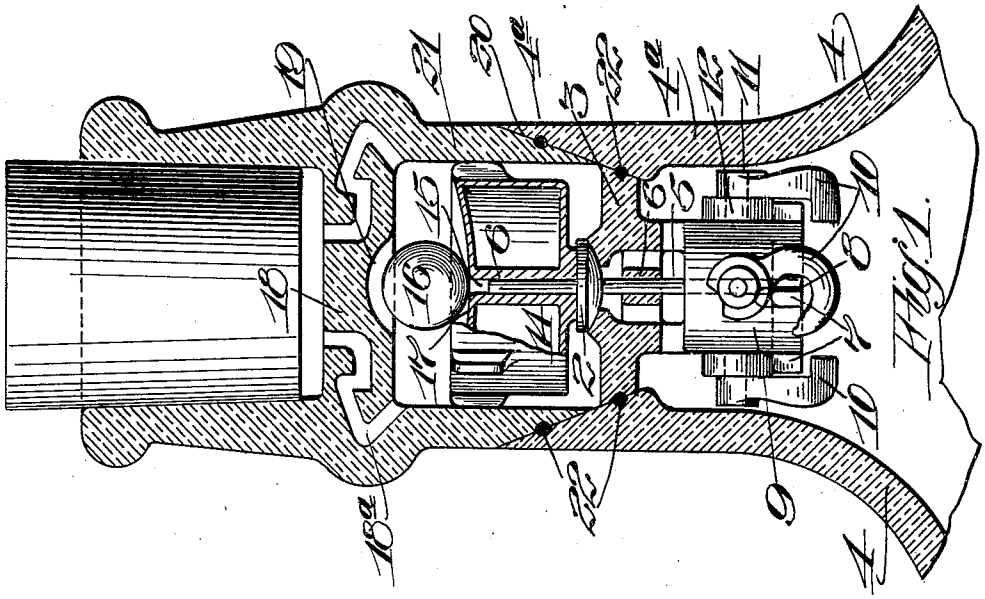

Fig. 1.

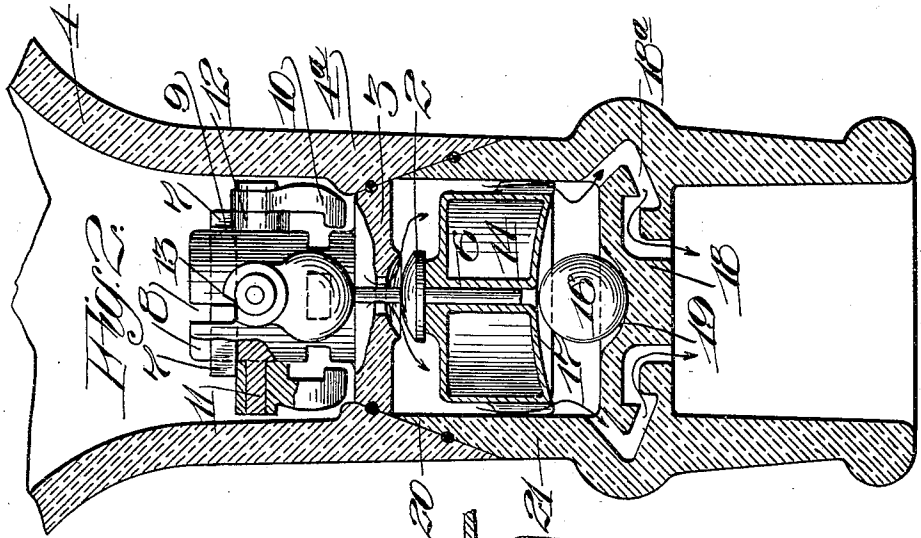

Fig. 2.

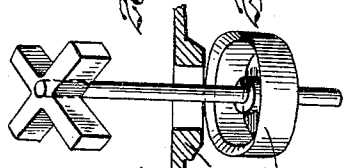

Fig. 4.

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2 SHEETS—SHEET 2.

Fig. 5.

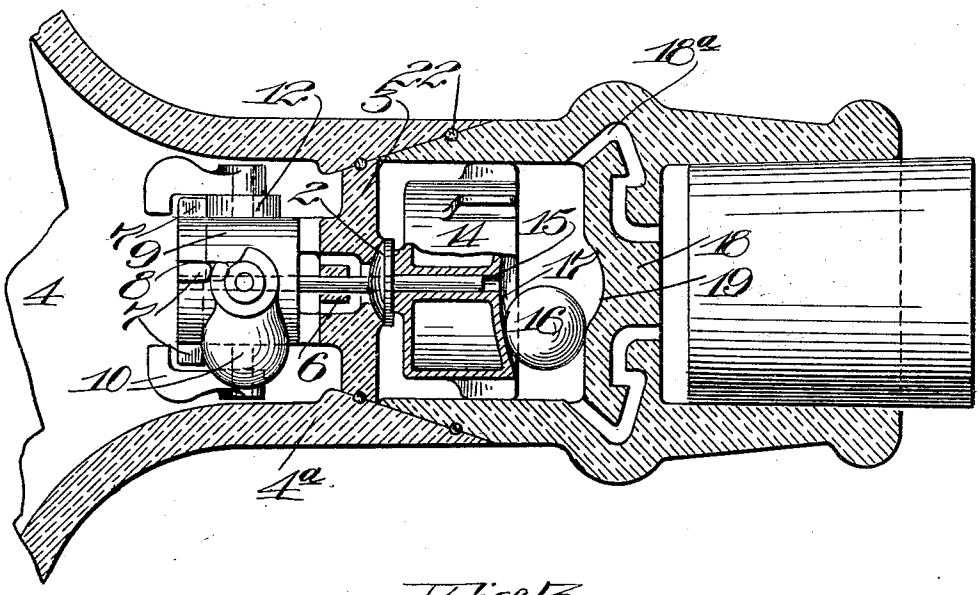
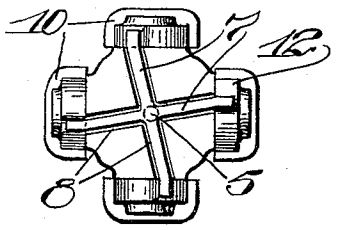


Fig. 6.



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UNITED STATES PATENT OFFICE.

STERLING B. BATSFORD, OF BERKELEY, AND CRAMER BATSFORD, OF OAKLAND, CALIFORNIA.

BOTTLE.

1,050,091. Specification of Letters Patent. Patented Jan. 14, 1913.

Application filed February 12, 1912. Serial No. 677,195.

To all whom it may concern:

Be it known that we, STERLING B. BATSFORD, of Berkeley, Alameda county, State of California, and CRAMER BATSFORD, of Oakland, Alameda county, State of California, both citizens of the United States, have invented new and useful Improvements in Bottles, of which the following is a specification.

This invention relates to bottles and particularly to an improved bottle stopping device having a function of preventing the surreptitious filling of the bottle or adulterating the contents thereof.

The object of the present invention is to provide a bottle in which there is arranged a combination of elements coöperative to prevent the unwarranted introduction of the fluid into the bottle.

The invention is designed to automatically operate under various conditions to effectually seal the bottle against the insertion of a fluid; the elements being arranged and designed to prevent the filling of the bottle when various forces or agents are employed to so affect the elements as to render them inoperative to effect their proper functions.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of the upper portion of a bottle in its normally upright position with the valve closed and locked. Fig. 2 is a view of the bottle in inverted position with the valve open to permit the discharge of its contents. Fig. 3 is an end view of the locking device of the valve. Fig. 4 is a perspective view of a modified form of valve and its seat. Fig. 5 is a view showing bottle in horizontal position.

Many attempts have been made to produce bottle stoppering device which will be effective to prevent the refilling of a bottle in connection with which the device may be arranged. Persons desiring to unwarrantedly fill, or adulterate the contents of, a bottle try by divers methods to render the stoppering device ineffective.

It is one of the important objects of this invention to so design, construct and arrange the parts that they will effectually prevent being rendered inoperative by the application of divers methods with that object in view.

Heretofore floats, counterweights and other peculiar devices have been utilized, but to our knowledge no practical structure has been devised which is able to successfully contend against the application of some one of a great number of methods which may be employed to force a fluid into the vessel. To the end of providing a structure which will successfully resist methods known at present for refilling the bottle, we have evolved and successfully constructed a bottle stoppering device which involves a valve 2, of suitable design, capable of closing against a valve seat 3 which may be formed or mounted in a neck 4^a of a bottle or other vessel 4. The valve 2 is shown as provided with a stem 5 guided in a bearing 6 formed in the valve seat 3; the lower end of the stem having a plurality of substantially radial arms 7 which are adapted to reciprocate in unison with movements of the valve 2 and be guided against circumferential movement in slots 8 in a bearing 9 formed with or attached to the valve seat 3.

The cross arms 7 of the valve stem 5 are adapted to have a longitudinal movement in the bearing 9 sufficient to permit the valve 2 to move away from its seat 3 when the latter is inverted to the position shown in Fig. 2. In order to prevent any movement of the valve 2 away from its seat 3, except when the bottle 4 is in a substantially inverted position, we provide a number of freely swinging weights or pendulums 10 pivoted upon projections 11 of the bearing 9 and having annular hubs 12 over which the radiating arms 7 normally project, so that when the swinging pendulums 10 move or gravitate automatically as the vessel 4 is tilted, the overlapping portions of the arms 7 will constantly bear upon the annular surface of the hubs 12 and thus effectually prevent any movement of the valve 2 away from its seat until the vessel 4 has been substantially inverted, at which time the several pendulums depending from their pivots 11 will have such a relation to the inverted bottle or vessel 4 that the outwardly projecting ends of the arms 7 may freely slip into notches 13 formed at an appropriate point in the periphery of the annular hubs 12 of the pendulums.

The operation of the valve and its pendulums 10 is as follows: When the vessel 4 is in any position other than a completely inverted one, the outwardly projecting ends of the arms 7 will overlap and ride upon the annular hubs 12 of the pendulums 10, and due to the number of these pendulums 10 some one or the other of them will always be effective to restrain movement of the valve stem 5 as the vessel is tilted in any angle in a complete circle until the bottle is entirely inverted, as shown in Fig. 2, at which time all of the pendulums will stand vertical below their pivots 11. At that instant the portions of the arms 7 normally overlapping and riding upon the annular hubs 12 will be permitted to fall slightly by reason of the position of the notches 13 and the valve will then drop, as shown in Fig. 2, permitting the contents of the vessel to percolate downwardly and out of the vessel.

In order to prevent the bottle from being charged while the valve is open due to the inverted position of the bottle, there is introduced in the bottle neck and adjacent to the valve 2 a suitable float 14, the circumference of which is designed to permit the free passage of fluid from the vessel. When an attempt is made to force fluid up into the inverted bottle should the fluid reach the float this will automatically rise and lift and close the valve 2 against its seat 3, thus effectually cutting off the upwardly flowing water or other fluid.

If desired, the float 14 may be centrally perforated, as at 15, to slide upon the stem 5 of the valve 2. As a means for eliminating any chance of the bottle being filled when placed in a horizontal position, there is provided a ball 16 which is introduced between the concave surface 17 of the float 14 and a baffle diaphragm 18 arranged in the upper part of the neck of the bottle or vessel and having fluid discharge ducts 18^a. The diaphragm 18 is formed with a relatively small, central concaved seat 19 upon which the ball 16 will rest when the bottle is brought to a substantially inverted position, but when the latter is tilted at a relatively slight angle in any direction from the vertical then the ball 16 rolls out of the seat 19 and shifts the float 14 to close the valve 2.

The reason for providing a plurality of pendulums or weights 10 is that some one or the other will always be in such position, relative to its respective arm 7, as to prevent any movement of the valve 2 away from its seat regardless of any method or force which may be employed in an attempt to render these devices ineffective to lock the valve 2 closed until the bottle is entirely inverted. When the bottle is so inverted and the valve open, any attempt by divers methods to force a fluid into the bottle past the open valve will be frustrated due to the automatic action of the float 14 as fluid rises in the neck of the bottle; and again if any method be attempted to fill the bottle when it is in any position whereby it might possibly be contrived to render the pendulums 10 inoperative, then the ball 16 will become operative by rolling out of its seat 19 to act upon the float and through this close the valve 2.

From the foregoing it will be seen that the automatic locking devices 10 will be operative in practically all positions of the bottle, save the inverted one, to effectually close and lock the valve 2 upon its seat. In addition to this locking means the float is provided, and in further addition the ball 16 is employed.

The weights or pendulums 10 have not only the function of locking the valve upon its seat in nearly all positions, but they have the further function of acting as automatic actuators due to the inclined surface of the notches 13 which press the arms 7 outwardly as the bottle is tilted away from a true vertical position; the force or power of the weights 10 being sufficient to accomplish this automatic movement of the valve arms 7.

In Fig. 4 there is shown a somewhat modified form of valve 2^a, this being shown as cup-shaped and adapted to rest upon an appropriately designed seat 3^a.

The notches 13 of the hubs 12 are shown as slightly to one side of the center line of the pendulums; this arrangement being found practicable in that it permits the hub 12 to be made of small diameter, thus increasing the leverage of the pendulums against the arms 7.

Manifestly the most expedient means or methods may be employed for the inexpensive construction of the present stoppering device. In the present instance the vessel 4 is shown as having its upper portion formed with a seat 20 against which may be placed a cork-receiving portion 21, in which may be formed the baffle diaphragm 18, and any appropriate means may be employed for securing the portion 21 of the part 4; likewise any appropriate means may be employed for attaching or forming the valve seat 3 in the neck of the vessel, this being indicated here as resting upon the seat 20 of the vessel neck and being secured by welding or cementing at 22.

The bottle may be initially filled by utilizing any simple device which will temporarily hold the valve 2 from its seat 3. Such a device may consist of a piece of cord which may be threaded through the diaphragm 18 before the parts are finally assembled in the finished bottle; the lower end of the cord being continued around the float and ex-

tended under the valve, and the upper end of the cord being sufficiently long and extending upward to permit an operator to withdraw it through the diaphragm 18 after the bottle has been filled. When the cord has been withdrawn it will be impossible to again have access to the valve 2 with any means which could effect an opening of the same.

When the bottle is inverted the concaved surface 17 of the float 14 automatically forces the ball to roll toward the center depression or seat 19 of the diaphragm 18.

The apparatus may be constructed of various materials best adapted to meet the uses to which it may be employed.

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

1. In a liquid container, a stoppering structure comprising a valve seat mounted in the container, a valve movable to and from said seat and having a stem and substantially radial projections on the end thereof, and means including a plurality of independent swinging pendulums having hubs operating against said projections to automatically lock said valve upon its seat in any save a substantially inverted position of the container.

2. In a liquid container, a stoppering structure comprising a valve seat mounted in the container, a valve movable to and from said seat and having a stem and substantially radial projections on the end thereof, means including a plurality of independent swinging pendulums arranged equidistant around the stem between the valve and the said projections and having hubs operating against the latter to automatically lock said valve upon its seat in any save a substantially inverted position of the container, and a device adapted to close said valve when the container is in an inverted position when a fluid rises in the lower portion of the container.

3. Means for preventing the charging of a vessel, said means comprising a valve seat mounted in the vessel, a valve seatable upon and guided in the valve seat, and having a stem with its end provided with substantially radial projections, a float adapted to close the valve when the bottle is inverted, and a plurality of gravity actuated pendulums spaced around the stem and located between the end of the stem and the valve, said pendulums having hub portions whose peripheries ride in contact with the projections whereby the valve is locked in its closed position save when the container is substantially inverted.

4. A stoppering structure for vessels, comprising a movable valve, a seat therefor in the vessel, a floatable member on one side of the valve, a freely movable spherical weight, a baffle diaphragm having discharge ducts, and a central concaved seat for restraining the upward movement of the spherical weight between which diaphragm and the float member the weight is interposed, and a gravity actuated means for locking the valve in closed position, said last named means including a plurality of gravity actuated pendulums positively operating upon the valve by their weight and serving to hold the valve closed.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

STERLING B. BATSFORD.
CRAMER BATSFORD.

Witnesses:
KIRBY S. REIST,
J. IRVING READ.