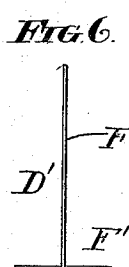
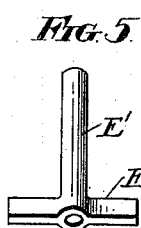
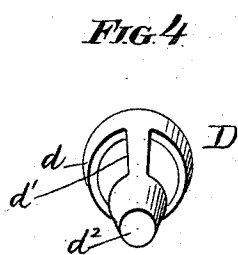
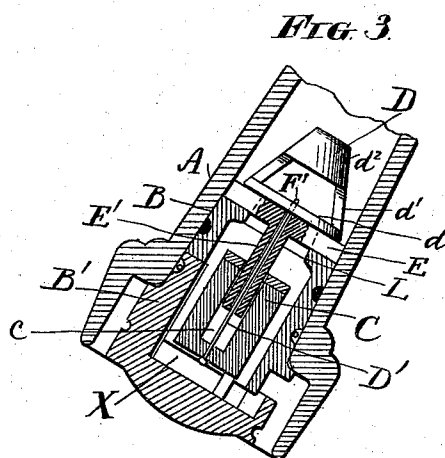
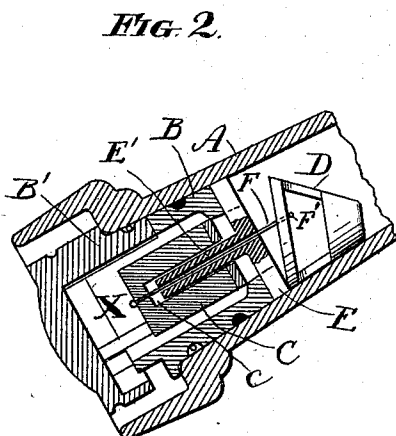
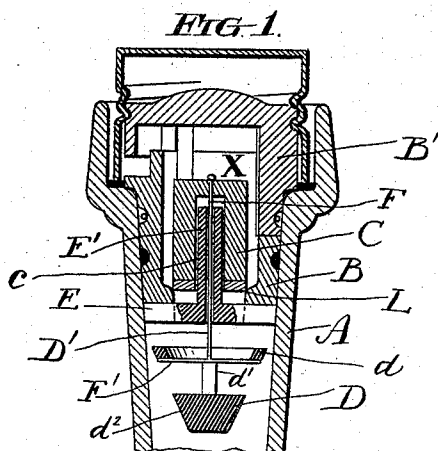


(No Model.)

J. SCHUMACHER.
BOTTLE STOPPER.

No. 573,360.

Patented Dec. 15, 1896.



Witnesses:
J. Halpenny
S. E. Sherm

Inventor:
John Schumacher
By his attorneys
Gibbs & Hopkins

UNITED STATES PATENT OFFICE.

JOHN SCHUMACHER, OF CHICAGO, ILLINOIS.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 573,360, dated December 15, 1896.

Application filed June 8, 1895. Serial No. 552,098. (No model.)

To all whom it may concern:

Be it known that I, JOHN SCHUMACHER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bottle-Stoppers, of which the following is a specification, reference being had to the accompanying drawings, which are made a part hereof, and in which—

Figures 1, 2, and 3 are vertical sections of the neck of a bottle and of a stopper embodying the invention in place therein, the parts being shown by these figures, respectively, first, in the positions that they occupy when the bottle is in upright position; secondly, in the positions that they occupy when the bottle is tipped, but before it has reached the pouring position, and, thirdly, in the positions that they occupy after it has reached the pouring position. Figs. 4, 5, and 6 are views showing some of the parts in detail.

The subject of the present invention is a stopper designed to permit the escape of liquid from but prevent the admission of liquid into a bottle or other receptacle.

The stopper which I have shown in the drawings as embodying the present invention includes many novel features that are not herein claimed or particularly described, for the reason that they are made the subject-matter of another application, which was filed on the 8th day of June, 1895, Serial No. 552,097, the present application being confined to the means for guiding the valve in its movement toward and from the valve-seat and the means for holding the valve normally seated.

One object of the invention is to prevent the valve from coming in contact with any part of the cage by which it is inclosed, to the end that it cannot be secured in an unseated position by introducing into the cage a gummy substance and bringing the valve in contact therewith.

Another object of the invention is to improve the construction of the weight and the means whereby it is connected with the valve, to the end that the weight shall have the greatest possible freedom of movement without any liability to injure the connecting means.

To these ends the invention consists in the

features of novelty that are particularly pointed out in the claims hereinafter.

In the drawings, A represents the neck of a bottle; BB', two parts herein collectively referred to as the "cage;" C, the valve; D, the weight, and D' the device for connecting the valve and weight. The valve is buoyant, so that if the bottle be inverted and liquid be introduced into the neck thereof under pressure the valve will float to its seat, which latter is shown as being formed at L on the part B of the cage. I desire to have it understood, however, that the invention which forms the subject of this application is not concerned with the character of the valve, so long as it operates as herein described, or with the character of the valve-seat or of the cage. In the under side of the part B two notches are formed, and in these notches fits a cross-head E, from which rises a hollow stem E', that passes through the valve-seat opening and upward into the chamber X, in which the valve is located, to a sufficient distance above the level of the valve-seat to form a guide for the valve. The valve is shown as being formed with a socket c, which is of such diameter that it will receive the stem E' and permit the valve to move freely thereon.

Ordinarily a flexible ligament is used for connecting the valve and weight, but I prefer to use a rigid connection, such as shown more clearly in Fig. 6. It consists of a stem F, which passes through the hollow guiding-stem E' and has at its lower end a cross-head F', its upper end being secured to the valve in any suitable manner. The cross-head is not rigidly secured to the weight, but, on the contrary, the weight simply rests upon it, the diameter of the weight, the diameter of the neck of the bottle at the point where the weight is located, and the length of the cross-head all being relatively such that it is impossible for the weight to disengage itself from the cross-head, albeit the weight has intersecting openings of large area that reduce it to the form of a ring d, from which project downward two arms d', that support a frustum d'', the external surfaces of these integral parts being of a general conical shape. The advantage of this construction is that it enables the use of a rigid connection between the valve and weight, and at the same time

permits the weight to have the greatest possible freedom of movement without subjecting the connection to objectionable lateral strain. The length of the connection is such
 5 that it limits the movement of the valve away from its seat and prevents its top from coming in contact with the ceiling of the chamber in which it is located, and since the guiding-stem E' prevents the valve from coming in
 10 contact with the sides of said chamber it follows that it is absolutely impossible to secure the valve in open position by means of a gummy substance in the manner described.

What I claim as new, and desire to secure
 15 by Letters Patent, is—

1. In a stopper the combination of a valve-seat, a valve adapted to seat thereon and having a socket in its under side a guiding-stem occupying said socket, and means preventing
 20 the valve or any part carried thereby from coming in contact with any part located above it, substantially as set forth.

2. In a stopper the combination of a valve-seat, a stem rising above it, a valve having a
 25 socket in which said stem fits whereby the valve is guided in its movement, and means preventing the valve or any part carried thereby from coming in contact with any part located above it, substantially as set forth.

3. In a stopper the combination of a valve-seat, a valve adapted to seat thereon and having a socket in its under side, a guiding-stem occupying said socket, and means for limiting
 30 the movement of the valve away from its seat and preventing it or any part carried by it from coming in contact with any part located above it, substantially as set forth.

4. In a stopper the combination of a valve-seat, a valve adapted to seat thereon and having a socket in its under side, a guiding-stem occupying said socket, a cross-head supported
 40 by the valve-seat ring and supporting the guiding-stem, and means for preventing the valve or any part carried thereby from coming in contact with any part located above it, substantially as set forth.

5. In a stopper the combination of a valve-seat, a valve adapted to seat thereon and hav-

ing a socket in its under side, a guiding-stem occupying said socket, a weight located below
 50 the guiding-stem, and means connecting the valve and weight, substantially as set forth.

6. In a stopper the combination of a valve-seat, a valve adapted to seat thereon and having a socket in its under side, a hollow guiding-stem occupying said socket, a weight located below the hollow guiding-stem, and
 55 means extending through the hollow stem and connecting the valve and weight, substantially as set forth.

7. In a stopper the combination with a valve-seat, and a valve adapted to seat thereon, of a rigid stem extending downward from the valve and having a cross-head, means restraining the stem against lateral movement
 60 and a weight resting loosely upon said cross-head, substantially as set forth.

8. In a stopper the combination with a valve-seat and a valve adapted to seat thereon, of a rigid stem extending downward from the valve and having a cross-head and a weight having a central opening through
 70 which the stem passes, and a lateral opening occupied by the cross-head, substantially as set forth.

9. The combination with a bottle of a stopper having a valve-seat, a valve adapted to seat thereon, a conical weight located below the valve-seat with its larger end uppermost, and means connecting the valve and weight
 80 and permitting the tapering side of the weight to rest upon the neck of the bottle when the bottle is tipped, substantially as set forth.

10. In a stopper the combination of a valve-seat and a valve adapted to seat thereon, a
 85 rigid stem extending downward from the valve and having a cross-head and a conical weight having a central opening of larger diameter than the stem, through which the stem passes, and an opening occupied by the
 90 cross-head, substantially as set forth.

JOHN SCHUMACHER.

Witnesses:

L. M. HOPKINS,
 CHARLES E. RAND.