

No. 656,698.

Patented Aug. 28, 1900.

C. MARCHAND.
BOTTLE STOPPER.

(Application filed May 22, 1900.)

(No Model.)

Fig. 1.

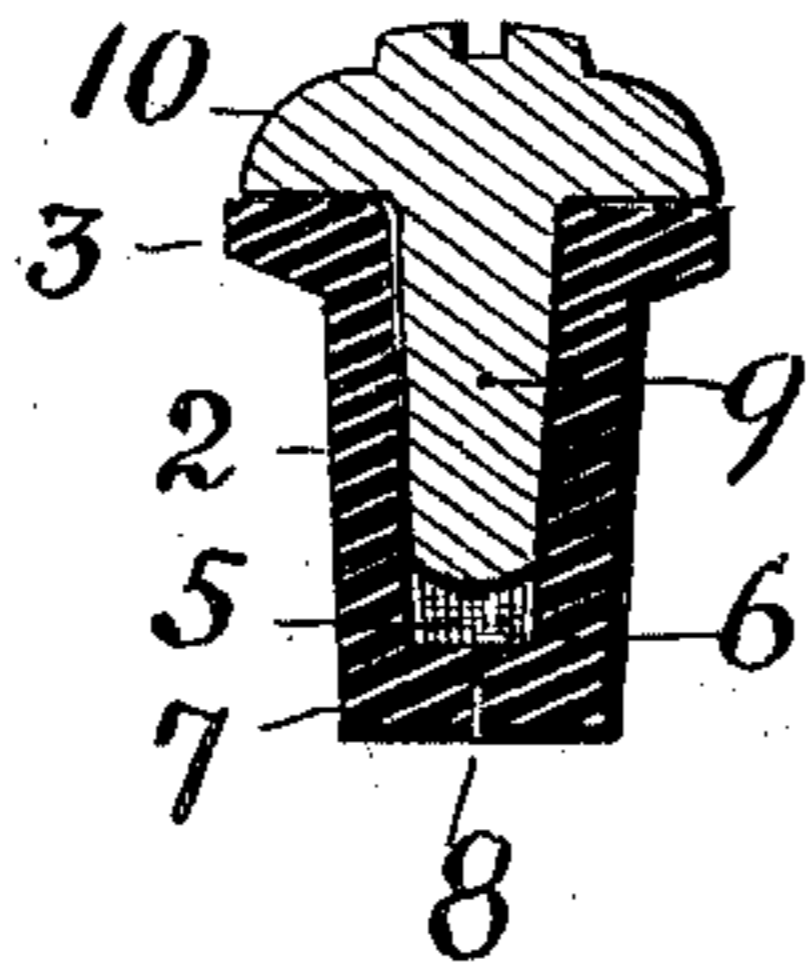


Fig. 2.

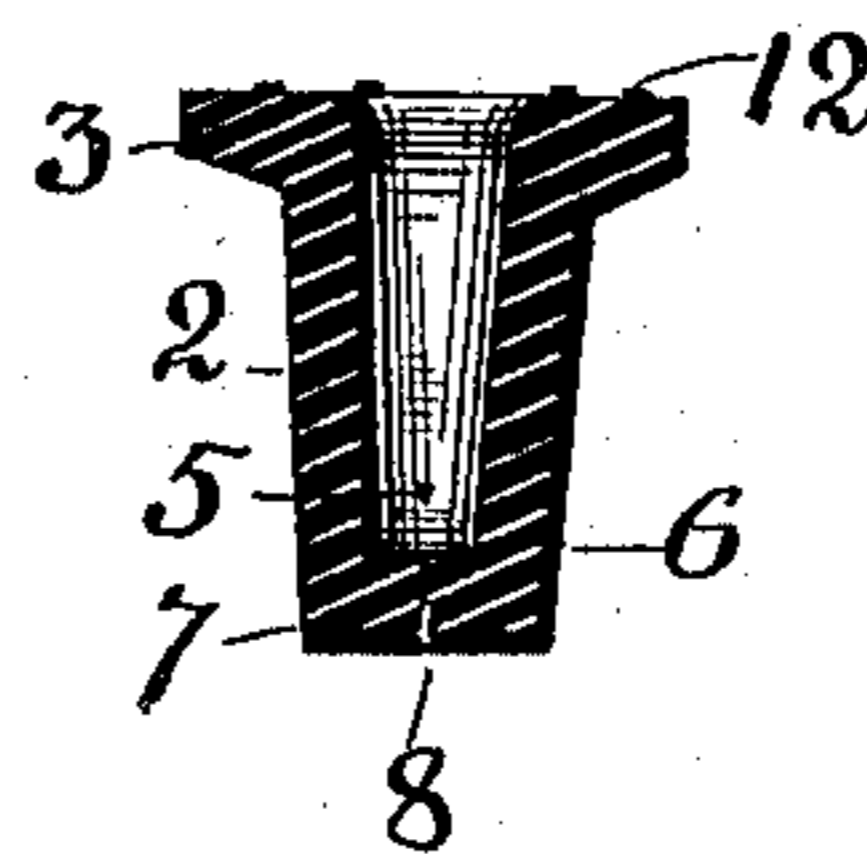


Fig. 3.

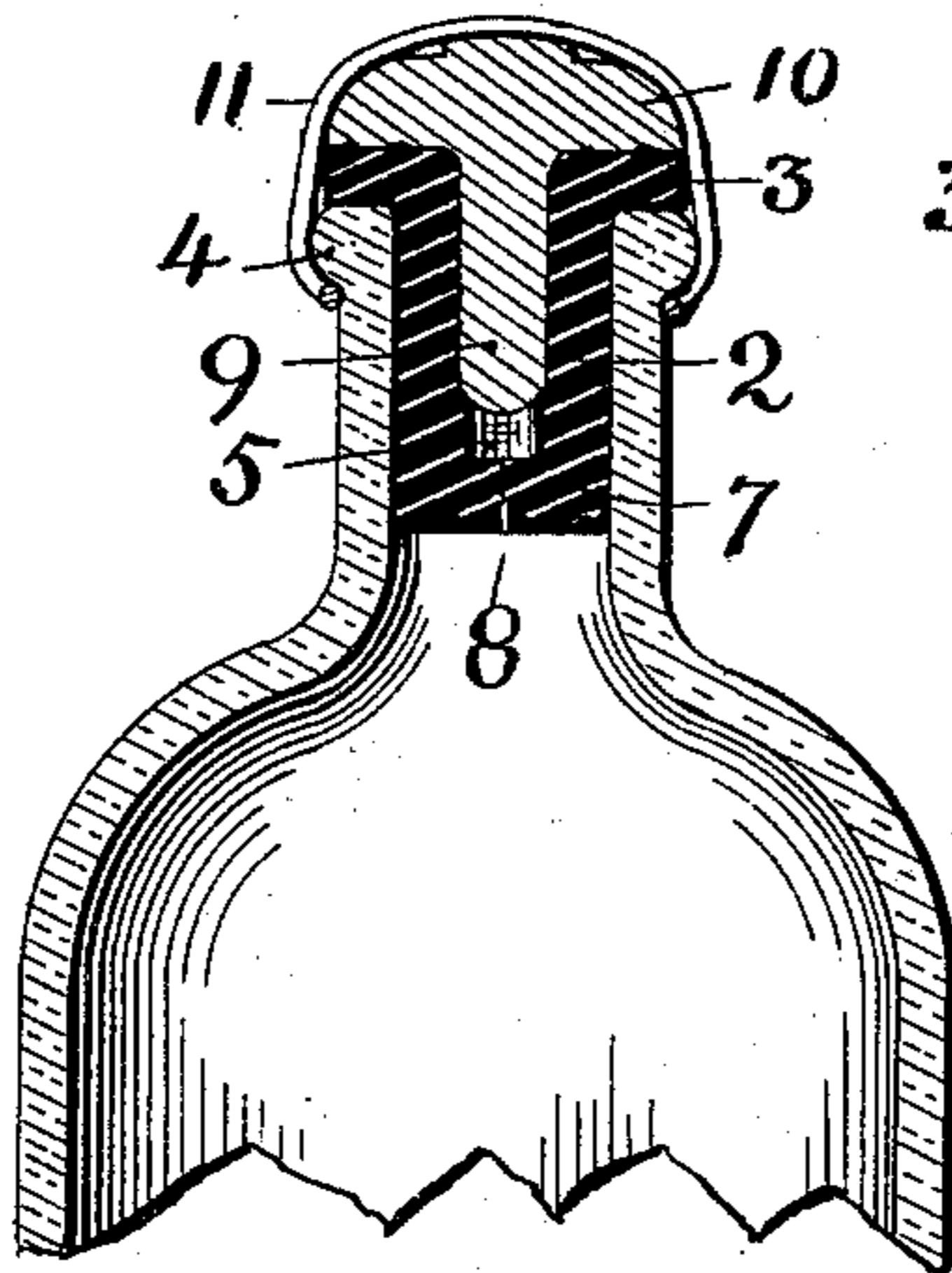
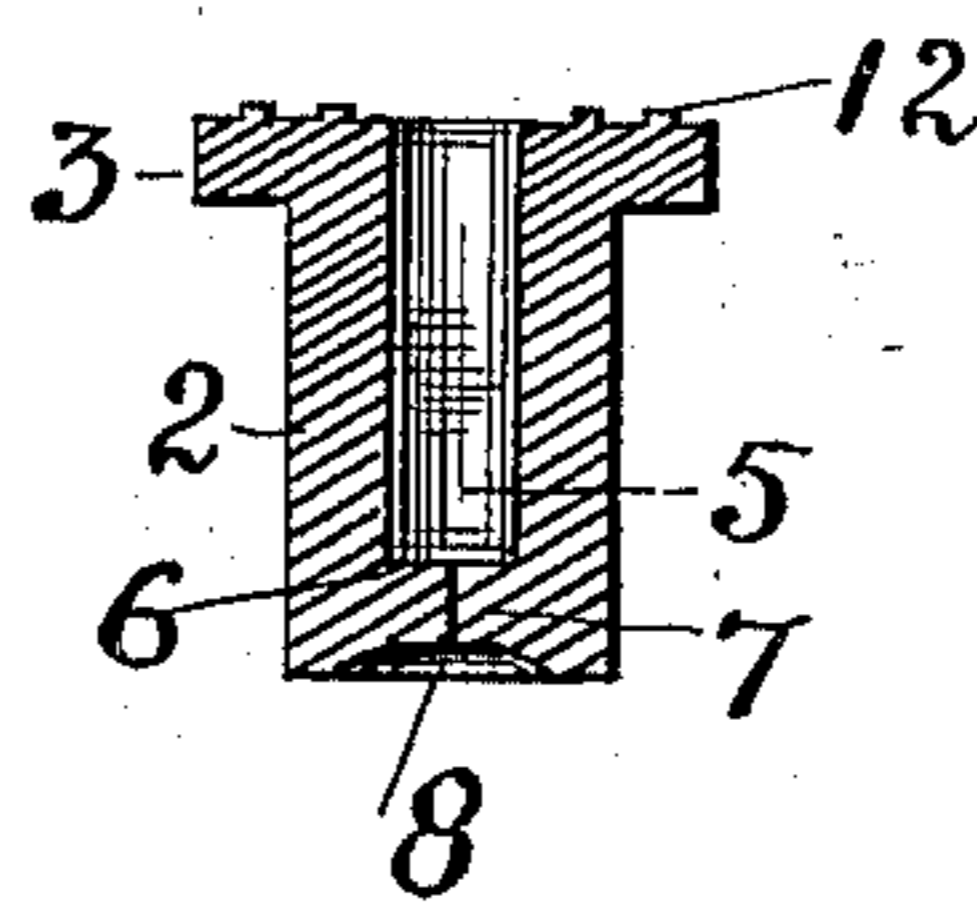


Fig. 4.



Witnesses
E. W. Hart
J. J. Masson

Inventor
Charles Marchand
by E. E. Masson, Attorney.

UNITED STATES PATENT OFFICE.

CHARLES MARCHAND, OF NEW YORK, N. Y.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 656,698, dated August 28, 1900.

Application filed May 22, 1900. Serial No. 17,592. (No model.)

To all whom it may concern:

Be it known that I, CHARLES MARCHAND, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Bottle-Stoppers, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to that class of bottle-stoppers which are provided with a valve to arrest the flow of gas released from a liquid contained in a bottle closed by said stopper; and the objects of my invention are to provide a simple and inexpensive stopper with a valve integral with its body and adapted to close automatically a fine puncture or pin-hole made in said body, the elastic walls of said puncture being constructed to be wholly supported laterally by the internal surface of the neck of a bottle and used as a valve to resist the passage of a fluid under any desired pressure through said puncture and also to permit its passage and the relief of the pressure at any predetermined stage, and thereby preventing the explosion of the bottle or the expulsion of the stopper. I attain these objects by the construction illustrated in the accompanying drawings, in which—

30 Figure 1 is a vertical section of the elastic stopper with a central plug therein, which constitutes also a cap for the stopper proper, the parts being made slightly conical to fit within the neck of suitably-formed bottles. Fig. 2 is a vertical section of the elastic stopper. Fig. 3 is a vertical section of a stopper constructed in accordance with my invention and retained within the cylindrical neck of a bottle, the body of the stopper and its central plug being correspondingly cylindrical. Fig. 4 is a vertical section of the stopper with its small end concaved toward its puncture.

In said drawings the elastic stopper is shown at 2. It is preferably made of rubber slightly vulcanized to retain its natural resilience. The body of the stopper is substantially cylindrical, but is provided with a flanged head 3, made to rest upon the edge 4 of a bottle. In the center of the stopper there is a vertical cavity or passage 5, which is extended to within about one-eighth of an inch of the bottom 6 to obtain an elastic wall 7

having said thickness. Vertically through the center of said wall 7 there is a pin-hole or puncture 8, which is normally closed by the resilience of its walls bearing forcibly against each other, the power of resistance being materially increased by having the whole periphery of the wall 7 constructed rectangularly with its base, so as to bear against the internal surface of the neck of a bottle. The small end of the stopper is either flat or concaved, as shown in Fig. 4, in contradistinction to a convex end, which would constitute the bulge of an arch and entirely resist the entrance of the gas or fluid through the puncture into the passage 5. The resistance desired against the passage of gas or fluid through the puncture is generally four to six pounds to the square inch, and it has been found by experiments that said resistance is obtained by making the wall 7 about one-eighth of an inch thick; but it is evident that the amount of resistance can be regulated by the thickness given to the wall 7 and also by the quality and nature of the elastic stopper.

The valved stopper above described can be used by itself to close the neck of a bottle and automatically relieve the pressure therein, which is generally increasing when containing peroxid of hydrogen (H_2O_2) or other liquid containing gases, in which case the cavity or passage 5 may be made very narrow; but I prefer to employ with the elastic stopper a central plug 9, preferably of wood, on account of its inexpensiveness and adaptability to expand when in contact with a liquid, as water. Said plug is provided with a broad head 10, well adapted to rest upon the head 3 of the stopper and to provide a bearing for the binding-wire 11. The bottom of the plug 9 extends to within about one-eighth of an inch of the bottom of the cavity 5, so as not to interfere with the pin-hole 8. The plug 9 fits snugly within the cavity 5, but not closely enough to prevent the passage of gas between said parts when the plug is in its normal dry condition; but when the plug is swollen by contact with a few drops of the liquid contained within the bottle when the latter is accidentally inverted during transportation the passage 5 becomes temporarily closed until the bottle is again made

to rest upon its bottom. To prevent the head 10 of the plug from closing the passage between its bottom and the top of the head 3 of the stopper, there are on top of said head 5 3 a series of projections 12, generally made to represent letters, which constitute elevated seats for the bottom of the head 10 of the plug and small passages between them for the issue of the escaping gas.

10 Having now fully described my invention, I claim—

1. In combination with a bottle, a bottle-stopper consisting of an elastic body having a central cavity, a closing-wall for said cavity, integral with said body and having its 15 bottom rectangular to its sides, the periphery of said wall being constructed to be wholly supported by the neck of said bottle and having a puncture through said wall, with the 20 flat-top stopper-head extended horizontally

beyond the body of said stopper substantially as described.

2. The combination of a bottle, and a bottle-stopper consisting of an elastic body having a central cavity closed by a wall having 25 a puncture therethrough, the periphery of said wall bearing wholly against the interior surface of the neck of said bottle, and a head extending around said body, and projections upon said head; with a plug within the cavity of the stopper, and having its head resting upon the top projections of the elastic head, substantially as described. 30

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES MARCHAND.

Witnesses:

HERMAN POHMER,

EDWARD C. LOUMENA.