No. 683,971. Patented Oct. 8, 1901.

W. J. H. McGURN.

NON-REFILLABLE BOTTLE.

(Application filed Dec. 14, 1900.)

(No Model.)

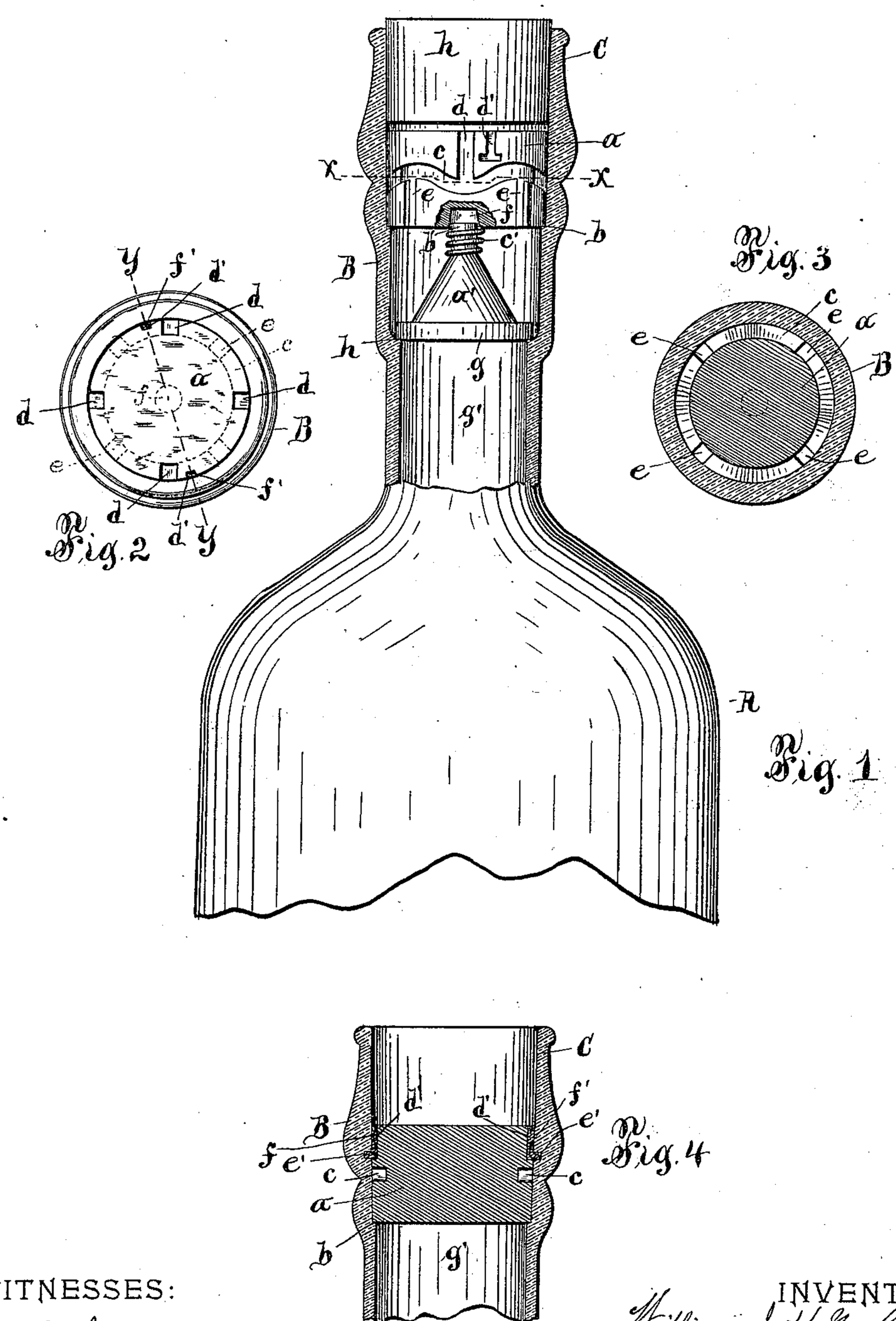

Fig. 1

Fig. 2

Fig. 3

Fig. 4

WITNESSES:

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WILLIAM J. H. McGURN, OF SYRACUSE, NEW YORK, ASSIGNOR OF ONE-HALF TO DUANE HOWARD, OF SAME PLACE.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 683,971, dated October 8, 1901.

Application filed December 14, 1900. Serial No. 39,901. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. H. McGURN, a citizen of the United States, and a resident of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Non-Refillable Bottles, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to an improved construction in that class of articles known as "non-refillable bottles."

The object of the present invention is to provide a bottle with simple and efficient means which shall operate to allow the liquid to be easily and conveniently poured out of the bottle and at the same time shall positively prevent the entrance of liquid into the same.

Furthermore, the object of the invention is to so construct the stopper as to effectually guard against tampering with the valve by use of a wire or other instrument.

To these ends the invention consists in the novel arrangement and combination of the component parts, as hereinafter fully described, and set forth in the claims.

In the accompanying drawings, Figure 1 is partly a side view and partly a vertical section of a portion of a bottle, illustrating my invention. Fig. 2 is a top plan of the neck of the bottle with the cork removed. Fig. 3 is a transverse section on line X X in Fig. 1, and Fig. 4 is a transverse section on line Y Y in Fig. 2.

Referring to the drawings, A represents the body of the bottle, B the neck, and C the mouth of the same. The neck B is preferably formed tapering or flaring, but not necessarily so, and it may be of any suitable and desired style or design. In said neck is inserted a solid stopper *a*, which is seated on an annular shoulder *b*, formed on the interior of said neck. The stopper *a* is formed in its circumference with a regular undulated liquid-passage *c*, extending entirely around the same, and with a plurality of upwardly-extending passages *d* and downwardly-extending passages *e*. Said passages *d* and *e* communicate with the undulated passage *c* at its lowest and highest portions, respectively, so as to effectually guard against the insertion of a wire or other instrument, and thus prevent malicious tampering with the valve, the passages *d* leading through the top edge of the stopper and the passages *e* leading through the bottom edge of the stopper. In the bottom of the stopper *a*, at the center thereof, is formed a socket *f*, which is preferably made tapering or flaring, as clearly shown in Fig. 1.

g denotes the valve, which consists, preferably, of a disk and is provided with a seat formed on the neck B, as indicated at *h*. Said valve is placed at sufficient distance from the lower end of the neck to form a chamber *g'*, communicating with the body A and serving to augment the force of the outflowing liquid, so as to insure the unseating of the valve, which is especially desirable when the bottle is full.

On the top of the disk or valve *g* is formed a conical body *a'*, which has its apex below the stopper, and is formed with a stem *b'*, which enters the aforesaid socket *f* part way when the valve is seated. Said body serves to balance the valve. A coiled spring *c'* embraces the stem *b'* and is supported on the conical body and bears against the under side of the stopper *a*. Said spring may be of any suitable metal which will not corrode and is of such a tension as to allow the valve to be readily moved away from its seat by the force of the liquid against its under side and serves to effectually and positively seat the valve.

The stopper is formed with a series of inverted-T-shaped recesses *d'*, extending from the top part way down its side, the horizontal portions of which coincide with recesses *e'*, formed in the interior of the neck B.

f' represents cementing material of any suitable nature, which is injected into the recesses *d'* and is caused to enter the recesses *e'*. When the recesses are completely filled and the material becomes thoroughly set or hardened, the stopper is securely and permanently locked to the neck.

h denotes the usual cork, which is inserted into the mouth of the bottle independent of stopper.

The operation of my described bottle is as follows: When the bottle is inclined, the liq-

quid is forced against the under side of the valve, whereby said valve is moved away from its seat. Thus the liquid passes through the passages *e* into the undulated passage *c*, and thence through the passages *d* to the mouth of the bottle. When the bottle is brought to its upright position, the spring forces the valve to its seat.

What I claim as my invention is—

1. In a bottle of the class described, the combination with the neck formed with an internal annular shoulder, of a solid stopper permanently secured in the neck and seated on said shoulder, said stopper being formed with a regular circumferential undulated liquid-passage extending entirely around the same, and with a plurality of upwardly and downwardly extending passages in its periphery communicating with said undulated passage at its lowest and highest portions respectively, a socket in the bottom of said stopper, a disk valve seated in the neck below the stopper and formed with an upwardly-extending stem engaging said socket, and a coiled spring embracing said stem and bearing against the bottom of said stopper for the purpose set forth.

2. In a bottle of the class described, the combination with the neck, of a solid stopper permanently secured therein and formed with a regular undulated liquid-passage extending entirely around the same, and with a plurality of upwardly and downwardly extending passages in its periphery communicating with said undulated passage and leading through the top and bottom edges respectively of the stopper, a socket in the bottom of said stopper, a disk valve seated in the neck below the stopper and formed on its top with a conical body having its apex below the stopper and formed with a stem extending into said socket part way when the valve is seated, a coiled spring embracing said stem and bearing on the bottom of the stopper and on said conical body for the purpose set forth.

3. In a bottle of the class described, the combination with the neck formed with an internal annular shoulder, of a solid stopper seated with its lower edge on said shoulder and permanently locked to the neck, said stopper being formed with a regular circumferential undulated liquid-passage extending entirely around the same, and with a plurality of upwardly and downwardly extending passages in its periphery communicating with said undulated passage at its lowest and highest portions respectively, the upwardly-extending passages leading through the top edge of the stopper and the downwardly-extending passages leading through its bottom edge, a socket formed in the bottom of the stopper, a disk valve seated in the neck below said stopper and formed on its top with a conical body disposed entirely below the stopper and formed with a stem entering said socket, a coiled spring embracing said stem and bearing on the bottom of the stopper and on the conical body, and a cork inserted in the neck independent of the stopper as set forth.

4. In the herein-described non-refillable bottle, the combination with the neck formed on its interior with a plurality of recesses and with an annular shoulder, of a solid stopper seated with its bottom edge on said shoulder and formed in its side with a plurality of inverted-T-shaped recesses extending from the top of the stopper part way the depth of the same and having their horizontal portions coinciding with the recesses in the neck whereby cementing material may be applied to the two parts after the stopper is seated to securely lock the stopper to the neck, said stopper being formed in its circumference with a regular undulated liquid-passage extending entirely around the same, a series of upwardly and a series of downwardly extending passages formed in its periphery communicating with said undulated passage, the upwardly-extending passages leading through the top edge of the stopper and the downwardly-extending passages leading through the bottom edge of the stopper, a socket formed in the bottom of the stopper and extending part way through the same, a valve seated in the neck below the stopper and formed on its top with a conical body having its apex below the stopper and formed with a stem entering said socket part way when the valve is seated, and a coiled spring embracing said stem and bearing on the bottom of the stopper and top of the conical body for the purpose set forth.

WILLIAM J. H. McGURN.

Witnesses:
J. J. LAASS,
H. B. SMITH.