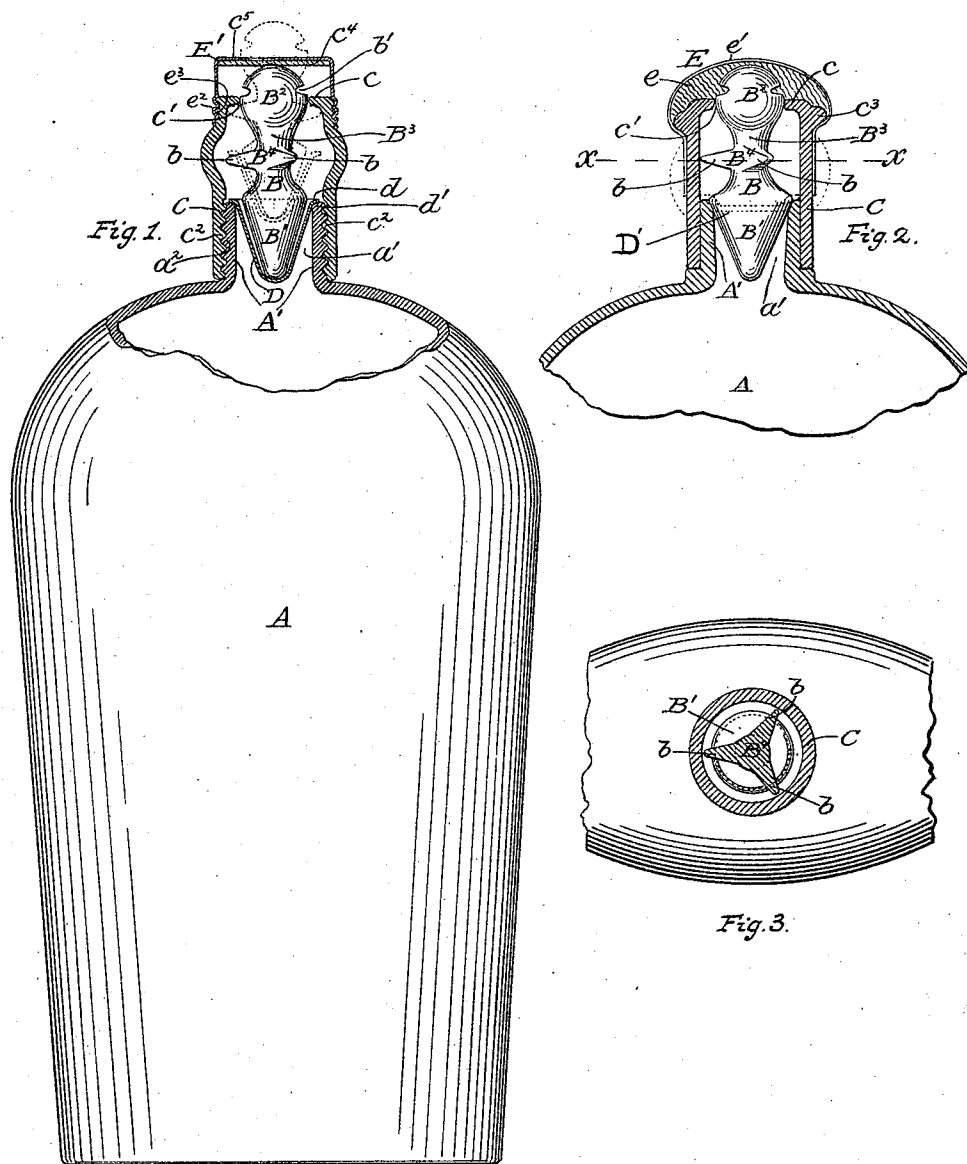


(No Model.)

E. MADDEN.
BOTTLE.

No. 574,923.

Patented Jan. 12, 1897.



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UNITED STATES PATENT OFFICE.

EDWARD MADDEN, OF AMSTERDAM, NEW YORK.

BOTTLE.

SPECIFICATION forming part of Letters Patent No. 574,923, dated January 12, 1897.

Application filed January 2, 1896. Serial No. 574,003. (No model.)

To all whom it may concern:

Be it known that I, EDWARD MADDEN, a citizen of the United States, residing at Amsterdam, in the county of Montgomery and State of New York, have invented new and useful Improvements in Bottles, of which the following is a specification.

My invention relates to improvements in bottles and means for closing the same when filled and for preventing the bottle when once emptied being refilled; and it consists in the devices and elements and the combinations of the same, as hereinafter described, and specifically set forth in the claims.

The objects of my improvements are, first, to provide a stopper and a stopper-guard which are to be applied to the bottle after having been filled with liquid, and, second, to combine the stopper and its guard with the neck of the bottle for closing the throat of the same when the bottle is standing on its bottom and for allowing the liquid therein to escape therefrom when the bottle is inverted or decanted and to prevent the bottle being refilled after the original charge of liquid has been poured out therefrom. I attain these objects by the means illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is an elevation of a bottle containing the improvements in my invention with parts shown in section. Fig. 2 is a sectional elevation of the same with a modification, and Fig. 3 is a sectional view taken at line *x x* of Fig. 2.

The same letters of reference refer to similar parts throughout the several views.

In the drawings, A is the bottle, and A' is the neck thereof, which neck may be provided with an external screw-thread *a*², as shown in Fig. 1, or its external side may be plain, as may be preferred and as shown in Fig. 2, and *a'* is the throat, provided central in said neck A' for passage of liquids into the body of the bottle or out therefrom.

B is the stopper-piece, having with one end thereof the conical-form stopper or plug B' for closing or contributing to close the throat *a'* of the neck of the bottle and having its opposite end terminating with the bulb B². This bulb and stopper are connected by means of the contracted middle portions B³, from

which is projected the stop B⁴, preferably formed by two or more radial projections *b b*, which project from the axial line of the stopper-piece B to a distance about equal to half of the diameter of the neck A of the bottle.

C is the stopper-guard, preferably made of glass or other suitable substance and having its lower end open, with an inside diameter 60 corresponding with the outside diameter of the neck A', so as to nicely receive the latter, and it is made with a vertical extension about equal to the length of the stopping-piece B from its lower end termination to the middle 65 of length of the bulb B². Its upper end is made with an inwardly-turned flange *c*, annular to a central opening *c'*, which is of diameter corresponding with the diameter of the bulb B² of said stopper-piece, so that said bulb may freely pass its full length through said central opening in either direction as may be necessary for unstopping the throat of the bottle and allow liquids being discharged through said central opening *c'* from the bottle and permit the stopper-piece to move back or down the throat of the neck for closing the same.

The outer side of the neck A' may be plain, as shown in Fig. 2, or be provided with a screw-thread *a*², as shown in Fig. 1. When plain, as in Fig. 2, the inner side of the stopper-guard C will also be plain and nicely receive the plain neck A, as shown in Fig. 1, while when said neck is provided with the screw-threads *a*² corresponding screw-threads *c*² will be provided with the inner side of said stopper-guard, as shown in Fig. 1. There may be employed in connection with this stopper-piece and stopper-guard a shell-form stopper, as D, Fig. 1, made of thin metal or alloy, such as of aluminium, pure tin, silvered copper, or other metal or alloy having a non-corroding surface. This shell-form stopper supplements the stopper portion B' of the stopper-piece and closes the throat by its base-surface impinging all around against the upper end surface of the throat *a'* of the neck of the bottle, and it may be provided with an annular flange *d*, projected outwardly to a short distance to have bearing on the end surface *d'* of the neck A' of the bottle, as illustrated in Fig. 1. When this supplementary or shell stopper D is employed with the

stopper B', the latter at its base is to be made with a little less diameter than the inside diameter of the shell stopper-receiving it, while the chamber of the stopper-guard C, between the upper end edge of the neck of the bottle and the inwardly-turned flange *c* of said stopper-guard, will be made with an enlarged diameter, as shown in Fig. 1, which will be so much greater than the diameter of the neck of the bottle as to allow a free passage of liquids between the upper flange end of the shell-form stopper D and the well of the stopper-guard when the bottle is inverted.

E, Fig. 1, is a sealing device comprising, preferably, sealing-wax *e* and a thin sheet-metal covering *e'*, applied to the upper end of the stopper-guard, (when the shell-form stopper D is not employed between the throat and stopper.) This sheet-metal covering *e'* may be made from thin sheet tin, lead, or copper, as may be preferred, applied so as to cover the sealing-wax *e*, outwardly-projected rim *c*³, integral with the stopper-guard, and a portion of the latter below said rim *c*³, as shown in Fig. 2. This form of seal will be found to be effective for holding the stopper-piece B down, so that the stopper B' will tightly close the throat of the neck of the bottle when it is filled and is being transported, so that none of the liquid within may escape therefrom until this seal E has been removed and the bottle has been inverted.

When the shell stopper D is employed, I provide in the bulb B² of the stopper-piece, outside or above the upper end of the stopper-guard C, one or more indentations, as *b'*, by means of which a person with his thumbnail and a finger-nail or a suitable instrument may raise the stopper-piece so as to move its stopper portion B' away from the bottom of the shell stopper, when the latter will be pushed out from the throat *a'* so as to unclog the same, that the liquid within may be discharged through the unclosed throat and thence into the chamber of the stopper-guard, and from thence through the central opening *c'* of said stopper-guard, at which opening the reduced portion of the stopper-piece will be so as to allow the liquid to readily have passage through said opening, the radial projections *b b* retaining the stopper-piece within the said stopper-guard, while the openings between the said radial projections *b* allow a free passage of the liquid; but when the shell stopper D is employed I also preferably use a metallic sealing-cap E', although sealing-wax and a thin sheet-metal covering may be employed for holding this shell stopper D tightly closing the throat *a'* of the bottle. This sealing-cap E' when employed has preferably provided with its lower end a screw-thread *e*² for coaction with a screw-thread *e*³, made with the upper end portion of said stopper-guard, as shown in Fig. 1. This metallic sealing-cap is preferably provided with a yielding seat-piece *e*⁴, secured within said cap against its upper end wall *e*⁵,

for pressure on the crown of the bulb B² when the stopper-piece is fully down and the said cap is screwed down, as shown in Fig. 1.

The manner in which my new devices are applied to the bottle and operate after application is as follows: The bottle A, stopper-piece B, and stopper-guard C, all preferably made of clear glass, and the shell stopper D, or disk-form stopper D', (indicated by dotted lines in Fig. 2,) are received by the bottler as separate pieces ready to be applied to the bottles at will. The bottle is first filled with the liquid it is to contain up to its neck, then the stopper-piece is applied, when the stopper B' thereof is calculated to close the throat *a'*, as shown in Fig. 1; but when the shell-form stopper D or disk-form stopper D' is to be employed, as shown and indicated, they will be first placed to close the throat *a'*, the former as shown by full lines in Fig. 2 and the latter as indicated by dotted lines in Fig. 1. Then the stopper-piece B will be placed in position, the stopper portion B' in Fig. 1 entering the chamber of the shell stopper D and holding it down so as to keep the said shell stopper plugging the throat *a'*, or the lower end of the stopper-piece B, when reduced in length up to the dotted lines, indicating a disk-form stopper D' in Fig. 2, will be seated on such disk-form stopper to hold it closing the throat, and in either case the stopper-piece will be in place for service. The stopper-guard will next be applied to the neck of the bottle and be secured permanently to the outer side of the same with a suitable cementing substance between and forming a close joint and a tenacious holding of the one with the other, so that a removal of the stopper-guard from the neck of the bottle cannot be effected without breaking either the neck or said stopper-guard, or both. When the stopper-guard is thus secured, with neck A' of the bottle now filled and closed by the stopper B' or its described equivalents, the bulb-form upper end B² will project partly through the central perforation *c'*, as shown, while the radial projections *b b*, forming stop B⁴, will be held within the chamber of the stopper-guard C, as shown. The sealing device within, comprising the sealing-wax *e* and metallic covering *e'*, as shown in Fig. 2, or the cap E' is next applied, as described and shown, when the liquid will be securely closed within the bottle without liability of escaping therefrom by the way of the throat of the bottle until the sealing device E or E' is removed. When the bottle has been closed, as illustrated in the drawings and as above described, it can be transported from place to place without the contents escaping and be kept in store without liability of evaporation of the liquid contained therein. When it is desired to pour any of the liquid out from the bottle, the sealing devices within, as E or E', will be removed and the bottle will then be decanted or turned with its stopper-guard end downward, when the stopper-piece will by its own weight move endwise outwardly, with its bulb-form

end passing wholly through the central perforation c' of the stopper-guard, and the radial projections b , forming stop B^4 , are brought against the lower side of the annular flange c' of said guard, while the contracted middle portion B^3 will also be moved partly into the central perforation c' , leaving a passage-way between said contracted portion B^3 and edge of the annular flange C , bounding said perforation c' . At the same time the stopper B' or its equivalents, the shell-form stopper D or disk-form stopper D' , will be carried by the pressure of the liquid in the inverted bottle off from the throat or open end of the neck of the bottle, so that the liquid will readily pass out from the bottle into the chamber of the stopper-guard and thence out through the perforation c' of the said guard. This position of the stopper-piece B and adjuncts of the same contained within the said guard are indicated by dotted lines in Figs. 1 and 2.

When the disk-form stopper D' (indicated by dotted lines in Fig. 1) is employed with a stopper-piece B , having its stopper portion reduced so as to seat on the said disk-form stopper, as indicated in the same figure, I would form the side walls of the stopper-guard C with an enlarged portion, as indicated by dotted lines in said Fig. 1, and similar to the side-swelled side portion of said guard, as shown by full lines in Fig. 2. After pouring a portion of the liquid within the bottle out therefrom through the openings produced for the passage of the liquid by the outward movement of the stopper devices from the throat of the bottle, as above described, and the bottle is again made to stand upright on its bottom, the said throat-closing devices will be moved back by their own weight, so as to close the throat of the bottle, and when the entire contents of the bottle have been poured out therefrom the bottle will be useless, as it cannot be again filled, because an attempted introduction of liquids

into the bottle will result in closing the throat of the same against the passage of liquids into the bottle for refilling the same.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with the neck of a bottle of a shell-form stopper D , stopper-piece B which is provided with the lower end portion B' , upper end bulb B^2 , contracted middle portion B^3 and stop B^4 , and stopper-guard C having its upper end provided with an internal flange c and central perforation c' , which is adapted to allow the bulb end of the stopper-piece to have passage through it until the contracted portion B^3 is within said central perforation, and an enlarged middle chamber of diameter greater than the outer diameter of the neck of the bottle, the said stopper-guard being permanently secured to the neck of the bottle, with the throat thereof closed by the said stopping-pieces, substantially as and for the purposes set forth.

2. The combination with the neck of a bottle, of stopper-piece B having its lower end closing the throat of said neck and provided with a bulb-form end B^2 , contracted middle portion B^3 and stop B^4 , of a stopper-guard C provided with the upper end internal flange c having central perforation c' which allows the bulb end B^2 of the stopper-piece to have passage through it, the lower end of said stopper-guard being permanently secured to the said neck, and mechanism described, secured to the upper end portion of said stopper-guard, and adapted to hold the stopper-piece from being accidentally moved longitudinally away from the throat of said neck, substantially as and for the purposes set forth.

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Witnesses:

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