(No Model.)

W. PAINTER.

BOTTLE STOPPER.

No. 449,822. Patented Apr. 7, 1891.

Fig 1.

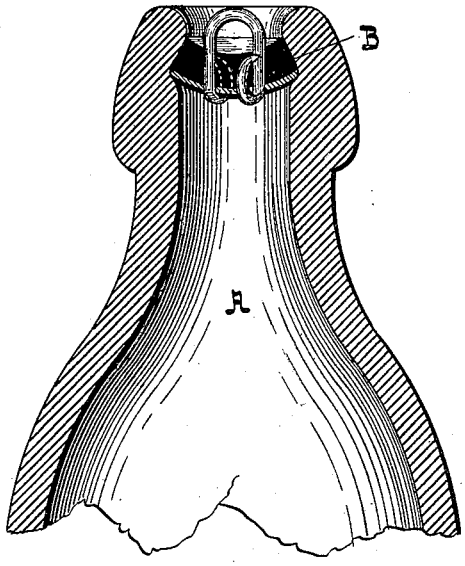

Fig 2.

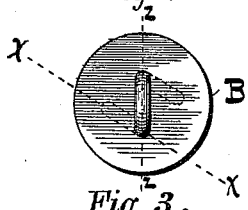

Fig 3.

Fig 4.

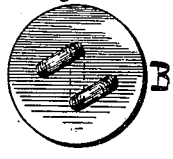

Fig 5.

Fig 6.

Fig 7.

Fig 8.

-WITNESSES-

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A. Lawrence Smith

-INVENTOR-

William Painter,

by Geo. W. Howard, Atty.

UNITED STATES PATENT OFFICE.

WILLIAM PAINTER, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE BOTTLE SEAL COMPANY, OF SAME PLACE.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 449,822, dated April 7, 1891.

Application filed March 7, 1890. Serial No. 342,967. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM PAINTER, of the city of Baltimore and State of Maryland, have invented certain Improvements in Bottle Stoppers or Seals, of which the following is a specification.

This invention relates to certain improvements in the bottle stopper or seal described in Letters Patent No. 327,099, granted to me on the 29th day of September, 1885. In the said Letters Patent is shown and described a bottle stopper or seal which consists of a revertible disk of flexible material, which is inserted into the bottle-neck in the form of a cup with its convex side toward the contents of the bottle, which are usually under pressure and which is retroverted in its removal from the bottle-neck.

The present invention consists, primarily, in the application to the said seal of a projecting wire loop situated about centrally of the seal, through which a suitable instrument may be inserted for the purpose of retroverting and withdrawing the seal from the bottle when the same is to be emptied of its contents.

The said invention further consists in inverting the ends of the wire loop within the seal and curving them backward to prevent movement of the loop independently of the seal in any direction; in sharpening the ends of the wire so as to produce chisel-points, in order that in their insertion into the seal they will merely displace the material instead of removing any of the substance, and, finally, in turning the inverted ends of the loop backward in opposite directions, as and for purposes hereinafter described.

In the further description of the said invention which follows reference is made to the accompanying drawings, forming a part hereof, and in which—

Figure 1 is a vertical section of the upper part of a bottle made in accordance with the invention set forth in the said Letters Patent, to which the present improved seal is applied. Fig. 2 is a top view of the seal as it would appear before its insertion into the bottle-neck. Fig. 3 is a section of Fig. 2, taken on the dotted line *x x*. Fig. 4 is an under side view of the seal. Fig. 5 illustrates the wire blank from which the loop is formed. Fig. 6 shows the wire after it is bent into the form of a staple and before it is passed through the seal. Fig. 7 is a view of the completed loop as it would appear if cut from the seal. Fig. 8 illustrates a modified construction of the loop as hereinafter described.

Referring to Figs. 1 to 7, inclusive, of the drawings, A is the bottle-neck, and B the seal, which consists of a disk cut from a sheet of some flexible material—such as rubber—faced on the under side or surface with a layer of strong, fibrous material to afford a good hold for the loop, and preferably waxed to protect the contents of the bottle against the action of the sulphur and rubber. The disk B is made somewhat larger in diameter than the inside of the bottle-neck, and after it is forced into position it becomes dished or cupped, as shown in Fig. 1. The wire blank from which the loop is formed is shown in Fig. 5, and it consists in a straight piece of tinned wire having its ends sharpened to a chisel-edge by means of a machine specially designed for the purpose. This blank is bent over a former, also a part of the machine, into the form of a staple, as shown in Fig. 6, and then the staple is forced through the seal and its ends turned up and around in opposite directions, as shown in Fig. 7.

By sharpening the ends of the staple in the manner described the seal is penetrated without any of its substance being removed, and consequently the rubber lies closely in contact with the wire, and leakage around the wire is prevented. The sharp or chisel points also enable the staple to pass twice through the textile facing of the seal without ragging it; but this in a measure is due to the wax with which the fabric is treated, as the wax holds the fibers of the material together and makes the same a practically solid body. In turning the ends of the wire in opposite directions the strain on the seal in its removal from the bottle-neck by means of an instrument inserted through the loop is distributed over a greater surface, thereby increasing the hold of the wire on the seal and its fibrous facing.

By referring to Figs. 2 and 4 it will be seen that the inverted ends of the wire which have

been alluded to as turned in opposite directions are at less than a right angle with the diametrical line *z z*, which passes through the straight parts of the loop. The object of this arrangement is to remove the inverted portions of the loop to a greater distance from the side or circumference of the seal, as will be readily understood.

By reference to Figs. 1, 3, and 7 it will be seen that the pointed ends of the staple which form the loop are not merely bent and turned upward into the substance of the seal, but bent and carried back toward the straight parts of the staple. By this means the loop is secured against what might be termed "backing out," and will resist a very considerable pressure exerted in a downward direction on the crown of the loop without being displaced.

The wire blank is provided with chisel-points in preference to rounded ones, for the reason that a rounded or conical point pushes a portion of the seal material equal to the diameter of the wire in front of it as the wire is inserted, and thereby has a tendency to detach the rubber from the fibrous portion of the seal as it passes from one material to the other in a manner similar to a non-pointed wire, whereas a chisel-point first cuts a slot, and then as the wire advances the material at the sides of the slot is merely forced aside and the slot changes into a circular opening which is the exact size of the wire. Further, a chisel-point can be produced in a cheaper and simpler manner than one of any other shape.

I claim as my invention—

The combination, with the neck of a bottle having an interior seat, of a stopper resting against the seat and consisting of a body or seal which is made concavo-convex by lateral compression and an external extractor loop or hook which reverts the body or seal in withdrawing the stopper from the bottle, substantially as and for the purpose specified.

WILLIAM PAINTER.

Witnesses:

JNO. T. MADDOX,

WM. T. HOWARD.