

(Model.)

W. PAINTER.  
BOTTLE SEALING DEVICE.

No. 468,259.

Patented Feb. 2, 1892.

Fig. 1.

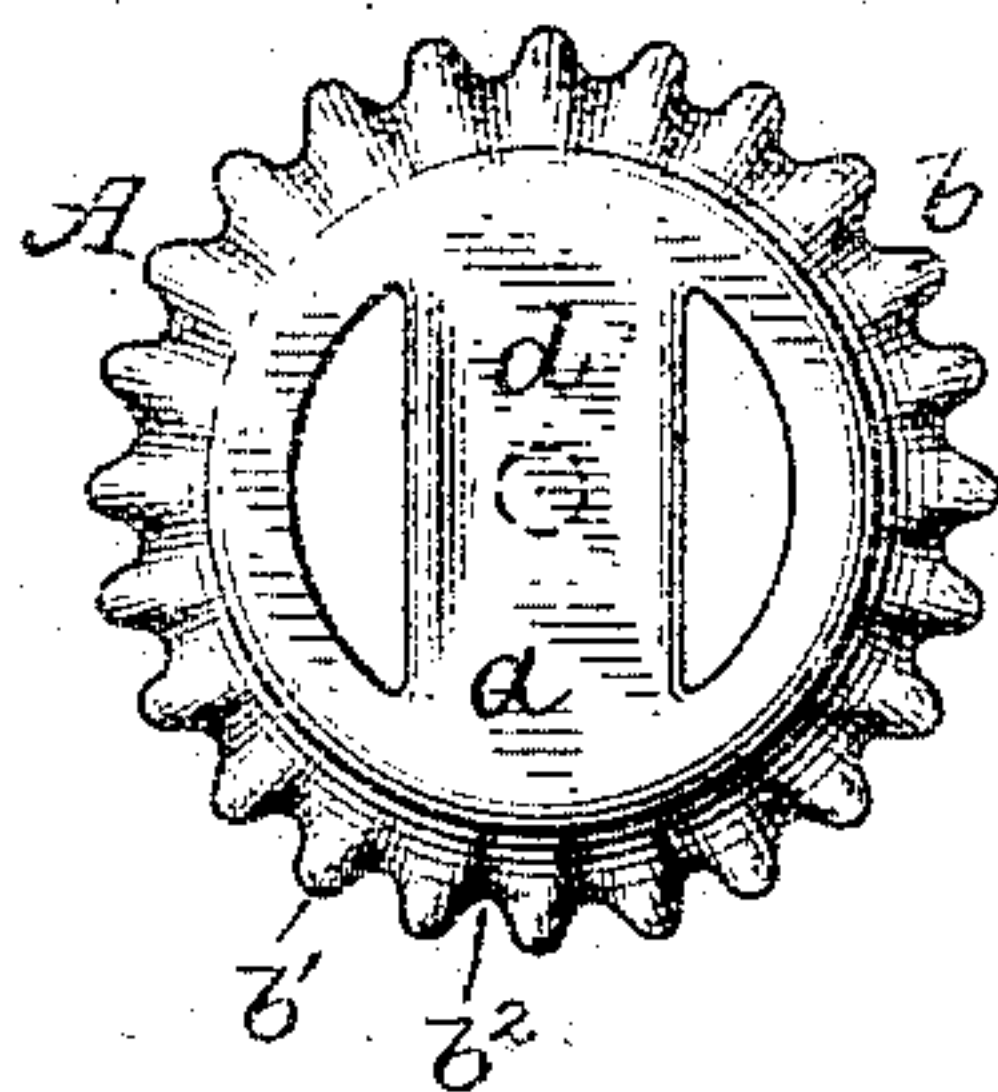


Fig. 2.

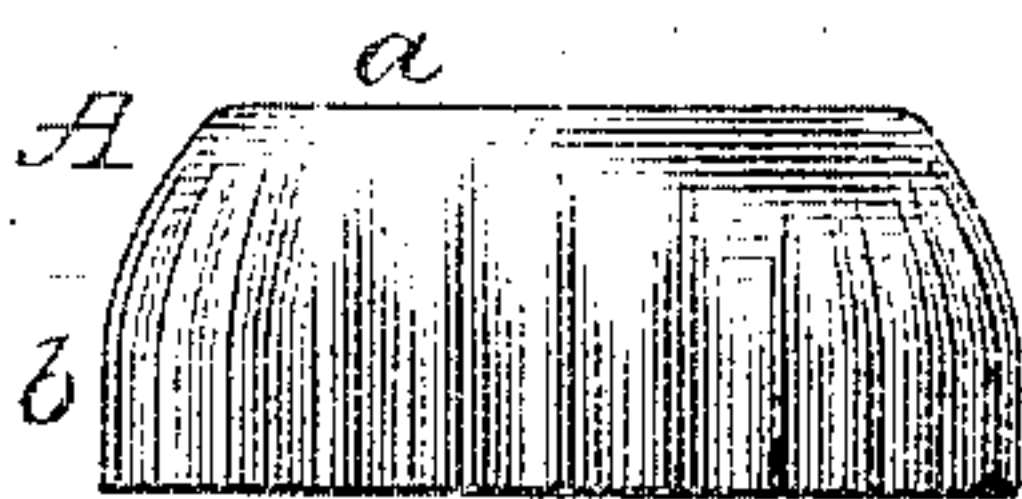


Fig. 3.

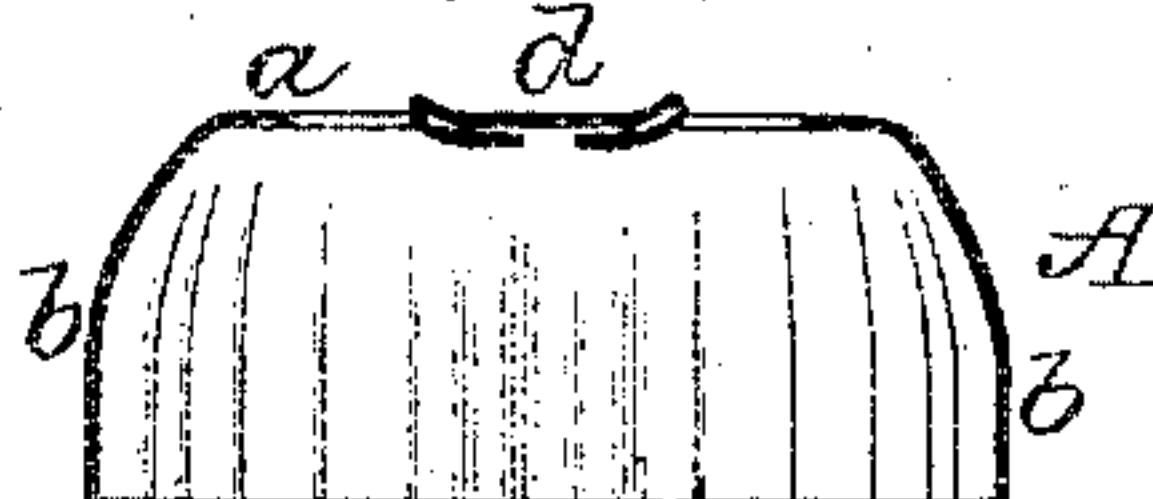


Fig. 4.

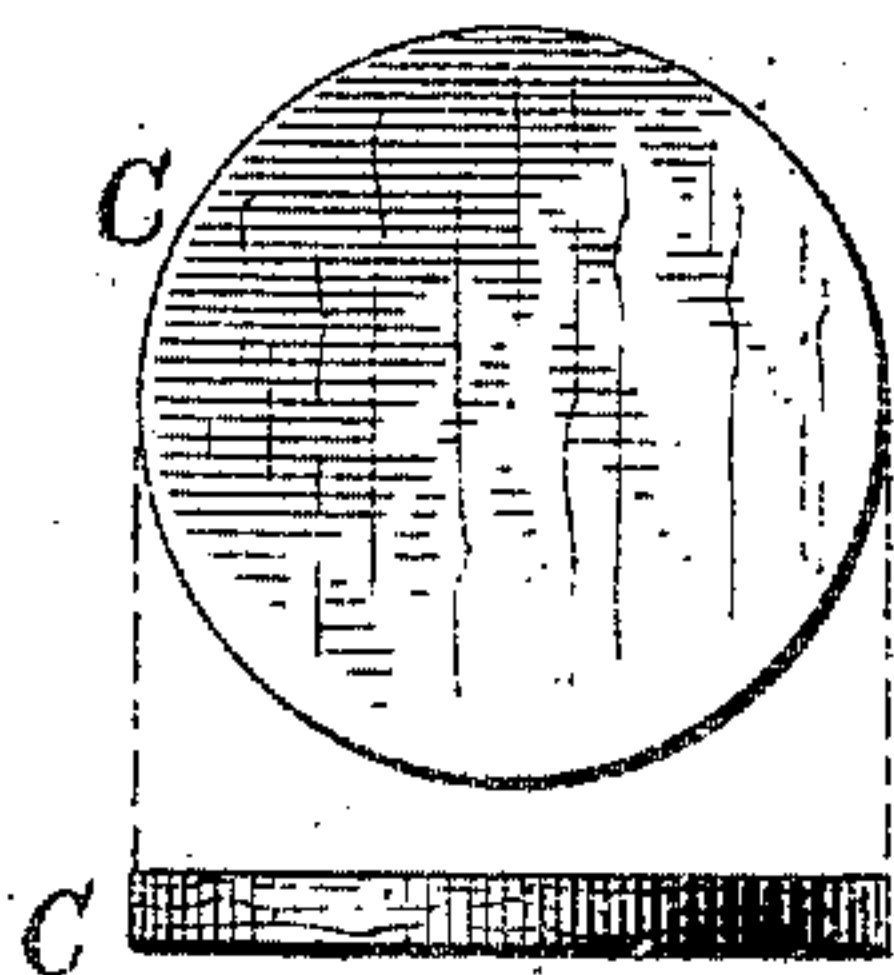


Fig. 5.

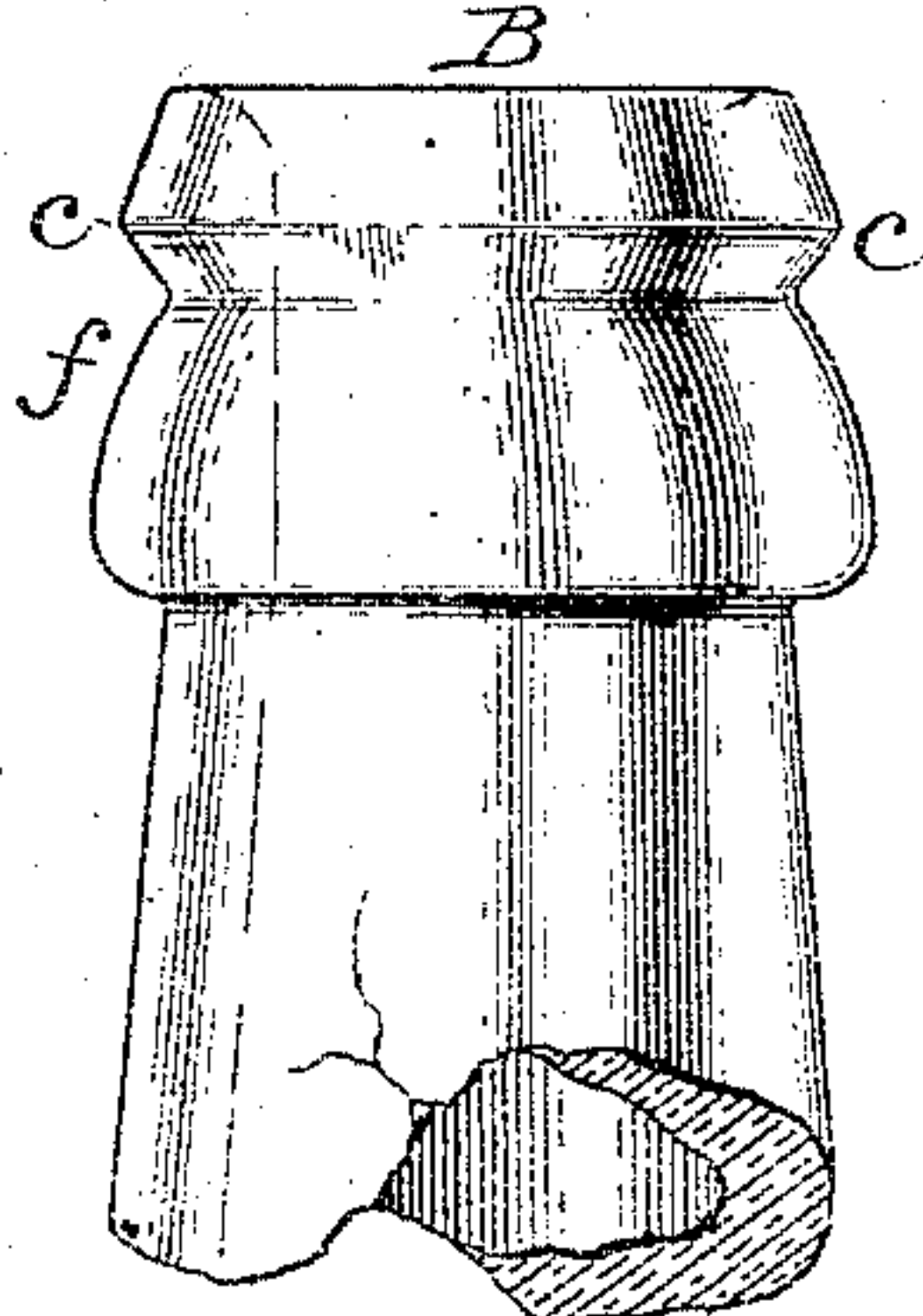


Fig. 6.

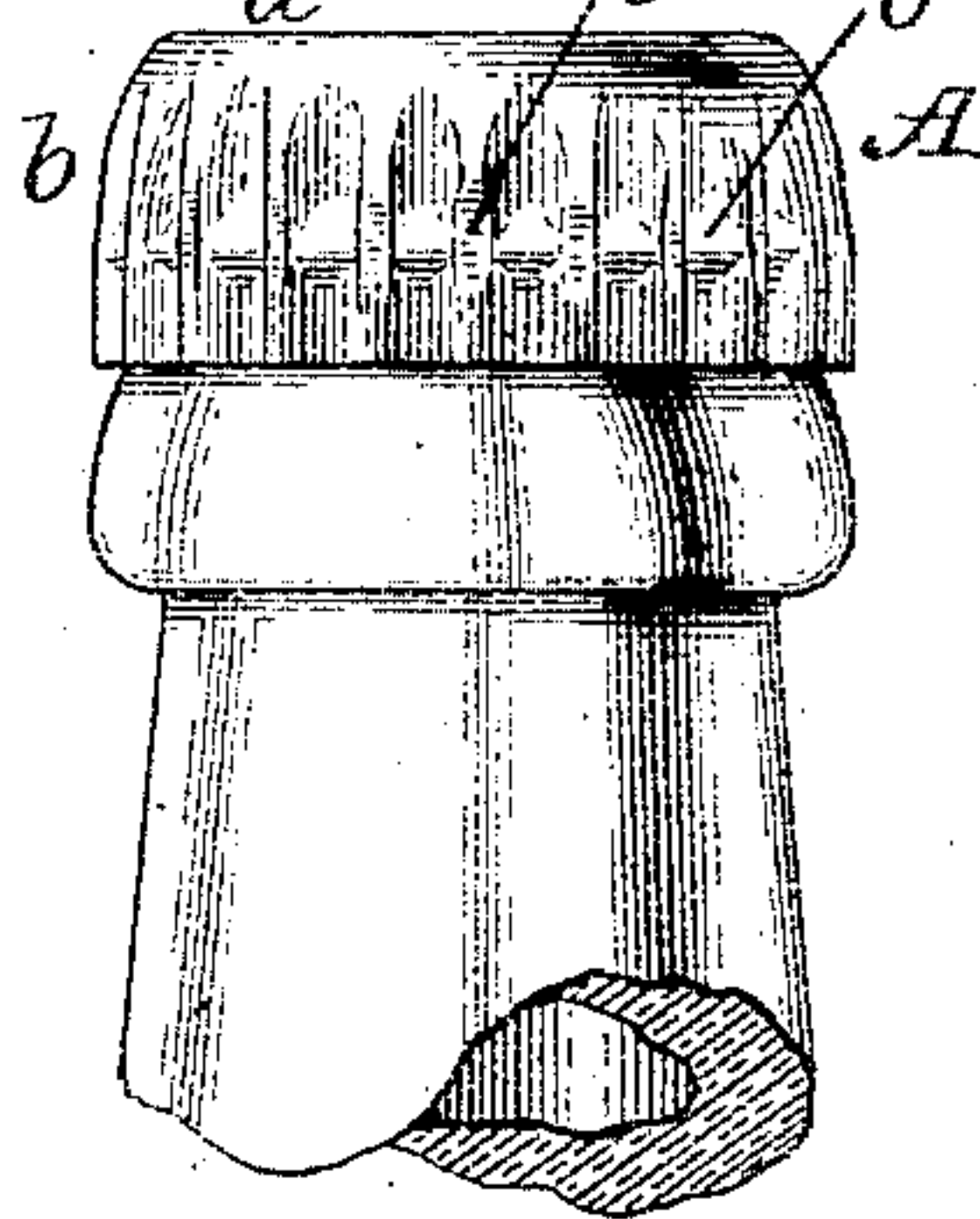


Fig. 8.

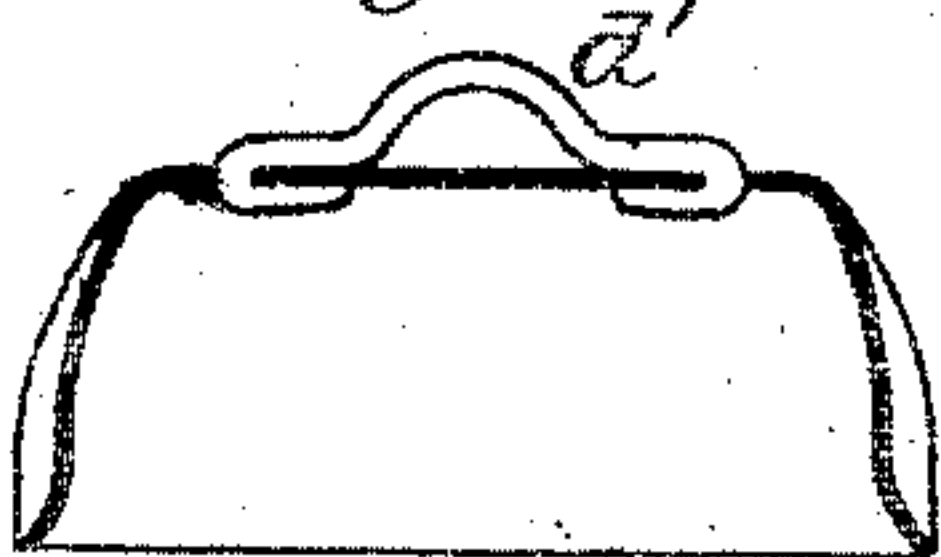


Fig. 9.

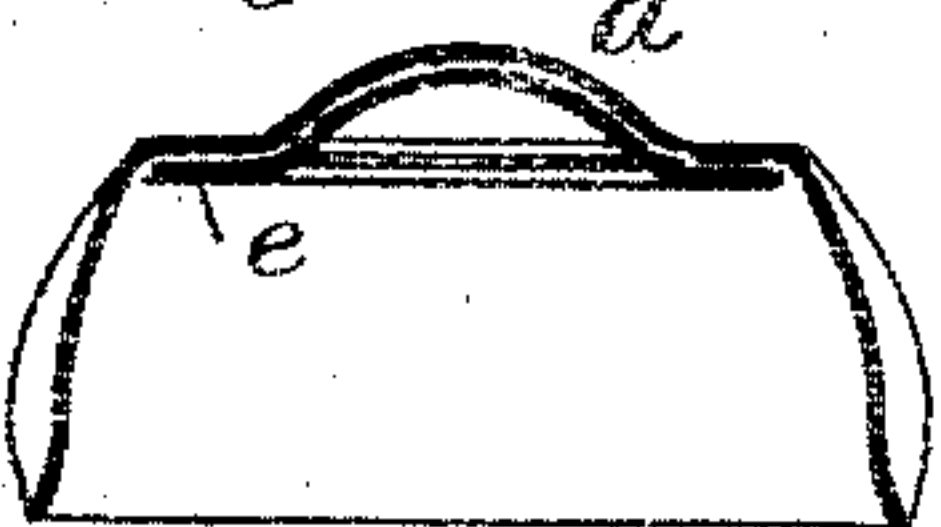


Fig. 7.

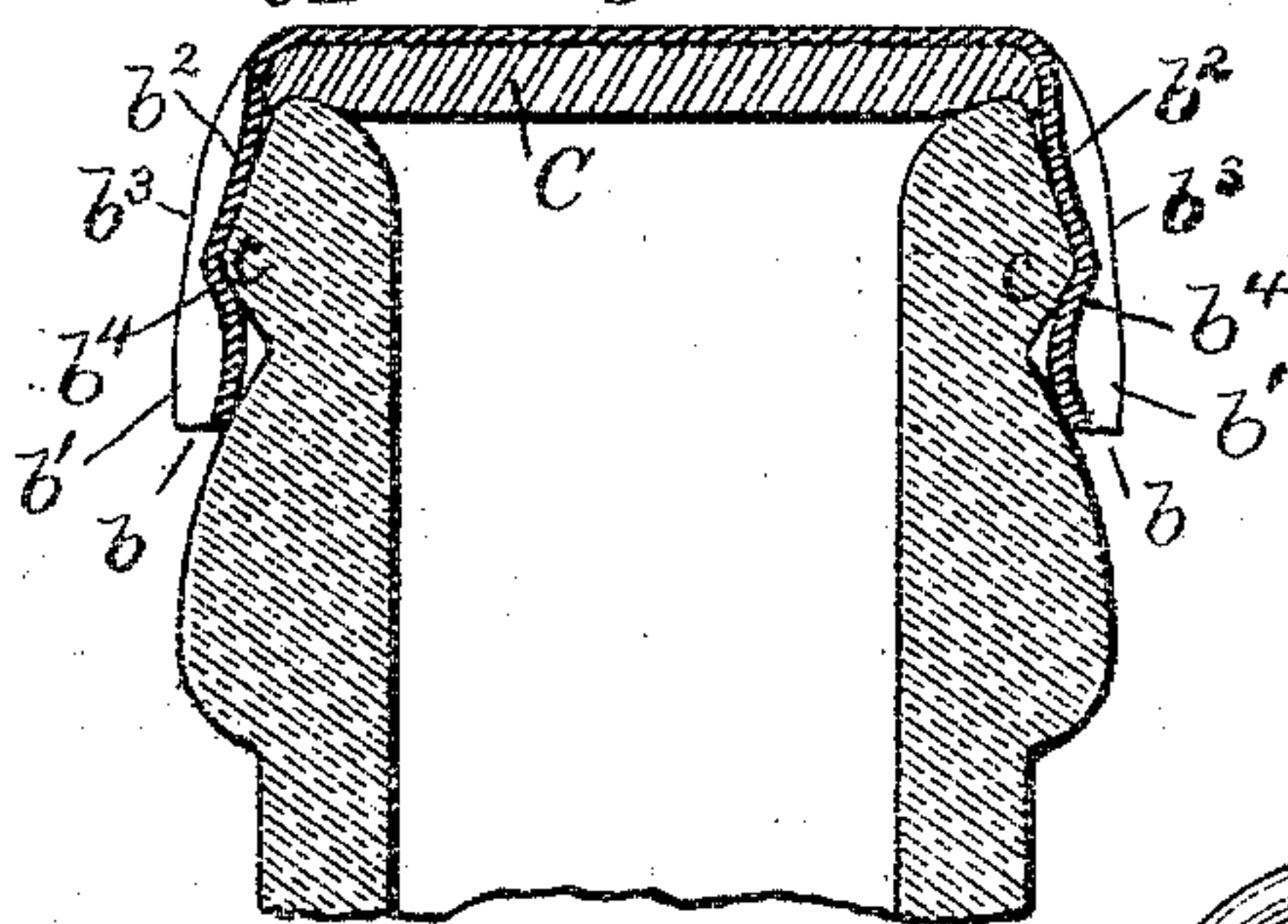


Fig. 10.



Fig. 11.



Fig. 12.

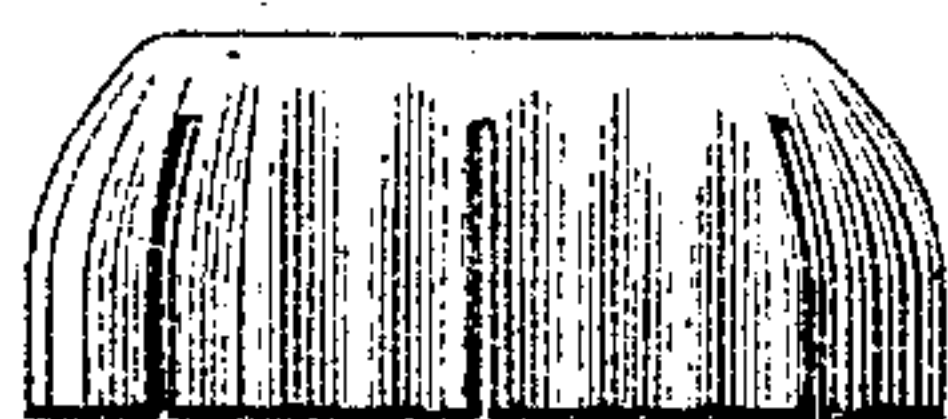
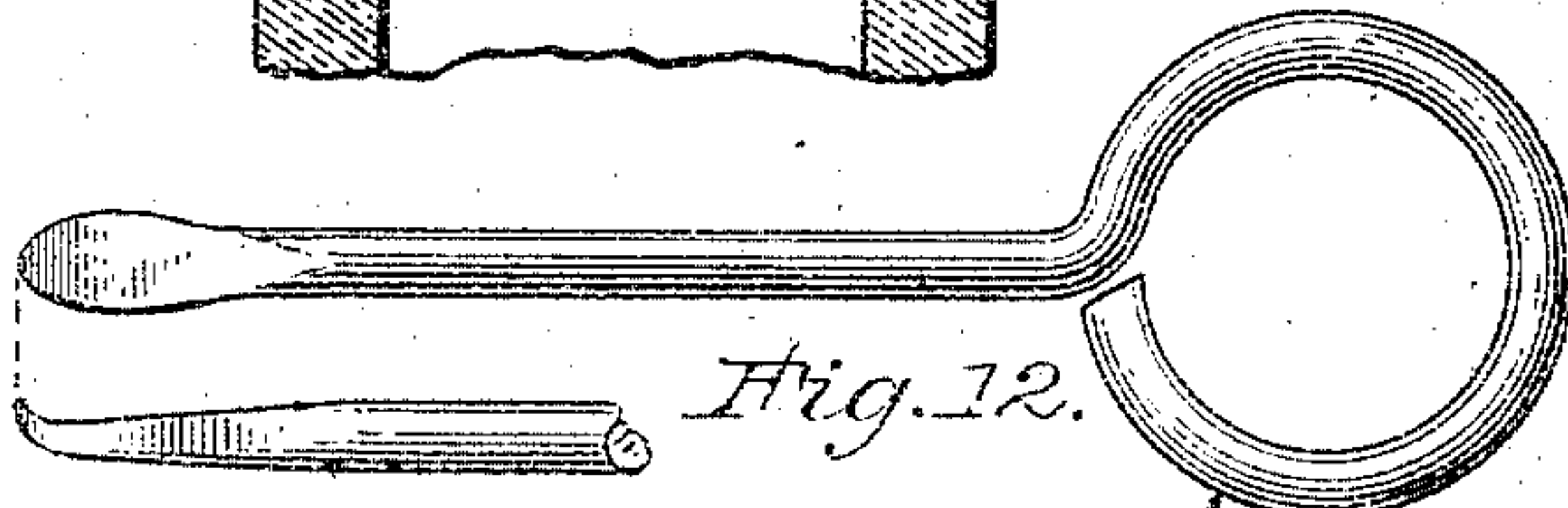


Fig. 13.

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# UNITED STATES PATENT OFFICE.

WILLIAM PAINTER, OF BALTIMORE, MARYLAND.

## BOTTLE-SEALING DEVICE.

SPECIFICATION forming part of Letters Patent No. 468,259, dated February 2, 1892.

Application filed November 5, 1889. Renewed October 6, 1891. Serial No. 407,843. (Model.)

*To all whom it may concern:*

Be it known that I, WILLIAM PAINTER, of the city of Baltimore, in the State of Maryland, have invented certain new and useful  
5 Improvements in Bottle-Sealing Devices; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of  
10 my invention.

The improvements to be hereinafter specified have been illustrated and described by me in connection with metallic sealing-caps embodying certain novel features, which, broadly  
15 considered, will constitute in part the subject of a separate application for Letters Patent. (See Serial No. 355,603.)

My said sealing-caps have corrugated flanges, and they are employed with sealing-  
20 disks, and the flanges are bent into locking contact with bottle-heads, all as fully set forth and claimed in my said other application; but the particular caps hereinafter described are provided with loops for enabling them to be  
25 conveniently removed from a bottle by means of any form of lever capable of passing into or through a loop.

This application further relates to a novel sealing-disk capable of and well adapted to  
30 use with any form of sealing-cap, because of its effective and reliable sealing capacity and its odorless and tasteless character, and also because of its low cost as compared with disks composed of rubber compounds or of cork in  
35 its natural condition.

After describing the several features of invention, each will be specified in appropriate clauses of claim hereunto annexed.

Referring to the drawings, Figures 1, 2, and  
40 3 illustrate one of my sealing-caps in top view, side view, and central section. Fig. 4, in top and edge views, illustrates the form of sealing-disk best suited for use with my sealing-caps. Fig. 5 is a side view of a bottle-head adapted  
45 for use with my sealing-cap. Fig. 6 is a similar view of a bottle-head with the cap and its sealing-disk properly applied thereto. Fig. 7 is a sectional view of the bottle, the cap, and the sealing-disk on a scale somewhat larger  
50 than in the preceding figures. Figs. 8 and 9 illustrate my sealing-caps provided with further special means for facilitating their re-

moval from bottles, the same consisting of different kinds of loops, and these caps also have their lower edges flared or flattened. 55  
Figs. 10 and 11 illustrate different forms of packing or sealing disks with which my sealing-caps may be successfully used. Fig. 12 illustrates a tool devised for use as a hand-  
60 lever for wrenching the sealing-caps from bottles. Fig. 13 illustrates my sealing-cap in a less desirable form, its pendent flange being slotted instead of continuous, as in the preceding figures.

In each instance, A denotes a sheet-metal 65 sealing-cap embodying my present invention. The said cap has a flat top  $\alpha$  and an integral continuous corrugated flange  $b$ . The corrugations are parallel with the axis of the cap and extend substantially throughout the  
70 depth of the flange, and for the purposes of this specification I will designate the outer portion of each corrugation an "outer corrugation"  $b'$  and the alternating portion an "inner corrugation"  $b''$ . 75

Inasmuch as some cushioning or packing medium must be employed in connection with all metallic sealing-caps, I will now, without referring to any particular form of packing, describe the feature essential to all bottles 80 with which my sealing-caps are to be used.

In the drawings, B denotes the head of a bottle, having as an essential feature an annular shoulder  $c$ . Above this shoulder  $c$  the bottle-head is inwardly beveled, as shown, to 85 the lip of the bottle, and below the head is rounded out or beaded; but these portions of the head may be indefinitely varied, provided that the engaging character of the shoulder  $c$  is not thereby adversely affected. 90  
When the top of the cap has been properly forced upon the sealing medium, the pendent flange should so overlie the shoulder that the latter may be properly embraced by the inner corrugations  $b''$ . 95

As shown in Fig. 7, the sealing-disk C, although normally flat, has been made to properly conform to the lip of the bottle by heavy pressure applied to the top of the cap, the bottle being of course firmly supported at its 100 base, and while this vertical pressure is being maintained a setting-die, which is ring-shaped in form and has a proper internal diameter, is forced downward upon and around the



flange, and by forcibly engaging with the outer corrugations  $b'$  it slightly flattens them, as at  $b^3$ , for a portion of their length; but nevertheless their sides are sufficiently rigid to cause a portion of each inner corrugation  $b^2$  to be so bent, as at  $b^4$ , that it accurately conforms to the contour of the engaging-shoulder, and therefore the cap is firmly secured or locked to the bottle, and it thoroughly maintains the sealing-disk in substantially the same close relation with the mouth of the bottle as was secured by the pressure applied to the cap prior to the circumferential compression of the corrugated flange. The best results will accrue with a flange extended so far below the engaging-shoulder that a portion of each inner corrugation remains substantially intact; but fair results can be obtained even if the extreme lower portions of said inner corrugations be forced inwardly and made to conform to the engaging-shoulder.

My sealing-cap thus constructed and applied is capable of successfully resisting any internal pressure to which bottled liquids need ever be subjected, and it follows that very considerable force must be exerted to effect the displacement of a cap in opening a bottle, and I find that a wrenching or prying action at the top of the cap is specially effective.

In Figs. 1, 2, and 3 a loop  $d$  is shown to be integrally formed from the metal of the cap top, portions thereof being cut and folded under the central portion, which forms a bar or loop, and the sides of the latter are slightly upturned to enable a pointed or chisel-shaped tool or hand-lever (like that shown in Fig. 12, for instance) to be more readily inserted beneath the loop. In Fig. 8 a loop  $d'$  is composed of wire, its ends being inserted in appropriate small holes in the top of the cap.

Caps having applied loops, as in Fig. 8, and embodying the described feature of my invention, will be made the subject of a separate application for patent.

In Fig. 9 the loop  $d^2$  is formed in part as in Fig. 1; but it is reinforced by a similar underlying loop formed in a separate disk of sheet metal  $e$  within the cap, this form being specially desirable when the caps are to be of extra strength and applied for resisting unusual pressures. The loop integral with the top of the cap is specially valuable in view of the great strength required, coupled with the economy involved in the production of such caps as distinguished from the use of a non-integral loop.

My caps are so firmly united to the bottles and the force requisite for displacing them is so great that in prying them off the lips of the bottles would be shattered and the bottles ruined by the opening-tool were it not for the fact that each sealing-disk, in addition to its usual function, now for the first time serves as a cushioned protector for the lip of the bottle during the opening operation.

With a bead or annular rounded projection on the bottle-head immediately below the engaging-shoulder, as shown in Fig. 5 at  $f$ , it is sometimes desirable that the interior corrugations of the cap-flange be initially flared outwardly at the lower edge, so that it may loosely conform to or with the coincident surface of the bead and thus avoid the lifting tendency which would be liable if the edge of the flange was in forcible contact with the upper surface of the bead. The cap of Fig. 8 illustrates the inner corrugations flattened at their lower ends, and that in Fig. 9 illustrates the flattening of both the inner and outer corrugations at the edge of the flange, thus producing the flaring effect referred to.

Referring now to the normally-flat sealing-disk  $C$  of Figs. 4 and 7, it is to be understood, while the form there shown is deemed preferable by me to any other, that the form may be varied without departure from my invention—as, for instance, the packing medium may be a molded disk with a projection on its under side to occupy and fill the mouth of the bottle for securing greater area of contact with the bottle, as shown in Fig. 11, or it may be a short cork with specially flaring sides, as shown in Fig. 10, it being obvious that my sealing-cap will perform its proper functions in connection with a sealing medium of any form, if the latter have a suitable packing capacity.

As hereinbefore indicated, a normally-flat sealing-disk is best suited for use with my sealing-caps, and the same would be true of any form of sealing-cap which is capable of maintaining a disk under the high degree of compression essential for securing proper sealing effects. So far as my knowledge extends, all prior sealing-disks of practical value have either been cut from cork-wood or cut from sheeted vulcanized-rubber compound, or said compound has been molded into form. I find that reliable disks cut from cork-wood involve, first, a close selection from the best and most expensive grades of cork, and, secondly, a close inspection of each disk cut therefrom, because the presence of pits or cells in a thin disk of cork-wood will defeat the prime objects sought in bottling. The rejected cork-wood disks are practically wasted, and their proportion to the good ones is so great as to render the use of cork disks impracticable in ordinary bottling operations. The considerable cost of rubber disks is also a matter of much consequence; but while that does not preclude their extensive use they are well known to be objectionable, because their sulphurous odor is liable to impair liquids of delicate flavor. I have after much experiment devised a normally-flat disk which has the desired resiliency, as in cork-wood or rubber, is practically free from objectionable odor, is free from pits or cells, and which is more economically produced than any other type of effective sealing-disks known to me. I cut my novel disks from sheets of a complex fab-



ric composed of a textile-fabric foundation and granulated cork united in mass by a binding or adhesive medium which is practically odorless and tasteless—as, for instance, the refined gum derived from linseed oil—one form of such sheeted material being the best quality of “linoleum,” a fabric readily obtainable in open market. The textile-fabric foundation affords desirable strength to the disk; but for securing still greater strength they are coated on their inner sides with thin cloth preferably charged with refined paraffine, which is well known to be odorless and practically insoluble in such bottled liquids as will usually involve the use of my sealing-caps.

It is oftentimes desirable, after opening a bottle and partially emptying it, to temporarily close it again, and this can be readily done by replacing the cap and striking it with the hand, whereby air will not only be excluded, but the cap will successfully resist any gaseous pressure which is liable to be developed within an opened bottle of wine or beer.

My sealing-caps possess much practical value for use in connection with long corks, which might not, as a rule, be displaced by gaseous pressure after the removal of the cap, and hence for such uses the corrugated flange need not be locked so firmly on the bottle-head as when a sealing-disk is used, and by having a small hole in the center of the cap, as indicated in dotted lines in Fig. 1, a corkscrew can be inserted for simultaneously withdrawing the cork and removing the cap.

The slitted flange-cap of Fig. 13 is specially well adapted for use with long corks or with disks, if the liquids are not bottled under high pressures.

The bottle-heads herein illustrated embody certain novel and valuable features, which will be made the subject of a separate application for Letters Patent.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent—

1. A bottle-sealing cap, substantially as hereinbefore described, containing a sealing-disk and composed of sheet metal, having an integral pendent flange adapted to be secured upon the head of a bottle by bending portions of the flange into locking contact with an engaging shoulder on said head and provided with an integral loop at its top for facilitating the removal of the cap from a bottle, said disk protecting the lip of the bottle from fracture while prying off the cap.

2. A bottle-sealing cap composed of sheet metal, having a continuous integral pendent flange corrugated substantially throughout its depth in lines parallel with the axis of the cap and provided with a loop for enabling the cap to be readily wrenched from a bottle to which it has been applied.

3. A sealing-disk composed of granulated cork and the practically tasteless and odorless gum derived from linseed-oil, said disk being adapted for use with sealing-caps, substantially as described.

4. A bottle-sealing cap composed of metal and having an integral pendent flange by which the cap may be locked to a bottle and provided at its top with an integral loop, substantially as described.

5. A bottle-sealing cap having a flange corrugated in line with the axis of the cap and slitted at intervals, the corrugated portion of the flange being adapted to be bent into locking contact with an annular shoulder on a bottle-head, substantially as described.

6. A metallic bottle-sealing cap having an integral pendent flange and an integral loop at its top reinforced by a separate underlying loop, substantially as described.

WILLIAM PAINTER.

Witnesses:

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ORRIN C. PAINTER.