No. 771,713. PATENTED OCT. 4, 1904.

H. COALE & L. S. GREENSFELDER.

BOTTLE CLOSURE.

APPLICATION FILED JAN. 20, 1904.

NO MODEL.

Fig. 1.

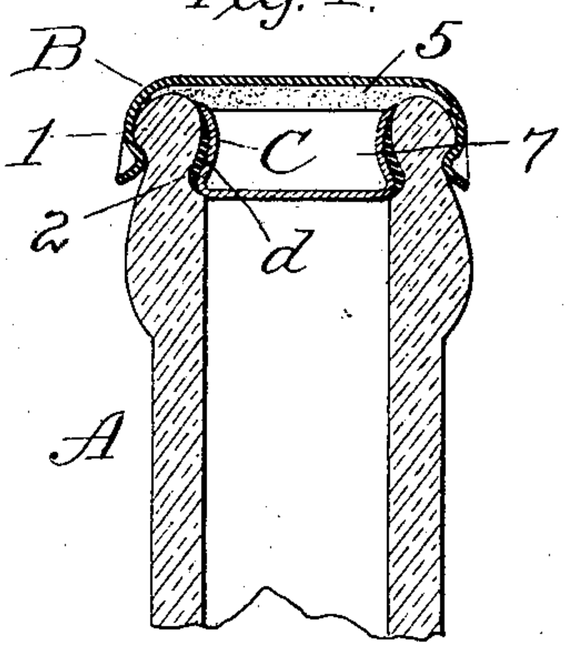
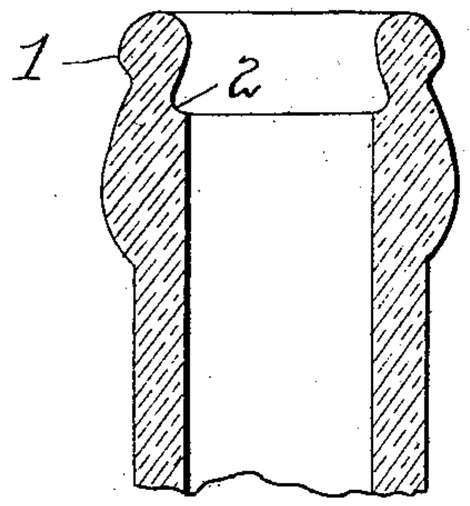


Fig. 2.



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No. 771,713. Patented October 4, 1904.

UNITED STATES PATENT OFFICE.

HARVEY COALE AND LEWIS S. GREENSFELDER, OF BALTIMORE, MARYLAND, ASSIGNORS TO THE CROWN CORK & SEAL COMPANY, OF BALTIMORE, MARYLAND.

BOTTLE-CLOSURE.

SPECIFICATION forming part of Letters Patent No. 771,713, dated October 4, 1904.

Application filed January 20, 1904. Serial No. 189,902. (No model.)

To all whom it may concern:

Be it known that we, HARVEY COALE and LEWIS S. GREENSFELDER, citizens of the United States, residing at Baltimore, Maryland, have invented certain new and useful Improvements in Bottle-Closures, of which the following is a specification.

Our invention is a modification of a form of closure shown in a companion application of even date herewith; and, broadly stated, it consists of a special combination of two well-known types of closures with a bottle of novel character, the bottle, however, forming the subject-matter of an independent application.

The same object is sought in the present application as in the construction illustrated in the companion case—namely, greater security and strength and less liability of waste by leakage; but instead of constructing an entirely new form of closure we find that we can secure substantially the same result by combining two well-known types of single-use closures. The organization of the outside and inside closures with the novel bottle is such, however, that while each stopper performs its duty in the old way they coöperate to produce certain results not attainable by the separate use of either.

In the drawings, Figure 1 is a central vertical section of a bottle-head with the closures in place, while Fig. 2 is a vertical sectional view through the bottle-head, the closures being removed.

We use for our inner closure preferably what is known as the "Aluminium" disclosed in the reissue patent to Painter, No. 11,685, July 26, 1898, and in its specific form in the patent of Hall, No. 541,203, of June 18, 1895, and for the outer closure the stopper known as the "Crown," illustrated in the patent to Painter, No. 468,258, February 2, 1892, and we have found that these closures when used together as contemplated by us supplement and sustain each other and provide a double seal for the bottled contents. The interior closure takes the initial pressure, while the outer closure serves to protect the inner, and, being free from the same degree of pressure to which the inner closure is subjected, there is no tendency to weaken its connection with the bottle, and it thus materially aids to check any pressure or waste which for any reason should pass the inner closure.

While we have shown in the accompanying drawings two well-known forms of closures, we do not limit ourselves in this connection, as our invention is extensive enough to include any independent forms of closure adapted to coöperate and of the type adapted one for expansion within the neck of the bottle to resist effectually outward pressure and the other for use exteriorly thereto, covering and supplementing the security furnished by the inner closure.

Our improved form of bottle is particularly described in another application, and this need not be enlarged upon here. It is shown at A, and its exterior is formed with a shoulder 1 for holding the cap B in place when its flange is locked thereunder. The annular groove is shown at 2 and is fitted to retain the interior stopper C, of cup-shape, adapted to be expanded into the groove 2 by a suitable expanding-tool. In the mouth of the bottle thus formed the interior stopper C is placed. It is provided with a packing or gasket *d*, which is compressed in the expansion of the cup against some part of the wall of the groove and is so held, forming a gas-tight seal. The cap B is applied over the outside with an interposed packing, preferably in the form of a disk 5. The cap is forced down to compress the packing upon the mouth of the bottle, and the flange is then caused to interlock with the shoulder on the outside. When the two stoppers are thus applied, a chamber 7 is formed between the inner and outer stoppers, hermetically inclosing air, which is itself compressed and which expands with any expansion of the gaseous contents of the bottle due to heat, and so effectually resists interior pressure.

It will be seen that the forcing of the Crown packing into the air-space reduces the space, with consequent compression of the inclosed air, and that the inner stopper is expanded

outwardly by pressure to effect a proper seal, while the external stopper is pressed inwardly to engage the shoulder, and thus the tendency of the inward and outward lateral strain is equalized, and the bottle-mouth is bound with metal, having its throat or opening closed by two parallel layers of metal, with an intervening air-space. Further than this, in the application of the outer closure the sealing medium thereof by the pressure applied thereto is forced or embedded into the space left around the upper edge of the inner closure or cup C between it and the wall of the bottle, and as this is the only possible outlet for leakage it is effectually prevented and at a minimum of pressure to the outer closure. The outer closure not only therefore supplements the inner, but keeps the lip of the bottle clean and covers and protects the cup, preventing the accumulation or deposit of dust therein, and is at the same time never subjected to the full pressure of the gaseous contents of the bottle, for the reason stated—namely, the sealing medium being crowded into the annular channel and embedding the edge of the inner closure, through which leakage must occur, if at all—and this makes more effective the outer seal than when used alone, as only a small part of the outer closure or the sealing medium thereof is subjected to the pressure of possible leakage, and thus the liability of encountering interstices in the cork is lessened, not only on account of the limited area exposed, but also because the pressure at this point crowds the inner sealing medium into the space and tends to close any interstices which may exist.

What we claim is—

1. In combination, an internal closure located within the bottle-throat, and in locking engagement therewith, an exterior closure in locking engagement with the bottle-head, and a sealing medium between the outer closure and the bottle, and between the outer and inner closures, substantially as described.

2. A closure for bottles consisting of a metallic closure expanded within the bottle-neck and a closure in the form of a metallic cap covering the end of the bottle, whereby the upper edge of the bottle is bound between metallic walls and a double thickness of metal is provided for the bottle-throat, substantially as described.

3. A closure comprising an inner stopper and an outer stopper disconnected and independent, a sealing medium between the inner stopper and the bottle and a sealing medium carried by the outer stopper and filling the space between the upper edge of the inner stopper and the adjacent wall of the bottle, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

HARVEY COALE.
LEWIS S. GREENSFELDER.

Witnesses:
JOHN BLACK,
CHAS. H. KOPPELMAN.