D. H. MURPHY.

STOPPERS FOR BOTTLES, &c.

No. 194,924. Patented Sept. 4, 1877.

Fig. 1.

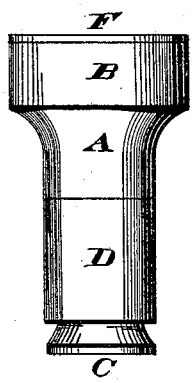


Fig. 2.

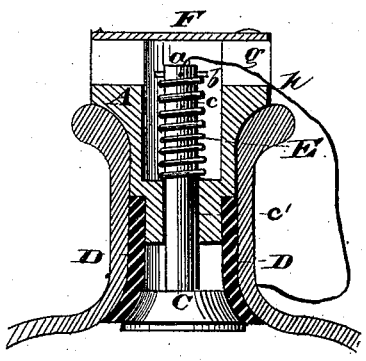
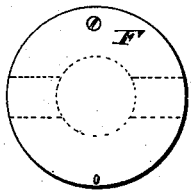


Fig. 3.



WITNESSES

Ed. S. Nottingham.

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INVENTOR

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UNITED STATES PATENT OFFICE.

DANIEL H. MURPHY, OF PLAINVILLE, ASSIGNOR TO WILLIAM R. HARTIGAN, OF BURLINGTON, CONNECTICUT.

IMPROVEMENT IN STOPPERS FOR BOTTLES, &c.

Specification forming part of Letters Patent No. **194,924**, dated September 4, 1877; application filed May 21, 1877.

To all whom it may concern:

Be it known that I, DANIEL H. MURPHY, of Plainville, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Stoppers for Bottles, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improved bottle-stopper; the object of the same being to provide a stopper of such construction that the force of the contained gases in the vessel to which it is applied shall operate to automatically seal the outlet of said vessel, and thereby prevent the escape of any of the gaseous or liquid contents contained therein.

My invention consists in a bottle-stopper made essentially of a hollow-headed stem, having an inverted conical wedge secured to its smaller end, said wedge and stem surrounded by an expansible packing-ring, whereby the stem may be elongated to allow of its introduction into the neck of the bottle, and then the force of the contained gases serves to force the conical wedge against the elastic packing and seal the outlet of the vessel.

My invention further consists in the combination, with a hollow stem, an inverted conical wedge, an elastic packing surrounding the lower portion of the stem and wedge, of a spiral or other spring secured to the stem of the conical wedge, whereby said spring serves to automatically contract the stopper after its introduction into the neck of a vessel, and prevent the escape of any of the contents of the same.

The invention further consists in the several details of construction, as will more fully appear from the following description and claims.

In the accompanying drawings, Figure 1 represents a side elevation of my improved bottle-stopper. Fig. 2 is a vertical section, and Fig. 3 a plan view, of the same.

A designates the main body of the stopper, having its upper end provided with a head, B, which latter fits snugly against the mouth of the bottle or other vessel to which it may be applied. C is an inverted conical wedge, the upper end *a* of which extends into an opening, *b*, formed in part A. To the stem *c* of part A, is secured an elastic ring, D, which latter surrounds the conical wedge C, and is expanded or contracted, according as the wedge is moved toward or away from the main portion of the stopper.

E designates a spiral spring, which surrounds the stem *c* of conical wedge C, the lower end of the spring having its bearing on a shoulder, *e*, formed within the opening in part A, while the upper end of the spring is locked to the stem by a pin, *f*. The upper portion of part A is cut away to enable the stem to be forced downwardly within the stem, and also has groove *g* cut therein for the passage of a cord or wire, *h*, one end of which is secured to stem *c* or any other portion of the stopper, and the other end to the neck of the bottle or vessel, in order to prevent the loss or detachment of the stopper from the bottle, so that it may be reused for any number of times.

F is a cap, pivoted to the upper end of the stopper, and serves to protect the spring-pressed stem *c*.

The operation of the stopper is as follows: The cap F is swung to one side, and then by pressing on the upper end of the stem *c* the conical wedge is forced downwardly, allowing the elastic ring to contract until it is of practically the same size as the stem of the stopper. The stem of the stopper is then inserted into the neck of the bottle or other vessel to which it is to be applied. When the head of the stopper is firmly seated on the mouth of the bottle, pressure is removed from the stem *c*, and the latter is forced upwardly by the spiral spring acting on the same. As the inverted conical wedge is drawn into the rubber or elastic sleeve it expands the same around the outlet of the vessel, and prevents any escape of the contents thereof. Should the material contained within the vessel be of such a character as to generate gas by long standing, the ex-

pansive force by such gas will operate to force the wedge in an outward direction, and hence the more securely seat the elastic packing to seal the mouth of the bottle.

I do not limit myself to any particular application of my improved bottle-stopper, as it is evident that it may be employed for sealing the mouth of any ordinary vessel.

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

1. A bottle-stopper consisting in the combination, with a hollow stem and an elastic packing surrounding the lower portion of the same, of an inverted conical wedge, provided with a stem extending upward into the hollow stem of the stopper, and a spring located within the hollow stem below the upper end of the stopper, substantially as described.

2. The combination, with the hollow stem having an elastic tubular packing surrounding its lower portion, of an inverted conical wedge, a spiral spring located within the hollow stem and below the top of the stopper, and an oscillating cap, substantially as described.

3. The combination, with the conical wedge and main stem of the stopper, the latter grooved, as described, of a cord or wire attached to the movable stem, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 9th day of May, 1877.

DANIEL H. MURPHY.

Witnesses:
MAJOR A. NICKERSON,
FRED. B. MANCHESTER.