

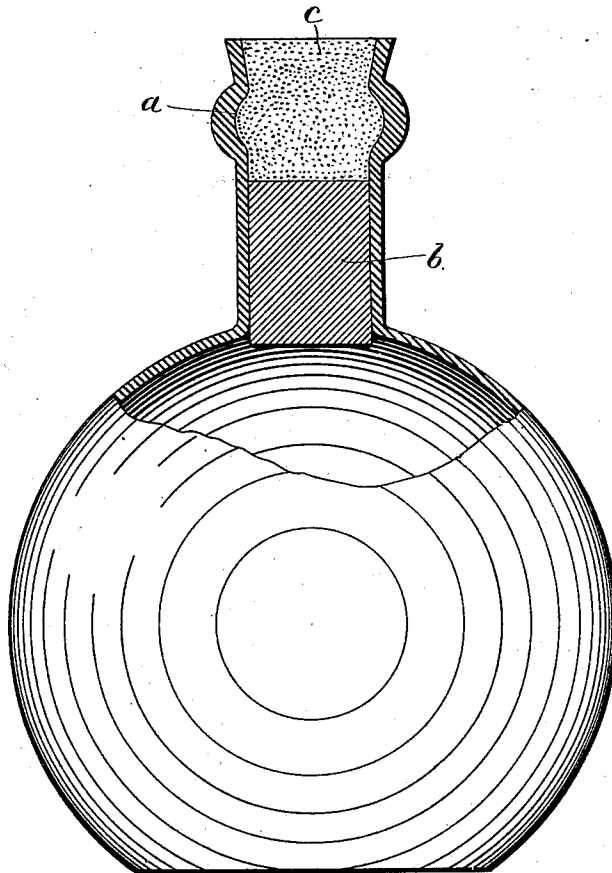
(No Model.)

J. H. PEIRCE.

HERMETICAL SEAL FOR LIQUID FIRE EXTINGUISHING HAND GRENADES.

No. 314,148.

Patented Mar. 17, 1885.



WITNESSES:

*Ernest W. Browning*

*L. Holmboe*

INVENTOR

*James H. Peirce*

# UNITED STATES PATENT OFFICE.

JAMES H. PEIRCE, OF CHICAGO, ILLINOIS.

HERMETICAL SEAL FOR LIQUID FIRE-EXTINGUISHING HAND-GRENADES.

SPECIFICATION forming part of Letters Patent No. 314,148, dated March 17, 1885.

Application filed June 20, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES HARVEY PEIRCE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hermetical Seals for Liquid Fire-Extinguishing Grenades; and I do hereby declare the following to be a full, clear, and exact description of said improvements, sufficient to enable others skilled in the art to make and use the same.

In the manufacture of liquid fire-extinguishing grenades of the general character set forth in Johnson's Letters Patent No. 117,891, August 8, 1871, and Harden Letters Patent No. 282,981, dated August 4, 1883, it is important to hermetically seal the vessel, so that the contents thereof shall not deteriorate by premature air exposure, nor the extinguishing-gases contained therein be prematurely lost. To insure this perfect sealing of the grenade as against the internal pressure of confined gas is difficult to accomplish, and prior to my invention had not been done in a cheap and effective manner.

To practice said invention I provide a glass bottle of the substantial structure shown in accompanying drawings—that is, having an offset or recess, as at *a*, in its neck—and, having filled said bottle with the desired quantity of fire-extinguishing liquid, force the cork stopper *b* tightly into position, preferably by the aid of a compress bottling-machine. Instead of the ordinary cork stopper, however, in its natural condition as cut from the cork sheet, I employ one which has been first treated in a bath of melted tallow, paraffine, or the like, whereby its pores are saturated with an inert or non-corrosive and water-repellent material that presents an impervious barrier to the passage of the free carbonic-acid gas and watery vapor. Aside from this function, however, the materials mentioned act as a lubricant and allow a larger and tighter cork to be forced into the neck. Immediately that the stopper has been applied, the space above the same, including offset *a*, is filled with a thin slip of Portland or like hydraulic cement, *c*, reduced, preferably by water, to the consistency of thick cream.

Heretofore, in attempting to employ a filling for the offset neck, the cement used was sealing-wax or plaster-of-paris, which has no chemical affinity for the carbonic-acid gas and watery vapor that may find vent through or about the stopper, and tends, moreover, to crumble and deteriorate in contact therewith, whereas by employing hydraulic cement, as proposed, the conditions are such that if the carbonic acid and watery vapor find their way past the stopper they unite chemically with the layers of cement next above said stopper and produce a close, compact, fine-grain, rock-like setting, which stoutly holds the stopper, and at the same time serves to arrest the passage of the water. The unsightly appearance of the grenade, which in older practice resulted from forcing the contained liquid through or past the filling, is no longer encountered, and as the setting of the cement progresses it more and more firmly resists the forcing of the stopper by the gas developed or in process of devolution within the grenade. The filling of hydraulic cement becomes harder upon exposure, whereas the older forms, particularly in damp situations, are apt to deteriorate and crumble away. Should this occur, it is plain that the escape of the extinguishing ingredients under pressure would permanently impair the qualities of the grenade, though this might not be obvious to those having occasion to use them.

My invention is plainly applicable to other uses where it is desired to hermetically seal liquids in vessels under pressure of free carbonic-acid gas.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the vessel having the recessed neck and containing carbonic-acid gas in solution therein, and the stopper, of a hydraulic-cement filling, substantially as described.

2. In liquid fire-extinguishing grenades having free carbonic-acid gas in solution therein, the combination, with the neck provided with offset *a*, of the tallow-saturated stopper *b* and the hydraulic-cement filling *c*, substantially as set forth.

3. The combination, with a bottle for con-

taining carbonic gas in solution, of means  
for hermetically sealing said bottle, compris-  
ing a stopper, *b*, coated with tallow or the like  
for preventing the escape of gas or liquid  
5 through its pores, and above said stopper a  
seal, *c*, of hydraulic cement, substantially as  
described.

In testimony whereof witness my hand this  
17th day of June, 1884.

JAMES H. PEIRCE.

Witnesses:

LEONHARD HOLMBOE,  
GEO. P. FISHER, Jr.