

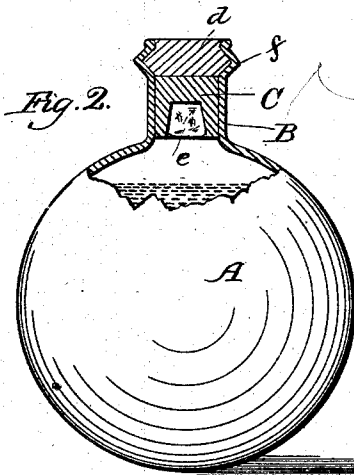
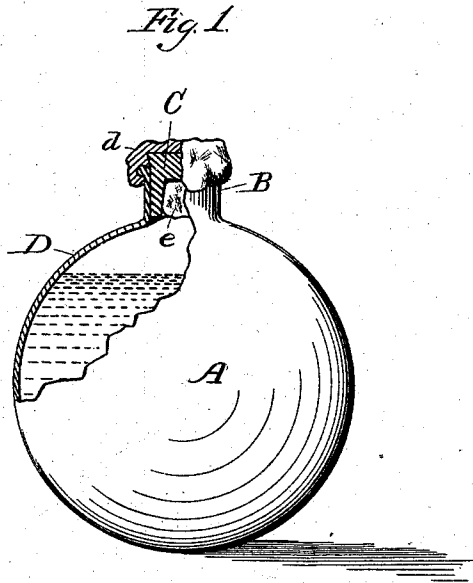
(No Model.)

J. J. HARDEN.

HAND GRENADE FOR FIRE EXTINGUISHERS.

No. 282,981.

Patented Aug. 14, 1883.



WITNESSES.
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HAND-GRENADE FOR FIRE-EXTINGUISHERS.

SPECIFICATION forming part of Letters Patent No. 282,981, dated August 14, 1883.

Application filed March 23, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. HARDEN, of the city of Chicago, county of Cook, and State of Illinois, have invented a new and useful Improvement in Hand-Grenades for Fire-Extinguishers, of which the following is a description, reference being had to the accompanying drawings, in which—

Figure 1 represents a perspective view of my improvement, with a portion broken away to show the interior thereof; and Fig. 2, a vertical sectional view of a modification of the mouth or opening, showing the manner of placing the cork therein and sealing the same.

Like letters of reference refer to like parts in the different figures.

The object of my invention is to provide a simple, cheap, and effective means for the sudden extinguishment of fires accidentally or otherwise breaking out in cars, buildings, and other places; and it consists in a receptacle made of glass or other frangible material, having an orifice with a stopple fitted therein, said stopple being provided with an interior recess communicating with the interior of said receptacle, into which recess I place a quantity of alkali or other material, which, entering into chemical combination with sulphuric acid, or other acid capable of producing when combined therewith carbonic acid or other fire-extinguishing gas, and thus charging said receptacle, after the same is closed, with said gas. To prevent said stopple from being forced out by the pressure within, as well to prevent the leaking of gas through the pores of said cork, I preferably provide said orifice with an enlargement above said stopple ending with an inwardly-inclined flange, in which enlargement I place suitable cement, wax, or metal for holding said stopple in place and preserving the contents of said receptacle intact.

In the drawings, A represents a hollow globe or bottle, preferably made of glass or other frangible material, and provided with an orifice, B, into which a stopper, C, may be inserted, and through which orifice the liquid contents may be poured. I fill the globe A nearly full of diluted acid, as shown at D in the drawings, diluted to such an extent as to produce the most ready reaction when brought in contact with such reagent as may be adopted. I prefer to dilute the acid in the proportion of

two drams, or thereabout, of concentrated sulphuric acid to one gill of water. It is well known that this liquid, if brought in contact with a reagent—such as bicarbonate of soda—will immediately and almost instantaneously produce a reaction; and the gas evolved will escape and be lost unless proper means are adopted to confine it before the reaction takes place. It is therefore essential that the globe should be corked and sealed or otherwise inclosed before the chemical substances which it contains are brought in contact.

As a reagent, I prefer carbonate of soda, preferably used in the solid form, and for the quantity of liquid mentioned about one-half of a drachm will be sufficient, as more than that would produce too great a pressure and burst the globe. These proportions of course may be varied, due regard being had to the strength of the globe. In order to accomplish this result, a cavity may be formed in the cork C, as shown at *e*, and the charge of soda inserted therein and preferably covered by a gummed label or wafer to hold it in place. The cork may then be inserted and sealed, and the globe inverted, when the acid will be brought in contact with the soda after destroying or loosening the label, and the carbonic acid thereby evolved will remain under pressure.

Under ordinary circumstances, if soft and pliable corks are used and inserted well within the mouth of the globe, the expansion at the base will usually be sufficient to retain the same securely in place, notwithstanding the internal pressure may be nearly sufficient to burst the globe. To prevent the escape of gas through the pores of the cork, and to more effectually hold the same in place, I cover the latter with a coating, *d*, of ordinary sealing-wax, cement, lead, or other soft metal. To accomplish the sealing more effectually, the mouth of the receptacle may be enlarged near the top, and a flange molded or formed thereon, and inclined inward, as shown at *f*, Fig. 2. The cork C may then be inserted until its top is below the enlargement, and the wax, cement, or other covering *d* pressed in above and allowed to solidify, when it will hold the cork firmly in place. If preferred, a metal cap may be secured over the mouth of the globe, either by being screwed upon threads, molded in the glass, or in any other suitable manner; or the

opening may be hermetically sealed by fusing the glass thereover, or it may be closed in any other convenient manner.

It is obvious that the greater the pressure of gas obtained within the globe the more efficient it will prove in extinguishing fires, as the volume of gas evolved will be in proportion to such pressure.

Any number of grenades of sizes to suit varying purposes may be charged at a time, when they are ready for immediate use, it being only necessary to throw them into the fire with sufficient force to break them, when the gas escapes and prevents further combustion.

My grenades may be kept in convenient places in houses or other buildings, or carried in conspicuous places in passenger-cars, steamboats, and other conveyances when needed. By their use it is obvious that many fires might be extinguished in their incipiency, which might get beyond control if allowed the time necessary to adjust and bring into use the more complicated and cumbrous appliances heretofore adopted.

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

1. A hand-grenade for fire-extinguishing purposes, consisting of a receptacle formed from glass or other frangible material, and having an orifice provided with a stopple fitted therein, the stopple being provided with an interior recess opening into the interior of said grenade, containing the requisite acid and alkali, forming a charge of carbonic-acid gas or other fire-extinguishing gas, substantially as and for the purpose set forth.

2. A hand-grenade for fire-extinguishing purposes, consisting of a receptacle formed from glass or other frangible material, and having an orifice provided with a stopple fitted therein, the stopple being provided with an interior recess opening into the interior of said grenade, containing the requisite acid and alkali, forming a charge of carbonic-acid gas or other fire-extinguishing gas, said orifice being also provided with an enlargement above said stopple, and ending with an inwardly-inclined flange, in the manner and for the uses and purposes set forth.

JOHN J. HARDEN.

Witnesses:

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