(No Model.)

C. T. HOLLOWAY.

HAND GRENADE FIRE EXTINGUISHER.

No. 305,190. Patented Sept. 16, 1884.

Fig. 1

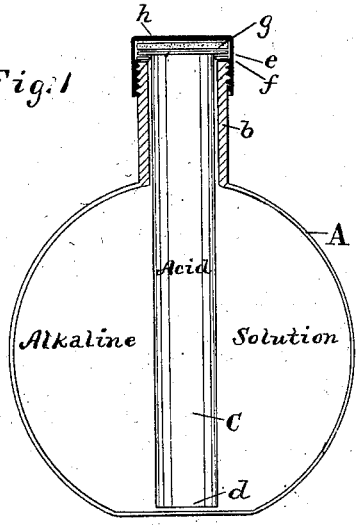


Fig. 2

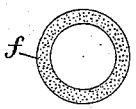


Fig. 3

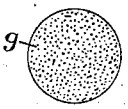


Fig. 4

Fig. 5

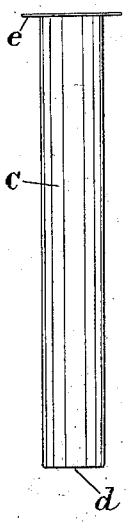


Fig. 7

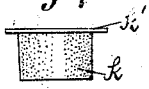
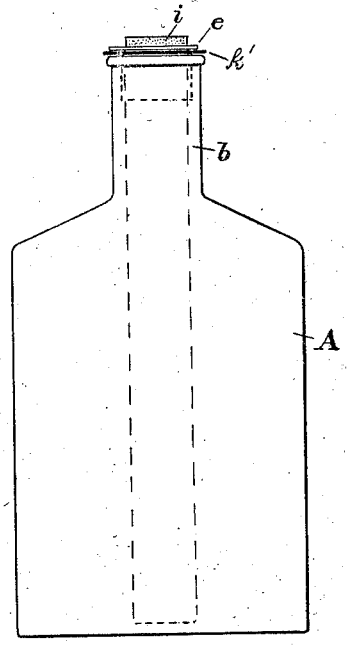


Fig. 6



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UNITED STATES PATENT OFFICE.

CHARLES T. HOLLOWAY, OF BALTIMORE, MARYLAND.

HAND-GRENADE FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 305,190, dated September 16, 1884.

Application filed July 18, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. HOLLOWAY, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Hand-Grenades for Fire-Extinguishers, of which the following is a specification.

The object of this invention is to provide a hand-grenade made of frangible material adapted to contain the requisite alkaline solution and liquid acid in separate receptacles, whereby they are kept from chemical combination until the grenade is broken. The construction of the improved hand-grenade whereby the desired result is accomplished will be described in connection with the accompanying drawings, which illustrate what is deemed the best means of carrying the invention into effect.

Figure 1 is a sectional view of my improved hand-grenade. Fig. 2 shows the washer which may be interposed between the rim of the orifice on the shell and the flange of the acid-receptacle. Fig. 3 shows a disk which may be used to close the mouth of the acid-receptacle. Fig. 4 shows a screw-cap which, when the grenade is constructed as shown in Fig. 1, is employed to retain the disk over the mouth of the acid-receptacle and to confine the said acid-receptacle and alkaline solution within the grenade-shell. Fig. 5 shows the acid-receptacle detached. Fig. 6 illustrates my hand-grenade made in a different shape, and shows a modification in the manner of securing the acid-receptacle within the grenade-shell. Fig. 7 is a detached view of the elastic packing employed for securing the acid-receptacle within the shell when the grenade is made according to the modification shown in Fig. 6.

Referring to the drawings, the letter A designates the outer shell of the hand-grenade. This should be made of glass or other suitable frangible material. It may have a nearly globular form, as shown in Fig. 1, or may have an ordinary bottle shape, as shown in Fig. 6. The shape, however, is immaterial. This outer shell has a neck, *b*, which serves as a handle by which the grenade may be grasped. The neck is provided with an orifice, through which the shell is filled with the solution. In the present instance the shell is designed to be filled with an alkaline solution, though it may be used for confining the liquid acid. A receptacle, C, for acid is also made of glass or other frangible material, and has such shape as will permit it to pass through the orifice in the neck *b*, and thereby occupy position within the outer shell. In the present instance the acid-receptacle consists of a straight slim vial closed at the lower end, *d*, and provided at the upper open end with a flange, *e*, projecting at a right angle. By this construction of the two frangible receptacles, when the one is confined within the other, as hereinafter described, the grenade stands ready charged with such components separated as are usually employed in chemical fire-extinguishers to produce, when combined, carbonic-acid gas; and when thrown into a fire with such force as to break the shell and receptacle the said components at once enter into chemical combination, producing instantly the desired fire-extinguishing gas. As the gas-evolving components are kept separate until the grenade is broken, the grenade is at no time charged with gas, and there is no pressure within it to strain the shell or prematurely burst it. The components, being kept separate, may each be of the maximum strength, (a thing impossible in hand-grenades hitherto where the components have been in contact,) whereby the limited quantity of the two solutions which a hand-grenade can contain will produce a greater volume of carbonic-acid gas, and therefore this combination will be more effective as a fire-extinguisher.

I will now proceed to describe the means for confining the solution, the acid, and the acid-receptacle within the shell.

The solution constituting one component is first put into the shell A, and the other liquid component is put into the receptacle C. The latter is then inserted into the former. A washer, *f*, of rubber, cork, or other material, is interposed between the rim of the orifice and the flange *e* of the receptacle. A disk, *g*, of suitable material is placed over the open end of the receptacle, resting on top of the flange; and, finally, a screw-cap, *h*, is placed over the disk and flange and screwed fast to the neck *b*. Thus the washer *f* confines the solution in the shell and affords an elastic connection between

the shell and the receptacle. The disk *g* closes the receptacle, while the screw-cap keeps the disk to its place and confines the receptacle within the shell. It will be seen that the acid-receptacle has such position within the outer receptacle as to be surrounded by the solution therein, and that the connection between the shell A and receptacle C is only in the neck of the former. Another means of confining the receptacle within the grenade-shell is shown in Figs. 6 and 7. Here a suitable stopper, *i*, closes the open end of the receptacle C. An elastic packing consisting of a collar or sleeve, *k*, having a flange, *k'*, is employed to give an elastic connection between the shell and receptacle, and to confine the latter within the shell. The collar part *k* of the packing surrounds the vial below its flange *e*, and is crowded into the orifice of the neck *b*, while the elastic flange part *k'* is interposed between the orifice-rim and glass flange *e*. The flange on the upper end of the receptacle C projects over the rim of the orifice and serves to aid in staying the receptacle and prevent its moving.

Having described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A hand-grenade fire-extinguisher consisting of an outer shell made of frangible material, having an orifice, a receptacle, also made of frangible material, shaped to enter said orifice, both ends being closed, and having its upper end projecting above the rim of the orifice, and an elastic packing interposed between the rim of the orifice and receptacle, as set forth.

2. A hand-grenade fire-extinguisher consisting of an outer shell made of frangible material, having an orifice, a receptacle, also made of frangible material, shaped to enter said orifice, having both ends closed, and provided at its upper end with a flange projecting over the rim of the orifice, and secured substantially as described.

3. A hand-grenade fire-extinguisher consisting of an outer shell made of frangible material, having an orifice, a receptacle, also made of frangible material, shaped to enter said orifice, and provided at its upper end with a flange projecting over the rim of the orifice, a washer interposed between the rim of the orifice and flange, and a cap covering the upper end and flange of the receptacle and secured to the outer shell, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES T. HOLLOWAY.

Witnesses:
J. EDW. MORRIS,
WM. B. NELSON.