

UNITED STATES PATENT OFFICE.

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CHARLES J. VAN VALKENBURG ASSIGNOR TO WILLIAM E. CRICHTON,
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FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 695,847, dated March 18, 1902.

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To all whom it may concern:

Be it known that we, RANDALL T. VAN VALKENBURG, residing at Newcastle, in the county of Lawrence and State of Pennsylvania, and
5 CHARLES J. VAN VALKENBURG, residing at Manchester, in the county of Washtenaw and State of Michigan, citizens of the United States, have invented a new and useful Fire-Extinguisher, of which the following is a specification.
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This invention relates to fire-extinguishers; and the object in view is to provide what might be termed a "self-acting" chemical fire-extinguisher.

15 In its preferred form the invention contemplates a frangible receptacle or vessel containing a fire-extinguishing agent which may be either of liquid or solid or granular form, and in connection with said vessel we employ
20 an explosive compound having adjacent thereto an igniter composed of material which is rendered combustible at a certain temperature, thus adapting the igniter when the temperature reaches a certain point to set off the
25 explosive compound and cause a sudden and violent breakage of the vessel, which results in scattering the fire-extinguishing agent through a considerable area, whereupon it acts to smother the flames.

30 A point to be borne in mind as defining and strongly differentiating this invention from the art is that the igniter is rendered operative by transmitted heat or, in other words, air heated to a high temperature, as opposed
35 to a fire-extinguisher requiring direct heat or contact with the igniter by a flame before it will operate. The advantage of the igniter of the present invention will be obvious, for whereas with fire-extinguishers of the character last defined a fire could exist in a room
40 or building and gain such headway as to become disastrous without effecting such extinguisher so long as the flame did not contact with it, while with the extinguisher of the present invention should the temperature of a room reach a point bearable by human beings but produced by a fire the extinguisher will be operative. It is to be understood, therefore, that the statement to the effect
50 that the igniter is rendered operative by

transmitted heat is to be defined as meaning that actual contact by the igniter of a flame is not necessary to its proper operation.

In carrying out the present invention under the preferred embodiment thereof various details of construction and arrangement of the contributory elements are resorted to, the nature of which will appear more fully in the course of the subjoined description and the novel features of which will be pointed out in the claims.
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In the accompanying drawings, Figure 1 is a central longitudinal section through a fire-extinguisher complete, constructed in accordance with the present invention. Fig. 2 is a bottom plan view of the same. Fig. 3 is a fragmentary section similar to Fig. 1, showing a modified construction of vessel or receptacle.
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Similar numerals of reference designate corresponding parts in all figures of the drawings.
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In carrying out the present invention we employ a vessel or receptacle 1, which is preferably frangible and composed of some such material as glass. It is preferred to form this vessel with a neck or mouth 2, by means of which it may be filled with the fire-extinguishing agent. The fire-extinguishing agent may consist of any well-known chemical compound for the purpose and may be either in liquid form, as indicated at 3 in Fig. 1, or it may be in dry, solid, or granular form, as shown at 4 in Fig. 3.
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The frangible vessel 1 is provided with an elevated or false bottom 5 of the same material as the body of the vessel and having its central portion offset inwardly, as illustrated in Figs. 1 and 3. Communicating centrally with the bottom 5 is a holder 6 for the explosive compound, which is preferably supplied in the form of a cartridge (indicated at 7) and provided with a fuse 8. The cartridge holder or chamber 6 forms an inward extension of the bottom 5, being preferably formed integral therewith and being thereby also frangible. As the holder 6 extends inward from the bottom 5, it will be seen that it is comprised wholly within the plane of the vessel 1 and is not subject to accidental frac-
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ture. It will further be noted that the side wall or main body of the vessel 1 is extended below the bottom 5 to form a surrounding continuous flange 9, and this flange, taken in connection with the bottom 5, forms an ignition-chamber in which the igniter is placed and sealed by means of a closure 10, which may consist of a plate corresponding in shape and size to the bottom of the vessel.

- 10 The explosive cartridge 7 may be of any desired character; but it is preferred to employ one having a projecting fuse 8, which will extend into the ignition-chamber, so as to come in contact with the igniting material. The igniter consists, preferably, of a combination of guncotton and celluloid, and the said elements are preferably arranged in layers, 11 designating the layers of guncotton, and 12 the intervening layers of celluloid. These layers are arranged so as to surround the fuse 8 and fill the ignition-chamber.

As is well known, guncotton will ignite or be rendered combustible at a temperature of 180° Fahrenheit, while celluloid will ignite at a temperature of 200° Fahrenheit. It has, however, been ascertained by actual experiment that where celluloid and guncotton are combined they will ignite at a temperature of 160° Fahrenheit, and this action and result is promoted by sprinkling sulfur in powdered form upon and into the guncotton.

Where the fire-extinguishing agent is used in dry form, as indicated in Fig. 3, the chamber or holder 6 may be dispensed with and the cartridge of explosive compound may be placed directly in the extinguishing agent and within the body of the vessel, in which case a small opening 13 will be provided in the bottom 5 to enable the fuse 8 to pass therethrough into the ignition-chamber.

In order to carry and suspend the fire-extinguisher, we employ a bail-shaped carrying-frame 14, which preferably consists of a strip or band of metal, preferably in the form of wire, as shown in Figs. 1 and 2, the central portion of said strip or wire being twisted upon itself, as at 15, and fashioned into a carrying or suspending loop 16. The opposite arms of the frame are passed through openings 17 in the opposite ends of a bar or yoke 18, which extends diametrically across the bottom of the vessel, and the terminals of the wire are then bent inward and clenched against the body of the yoke or bar 18, as shown at 19, while the extremities are swaged inward, as shown at 20, and partially embedded in the lower surface of said yoke. Prior to the operation just described, however, a stopper 21 is inserted in the neck of the vessel, and the central portion of the carrying-frame is brought to bear firmly against the stopper, so that after the terminals of the frame have been clenched upon the yoke or base-bar 18 the stopper is prevented from becoming displaced and the carrying-frame is held centrally of the vessel. The vessel may be suspended at any de-

sired place in a room or building, or it may be placed upon the floor at some point where it will be out of the way.

The operation of the fire-extinguisher is as follows: As soon as the fire raises the temperature of the room or building in which the extinguisher is contained to a certain point the igniter acts spontaneously and sets fire to the fuse 8. This in turn explodes the compound or cartridge and causes a sudden and violent breakage of the frangible vessel, with the result that the fire-extinguishing agent or compound is scattered throughout a considerable area. By providing the vessel with a frangible bottom as well as main body portion the vessel is completely demolished, and in the construction in which the cartridge chamber or holder 6 is employed said holder is at the same time demolished. Prior to the destruction of the vessel, however, the several agents or compounds contained therein are held separated and prevented from commingling. It will thus be seen that the fire-extinguisher hereinabove described is entirely automatic in action and does not require the presence of a person to remove the stopper or to break the vessel by striking or throwing the same violently against a wall, floor, or other surface. Any suitable explosive cartridge or torpedo may be employed for obtaining the desired effect and combined with the other elements named.

In addition to breaking the vessel and scattering the contents thereof the cartridge or explosive compound also produces a sharp loud report, and thus gives an audible alarm or signal to the occupants of the building.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described fire-extinguisher will be readily apparent to those skilled in the art without further description, and it will be understood that various changes in the form, proportion, and minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. A fire-extinguisher comprising a frangible vessel containing a fire-extinguishing agent, a frangible holder for an explosive cartridge, an ignition-chamber separated from the main body of the vessel by a frangible wall, and a closure for the ignition-chamber.

2. A fire-extinguisher comprising a frangible vessel containing a fire-extinguishing agent, an explosive cartridge having a fuse, and an igniter, the fuse being bedded in the igniter, and the explosive agent and igniter being separated, all the agents being wholly confined within the receptacle.

3. A frangible vessel for the purpose specified, comprising a main body portion, a bottom formed integral therewith and set inward to present a continuous flange which

extends below the bottom, an inwardly-extending chamber arranged centrally within the vessel, and open at one end and communicating with the space beneath the bottom, and a closure for the said space.

4. A fire-extinguisher comprising a frangible receptacle having a frangible partition extending from one side to the other thereof, and dividing the receptacle into opposite compartments, a fire-extinguishing agent in one compartment, an igniter in the other compartment, and an explosive agent having a fuse embedded in the igniter, all of these elements being wholly contained within the receptacle.

5. A fire-extinguisher comprising a vessel inclosing and wholly confining a fire-extinguishing agent, an explosive cartridge having a fuse, and an igniter in contact with the fuse, the igniter and fire-extinguishing agent being separated by a frangible wall.

6. A fire-extinguisher comprising a frangible vessel containing a fire-extinguishing agent, a bottom integral with the vessel, and a cylindrical open-ended cartridge-holder wholly contained within the vessel and forming an integral part of the bottom.

7. A fire-extinguisher comprising a frangible vessel containing a fire-extinguishing agent, a compartment separated from the fire-extinguishing agent by a frangible wall and containing an igniting agent, a chamber carried by the said wall and housing an explosive agent having its fuse bedded in the igniting agent, and a closure for the said compartment.

8. A fire-extinguisher comprising a frangible vessel containing a fire-extinguishing agent, a compartment separated from the fire-extinguishing agent by a frangible wall and containing an igniting agent, an open-bottomed chamber carried by the said wall and housing an explosive agent having its fuse bedded in the igniting agent, and a closure for the said compartment.

9. The combination with a vessel, and a supporting base or yoke, of a carrying-frame composed of a metal strip, such as wire, the terminal portions thereof being bent to form hooks which engage the base or yoke, and the

central portion thereof being twisted upon itself above the vessel and formed into a carrying or suspending loop.

10. The combination with a vessel and a base or yoke upon which the vessel is adapted to rest, of a carrying-frame composed of wire and having its central portion bent to form a carrying or suspending loop, the terminal portions being inserted through the yoke and clenched against the lower side thereof.

11. The combination with a bottle-shaped vessel, and a stopper therefor, of a base or yoke extending diametrically across the bottom of the vessel, and a carrying-frame composed of wire and having its terminal portions bent inwardly and clenched against the yoke, the central portion of said frame being twisted upon itself and brought to bear against the stopper and also fashioned into a carrying or suspending loop.

12. A fire-extinguisher comprising a frangible vessel having a filling-opening, a reentrant end, the projected side walls of the vessel forming an ignition-chamber, an igniter within the chamber, a closure therefor, an explosive agent having a fuse in communication with the igniter, and a fire-extinguishing agent within the vessel.

13. A fire-extinguisher comprising a frangible vessel having a filling-opening, a reentrant frangible bottom, the projected bottom walls forming an ignition-chamber, an igniter therein, a closure for said chamber, a fire-extinguishing agent within the vessel, and an explosive within the vessel and in communication with the igniter.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

RANDALL T. VAN VALKENBURG.
CHARLES J. VAN VALKENBURG.

Witnesses to signature of R. T. Van Valkenburg:

H. K. GREGORY,
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Witnesses to signature of C. J. Van Valkenburg:

A. J. WATERS,
C. S. NOBLES.