June 26, 1962 S. M. PAMBELLO 3,040,815

FIRE EXTINGUISHING APPARATUS

Filed June 3, 1960

Fig. 1

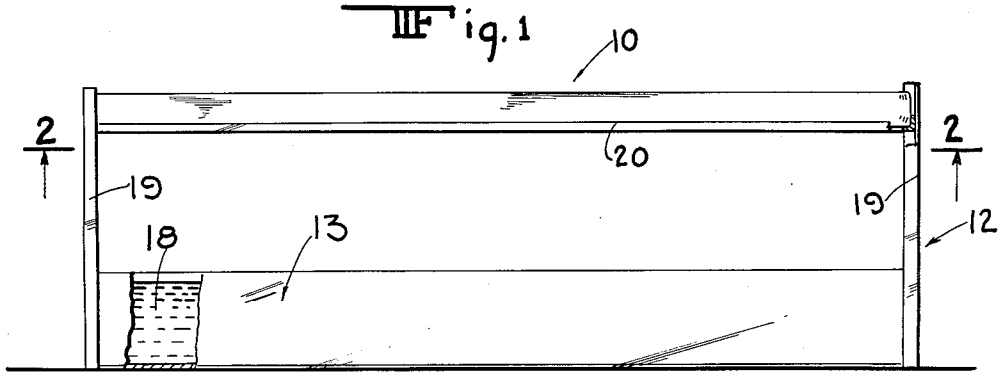
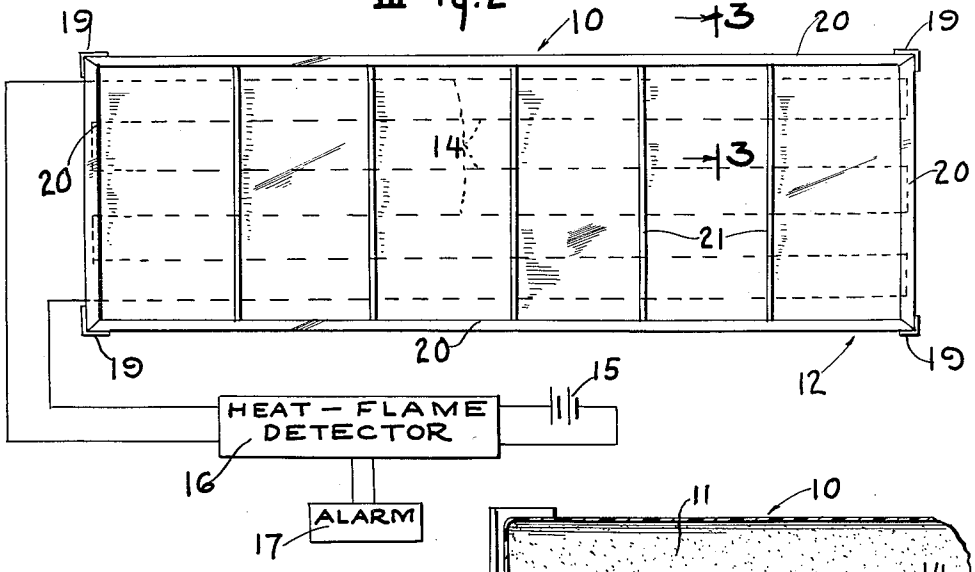


Fig. 2



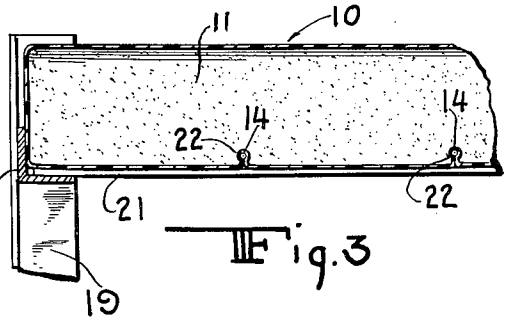


Fig. 3

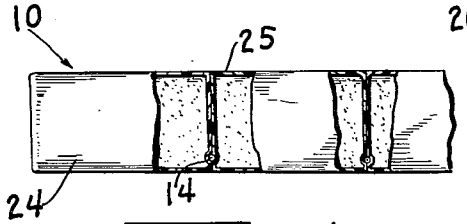


Fig. 4

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United States Patent Office 3,040,815 Patented June 26, 1962

3,040,815

FIRE EXTINGUISHING APPARATUS

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Filed June 3, 1960, Ser. No. 33,856
3 Claims. (Cl. 169—1)

The present invention relates to fire extinguishing, and, more particularly, to apparatus for automatically releasing and directing a charge of fire extinguishing agent onto a fire.

Heretofore, fire extinguishing apparatus has been proposed which included a frangible container for the fire extinguishing agent and means for rupturing the container to release the fire extinguishing agent therefrom and allow the agent to fall onto a fire. Such apparatus had the disadvantage that some mechanical element was required to rupture or to initiate means for rupturing the container which element, if not operated frequently, would corrode, or rust fast to other elements and would not function at all or improperly when required, whereby the fire extinguishing agent was not released at all or too late when a fire occurred.

Another disadvantage of such apparatus was that the release of the fire extinguishing agent was only at the bottom of the container which was of a shape so that wide distribution of the fire extinguishing agent was not accomplished.

Accordingly, an object of the present invention is to provide fire extinguishing apparatus of the type indicated herein which is not subject to the foregoing difficulties and disadvantages.

Another object is to provide such apparatus which can be constructed in any desired shape or form and can be arranged to release the fire extinguishing agent at any desired portions thereof to accomplish wide distribution of the agent.

A further object is to provide such apparatus which is simple, practical and economical in construction and is reliable and effective in operation.

A still further object is to provide such apparatus which is readily installed into a system for protecting an area of any desired dimension where a fire is likely to occur.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

In accordance with the present invention, the foregoing objects are generally accomplished by providing fire extinguishing apparatus comprising a container constructed of heat meltable flexible plastic material or the like having a fire extinguishing agent sealed therein, and an electrically conductive heating element adjacent the wall of the container adapted to generate sufficient heat to melt portions of the container to release the agent therefrom.

A preferred embodiment of the invention has been chosen for purposes of illustration and description, and is shown in the accompanying drawing, forming a part of the specification, wherein:

FIG. 1 is an elevational view of apparatus in accordance with the present invention installed above a fire hazard.

FIG. 2 is a bottom plan view taken along the line 2—2 on FIG. 1.

FIG. 3 is an enlarged fragmentary sectional view taken along the line 3—3 on FIG. 2.

FIG. 4 is a sectional view illustraitng a modification of the invention.

Referring to the drawing in detail, there is shown fire extinguishing apparatus which generally comprises a container 10 such as a plastic bag formed of sheets of polyethylene, fire extinguishing agent 11 (FIG. 3) sealed in the bag, suitable structure 12 for supporting the bag above a fire hazard 13, an electrical heating element 14 adjacent the wall of the container, means including a source of electrical energy 15 for the heating element, control means 16 for rendering the source of energy effective in response to a fire, and an alarm 17 adapted to be actuated by the control means.

While the bag 10 may be in any desired shape or form with the heating element at the bottom, top and/or sides thereof and arranged in any desired pattern, the apparatus is illustrated herein, by way of example, for use in connection with a system for protecting a dip tank 18 or the like which contains highly flammable material and thus is a fire hazard. In such a system the bag preferably is generally flat and rectangular, and the heating element is at the bottom thereof and is arranged so that the fire extinguishing agent can fall across the entire area of the tank. Where an extremely large area is to be protected a plurality of bag and heating element units may be employed which may be actuated simultaneously or selectively depending on the nature of the hazard to be protected.

In the illustrative embodiment, a frame for mounting the bag or bags is shown which comprises four upright angle members 19 at the corners of the tank, and horizontal angle members 20 each connected between a pair of upright members 19 and so arranged that one flange thereof provides a shelf for supporting the bottom of the bag adjacent the edges thereof. In the event additional support is required for the bag, a plurality of narrow rigid strips 21 extending crosswise between a pair of opposite members 20 may be provided (FIG. 2).

The fire extinguishing agent may be dry power or liquid by which polyethylene or other suitable material is not affected.

The electrical heating element 14 is a length of high resistance wire or tape which is effective to generate sufficient heat to melt the bag. The element may be constructed of a material which consumes itself after melting portions of the bag or switch means may be provided in the control means 16 for deenergizing the element immediately after it has functioned so that it is not a fire hazard in itself.

The heating element 14 may be arranged in any desired path depending on the required distribution pattern and may be adhesively or heat sealed to the bag or embedded therein. As shown in FIG. 3, the bottom of the bag has pleats or folds 22 extending lengthwise and being heat sealed to enclose portions of the heating element, and the heating element is arranged in zig-zag fashion. This arrangement strengthens the bottom of the bag in the lengthwise direction in particular.

In FIG. 4, a bag 10 is shown which is constructed of a plurality of compartments or sections 24 each having a fire extinguishing agent sealed therein and each being heat sealed to the adjoining wall 25 of an adjacent section with a section of the heating wire 14 sealed therebetween near the lower end of the bag. Alternatively, a plurality of independent bags could be arranged side by side each having a heating wire for opening the same.

The detector 16 may be of any conventional heat and/or flame responsive type, preferably with rate-of-rise integration to prevent false operation due to a wide change in ambient temperature. If desired, the detector may have a cut-off switch which deenergizes the wire 14 after it has been heated to melt the bag portions and release the fire extinguishing agent, so that the wire does not glow and become a fire hazard.

The alarm may be a bell located near the hazard or at

some remote location or any suitable alarm means may be employed.

From the foregoing description, it will be seen that the present invention provides improved fire extinguishing apparatus of the type which is installed near the hazard and releases the fire extinguishing agent automatically onto the fire in an effective and reliable manner.

As various changes may be made in the form, construction and arrangement of the parts herein, without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in any limiting sense.

I claim:

1. Fire extinguishing apparatus comprising a generally flat rectangular bag constructed of heat meltable synthetic plastic material having a fire extinguishing material sealed therein and having a plurality of spaced apart pleats in the bottom thereof extending substantially the entire length of said bag, and an electrically conductive wire heating element having a plurality of sections each retained in one of said pleats and having portions electrically interconnecting the ends of said sections to simultaneously effect heating of all of said sections and said portions when said wire element is energized and thereby release the entire bottom of said bag in a plurality of sections.

2. Apparatus according to claim 1, wherein said wire element sections and portions are arranged in a zig-zag path.

3. Apparatus according to claim 1, including means for supporting said bag above an area to be protected against fire, means for supplying electrical energy to said wire element, and means responsive to a fire within the area for actuating said last mentioned means whereby all of the bottom sections of said bag are released and the fire extinguishing material falls on the entire area.

References Cited in the file of this patent

UNITED STATES PATENTS

1,169,210	Walsh	Jan. 25, 1916
1,832,056	Spencer	Nov. 17, 1931
1,921,452	Bronander	Aug. 8, 1933
2,504,308	Donkle	Apr. 18, 1950
2,539,513	Jenett	Jan. 30, 1951
2,550,836	MacHenry	May 1, 1951