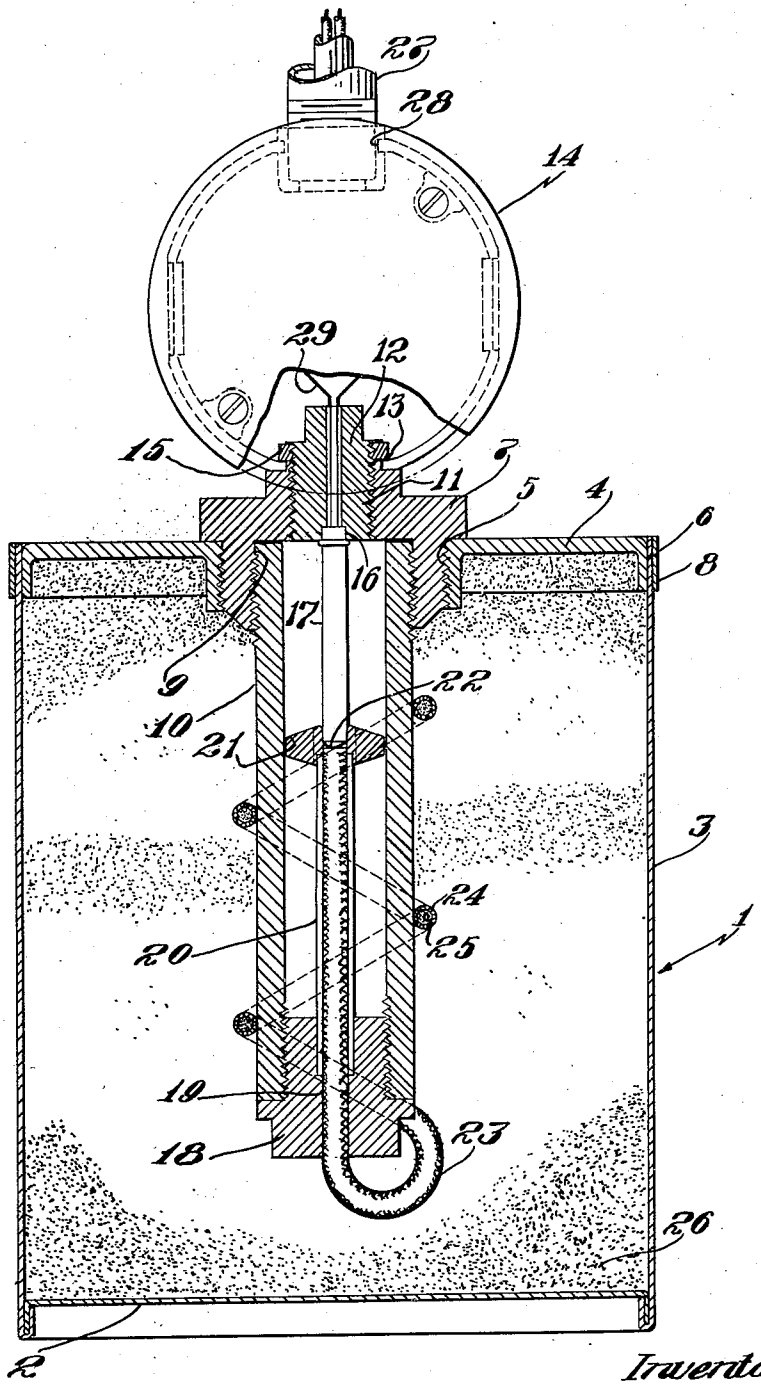
Oct. 5, 1948. N. J. THOMPSON 2,450,569

FIRE EXTINGUISHER

Filed June 28, 1946



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Patented Oct. 5, 1948 2,450,569

UNITED STATES PATENT OFFICE

2,450,569

FIRE EXTINGUISHER

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Application June 28, 1946, Serial No. 680,261

2 Claims. (Cl. 169—28)

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This invention relates to fire extinguishers and more particularly to a bomb-type extinguisher adapted to disperse and distribute a fire-extinguishing agent for extinguishing or preventing the development and propagation of a fire.

The primary object of my invention is to provide a fire extinguisher of the character described which will cause a more effective and efficient explosive dispersion and distribution of a fire-extinguishing agent than has heretofore been accomplished. Another object is to provide a fire extinguisher of the type described which is thoroughly safe in installation and use, which will result in no personal injury and which may be installed in ducts, vents or other small chambers without danger of structural damage thereto. A further object of my invention is to provide an apparatus of the character described which is thoroughly reliable in operation over long periods of time and which is not affected by normal variations in atmospheric humidity or normal vibrations customarily experienced in factories, shops, or conveyances. Still another object is to provide a fire extinguisher of the character described which is suitable for effective application in locations entirely inaccessible for manual application of ordinary extinguishing agents as, for example, in an enclosed pneumatic conveying system, to provide a non-combustible condition in advance of a fire in swiftly moving airborne material. Another object is to provide an apparatus which is adapted to utilize any effective fire-extinguishing agent whether in powder or liquid form and which may be utilized to extinguish fires in all types of combustible materials including inflammable liquids. Other objects of my invention are to provide an extinguisher of the type described which is economical to manufacture and use, simple to manufacture, install and maintain and readily adaptable to bombs which may be of odd or peculiar shape because of limited or restricted space requirements.

In one aspect my invention involves a fire extinguisher comprising a frangible casing, a fire-extinguishing agent within the casing, a flexible explosive cord looped back and forth upon itself within the body of the agent and means within the casing for detonating the explosive cord. In a preferred aspect the cord consists of a high velocity, sharp acting explosive adapted to create a high interior pressure of instantaneous duration within the casing, and the cord being free of non-combustible material. In another aspect the fire extinguisher comprises a frangible container, a fire-extinguishing agent within the container,

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and an explosive resistant casing formed with an opening and disposed within the body of the agent and a flexible explosive cord wound exteriorly about and supported by the casing and comprising an extension through the opening into said casing and means within the casing for detonating the explosive cord. In a preferred aspect the fire-extinguishing agent is in powder form and the explosive cord may either be looped back and forth upon itself and embedded in the body of the agent or the explosive resistant casing supporting the cord may be embedded in the body of the agent. The detonating means is a detonating charge within the casing and in the preferred aspect is responsive to the passage of electric current for detonating the explosive cord. Further, in the preferred aspect, the detonating means is a detonator within the explosive-resistant casing contiguous to the extension of the flexible explosive cord and responsive to the passage of electric current for detonating the cord, the fragments of the detonator being retained within the casing on detonation.

For the purpose of illustration a typical embodiment of the invention is shown in the accompanying drawing in which the single figure is a vertical section.

Referring to the drawings, the numeral 1 represents a cylindrical container having a bottom 2 and side wall 3 of frangible material, preferably of moisture-proof paper. An annular container top 4 of a strong explosive-resistant material, as for example steel, has an inner flange 5 and an outer flange 6, the inner flange being threaded to receive a bushing 7. The top portion of the side wall 3 is secured to the container top 4 by suitable means as a retaining ring 8 wedging said top portion of the side wall against the outer flange 6 of the container top.

The bushing 7 is formed with a threaded axial bore 9 which is enlarged at its inner end to threadably receive one end of a tubular member 10 of explosive-resistant material, as for example steel, the tubular member extending inwardly and centrally into the container 1, as shown in the drawing. A plug 11 is threaded into the outer end of the bore of the bushing 7 and is provided with an externally threaded extension 12 projecting through an opening 13 in a standard junction box 14, the junction box being removably secured to the extension 12 by a lock nut 15.

The plug 11 is formed with an axial bore 16 which is enlarged at its inner end to receive the base of a detonator 17, the detonator preferably consisting of a No. 6 electrically actuated blasting

cap and extending axially into the tubular casing 10. A plug 18 is threaded into the opposite end of the tubular casing 10 and is formed with an axial bore 19 which is enlarged at its inner end to receive and support one end of a tube member 20. The tube member 20 extends axially into the tubular casing 10, the opposite end of said tubular member entering one end of the bore of a spider 21 and providing a support for said spider within the casing 10. The opposite end of the bore of the spider 21 receives, with a pressed fit, the open end 22 of the detonator 17.

A flexible explosive cord 23, having one end contiguous with the open end 22 of the detonator 17, extends through the tube member 20 where it is snugly held in fixed position, and thence extends out of tubular casing 10 through the plug 18 and thence winds about the outside of the casing 10, as shown in the drawing.

The flexible explosive cord 23 preferably consists of a flexible moisture-proof casing 24 free of any non-combustible material, the interior of the casing being filled with a rapid-burning high-velocity, sharp-actuating type of explosive 25 adapted to create a high interior pressure of instantaneous duration within the container 1. An example of the type of explosive possessing the characteristics disclosed is penta-erithrytol tetranitrate.

The interior of the casing 1 exclusive of the space occupied by the tubular casing 10 and the explosive cord 23 disposed outside of said casing is filled with any well-known effective fire extinguishing agent 26 preferably in powder form as for example Dugas the tubular casing 10 and the explosive cord disposed outside of said casing being embedded within said agent.

One end of an electric conduit 27 is threadably received through an opening 28 in the junction box 14, and wires 29, connected at one end to a source of electricity (not shown), extend through said conduit into the junction box and thence through the apertured plug 11 where they are joined to the base of the detonator 17. It is to be understood that the electric conduit 27 is of sufficient strength to support the weight of the assembled apparatus when filled with a fire extinguishing agent and, therefore, provides a means for mounting the apparatus on any convenient surface, as for example a ceiling by securing the conduit to said surface in any well-known manner.

The fire extinguisher above described may be automatically actuated by any well-known heat-actuated electrical switch located in proximity to a firing area or may be manually and remotely actuated at will by a push button switch or the like, but, in either case, energizing of the wires leading to the detonator 17 will cause the detonator to explode into the contiguous end of the flexible cord 23 which in turn will instantaneously explode the entire flexible cord 23. The high interior pressure of instantaneous duration created by the explosion of the cord within the container 1 and outside the casing 10 will be sufficient to force the fire extinguishing agent outwardly against the bottom and side walls of the container causing them to burst, thereby permitting the agent to be dispersed and distributed over the fire or threatened fire area to extinguish or prevent the spread or propagation of a fire.

It will be noted that because of the explosive-resistant character of the tubular casing 10, the shrapnel from the detonator is retained within said casing and because the flexible cord outside the casing is free of non-combustible material, no damaging or injurious fragments are dispersed with the fire extinguishing agent. Further it is evident that because of the rapid burning nature of the explosive charge used, the high interior pressure essential to effective and efficient distribution of the fire extinguishing agent is provided but, because of the instantaneous duration of the explosive blast, no structural damage or injury results to the material surrounding the apparatus.

It is further evident from the above that the device is suitable for distribution of any effective fire extinguishing agent whether in powder or liquid form and may be utilized wherever a similar type of dispersion or distribution of a liquid or powder is required. It is to be noted also that the flexible explosive cord used need not necessarily be supported or wound about the tubular casing, but may be distributed throughout the body of the agent wherever it is most effective, depending upon the shape of the frangible container, as for example along the longitudinal axis of an elongate container.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. A fire extinguisher comprising a frangible container, a fire-extinguishing agent within the container, an explosive resistant casing formed with an opening and disposed within the agent, a flexible explosive cord wound exteriorly about and supported by the casing and comprising an extension through the opening into said casing, a detonator within the casing and contigous to said extension responsive to the passage of electric current for detonating the cord, the fragments of the detonator being retained within the casing on detonation.

2. A fire extinguisher comprising a frangible container, a fire-extinguishing agent in powder form within the container, an explosive resistant casing formed with an opening and embedded within the agent, a flexible cord wound exteriorly about and supported by the casing and comprising an extension through the opening into the casing, the cord consisting of a high velocity, sharp acting explosive adapted to create a high interior pressure of instantaneous duration within the container and the cord being free of non-combustible material, and a detonator within the casing and contiguous to said extension responsive to the passage of electric current for detonating the cord, the fragments of the detonator being retained within the casing on detonation.

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