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FIRE EXTINGUISHER

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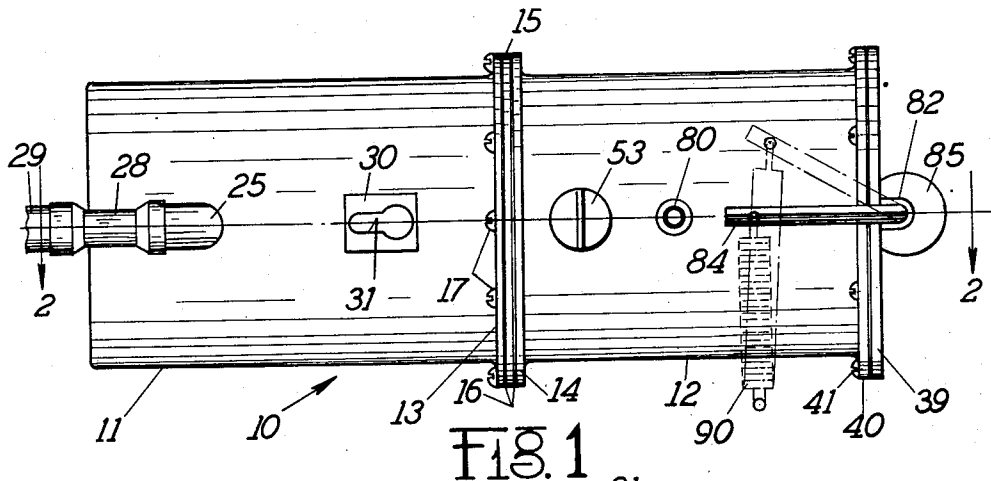


FIG. 1

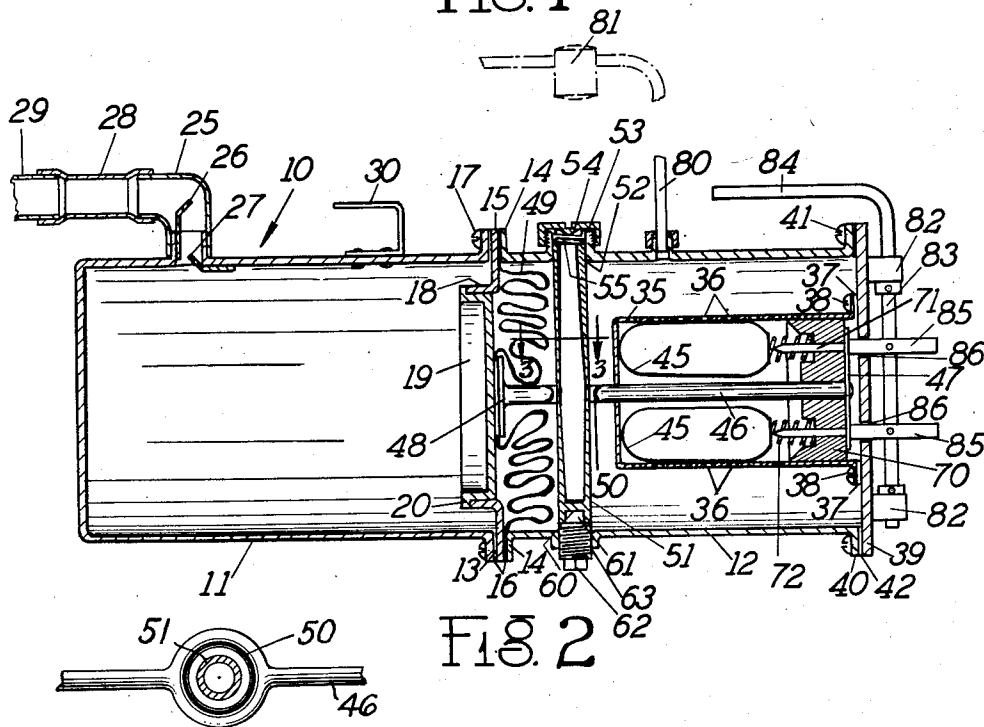


FIG. 2

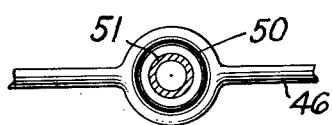


FIG. 3

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## UNITED STATES PATENT OFFICE

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## FIRE EXTINGUISHER

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3 Claims. (Cl. 169—32)

This invention relates to fire extinguishers adapted for either manual or automatic use, the latter upon a predetermined increase in temperature.

A primary object of this invention is the provision of an improved fire extinguisher which may be readily attached to a supporting surface and removed therefrom for manual operation without adjustment thereof and will operate upon the achievement of a predetermined temperature in a locality either adjacent thereto or remote therefrom.

An additional object is the provision of a fire extinguisher particularly adapted for use with a vehicle such as an automobile or a truck which may be mounted in a desired location in the body of the vehicle or under the hood and which upon the achievement of a predetermined temperature indicating a fire or other dangerous heated condition operates to eject the contents thereof and extinguish the fire.

An additional object is the provision of such an extinguisher which is at the same time readily detachable for manual use should the occasion arise.

A still further object is the provision of a fire extinguisher for use with a vehicle such as an automobile or airplane which will when caused to operate, either automatically as by means of a thermostat or manually, simultaneously serve to disconnect and cut off the gasoline supply line or which may cut off the ignition or perform other analogous safety function.

Other objects will in part be obvious and in part pointed out hereinafter.

The invention accordingly consists in the combinations, elements, arrangement of parts and features of construction all as will be more fully pointed out hereinafter and disclosed in the accompanying drawing wherein:

Figure 1 is a plan view of one form of fire extinguisher embodying this inventive concept,

Figure 2 is a sectional view taken along the line 2—2 of Figure 1 as viewed from the top, and

Figure 3 is a sectional view taken along the line 3—3 of Figure 2.

In the form disclosed herein the fire extinguisher is comprised of a casing generally indicated at 10 comprised of two hollow members 11 and 12 flanged as at 13 and 14 respectively.

A plate 15 is positioned between flanges 13 and 14 and suitable sealing gaskets 16 positioned between plate 15 and flanges 13 and 14. The flanges and plates are provided with holes at suitable spaced intervals and secured in related assembly as by a plurality of screws 17. Plate 15 is provided with a flange 18 turned in the direction of member 11 surrounding an aperture cen-

trally disposed with respect thereto. In the aperture so formed is fitted a sealing cap 19 provided with an overlapping flange 20 and held in position with relation to flange 18 by a relatively tight friction fit, the arrangement being such that the exertion of pressure thereon from the direction of member 12 will force sealing cap 19 inwardly into the interior of member 11.

Member 11 is substantially filled with a fire extinguishing fluid of any desired composition which on subjection to pressure, in a manner to be described hereinafter, is forced outwardly therefrom through an elbow 25 or other suitable exit, which may or may not be provided with directing baffles 26 and 27 in order to concentrate the flow of the fluid. A flexible coupling 28 extends from elbow 25 to a tube 29 which leads to any desired locality where the presence of an extinguishing liquid is desired. Flexible coupling 28 is provided in order that the device may be readily disconnected from tube 29 when it is desired to use the same as a manual extinguisher.

One or more brackets 30 may be provided for supporting the extinguisher in any desired locality, each of brackets 30 being provided with a key-hole shaped aperture 31 which may be slipped over any suitable headed support and readily disconnected therefrom in a known manner.

Having reference now to member 12 it should be pointed out there is positioned interiorly thereof a chamber 35 provided, about its entire periphery, with a plurality of perforations 36 and secured as by means of a flange 37 and screws 38 to an end plate 39 which in turn is secured to a flange 40 surrounding an open end of member 12 as by screws 41. A suitable sealing gasket 42 may be interposed between flange 40 and end plate 39. Chamber 35 contains a plurality of sealed cylinders 45 containing a gas of any suitable type sealed under pressure in a known manner and adapted to be perforated at their ends in a manner to be described hereinafter.

A rod 46 extends from a plate 47 positioned adjacent end plate 39 and terminates in a head 48 adjacent a flexible rubber diaphragm 49, a portion of which presses against sealing cap 19. Flexible diaphragm 49 may be secured to the walls of extinguisher 10 in any desired manner as by interposing the peripheral rim thereof between a sealing gasket 16 and flange 14 and forms a substantially air tight seal between the chamber in the interior of member 11 and interior of member 12.

Rod 46 is provided with a circular aperture 50 positioned to surround a thin walled glass tube 51 adapted to be inserted in the extinguisher through an aperture 52 in the top thereof which aperture is provided with a threaded cap 53 hav-

ing a projection 54 on the inner side thereof adapted to hold in position a coil spring 55. The lower end of tube 50 is provided with a cup 60 positioned for engagement with an angled projection 61 carried by a threaded plug 62 which passes through an aperture 63 in the lower portion of member 12 in alignment with aperture 52. Thus it will be seen that tube 50 which may contain any suitable fluid ingredient, suitable for the purpose desired, is held firmly but, through the pressure of spring 55 resiliently in place and centrally in line with aperture 50, whereupon movement of rod 46 will readily rupture the same and cause its contents to be disseminated into the chamber in the interior of member 12.

Positioned adjacent plate 47 is a plunger or piston 70 adapted to fit slidably within chamber 35 and through which are passed a number of pointed pins 71 corresponding in number to the number of cylinders 45 and positioned for perforation thereof when moved toward the same. A plurality of coil springs 72 are positioned adjacent each pin 71 and bias the same in a direction away from cylinders 45. Thus it will be seen that upon inward movement of plate 47 in a manner to be described hereinafter pins 71 penetrate cylinders 45 simultaneously rod 46 ruptures glass vial 51 and pushes sealing cap 19 into the interior of chamber 11.

The contents of vial 51 and cylinders 45 are of a type which may be comprised of any suitable ingredient to generate pressure upon their mixture and upon the escape of the fluid in cylinder 45 through apertures 37 and its subsequent mixture with the fluid contained in tube 51 a highly expansive gas is generated which forces rubber diaphragm 49 through aperture 18 until the same completely fills the interior of member 11 and in consequence ejects all the liquid therefrom through elbow 25 to any desired source.

A tube 80 extends outwardly from member 12 and may lead to any suitable pressure operated valve or switch 81 to cut off the gas supply line and/or disconnect the ignition.

Having reference now to the means of forcing plate 47 inwardly, there are secured to end plate 39 a pair of brackets 85 through which extends a rod 83 provided with a curved operating portion 84. Operating rod 83 is provided with a pair of cams 85 each of which is positioned to register with a slot 86 in end plate 39 and bear against plate 47. Thus upon the turning of portion 84, cams 85 force plate 47 inwardly to puncture cylinders 45. Upon the release of such pressure springs 72 force pins 71 from the apertures so formed and the operation previously discussed is effected. Operating lever 84 may be connected in any desired manner to a suitable thermostatic element 90 positioned adjacent any spot wherein an increase in temperature may indicate the presence of a fire.

In order to refill the extinguisher it is only necessary to remove screws 17 and 41 and remove cap 53, reposition sealing gasket 19, rearrange diaphragm 49, replace tube 51, with an additional fluid filled tube, substitute new cylinders for cylinders 45 and reassemble the device which is again readily available for automatic or manual use.

Now from the foregoing it will be seen that there is herein provided a fire extinguisher which

accomplishes all the objects of this invention and others including many advantages of great practical utility.

As many embodiments may be made of the inventive concept herein shown and described and as many modifications may be made in the embodiment hereinbefore set forth, it is to be understood that all matter hereinbefore described or shown in the accompanying drawing is to be interpreted merely as illustrative and not in a limiting sense.

I claim as my invention:

1. In a fire extinguisher having a casing, a movable partition forming a plurality of chambers within said casing, one of said chambers having a fluid outlet and containing a fire extinguishing substance, pressure forming means in another of said chambers comprising a plurality of separate frangible containers containing dissimilar substances which when brought together form an increased gaseous pressure in said chamber, a movable operating member having a plurality of projecting members connected to move therewith and arranged to rupture said containers and to concomitantly and preliminarily move said partition into said first chamber containing said fire extinguishing substance, said partition being further movable into said first chamber in response to an increase in said pressure.

2. In a fire extinguisher having a casing, a movable partition forming a plurality of chambers within said casing, a portion of said partition comprising a flexible and extensible member adapted to be moved under pressure into one of said chambers, said chamber being provided with an outlet and containing a fire extinguishing substance, pressure forming means in another of said chambers comprising a plurality of separate frangible containers containing dissimilar substances which when brought together form an increased gaseous pressure in said chamber, a movable operating member having a plurality of projecting members connected to move therewith and arranged to rupture said containers and to concomitantly and preliminarily move said partition into said first chamber containing said fire extinguishing substance, said partition being further movable into said first chamber in response to an increase in said pressure.

3. In a fire extinguisher having a casing, a partition dividing the interior of said casing into a pressure chamber and a fluid containing chamber provided with an outlet, said partition including a ring fixed to said casing, a sealing member movably mounted with respect to said ring but adapted to closely engage it when in seated position, and a flexible and extensible member secured adjacent its outer periphery in sealed engagement with said casing and secured at its extensible end to said sealing member, a plurality of sealed frangible containers within said pressure chamber and containing chemicals which when brought together combine to form a substantial gaseous pressure in said chamber, and actuating members positioned and so related as to concomitantly rupture said containers and to unseat said sealing member with relation to said ring, whereby upon said increased pressure said sealing member and said extensible member will be moved into said fluid chamber to cause the ejection of said fluid.

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