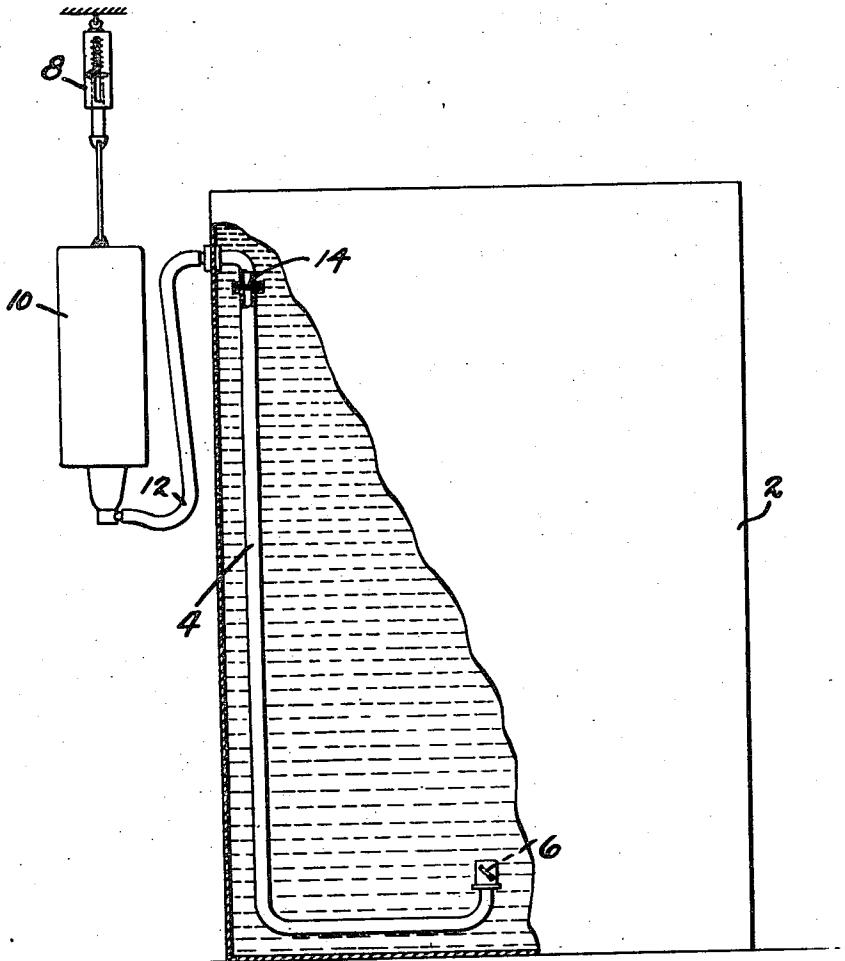


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APPARATUS FOR PROTECTING INFLAMMABLE
LIQUIDS AGAINST FIRE
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APPARATUS FOR PROTECTING INFLAMMABLE LIQUIDS AGAINST FIRE

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1 Claim. (Cl. 169-4)

1 This invention relates to an improvement in fire preventing and extinguishing apparatus, and has for one of its objects to provide a very simple and relatively inexpensive equipment, automatic in operation, adapted to prevent fire or extinguish fire in closed containers of inflammable liquids such as oil.

More specifically my invention provides an attachment adapted to be installed upon both existing and new equipment, and capable of automatically discharging a non-inflammable material into the liquid to be protected against fire, from beneath the surface of the same. This non-inflammable material is very miscible with the liquid to be protected and inasmuch as it is stored under pressure, it will, upon release, quickly permeate the entire body of the liquid and blanket any fire which may be present at the surface thereof.

The accompanying drawing illustrates an embodiment of my invention in part sectional elevation.

Referring to the drawing in detail: 2 designates a tank containing a liquid which it is desired to protect against fire. This tank may be an electrical transformer tank, for instance, in which event the liquid to be protected will be transformer oil, which is highly inflammable.

It is to be understood, however, that my invention is equally applicable to other types of equipment and other liquids, as will be explained hereinafter.

4 designates a tube within the tank 2. This tube is preferably installed fairly close to one side-wall of the tank, and extends downwardly to a point adjacent the bottom of the tank, and is there bent outwardly away from the tank wall so that its discharge end is approximately in the center line of the tank. This end of the tube is equipped with check valve 6, which opens outwardly of the tube.

At the exterior of the tank 2 adjacent the top thereof, and suspended from spring balance or other type of weight indicator 8 is an inverted bottle 10 of dichlorodifluoromethane (CCl_2F_2). Flexing tubing 12 is attached to the lower end, the discharge end of this bottle, and is coupled to the upper end of tube 4.

Adjacent its upper end, at the point of maximum temperature in the event of a fire within the tank 2, the tube 4 is provided with a temperature controlled stop or dam, for preventing, under normal conditions, the passage of the dichlorodifluoromethane along the tube. This temperature controlled device may be a standard

2 sprinkler head, a diaphragm such as illustrated, or other suitable device which will function to release the dichlorodifluoromethane in the event of a fire. For purposes of illustration I have shown a diaphragm, composed of an alloy of lead, cadmium and bismuth. This diaphragm melts at about 285° F. which makes it suitable as a temperature controlled device for use in electric transformers.

10 The dichlorodifluoromethane is under a pressure of the order of 70 lbs. per square inch, and under this pressure and at about 70° F. it is liquid. This material is very highly miscible in the transformer oil.

15 It will be evident from all of the foregoing that upon a rise in temperature of the oil in the tank to the flash-point of the oil, the temperature-controlled device 14, in this case a diaphragm, will function to release the dichlorodifluoromethane into the bottom of the tank 2. As this material is released, it will revert to a gas and some of it bubble to the surface of the oil and blanket the fire. A great deal of the gaseous dichlorodifluoromethane, however, being highly miscible with the oil will remain in solution in the oil to convert the oil to a non-inflammable mixture of oil and dichlorodifluoromethane.

20 The function of the spring balance or other weight indicator 8 is to indicate to the operating staff when my apparatus has functioned.

25 As above noted my apparatus is usable in connection with preventing fires in any liquid in which the dichlorodifluoromethane is miscible, and my invention is not confined merely to protecting insulating oils.

30 As above explained, my invention is not limited to the use of a fusible diaphragm, such as shown at 14, for a temperature controlled device for releasing the dichlorodifluoromethane.

40 It is to be understood that other changes may be made in the details of construction and arrangement of parts hereinabove described without departing from the spirit and scope of my invention.

45 What I claim is:

50 In combination with a tank of inflammable liquid, a container of dichlorodifluoromethane at the exterior of the tank and under sufficient pressure to maintain the dichlorodifluoromethane in the liquid phase, a tube extending from the container into the tank near the top thereof and along the tank wall to a point adjacent the bottom of the tank and thence inwardly of the tank to approximately the center line of the tank, and a fusible diaphragm across said tube adja-

cent the surface of the inflammable liquid, said diaphragm fusing at substantially the flashpoint of said inflammable liquid, whereby upon a rise in the temperature of the inflammable liquid at its surface approximating its flashpoint the dichlorodifluoromethane will be released into the liquid adjacent the bottom thereof, some of the dichlorodifluoromethane remaining in solution in the inflammable liquid to convert the liquid to a non-inflammable mixture of liquid and dichlorodifluoromethane, the remainder of the dichlorodifluoromethane rising to the surface of the liquid.

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