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FIRE EXTINGUISHING APPARATUS

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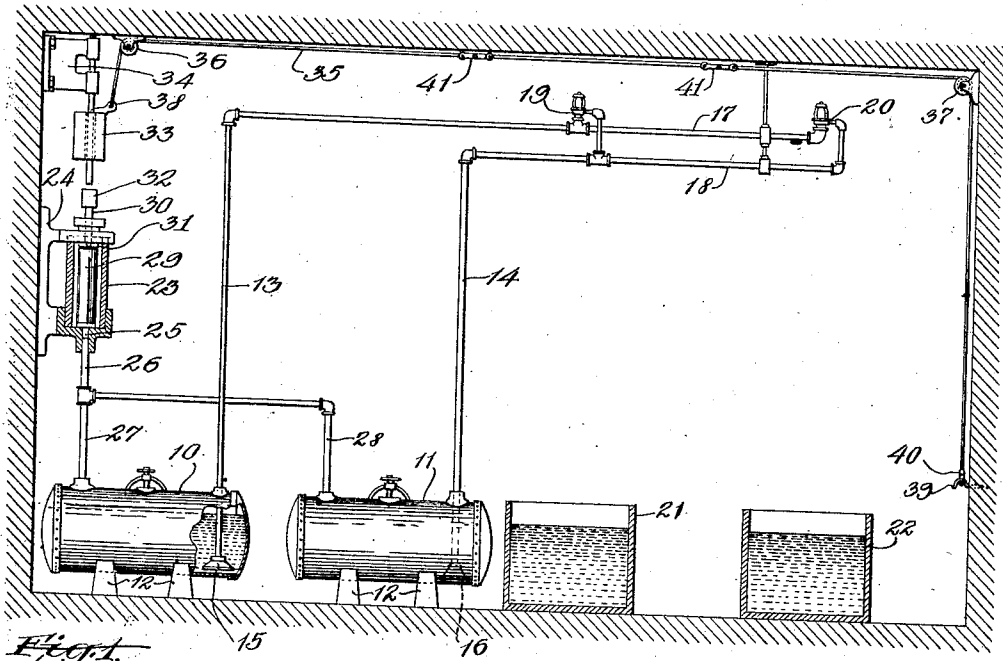


Fig. 1

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UNITED STATES PATENT OFFICE.

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FIRE-EXTINGUISHING APPARATUS.

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The invention relates to foam-type fire extinguishing systems for the protection of isolated fire risks where elaborate and expensive installations are not warranted, the principal object of the invention being saving of the apparatus required and its reduction to the simplest terms without sacrifice of certainty and promptness of automatic protection of each fire risk.

The single figure is an elevation of one form of installation.

Referring to the drawings, the fire extinguishing apparatus of my present construction includes a plurality of compartments or tanks 10 and 11 respectively, the tanks being of relatively small capacity and adapted for the reception of A and B chemical component solutions. The solution tanks 10 and 11 may be conveniently supported as by means of the piers 12 located in any convenient part of the plant. Connected to the solution tanks 10 and 11 are the distribution lines 13 and 14 respectively, the said distribution lines comprising piping communicating with the interior of the tanks and extending into the bottoms of the respective tanks, the distribution piping terminating preferably in bell mouth solution inlets 15 and 16 respectively. The distribution lines may consist of the riser pipes 13 and 14 connected to the laterally extending pipe sections 17 and 18 respectively, the said solution lines comprising a normally dry pipe system. Connected to the lateral piping 17 and 18 and openly communicating therewith I provide one or more sprinkler heads such as 19 and 20, these sprinkler heads being preferably of the type disclosed in the co-pending application of Orlando R. Erwin, Serial No. 398,653 of July 24, 1920, the sprinkler heads 19 and 20 which may also comprise mixing chambers of the type disclosed in the patent to Meigs and Epps, No. 1,261,422, of April 2, 1918 being preferably normally open, that is, with the fusible link and closure cap thereof removed. My present installation is provided for employment with the cheaper types of plants and in my present exemplification I show the installation in a plant where inflammable compounds such as varnish, lacquer or gasoline contained in containers such as small dip tanks 21 and 22 are desired to be protected, such tanks having been found to be a frequent source of fire,

the rapid extinguishing of which is desired where spread of the fire is to be minimized. The sprinkler heads 19 and 20 may conveniently be mounted directly above the dip tanks 21 and 22, as shown particularly in Figure 1 of the drawings. The small capacity solution tanks, the relatively short dry pipe distribution lines, with the normally open sprinkler heads provides equipment which may be installed at a very low cost for the protection of inexpensive property, with the cost of upkeep of the system a negligible factor.

To drive the component solutions through the dry piping lines in time of fire means is provided for exerting pressure on the solution levels in the tanks to force the solutions through the distribution piping. The amount of space in a small plant being relatively limited, it is desired to provide a pressure system in the form of a gas generator, the generator being adapted to be set into activity in time of fire for the production of large volumes of gas under the necessary pressure to effect movement of the solutions through the distribution lines and to the mixing sprinkler heads. To these ends I provide a gas generator employing a compressor fluid cartridge or a combustible cartridge of the type disclosed in Patent No. 1,422,406 of Frederick C. Bargar. Accordingly, I provide a casing 23 which may be supported in the bracket 24, the casing defining a gas chamber provided with a gas duct 25 communicating with gas pressure lines provided by the pipe section 26 connected to the duct 25, the pipe 26 being, in turn, connected to the duplex pressure lines 27 and 28 which are, in turn, connected for communication with the solution tanks 10 and 11 respectively. Housed in the casing 23 I provide the capsule or cartridge 29 of the type disclosed in the said patent, the said capsule being of a combustible nature and being adapted to be set into combustion and gas producing activity in time of fire for the gradual generation of gases having exit from the casing 23 to the gas piping 26, 27 and 28 and to the solution tanks 10 and 11 for exerting pressure on the solution levels in the tanks to force the solutions through the distribution piping 13 and 14, through the lateral pipe sections 17 and 18 and to the mixing chambers 19 and 20, the solutions being forcibly comixed in the

said chambers for the production of the fire extinguishing compound. To set the cartridge 29 into gas producing activity the plunger 30 arranged for sliding motion in the bracket 24 is provided, the plunger 30 being provided at one end with a harpoon or cutting head 31 and at its other end with an enlarged anvil portion 32, the plunger 30 being intended in time of fire to be actuated downwardly in the bracket 24, such downward motion effecting an impact between the cutting head 31 and the cartridge 29 for setting the cartridge into combustion activity.

For the purpose of setting the cartridge into gas producing activity and for the more specific purpose of actuating or impelling the plunger 30 in its descent, I provide means adapted to be manually operated or to be automatically operated by the existence of a fire. To this end I provide the weighted hammer element 33, the said element 33 being mounted for slidable movement in a bracket 34, the element being maintained in an elevated position, as shown in Figure 1 of the drawings, by means of the cable 35 guided over spaced pulleys or sheaves 36 and 37, the cable being connected at one end to the weighted element 33, as shown at 38, the cable being held at its other end by a hook member 39 engaging a handle 40 fixed to the cable 35. The cable 35 is further provided with a plurality of fusible link elements 41, the said fusible elements being preferably located above the dip tanks 21 and 22. It will be apparent from this construction that in the event of a fire the handle 40 may be released from the hook 39 to effect the descent of the weighted hammer 33, gravitated movement of the said hammer impelling the plunger 30 towards the gas cartridge 29 to set the same into activity. The weighted hammer 33 is adapted also to be operated automatically in the event of a fire, the fusing of the link or links 41 breaking the cable 35 to effect the desired gravitated movement of the hammer element 33.

While I have shown my device in the preferred form, it will be obvious that many changes and modifications may be made in

the structure disclosed without departing from the spirit of the invention, defined in the following claims.

I claim:

1. A fire extinguishing system of the type in which normally stored chemical component solutions are intermixed in time of fire for the production of a fire extinguishing foam comprising a plurality of solution tanks for holding the component solutions, a distributor head, distribution lines connecting the solution tanks with the head for separately conducting the solutions thereto, the said head comprising means for effecting intermixture of the solutions to produce the fire extinguishing foam and for delivering the foam to the region of the fire, a gas generator effective in time of fire for generating gases for exerting operating pressure on the solutions in the tanks for driving the same through the distribution lines and means independent of the head for setting the generator into activity, the said means including elements adapted to be automatically controlled by fire conditions.

2. A fire extinguishing system of the type in which normally stored chemical component solutions are intermixed in time of fire for the production of a fire extinguishing foam, comprising a plurality of solution tanks for holding the component solutions, a mixing chamber, distribution lines connecting the solution tanks with the mixing chamber for separately conducting the solutions thereto, the said mixing chamber comprising means for effecting intermixture of the solutions to produce a fire extinguishing foam and for delivering the foam to the region of the fire, a combustion gas generator effective in time of fire for generating gases for exerting operating pressure on the solutions in the tanks for driving the same through the distribution lines, and means independent of the mixing chamber for setting the combustion gas generator into activity.

Signed at New York in the county of New York and State of New York this twenty-seventh day of July A. D. 1921.

FRANK A. EPPS.