R. PFEIL, JR.

FIRE EXTINGUISHER.

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1,377,431. Patented May 10, 1921.

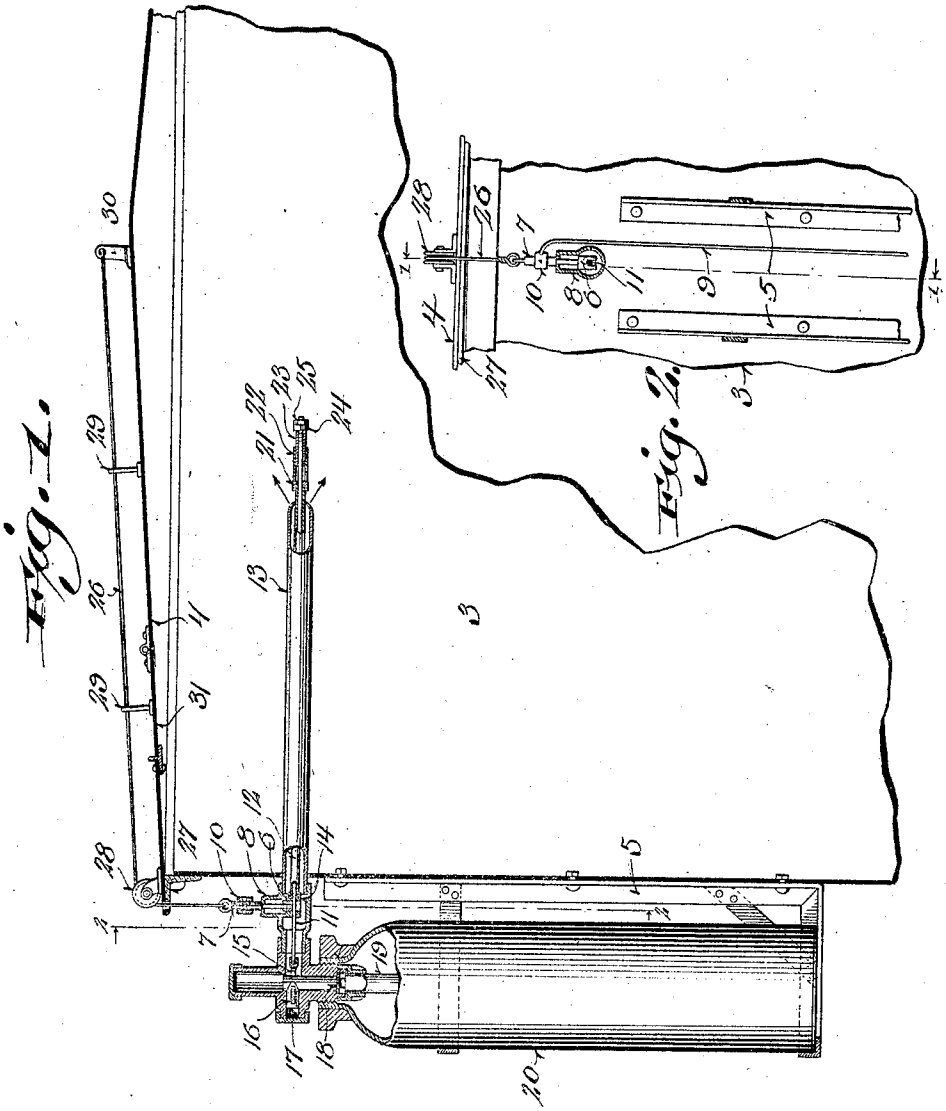


Fig. 1.

Fig. 2.

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UNITED STATES PATENT OFFICE.

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FIRE-EXTINGUISHER.

1,377,431. Specification of Letters Patent. Patented May 10, 1921.

Application filed March 21, 1919. Serial No. 284,118.

To all whom it may concern:

Be it known that I, RUDOLPH PFEIL, Jr., a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Fire-Extinguishers; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to automatic liberation of a normally confined fire-extinguishing medium and its discharge within an oil-storage tank, freight-car or other structure, and said invention more particularly pertains to an automatic release of said medium, as a result of a change in the pressure of air or other gaseous-fluid in the structure.

My invention is herein shown applied in connection with an oil-storage tank and a chemical fire-extinguisher that discharges in said tank. In such a tank the space between the oil level and the tank-roof is frequently filled by a gaseous mixture of a highly explosive character, and fire in the tank is generally caused by lightning, but no matter from what cause ignition occurs, it will result in an explosion, if the gaseous contents of said tank are of an explosive mixture, and it is a purpose of my invention to utilize the explosive force to release the fire-extinguishing medium aforesaid. Obviously it is of the greatest importance that there be a practically instantaneous release of the fire-extinguishing medium the instant ignition occurs in the tank, to thus prevent the fire from gaining headway sufficient to heat the uppermost portion of the oil and cause its rapid volatilization.

Figure 1 of the accompanying drawings represents a sectional view of a fragment of an oil-storage tank, a chemical fire-extinguisher therewith partly in section, and means in accordance with my invention for an automatic operation of a control mechanism of the extinguisher, in the event of ignition in the tank, the sectional parts of the view being on the plane indicated by line 1—1 in the next described illustration, and

Fig. 2, an elevation partly in section as indicated by line 2—2 in Fig. 1.

Referring by numerals to the drawings, 3 indicates the body and 4 the roof of an oil-storage tank provided with outer angle-brackets 5 supporting a chemical fire-extinguisher. My invention is adapted for association with a control mechanism of the extinguisher shown, or with the mechanism controlling the discharge of any other such extinguisher applied to an oil-storage tank or other structure, but no claim is made to the construction of said extinguisher specifically.

The control mechanism of the extinguisher is shown as embodying a plug 6 having a shouldered stem 7 extending through a chambered fitting 8 incasing said plug outside of the tank and a lift-rod 9 is fastened to a collar 10 fast on the exposed portion of the plug-stem. The plug is astraddle of a rod 11 in a pipe 12 extending through the forward end of the chemical distributing nozzle 13 of the extinguisher, this nozzle being partly within the oil tank. A ferrule 14 on the pipe 12 abuts the plug 6 within the chamber-fitting 8, and said rod is coupled to a shackle 15 having a bevel-point of a bolt element 16 thereof engaging a flaring notch in a piston-like seal-stop 17 supporting a seal 18 of a chemical conveyer pipe 19 in the cylinder 20 of the extinguisher, said cylinder being charged with fluid under pressure. Within the oil-tank another ferrule 21 on the pipe 12 abuts a tube 22 sweated on a fusible-sleeve 23 engaged by the rod 11, and a nut 24 run on the screw-threaded inner end of said rod, against the sleeve, is held in place by a jam-nut 25.

Attached to the outer eye-end of the plug-stem 7 is a cable 26 or other suitable flexible device, that extends through the flange 27 and roof 4 of the tank. The cable is run on a sheave 28 and through guides 29 surmounting the tank-roof, and an end of said cable is fastened to a bracket 30 also surmounting said roof.

A section of the tank-roof may be a hinged door 31 or other closure for an opening therein, and one of the guide-brackets 29 for the cable 26 is shown on said closure.

The rod 9 may be actuated by hand to lift the stem 7 and the plug 6 therewith, the result being a release of the fire-extinguishing medium, and in practice said rod is suitably secured against unauthorized use. However my invention is not specific to any peculiar manual control of a fire-extinguishing apparatus, although provision is had for connecting the tank-roof or a closure

for an opening therein with such control of such an apparatus regardless of the specific detail of said control.

If an explosion due to ignition of gases in the tank occurs, the force of such explosion may either lift the closure 31, thereby causing a pulling action on the cable 26 and the stem 7 to provide for a discharge of the fire extinguishing medium into said tank, or if the explosion is of such a violent character as to displace the entire tank-roof, the same result will be attained. The roofs of oil-storage tanks are purposely lightly attached to the walls of said tanks to permit of their blowing off, whereby rupture of said walls is prevented and a leaking away of the burning oil avoided. If the mixture of gases above the oil is of a non-explosive character and the liquid contents of the tank are ignited, the resultant heat will disintegrate the members 22 and 23 of the fire-extinguisher apparatus herein shown, and thus the extinguishing medium will become effective, but the fusible control of a fire-extinguisher apparatus is no part of my invention.

In accordance with my invention, in its broadest sense, various means may be employed to effect the liberation of a fire-extinguishing medium into a structure as the result of an appreciable expansion of air or gaseous fluid in the structure due to various causes, said means being associated with some displaceable portion of said structure.

I claim:

The combination with a storage compartment for combustible material including side walls and a roof, of a fire extinguisher, said roof having an opening therein, a cover hinged to said roof and normally covering said opening, means for controlling the discharge of extinguishing fluid from said fire extinguisher, an actuating cable having one end secured to said controlling means and the other end secured to the roof, the intermediate portion of said cable passing over said cover member, whereby the raising of said cover member will actuate said controlling means.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, in the county of Milwaukee and State of Wisconsin.

RUDOLPH PFEIL, JR.