P. DANIEL.

FIRE EXTINGUISHER.

APPLICATION FILED AUG. 7, 1912.

1,067,803.

Patented July 22, 1913.

3 SHEETS—SHEET 1.

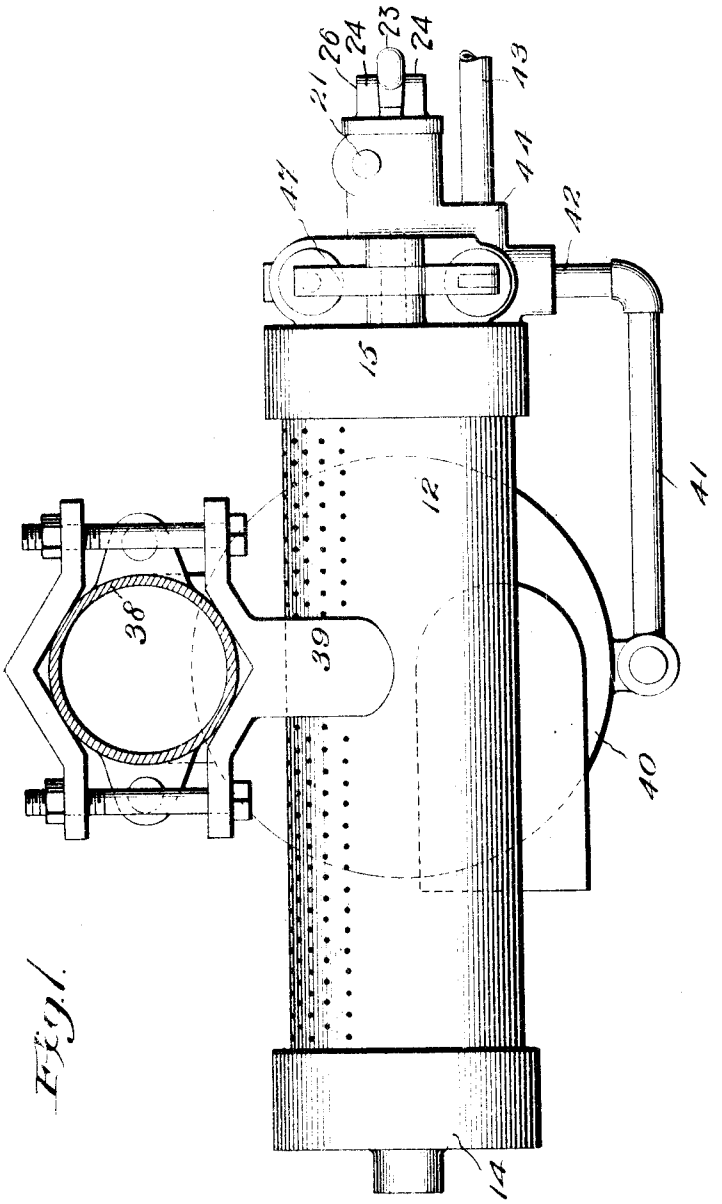


Fig. 1.

Witnesses:
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Katharine C. Mead

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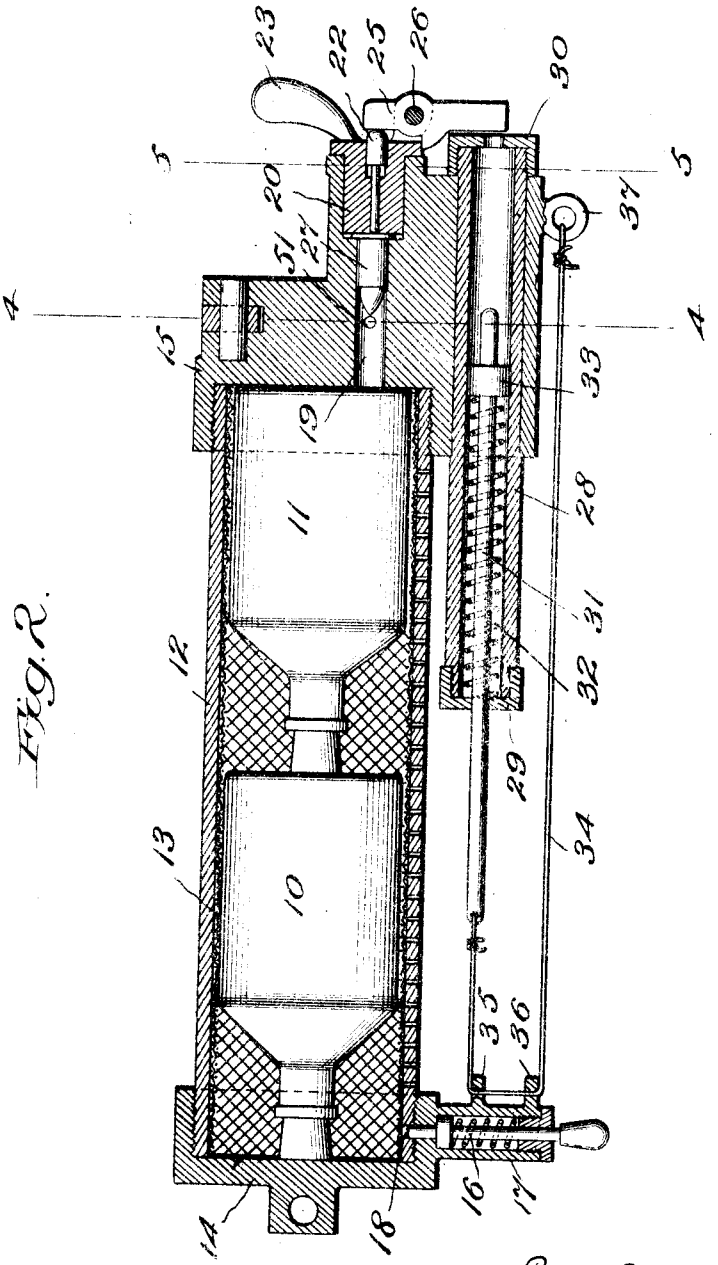


Fig. 2.

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3 SHEETS-SHEET 3

Fig. 3.

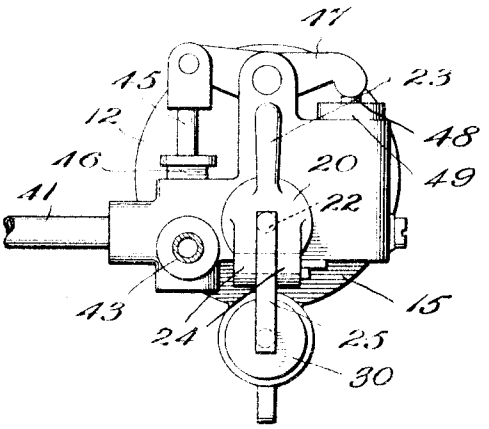


Fig. 4.

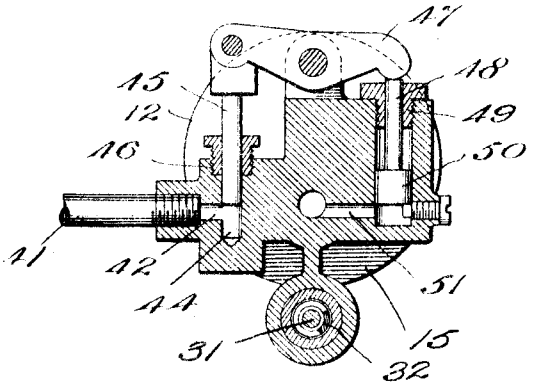
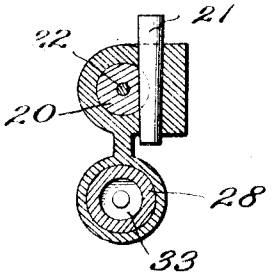


Fig. 5.



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UNITED STATES PATENT OFFICE.

PAUL DANIEL, OF JAMAICA, NEW YORK.

FIRE-EXTINGUISHER.

1,067,803. Specification of Letters Patent. Patented July 22, 1913.

Application filed August 7, 1912. Serial No. 713,825.

To all whom it may concern:

Be it known that I, PAUL DANIEL, a citizen of the Republic of France, residing at Jamaica, in the county of Queens and State of New York, have invented certain new and useful Improvements in Fire-Extinguishers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to a novel device for automatically extinguishing fire, and more particularly for extinguishing burning oil, gasolene or other fluid while simultaneously shutting off the supply of such fluid from the point of combustion.

My invention is conspicuously useful in preventing accidental conflagration on automobiles, in motor boats and in connection with gas and gasolene engines in general, and accordingly I have herein described and illustrated a particular embodiment of the inventive idea which is especially suited to the last named uses. It is to be understood, however, that the invention may be employed for extinguishing fires however originating.

The invention is illustrated in a preferred form in the accompanying drawings, wherein—

Figure 1 is a plan view of the device as attached to the rising manifold of an ordinary gas engine, Fig. 2 is a median horizontal section of the same, Fig. 3 is an end elevation of the device, Fig. 4 is a sectional view taken on the plane 4—4 of Fig. 2, and Fig. 5 is a section on the plane 5—5 of Fig. 2.

My invention, broadly stated, comprises the use in combination of means for supporting and separating two substances which, when mingled produce an extinguishing gas or fluid; a device for rendering the separating means inoperative, whereby these substances are allowed to mingle; and means normally restraining the device last mentioned, but adapted to liberate the same when affected by an abnormally high temperature. The first named agency may be termed the "separating support." The second named device is broadly referred to as the "mingling means" and the last named element is called the "restraining device."

In the preferred apparatus the separating support comprises two bottles 10 and 11, of glass or other material easily shattered carried in a suitable holder. In the form shown this holder comprises a cylinder 12, suitably perforated in such a manner as to discharge its contents under sufficient pressure as hereafter described.

In order to facilitate removal of the broken glass after operation of the device I prefer to provide a removable lining of wire netting 13, within which the vessels 10 and 11 are placed. This netting also serves to prevent the broken glass from closing the perforations in the cylinder and preventing escape of fluid.

The holder 12 is closed at its two ends by the caps 14 and 15 which are preferably screwed onto the holder, as shown. I prefer to provide a lock for the outer cap 14, which consists of a spring-pressed pin 16 which moves within the hollow boss 17 and enters a suitable cavity 18 with which it registers when the cap 14 is screwed home. A cylindrical passage 19 constituting a gun barrel, pierces the cap 15, preferably in an eccentric position, and this passage communicates with an exterior enlargement intended to receive the removable breech block 20. As clearly shown in Fig. 5, this block is preferably held in place by a tapered pin 21, engaging both the block 20 and the surrounding portions of the cap 15. The breech block 20 is suitably pierced to receive a firing pin 22, and it may be provided with a handle 23. The block 20 also carries two ears 24 between which is pivoted a dog 25 on the pin 26. The upper end of the dog rests upon the base of the firing pin 22 and its lower end extends below the under surface of the holder 12.

Within the barrel 19 there is placed a suitable bullet cartridge 27, which is discharged by a blow upon the firing pin. In order to provide means for delivering the necessary blow, the cap 15 carries a cylinder 28, closed at its ends by the screw caps 29 and 30, the latter of which is perforated, as shown. Within the cylinder 28 the striker bar 31 is adapted to slide forward under the influence of the spring 32. This bar is guided by the cap 29 and the piston 33. The cartridge, firing pin, dog and striker bar form the principal elements of the "mingling

means," since, when permitted to act, these serve to break the bottles 10 and 11 and cause their contents to be mingled.

Normally the striker bar is held in a potentially operative position by the "restraining device", which is essentially an element acting to prevent the action of the mingling means until rendered inoperative by subjection to an abnormally high temperature. Preferably this member is rendered inoperative by being destroyed by the temperature in question, either wholly or partly. In claiming this member as one adapted to be destroyed by abnormally high temperature, I am to be understood as including partial destruction. Preferably I employ for this purpose a cord 34, by which term I intend to include a wire, for instance, of magnesium or other metal which is rapidly burned when exposed to fire. I may also use thread or string impregnated with saltpeter or associated with or formed of nitro-cellulose. Indeed any highly inflammable thread, cord or wire, will answer. The cord 34 is fastened at one end to the striker rod 31 and may then be laid or carried to any suitable position within the influence of the device where fire is liable to occur, the outer end of said cord being made fast. In the form shown the cord is carried through openings in the ears 35, 36 and back to the ear 37. It is obvious that, the instant that the cord 34 feels the heat of a flame and is partly or wholly destroyed, the striker rod 31 is liberated, and, under the influence of the spring 32, it will deliver a blow upon the dog 25 which causes the firing pin 22 to discharge the cartridge 27. At once the holder is filled with a mixture of sodium bicarbonate and sulfuric acid (or other suitable mixture) whereby there is developed an immense volume of carbonic acid gas. This gas is expelled, together with the liquid, through the perforations in the holder, under the influence of its own expansion and the gases liberated from the cartridge. The expansive force of these gases is so great that an atmosphere incapable of supporting combustion is created for a long distance around the perforated holder.

The apparatus so far described is sufficient to act as a fire extinguisher for all purposes; but, where intended for use in connection with devices using gasolene, I prefer to associate with the elements so far described other mechanism adapted to act harmoniously with it to cut off the supply of gasolene or the like in case of fire.

In the particular device illustrated in the drawings, the holder 12 is fastened to the upright manifold 38, as by the clamp 39. The carbureter 40 is supplied with gasolene by a pipe 41 leading from the opening 42 in the cap 15, and the gasolene is led to the cavity behind the opening 42, by means of the pipe 43, leading to the opening 44. The passage between the openings 44 and 42 may be closed by depression of the lower end of the valve rod 45, which passes through a stuffing box 46, and is normally in a raised position.

A walking beam 47 is pivoted at its middle to the cap 15 and the upper end of the rod 45 is pivotally attached thereto. The opposite end of the beam 47 bears upon the end of a pin 48, passing through the screw cap 49 and having at its lower end a piston 50. A passage 51 leads from the barrel 19 directly under the piston 50. When the cartridge is discharged the pressure of explosion is transmitted through the passage 51 to the piston 50. The pin 48 is forcibly lifted, and acts, through the walking beam 47 to lower the valve rod 45, and shut off the gasolene.

My invention is not limited to the use of a cartridge, and, where other means are used for breaking down the separation between the active liquids, the pressure of the extinguishing gases may be relied upon to be transmitted through the passage 51 and close the valve as described.

Various changes may be made in my apparatus without departing from the scope of my claims, and I do not limit myself to the details herein shown and described.

What I claim is—

1. In a device of the class described, a separating support for suitable active fluids, a valve for supplying liquid fuel, a mingling means adapted when operated to destroy the separating function of said support, a means adapted to be actuated by operation of said mingling means for closing said valve, and a restraining device for said mingling means, comprising material adapted to be destroyed by high temperatures, substantially as described.

2. In a device of the class described a perforated casing, two glass vessels fitting close together within the same, a gun at one end of said casing, firing means for said gun, and a restraining device for said firing means comprising material adapted to be easily destroyed by high temperatures, substantially as described.

3. An automatic fire extinguisher comprising in combination two breakable vessels for active fluids, an automatic gun adapted to fracture the same when discharged, and a cord for normally preventing discharge of said gun, and comprising highly inflammable material in its composition, substantially as described.

4. In a device of the class described, a fire extinguishing apparatus adapted to produce gas under pressure incidentally to its operation, a valve for fluid fuel, and means controlling said valve adapted to be operated by

the aforesaid gas pressure, substantially as described.

5. In a device of the class described, a fire extinguishing apparatus comprising a gun as an active member, a valve for fluid fuel and means controlling said valve adapted to be operated by the pressure incident to discharge of said gun, substantially as described.

6. In a device of the class described, a separating support for active fluids, a gun directed toward the same, a spring pressed striker rod adapted to discharge said gun and an inflammable cord for normally restraining said rod against action of said spring, substantially as described.

7. In a device of the class described, a holder having closing caps, breakable vessels within said holder, a gun on one of said caps, means for automatically discharging said gun, and a restraining cord of inflammable material for controlling the discharge of said gun, substantially as described.

8. In a device of the class described, a holder having closing caps, breakable vessels within said holder, a gun on one of said caps, means for automatically discharging said gun, a valve for fluid fuel on said cap, means adapted to be operated by the discharge pressure of said gun for closing said valve and restraining means for said gun adapted to be rendered inoperative by an abnormally high temperature, substantially as described.

9. In a device of the class described, a holder having closing caps, breakable vessels within said holder, a gun barrel in one of said caps, a removable breech block in said cap having a firing pin, ears on said block, a dog pivoted between said ears, a striker rod adapted to strike said dog, a spring therefor, and a restraining means for said striker rod adapted to be destroyed by an abnormally high temperature, substantially as described.

10. A fire extinguisher of the class described, comprising a holder and a gun supported thereon; in combination with a passage for conveying fluid fuel, a reciprocating valve rod, a piston, means connecting said piston and valve rod for depressing the latter to close said passage, and means for conveying the pressure of discharge of said gun to said piston, substantially as described.

In testimony whereof, I affix my signature, in presence of two witnesses.

PAUL DANIEL.

Witnesses:
KATHARINE C. MEAD,
H. S. MACKAYE.