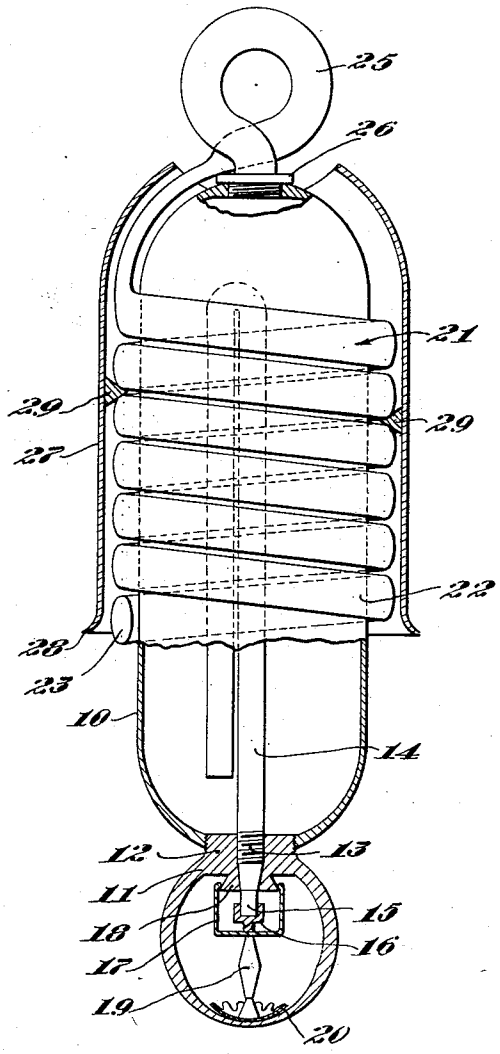
July 5, 1932. A. W. BURNHAM. 1,866,151

FIRE EXTINGUISHER

Filed June 20, 1929



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Patented July 5, 1932 1,866,151

UNITED STATES PATENT OFFICE

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FIRE EXTINGUISHER

Application filed June 20, 1929. Serial No. 372,267.

This invention relates to an improvement in fire extinguishers, and more particularly fire extinguishers of the type in which a fire extinguishing chemical is released automatically by heat and sprayed upon the burning material.

The primary object of this invention is to provide a fire extinguisher in which the fire extinguishing chemical is ejected from the extinguisher by the pressure created by gas generated from a chemical heated by the fire to be extinguished and which extinguisher is normally closed by a valve cap held in the closing position by the co-action of mechanical and fusible means. A further object of this invention is to provide a fire extinguisher, the outlet of which is closed by a valve cap held seated by the coaction of mechanical and fusible means, the latter being rendered inoperative by the heat of the fire and the former being overcome by the pressure of the chemical within the fire extinguisher.

Other objects of the invention will be apparent to one skilled in the art from an examination of the following specification taken in connection with the drawing which forms a part thereof and which comprises an elevational view, partly in section, of a fire extinguisher embodying one form of this invention.

The extinguisher selected for illustration comprises a container 10 of aluminum or other material of sufficient strength to withstand a predetermined pressure. Fixed in the lower end of the container 10 is an annular head 11 having a boss 12 which is in threaded engagement with the wall of the container 10 and which contains a central opening 13 in which is supported a siphon tube 14. This tube extends substantially the length of the container, as shown in the drawing, and terminates below the boss 12 in a nozzle the outlet 15 of which is normally closed by any suitable means a valve cap 16 being here shown. The cap 16 may be of any desired type but it preferably fits tightly over the nozzle of the siphon to provide a liquid seal. The cap 16 is held in position on the nozzle by a spring clip 17 which engages a flange 18 on the boss 12. The clip 17 preferably is of spring steel or other metal and may be adjusted to resist a pressure of any predetermined amount. The valve cap is further held in position on the nozzle by a fusible link 19 which bears against the clip 17 and against the distributor plate 20 mounted in the head 11.

Surrounding the upper portion of the container 10 is a tubing 21 of aluminum or similar material preferably formed with a series of coils 22 and sealed at its lower end 23 in any desired manner. The tubing 21 continues beyond the upper coil to form a loop 25 and enters the upper end of the container 10, being held in such position by any suitable means such, for example, as the nut 26. Surrounding the coils 22 is a jacket 27 terminating at its lower end in an outwardly extending flange 28. The jacket 27 is preferably spaced a predetermined distance from the container 10 and is also spaced from the coils 22 by suitable blocks or spacers 29.

The tubing 21 constitutes a pressure generator, the coils 22 forming a chamber which may be filled with any chemical, preferably liquid having a low boiling point such chemicals being for instance ammonia, carbon dioxide, nitrogen or carbon tetra chloride, and the loop 25 forming a passage through which the gas generated under heat by the chemical in the chamber is conducted into the container 10. The container 10 preferably is filled with any suitable fire extinguishing chemical, such for example as carbon tetra chloride. The loop 25 forms a hanger for the fire extinguisher whereby it can be supported in the desired position in the room to be protected.

The fire extinguisher is prepared for serv-

ice by filling the container 10 with the desired fire extinguishing chemical and the generator tubing 21 with the preferred low boiling chemical. The fusible link 19 selected is of such composition that it will fuse when the temperature in the room being protected exceeds a predetermined amount and the chemical in the generator tubing is such that it will start to generate gas when that temperature is exceeded. The spring clip 17 is so formed that when the pressure created in the container exceeds a predetermined limit it will unseat the cap 16 from the nozzle and force the clip out of engagement with the flange 18. Should a fire start in the room protected by one or more of these extinguishers the heat therefrom will raise the temperature of the tubing 21 and cause the chemical therein to generate gas. The gas from the chemical is conducted through the passage into the container 10 and exerts pressure upon the chemical therein forcing it to travel through the siphon 14 to the outlet 15. In the meantime the link 19 has fused and no longer has any action on the valve cap 16 and the pressure of the chemical in the siphon 14 will force the cap 16 and clip 17 away from the outlet 15. The chemical leaving the outlet 15 strikes the distributor plate 20 and is sprayed into the room to be gasified and diffused into an extinguishing gas blanket.

The jacket 27 acts not only to protect the tubing 21 from injury but also to form a flue through which the heat from the fire passes so that the walls of the generator tubing 21 are quickly heated and the chemical therein turned to a vapor. The spacers 29 function also to deflect the heat toward the tubing and to prevent it from escaping unused from the open top of the jacket 27.

If the composition of the link 19 be such that it will fuse before the chemical in the tubing 21 generates much gas the link will not oppose the pressure exerted by the fire extinguishing chemical upon the cap 16 and clip 17. If, on the other hand, the chemical in the tubing 21 creates gas and forces the fire extinguishing chemical into the siphon before the link fuses the latter will supplement the resistance of the cap 16 and clip 17 to internal pressure and the chemical will then escape as soon as the fusion of the link removes its action upon the clip 17.

It will be understood that under ordinary conditions the container 10 will be filled by removing the tubing 21 and that a certain amount of air will be trapped in the siphon 14. Such air will prevent the chemical in the container from directly contacting with the outlet closing means and avoid the danger of corrosion thereby which might result either in leakage or on the other hand in sealing the closing means and rendering the extinguisher inoperative. Moreover the chemical in the container 10 will be separated from the chemical in the tubing 21 by a body of air or vapor which will not materially retard the chemical in the tubing from generating gas when the predetermined temperature is reached.

While one embodiment only of this invention has been shown and described I am not limited thereby since others might be made without departing from the spirit and scope of the invention as set forth in the following claims.

I claim:

1. A fire extinguisher comprising a container for a fire extinguishing chemical having an outlet, means normally closing said outlet, said means being arranged to be displaced by pressure, a chamber containing a chemical adapted to generate gas under the influence of heat closed at one end and connected at the other end to the container by a passage through which the generated gas is conducted from the chamber to the container to exert pressure upon the chemical therein and cause it to escape through the outlet forcing the closing means out of the normal position, said container projecting in part below said chamber and both being directly exposed to the heat of the fire whereby the chemicals in each are directly caused to generate gas.

2. A fire extinguisher comprising a container for a fire extinguishing chemical directly exposed to the heat of a fire, said container having an outlet, means normally closing said outlet, a chamber containing a chemical adapted to generate gas under the influence of heat, which chamber surrounds the container and is connected thereto by a single communicating means through which the generated gas is conducted from the chamber to the container to exert pressure upon the chemical therein.

3. A fire extinguisher comprising a container for a fire extinguishing chemical directly exposed to the heat of a fire, said container having an outlet, means normally closing said outlet, and a tubing comprising a plurality of coils surrounding said container, in which is a chemical adapted to generate gas under the influence of heat, said tubing being closed at one end and connected at the other end to the container by a passage through which the generated gas is conducted from the coils into the container to exert pressure upon the chemical therein.

4. A fire extinguisher comprising a container for a fire extinguishing chemical having an outlet, means normally closing said outlet, a chamber surrounding said container in which chamber is a chemical adapted to generate gas under the influence of heat, a passage through which the generated gas is conducted from the chamber to the container to exert pressure upon the chemical therein and a jacket surrounding and spaced from

said chamber by which heat is directed thereto.

5. A fire extinguisher comprising a container for a fire extinguishing chemical having an outlet, means normally closing said outlet, a tubing comprising a plurality of coils surrounding said container in which is a chemical adapted to generate gas under the influence of heat and a passage through which the generated gas is conducted from the coils into the container to exert pressure upon the chemical therein and a jacket surrounding and spaced from the coils whereby heat is directed thereto.

6. A fire extinguisher comprising a container for a fire extinguishing chemical having an outlet, means for closing said outlet, mechanical and fusible means coacting with said closing means for holding the closure in the functioning position, a chamber containing a chemical adapted to generate gas under the influence of heat and a passage through which the generated gas is conducted from the chamber to the container to exert pressure upon the chemical therein and cause it to escape through the outlet forcing the closing means out of the normal position, the fusible coacting means being fused by the heat generating the gas and the mechanical means yielding when the pressure in the container exceeds a predetermined amount.

7. A fire extinguisher comprising a container for a fire extinguishing chemical havan outlet, a cap for closing said outlet, means for generating pressure upon the chemical in the container, mechanical means acting upon the cap to hold it in the outlet closing position until the generated pressure has reached a predetermined amount and fusible means acting upon the mechanical means to supplement its action upon the cap.

8. A fire extinguisher comprising a container for a fire extinguishing chemical having an outlet, a cap for closing said outlet, means for generating pressure upon the chemical in the container, mechanical means acting upon the cap to hold it in the outlet closing position until the generated pressure has reached a predetermined amount and fusible means acting upon the mechanical means to supplement its action upon the cap, said last named means being fused at the time that pressure is generated upon the chemical.

9. A fire extinguisher comprising a container for a fire extinguisher chemical having an outlet, a closure for the outlet, spring means normally holding the closure closed which means acts until a predetermined pressure has been created in the container by the action of heat, and fusible means which prevent the spring means from releasing the closure until said fusible means has been fused by heat.

10. A fire extinguisher comprising a container for a fire extinguishing chemical having an outlet, a closure for the outlet, spring means normally holding the closure closed, which means tend to release the closure when the pressure generated in the container has exceeded a predetermined amount and fusible means which prevent the spring means from releasing the closure until said fusible means has been fused by heat.

Signed by me at Providence, Rhode Island, this seventeenth day of June, 1929.

ARNOLD W. BURNHAM.