No. 732,990. PATENTED JULY 7, 1903.

E. ZIMMERMAN.

FIRE EXTINGUISHING APPARATUS.

APPLICATION FILED NOV. 24, 1902.

NO MODEL.

Fig. 1.

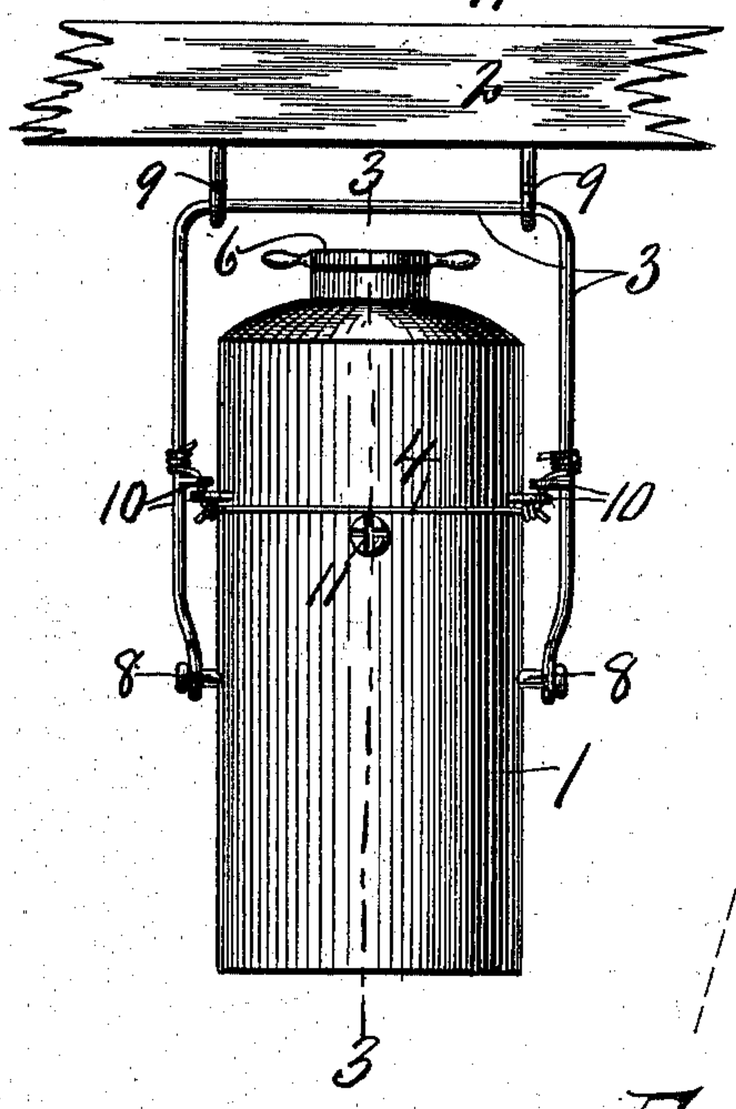


Fig. 2.

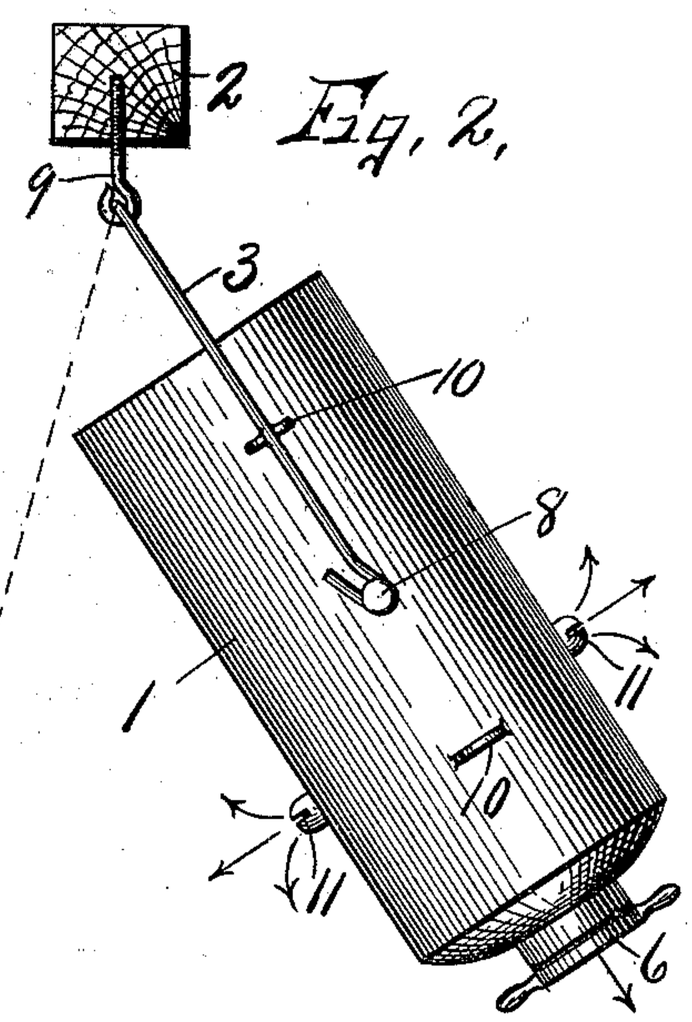


Fig. 3.

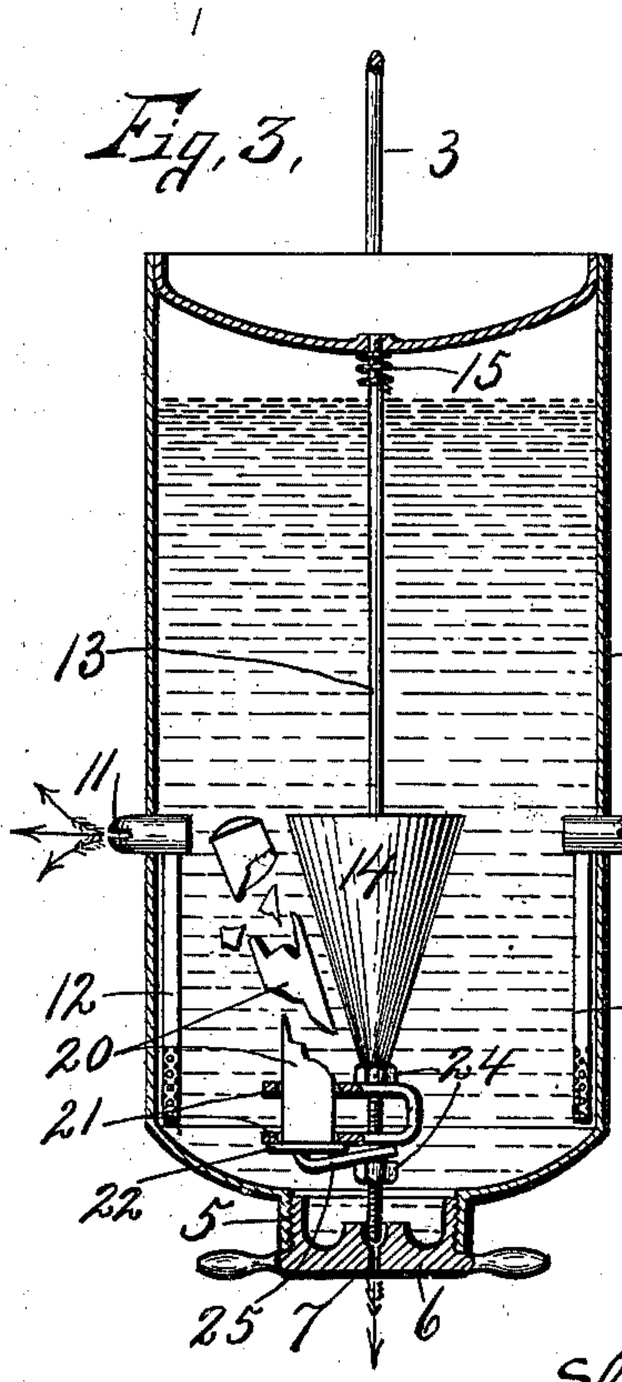


Fig. 5.

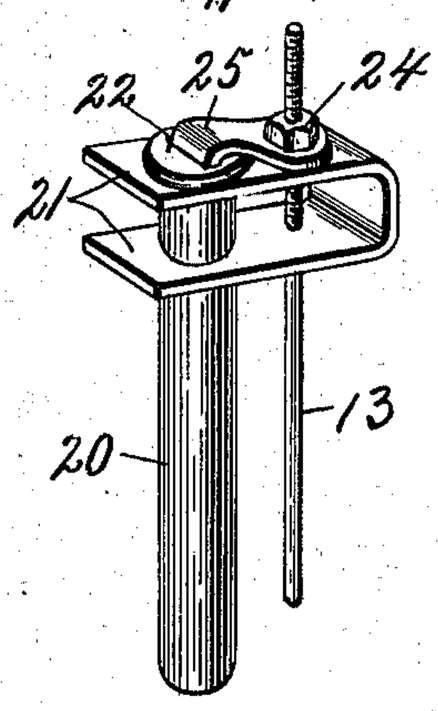
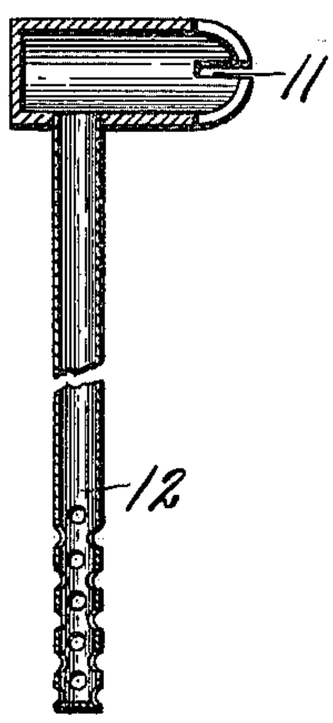


Fig. 4.



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No. 732,990. Patented July 7, 1903.

UNITED STATES PATENT OFFICE.

EUGENE ZIMMERMAN, OF HORSEHEADS, NEW YORK.

FIRE-EXTINGUISHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 732,990, dated July 7, 1903.

Application filed November 24, 1902. Serial No. 132,594. (No model.)

To all whom it may concern:

Be it known that I, EUGENE ZIMMERMAN, of Horseheads, in the county of Chemung, in the State of New York, have invented new and useful Improvements in Fire-Extinguishing Apparatus, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in automatic fire-extinguishers the operation of which is dependent upon the destruction or disintegration by heat of a fusible detent.

The primary object of this invention, briefly stated, is to normally confine suitable fire-extinguishing elements in separate chambers within automatically-tilting receptacles which are located in different parts of a building and held from tilting by fusible detents and to provide means operable by the shifting of the receptacle for liberating one of the elements in the presence of the other for the purpose of producing a gas rapidly and with sufficient pressure to forcibly expel the fire-extinguishing agent from the receptacle through suitable spray-openings therein, the spray acting to quench the fire which fused the detent. It is apparent that many forms of apparatus may be employed to carry out this object, and for the purpose of clearly demonstrating what I have sought to accomplish I have shown one form of apparatus in the drawings, in which—

Figures 1 and 2 are front and side elevations of my invention, the receptacle being normal in Fig. 1 and inverted in Fig. 2. Fig. 3 is an inverted sectional view taken on line 3 3, Fig. 1. Fig. 4 is a sectional view through the discharge duct or conduit. Fig. 5 is a perspective view of the fracturable acid-containing bulb or bottle and its support.

Similar reference-figures indicate corresponding parts in all the views.

In carrying out the object stated a cylindrical receptacle 1 is suspended from a support 2, such as the ceiling or side wall of a building, by means of a hanger 3 and is normally held in an upright position by a fusible detent 4, said receptacle being supported in such manner that when the detent is destroyed by heat the receptacle will automatically invert itself by its own gravity. One end of this receptacle, as the normal upper end, is provided with an inlet-opening 5 for receiving the fire-extinguishing elements and certain devices hereinafter described, said opening being normally closed by a cap 6, which may be attached or removed when desired and is preferably formed with a spray-opening 7. Suitable trunnions 8 project laterally from opposite walls of the receptacle and are preferably disposed in a plane beneath the normal center of gravity and may be slightly to one side of the plane of the vertical axis of said receptacle, and the lower ends of the hanger 3 are pivotally attached to these trunnions, so that when the function of the detent 4 is destroyed the receptacle will readily tilt by its own gravity to an inverted position, as seen in Figs. 2 and 3. The hanger 3 is shown as pivotally suspended in bearings 9 on the support 2, and when the receptacle inverts itself the momentum imparts a swinging movement to the hanger, and therefore affords a wide range of action for the fire-extinguishing liquid over the fire; but it is evident that the receptacle may be otherwise mounted to effect the same results, if desired. The detent 4 serves to hold the receptacle against its normal tendency to invert or tilt, and preferably consists of a fusible cord or wire lying across and against the weighted side of the receptacle in a plane above the trunnions and having its opposite ends passed through apertured ears 10 upon the receptacle and hanger and secured to said hanger, the apertured ears serving as a convenient means for attaching the detent.

The receptacle 1 is partially filled with a fire-extinguishing liquid, such as a soda solution, and is provided with opposite spray-jets 11, projecting through apertures in the side walls, said jets being connected with perforated tubes 12, which are located within the receptacle and extend from the jets to points in proximity to the normal upper end wall, the perforations in said tubes being normally above the level of the solution, so as to prevent leakage, and are immersed in the solution when the receptacle is inverted, as seen in Fig. 3. A spindle or guide-rod 13 extends axially through the receptacle to receive and guide a sliding weight 14, one end of the rod being secured to the normal bottom

end wall of the receptacle, and is provided with a spring-buffer 15 to receive the impact of the weight, and the other end of the rod enters the inner end of the spray-opening 7, which is slightly enlarged to permit the outflow of the fire-extinguishing fluid when the receptacle is inverted. The weight 14 has a central aperture, through which the rod 13 passes and slides along the rod from end to end of the receptacle as the receptacle changes ends, said weight being normally supported on the buffer 15, and as the receptacle is inverted the weight slides along the rod by gravity toward the descending end of the receptacle, thereby facilitating the inversion of the receptacle and imparting to it a swinging motion due to the momentum. A fragile tube 20 of glass or equivalent material is supported in a suitable holder 21 in the path of the descending weight and contains an acid, so that when the weight descends during the inversion of the receptacle the tube is fractured and liberates the acid in the presence of the soda solution, thereby combining these elements and generating a gas in said receptacle. This gas operates to compress the liquid fire-extinguisher and forcibly expels the same from the receptacle through the tubes 12, jets 11, and spray-opening 7 and onto the fire which fused the detent, and thus squelches said fire. The glass tube 20 is open at its normal upper end to receive the acid and is afterward closed by a suitable cap 22, said tube being mounted on the support 21, which in turn is adjustably secured to the guide-rod 13 in proximity to its normal upper end. This end of the rod is also threaded and receives suitable lock-nuts 24 and a clamping-finger 25, the clamping-finger operating to hold the cap and tube in place, and the lock-nuts serve to lock the support 21 and finger 25 to the rod 13, one of the nuts, as the normal lower one, acting as an abutment for limiting the downward movement of the weight when the receptacle is inverted from its normal position. The receptacle is first partially filled with the desired fire-extinguishing solution and the cap placed in position to close the inlet. The acid-containing tube 20 is then seated in the support 21 and clamped by the finger 25 and lock-nut 24, and the receptacle is then hung in its hanger, after which the fusible detent is secured in place. The apparatus is now ready for automatic action in case of fire. When this occurs, the detent is fused, and the receptacle being released then tilts to an inverted position by its own gravity, during which operation the weight descends along the guide-rod and breaks the acid-containing tube, and the acid mingles with the soda solution or equivalent material and forms a gas with sufficient pressure to expel the liquid, as described.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an automatic fire-extinguisher, an invertible receptacle having an outlet, a guide-rod centrally and axially in the receptacle and fixed to one of its end walls, a sliding weight guided on the rod, a support mounted on the rod and projecting laterally therefrom, and a glass tube attached to the support in the path of the weight.

2. In an automatic fire-extinguisher, an invertible receptacle having an outlet, a guide-rod centrally and axially in the receptacle and fixed to one of its end walls, a sliding weight guided on the rod, a support adjustable on the rod, means to hold the support in its adjacent position, a breakable tube on the support at one side of the rod and in the path of said weight.

3. A fire-extinguisher comprising an automatically-tilting receptacle adapted to contain a fire-extinguishing fluid and having one of its end walls provided with an inlet, a removable cap for the inlet, a spray-jet through one of the side walls of the receptacle, a tube having one end connected to said jet and its other end perforated and projecting above the liquid when the receptacle is normal, a guide-rod in the receptacle, a weight sliding on the rod when the receptacle is tilted from its normal position, a clamp secured to the rod, and a breakable tube held by the clamp in the path of the moving weight for the purpose described.

In witness whereof I have hereunto set my hand this 14th day of November, 1902.

EUGENE ZIMMERMAN.

Witnesses:

AURELIA G. WHITENACK,

STANLEY DAY.