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APPARATUS FOR GENERATING FOAM FOR EXTINGUISHING FIRES.
APPLICATION FILED FEB. 2, 1916. RENEWED OCT. 6, 1919.

1,340,601.

Patented May 18, 1920.

2 SHEETS—SHEET 1.

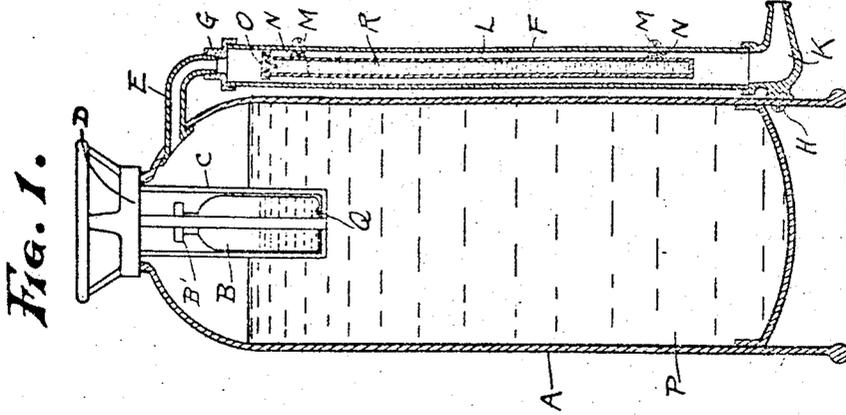


Fig. 1.

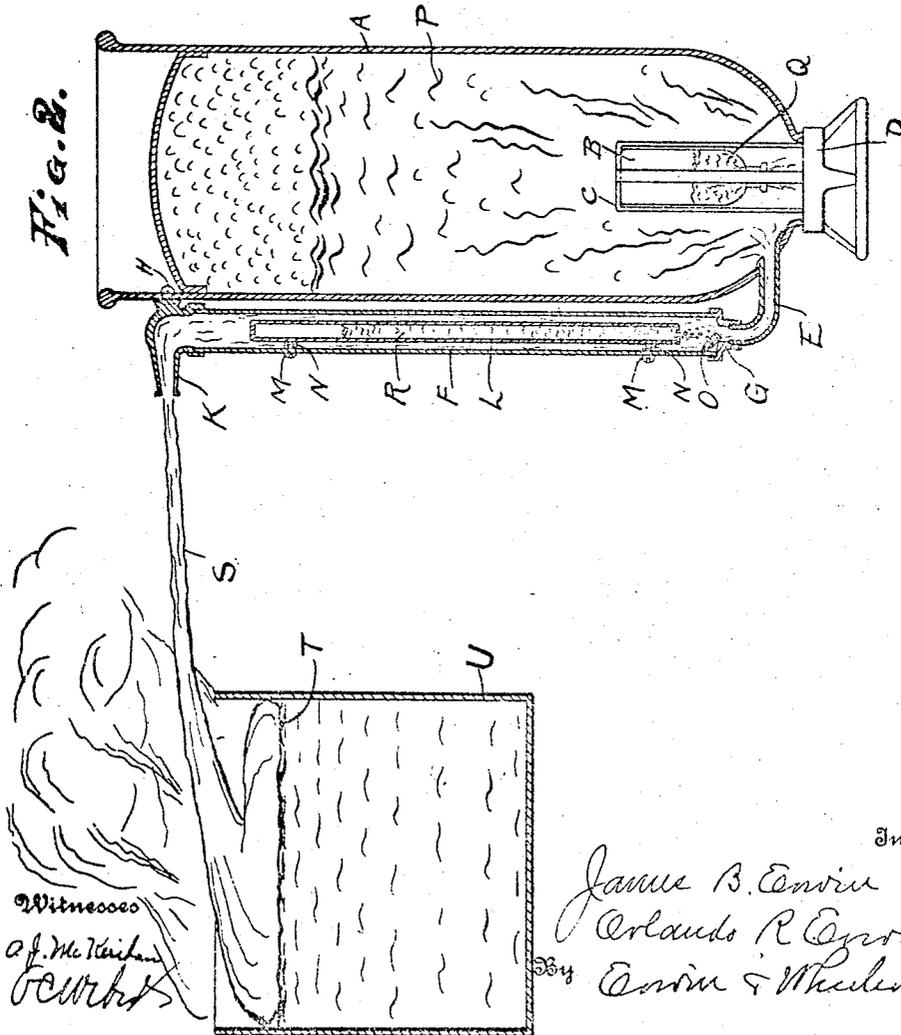


Fig. 2.

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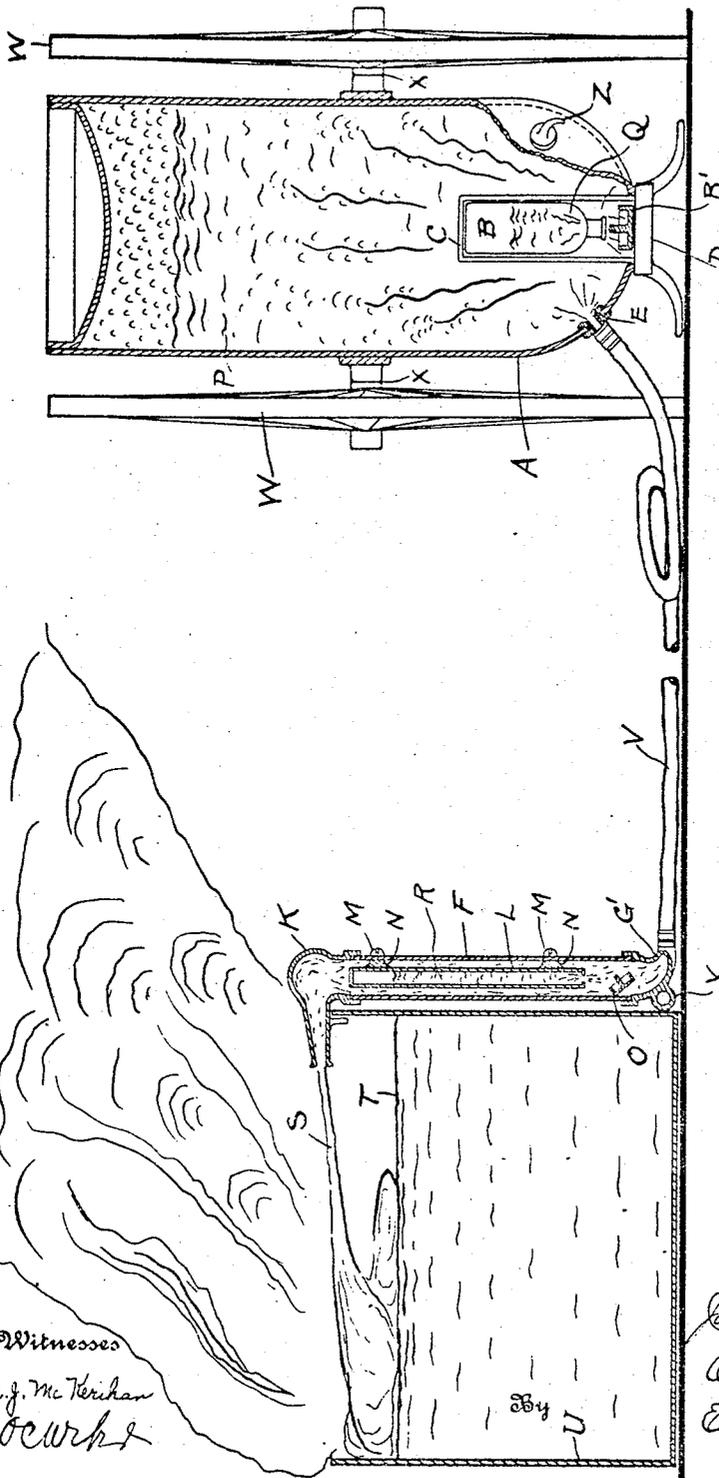


Fig. 5.

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UNITED STATES PATENT OFFICE.

JAMES B. ERWIN AND ORLANDO R. ERWIN, OF MILWAUKEE, WISCONSIN.

APPARATUS FOR GENERATING FOAM FOR EXTINGUISHING FIRES.

1,340,601.

Specification of Letters Patent. Patented May 18, 1920.

Application filed February 2, 1916, Serial No. 75,736. Renewed October 6, 1919. Serial No. 328,927.

To all whom it may concern:

Be it known that we, JAMES B. ERWIN and ORLANDO R. ERWIN, citizens of the United States, residing at the city of Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Apparatus for Generating Foam for Extinguishing Fires, of which the following is a specification.

Our invention relates to improvements in apparatus for generating carbon dioxide foam for extinguishing fires, especially fires in hazardous liquids like benzine, gasoline, etc.

The primary object of our invention is to provide simple attachments for the ordinary so-called soda-and-acid type of fire extinguishers whereby the same may be used with suitable chemicals to generate a volume of foam equal to about ten times the capacity of such extinguishers, whereby the fire fighting efficiency of such devices is not only increased ten-fold, but they are then adapted to extinguish fires in combustible liquids, etc. Foam is well known to be vastly superior to water or solutions containing large percentages of water not only in extinguishing fires in highly inflammable liquids but also in extinguishing any kind of fires, owing to the fact that it is adhesive and may be thrown to a distance upon a wall, ceiling or any surface where it remains long enough to put out fires thereon, and in transit from the extinguisher none of the efficient fire-killing gas, carbon dioxide, is lost, as is the case with ordinary soda-and-acid extinguishers, because such gas is confined in millions of minute bubbles which form the foam.

Another important object accomplished by this invention is that the foam bubbles are generated almost entirely in our improved foam spout attachment from which they are discharged directly upon the fire as fast as generated and consequently in their highest state of fire extinguishing efficiency. It is a well known fact that when the foam is generated in a mixing tank and thereafter forced from thence by its own expansion through a series of ducts, hose, couplings, etc., the foam bubbles become crushed or largely destroyed in transit therethrough and the resultant stream at the nozzle is consequently largely condensed to liquid, the pressure thereby greatly de-

creased, and consequently the fire extinguishing efficiency of such stream is greatly reduced.

Our device and process of generating foam is further explained by reference to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of an ordinary soda-and-acid extinguisher in its normal upright position, charged ready for use, to which our improved foam generating attachments are connected, the same being also shown in vertical section.

Fig. 2 represents the device shown in Fig. 1 in its inverted discharging position as adapted to extinguish a fire in an oil tank, said tank being also shown in vertical section.

Fig. 3 is a vertical sectional view of an ordinary soda-and-acid extinguisher on wheels shown in its inverted position in process of discharging its contents through a line of hose connected to our improved foam generating attachment shown in vertical section and in process of foam generation and discharge upon a fire in an oil tank, said tank also being shown in vertical section.

Like parts are identified by similar reference characters throughout the several views.

The tank A, of ordinary construction, is provided with the usual acid bottle B, bottle supporting cage C, cap D and outlet E, to which a rubber hose (not shown in Figs. 1 and 2) is usually coupled, but instead of which we attach a depending tubular spout F by means of a screw-threaded coupling G functioning as an auxiliary foam producer and ejector. The lower end of the spout F is further detachably connected to the tank A by means of the screw H engaging the L K. A second acid receptacle L is supported within said spout F by means of the screws M, M engaging the lugs N, N or in any convenient manner. O is a stopple for the acid receptacle L, the same being held upon the acid receptacle by its own weight.

To charge the device shown in Fig. 1, the tank A has first to be filled with a suitable foam producing solution P, next the acid bottle B is filled with only sufficient acid Q to react upon and force said solution into said spout L. An additional quantity of acid R is then placed in the receptacle L therefor when the stopples B' and O are

placed upon their respective receptacles and the cap inclosing cover D replaced upon said tank when the device is charged ready for use.

5 To operate the device shown in Fig. 1, the same has simply to be inverted as shown in Fig. 2, whereupon the acid Q will react upon a sufficient quantity of the solution P to discharge same through duct E into the
10 spout F, wherein said solution P is converted into foam by chemical reaction with the acid R therein. The foam, thus generated, escapes direct through L K in its highest state of efficiency for fire extinguish-
15 ing purposes.

The jet of foam S is shown discharging upon the burning surface T of oil in a tank U.

20 The device shown in Fig. 3 is in all respects similar to that shown in Figs. 1 and 2 except that the same is of larger construction and mounted upon a pair of wheels W, W, journaled upon axles *x, x* securely fastened to the tank A. An elongated hose V
25 is employed to convey the solution P into the spout F, whereby greater range of applying the foam to the fire is afforded. The spout F, shown in Fig. 3, is shown removed from the tank A, but the same is provided
30 with an eye Y at its lower end adapted to support said spout F upon a hook Z, fastened to the tank A, when not in use and when in its normal upright position.

35 Having thus described our invention what we claim as new and desire to secure by Letters Patent is:—

1. A device of the class described comprising a closed tank for a solution to be used in the production of foam, a foam gener-
40 ating auxiliary spout located exteriorly of said tank, an acid receptacle having an opening in one end thereof, the same being nor-

mally closed by a stopper, said receptacle being secured axially within the said spout and so arranged as to permit a foam passage
45 therearound, the said tank and spout being in position for the production of foam upon being inverted, and a duct communicating between said tank and spout.

2. A device of the described class, com- 50 prising a closed tank for a solution to be used in the production of foam, a foam generating auxiliary spout located exteriorly to said tank, a receptacle having an opening in one end thereof, the same being normally
55 closed by a stopper, said receptacle being secured within said spout and so arranged as to permit a passage for the foam around said receptacle and through said spout, and
60 a duct communicating between said tank and spout.

3. In combination with a fire extinguisher tank, an auxiliary foam producer and ejector comprising a tubular spout in operative
65 communication with the said tank, a foam discharge nozzle at the opposite end of the spout from its point of communication with the said tank, an elongated acid receptacle secured axially within said spout and hav-
70 ing a foam outlet passage therearound and having an outlet adjacent the opposite end of the spout from said nozzle, and a gravity seated normally closed stopper upon said receptacle, the said foam producer and ejec-
75 tor being adapted for operation by in-

verting.
In testimony whereof we affix our signatures in the presence of two witnesses.

JAMES B. ERWIN.
ORLANDO R. ERWIN.

Witnesses:

O. C. WEBER,
A. J. MCKERIHAN.