

H. M. MINNIS.
CHEMICAL FIRE ENGINE.
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984,231.

Patented Feb. 14, 1911.

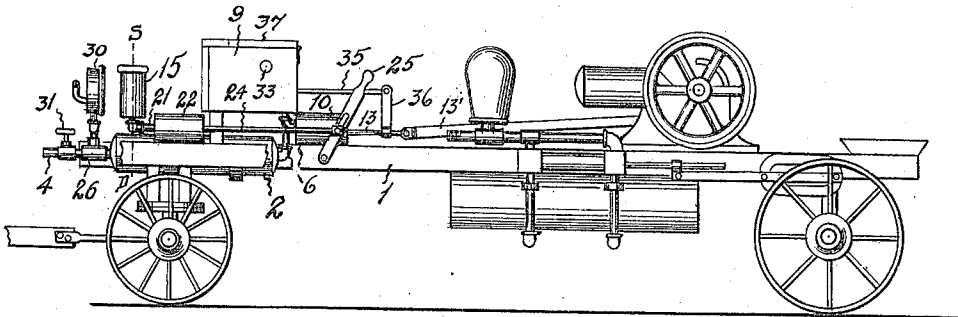


Fig. 1.

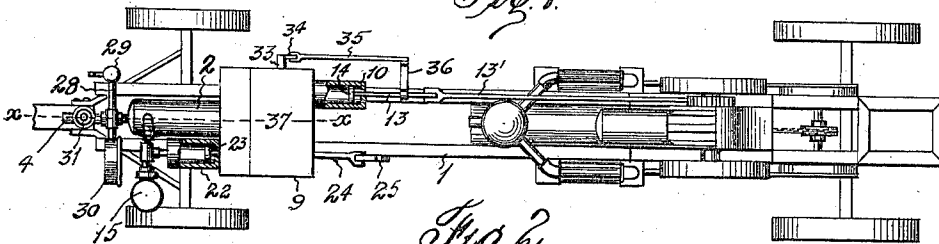


Fig. 2.

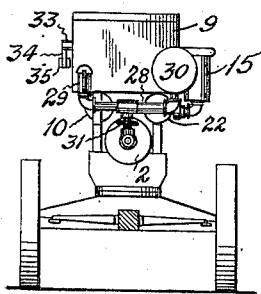


Fig. 3.

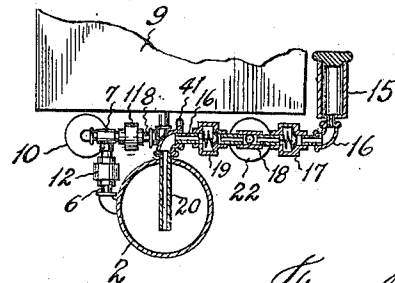


Fig. 4.

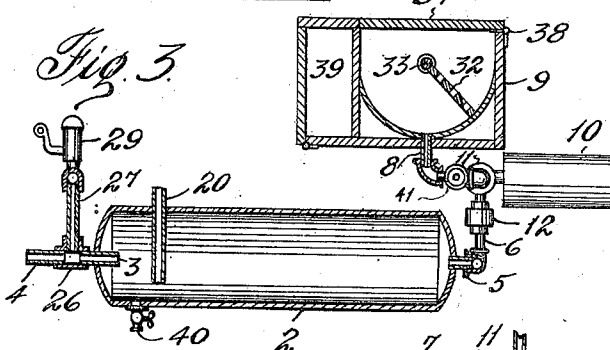


Fig. 5.

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Fig. 6.

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UNITED STATES PATENT OFFICE,

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CHEMICAL FIRE-ENGINE.

984,231.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY M. MINNIS, citizen of the United States, residing at Wylie, in the county of Collin and State of Texas, have invented certain new and useful Improvements in Chemical Fire-Engines, of which the following is a specification.

My invention relates to new and useful improvements in fire extinguishers and more particularly to chemical fire engines.

The object of my invention is to provide a chemical fire engine which can be mounted upon a portable frame and one which will not necessitate the refilling of the tanks carrying the chemical after the initial charge has been exhausted.

Another object of my invention is to provide a fire extinguisher having a tank for carrying chemical and means for forcing soda water into the tank and a pump arranged to introduce suitable acid into the tank to charge the same.

Still another object of my invention is to provide a chemical fire engine carrying a tank similar to the usual carboy commonly used on fire extinguishers of this class, but one which can be made to regenerate without closing the outlet to the tank or lowering the pressure of the fluid that is passing through the outlet.

Finally the object of the invention is to provide means of the character described that will be strong, durable, efficient, and easy of operation, simple and comparatively inexpensive to construct, and also in which the several parts will not be likely to get out of working order.

With the above and other objects in view, the invention has relation to certain novel features of construction and operation, an example of which is described in this specification and illustrated in the accompanying drawings, wherein:

Figure 1. is a side elevation of my device mounted on the frame of a portable fire pump, Fig. 2. is a plan view of the same, Fig. 3. is a front elevation of my device mounted on said frame, Fig. 4. is a vertical section taken on the line S—D of Fig. 1 with the tank removed from the frame, Fig. 5. is a transverse section taken on the line $x-x$ of Fig. 2 showing a soda water hopper and a pump connection to the tank, and

Fig. 6. is a detail of the soda water pump connections and valves.

In the drawings the numeral 1 designates the frame of a portable fire pump on which I have mounted a tank 2 near its forward end. The tank 2 has an outlet 3 arranged at its forward end from which a pipe 4 extends. From the other end of the tank a pipe 5 extends outward to a vertical pipe 6 which has connection with a T-joint 7 connected in a pipe 8 leading from a soda water receptacle 9 to a cylinder 10. A check valve 11 is arranged in the pipe 8 between the T-joint 7 and the soda water receptacle 9 while a similar check valve 12 is included in the pipe 6 between the T-joint 7 and the pipe 5. A hand operated cut-off valve 41 is connected between the receptacle 9 and the check valve 11 to regulate the flow between the pump and the receptacle. This construction is best shown in Figs. 4 and 5.

A piston 14 is mounted in the cylinder 10 and arranged to be operated by a pitman 13 to be driven by any suitable power. Soda water or similar fluid which is poured into the receptacle 9 will be forced into the tank 2 under pressure, where it will be held by the check valve 12.

Above the tank 2 at its forward end a receptacle 15 adapted to hold an acidulous fluid such as sulfuric acid is mounted. From the bottom of this receptacle a pipe 16 extends to a check valve 17 and thence to a T-joint 18. On the other side of the T-joint the pipe 16 has connection with a check valve 19 and terminates in a downwardly extending pipe 20 which enters the tank 2 and terminates near its bottom. The T-joint 18 communicates with a rearwardly extending pipe 21 which terminates within a cylinder 22 mounted on the frame 1. A piston 23 arranged to operate within the cylinder 22 has connection through a pitman 24 to a hand lever 25 also mounted on the frame 1.

In the pipe 4 which extends from the forward end of the tank 2, a T-joint 26 is included and a pipe 27 having connection therewith extends upward and connects with a horizontal pipe 28 which communicates with a safety valve 29 and pressure gage 30. After connecting with the T-joint 26 the pipe 4 communicates with a hand operated cut-off valve 31 which is normally kept

closed. The end of the pipe 4 which extends beyond the cut-off valve 31 is threaded so as to be capable of being connected to a hose to be used in fighting fire.

- 5 Soda and water emptied into the receptacle 9 will be thoroughly mixed by an agitator 32 mounted on the shaft 33 which extends to the receptacle 9. On the end of the shaft 33 a lever arm 34 is mounted and has
10 pivotal connection with a link 35 extending rearwardly and connected at its rearmost end to an arm 36 secured on the pitman 13. A cover 37 is provided for the receptacle 9 so that the same may be used for a seat.
15 However upon reaching the fire the cover is swung back on hinges 38 and the receptacle 9 is left open to act as a hopper into which soda and water to be pumped into the tank 2 is emptied and mixed. A compartment 39
20 is arranged in the forward end of the receptacle 9 in which provisions such as soda and acid may be carried. The front wall of this compartment is hinged to the bottom so that it may be swung down to give easy
25 access to the contents of the compartment.

- To charge the soda and water after it has been pumped into the tank 2 under pressure, the operator only has to draw the lever 25
30 back to fill the cylinder 22 with acid from the receptacle 15 and then push it slightly forward forcing just enough acid into the tank 2 to give the required pressure. The cut-off valve 31 is then open and the fluid
35 The fluid exhausted through the hose will be readily replaced by the pump 14 provided the receptacle 9 is kept filled with sufficient soda and water, and the operator may keep uniform pressure by observing the pressure
40 gage 30 and by moving the lever 25 to introduce more acid into the tank 2 in accordance with the pressure which he desires to maintain.

- It is obvious that it is unnecessary to close
45 the cut-off valve 31 during this operation and that the flow through the exhaust pipe

4 will be continuous and with uniform pressure, also that the machine may be kept in operation for several hours or longer if desired without adjustment or without stopping to allow the chemical to regenerate. 50

To prevent the corrosion of the several parts of this machine when it is not in use I have provided a petcock 40 in the lower side of the tank 2 which may be opened after 55 the valve 31 has been closed to allow clear water emptied into the receptacle 9 to run through the pipe connections 8, 6 and 5 by gravity and thence through the tank 2 where it will gather the remains of the acid. 60

What I claim is:

In a chemical fire engine, the combination with a frame, of a charging tank mounted on the frame and provided with an outlet, a receptacle for receiving soda water mounted 65 adjacent the tank, a pump cylinder interposed between the tank and receptacle, a pipe connection from the tank to the receptacle to which the cylinder is also connected, a pair of check valves in the pipe 70 connection, a valve being located on each side of the point of connection with cylinder, an acid receptacle, a hand operated pump interposed between the acid receptacle and the tank, a pipe connecting the acid re- 75 ceptacle with the tank and to which the hand pump is also connected, a pair of check valves in the last named pipe, a valve being disposed on each side of the point of connection to the hand pump, a piston working in 80 the first named pump cylinder, a swinging agitator operating in the soda water receptacle, and an operating connection between the piston and the agitator.

In testimony whereof I have signed my 85 name to this specification in the presence of two subscribing witnesses.

HENRY M. MINNIS.

Witnesses:

Z. M. DUCKWORTH,
GLYNN DAVIS.