E. M. E. HANSEN.

CHEMICAL FIRE ENGINE.

APPLICATION FILED AUG. 2, 1909.

957,054.

Patented May 3, 1910.

2 SHEETS—SHEET 1.

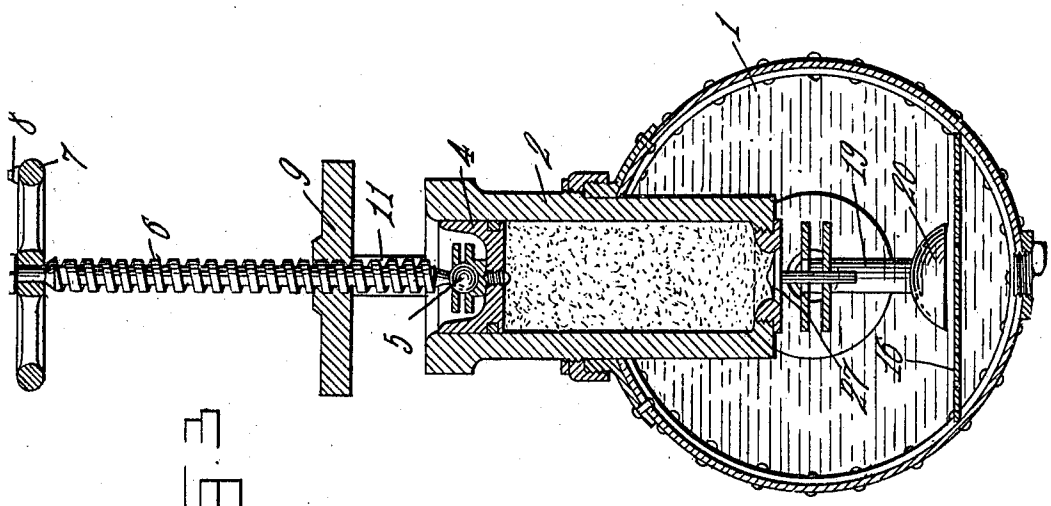

Fig. 3

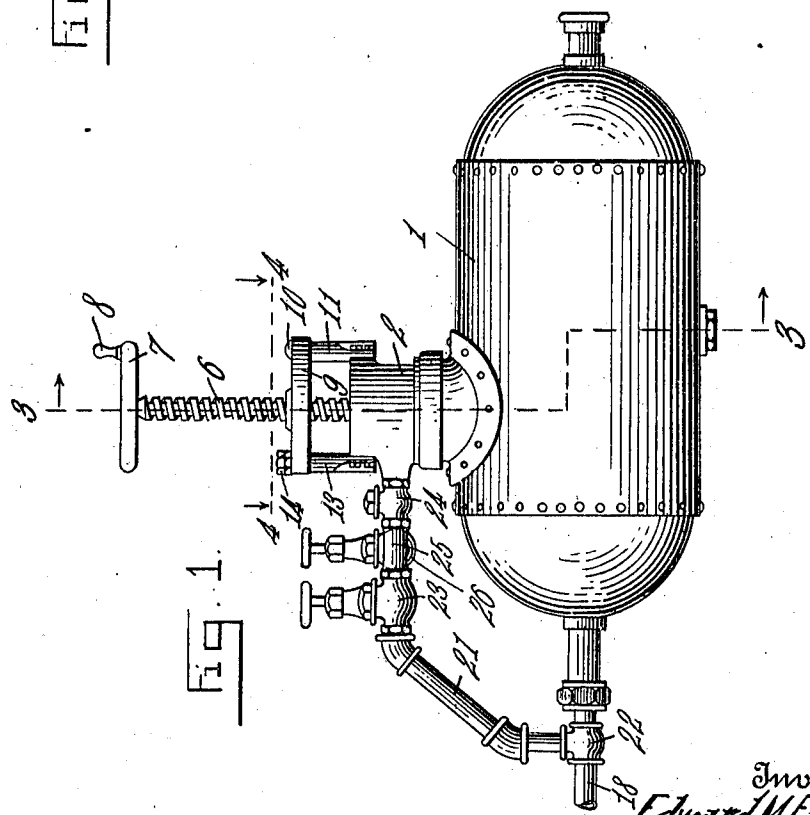

Fig. 1

Witnesses
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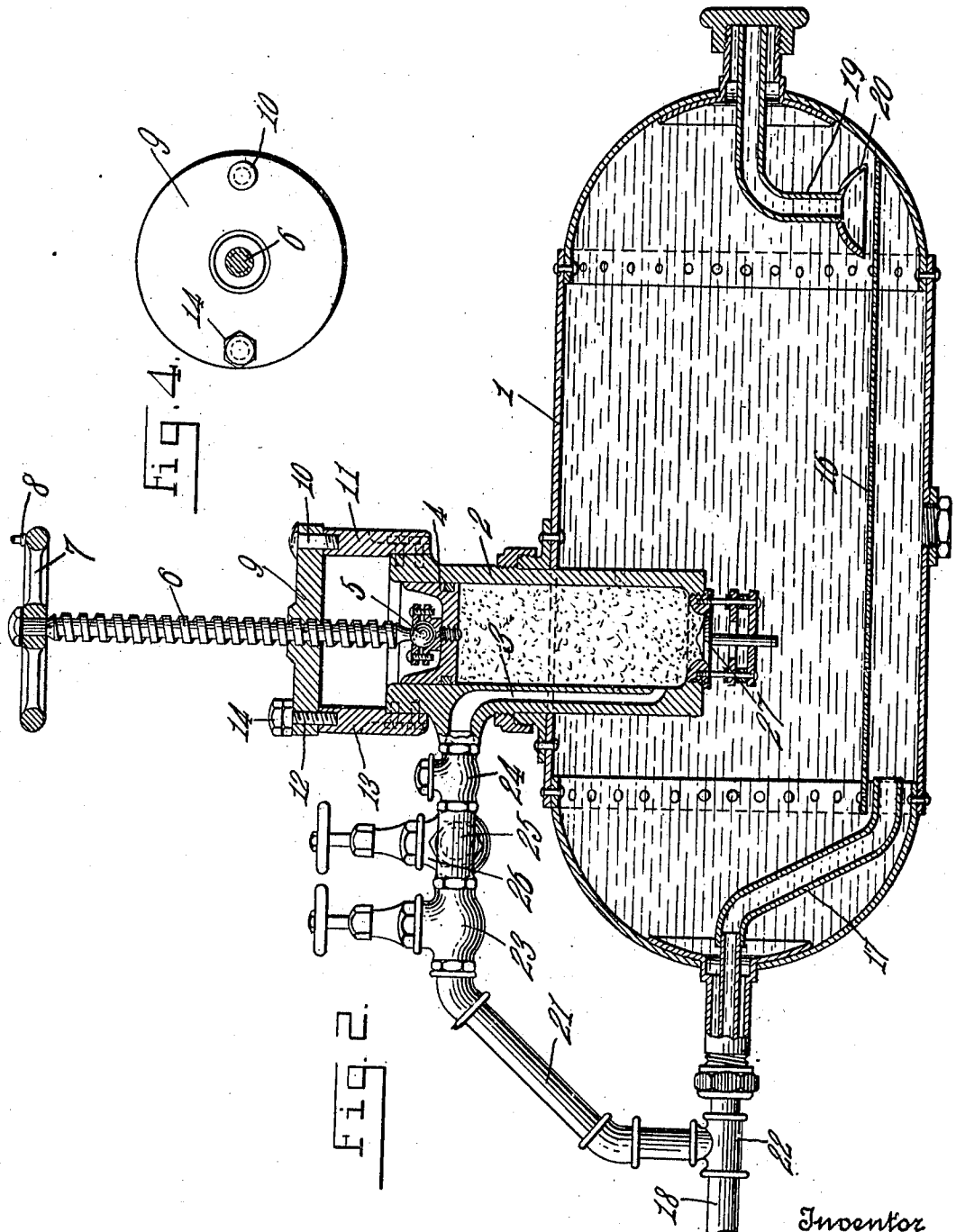

Fig. 2.

Fig. 4.

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UNITED STATES PATENT OFFICE.

EDWARD M. E. HANSEN, OF ST. LOUIS, MISSOURI.

CHEMICAL FIRE-ENGINE.

957,054. Specification of Letters Patent. Patented May 3, 1910.

Application filed August 2, 1909. Serial No. 510,738.

To all whom it may concern:

Be it known that I, EDWARD M. E. HANSEN, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Chemical Fire-Engines; and I do 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.

This invention relates to chemical fire engines.

The principal object of this invention is to provide an engine which will be more simple and efficient in operation and action than similar devices or engines now in use.

A further object of the invention is to provide an improved charging device by means of which the operator can charge and recharge a tank without interfering with the stream through the hose thus providing for a continuous unbroken stream of the fire extinguishing fluid. By using my improved charging device the danger of burning the hands or damaging valuable apparatus or other property in the near vicinity by the spilling of acid is avoided.

A further object is to provide means to prevent the soda from settling in the bottom thus dispensing with the agitator mechanism heretofore used in chemical engines.

With these and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings: Figure 1 is a side elevation of the complete engine; Fig. 2 is a central longitudinal section thereof; Fig. 3 is a vertical transverse section taken on line 3—3 of Fig. 1; and, Fig. 4 is a horizontal section taken on the line 4—4 of Fig. 1.

Referring to the drawings for a more particular description of the invention the engine comprises the tank or casing 1 which contains the extinguishing fluid. The charging cylinder 2 is mounted upon the top of the tank 1 with its lower end projecting thereinto and is provided in its wall and at one side with the longitudinal supply port 3 which communicates with the interior of the cylinder at a point somewhat above the lower end thereof.

The numeral 4 indicates the charging piston which is mounted in the charging cylinder and is connected by a ball and socket joint 5 with a vertical operating screw 6 provided at its upper end with the turning wheel 7 provided with the arm 8 which is to be grasped by the operator. The operating screw 6 screws through the horizontal supporting plate 9 which is pivoted at one end upon a reduced headed extension 10 of the vertical support or bracket 11 screwed to the top and at one side of the charging cylinder. The free end of the supporting plate 9 is apertured to receive the threaded extension 12 formed at the upper end of the bracket or support 13, nuts 14 being screwed on said extension to hold the free end of the plate 9 against vertical displacement.

The tank 1 is provided near its bottom with a horizontal perforated copper plate 16 the purpose of which will be presently disclosed. A water supply pipe 17 communicates with one end of the tank at a point beneath the plate 16 and its opposite end communicates with the pipe 18 which may lead to the pump. An outlet pipe 19 provided at its lower end with the cup shaped hood 20 is arranged at the opposite end of the tank the purpose of which will be evident. A by-pass water pipe 21 extends upwardly at a suitable inclination from the pipe 18 to which it is connected by the elbow 22. The upper end of the pipe 21 is connected with the hand operated cut off valve 23 which communicates with the check valve 24 by means of the connecting pipe 25, the check valve 24 communicating with the port 3 in the charging cylinder 2.

The numeral 26 indicates the acid valve which controls the supply of the acid to the discharge cylinder.

In practice water is pumped into the tank through the supply pipe 17. The operating screw 6 is then turned to the left until the piston 4 leaves the upper end of the charging cylinder 2 when by reason of the ball and socket joint 5 the piston may be swung at any desired angle or instead the nuts 14 may be removed and the free end of the supporting plate 9 swung to a position at one side of the cylinder to carry the piston away from the upper end thereof. The soda is then placed in the charging cylinder 2 when the supporting plate is readjusted and the operating screw 6 turned to the right to force the soda through the check valve 27 into the tank. Water in the mean time is

admitted into the lower end of the cylinder through the port 3 which washes the soda into the tank through the check valve. After the soda has been charged in the tank the valve 23 is closed cutting off further supply of water through the by-pass pipe 21 when the valve 26 is opened to allow the acid to flow or siphon through the check valve 24 and port 3 into the cylinder 2. The charging piston is then again moved downwardly in the cylinder to force the acid through the check valve into the tank 1. The contents of the tank 1 is then ready to be discharged through the discharge pipe 19. The acid can be carried in the car body or on a large acid receptacle, conveniently placed on the apparatus and connected by a lead or other pipe with the valve 26. The water entering the tank between the copper plate 16 and then passing through the plate prevents the soda from settling on the bottom of the tank thereby dispensing with the agitator mechanism heretofore used in chemical fire engines.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention as defined in the appended claims.

I claim as my invention:

1. A chemical fire engine comprising a main tank, a charging cylinder provided with a longitudinal water and acid port mounted thereon and projecting thereinto, a charging piston in the cylinder, operating means for the piston, a check valve at the lower end of the cylinder, means for admitting water into one end of the tank, a water by-pass conduit communicating with the water and acid discharge port of the charging cylinder and manually operated valves to control the supply of the water and acid through said port.

2. A chemical fire engine comprising a main tank, a charging cylinder mounted thereon and projecting thereinto, means for charging the tank with water, a piston in the charging cylinder, an operating screw having a ball and socket connection with the piston and means for passing either acid or water into the lower end of the cylinder with means for controlling the passage of said acid and water.

3. A chemical fire engine comprising a main tank, a charging cylinder mounted thereon and projecting thereinto, a piston in the cylinder, a horizontal supporting plate pivoted to swing over the upper end of the cylinder, means for holding the free end of said plate in normal position or over the top of the cylinder, an operating screw having a swivel connection with the piston screwing through said supporting plate, a downwardly opening check valve at the lower end of the charging cylinder and means for charging the tank with water, an outlet for the extinguishing fluid and means for passing either a quantity of acid or water through the lower end of the charging cylinder.

4. A chemical fire engine comprising a main tank, a horizontal perforated copper diaphragm in the bottom thereof, means for admitting water into the tank beneath the diaphragm, an outlet for the water, a charging cylinder, a piston therein, means for operating the piston and means for passing a quantity of water or acid into the lower end of the charging cylinder.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

EDWARD M. E. HANSEN.

Witnesses:

JAMES E. DAME,

A. L. HIRSCH.