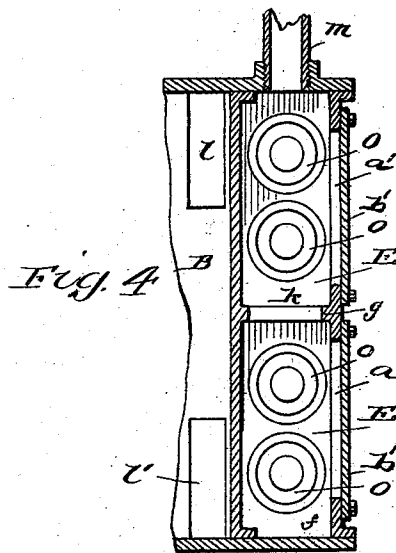
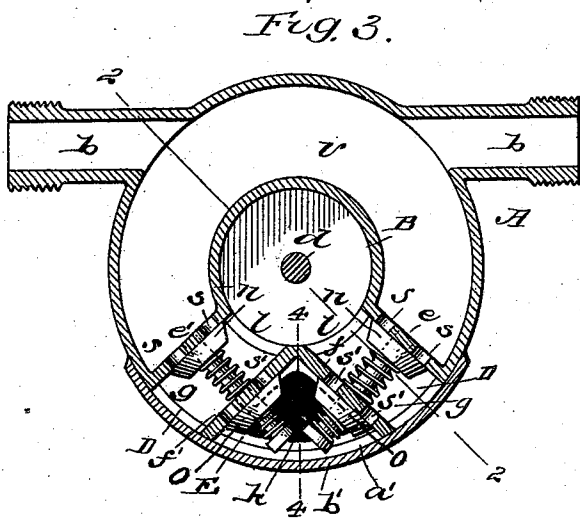
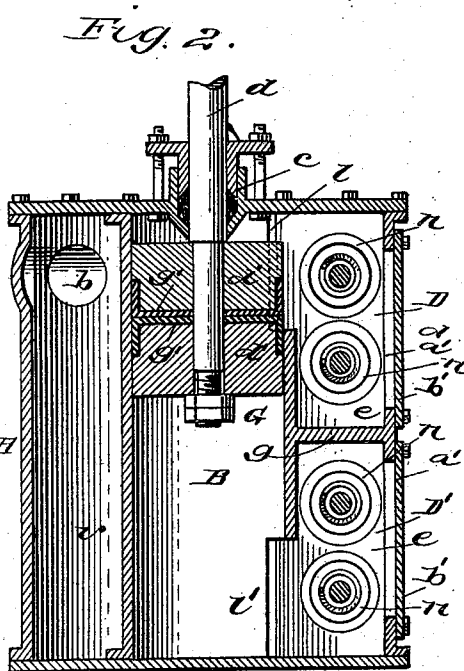
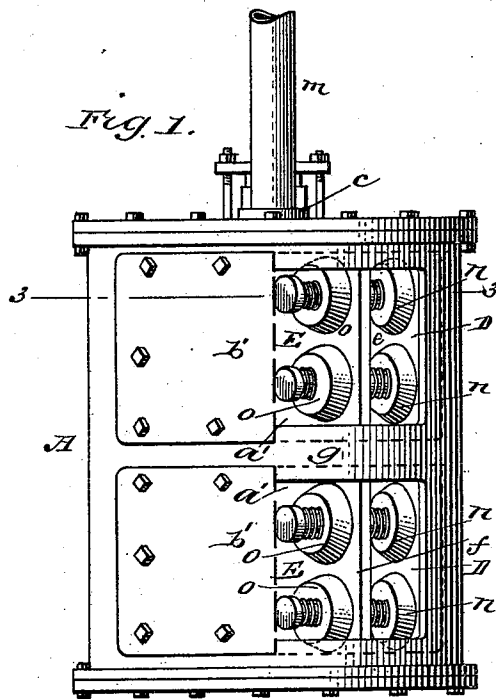


(No Model.)

T. S. LA FRANCE.
FIRE ENGINE PUMP.

No. 478,439.

Patented July 5, 1892.



WITNESSES:

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TRUCKSON S. LA FRANCE, OF ELMIRA, NEW YORK.

FIRE-ENGINE PUMP.

SPECIFICATION forming part of Letters Patent No. 478,439, dated July 5, 1892.

Application filed July 15, 1890. Serial No. 358,780. (No model.)

To all whom it may concern:

Be it known that I, TRUCKSON S. LA FRANCE, of Elmira, in the county of Chemung and State of New York, have invented a new and useful Improvement in Fire-Engine Pumps, of which the following is a full, clear, and exact description.

This invention has more especially for its object the production of a pump for steam and other like fire-engines which shall be more conveniently accessible as regards its valves and interior mechanism when repair or adjustment is necessary than is usually attainable and which will not necessitate the taking down or interference with the outside mechanism of the pump or engine whenever it is necessary to get at the valves of the pump to repair or replace them, thereby saving much time and labor and consequently reducing the expense attendant upon keeping a fire-engine in order ready for use without much or any serious delay.

The invention, which relates to double-acting pumps, more particularly to those which occupy an upright position in the fire-engine, consists in a novel construction of the pump-casing and arrangement of the inlet and outlet passages with the pump-barrel and in double sets of valve-chambers arranged in the front or accessible side of the pump-casing and closed by a separate lid or lids, with all the valves grouped in close relation with each other, and so that either end sets of valves are readily accessible without disturbing the end covers of the pump-barrel and its casing, substantially as hereinafter described, and pointed out in the claims, and whereby the object more especially sought to be attained, as hereinbefore set forth, is very perfectly and compactly secured.

The invention also includes a special combined "solid head" and "bucket" plunger for the double-acting pump, as hereinafter described.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 represents an exterior elevation of my improved double-acting fire-engine pump, with one-half of two lids which close its valve-chambers on the one side or front of the

pump removed. Fig. 2 is a vertical section upon the line 2 2 in Fig. 3. Fig. 3 is a horizontal section upon the line 3 3 in Fig. 1; and Fig. 4 is a vertical section, in part, upon the line 4 4 in Fig. 3.

A indicates the pump-casing of circular form, as usual, and provided with opposite side inlets *b b* for receiving the water from either side of the engine without turning the latter, which feature is common to fire-engines generally.

B is the pump-barrel, arranged concentrically within the casing A and extending the full height and depth of it. Said barrel and casing are closed both top and bottom, and neither end requires to be opened nor yet the back of the casing nor the barrel nor its plunger to be removed in order to get at the valves, as will be apparent from the description which follows.

A stuffing-box *c* is provided on top of the pump-casing or its barrel for the plunger-rod *d* to work through.

All the valves, both inlet and outlet, are arranged in the front portion of the casing A, so as to be more readily accessible, as hereinbefore described, to which end I construct the casing as follows: Running vertically from top to bottom in the front portion of the pump-casing and joining the front side of the barrel are partitions *e e'* and *f f'*, joined midway of their height by a horizontal dividing partition *g*, thereby forming upper inlet-valve chambers D D and lower inlet-valve chambers D' D'; also, between these two sets of inlet-chambers upper and lower outlet-valve chambers, virtually, however, forming only one E, by reason of the partition *g* not intersecting them or having an opening *k* through it uniting them. Passages *l l'* are made in the backs of the inlet-valve chambers D D and D' D' to establish communication with the pump-barrel B for drawing water first into one end of the barrel and then into the other end thereof and discharging it therefrom as the plunger G is reciprocated up and down, and a pipe or outlet *m* is provided at top of the double delivery-chamber E to connect with the usual air-chamber with which the discharge-hose is connected. (Not shown here.) Both the upper and lower sets of inlet or suction valves *n*, contained in the chambers D D D' D', and

the upper and lower sets of delivery-valves *o*, contained in the double delivery-chamber *E*, are or may be the usual spring-puppet ones. The suction-valves *n* control openings *s*, connecting the inlet-chambers *D D D' D'* with the whole interior back and side portions of the casing *A*, which forms a water-receiving chamber *v*, and the delivery-valves *o* control like openings *s'*, connecting the inlet-chambers *D D D' D'* with the double delivery-chamber *E*. From this description it will readily be seen that as the plunger *G* is worked up and down the pump-barrel *B* alternately takes in water by the upper and lower passages *l l'* through the suction-valves *n* in the upper and lower inlet-chambers *D D D' D'*, the supply being furnished from the general receiving-chamber *v*, and alternately discharges the water through the same passages *l l'* into the double delivery-chamber *E* through the delivery-valves *o*, and from thence through the outlet *m*.

In the front and exposed side of the pump-casing *A* are provided openings *a' a'*, the one above and the other below the horizontal partition *g*, said openings, which virtually form open fronts to the valve-chambers *D D, D' D'*, and *E*, being of sufficient size to take in or expose the whole of the valves when a lid, or preferably separate lids *b' b'*, applied to the front of the casing *A* and closing said openings *a' a'*, are removed. In this way or by these means either or both the upper and lower sets of inlet and outlet valves, all or any of them, are readily accessible for repair or replacement from the front side of the outer casing, free from displacement of or interference with the outside mechanism or parts of the engine and without opening the back of the casing or removing the ends of it and the barrel or drawing out the barrel or plunger, and by this arrangement of the valves and valve-chambers the pump-barrel and its outer casing may be cast in a single piece, if desired.

As in fire-engines, it sometimes is preferred to construct the plunger of the pump with a solid head, and at other times to use a bucket-plunger provided with a leather or other like cup-packing. I combine both of these constructions in the plunger *G* by making it with two half or upper and lower solid heads *d' d'*, holding reverse cup-shaped leather or flexible packings *g' g'* in between them.

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

1. In a fire-engine pump, the combination, with a casing, of a pump-barrel arranged therein to form a water-chamber at the back and sides of the said barrel and an outlet-chamber between the pump-barrel and the front of the casing and discharging at the top, an upper and lower inlet-chamber on each side of the outlet-chamber and each communicating with the pump-barrel, and valves controlling the admission of water from said wa-

ter-chamber to the inlet-chambers and from the inlet-chambers to the outlet-chamber, substantially as described.

2. In a fire-engine pump, the combination, with a casing, of a pump-barrel arranged approximately concentrically in the casing and extending from top to bottom thereof, thereby forming a water-chamber at the back and sides of the pump-barrel, said chamber extending from the top to the bottom of the casing, an outlet-chamber between the pump-barrel and the front of the casing, an outlet-pipe leading from the top of the outlet-chamber, an upper and lower inlet-chamber on each side of the outlet-chamber and each communicating with the pump-barrel, valves controlling the admission of water from the said water-chamber to the inlet-chambers, and valves controlling the admission of water from the inlet-chambers to the outlet-chamber, substantially as described.

3. In a fire-engine pump, the combination, with a casing, of a pump-barrel arranged approximately concentrically in the casing and extending from top to bottom thereof, four vertical partitions arranged between the pump-barrel and the front of the casing, a horizontal partition extending from the pump-barrel to the front of the casing at about the middle of the height of the said casing, the said horizontal partition being apertured between the two innermost partitions, whereby an outlet-chamber and two upper and two lower inlet-chambers will be formed in the front of the casing, and a water-chamber in the rear thereof, said water-chamber surrounding the back and sides of the pump-barrel and extending from the top to the bottom of the casing, substantially as herein shown and described.

4. In a fire-engine pump, the combination, with a casing having an opening in its front, of a pump-barrel in the casing and extending from the top to the bottom thereof, a water-chamber in the rear of the casing and extending from top to bottom thereof, an outlet-chamber between the pump-barrel and the front of the casing, an outlet-pipe leading from the top of the outlet-chamber, an upper and lower inlet-chamber on each side of the outlet-chamber and communicating with the pump-barrel, valves controlling the admission of water from the water-chamber to the inlet-chambers and from the inlet-chambers to the outlet-chamber, and a lid or lids closing the opening in the front of the casing, substantially as herein shown and described.

5. The combination of the outer pump-casing *A*, having openings *a' a'* in its front side, lids *b' b'*, closing said openings, the inner pump-barrel *B*, having upper and lower openings *l l'*, the upright partitions *e e'* and *f f'* between the front side of the barrel and open front side of the outer casing, and the horizontal partition *g*, forming double sets of upper and lower inlet-valve chambers *D D D' D'* and a double outlet-chamber *E*, the suction-

valves *n*, controlling admission of water from the outer casing into said inlet-chambers, and the delivery-valves *o*, controlling the discharge into the outlet-chamber *E*, essentially as shown and described.

5 6. In a double-acting fire-engine pump, a plunger formed of upper and lower solid heads, each having a reduced end, the said heads being mounted on the plunger-rod with their

reduced ends adjacent to each other, and 10 flexible cup-shaped packings fitting on and arranged between the reduced ends of the said heads, substantially as and for the purpose set forth.

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Witnesses:

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C. SEDGWICK.