No. 693,516. Patented Feb. 18, 1902.

# W. S. HALSEY.

## MEANS FOR TRANSMITTING FLUID UNDER PRESSURE.

(Application filed Aug. 30, 1900.)

(No Model.)

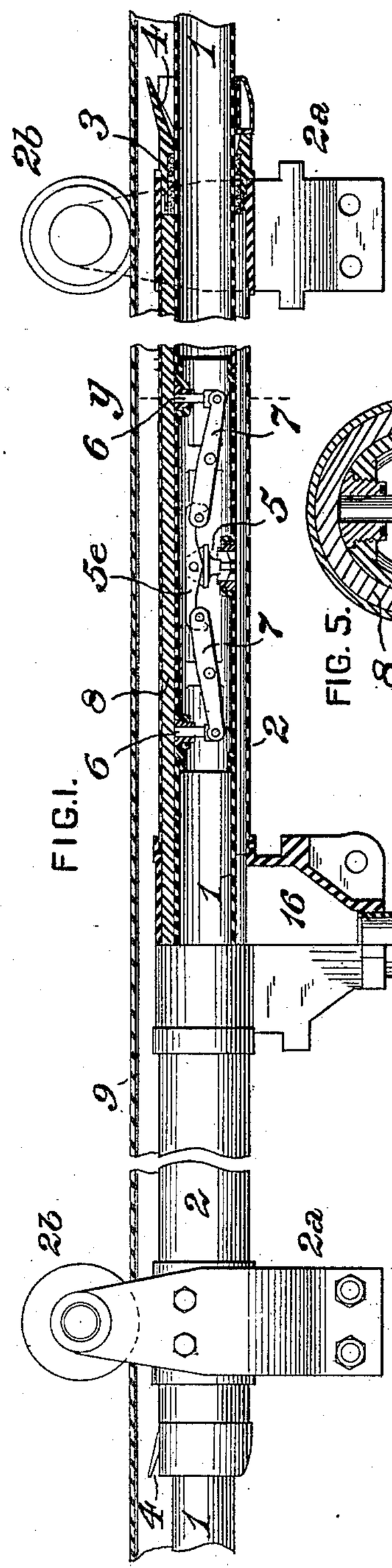


FIG. 1.

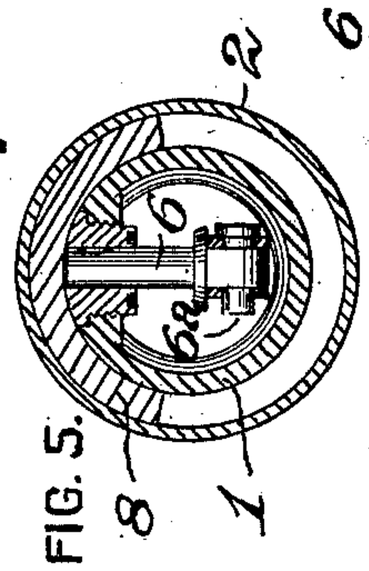


FIG. 5.

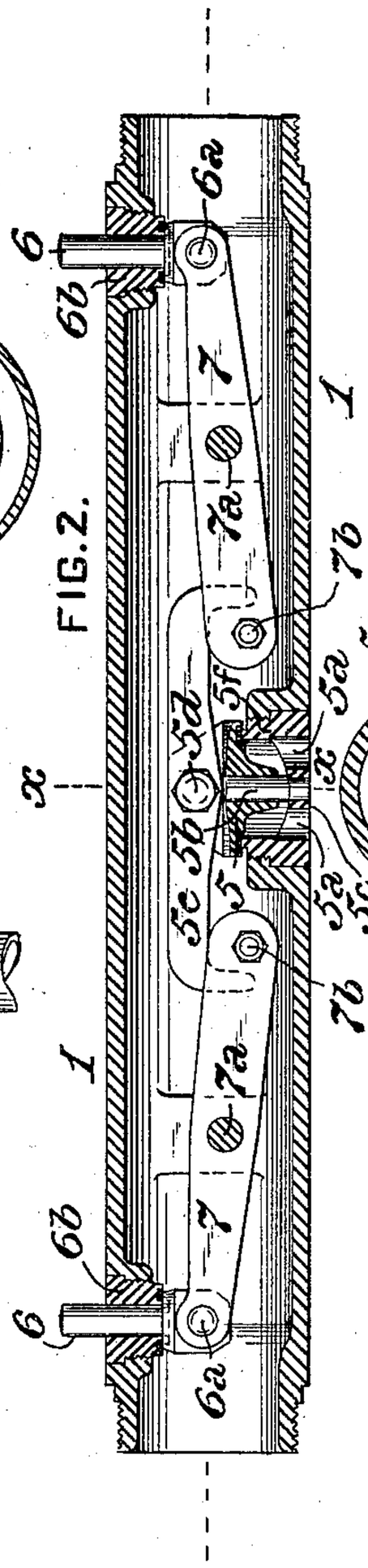


FIG. 2.




FIG. 4.

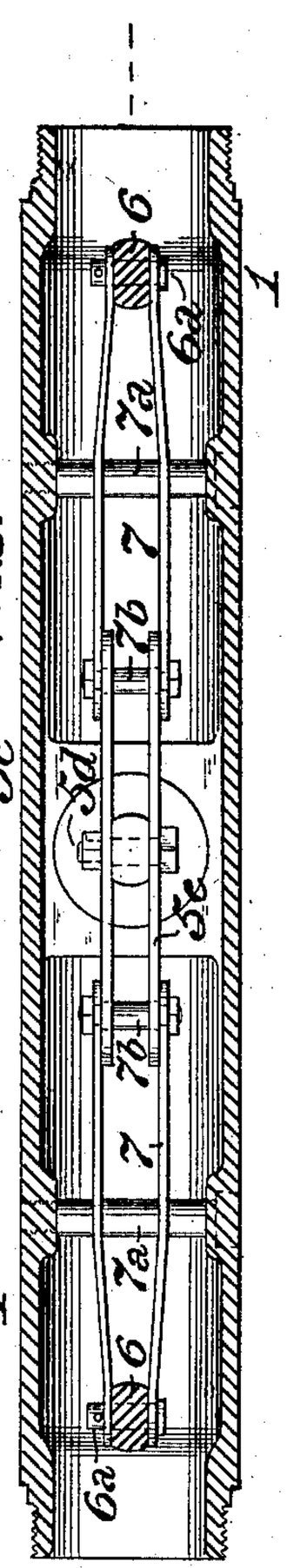


FIG. 3.

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# UNITED STATES PATENT OFFICE.

WILLIAM S. HALSEY, OF PITTSBURG, PENNSYLVANIA.

## MEANS FOR TRANSMITTING FLUID UNDER PRESSURE.

SPECIFICATION forming part of Letters Patent No. 693,516, dated February 18, 1902.

Application filed August 30, 1900. Serial No. 28,508. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM S. HALSEY, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Means for Transmitting Fluid Under Pressure, of which improvement the following is a specification.

My present invention relates to and is an improvement in apparatus for transmitting fluid under pressure from a supply-reservoir to a device or mechanism in which it is to be utilized of the general class or type in which a receiver is fitted to traverse longitudinally on a fixed feed pipe or reservoir and to communicate therewith in its traverse through ports or openings controlled by automatically-operated valves for the admission of fluid under pressure from the reservoir to the receiver, such fluid being conducted through suitable tubular connections from the receiver to the desired point of supply. Instances of apparatus of the class referred to are exemplified in Letters Patent of the United States No. 532,198, granted and issued to me under date of January 8, 1895, and Nos. 637,333 and 653,802, granted to the Pneumatic Crane Company, as my assignee, under dates of November 21, 1899, and July 17, 1900, respectively.

The object of my invention is to provide improved means for actuating the valves which effect admission of fluid from the reservoir to the receiver, whereby an unobstructed passage for the delivery of fluid may be afforded and a wider bearing-face for the valve-operating tappets be rendered admissible.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a vertical longitudinal central section through a portion of a fluid-pressure-transmission apparatus, illustrating an application of my invention; Fig. 2, a similar section, on an enlarged scale, through a portion of the reservoir; Fig. 3, a corresponding horizontal section; Fig. 4, a transverse section at the line $x\,x$ of Fig. 2; and Fig. 5, a transverse section, on an enlarged scale, at the line $y\,y$ of Fig. 1.

My invention is herein shown as applied, in connection with a feed pipe or reservoir 1, for the reception of fluid under pressure, which extends throughout the distance in which the apparatus is desired to operate, and a receiver 2, which surrounds and is movable longitudinally on the feed-pipe and is provided with packing 3 near its ends, forming fluid-tight joints with the reservoir, and with tapered or inclined end faces 4 for actuating the supply-valves 5 thereof. The valves 5 control supply ports or openings $5^a$ in the reservoir, which when uncovered establish communication between the reservoir and the receiver, and they are located at such distances apart in the length of the reservoir that one or more of them will always be within the receiver. The reservoir is supported upon a suitable track or runway 9 by vertical brackets $2^a$, having wheels or rollers $2^b$, which traverse on the runway, journaled in their upper ends. The supply-valves are fixed upon stems $5^b$, fitting guides $5^c$ in removable bushings $5^f$, secured in the shell of the reservoir 1, the inner faces of the bushings forming seats for the valves and the supply-ports $5^a$, extending through the bushings. Each of the valves 5 is connected on its inner side by a fulcrum-pin $5^d$ to a double-armed lever or pair of parallel levers $5^e$. The outer ends of the valve-levers $5^e$ are turned downwardly and stand in position to be abutted against by bearing-pins $7^b$, fixed in the adjacent ends of double-armed tappet-levers 7, which are pivoted by fulcrum-pins $7^a$ to the reservoir and may be either in a single piece provided with end jaws or be in the form of two separate and substantially parallel side members, as shown in the drawings. The ends of the tappet-levers farther from the valves are coupled by pins $6^a$ to tappets 6, which pass through properly-packed guide-bushings $6^b$ in the shell of the reservoir, the tappets 6 being adapted to traverse in the bushings at right angles to the axis of the reservoir and on the side thereof opposite the supply-valves 5. A longitudinal rib or bearing-face 8 is fixed to the receiver 2, extending from the packing 3 at one end thereof to that at the other and fitting on its inner side against the periphery of the reservoir, so as to make contact with the outer ends of the tappets 6. The rib 8 may be extended around

the reservoir to any desired extent, as shown in Fig. 5, in order that proper and sufficient bearing-surface for the tappets may be afforded without necessitating accurate vertical alinement thereof.

The supply-valves 5 are normally closed and held seated, as shown in Fig. 2, by the fluid-pressure in the reservoir and by their gravity and that of the connected valve-levers $5^e$. When in the longitudinal movement of the receiver one of its inclined end faces 4 abuts against one of the tappets 6 of a supply-valve, it depresses said tappet to the inner limit of its traverse, in which position it is held by the bearing-face 8. The coincident elevation of the opposite end of the tappet-lever 7 raises the adjacent end of the valve-lever $5^e$, which moves on the pin $5^d$ as a fulcrum without unseating the valve 5. When the tappet 6 on the opposite side of the valve is depressed by the inclined face 4, its lever 7 raises the adjacent end of the valve-lever $5^e$, which then moves on the bearing-pin $7^b$ of the tappet-lever first stated as a fulcrum and unseats the valve, thereby admitting fluid under pressure from the reservoir 1 to the receiver 2, from which it is led to the mechanism or appliance in which it is to be utilized through a supply-passage 16, communicating with the receiver and having a nozzle to which is connected a supply-pipe $16^a$, which may be flexible and which leads to said mechanism or appliance. As the rear or following end of the receiver passes beyond the members of each pair of tappets they are successively released from contact with the bearing-face, and the interposed valve is closed by fluid-pressure and gravity, as before stated.

It will be seen that under the above construction a free delivery of fluid under pressure from the reservoir to the receiver is afforded under all conditions, as the supply-ports being located on the side of the axis of the reservoir opposite that on which contact is made with the bearing-surface of the reservoir said ports are wholly unobstructed. The bearing-surface may also be made of as great a width as desired without interference with other members, thereby insuring that operative contact with the tappets will always be made and obviating the necessity for accurate alinement of the tappets and bearing-surface in the adjustment of the apparatus for service.

I claim as my invention and desire to secure by Letters Patent—

1. The combination of a fluid-pressure reservoir, a receiver surrounding and movable longitudinally thereon, a supply-valve seating over a port in the reservoir, a lever system mounted in the reservoir and coupled to said valve, tappets connected to said lever system, and extending through the shell of the reservoir on the side thereof farther from the supply-valve, and a bearing-surface fixed to the receiver in position to contact with said tappets.

2. The combination of a fluid-pressure reservoir, a receiver surrounding and movable longitudinally thereon, a supply-valve seating over a port in the reservoir, a lever system mounted in the reservoir and coupled to said valve, tappets connected to said lever system, and extending through the shell of the reservoir on the side thereof farther from the supply-valve, and a curved bearing-face, of substantially greater width than the diameter of the tappets and fixed to the receiver in position to contact with said tappets.

3. The combination of a fluid-pressure reservoir, a receiver surrounding and movable longitudinally thereon, a supply-valve seating over a port in the reservoir, a double-armed valve-lever pivoted thereto, double-armed tappet-levers, each fulcrumed in the reservoir, and adapted to abut against one end of the valve-lever, tappets coupled to said tappet-levers and extending through the shell of the reservoir on the side thereof farther from the supply-valve, and a bearing-surface fixed to the receiver in position to contact with said tappets.

4. The combination of a fluid-pressure reservoir, a receiver surrounding and movable longitudinally thereon, a supply-valve controlling communication between the reservoir and receiver, a lever system mounted in the reservoir for unseating said valve, a member fixed to the receiver, on the side of the axis thereof farther from the supply-valve, for actuating said lever system, a fixed track or runway, and suspending-brackets connected to the receiver and provided with wheels traversing on said runway.

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Witnesses:
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