No. 637,333. Patented Nov. 21, 1899.

W. S. HALSEY.

MEANS FOR TRANSMITTING FLUID UNDER PRESSURE.

(Application filed June 10, 1899.)

(No Model.) 2 Sheets—Sheet 1.

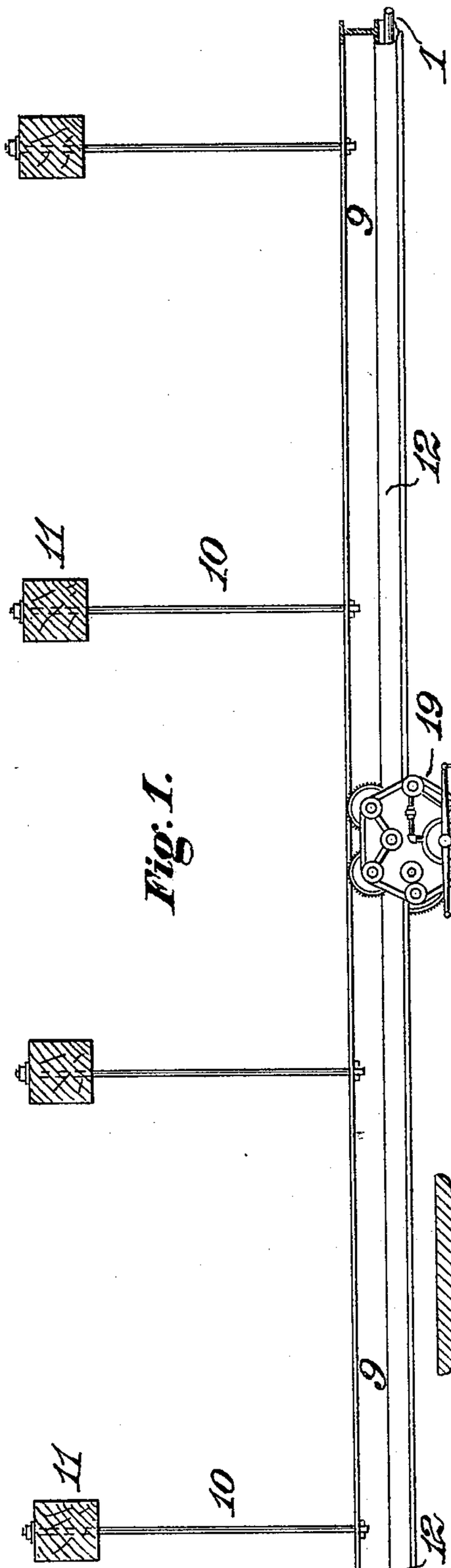

Fig. 1.

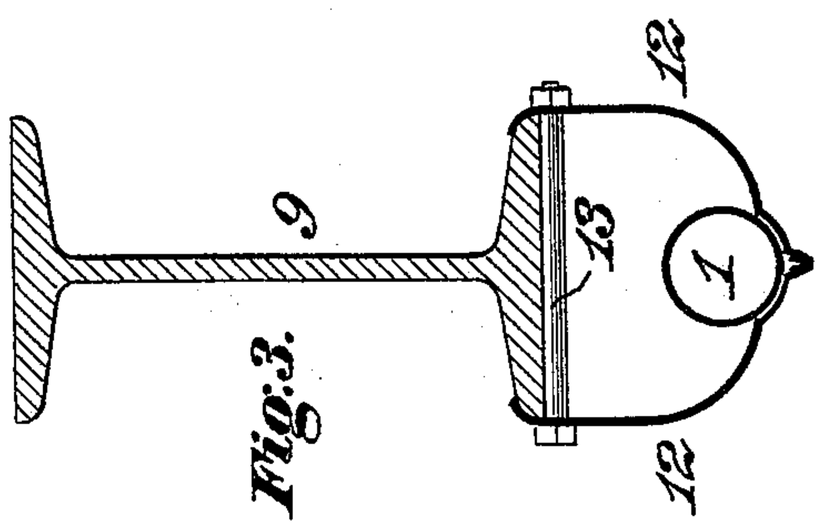

Fig. 3.

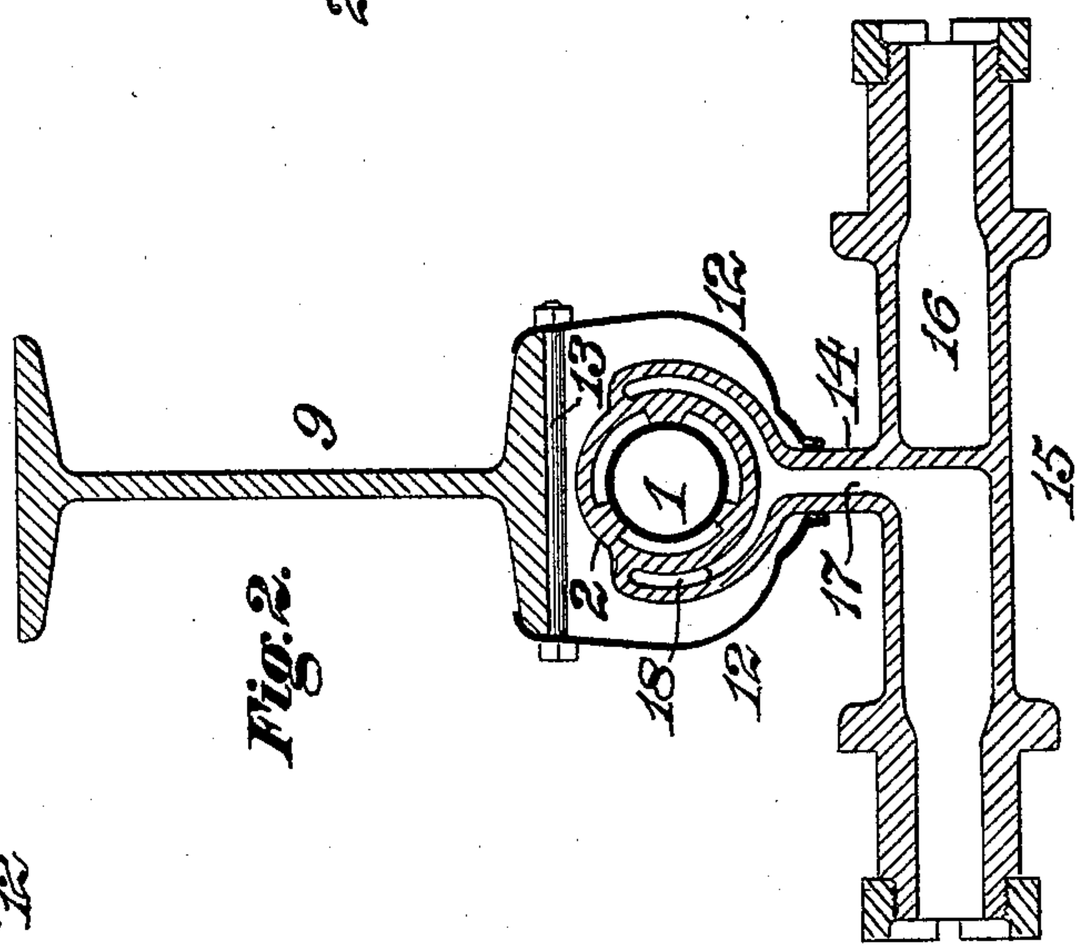

Fig. 2.

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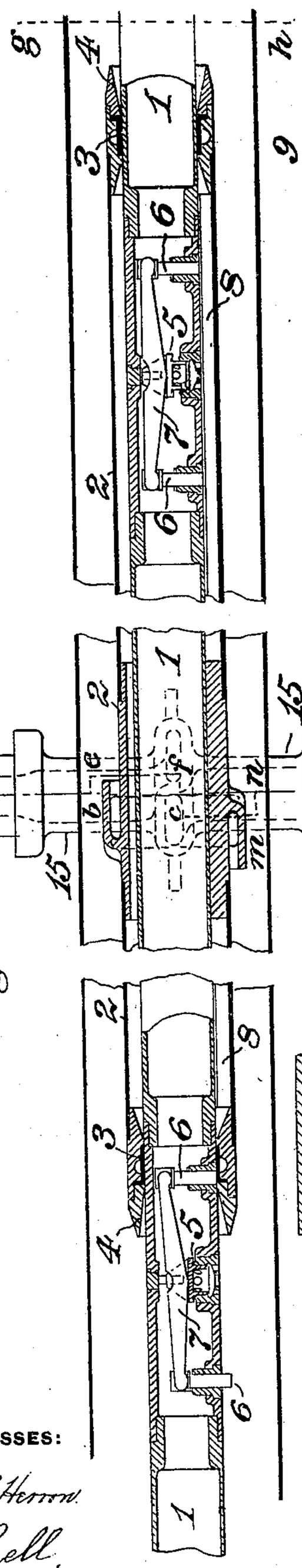

Fig. 5.

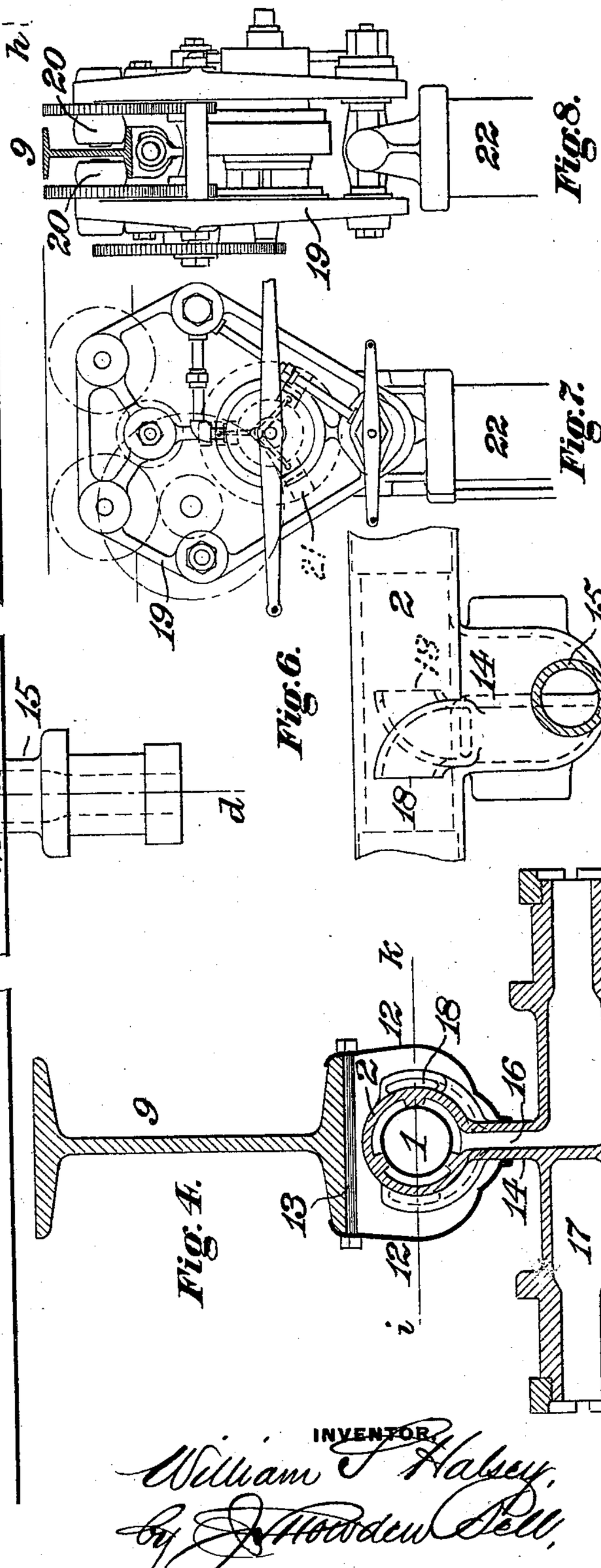

Fig. 8.

Fig. 7.

Fig. 6.

Fig. 4.

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MEANS FOR TRANSMITTING FLUID UNDER PRESSURE.

SPECIFICATION forming part of Letters Patent No. 637,333, dated November 21, 1899.

Application filed June 10, 1899. Serial No. 720,129. (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 means for transmitting fluid under pressure from a supply-reservoir to a device or mechanism in which it is to be utilized, an instance of the general class or type of constructions in which it is specially designed for application being exemplified in Letters Patent of the United States No. 532,198, granted and issued to me under date of January 8, 1895.

The object of my invention is to provide simple, effective, and inexpensive means for suspending a fluid-pressure feed-pipe or reservoir, preventing wear of parts in frictional contact and interference with the free traverse of a receiver on the pipe by protecting the pipe from the access of dirt and grit, and automatically lubricating the contact-surfaces of the pipe and receiver.

To this end my invention, generally stated, consists in the combination of a fluid-pressure reservoir, a receiver surrounding the same and movable longitudinally thereon, a longitudinally-divided casing surrounding and suspending the reservoir and connected to a fixed support, and a fluid-pressure exhaust-pipe leading into the casing.

The improvement claimed is hereinafter fully set fo th.

In the accompanying drawings, Figure 1 is a side view in elevation, illustrating an application of my invention in connection with a pneumatic trolley and hoist; Fig. 2, a transverse section, on an enlarged scale, at the line *a b c m n d* of Fig. 5; Fig. 3, a similar section at the line *g h* of Fig. 5; Fig. 4, a similar section at the line *a b e f n d* of Fig. 5; Fig. 5, a horizontal section at the line *i k* of Fig. 4; Fig. 6, a side view in elevation of the central portion of the receiver, with the exhaust-passage in transverse section; Fig. 7, a side view in elevation of the trolley, and Fig. 8 an end view of the same.

In the practice of my invention I provide, as in my Letters Patent No. 532,198 aforesaid, a feed-pipe or reservoir 1 for the reception of fluid under pressure, which extends throughout the distance within 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 therewith, and tapered or inclined end faces 4 for actuating the supply-valves 5 of the reservoir. Said valves control openings 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 supply-valves are unseated by the contact of one of the end faces 4 of the receiver with pairs of tappets 6, the members of which project through properly-packed openings in the wall of the reservoir and are pivotally connected at their inner ends to valve-levers 7, which levers are pivotally connected with the supply-valves intermediately of the tappets 6. The supply-valves are held unseated during the periods in which they are surrounded by the receiver by a longitudinal rib or bearing-face 8 on the inner surface of the receiver, against which the outer ends of the tappets 6 abut during the traverse of said rib longitudinally past them and are returned to their seats by the fluid-pressure on their tops as the rear inclined face 4 of the receiver passes clear of one of their tappets. In the particulars above stated the construction herein set forth accords substantially with that of Patent No. 532,198 aforesaid, and said structural features are not in and of themselves claimed as of my present invention.

The feed-pipe or reservoir 1 is supported upon a runway 9, which is preferably, as shown, composed of I-beams connected by suspension-bolts 10 to the roof-trusses 11 of a building or to any other suitable support. The feed-pipe is suspended upon the runway and supported by a casing 12, the sections of which are each formed of two sheets of steel or other metal of sufficient strength to act as suspension members for the pipe and sufficiently flexible to spring together below it on

their lower sides, which are preferably bent over to present double thicknesses thereat, as indicated in Fig. 3. The upper ends of the casing-sheets are turned over on the lower flanges of the runway-beams, and the opposite sheets are connected and held in position thereon by transverse bolts 13. The casing is open at its opposite ends and is closed at top by the lower flanges of the runway-beams and at bottom by the contact of the opposite sheets along the line of longitudinal division except at and adjacent to the point where a trolley-arm, to be presently described, passes between the opposite sheets, which progressively spring apart sufficiently far to permit the passage of the trolley-arm and close together into their normal condition of contact in the rear of the trolley-arm as the same traverses longitudinally on the feed-pipe.

A tubular trolley-arm 14 is formed integral with or otherwise fixed to the receiver 2 and projects downwardly from the feed-pipe or reservoir 1, passing between the opposite sheets of the casing 12, which, as above stated, spring apart to admit of its traverse, and terminates at bottom in a horizontal connecting-tube 15. The arm 14 is of flattened or elliptical transverse section, its greater dimension being in line with the feed-pipe or reservoir 1, and it is divided by a vertical partition into a supply-passage 16 and an exhaust-passage 17. The supply-passage 16 communicates at its upper end with the interior of the receiver 2 and extends through about one-half the connecting-tube 15 to one end thereof, at which it is open for connection to a supply-pipe leading to a motor, hoist, or other device in which fluid-pressure is desired to be exerted, as shown in Fig. 4. The exhaust-passage 17 is branched or divided, so as to partially surround the receiver at and adjacent to its upper end, at which it is provided with outlets 18 18, opening into the casing 12, said outlets being turned in opposite directions on the opposite sides of the receiver, and the exhaust-passage extends through the portion of the connecting-tube 15 not occupied by the supply-passage to the opposite end of the tube, at which it is open for connection to an exhaust-pipe leading from a fluid-pressure device, as shown in Fig. 2.

The connecting-tube 15 is connected to a trolley or traveling frame 19, which is provided with wheels 20, adapted to run on the lower flanges of the runway-beams 9. A motor or motors of any suitable construction (a three-cylinder engine 21 being indicated in dotted lines in Fig. 7) and a hoisting-cylinder 22 may be mounted upon the trolley, the supply and exhaust of fluid under pressure to and from the same being effected through the passages in the trolley-arm and connecting-tube above described.

The construction of the motor and the gearing through which it imparts longitudinal movement to the trolley and that of the hoisting mechanism do not form part of my present invention and are not therefore herein fully and at length set forth.

It will be obvious that in the successful operation of an apparatus of the character of that to which my invention relates it is of substantial importance that the feed-pipe or reservoir should be properly supported and that the contact-surfaces of the feed-pipe or reservoir and of the receiver which traverses thereon should be made as smooth and true as practicable to minimize friction and should be maintained in such normal operative condition by being protected from the access of dust and gritty foreign matter, which is present in considerable quantity in foundries and many other locations in which the apparatus may be installed. It is also desirable that these surfaces should be sufficiently lubricated and that such lubrication should be effected with economy of the lubricant and of manipulation in its application.

The essential features of my invention, as hereinbefore described, enable the ends above stated to be fully and effectively attained in practice. The longitudinally-divided casing performs the functions both of a suspension member for the feed-pipe or reservoir and an inclosing case for the same and for the receiver, whereby the reservoir and receiver are completely protected from the access of foreign matter and the maintenance of their surfaces in proper working condition and of fluid-tight joints between them is assured. By discharging the exhaust fluid from the motor into the casing, from which it can escape only at the sprung-open portion adjoining the trolley-arm and at the ends, an outward current of fluid is maintained at these points, which are the only ones at which the contact-surfaces are not wholly inclosed, and the exclusion of dirt and grit is thereby made complete. Lubricating material which is supplied to the cylinder and valve of the motor is discharged therefrom with the exhaust motive fluid and instead of being wasted, as would otherwise be the case, is sprayed in opposite directions into the casing, thereby lubricating the contact-surfaces automatically and without any cost either for material or labor.

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 on said reservoir, a fixed support, a longitudinally-divided casing surrounding and suspending the reservoir and connected to the fixed support, means for utilizing fluid-pressure supplied from the reservoir, and a fluid-pressure exhaust pipe or passage leading from said means into the casing.

2. The combination of a fluid-pressure reservoir, a receiver surrounding and movable longitudinally on said reservoir, a fixed support, a casing composed of opposite plates of flexible metal sprung together so as to abut

in a longitudinal line of division below the reservoir and connected at top to the fixed support, means for utilizing fluid-pressure supplied from the reservoir, and a fluid-pressure exhaust pipe or passage leading from said means into the casing.

3. The combination of a fluid-pressure reservoir, a receiver surrounding and movable longitudinally on said reservoir, a fixed support, a casing composed of opposite plates of flexible metal sprung together so as to abut on a longitudinal line of division below the reservoir and connected at top to the fixed support, an arm fixed to the receiver and passing between the opposite plates of the casing, means for utilizing fluid-pressure supplied from the reservoir, and a fluid-pressure exhaust pipe or passage extending from said means through said arm and opening into the casing.

4. The combination of a fluid-pressure reservoir, a receiver surrounding and movable longitudinally on said reservoir, means for delivering fluid from the reservoir to the receiver, a fixed support, a casing composed of opposite plates of flexible metal sprung together so as to abut on a longitudinal line of division below the reservoir and connected at top to the fixed support, an arm fixed to the receiver and passing between the opposite plates of the casing, a fluid-pressure motor connected to said arm, and fluid-pressure supply and exhaust pipes or passages extending through the arm, from the receiver to the motor and from the motor to a point of discharge within the casing, respectively.

5. The combination of a fluid-pressure reservoir, a receiver surrounding and movable longitudinally on said reservoir, means for delivering fluid from the reservoir to the receiver, a fixed support, a casing composed of opposite plates of flexible metal sprung together so as to abut on a longitudinal line of division below the reservoir and connected at top to the fixed support, an arm fixed to the receiver and passing between the opposite plates of the casing, a fluid-pressure motor connected to said arm, a fluid-pressure supply pipe or passage extending through the arm, from the receiver to the motor, and a fluid-pressure exhaust pipe or passage extending through the arm, from the motor to outlets adapted to discharge fluid in opposite directions in the casing.

6. The combination of a fixed metal beam-runway, a casing composed of opposite plates of flexible metal, connected at top to the runway and sprung together so as to abut at bottom on a longitudinal line of division, a fluid-pressure reservoir supported in and suspended by the casing, a receiver surrounding and movable longitudinally on the reservoir, means for delivering fluid from the reservoir to the receiver, a trolley adapted to traverse on the runway, a fluid-pressure motor mounted on the trolley, an arm connecting the receiver and the trolley and passing between the opposite plates of the casing, and fluid-pressure supply and exhaust pipes or passages extending through the arm, from the receiver to the motor and from the motor to a point of discharge within the casing, respectively.

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