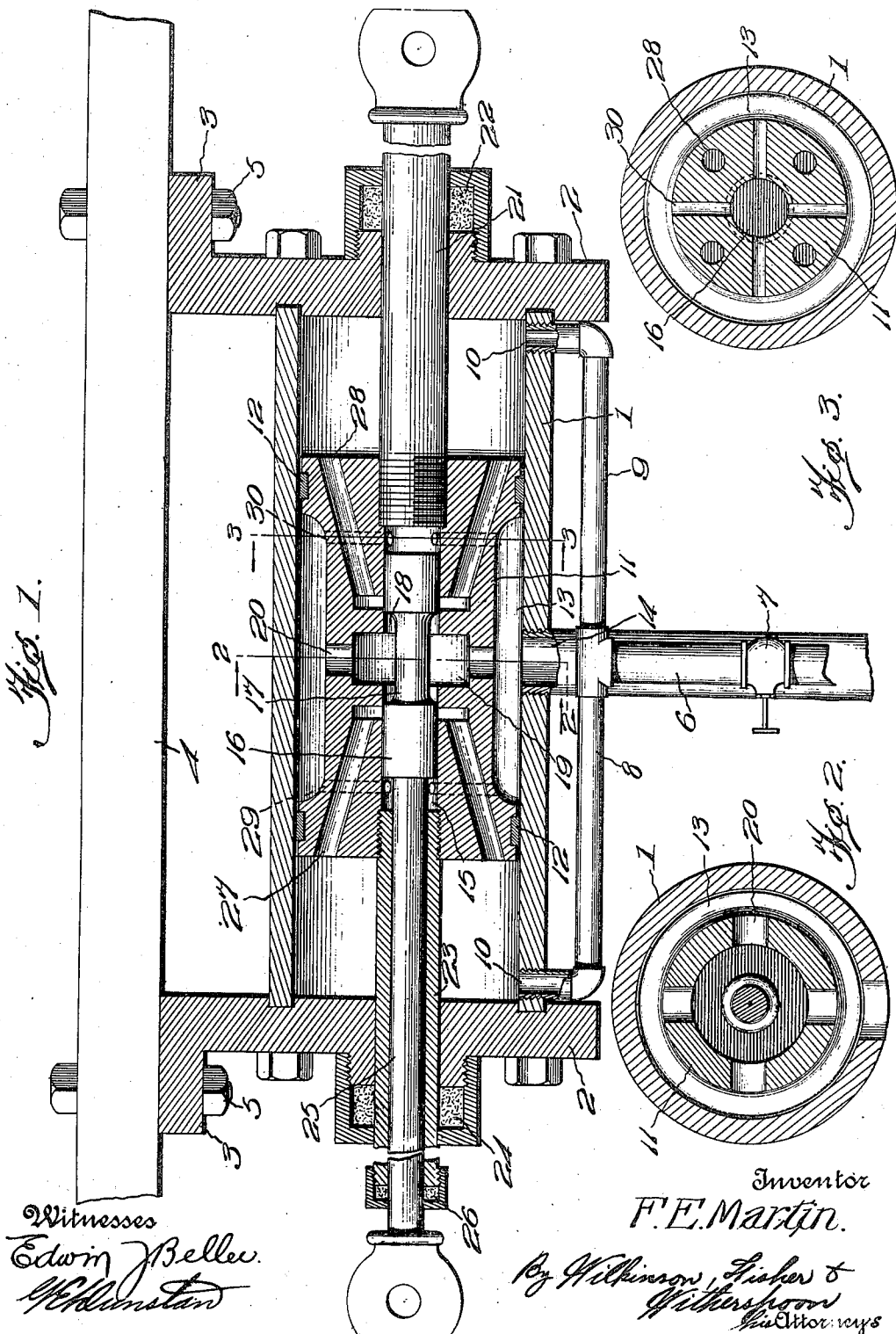


F. E. MARTIN.
 FLUID PRESSURE CONTROL.
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1,030,105.

Patented June 18, 1912.



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UNITED STATES PATENT OFFICE.

FREDERICK E. MARTIN, OF BONAMI, LOUISIANA.

FLUID-PRESSURE CONTROL.

1,030,105.

Specification of Letters Patent.

Patented June 18, 1912.

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To all whom it may concern:

Be it known that I, FREDERICK E. MARTIN, a citizen of the United States, residing at Bonami, in the parish of Calcasieu and State of Louisiana, have invented certain new and useful Improvements in Fluid-Pressure Control; and I do hereby 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 a fluid pressure control and especially to improvements in the device disclosed by my former application filed March 22, 1911, Serial No. 616,286.

The main object of the present invention is to arrange the ports and passages in the piston and also the valve for controlling same.

A further object of my invention is to provide an improved fluid-actuated control device adapted for efficient operation, and which can be manually actuated by the operator upon failure of the actuating fluid.

The invention will be understood from the following description taken in connection with the accompanying drawing, illustrating the preferred embodiment thereof, and the novel features of the invention will be distinctly pointed out in the appended claims.

In the drawing like characters of reference indicate corresponding parts.

Figure 1 is a longitudinal sectional view of a fluid pressure control constructed in accordance with my invention; Fig. 2 is a transverse section taken on line 2—2, Fig. 1, the exhaust pipe being omitted; and, Fig. 3 is a similar view taken on line 3—3, Fig. 1. 1 represents a cylinder provided with ends 2 having feet 3 which are secured to a suitable support 4 by bolts 5. A pressure supply pipe 6, provided with a valve 7, terminates in branch pipes 8 and 9, which enter the cylinder near its ends, as at 10, for conveying steam or fluid pressure thereto.

A piston 11, provided with the usual packing rings 12 near its ends, is slidably mounted in the cylinder, and has a reduced central diameter to provide an exhaust chamber 13 of such a length as to always be in communication with an exhaust pipe 14 connected to the cylinder centrally of its ends. The piston is centrally bored at 15 for receiving a slidably mounted valve 16, which has a reduced central portion 17 leaving a space

18 which is always in communication with a central recess 19 of the piston 11, and said recess communicates with the exhaust chamber 13 by means of a plurality of apertures 20. A piston rod 21 projects from one end of the piston 11 through the corresponding end of the cylinder, which is provided with the usual stuffing box, indicated at 22; said piston rod being adapted for connection to a valve or other means which it is desired to control or shift. A tube 23 projects from the other end of the piston through the end of the cylinder, which is also provided with a stuffing box, as shown at 24. Slidably mounted in the tube 23 is a valve stem 25, which is connected with the valve 16; said valve stem being adapted to be manually operated in any well known manner, as by a lever. A stuffing box 26 is provided at the projecting end of the tube 23.

A plurality of exhaust ports 27 and 28 extend inwardly on an inclination from each end of the piston 11, and are adapted to communicate alternately with the space 18 of the valve 16 as same is reciprocated, by the operator, to permit the escape of the fluid from the corresponding ends of the cylinder. Passages 29 and 30 connect each end of the bore 15 with the exhaust chamber 13, and the passages at one end of the bore are closed by the valve 16 when said ports at the corresponding ends of the cylinder are in communication with the exhaust space 18 of the valve. The passages 29 and 30 thus obviate all danger of pressure accumulating in either end of the bore 15 by steam leakage past the valve 16, thereby insuring a perfect balance of said valve at all times.

The operation is as follows:—Assuming the parts are in the relative positions shown in Fig. 1 of the drawings, and steam or other fluid pressure is admitted into the opposite ends of the cylinder through the branch pipes 8 and 9, the pressure is equalized on the opposite ends of the cylinder and upon the opposite ends of the piston 11, and consequently the piston is balanced and will not move longitudinally in the cylinder. Assuming it is desired to have the piston and the rod 21, to which it is attached, move toward the right an operator moves the stem 25 and the valve 16 toward the right whereby the exhaust ports 28 are uncovered by the valve, and the fluid pressure from the right end of the cylinder is allowed to escape through the exhaust space 18 of the valve,

through the recess 19 and apertures 20 of the piston to the exhaust chamber 13, and then through the exhaust pipe 14. As the pressure is reduced at the right end of the piston, the excessive pressure at the other end forces the piston to the right until the ports 28 are again closed by the valve, when the piston will be brought to rest by the equalized pressure in the two ends of the cylinder. It is obvious that a reverse movement of the valve stem would reverse the operations described, and the piston would be moved toward the left. Should the actuating steam supply fail, the operator can manually operate the piston 11 by shifting the valve 16 in the desired direction until it comes in contact with the adjacent closed end of the bore 15 and carries the piston along with it. This is a very advantageous and important feature under certain conditions, as in the application of my device for controlling the feed in saw mills, etc.

It is to be understood that slight changes in the details of construction and combination and arrangement of the parts may be resorted to without sacrificing any of the advantages or departing from the spirit of the invention.

Having fully described my invention what I claim is:—

1. In a control device, the combination of a cylinder, an admission pipe communicating with the ends only of said cylinder, an exhaust pipe leading from the medial portion of said cylinder, a piston in said cylinder provided with a central bore having closed ends and with ports communicating with the cylinder ends and said exhaust pipe, respectively, a valve slidably mounted in said bore, and means for shifting said valve for

controlling said ports and for actuatingly engaging said closed ends of the bore.

2. In a control device, the combination of a cylinder, an admission pipe communicating with the ends only of said cylinder, an exhaust pipe leading from the medial portion of said cylinder, a piston in said cylinder provided with a central bore having closed ends and ports spaced from said closed ends and communicating with the cylinder ends and said exhaust pipe, respectively, said piston being provided with ports leading from the end portions of said bore to the exhaust pipe, a valve slidably mounted in said bore, and means for shifting said valve for controlling said ports and for actuatingly engaging said closed ends of the bore.

3. In a control device, the combination of a cylinder, admission and exhaust pipes communicating respectively with the end and medial portions of said cylinder, a piston within said cylinder provided with a circumferential recess communicating with said exhaust pipe, and with a central bore having closed ends and with its medial and end portions communicating with such recess, said piston being also provided with ports extending from the respective heads into communication with such central bore, a valve slidably mounted in such bore for controlling the ports, and means for shifting said valve.

In testimony whereof, I affix my signature, in presence of two witnesses.

FREDERICK E. MARTIN.

Witnesses:

T. M. TRASHER,
J. M. WARREN.