

No. 685,662.

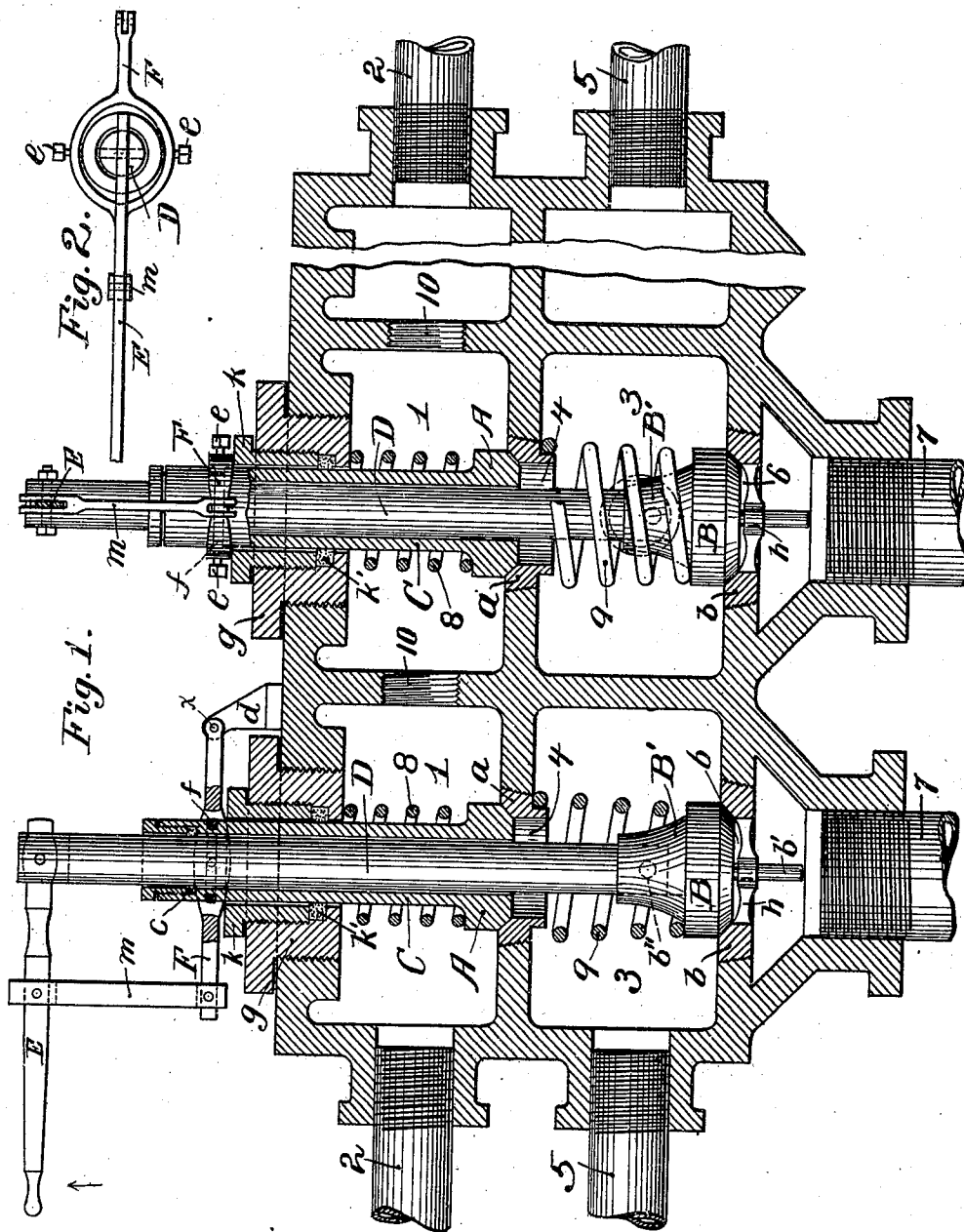
Patented Oct. 29, 1901.

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HYDRAULIC VALVE.

(Application filed Apr. 1, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

HARRY F. ANAWALT AND PAUL SHALKOWSKI, OF HOMESTEAD,
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HYDRAULIC VALVE.

SPECIFICATION forming part of Letters Patent No. 685,662, dated October 29, 1901.

Application filed April 1, 1901. Serial No. 53,794. (No model.)

To all whom it may concern:

Be it known that we, HARRY F. ANAWALT and PAUL SHALKOWSKI, citizens of the United States of America, residing at Homestead, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Hydraulic Valves, of which the following is a specification, reference being had to the accompanying drawings, which form a part of this specification, in which—

Figure 1 indicates a longitudinal central section of our improved hydraulic valve for controlling the admission and discharge of fluid under pressure to the cylinder or cylinders, the valve-operating mechanism being shown in end elevation in the right of the figure for the purpose of illustration; and Fig. 2 is a plan view of the valve-levers.

Our invention relates to valves, and more particularly to valves adapted to control the admission and exhaust of fluid under pressure to and from hydraulic cylinders.

The object of our invention is to produce a valve of this general character simple and efficient in construction and adapted to be used singly or nested, if desirable; and to this purpose our invention consists in the novel construction and arrangement of parts hereinafter set forth, reference being had to the accompanying drawings, forming a part of this specification, in which like reference characters indicate like parts wherever they occur throughout both views.

Referring to said drawings, 1 is a casing or chamber adapted to be connected to a pump or accumulator (not shown) by a pipe 2. The said chamber 1 communicates with a similar chamber 3 by means of a port 4, which is controlled by a valve A. Said chamber 3 is adapted to be connected to a hydraulic cylinder or cylinders (not shown) by means of the pipe 5. The said last-mentioned chamber 3 is provided with an exhaust-port 6, controlled by the valve B, as hereinafter described. The said valves A and B are seated in the valve-seats *a* and *b*, which are formed, preferably, of brass and slightly tapered on the exterior and screw-threaded, as shown, to enable the same to be screwed into the bottom of the chambers 1 and 3, respectively.

The said valves A and B are respectively mounted on the lower end of the thimble C and a stem D, which telescope within each other, as hereinafter described, the said thimble surrounding said stem from a point on a horizontal plane with the port 4 to a point near the upper end of said stem to admit of this. The said stem D projects through the thimble C and through the stuffing-box *c*, which terminates the upper end of said thimble C, and is connected at its extreme upper end with the horizontally-disposed lever E, the said lever E being connected to a horizontally-disposed lever F by means of the arm or strap *m*. The said lever F is pivotally connected to a stud *d* at *x* and having a distended or annular portion intermediate the same, which surrounds the upper end of the thimble C, being connected therewith by means of bolts *e*, which project through the sides of the annular portion of the lever F and engage in an annular recess *f* on the exterior of the thimble C, whereby when the lever E is moved upward—i. e., in the direction of the arrow—the stem D, connected therewith, is caused to move downward, thereby seating the exhaust-valve B, which is connected to said stem, and simultaneously moves the thimble C upward, unseating the pressure-admission valve A. Immediately the lever E is moved in a reverse direction the exhaust-valve is opened and the admission-port valve closed, thus enabling the pressure to exhaust from the cylinder or cylinders through the chamber 3 into the exhaust-pipe 7. The spiral springs 8 and 9, which are respectively mounted upon the lower end of the thimble C and stem D, serve the purpose of assisting in closing the valves A and B, respectively, the spring 9 being preferably of greater tensional strength than the spring 8 to more quickly assist the closing of valve B.

In the accompanying drawings a plurality of chambers are shown for the purpose of illustrating the manner of nesting or grouping a number of the valves, in which case the admission-chambers communicate by means of openings 10, the sides of which may be screw-threaded, as shown in the drawings, for the purpose of isolating any of the cham-

bers from the adjacent chambers in the event of a break in either of them by screwing into the opening a threaded plug. The valve B is provided with a guide-stem *b'*, which projects into an opening in a spider *h*, seated in the exhaust-port below the valve.

The large openings in the top of the casing 1 are closed by the threaded ring *g* and the smaller threaded ring *k*, which surrounds the thimble below the stuffing-box *c* and is screwed into the larger ring *g* against the packing-ring *k'*, seated therein.

In the accompanying drawings the valve A is shown as being integral with the thimble C (it may be, however, separate therefrom and attached thereto in any suitable manner) and the valve B as having a socket B', in which the lower end of the stem D is secured by the bolt *b''*.

We claim as our invention and desire to secure by Letters Patent—

1. In a hydraulic valve mechanism, the combination of a plurality of chambers one of which is connected to an accumulator or pump and the other with a cylinder or cylinders, and a valve mechanism comprising two valves one of which controls the exhaust-port and the other the pressure-admission port for said chambers, the exhaust-port valve being connected to the lower end of a stem and the admission-port valve connected to the lower end of a sleeve or thimble which loosely surrounds said stem, and a compound lever having independent connections with the upper end of the stem and the upper end of the

thimble and adapted to positively move the exhaust and pressure-admission valves independently in opposite directions.

2. In a hydraulic valve mechanism, the combination, with alined valve-seats, of a valve, a stem connected therewith, a sleeve or thimble loosely surrounding said stem, a valve attached to the lower end of said sleeve, and a compound lever having independent connections with the upper end of the stem and the upper end of the thimble and adapted to positively move said stem and thimble independently in opposite directions.

3. In a hydraulic valve mechanism, the combination, with alined valve-seats, of a valve, a stem connected therewith, a sleeve or thimble loosely surrounding said stem, a valve attached to the lower end of said sleeve, and a compound lever having independent connections with the upper end of the stem and the upper end of the thimble and adapted to move the valves attached to said thimble and stem independently in opposite directions, and independent spiral springs mounted on the lower end of said thimble and stem respectively and tending to independently seat said valves.

In testimony whereof we have hereunto affixed our signatures in the presence of two subscribing witnesses.

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