

No. 765,867.

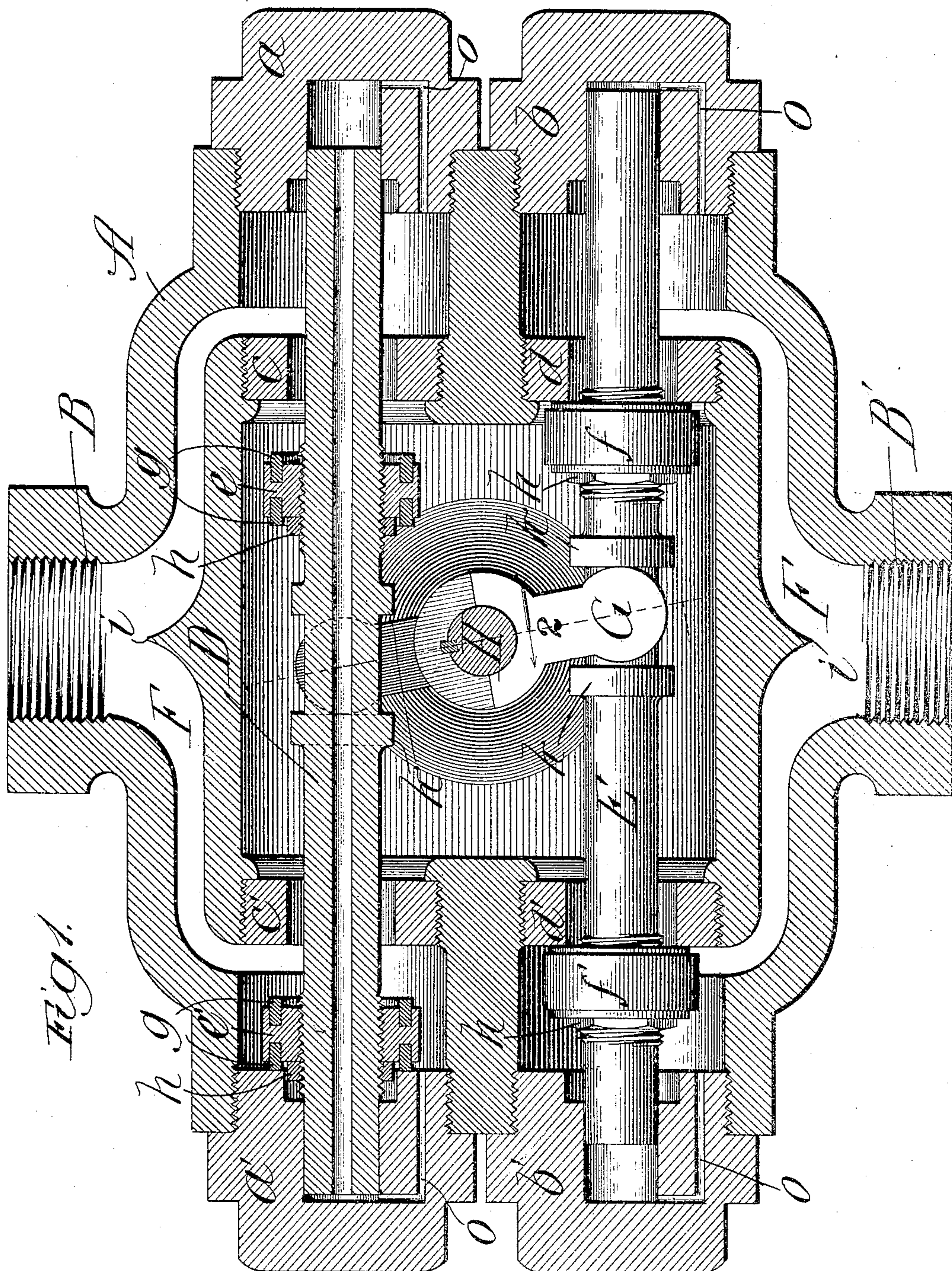
PATENTED JULY 26, 1904.

C. H. WATTERS.  
VALVE DEVICE.

APPLICATION FILED NOV. 2, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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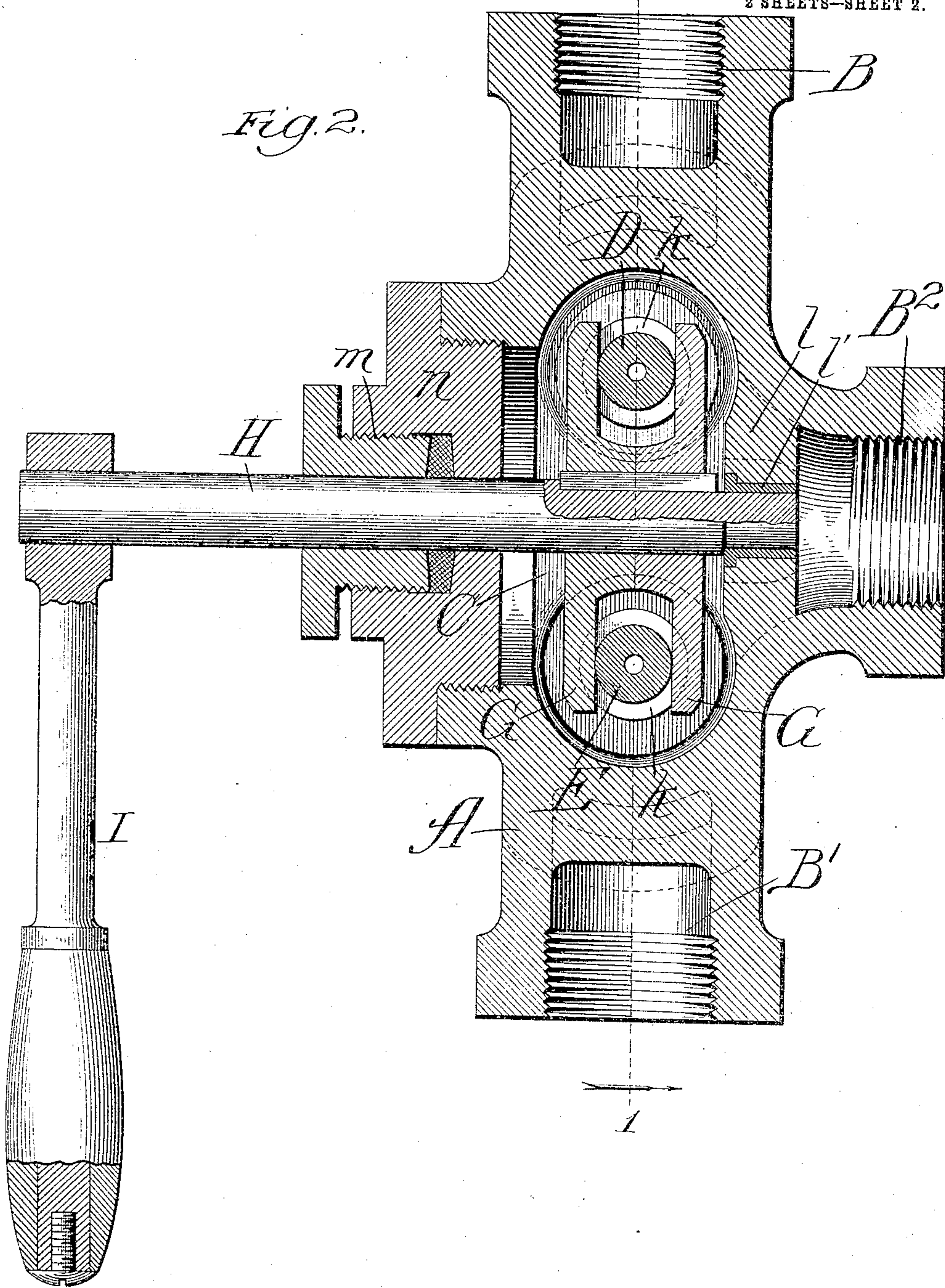
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2 SHEETS—SHEET 2.



Witnesses:  
Geo. Gaylord,  
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# UNITED STATES PATENT OFFICE.

CHARLES H. WATTERS, OF CHICAGO, ILLINOIS.

## VALVE DEVICE.

SPECIFICATION forming part of Letters Patent No. 765,867, dated July 26, 1904.

Application filed November 2, 1903. Serial No. 179,429. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. WATTERS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Valve Devices, of which the following is a specification.

My invention relates to an improvement in the class of valve devices for controlling hydraulic pressure, though it is also useful for controlling other varieties of pressure; and my primary object is to provide a simplified construction of valve device in the class referred to whereby parts shall be rendered reversible or interchangeable for the purpose of increasing the durability of the device, whereby the need of stuffing-boxes shall be dispensed with, and whereby the dimensions of the device may be reduced to the minimum for the service it is required to perform.

Referring to the accompanying drawings, Figure 1 is a view in vertical longitudinal sectional elevation, the section being taken at the line 1 on Fig. 2 and viewed in the direction of the arrow; and Fig. 2, a section taken at the line 2 on Fig. 1 and viewed in the direction of the arrow.

A is the shell or casing, having the ports B, B', and B<sup>2</sup>, all shown internally screw-threaded, and within the casing is the chamber C. Each end of the casing at right angles to the ports B and B' has screwed into it at opposite sides of its longitudinal center chambered plugs *a b* and *a' b'* to receive the ends of tubular longitudinally-reciprocable valve-stems D and E, passing, respectively, through pairs of annular valve-seats *c c'* and *d d'*, screwed into place. The stems are provided near their relatively opposite ends with disk valves *e e'* and *f f'*, shown screwed upon the stems and fastened by nuts *h*, though the valves *e'* and *f'* may be formed as integral parts of the stems, if desired. The valves *e* and *f* seat outwardly against the inner faces of their respective seats *c* and *d*, and the valves *e'* and *f'* seat inwardly against the outer faces of their respective seats *c'* and *d'*, each valve being provided, preferably on both of its faces, with annular packing-rings *g*, of leather or other suitable material, let into

them. A passage F, in which the valves are interposed, leads entirely about the chamber C in the casing-wall and is formed at the center of each port B and B' with a nose *i*, forming a divider for separating the body of fluid passing through the device into two equal or substantially equal parts and directing them in contrary directions from the inlet-port, (whichever of these two ports is used as such,) thereby to reduce the bulk of the body of fluid required to pass the valves, and thus enabling the dimensions of the device to be reduced accordingly, or, in other words, increasing the efficiency of the valve device of given dimensions. At opposite sides of the center of each valve-stem it is provided with collars *k*, forming stops between which the stems are embraced by the bifurcated ends of a head G, keyed on an oscillatory stem H, which is journaled at its inner end in a bushing *l'*, confined centrally in a spider *l*, formed in the casing at the port B<sup>2</sup>, the oscillatory stem extending out through a stuffing-box *m* in a plug *n*, screwed into the open side of the valve-casing opposite that containing the port B<sup>2</sup> and being provided with a handle I.

To explain the operation of the device, it may be regarded as being placed in position to render uppermost the port B as the inlet-port for hydraulic pressure, which on entering through that port separates at the divider *i* thereat into two streams to flow in opposite directions to the valves *e* and *e'*, which have been preparatorily unseated and the valves *f* and *f'* at the same time seated by suitably turning the head G at the handle I to turn the stem H. The valves are balanced by the pressure in contrary directions against those on opposite ends of the stems. The water enters the chamber C through the valve-seats *e c'* and discharges from the chamber through the outlet-port B<sup>2</sup> to the engine or mechanism to be driven by hydraulic power. To discharge water, as the return water from said engine admitted to the chamber C through the port B<sup>2</sup>, the handle I is turned in the direction opposite that described to close the valves *e e'* and open the valves *f f'*, thus to permit that water to flow through the discharge-port B'. Obviously, however, either



port B or B' may be used as the inlet, the primary purpose of providing the two directly opposite each other being for this reversible purpose, and the lower port B' also serves for draining the valve device. Water that enters the chambers in the plugs *a a'* and *b b'* does not obstruct or cushion the longitudinal movements of the hollow valve-stems, because in their movements they displace such water into the passages through them, so that there is no necessity for providing against the entrance of water into the plug-chambers, and the necessity of providing stuffing-boxes, of which four would otherwise be required, is dispensed with. Moreover, the valve-stems are interchangeable by arranging the stem E in the position of the stem D, thereby furnishing to each valve a new seat when the old becomes worn, and thus doubling the life of the valve device, which is also increased by the reversibility of the ports B and B', and the valves themselves, or at least those which are not integral with their stems, may be taken off and reversed to double the life of their usefulness. These purposes are all accomplished by the simple construction of my improved valve device shown and herein described, though the details of construction may be variously modified by those skilled in the art without departure from the invention which, therefore, is not intended to be limited to such details.

Ducts *o* (shown in Fig. 1) may be provided, if desired, to afford communication from behind the valve-stem ends with the valve-chamber for evacuating the plug-chambers of surplus water.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a valve device, the combination with a casing containing a chamber, of a passage in the casing-wall leading entirely about said chamber, an inlet-port and outlet-ports and opposite valve-seats forming pairs, a longitudinally-reciprocable stem for each pair of said seats carrying valves seating, respectively, against the inner and outer faces of the members of each pair, and a handle connected with said stems to move them in relatively contrary directions by turning the handle.

2. In a valve device, the combination with a casing having chambered ends and containing a chamber, of a passage in the casing-wall leading entirely about said chamber, an inlet-port and outlet-ports and opposite valve-seats forming pairs, a tubular longitudinally-reciprocable stem for each pair of said seats, supported at its ends in opposite said casing ends and carrying valves seating, respectively, against the inner and outer faces of the members of such pair, and a handle connected with said stems to move them in relatively contrary directions by turning the handle.

3. In a valve device, the combination with a casing containing a chamber, of a passage in

the casing-wall leading entirely about said chamber, an inlet-port and outlet-ports and opposite valve-seats forming pairs, a longitudinally-reciprocable stem for each pair of said seats carrying valves seating, respectively, against the inner and outer faces of the members of such pair, each stem with the valves thereon being interchangeable from one pair to the other of said seats, and a handle connected with said stems to move them in relatively contrary directions by turning the handle.

4. In a valve device, the combination with a casing containing a chamber, of opposite valve-seats forming pairs, a longitudinally-reciprocable stem for each pair of said seats carrying valves seating, respectively, against the inner and outer faces of the members of such pair, a handle connected with said stems to move them in relatively contrary directions by turning the handle, an inlet-port and outlet-ports, and a passage in the casing-wall leading entirely about said chamber having controllable communication therewith through said valves and connecting said ports and provided with a divider for directing the flow in different directions through it from the inlet-port.

5. In a valve device, the combination with a casing containing a chamber, of opposite valve-seats forming pairs, a longitudinally-reciprocable stem for each pair of said seats carrying valves seating, respectively, against the inner and outer faces of the members of such pair, a handle connected with said stems to move them in relatively contrary directions by turning the handle, an inlet-port and an outlet-port formed opposite each other in the casing, a passage in the casing-wall leading entirely about said chamber having controllable communication therewith through said valves and provided at each said port with a divider for directing the flow in different directions through it from the inlet-port, and an outlet-port between the said two ports.

6. In a valve device, the combination with a casing having chambered ends and containing a chamber, of opposite valve-seats forming pairs, a tubular longitudinally-reciprocable stem for each pair of said seats, supported at its ends in opposite said casing ends and carrying valves seating, respectively, against the inner and outer faces of the members of such pair, a handle connected with said stems to move them in relatively contrary directions by turning the handle, an inlet-port and an outlet-port and a passage in the casing-wall leading entirely about said chamber having controllable communication therewith through said valves and connecting said ports and provided with a divider for directing the flow in different directions through it from the inlet-port, and an outlet-port between the said two ports.

7. A valve device, comprising, in combina-



tion, a casing having chambered plugs in its  
opposite ends and provided with an inlet-port,  
an outlet-port opposite thereto and an inter-  
mediate outlet-port, opposite valve-seats  
5 forming pairs in said casing, a tubular longi-  
tudinally-reciprocable stem for each pair of  
said seats, supported at its ends in opposite  
said plugs and carrying valves seating, re-  
spectively, against the inner and outer faces  
10 of the members of such pair, a passage about  
said chamber having controllable communi-  
cation therewith through said valves and con-  
necting said opposite inlet and outlet ports and

provided with one or more dividers for di-  
recting the flow in different directions through 15  
it from the inlet-port, an outlet-port between  
the said two ports, and an oscillatory stem  
provided with an operating-handle and carry-  
ing a head engaging said valve-stems to move  
them in relatively contrary directions by turn- 20  
ing the handle.

CHARLES H. WATTERS.

In presence of—

WALTER N. WINBERG,  
W. B. DAVIES.