

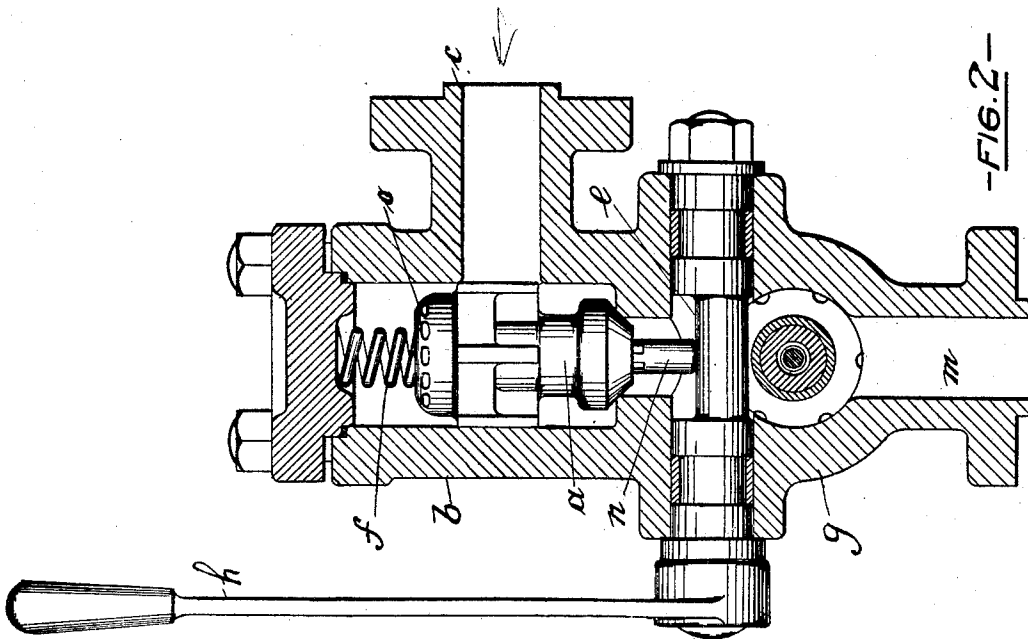
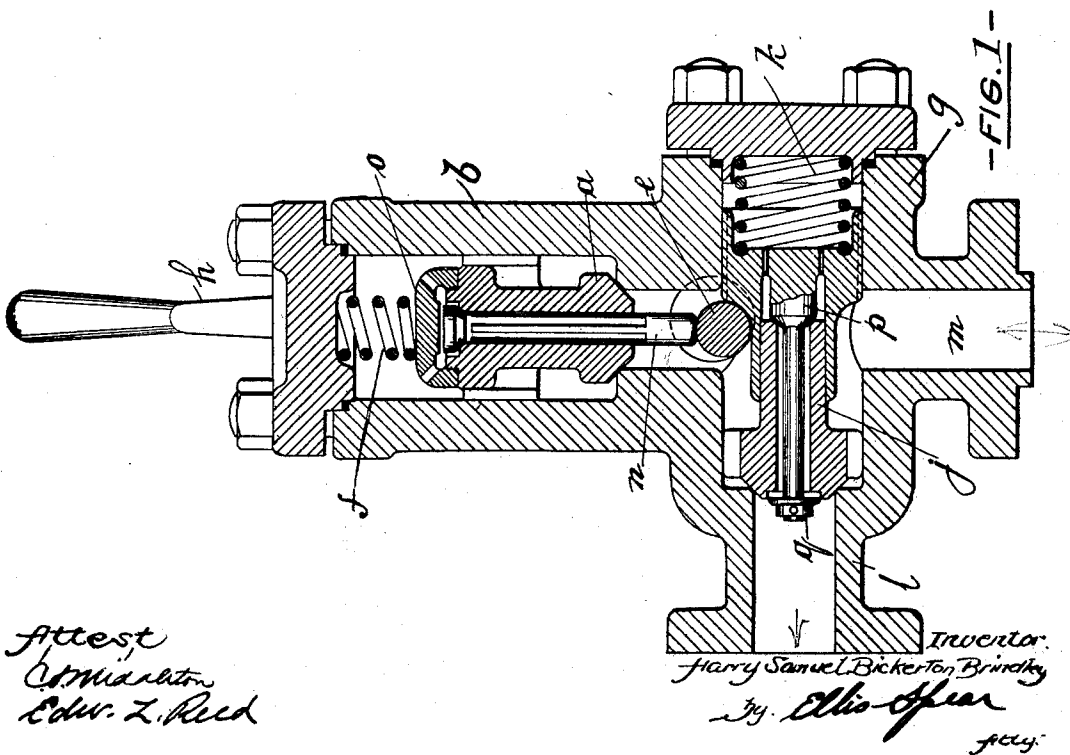
No. 715,009.

Patented Dec. 2, 1902.

H. S. B. BRINDLEY,
HYDRAULIC OR OTHER FLUID CONTROLLING VALVE.

(Application filed Nov. 23, 1901.)

(No Model.)



UNITED STATES PATENT OFFICE.

HARRY SAMUEL BICKERTON BRINDLEY, OF TOKIO, JAPAN.

HYDRAULIC OR OTHER FLUID-CONTROLLING VALVE.

SPECIFICATION forming part of Letters Patent No. 715,009, dated December 2, 1902.

Application filed November 26, 1901. Serial No. 83,804. (No model.)

To all whom it may concern:

Be it known that I, HARRY SAMUEL BICKERTON BRINDLEY, a subject of the King of Great Britain and Ireland, and a resident of 37 Ichome Mita, Shiba Ku, Tokio, in the Empire of Japan, have invented certain new and useful Improvements Relating to Hydraulic or other Fluid-Controlling Valves, (for which I have filed an application in Great Britain, No. 8,927, bearing date April 30, 1901,) of which the following is a specification.

This invention consists of improvements relating to hydraulic and other fluid-controlling valves, the object being to construct such appliances of a very compact and simple form and with the plugs, falls, or valves proper conveniently arranged for easy manipulation and for effectually closing the ports or valve-ways without the use of internal leather or other packing.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a sectional side elevation, and Fig. 2 a sectional end elevation, of my improved valve, having the plugs or valves proper fitted with pilot or supplementary plugs or valves.

The same reference-letters in the different views indicate the same or similar parts.

The valve proper, *a*, is arranged within the bore of the part *b* of the valve-casing and adjacent to the pressure-inlet *c*. The valve is kept on its seating by a spring *f* and the fluid-pressure, which is free to act on its upper surface. In the main part *g* of the valve-casing and immediately below the inlet-valve *a* is disposed the plug-operating spindle *e*, having a hand-lever *h* attached to its outer end and a central inner and eccentric portion arranged to engage a pilot plug or valve *n*, hereinafter mentioned. The eccentric spindle *e* also controls an exhaust-plug *j*, arranged in the main casing with its axis at right angles to that of the inlet valve or plug *a*. This valve *j* is retained on its seating by a spring *k* and fluid-pressure. The exhaust or outlet is at *l*, while *m* is the passage through which the liquid passes on its way to or from the machine whose working is controlled by this valve.

In valves of large diameter or valves for use on services where a considerable intensity of pressure is employed I arrange within the pressure or inlet plug *a* the auxiliary or pilot plug or valve *n*, before mentioned, of small diameter, which is retained on its seating by the fluid-pressure acting on its upper surface. The auxiliary plug consists of a long stem, at the one extremity of which a head or collar is formed which rests upon a seating in the main plug. The lower part of the stem projects downward through the main plug and engages with the eccentric operating-spindle *e*. The independent movement of the auxiliary plug is limited by the perforated cap *o*, attached to the top of the plug *a*, so that after the pressure on the main plug *a* has been released or balanced by the movement of the auxiliary plug from its seating the continued movement of the said plug will effect the raising of the main plug and the consequent admission of fluid through the main valveway or port. Similarly I provide within the exhaust-plug *j* an auxiliary or pilot plug *p*, which also during the early part of its movement releases or balances the pressure on the rear of the main plug *j*, and during its subsequent or continued motion effects the withdrawal of the said plug from its seating. An enlarged head of the auxiliary plug *p* serves as a guiding and supporting socket for the main plug *j* and also provides the abutment-shoulder which receives the motion from the eccentric spindle *e*. The main plug receives its motion through a collar *q*, fixed on the extremity of the auxiliary valve-stem, as illustrated.

In this valve no packing is necessary for the plugs or valves proper, and the main and auxiliary plugs are quite free and not restricted to a simple reciprocatory movement to and from their seatings, but are at liberty to rotate within their chambers. Thus the wearing of the seatings is greatly equalized, which results in considerable increase in durability and efficiency.

The portion of the plug *a* above the valve-seating is fluted or ribbed to serve as a guide while permitting of the passage of the fluid to its upper surface. The valve *j* has a similar construction.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In hydraulic and other fluid-controlling valves, the combination with an operating-spindle, independent inlet and exhaust valves or plugs proper, and pilot or auxiliary plugs fitted to each of the main plugs, said auxiliary plugs being each operated by the said spindle and each pilot-valve controlling the operation of its main valve, one of said auxiliary valves having its stem engaged by the spindle and the other having its head engaged by said spindle.

2. In hydraulic and other fluid-controlling valves, the combination with an eccentric operating-spindle, of independent inlet and exhaust plugs or valves proper and pilots or auxiliary plugs respectively fitted in each of the aforesaid main plugs and engaging with the said operating-spindle, one of the said pilots having a head which abuts against a perforated cap attached to the main plug in which it is fitted, and the other pilot having a head at one end arranged as a guiding and supporting

socket for the main plug in which it is fitted and a fixed collar at the other end, substantially as set forth.

3. In hydraulic and other fluid-controlling valves, the combination consisting of an eccentric operating-spindle, independent inlet and exhaust plugs or valves proper, pilots or auxiliary plugs respectively fitted in each of the aforesaid main plugs and engaging with the said operating-spindle, one of the said pilots having a head which abuts against a perforated cap attached to the main plug in which it is fitted, and the other pilot having a head at one end arranged as a guiding and supporting socket for the main plug in which it is fitted and a fixed collar at the other end, and springs arranged to act upon the top or forward ends of the respective inlet and exhaust compound valves, substantially as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

HARRY SAMUEL BICKERTON BRINDLEY.

Witnesses:

RANSFORD STEVENS MILLER,
KOTATO SUGGINORRO.