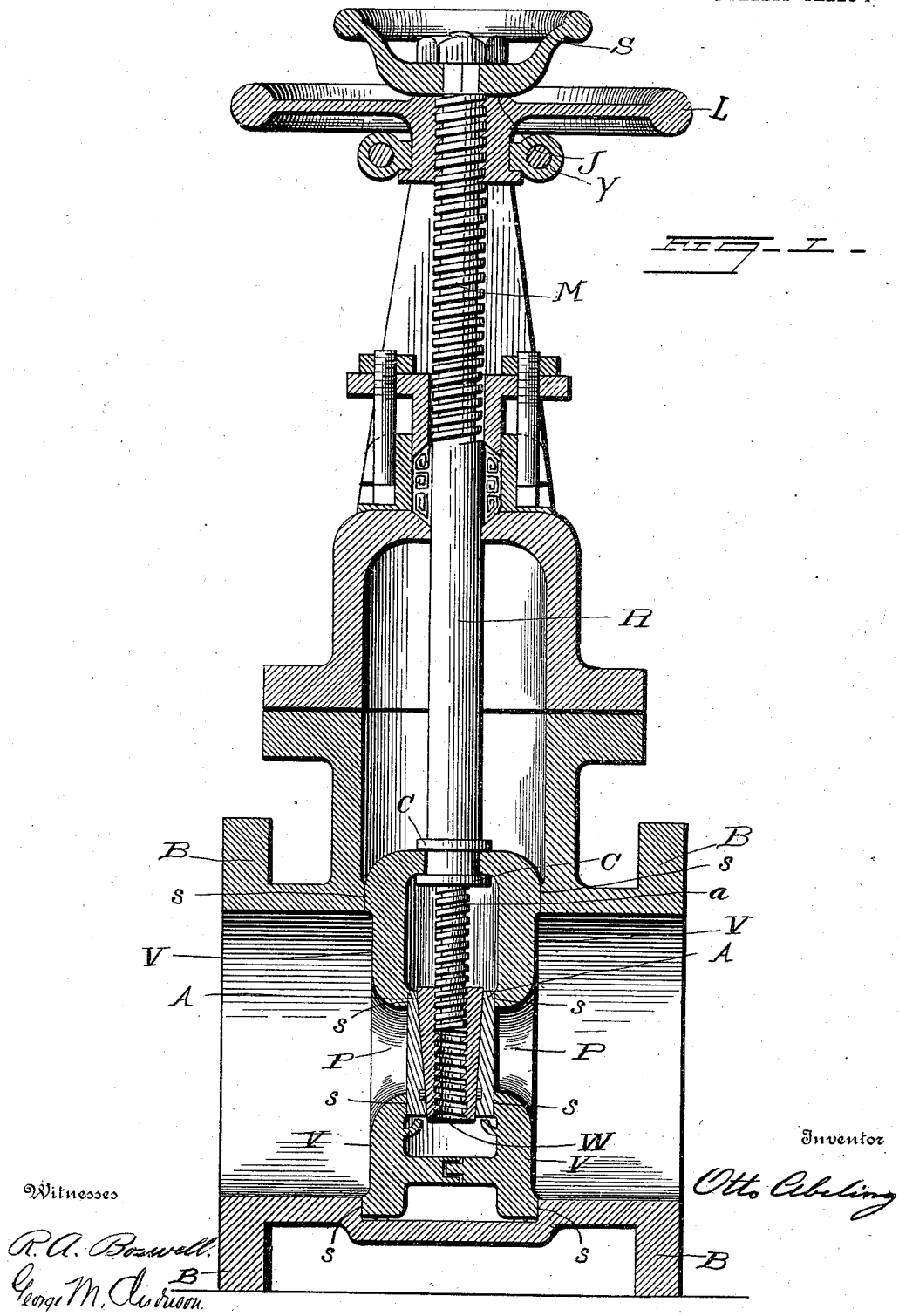
No. 723,803. PATENTED MAR. 31, 1903.

O. ABELING.

DIFFERENTIAL HIGH PRESSURE DIRECT PASS VALVE.

APPLICATION FILED JUNE 17, 1901.

NO MODEL. 2 SHEETS—SHEET 1.



Witnesses

R. A. Boswell.

George M. Audrison.

Inventor

Otto Abeling

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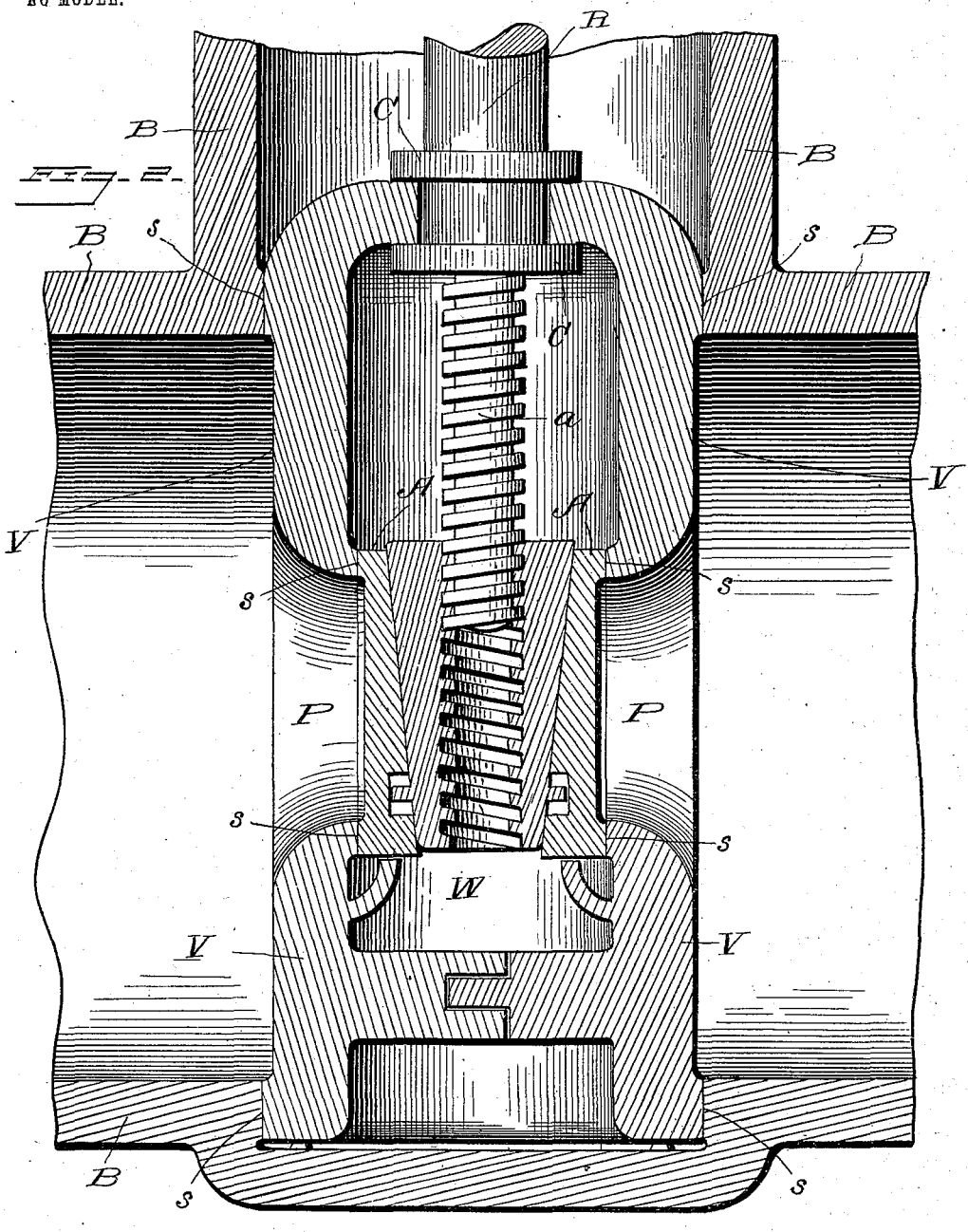
NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

OTTO ABELING, OF MOSCOW, IDAHO.

DIFFERENTIAL HIGH-PRESSURE DIRECT-PASS VALVE.

SPECIFICATION forming part of Letters Patent No. 723,803, dated March 31, 1903.

Application filed June 17, 1901. Serial No. 64,938. (No model.)

To all whom it may concern:

Be it known that I, OTTO ABELING, a citizen of the United States, residing at Moscow, in the county of Latah and State of Idaho, have invented a new and useful Differential High-Pressure Direct-Pass Valve, of which the following is a specification.

My invention relates to improvements in what are known as "straightway gate-valves" now in use, in which an outside by-pass is used to admit pressure from one side of the gate-valve to the other, thereby permitting the gate-valve to be opened with greater ease and in less time than it could be done without the by-pass.

My improvement consists of placing an auxiliary valve of smaller size inside and between the gate-disks of the larger valve and providing corresponding openings in the gate-disks of the larger valves to form a direct pass through it when the auxiliary valve is raised, thereby obtaining the same advantages as are gained from an outside by-pass without the corresponding cost and without being exposed to accidents and frost and occupying less space. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of the entire valve. Fig. 2 is merely an enlarged view of part of Fig. 1.

Similar letters refer to similar parts throughout both views.

The body of the valve B as ordinarily formed encompasses the valve-disks V V, having the direct-pass opening P P, inclosing the auxiliary-valve disks A A, between which is placed the wedge-block W, which is provided with a screw-thread and engages with screw *a*, by which the auxiliary valve A A is opened and closed, as ordinary gate-valves usually are. The screw-thread *a* operating the auxiliary valve is part of the valve-rod R, extending up through the packing-gland and forming at M the screw-section operating the main-valve disks V V by collars C C.

The movement of the auxiliary valve is accomplished by using the small hand-wheel S, which is rigidly fastened to the extreme extended screw-thread M. The first quarter-turn to the right jams the small hand-wheel down on J, compelling J to rotate in the yoke Y. Continuing to turn to the right *a*, the lower end of rod R, engaged in the wedge-block W, raises and loosens the wedge-block W and, continuing, draws the auxiliary-valve disks A A up with it until a clear direct pass P P is opened, admitting the pressure from one side of the main-valve disks to the other side thereof. The auxiliary valves A A having been drawn up to their limit, the small hand-wheel S cannot further be rotated. Then the large hand-wheel L, forming the nut J for the screw-thread M, if rotated to the right in the yoke Y proceeds to raise the main-valve disks V V and the auxiliary valve with it until the main valve has been opened entirely.

To close the valve, the large hand-wheel L is used, left-hand turn, until the main-valve disks V V have come to the limit of their travel. Then the small hand-wheel S, having again jammed down on J, is used to rotate the rod R to the left, which backs down the wedge-block W and the auxiliary-valve disks A A until all parts have reached the suitable stop provided. Then the last turns of the small hand-wheel S push the wedge-block W down between the auxiliary-valve disks A A, forcing them against the seats *s s* and making joints for the auxiliary valve and the main valve as they are ordinarily made in gate-valves.

By the use of the two hand-wheels together, giving a rotary motion to the valve-rod R, the auxiliary valve is operated.

By the use of the large hand-wheel L, which imparts an end motion to the valve-rod R, the main valve is operated.

Each valve is practically operated by the same rod, one valve by the rotary motion and the other valve by the end motion of the rod, each motion being independent, separate, and positive.

I am aware that prior to my invention gate-valves have been made with gate-disks operated by a screw-rod and hand-wheel. I therefore do not claim such a combination broadly; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In a straightway gate-valve, the combination with the main valve of an auxiliary valve inside of the main valve adapted to

open and close a direct pass centrally located in the gate-disks of the main valve, and provided with a wedge-block for forming all the tight joints of both the auxiliary valve against the main-valve disks and the main-valve disks against the seats provided by the body of the valve, substantially as described.

2. The combination of a gate-valve of the straightway type, having a centrally-located direct pass, an auxiliary valve adapted to open and close said pass, said auxiliary valve being operated by a valve-rod having on its lower section a screw-thread engaged in a wedge-block and a hand-wheel at the upper end, the said valve-rod being provided at its upper section with a screw-thread operated by a hand-wheel forming the nut of said screw-thread and rotating free in a yoke, giving end motion to the valve-rod and the main valve, substantially as described.

3. The combination of a straightway gate-valve, provided with a centrally-located direct pass, an auxiliary valve provided with means for opening and closing said valves consisting of one rod and two hand-wheels, one hand-wheel fastened rigidly to the extreme upper end of the rod operating the auxiliary valve by imparting a rotary movement to the rod, the other hand-wheel forming a nut for the upper section of rod and freely rotating in a yoke imparting an end motion to the rod and operating the main valve substantially as described.

4. The combination of a straightway gate-valve, provided with a centrally-located direct pass, an auxiliary valve and means for opening and closing said valves positively, separately, and independent of each other comprising one rod having a rotary movement for operating one valve and an end movement for operating the other valve substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

OTTO ABELING.

Witnesses:
EDWARD N. GRIFFITH,
RUDOLPH BERTSCH.