

No. 750,128.

PATENTED JAN. 19, 1904.

J. E. SCHNEIDER.
VALVE.

APPLICATION FILED NOV. 14, 1902.

NO MODEL.

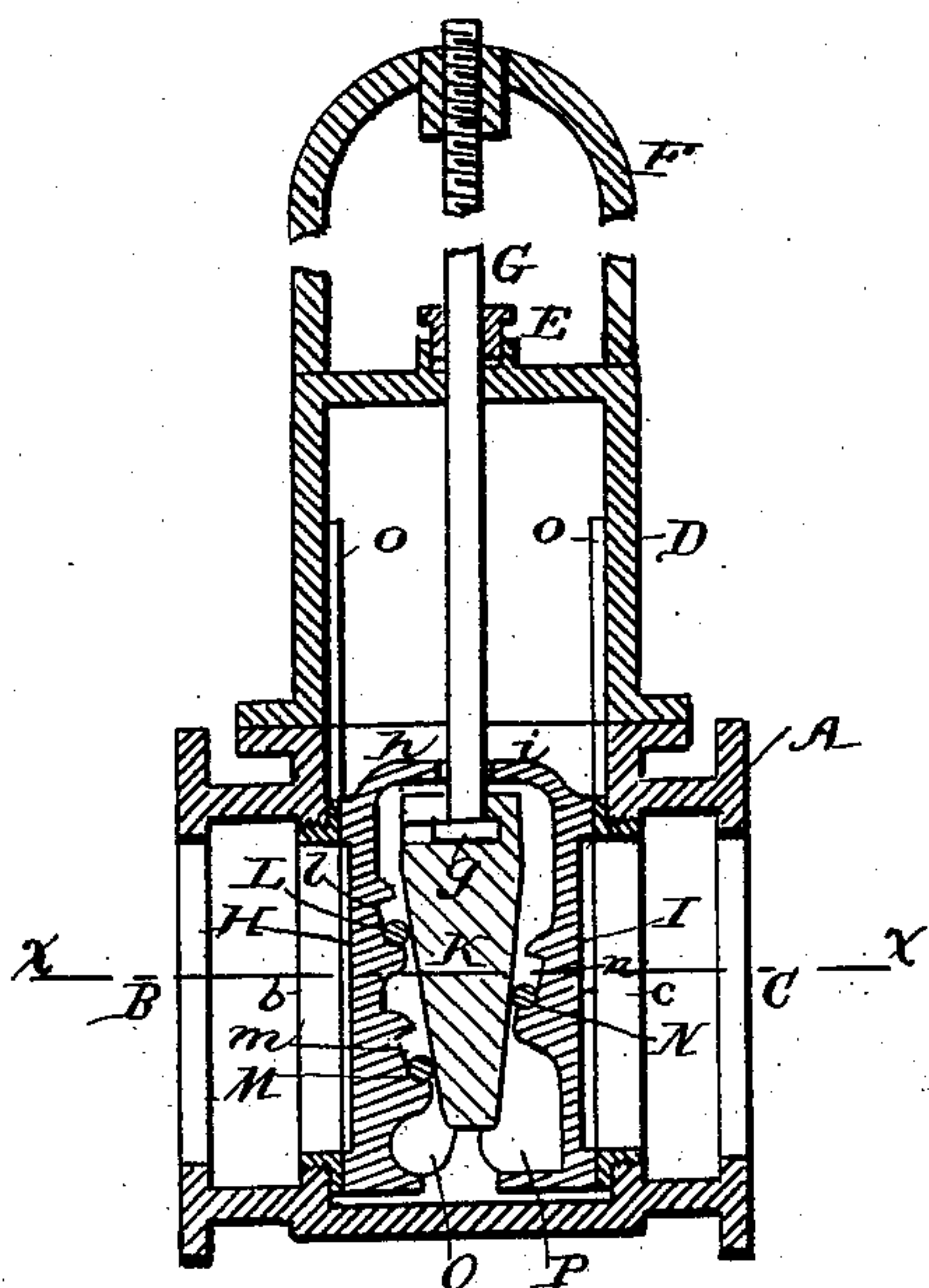


Fig. 1

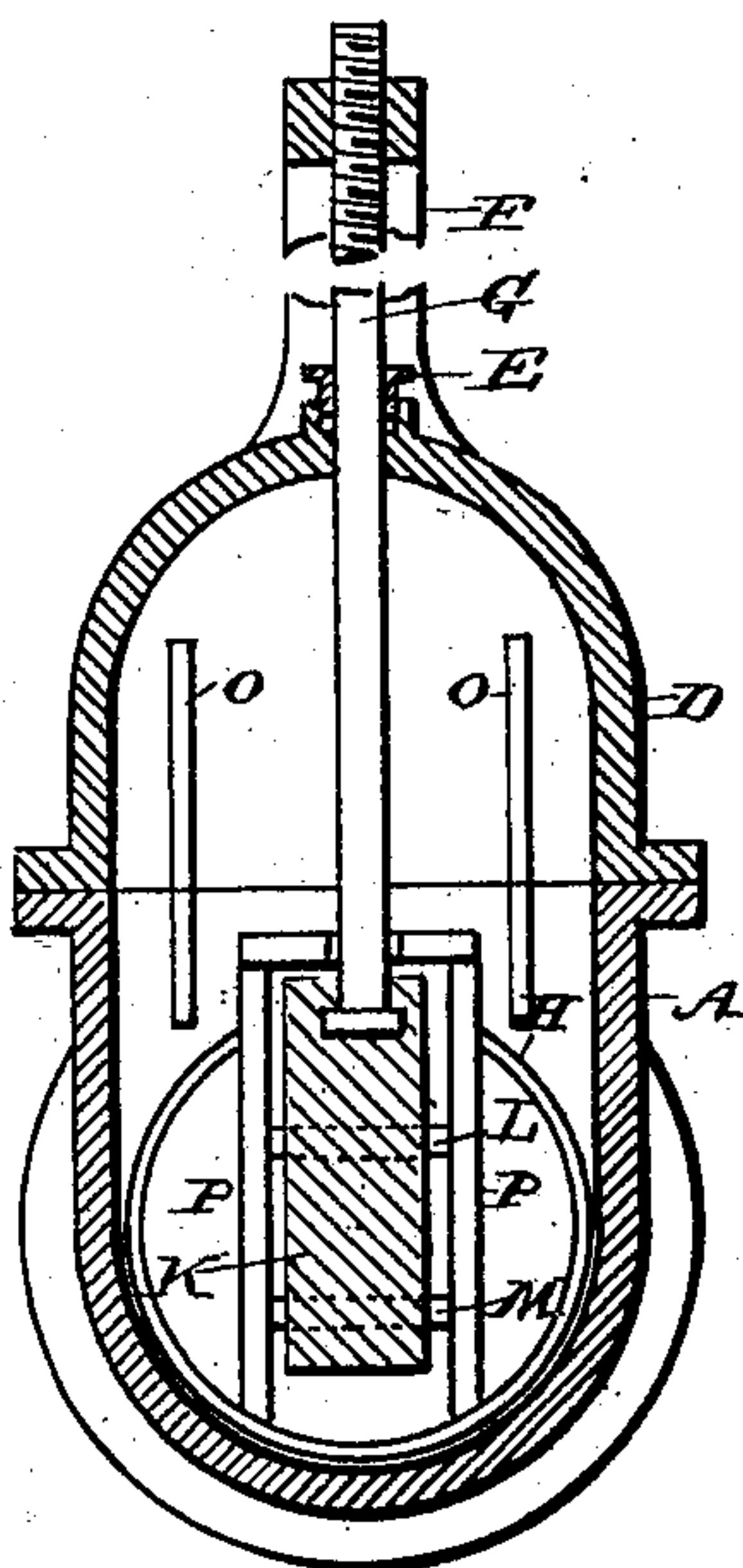


Fig. 2

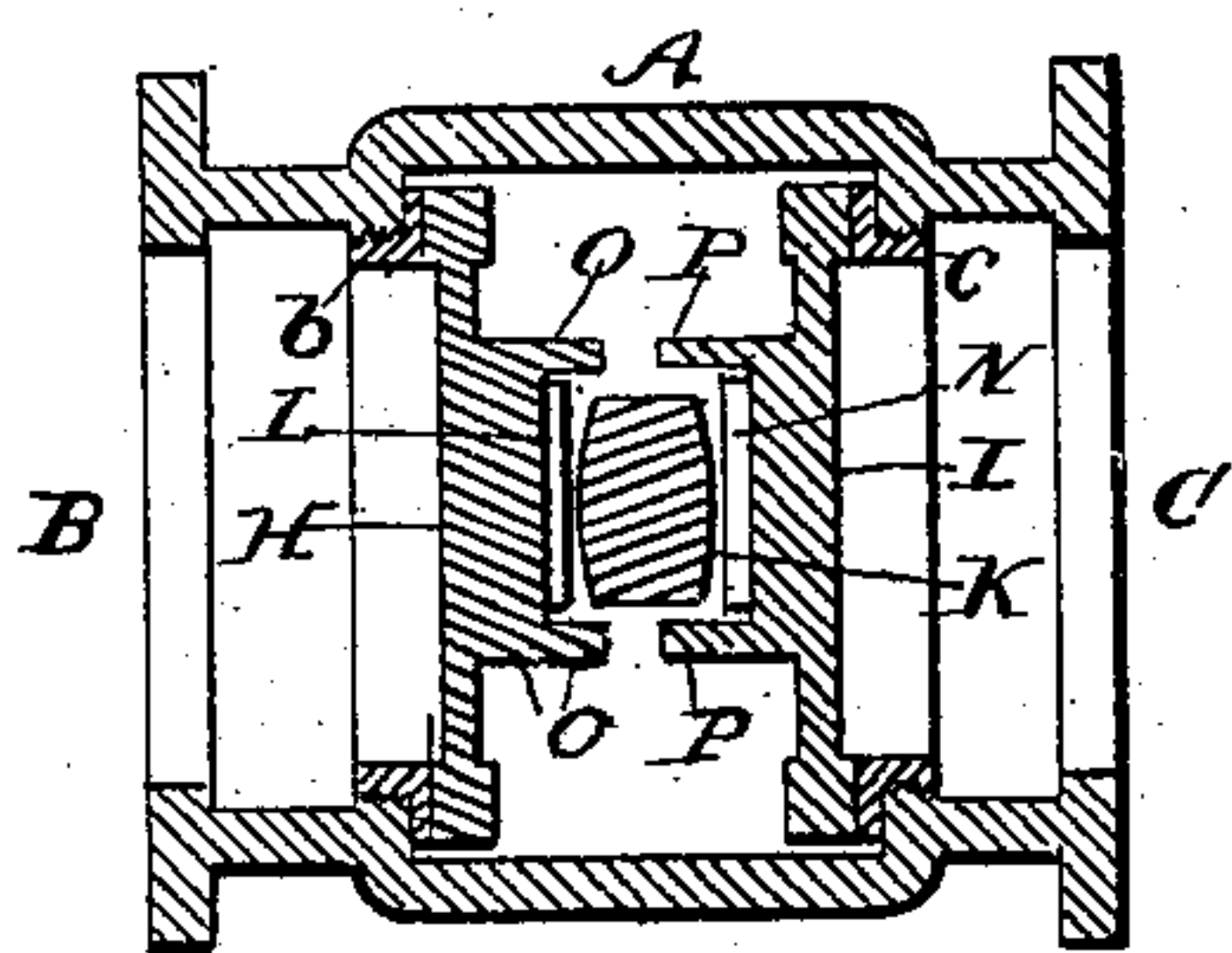


Fig. 3

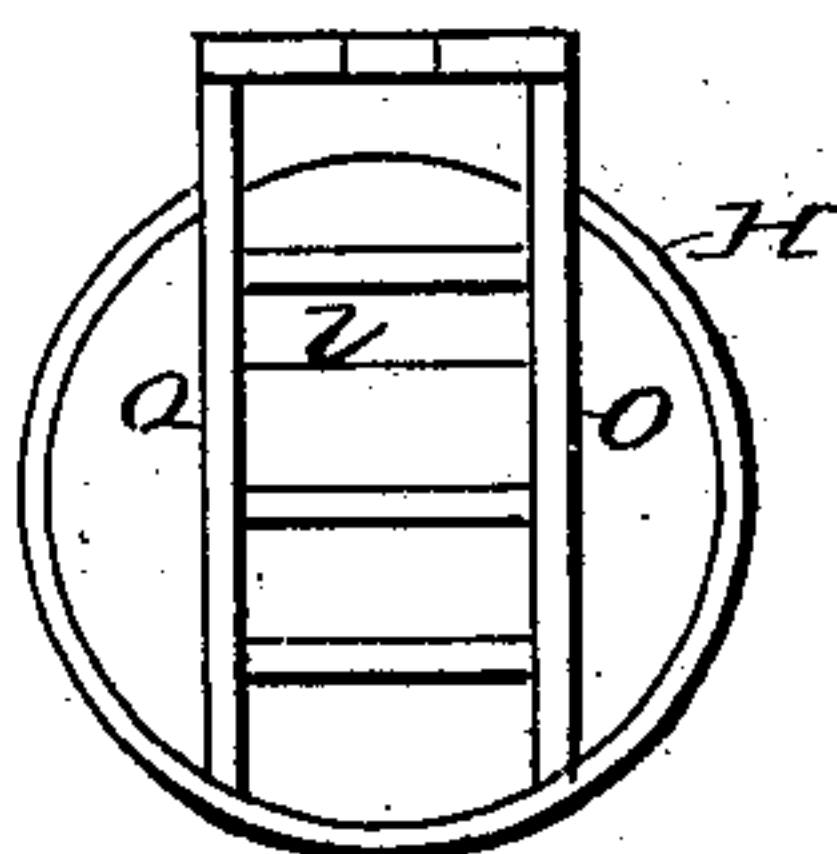


Fig. 4

WITNESSES:

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JOHN EDWARD SCHNEIDER, OF ALLEGHENY, PENNSYLVANIA.

VALVE.

SPECIFICATION forming part of Letters Patent No. 750,128, dated January 19, 1904.

Application filed November 14, 1902. Serial No. 131,402. (No model.)

To all whom it may concern:

Be it known that I, JOHN EDWARD SCHNEIDER, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Valves; 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.

My invention has relation to valves, and relates in particular to gate-valves or valves in which flat disks are pressed against the valve-seats on opposite sides of a chamber by a vertically-moving stem.

My invention has for its object the provision of novel means for causing the gates to seat evenly and to be retained firmly in position when seated; and my invention has for its further object the provision of a novel means for opening and closing the valve with a minimum amount of force; and my invention has for its still further object the provision of a valve of simple construction, devoid of complicated parts, and which will not be liable to become deranged by wear or accumulation of dirt, rust, scale, or other materials which are liable to lodge in a valve.

My invention consists in the novel construction, combination, and arrangement of parts hereinafter described and claimed.

Referring to the accompanying drawings, wherein I have illustrated my invention, Figure 1 is a vertical sectional view of a valve constructed according to my invention. Fig. 2 is a vertical transverse sectional view. Fig. 3 is a horizontal section on the dotted line *xx* of Fig. 1, and Fig. 4 is a detail rear elevation of one of the gates.

A designates the casing of the valve, which is a casting having inlet B and outlet C, provided, respectively, with seats *b c*, which may be metallic bushings screwing into the inlet and outlet openings of the valve-casing, or such seats may be formed on the casing, as is sometimes done in valves of this character. Upon the casing A is secured a vertical extension D of the casing, which is provided with a stuffing-box E, and the said extension D is also formed with the arch F, having a

screw-threaded hole at its top, in which works the screw that is cut on the valve-stem G. The gates of the valve are composed of circular disks H I, that bear against their respective seats *b* and *c* when the valve is closed and when the valve is opened are raised up out of the path between the inlet and outlet openings of the casing and rest in the extension D. The lower end of the valve-stem G is provided with a collar *g*, which fits in a suitable socket in a wedge-shaped block K, that is located between the gates H I and serves to spread them apart to close the gates against their seats when the valve-stem is screwed downwardly. The gates H I are formed with horizontal flanges *h i*, which are notched, so as to partly embrace the valve-stem G, and with which the wedge-shaped block K comes into contact to raise the gates when the valve-stem is screwed upwardly. The gate H is formed with horizontal seats *l m*, in which lie rollers L M, the seats being inclined inwardly, so that the tendency of the rolls is to roll toward the wedge-shaped block K. The rolls L M are arranged on opposite sides of the horizontal line bisecting the gate H. The gate I is formed with a socket *n*, in which seats a roller N, the socket and roller of the gate I being arranged at the center of the gate, as will be seen from the sectional view, Fig. 1. The wedge-shaped block K has slightly-rounded sides, so that it will bear against the rollers L M N at one point only, such point being at or approximately at the centers of the rollers. These rollers may be made of any suitable material; but I prefer to make them of some non-oxidizable metal or to plate them with such metal, so as to prevent them from becoming rusted.

The gates H I are formed with vertical flanges O P on their inner sides, which serve to maintain the rollers L M N in position in their respective seats and also serve to keep the wedge-shaped block K in position. Suitable guides *oo* in the casing A and extension D serve to prevent the gates from spreading apart when raised up out of the main casing into the extension D.

In operating the valve the stem G is turned, causing it to rise and raising the wedge-shaped

block K. The upward movement of the block releases the pressure on both gates, and they are then free to rise with the valve-stem, being lifted by the contact of the top of the block K with the flanges *h i*, and the continued movement of the valve-stem will eventually carry both gates up into the extension D, where they are out of the path from the inlet to the outlet openings. The reverse movement of the valve-stem G will lower the gates, and when they have reached their lowest point and come to rest opposite their seats the block K being forced down by the stem will bear against the rollers L M N and force the gates tightly against the seats. The arrangement of the rollers in the manner shown in the drawings—that is, with the roller N at the middle of the gate I and the rollers L and M above and below the center of the gate H—permits of the gates being forced tightly against their seats, even if the seats should not be exactly parallel, and obviates the necessity of very accurate fitting of the wedge-shaped block. The wedge-shaped block operates in conjunction with the rollers without appreciable friction, and, if necessary, the gates may be forced against their seats with a great deal of power. When the block K is elevated to open the valve, the rollers will roll up the outwardly-inclined seats, and thus prevent any binding of the block K. The rounded sides of the wedge-shaped block always present a single central bearing-point for each roller, and this construction is of advantage in preventing the wedge from being twisted sidewise by the presence of an obstruction under the edge of one or the other of the gates at the sides of

the same. This sidewise twisting of the wedge takes place more particularly in valves wherein a sphere is interposed between the gate and the wedge, and the latter has flat sides, as if one of the gates be held from its seat on one side the sphere will bear to one side of the center of the wedge and twist or turn it on its vertical axis and cause it to force both gates toward the side of the valve-casing in opposite directions. So, too, the arrangement of the rollers, hereinbefore described—that is, with one roller at the center of one gate and two rollers one above and the other below the central line of the gate—is of advantage, as it affords a firm bearing for the wedge and prevents the wedge from turning on its horizontal axis by the presence of obstructions under the top or bottom edges of the gates.

Having described my invention, I claim—

1. In a valve the combination of movable gates, a wedge-shaped block having rounded sides and cylindrical rollers arranged between said block and gates substantially as described.

2. In a valve the combination with movable gates and a wedge-shaped block attached to the valve-stem and adapted to force the gates against their seats of rollers arranged one at the center of one gate and two above and below the center of the other gate substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN EDWARD SCHNEIDER.

Witnesses:

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JOS. B. CONNOLLY.