

G. M. DAVIS.

VALVE.

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900,987.

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Fig. 1.

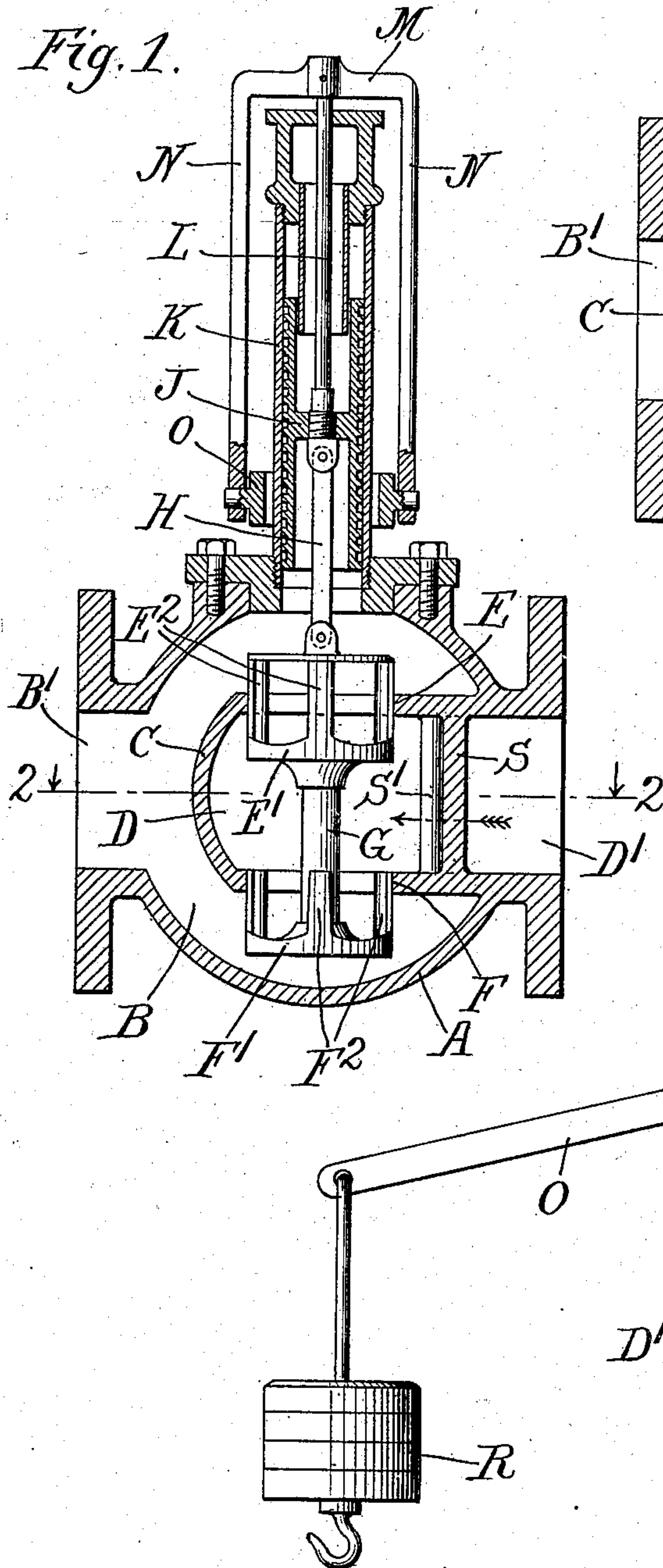


Fig. 2.

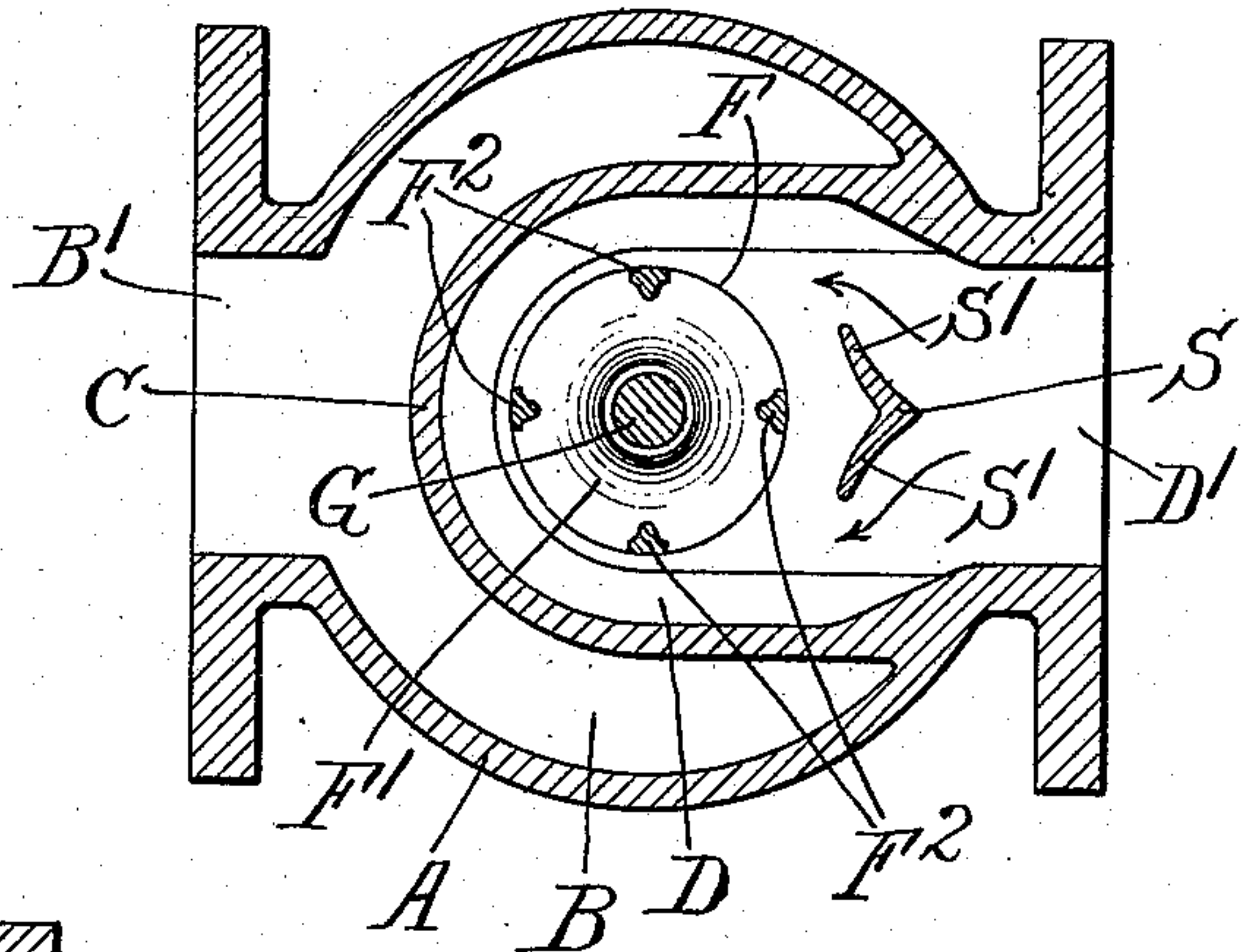
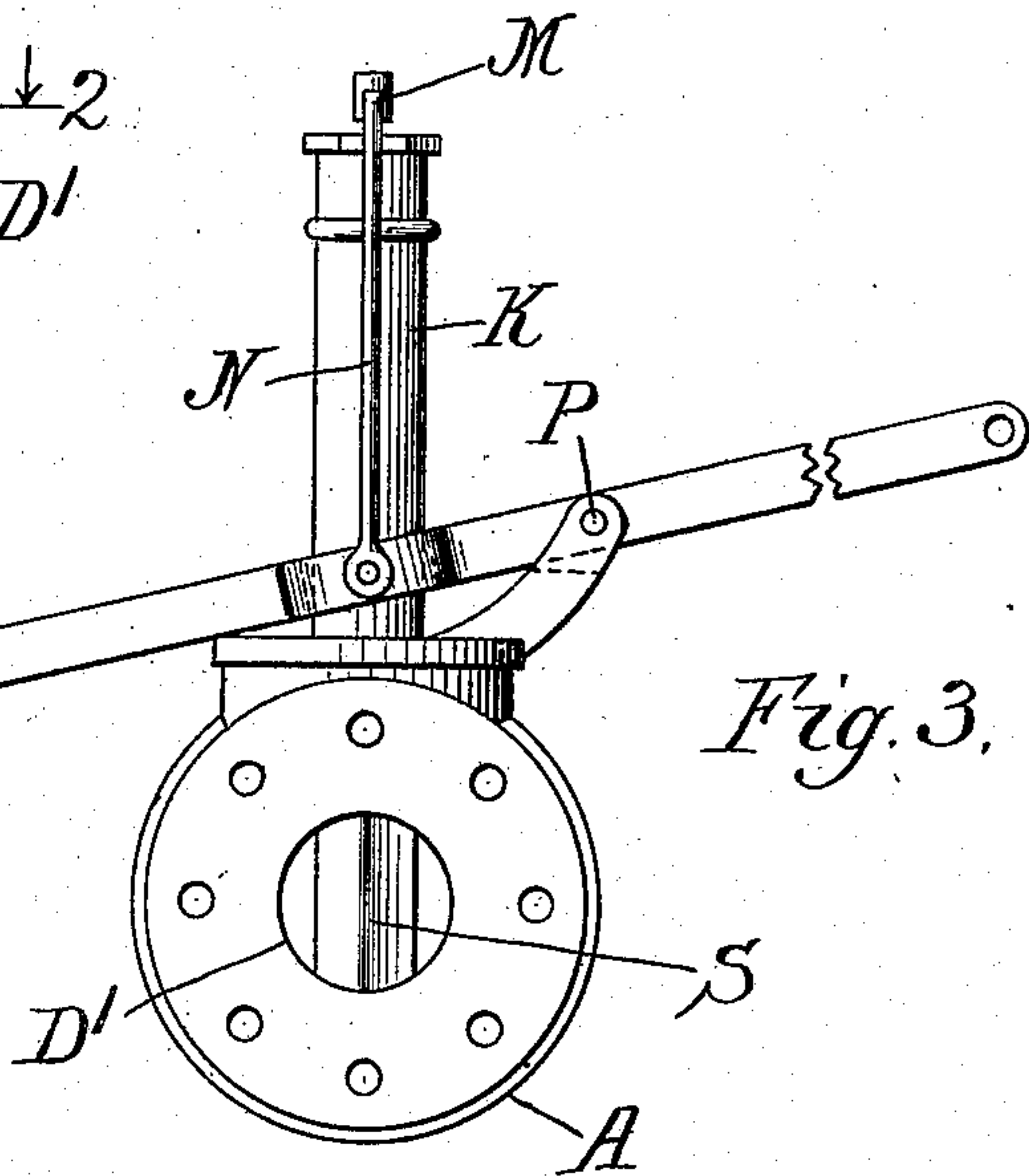


Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE M. DAVIS, OF CHICAGO, ILLINOIS.

VALVE.

No. 900,987.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE M. DAVIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Valves, of which the following is a specification.

My invention relates to pressure regulating valves. It is applicable to all kinds of valves where there is a valve controlling a passage way adapted to move along a given line associated with a fluid passage way which brings the fluid toward the valve on a line transversely to the line of motion of the valve. It is particularly applicable where there are two balanced valves and openings, or two valves related in any such manner as herein set forth.

One application of my invention as applied to a balanced valve is illustrated in the accompanying drawings, wherein

Figure 1 is a vertical section, with parts shown in full lines, of my device applied to a pressure regulating valve; Fig. 2, a horizontal section on line 2—2 of Fig. 1; and Fig. 3, an elevation.

Like parts are indicated by the same letter in all the figures.

A is the valve case of any desired size, form or shape. It contains the low pressure chamber B.

C is an inner case contained within the low pressure chamber B and itself containing the high pressure chamber D. Chamber B is associated with the low pressure outlet B¹, and the chamber D, with the high pressure inlet D¹. Suitable valve openings with valve seats are formed as, for example, at E and F in the upper and lower part of the casing C, and in these are suitably placed valves consisting, in this case, each of a disk E¹, F¹, respectively, and guides E², F², with openings between them. All these parts are mounted on the stem G which is attached to the short link H, in turn secured to the piston J which travels in the upper cylinder K. The piston is associated with the rod L, connected with the yoke M and from which depend the side arms N, N, to which latter is secured the lever O pivoted at P and associated with the variable weight R. Between the inlet opening D¹ and the inner high pressure chamber D is placed the distributor S consisting of

the vertical central portion and the two laterally extending wings S¹, S¹. These several parts are understood as more or less diagrammatic and intended to illustrate only one form of my device.

The use and operation of my invention are as follows: When the fluid, as, for example, steam is to be supplied at a high pressure and discharged at a low pressure, it may be accomplished by my valve. The steam entering the inner chamber passes through the openings of the two balanced valves and emerges at a relatively low pressure in the low pressure chamber. Here it bears upwardly against the piston and in opposition to the weight tends to raise or lower the piston, but this tends to raise or lower the valve stem G², and thus to open or close the valve openings as the case may be. In this way an equilibrium is maintained and a certain relation between the high and low pressure steam depends upon what is desired and fixed by the weight.

There are various other forms of valves to which my invention, now to be described, is applicable, but I have used the foregoing as an example of a double valve structure to which I can apply my invention. In such structure the flow of incoming fluid is directed transversely to and against one side of the valve stem. The tendency, therefore, is to press the valve to one side, that is, in the direction indicated by the arrow in Fig. 1. To operate successfully, the valves should be free to move in their valve openings and with a pressure directed against the valve stem as indicated this action is interfered with. This pressure distribution is accomplished by the vertical distributing plates in the path of the current of fluid which direct it to either side, as indicated by the arrows in Fig. 2. The fluid passes outwardly against the wall of the inner chamber and is thence deflected around that wall and toward the center so that in the end the fluid approaches the valve in such a way that its pressures are equalized and distributed and may be thought of as lines of force directed toward the valve stem from all sides, thus balancing themselves and leaving the valves to move freely through their chambers.

I claim:

An automatic balanced valve comprising a casing, a cylinder projecting therefrom, a

piston in such cylinder, an exterior lever and weight associated with such piston, a valve stem attached to the piston within the case, balanced valves thereon, an inner case with
5 two openings controlled by such balanced valves, an inleading fluid pipe normally discharging against the stem between the valves and a deflector in the path of such fluid to distribute it about the stem, substantially as shown and described.

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