

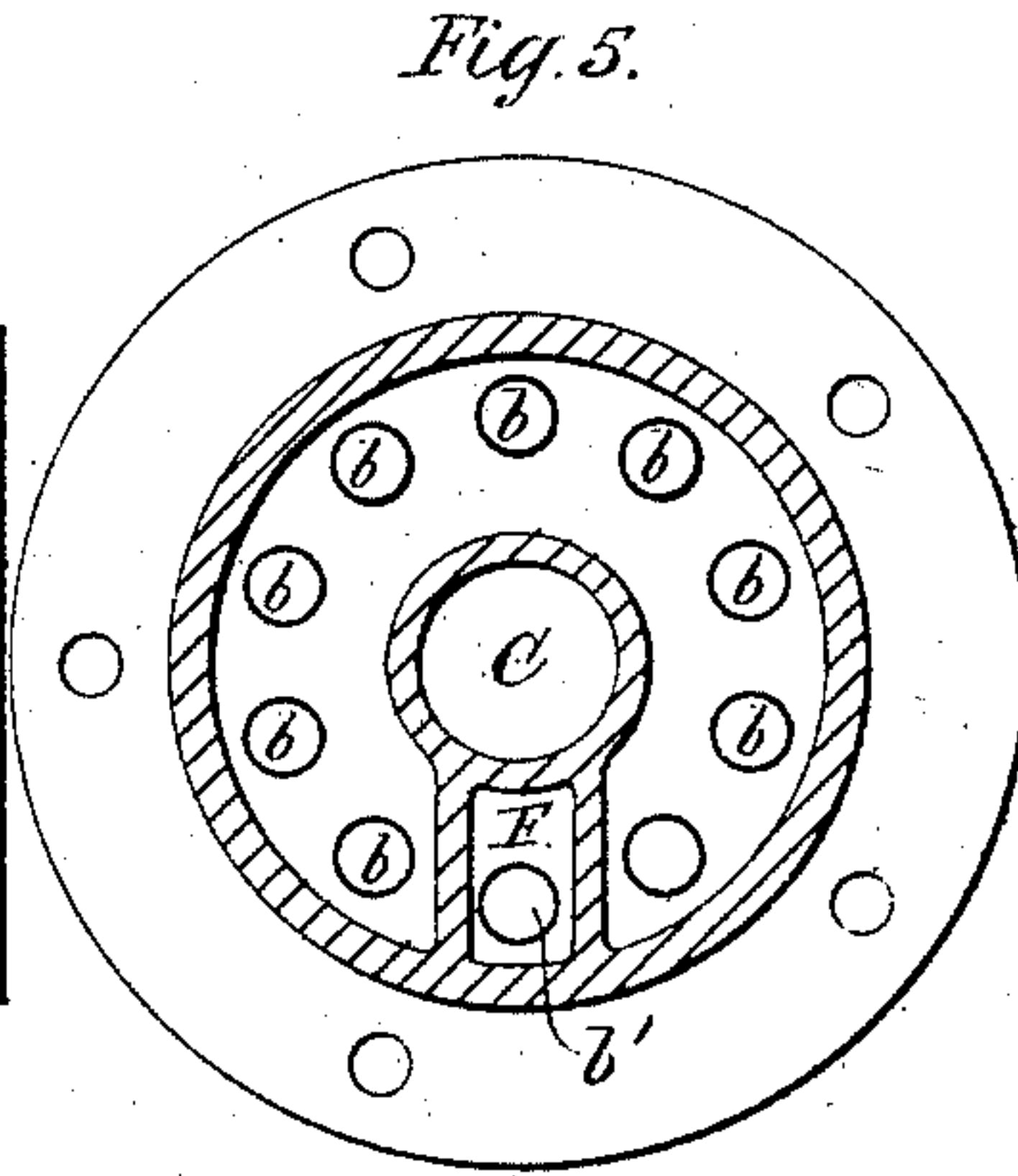
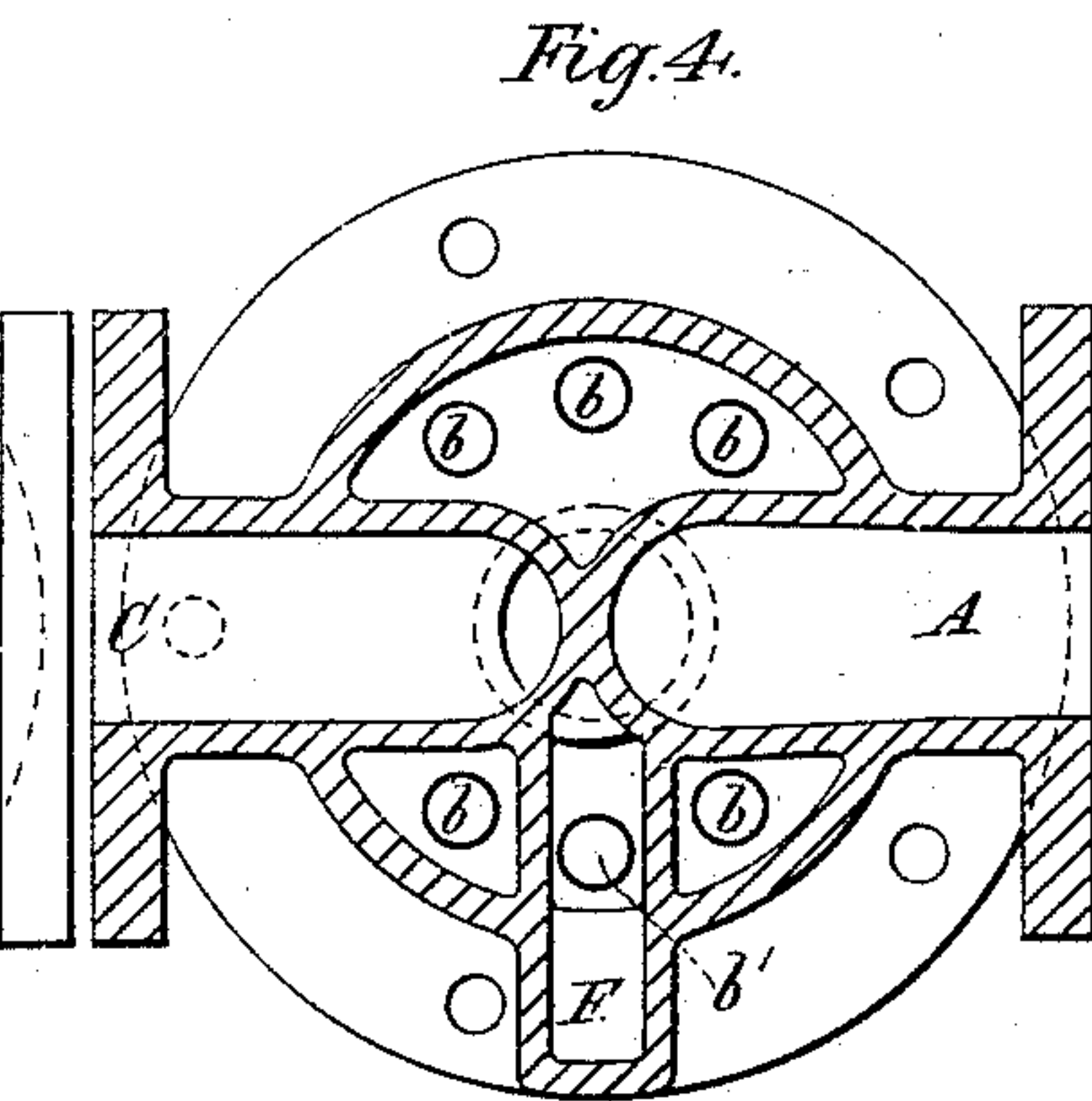
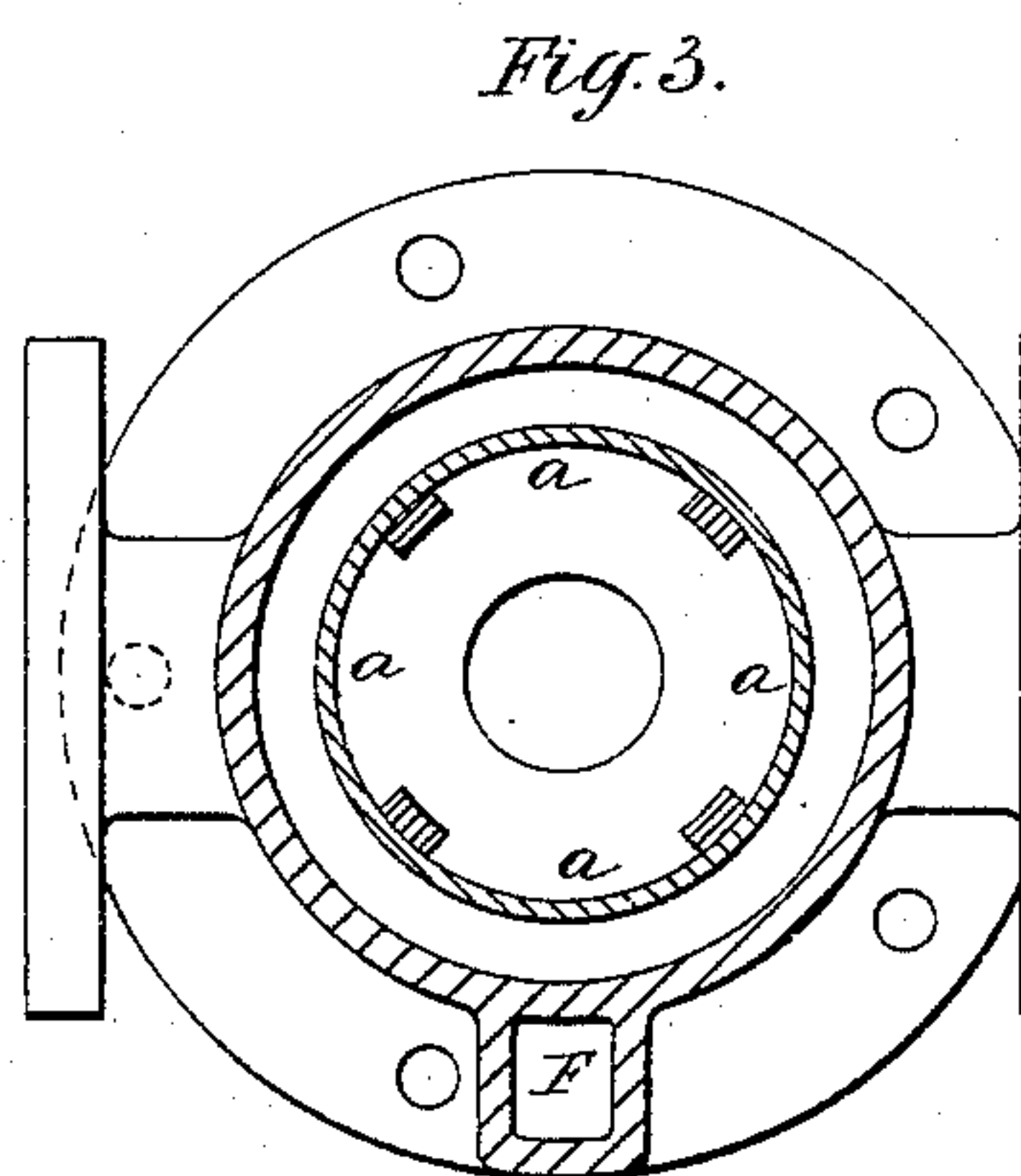
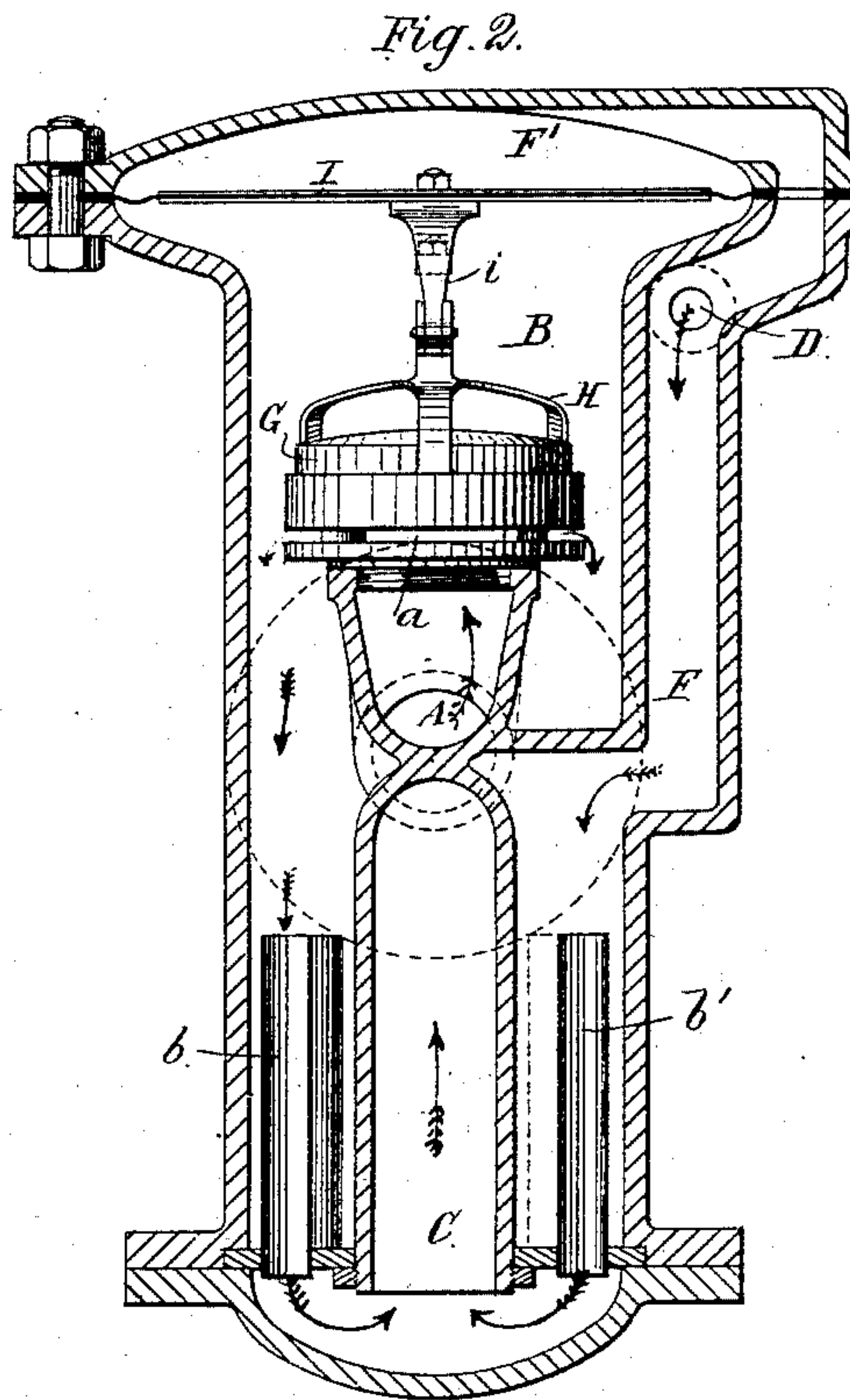
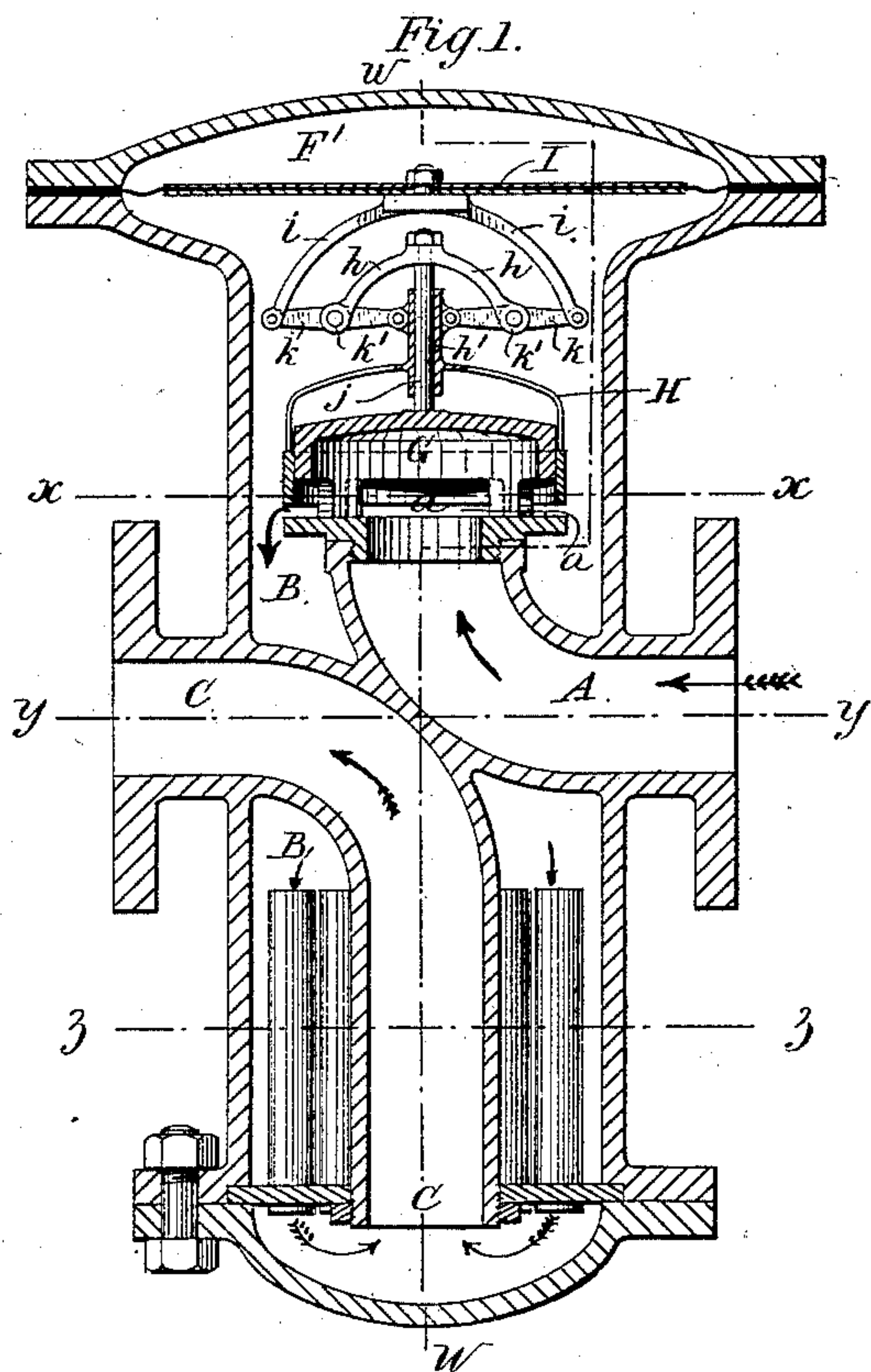
(No Model.)

C. C. BARTON.

APPARATUS FOR MAINTAINING A PROPORTIONAL FLOW OF LIQUIDS.

No. 371,167.

Patented Oct. 11, 1887.



Witnesses,
Wm. A. Harris
Sidney L. Johnson

Charles C. Barton
Inventor.
by *Inte. & Freeman*
Attys.

UNITED STATES PATENT OFFICE.

CHARLES CASIMIR BARTON, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF
TO CHARLES AUGUSTUS KENNEY, OF LONDON, ENGLAND.

APPARATUS FOR MAINTAINING A PROPORTIONAL FLOW OF LIQUIDS.

SPECIFICATION forming part of Letters Patent No. 371,167, dated October 11, 1887.

Application filed February 8, 1887. Serial No. 226,980. (No model.)

To all whom it may concern:

Be it known that I, CHARLES CASIMIR BARTON, a citizen of the United States, a resident of the city, county, and State of New York, and temporarily residing at Windsor Hotel, Edinburgh, Scotland, have invented a new and useful Improved Apparatus for Maintaining a Proportional Flow of Fluids Through Pipes of the Same or of Different Diameters, of which the following is a specification.

In a previous application filed by me I have described a method of and apparatus for regulating the flow through a main pipe by means of the flow through a smaller supplemental pipe connected therewith, and which, by means of the apparatus therein described, automatically actuates the regulating-valve of said main pipe.

My present invention relates to certain improvements in the apparatus for accomplishing the same purpose; and it consists, mainly, in an improved construction of valve-actuating mechanism, together with a somewhat improved arrangement of parts, while the method of governing the flow through the main pipe by means of the flow through a pipe of the same or smaller diameter remains the same.

In order that my present invention may be clearly understood, reference is made to the accompanying drawings, which form part of this specification, and in which—

Figure 1 represents a side sectional elevation of the apparatus. Fig. 2 represents a sectional elevation on the line W W, Fig. 1. Fig. 3 represents a plan view on the line x x. Fig. 4 represents a plan view on the line y y, and Fig. 5 represents a plan view on the line z z.

In said drawings, A represents the main pipe discharging through ports *a a* into chamber B, and from thence to discharge C through pipes *b b*. The supplemental pipe D is connected to pipe A, and discharges through a meter into chamber F F', and from thence through pipe *b'* to discharge C. The main pipe A has a dead end, G, so that the liquid can only escape through ports *a a*, which are closed or opened by means of a cylindrical slide-valve, H, which makes but a loose fit, and is adapted to be raised or lowered by means of the movement of the flexible diaphragm I, to which it is attached by rigid arms *i i* and levers *k k*, pivoted

at *k' k'* on rigid arms *h h*, carried by a stem, *j*, from the top of dead end G, the inner ends of levers *k k* being attached to sleeve *h'* of the valve H.

With this construction and arrangement of parts it will be obvious that the valve will be operated by any movement of the flexible diaphragm I, which is in turn secured in the casing and forms a flexible division between chambers B and F', so that any excess of pressure in either chamber will cause the said diaphragm I to rise or descend, and through the connected parts to open or close the ports *a a* until an equilibrium of pressure is secured in chambers B and F F'. The weight of valve H and connected parts should be sufficient to hold diaphragm I in its normal position when the pressure upon both sides thereof is equal. Any excess pressure in chamber F' would depress said diaphragm and through the levers *k k* open the valve to a greater or lesser extent, while any excess pressure in chamber B would raise said diaphragm, and thereby depress and close the valve to such a point as would produce an absolutely even pressure in chambers B, F, and F'.

In order to get the best results, the pipes *b b* should all be vertically placed and be of equal length and size, and should all be placed at points equidistant from the center of chamber B, and, together with pipe *b'*, equidistant from each other. Pipe *b'* should also be of like size and similarly placed. The chamber F is necessarily larger than the pipe *b'*, as, if this were not so, with an equal pressure in chambers B and F the discharge through *b'* would be less than that through any one of the pipes *b*, owing to the increased resistance offered in chamber F to the flow of the fluid. The number of pipes *b b* will depend upon the relative sizes of *b'* and A. Thus, if the latter has an area of ten and the former of one, there should be nine pipes *b*, each having an area of one, while pipes D and *b'* carry the remaining tenth of the fluid, and as this quantity must necessarily pass through the meter, if placed in connection with pipe D, and be measured, it will be at once evident that the total supply has been ten times that registered by the meter, or the indicating mechanism can be made to indicate ten times the volume absolutely passing through it, if

so desired. It will be evident that this construction enables a small meter to be used for registering the flow in a large main.

The operation of the parts will be understood from the foregoing description; but it may be noted that should the pressure through pipe D cease for any reason the excess pressure which would immediately be found in B would be transmitted to the diaphragm I, which would be raised thereby, while slide-valve H would be depressed, closing ports *a a* and stopping the flow. This automatic closing of the discharge renders the regulator extremely useful as an adjunct to large water-mains, as by means of a small and readily-operated stop valve or cock placed in the supplemental pipe D the flow through a large main may be instantly shut off.

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

1. In an apparatus for maintaining a proportional flow of fluid through pipes of the same or different diameters, the combination,

with diaphragm I and valve H, of the two rigid arms *i i*, a guide which directs the movement of the valve, and levers connected with the valve on opposite sides of its center, whereby it is balanced and also connected with the arms *i i*, substantially as described. 25

2. In an apparatus for maintaining a proportional flow of fluids through pipes of the same or different diameters, the combination, with the dead end G of the main pipe, of a stem, *j*, carrying arms *h h*, which form the fulcrums for the valve levers which are actuated by the motion of a diaphragm, substantially as set forth. 30 35

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES CASIMIR BARTON.

Witnesses:

OSCAR MALMROS,

U. S. Consul.

HUGH C. PEACOCK,

U. S. Vice-Consul.