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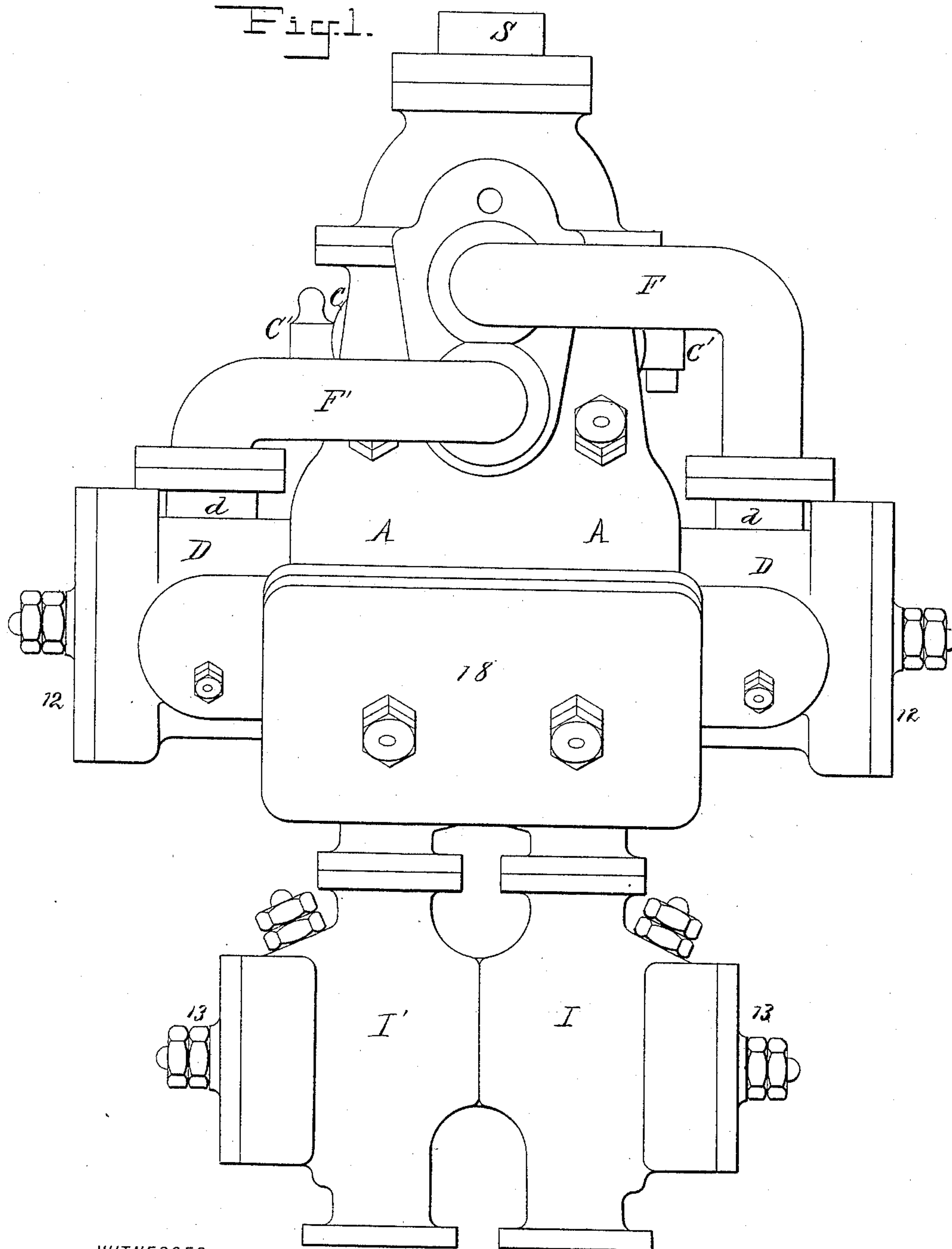
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H. SNOOKS.
AUTOMATIC STEAM VACUUM PUMP.

No. 462,069.

Patented Oct. 27, 1891.

Fig. 1.



WITNESSES:

George Baumann
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INVENTOR

Henry Snooks

BY

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his ATTORNEYS

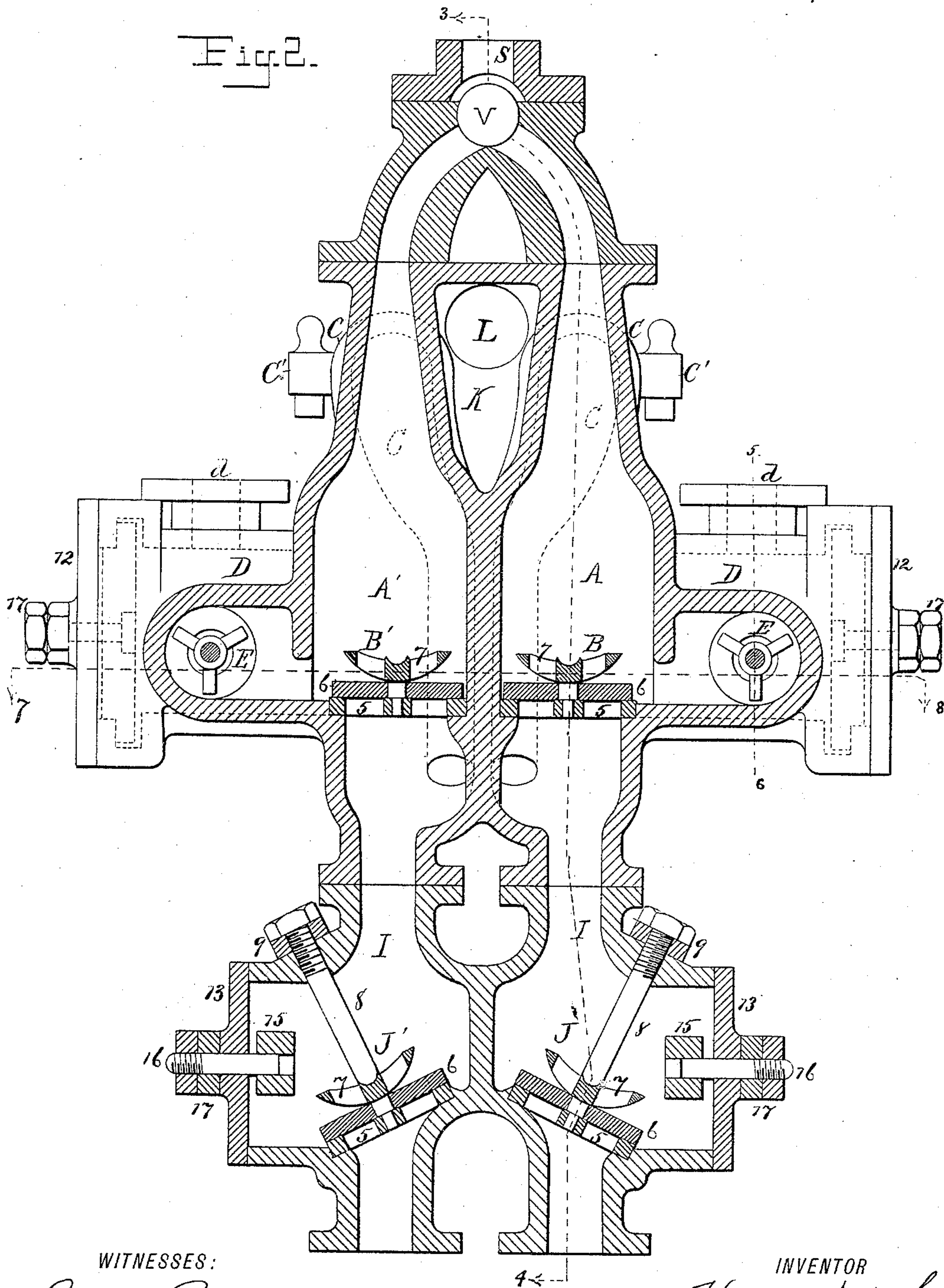
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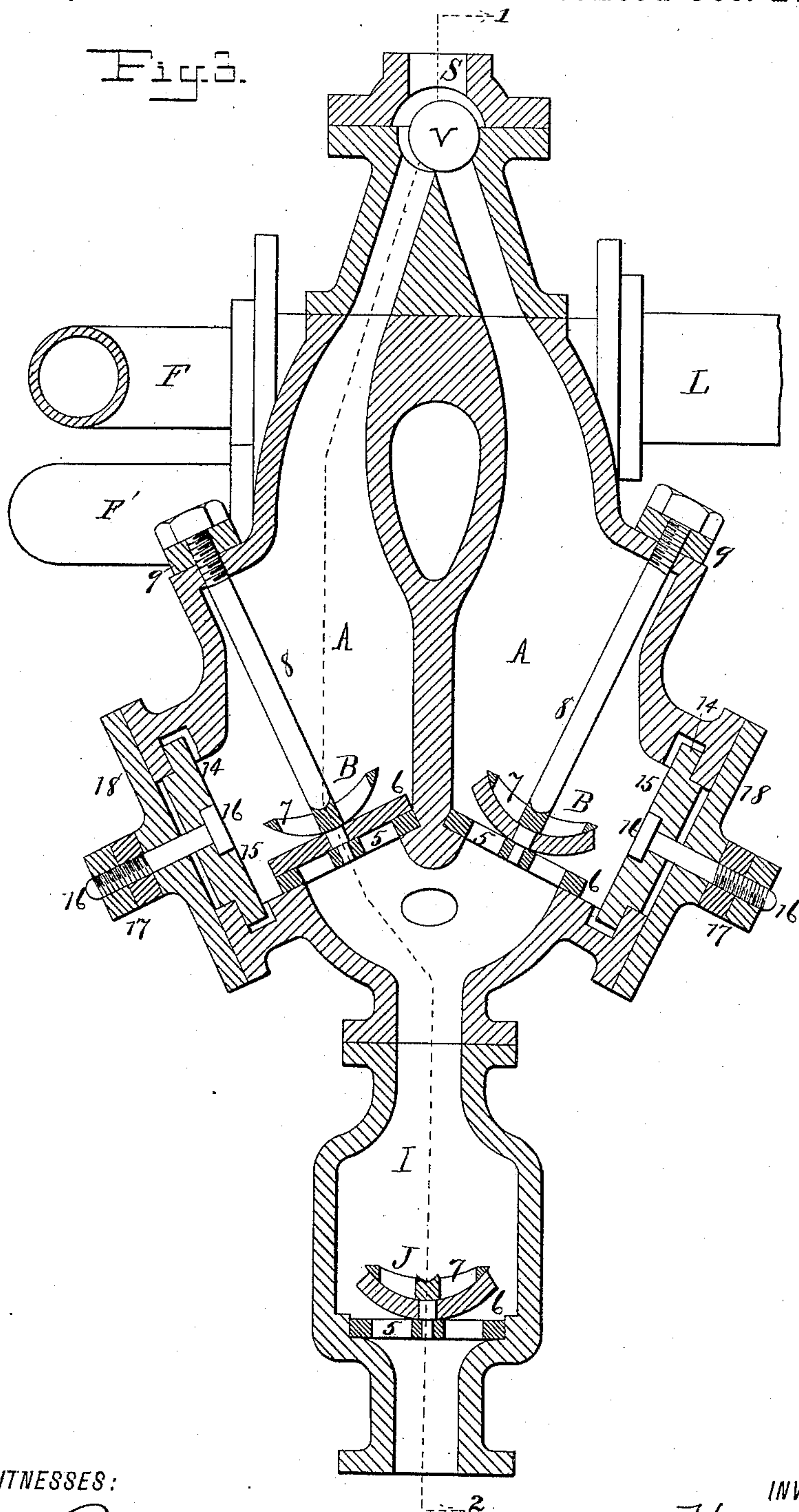
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Fig 3.



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Fig. 5.

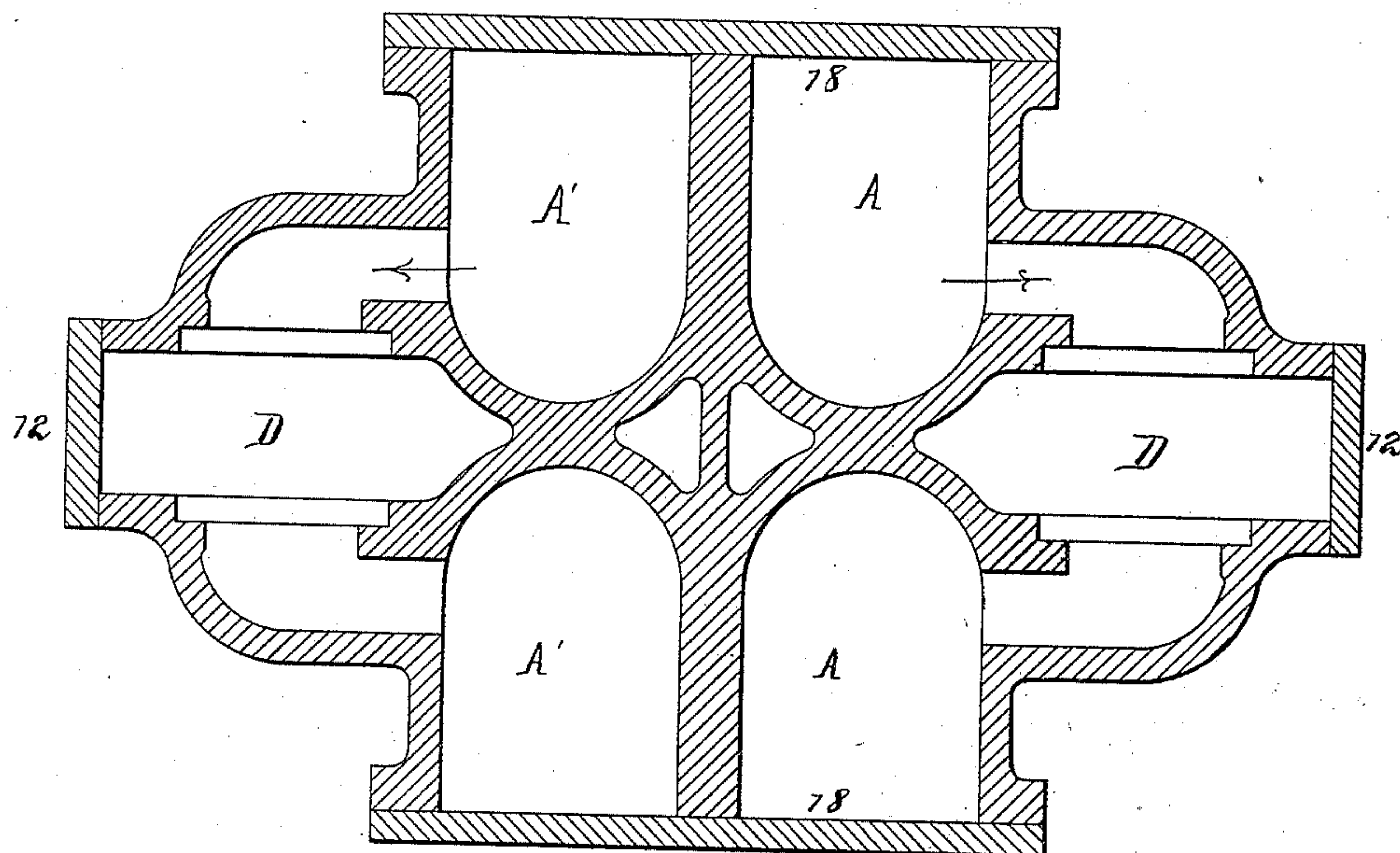


Fig. 4.

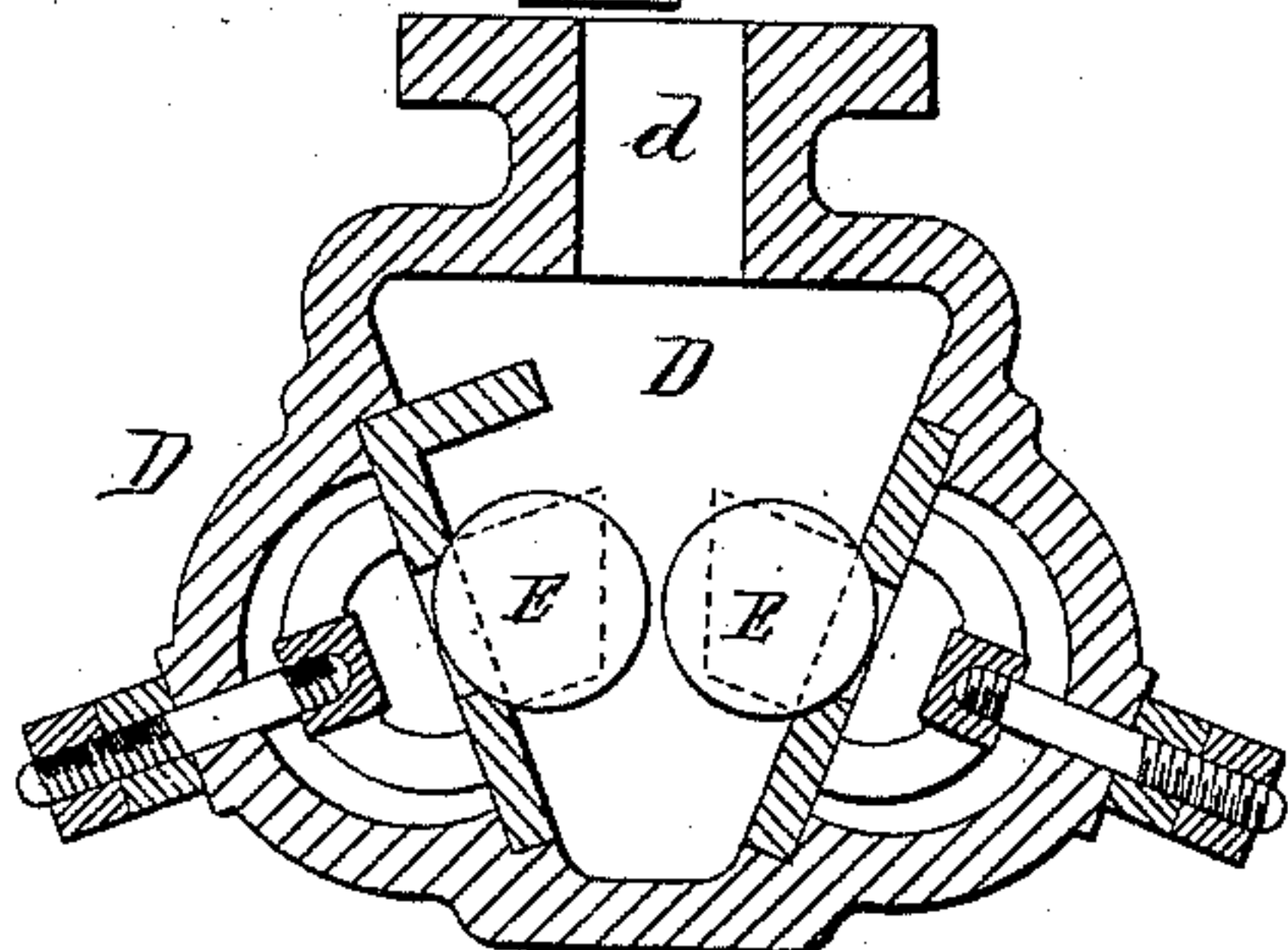


Fig. 6.

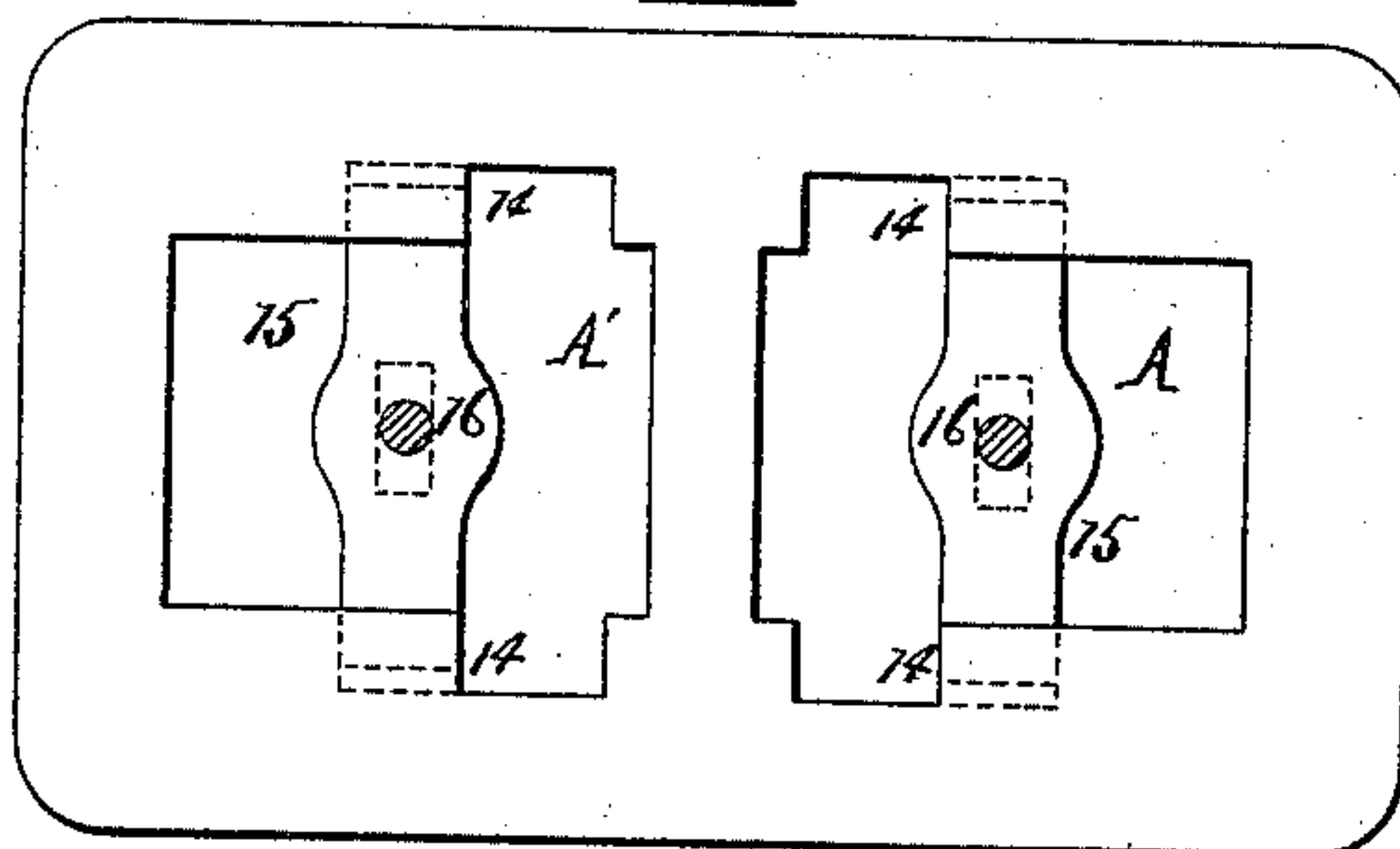


Fig. 7.

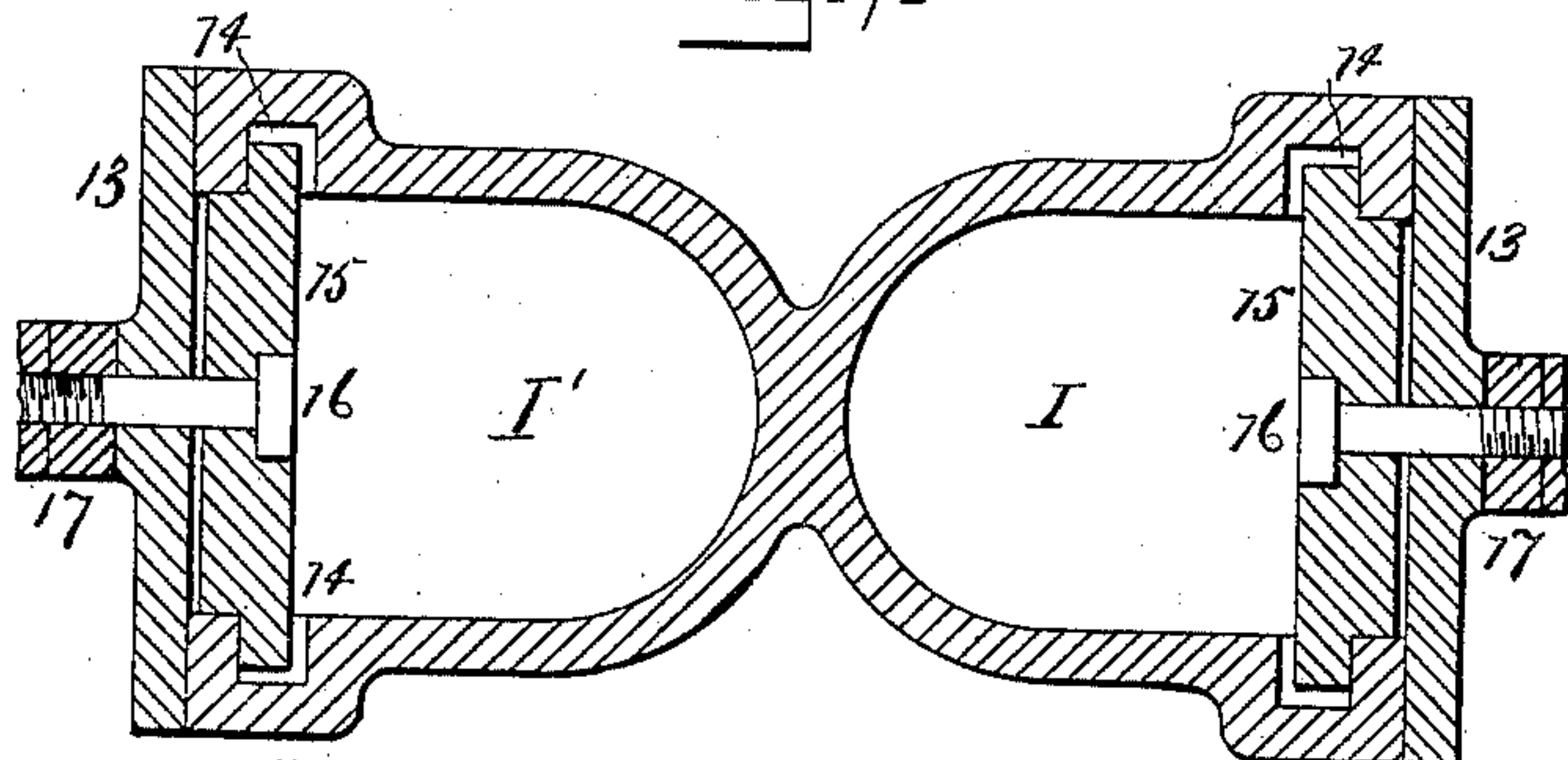
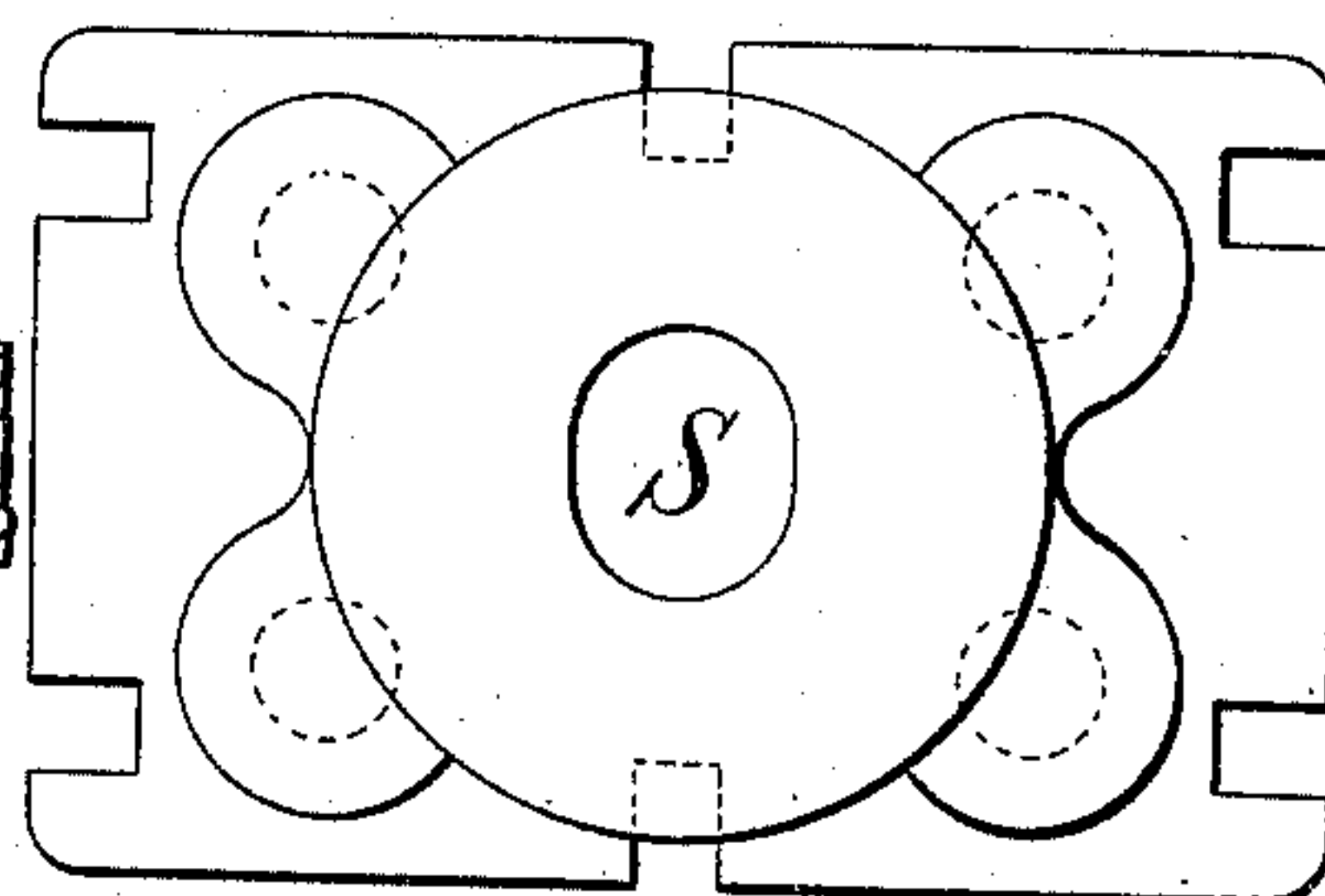


Fig. 8.



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UNITED STATES PATENT OFFICE.

HENRY SNOOKS, OF JERSEY CITY, NEW JERSEY.

AUTOMATIC STEAM VACUUM-PUMP.

SPECIFICATION forming part of Letters Patent No. 462,069, dated October 27, 1891.

Application filed May 8, 1891. Serial No. 392,053. (No model.)

To all whom it may concern:

Be it known that I, HENRY SNOOKS, a subject of the Queen of Great Britain and Ireland, and a resident of Jersey City, New Jersey, have invented an Improved Automatic Steam Vacuum-Pump, of which the following is a specification.

One of the main objects of my present invention is to construct an automatic steam vacuum-pump which shall have an increased capacity over such pumps as ordinarily made.

Further objects of my invention are to provide means for keeping the upper parts of the working chambers cool, and also to improve the construction of the pump in certain of its details.

In the accompanying drawings, Figure 1 is a side elevation of my improved automatic steam vacuum-pump. Fig. 2 is a vertical section on the line 1 2, Fig. 3. Fig. 3 is a vertical section on the line 3 4, Fig. 2. Fig. 4 is a section on the line 5 6, Fig. 2. Fig. 5 is a sectional plan on the line 7 8, Figs. 1 and 2, but without the valves. Fig. 6 is a face view of the flanged lower part of two working chambers to which a cover-plate is to be attached; but in this view the cover-plate is shown as cut off. Fig. 7 is a sectional plan view on the line 9 10, Fig. 1. Fig. 8 is a plan view of the neck-piece for the admission of steam.

My improved automatic steam vacuum-pump is of that class illustrated in the patents of Charles H. Hall, September 24, 1872, and the general principle of operation is similar to that of the well-known pulsometer steam vacuum-pump.

One of the features of my present invention is, as I have said, to increase the capacity of the pump, and this I accomplish by constructing the pump with two sets of working, vacuum, and discharge chambers in connection with one steam-inlet, thus making a duplex automatic steam vacuum-pump.

Referring to the accompanying drawings, Fig. 3 shows in section a pair of working chambers A A, having at their lower ends valves B B, which may be of any suitable construction. Below these valves is the induction-chamber I, having a foot-valve J of any suitable construction. S is the steam-inlet with a rolling-ball or other suitable valve V, the

position of which determines into which chamber the steam shall be admitted. I provide a second set of working chambers A' with valves B', induction-chamber I', and foot-valve J', as will be readily seen on reference to Fig. 2 and other figures of the drawings; but the same steam-valve V controls the admission of steam to both sets of chambers A and A' at the same time and with the same movement.

In connection with each set of working chambers A and A' is provided a discharge-chamber D, with valves E of suitable construction and with the outlet *d*. As shown in Figs. 1, 2, 3, and 5 these discharge-chambers are arranged on opposite sides of the four working chambers A and A', so that the latter may be close together to permit their upper ends to be brought close together at the top for control by the one steam-valve V. There is also in connection with each induction-chamber I a vacuum-chamber C, Fig. 2, provided with an air-valve C', and opening into the induction-chamber I (or I') below the valves at the lower ends of the working chambers A, (or A').

In order to keep the upper part of the working chambers A and A' cool, I utilize the space K, Fig. 2, between the upper parts of these chambers as a water-passage for the discharge, and for this purpose I carry the branches F F', Figs. 1 and 3, from the outlets *d* of the discharge-chambers D to one side of this chamber K and have one outlet-pipe L, Fig. 3, from the other side of this chamber K.

As I have said, the valves B B' and E E' and J J' may be of any suitable construction; but for the valves B B' and J J', I prefer to use the form illustrated, and consisting of a seat 5, a flexible flat valve 6, and a retaining-guard 7. The seats 5 are adapted to suitable recesses in the casing, and the guards and valves are held in place on the seat by means of rods 8, bearing upon the guards at their inner ends, and threaded near their outer ends, where each is screwed into a threaded opening in the casing. Jam-nuts 9 may be employed where desired. In order to conveniently get at these various valves, suitable cover-plates are used, such as the plates 18, for the two sets of chambers A and A', the plates

12 for the discharge-chambers D and D', and the plates 13 for the induction-chambers I and I'. Instead of securing these cover-plates in place each by a number of bolts and nuts fitted into notches in the edges of the meeting-flanges, I cast inside the flanges of each chamber where the cover-plates are to be applied recesses 14, into which can be fitted the ends of cross-bars 15, having headed bolts 16, (see Figs. 3, 6, and 7,) which are passed through openings in the cover-plates and tightened and held by means of suitable nuts 17.

The operation of the apparatus will be readily understood from the foregoing description, it being borne in mind simply that inasmuch as there is one steam-inlet to both sets of chambers they both work at the same time, and thereby greatly increase the capacity of the machine.

I claim as my invention—

1. A duplex automatic steam vacuum-pump having one steam-inlet valve and valve-chamber and two sets of working chambers, all close together, and having their upper ends all opening into the one valve-chamber at the top, in combination with two discharge-chambers on opposite sides of the working cham-

ber and two sets of induction-chambers and valves, all substantially as described.

2. A duplex automatic steam vacuum-pump having two sets of working chambers with valves, two induction-chambers with valves, and two valved discharge-chambers with pipes from the discharge-chambers opening into a space between the upper parts of the working chambers, and an outlet-pipe from said space, substantially as and for the purpose described.

3. An automatic steam vacuum-pump having valves and cover-plates on the casing for access to the valves, the corresponding flanged part of the casing having recesses 14, a bar 15 to engage with the recesses, and a headed bolt passing through the bar and the cover-plate, and nuts to secure the latter in place, all substantially as described.

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

HENRY SNOOKS.

Witnesses:

EDITH J. GRISWOLD,
JOHN REVELL.