

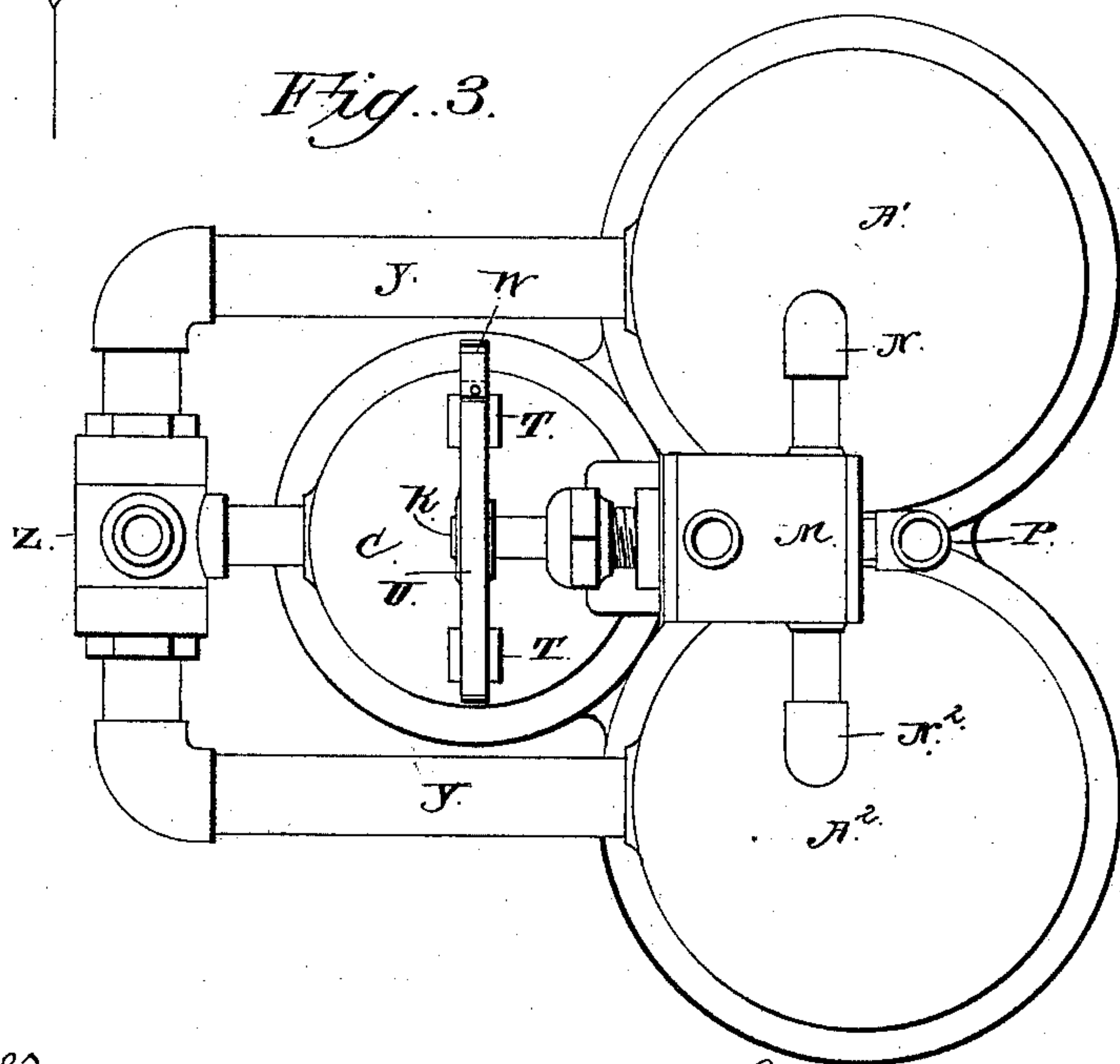
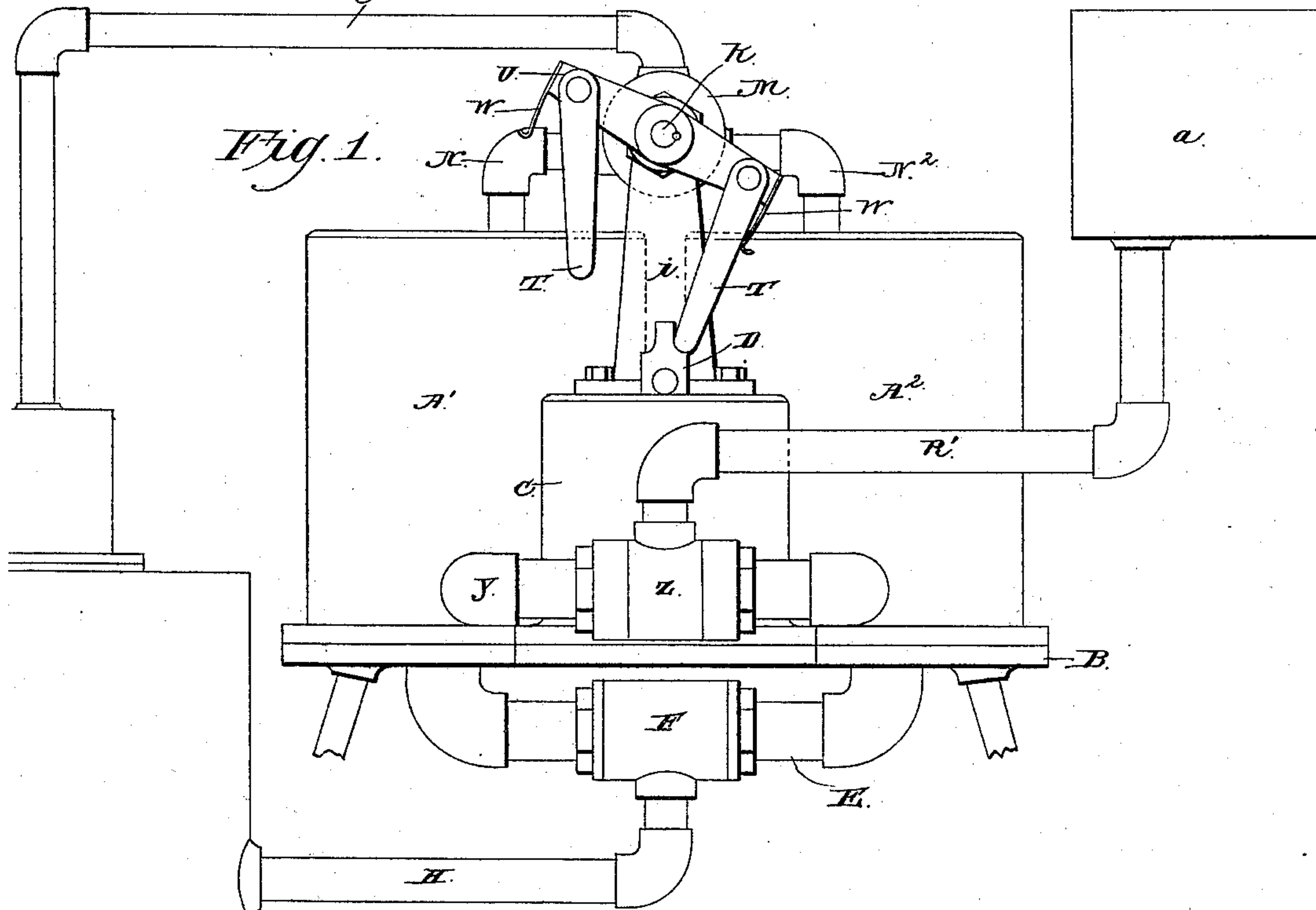
(No Model.)

2 Sheets—Sheet 1.

G. A. KELLY.
STEAM BOILER FEEDER.

No. 368,835.

Patented Aug. 23, 1887.



Witnesses

M. E. Fowler
J. W. Hammer

Inventor

George A. Kelly

By his Attorneys,

C. A. Snow & Co

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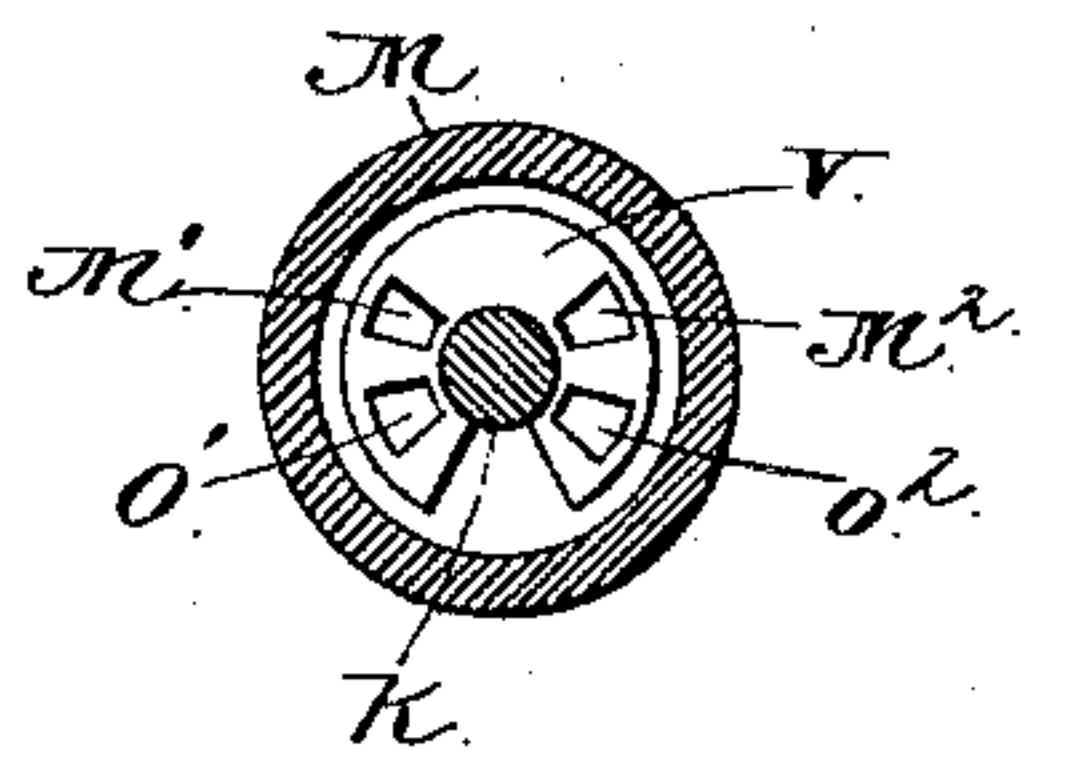


Fig. 2.

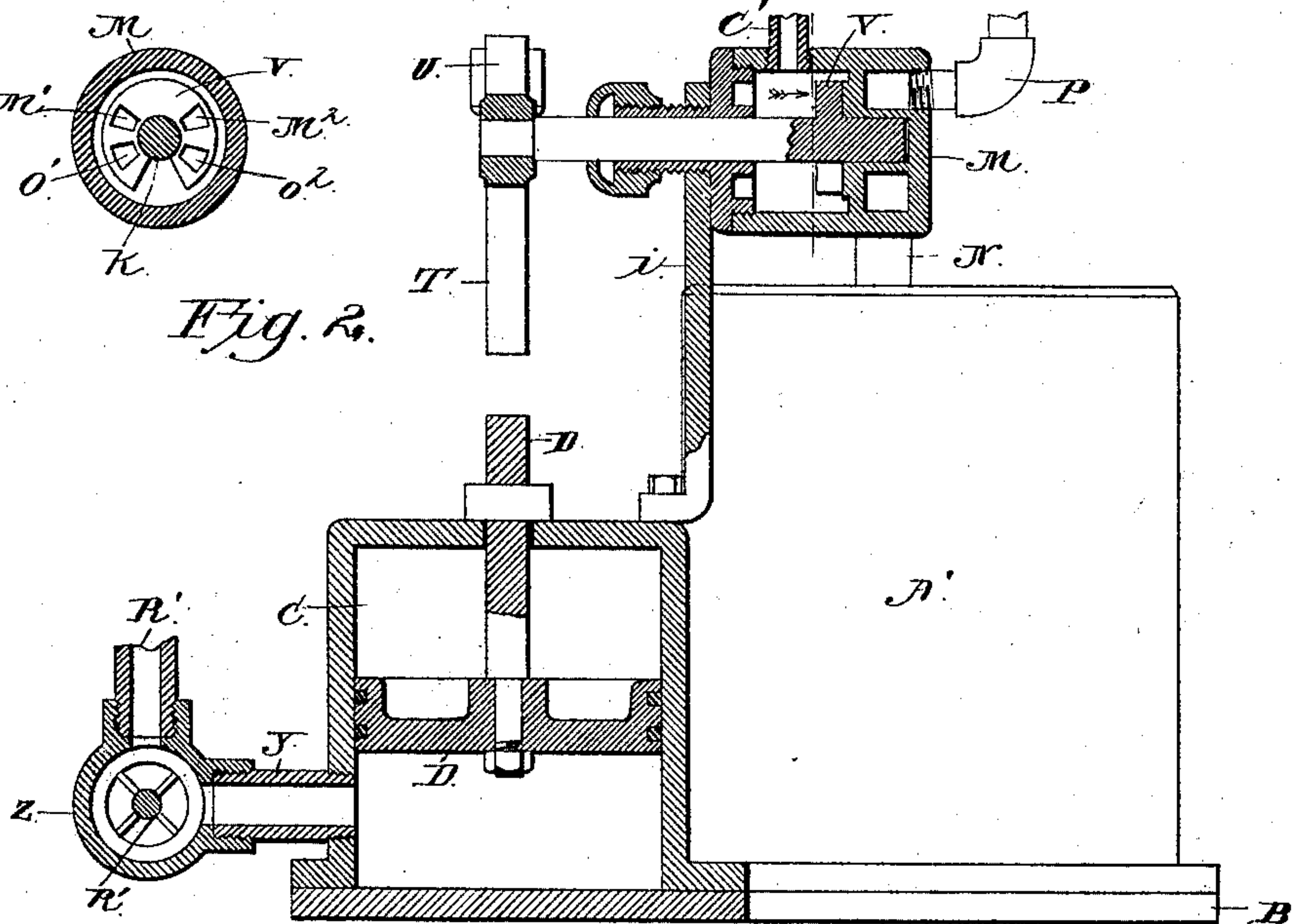


Fig. 4.

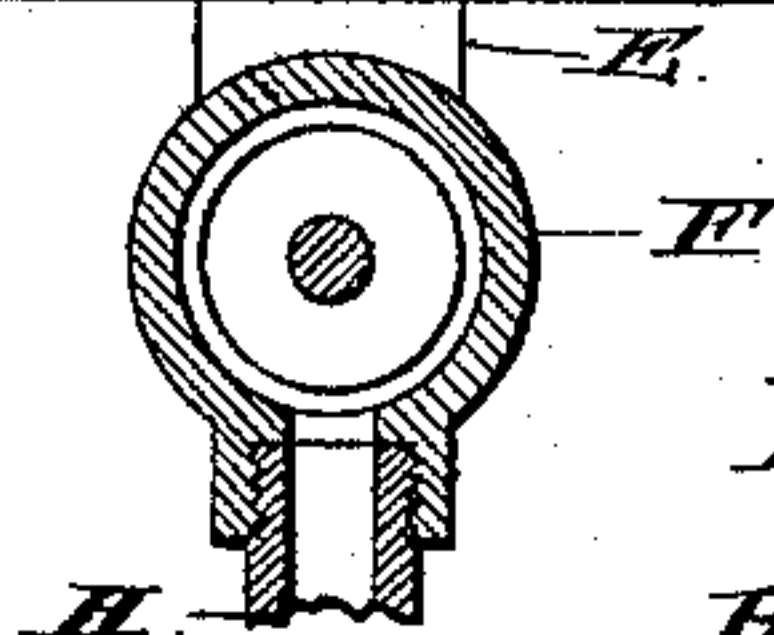
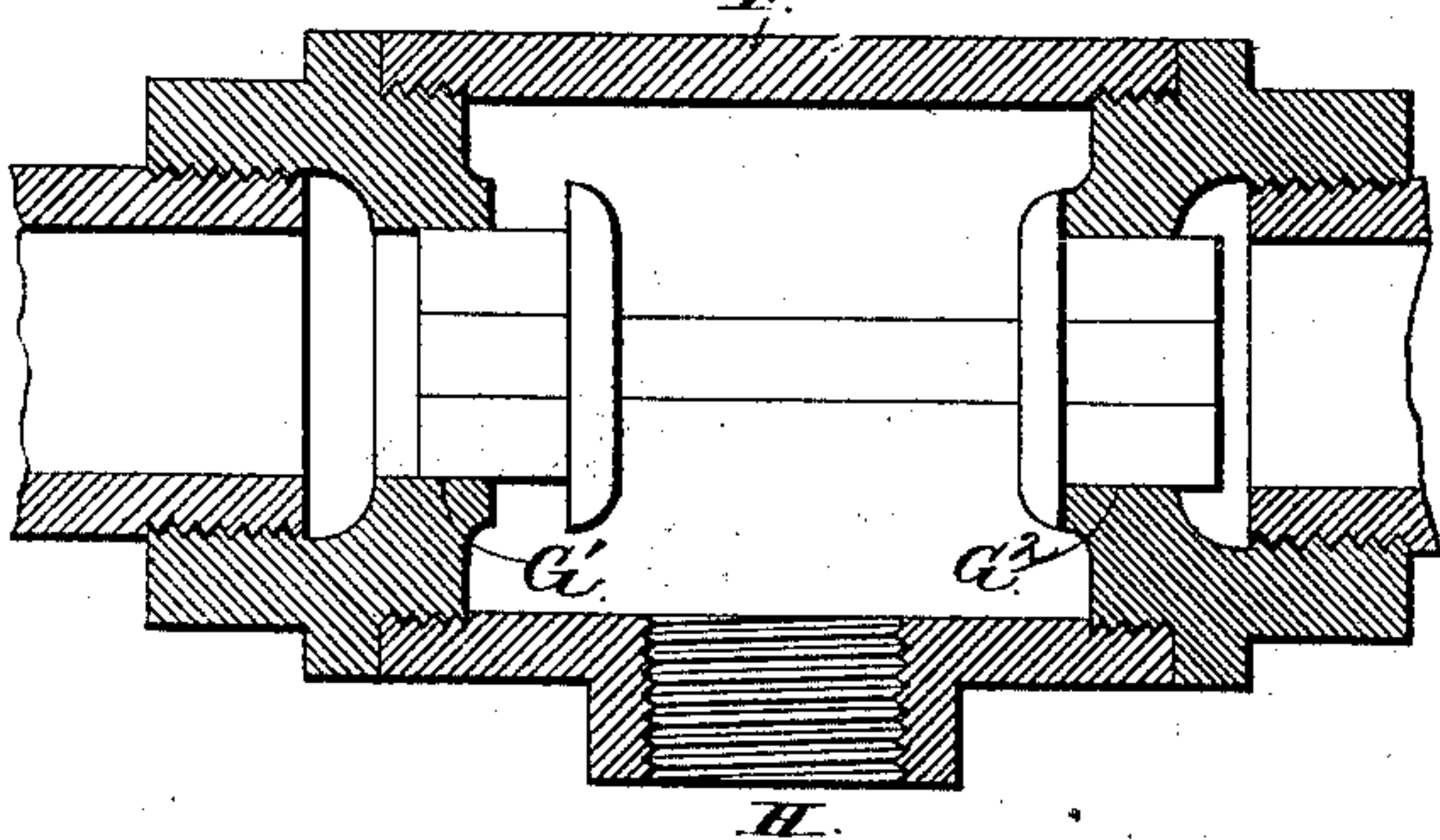


Fig. 5.

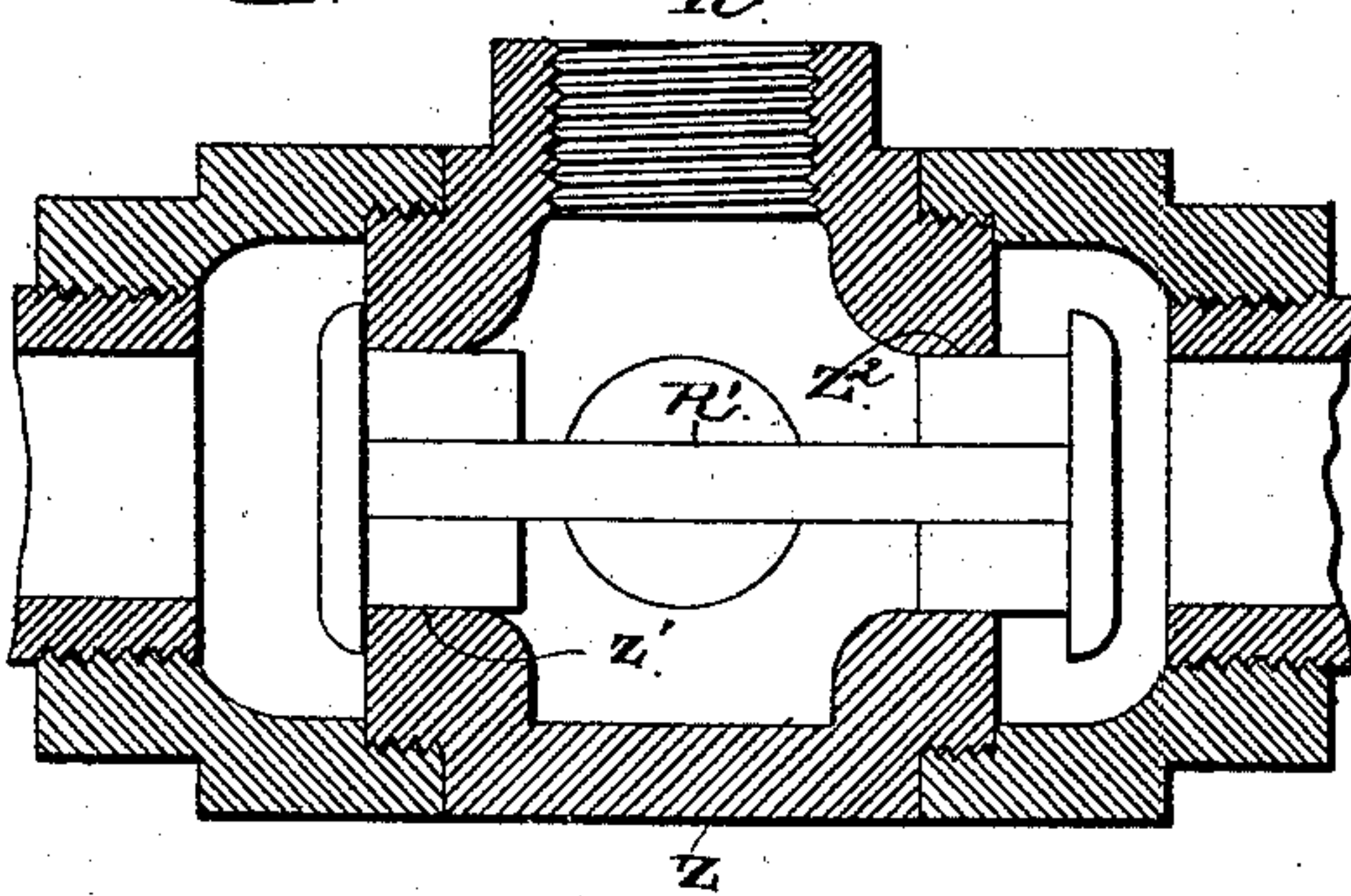
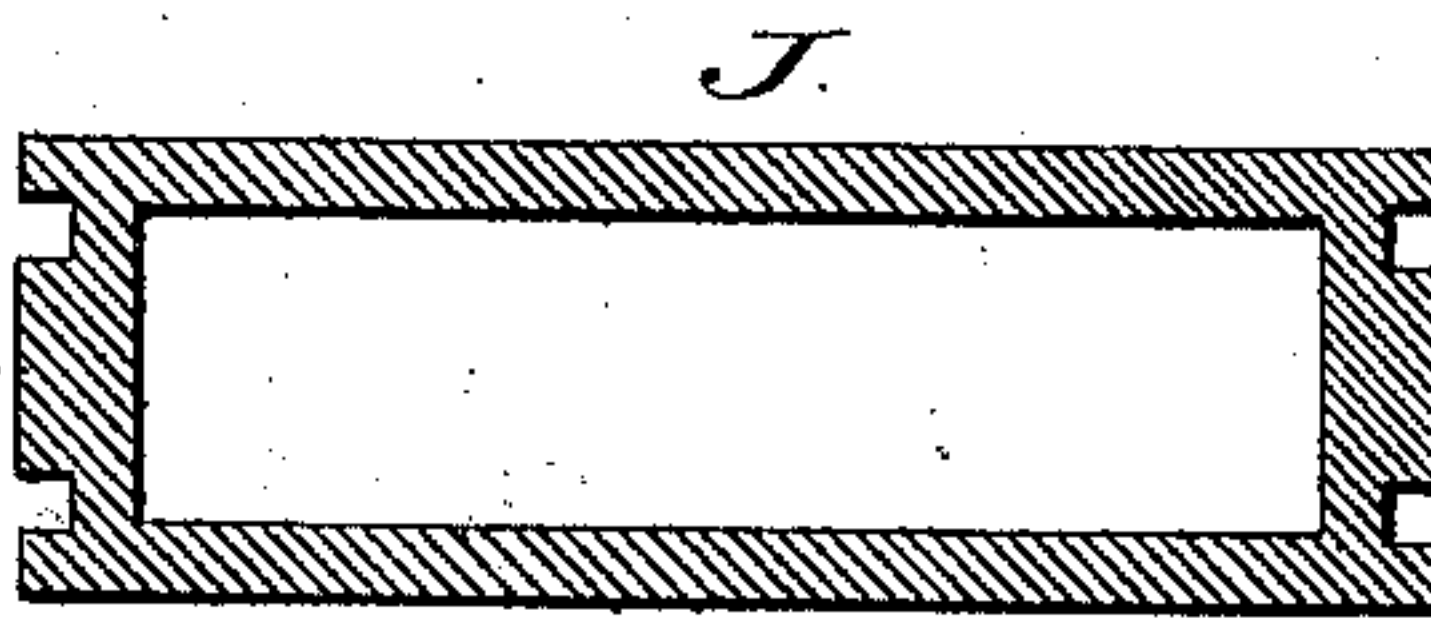
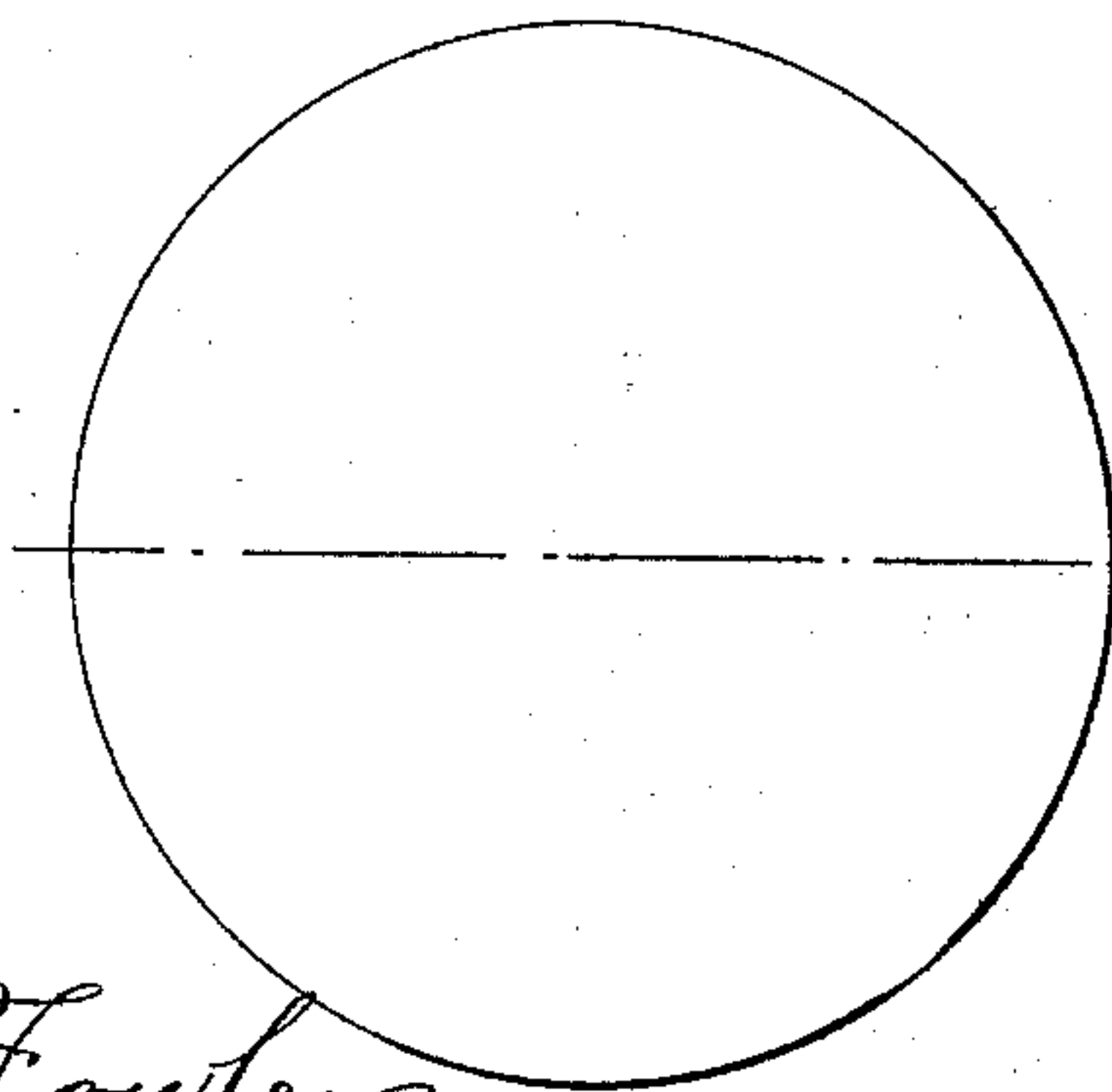


Fig. 6.



Witnesses
M. E. Fowler
J. W. Garner

Inventor
George A. Kelly
By his Attorneys,
C. A. Howells

UNITED STATES PATENT OFFICE.

GEORGE A. KELLY, OF LONGVIEW, TEXAS, ASSIGNOR TO THE LONGVIEW
KELLY PLOW MANUFACTURING COMPANY, OF SAME PLACE.

STEAM-BOILER FEEDER.

SPECIFICATION forming part of Letters Patent No. 368,835, dated August 23, 1887.

Application filed April 7, 1887. Serial No. 234,041. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. KELLY, a citizen of the United States, residing at Longview, in the county of Gregg and State of Texas, have invented a new and useful Improvement in Automatic Steam-Boiler Feeders, of which the following is a specification.

My invention relates to an improvement in automatic steam-boiler feeders; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the drawings, Figure 1 is a vertical front view of a steam-boiler feeder embodying my improvements. Fig. 2 is a vertical side sectional view of the same. Fig. 3 is a top plan view. Figs. 4, 5, and 6 are detail views.

A' A² represent a pair of vertical cylinders which are arranged side by side and are secured at their lower ends to a bed-plate, B.

C represents a vertical cylinder in front of cylinders A' A², and as near to the same as the space will allow, and is secured at its lower end to bed-plate B, which cylinder contains a piston and rod, D D. A pipe, E, connects the lower ends of the cylinders A' A² and communicates with the interiors thereof. In the said pipe E is located a double-headed endwise-moving valve, which works in a valve-case, F, connected in the pipe, and has openings or seats G' and G² for the heads of the valves, as shown at Fig. 4. A pipe, H, communicates with the valve-case F at the center thereof and extends to a steam-boiler, which is indicated in full lines in Fig. 1.

Y represents a pipe which connects and communicates with the interior of cylinders A', A², and C, and is arranged to communicate at their lower ends immediately above the bed-plate B B B, as shown in Fig. 3. In the said pipe is a valve-case, Z. The said valve-case has openings Z' and Z², forming seats for the heads of a double-ended valve, R', that is located in the valve-case and is adapted to move endwise therein.

On the upper end of the cylinder C is bolted a vertical brace, i, which extends upward and connects with the steam-chest M. The front side of the steam-chest is provided with ports M' and O' and M² and O². The former com-

municates with the interior of the cylinder A' through pipe N and the latter with the cylinder A² through a pipe, N². The said ports O' and O² communicate with an escape-pipe, P.

U represents a walking-beam which is connected in the center with valve stem or rod K.

T represents pawl or lever rods which are pivoted at their upper ends to the outer ends of walking-beam U. These rods are adapted to procure a vibrating movement of the said walking-beam, which, being rigidly attached to the valve-rod K, procures a semicircular movement of the circular valve V, by which means the steam-ports are opened and closed for the alternate admission and escapement of steam into and from cylinders A' and A².

W W represent light curved springs which are attached to the ends of the walking-beam U and adapted to press the pawl-rods T T into their bearings, which are located in top end of piston-rod D, as shown in Fig. 1.

C' is a steam-pipe which communicates with the interior of the steam-chest M and interior of steam-boiler, to which the feeder may be attached with the view of supplying the same with water. A water-tank (shown in full lines in Fig. 1) is located at a suitable elevation above the feeder. A pipe, R', extends from the lower side or bottom of this tank and communicates with the valve-case Z.

J represents a piston-head which is intended to be used in cylinders A' A², when desired, in order to separate the steam from the water. This head is intended to be used more especially when the feeder is applied to the purpose of lifting or pumping cold water.

I do not confine myself to any particular size or shape of the various parts composing my feeder as herein set forth, nor to the position of the same as shown in the drawings, but reserve the right to vary the same at will while conforming to the principles also herein set forth.

The operation of my invention is as follows: The feeder is placed in position with steam-boiler so as to bring the lower ends of the interior of the cylinders on a level plane with the water-line of the boiler. Steam is admitted into the steam-chest M through a pipe, C', from the steam-boiler and through the open port M' and through the pipe N into cylinder

A', the energy of which closes the valve in case Z, at the end communicating with said cylinder, and opens the valve in case F, communicating with the same, and pipe H, which communicates with the steam-boiler below the water-line, thus allowing the water contained in cylinder A' to flow into the boiler, for the reason that the lower ends of the cylinders A' and A² are placed in a position on a horizontal plane with the water-line in the boiler, and as this flow is progressing water is admitted from the tank *a* through the pipe R' into valve-case Z, which finds a free passage into the cylinder A², and at the same time allows the water that has passed into cylinder C and caused the piston D to move upward to drain out into cylinder A², so that the piston and rod D are allowed to descend of their own weight when the pawl-rod T is forced into its bearing in piston-rod D by the curved spring W, and when the cylinder A² is filled with water from tank *a* a pressure is exerted by the weight of the water upon the lower side of the piston D, which serves to give it an upward movement, which, acting upon the pawl-rod T, moves the walking-beam U, and thus procures a sufficient movement of the steam-valve V to open the steam-port M², and at the same time opens escape-port O', which transfers the steam-pressure into and upon the water in cylinder A² and allows the steam which has accumulated in cylinder A' to escape through the pipe P, which extends over and into the water-tank *a*, and at the same moment secures a reverse movement of the double-headed valves located in cases Z and F, and thus the automatic flow of water from the one cylinder into the boiler and from the tank into the other goes on continuously as long as may be desired. The supply of water from the tank to the feeder is graduated so as to keep up the necessary supply in the boiler.

Having thus described my invention, I claim—

1. The combination of the cylinders A' and A², the valve to alternately admit steam to and exhaust steam from the said cylinders, the cyl-

inder C, having the piston D, and devices connecting the said piston to the steam-valve to reverse the latter at each upstroke of the piston, the valve-case Z, communicating with the cylinders A', A², and C, and with the water-supply pipe, the valve R' in the said case, the valve-case F, communicating with the cylinders A' and A² and with the water-discharge pipe, and the valve in the said case adapted to alternately cut off communication to the cylinders, substantially as described.

2. The combination of the turning valve K, the walking-beam U, attached thereto, the spring-actuated pawls T, pivoted to the ends of the walking-beam, and the reciprocating piston D, having the rod provided with notches on opposite sides adapted to engage the free ends of the pawls alternately at each alternate upstroke of the piston, for the purpose set forth, substantially as described.

3. In a steam-boiler feeder, the combination of the cylinders A' and A², to which water is alternately supplied under pressure, the valve-case F, communicating with the said cylinders and having the double-ended valve movable lengthwise in the valve-case to alternately close the valve-seats, and the delivery-pipe extending from the valve-case, substantially as described.

4. The combination of the cylinders A' and A², the valves to alternately admit steam to and exhaust steam from the said cylinders, the valves to alternately admit water to and discharge it from the cylinders, and the cylinder C, communicating with the cylinders A' and A² and having the piston D, and valve-gearing actuated by the said piston to operate the steam inlet and exhaust valve, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

GEORGE A. KELLY.

Witnesses:

C. P. CARTER,
G. B. HINES.