

No. 620,281.

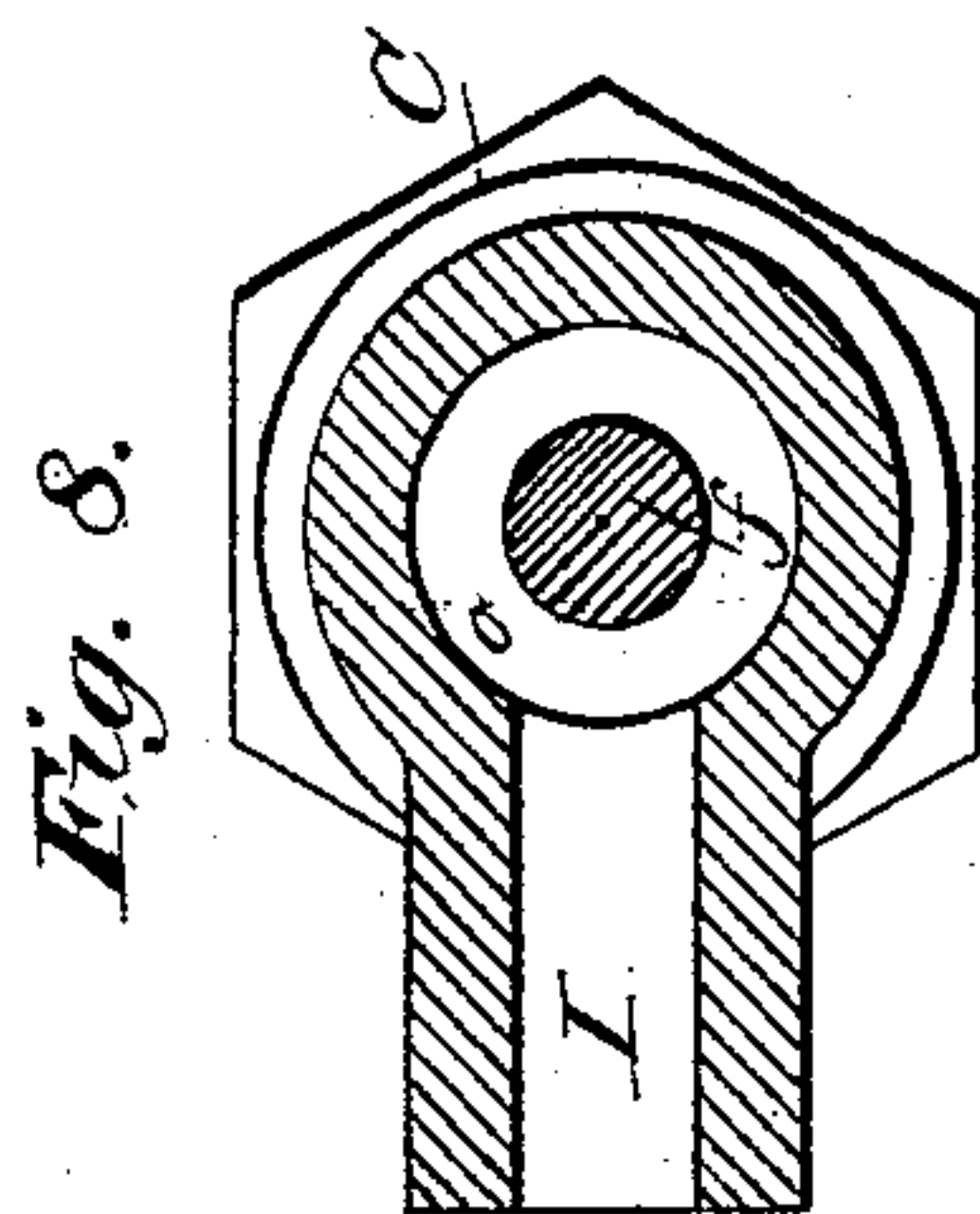
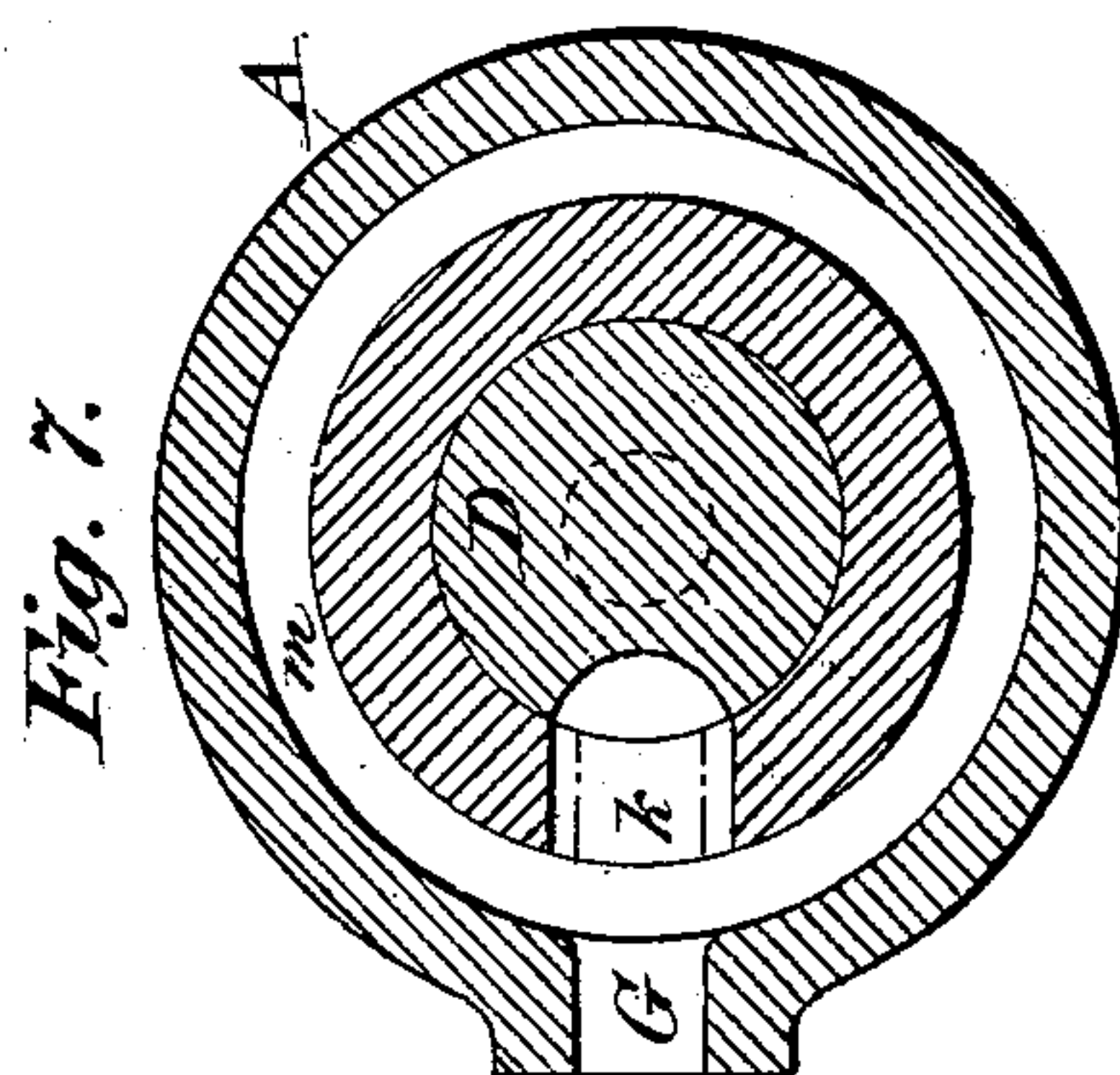
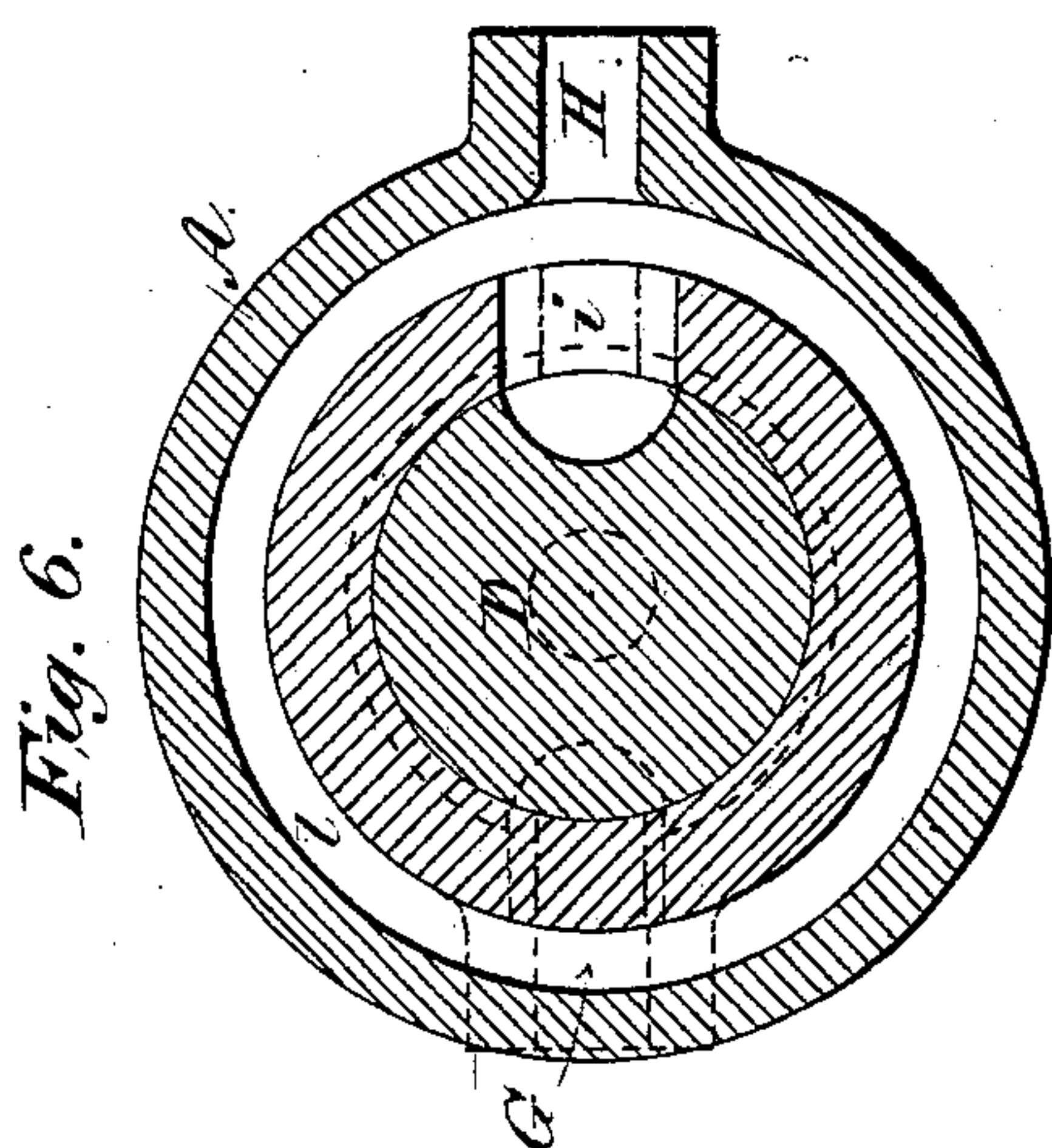
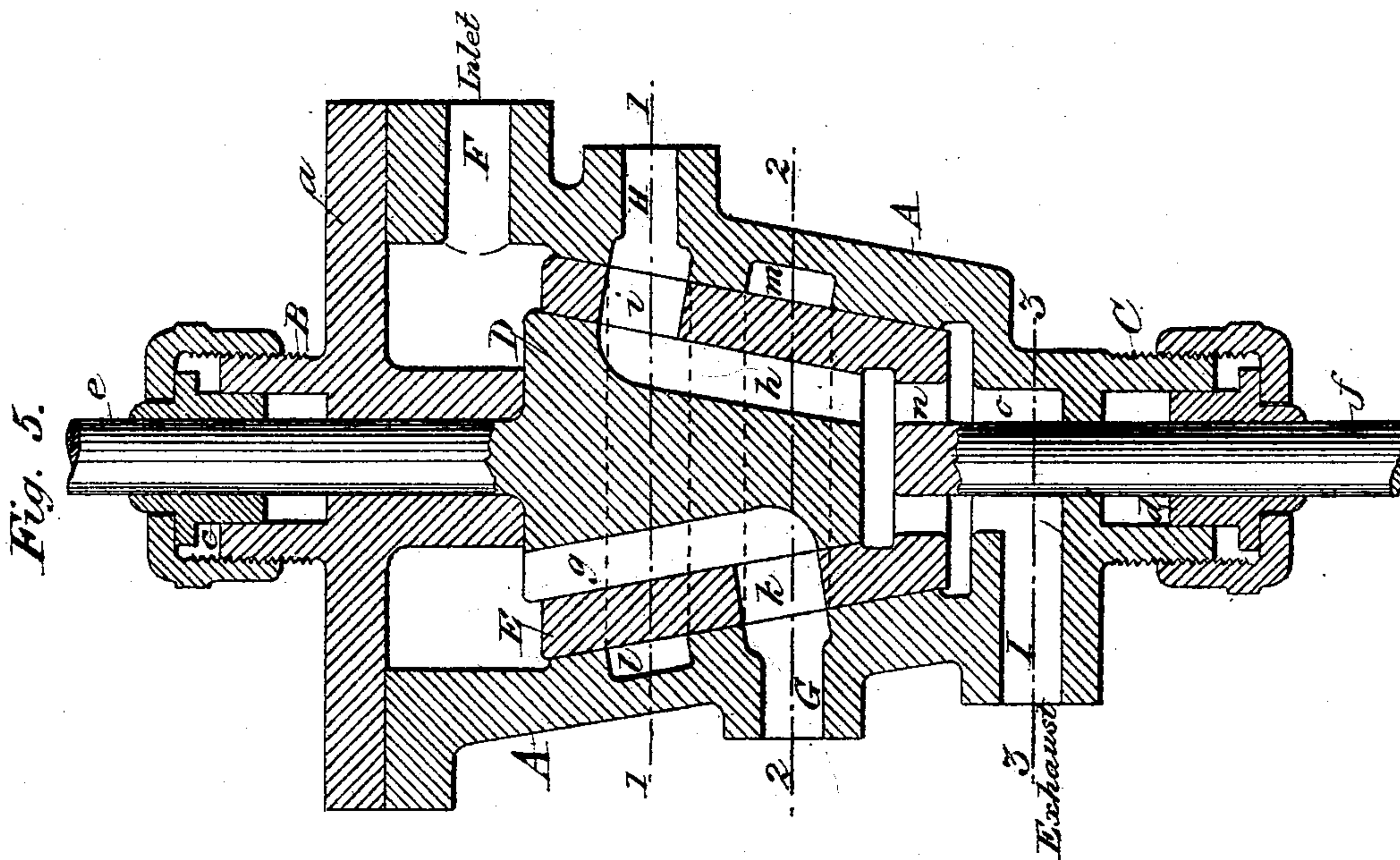
Patented Feb. 28, 1899.

J. G. COOPER.
CONTROLLING VALVE FOR MOTORS.

(Application filed Nov. 4, 1897.)

(No Model.)

3 Sheets—Sheet 2.



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3 Sheets—Sheet 3.

Fig. 9.

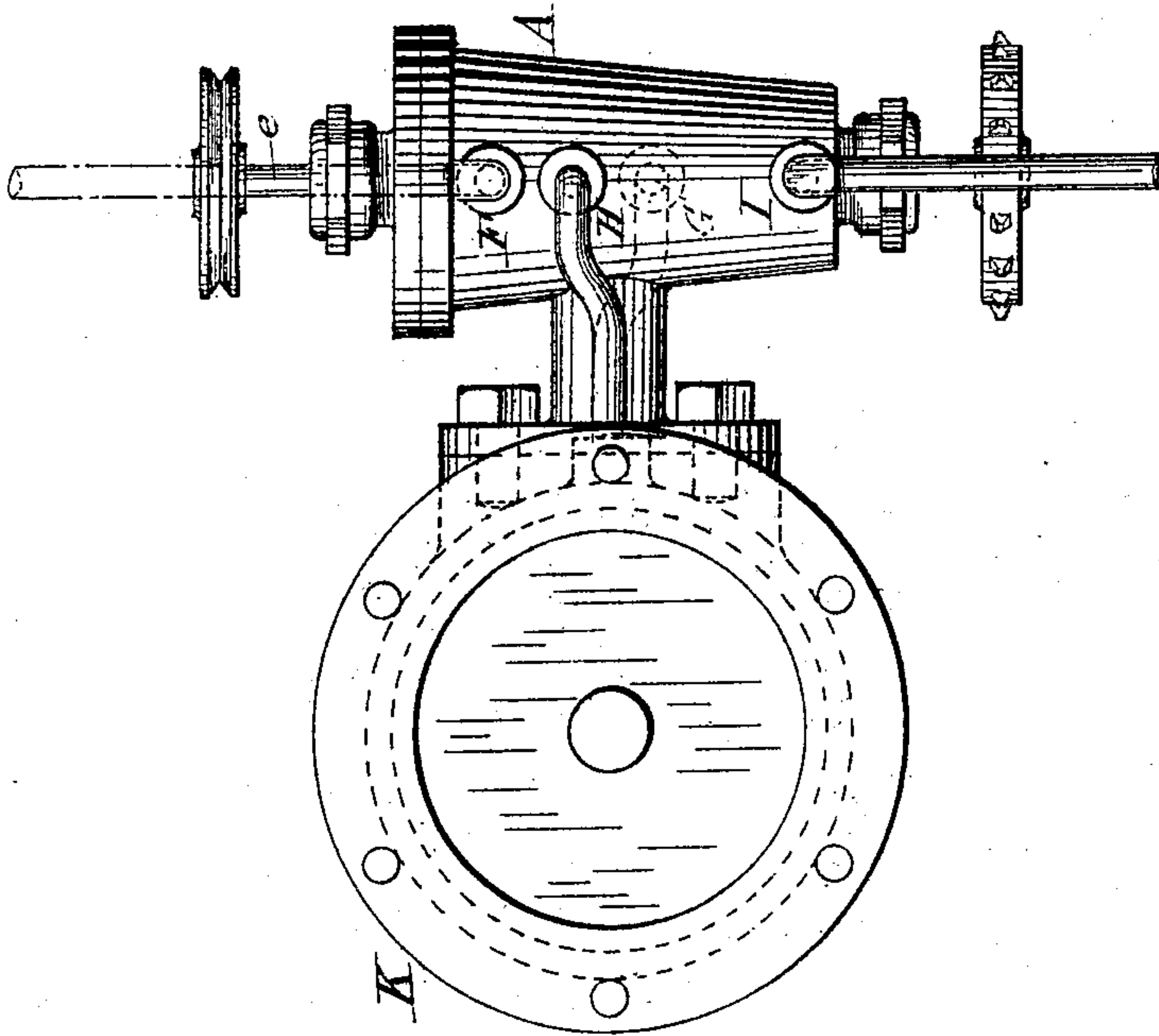
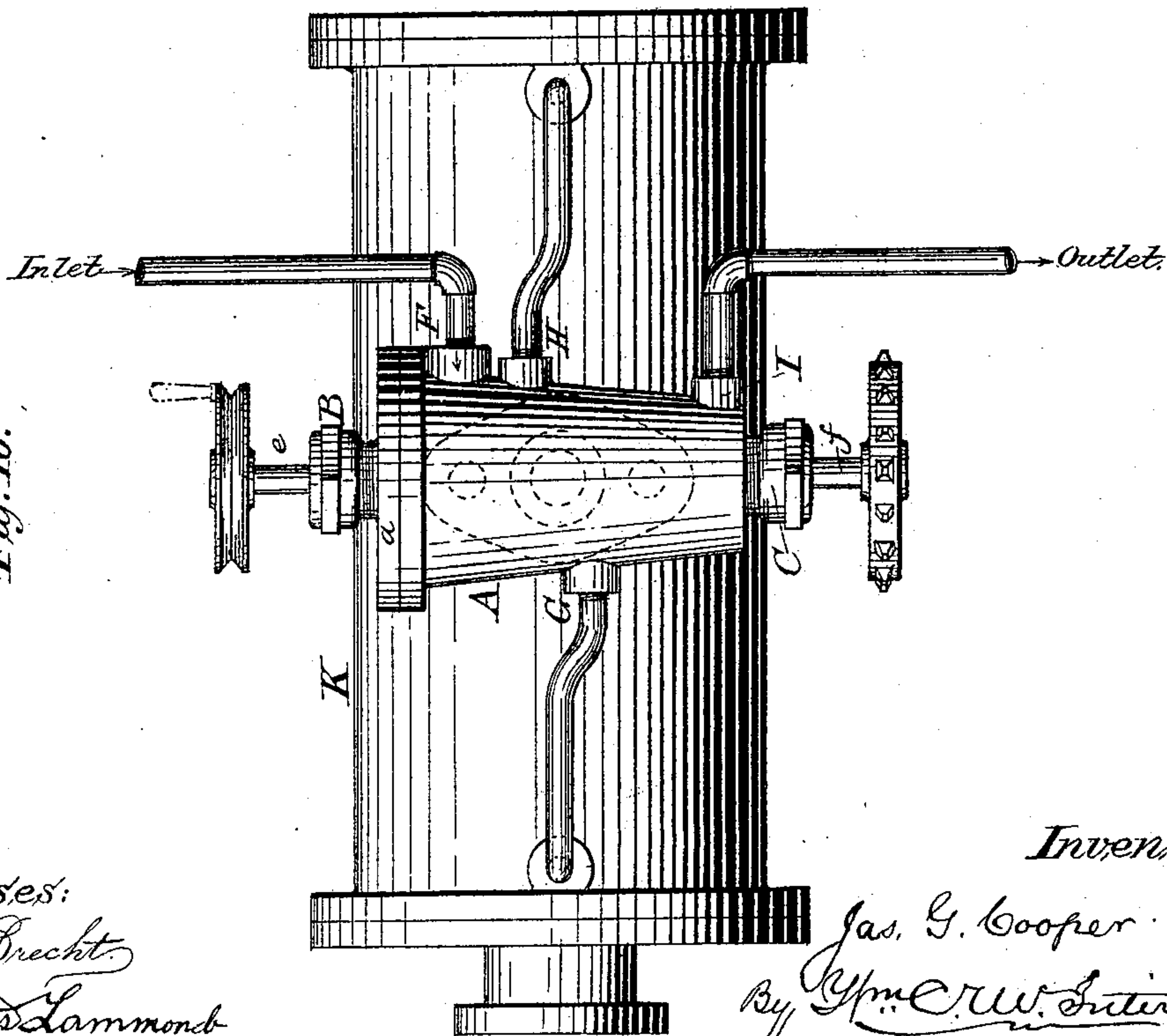


Fig. 10.



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UNITED STATES PATENT OFFICE.

JAMES G. COOPER, OF NEW YORK, N. Y., ASSIGNOR TO CLARENCE LINN AND
WILLIAM H. SPEER, JR., OF JERSEY CITY, NEW JERSEY.

CONTROLLING-VALVE FOR MOTORS.

SPECIFICATION forming part of Letters Patent No. 620,281, dated February 28, 1899.

Application filed November 4, 1897. Serial No. 657,393. (No model.)

To all whom it may concern:

Be it known that I, JAMES G. COOPER, a citizen of the United States, residing at New York, (Brooklyn,) in the county of Kings and State of New York, have invented certain new and useful Improvements in Controlling-Valves for Motors; 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 relates to certain new and useful improvements in controlling-valves, particularly to that class employed in the manipulation and control of final moving devices, such as steering apparatus, elevators, hoisting apparatus, or other similar machinery.

The objects of my invention are the production of rotary valves which will enable a final mover to be set in motion to any desired extent, checked at intermediate points, and held in such checked position, and also readily reversed; and with these ends in view my invention consists in the novel construction of certain details and peculiar arrangement of parts, as will be more fully hereinafter described, and specifically pointed out in the claims.

In order that those skilled in the art to which my invention pertains may fully understand the same, I will proceed to describe the construction, arrangement, and operation of the several parts, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section of the device. Fig. 2 is a cross-section on line *x x* of Fig. 1. Fig. 3 is a cross-section on line *y y* of the same. Fig. 4 is a cross-section on line *z z* of the same. Fig. 5 is a vertical section of a modified form of rotary valve. Fig. 6 is a cross-section on line 1 1 of Fig. 5. Fig. 7 is a cross-section on line 2 2 of the same. Fig. 8 is a similar view on the line 3 3. Fig. 9 is an end elevation of the valve attached to a cylinder. Fig. 10 is a side elevation of the same.

In the drawings, A represents the valve-casing, of conical shape, with an upper flange *a*, provided with a screw stuffing-box B and a gland *c*. The lower end of the body has a similar stuffing-box C, containing a gland *d*. Through these stuffing-boxes and glands the

stem *e* of a conical plug-valve D, forming the controlling-valve, extends and is provided with a hand-wheel or a sheave connected by a wire rope or its equivalent to the pilot-house or any distant point from which it is to be operated. The stem *f* is provided with a connection to any moving part of the engine and actuates the floating valve E. The valve D has the ports *g* and *h* in its face, and the floating valve E has the ports *i* and *k*, which in turn communicate with the annular spaces *l* and *m* in the body or casing of the valve. The inlet F is connected by a pipe to the boiler or other place of supply. The nozzles or openings G and H connect by suitable pipes with the opposite ends of the cylinder K, and the outlet-opening I communicates with the condenser or the atmosphere by means of the openings *n* and *o*. In the space *m* a partition *p* is arranged on each side to separate the two sides, and thus the live steam from the exhaust. In this case the inlet-pipe connects directly with the annular space *m*, as shown in Figs. 1 and 2.

In Figs. 5 to 8, inclusive, the inlet-pipe F is shown connected above the valve D, and the port *g* communicates with the space above said valve. If desired, the inlet-opening may, however, be made through the cover *a*, as indicated by the broken lines in Fig. 1, and the exhaust-opening G can be changed to suit different circumstances.

The stems *e* and *f* can pass through the casing without stuffing-boxes, and a conical seat may be formed surrounding the conical projections or collars formed on the stems, as shown by the broken lines in Fig. 1.

The operation is as follows: The valve D is first opened and the steam will then pass through the ports *i* and *k* and the opening G to one end of the cylinder and will cause the piston to move. The exhaust-steam will pass through the pipe connecting the other end of the cylinder with the opening H and pass through the port *h* and openings *n*, *o*, and I to the condenser or the atmosphere. The piston, being connected to the floating valve F, causes it to turn and close the ports in the controlling-valve, thus stopping the engine. By this means the piston can be moved and held in any predetermined position, and thereby controlling the position of the rudder or

its equivalent. To reverse the action of the piston, the operation is reversed by turning the valve D, so that the ports *g* and *h* connect with the opening H and the pipe leading to the opposite end of the cylinder.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A rotary valve A consisting of the controlling-valve D actuated as described, and provided with ports *g* and *h*, in combination with the floating valve E having ports *i* and *k* communicating with the annular spaces *l* and *m* in the body of the valve-casing, as specified.

2. The rotary valve A herein described, consisting of the body having annular spaces *l*, *m*, communicating with the ports *i*, *k* in the floating valve E and the ports *g*, *h* in the controlling-valve D, and the openings G, H with opposite ends of the cylinder and the exhaust-opening I, all as shown and for the purpose set forth.

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

JAMES G. COOPER.

Witnesses:

WILLIAM H. SPEER, Jr.,
JNO. LINN.