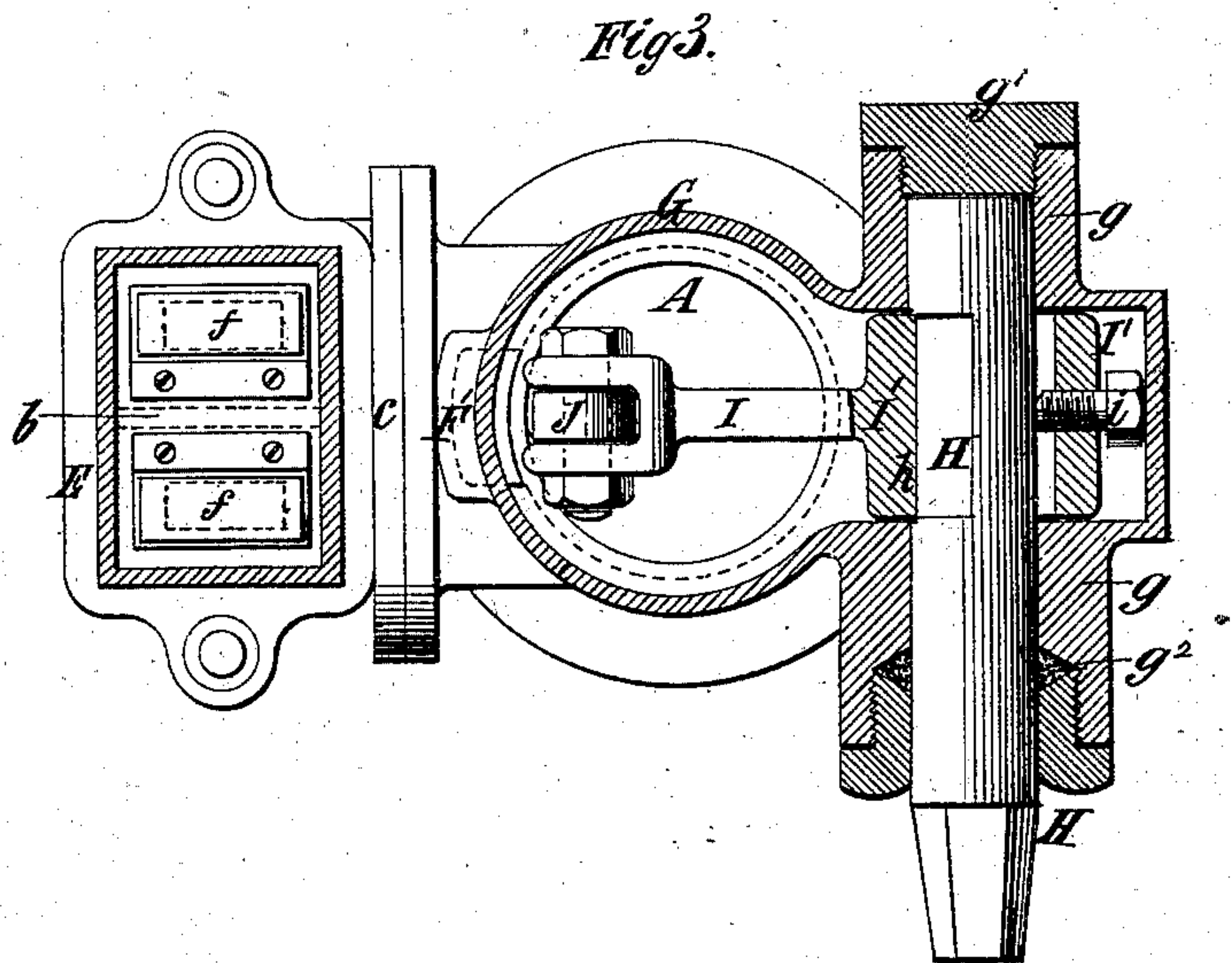
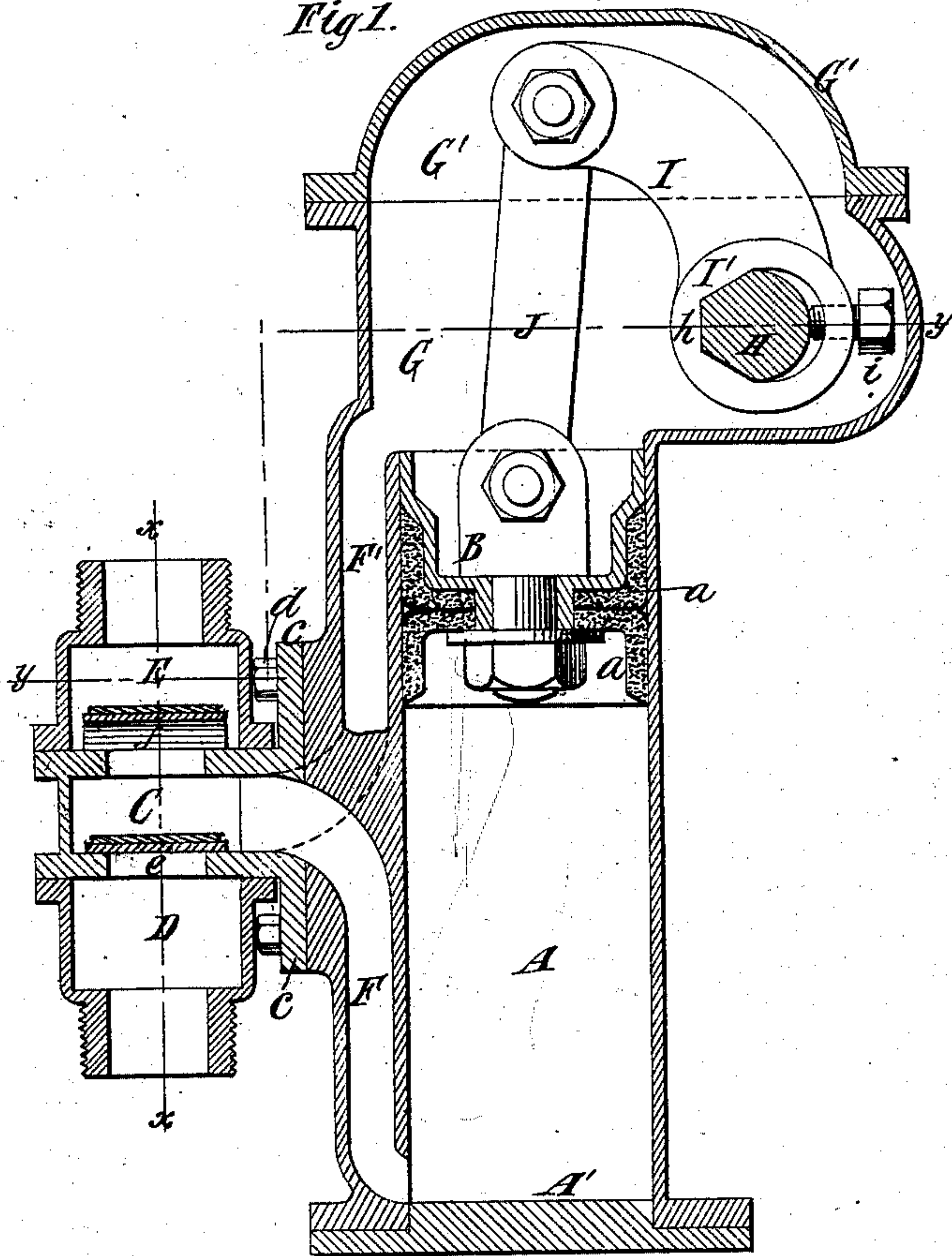
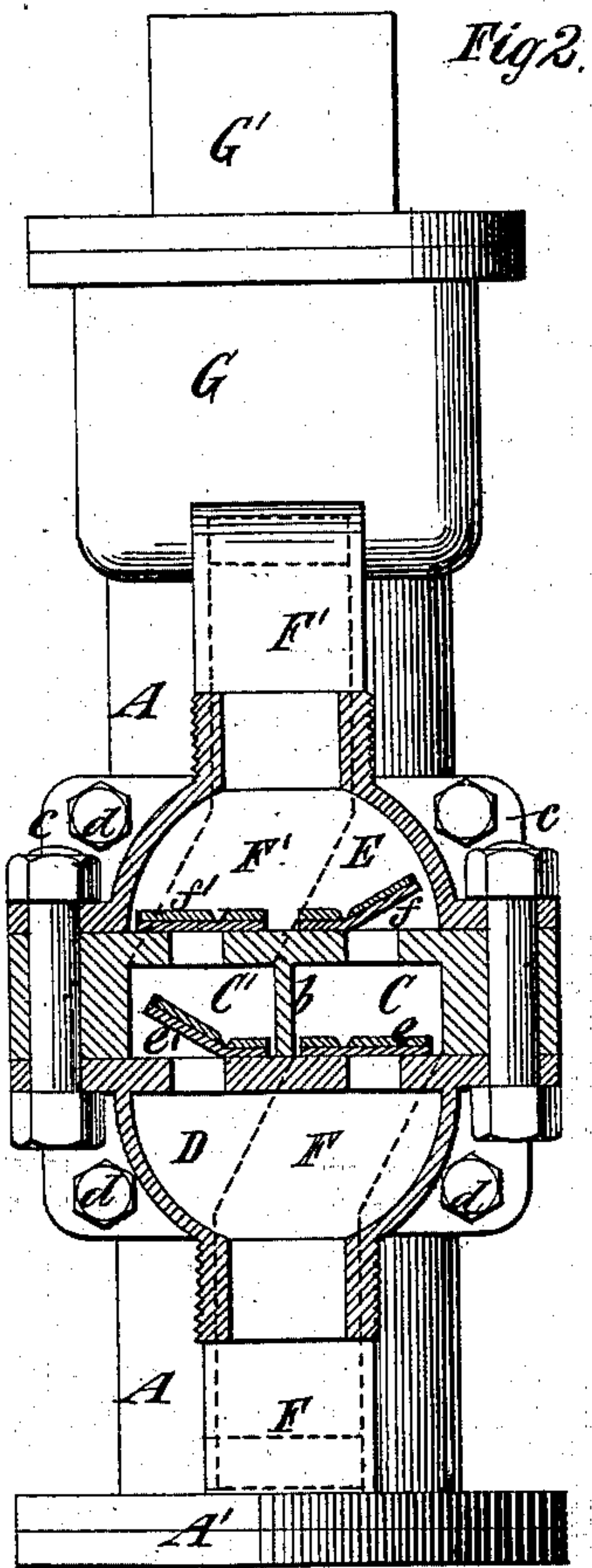


(No Model.)

F. B. HANSON.
PUMP.

No. 274,937.

Patented Apr. 3, 1883.
Fig 1.



Witnesses:

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UNITED STATES PATENT OFFICE.

FRANK B. HANSON, OF NEW YORK, N. Y.

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SPECIFICATION forming part of Letters Patent No. 274,937, dated April 3, 1883.

Application filed February 13, 1882. (No model.)

To all whom it may concern:

Be it known that I, FRANK B. HANSON, of the city of New York, in the county and State of New York, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

My invention relates, principally, to hand-pumps employed for household use.

The invention consists in the combination, with an upright pump-cylinder, of a novel arrangement of valve-chests, suction and discharge chests, and ports or passages, hereinafter particularly described and claimed.

The invention also consists in the combination, with the piston of a pump, of an arm for working the same, and a rock-shaft upon which said arm is secured in a novel manner, hereinafter described.

In the accompanying drawings, Figure 1 represents a central vertical section of a pump embodying my invention. Fig. 2 represents a sectional view of the valve-chest and appurtenances on the dotted line *x x*, Fig. 1, and a side view of the pump-cylinder; and Fig. 3 represents an irregular horizontal section on the dotted line *y y*, Fig. 1, the arm upon the rock-shaft being shown in a different position from that shown in Fig. 1.

Similar letters of reference designate corresponding parts in all the figures.

A designates an upright cylinder, closed at the bottom by a flange or base piece, A', and B designates a piston fitting therein. This piston may be of any desirable construction, but as here shown is composed of a cast-metal body having cup-leather packings *a* fitting thereon.

C C' designate the two valve-chests, which are shown as formed side by side in a direction transverse to the length of the cylinder, and in a single casting separated by a partition, *b*, and provided with a flange, *c*, through which bolts *d* are inserted for securing it to the side of the cylinder. The valve-chests C C' are provided with suction-valves *e e'* and discharge-valves *f f'*, and to the under and upper sides thereof are bolted the suction-chest D and the discharge-chest E, with which the suction and discharge pipes respectively communicate. The valve-chest C communicates with the lower

end of the cylinder A through a port or passage, F, and the chest C' communicates with the upper end of the cylinder through a port or passage, F'. The two ports F and F' are straight for the greater part of their length; but as they approach the valve-chests they are inclined, the former to the right and the latter to the left hand, as clearly shown by dotted lines in Fig. 2.

The cylinder A is surmounted by a casing, G, which contains the mechanism for working the piston B, and which is closed by a removable bonnet or cover, G'.

The mechanism for working the piston used in connection with the arrangement of valves here shown might be of any suitable character; but that here represented consists of a rock-shaft, H, an arm, I, fixed thereon, and a rod, J, connecting said arm with the piston B. The rock-shaft H is round for the greater part of its length, and is mounted in bearings *g*, formed on opposite sides of the casing G. One of these bearings is closed by a plug, *g'*, and in the other bearing is a stuffing-box, *g''*. The eye I' of the arm I is large enough to permit of the insertion of the shaft through it, and in one side of the said eye is an angular formation or seat, *h*, which fits a corresponding formation on the shaft H. After the shaft is inserted through the eye I' it is forced into the seat *h* by a set-screw, *i*, or other means, and thereby the arm is locked fast to the shaft, so as to oscillate therewith. This method of connecting the arm and rock-shaft is very desirable, because of its security, and because they can be so readily disconnected, if necessary, all that is required being to loosen the set-screw *i* and draw the shaft out longitudinally.

The operation of the pump is as follows: When the piston B is moved downward, the water below it is forced upward through the passage F into the valve-chest C, and thence through the discharge-valve *f* into the discharge-chest E, and at the same time a suction is produced above the piston, and the water passes from the suction-chest D through the suction-valve *e'* into the valve-chest C', and from thence through the passage F' into the cylinder above the piston. When the piston is moved upward, the water above it is forced

through the passage *F'*, the valve-chest *C'*, and the discharge-valve *f'* into the discharge-chest *E*, and at the same time a suction is produced below the piston, and the water passes from 5 the suction-chest *D*, through the suction-valve *e*, valve-chest *C*, and passage *F*, into the cylinder below the piston.

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

10 1. The combination, with the upright pump-cylinder *A* and its piston *B*, of two valve-chests, *C C'*, arranged side by side in a direction transverse to the length of the cylinder, two ports or passages, *F F'*, leading from the two ends 15 of the cylinder, one to each chest, and inclining in opposite directions as they approach said chests, and suction and discharge chests *D E*, attached below and above said valve-chests, substantially as specified.

2. The combination, with a pump-piston and 20 an arm for working the same, provided with an eye, in one side of which is an angular seat, of a rock-shaft inserted through said eye, and having on one side an angular formation fitting said seat, and means for securing the shaft 25 therein, substantially as specified.

3. The combination, with the arm *I* and its eye *I'*, having the seat *h*, of the round shaft *H*, having an angular formation on one side between its ends and the set-screw *i*, substan- 30 tially as specified.

FRANK B. HANSON.

Witnesses:

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JAMES R. BOWEN.