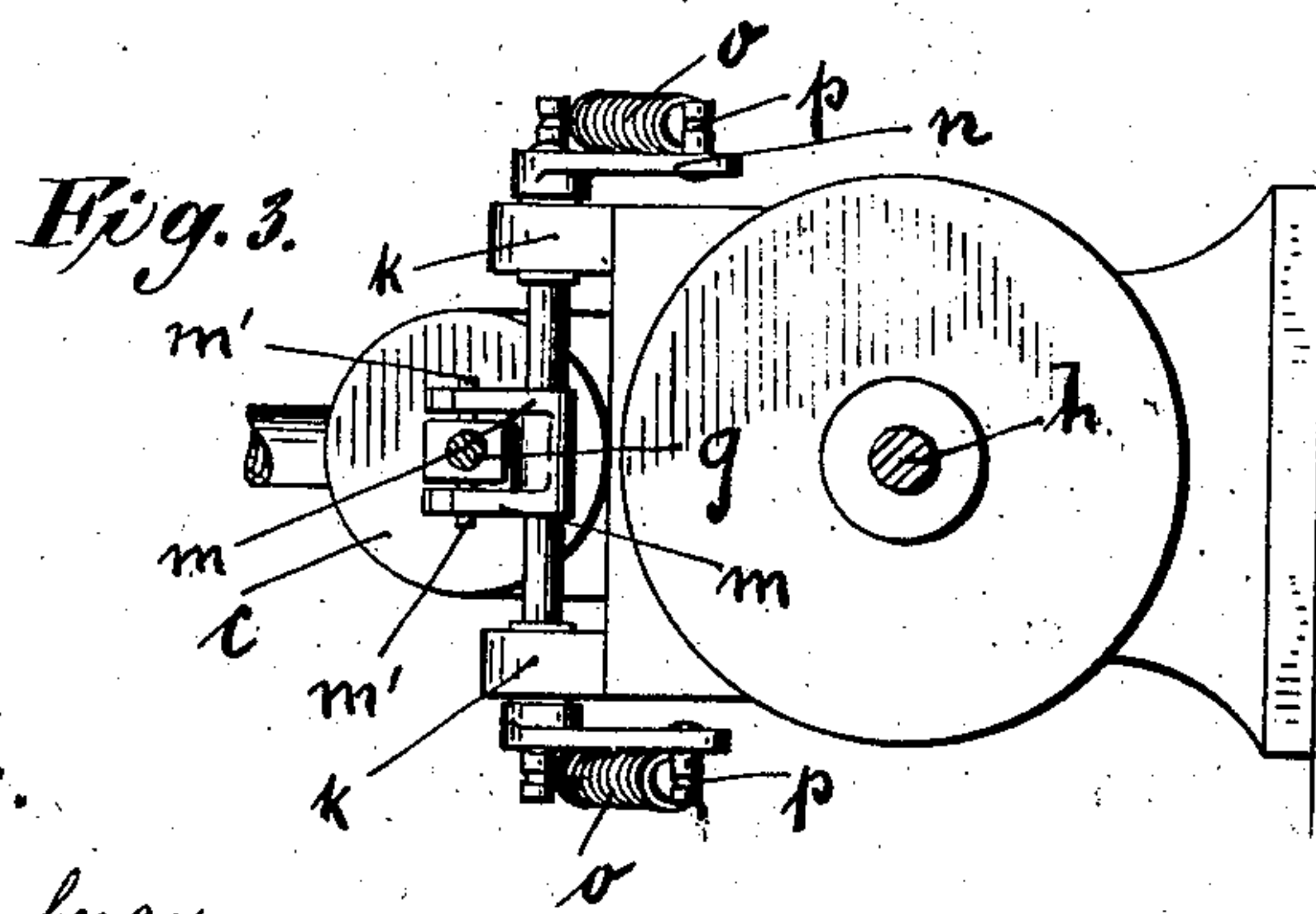
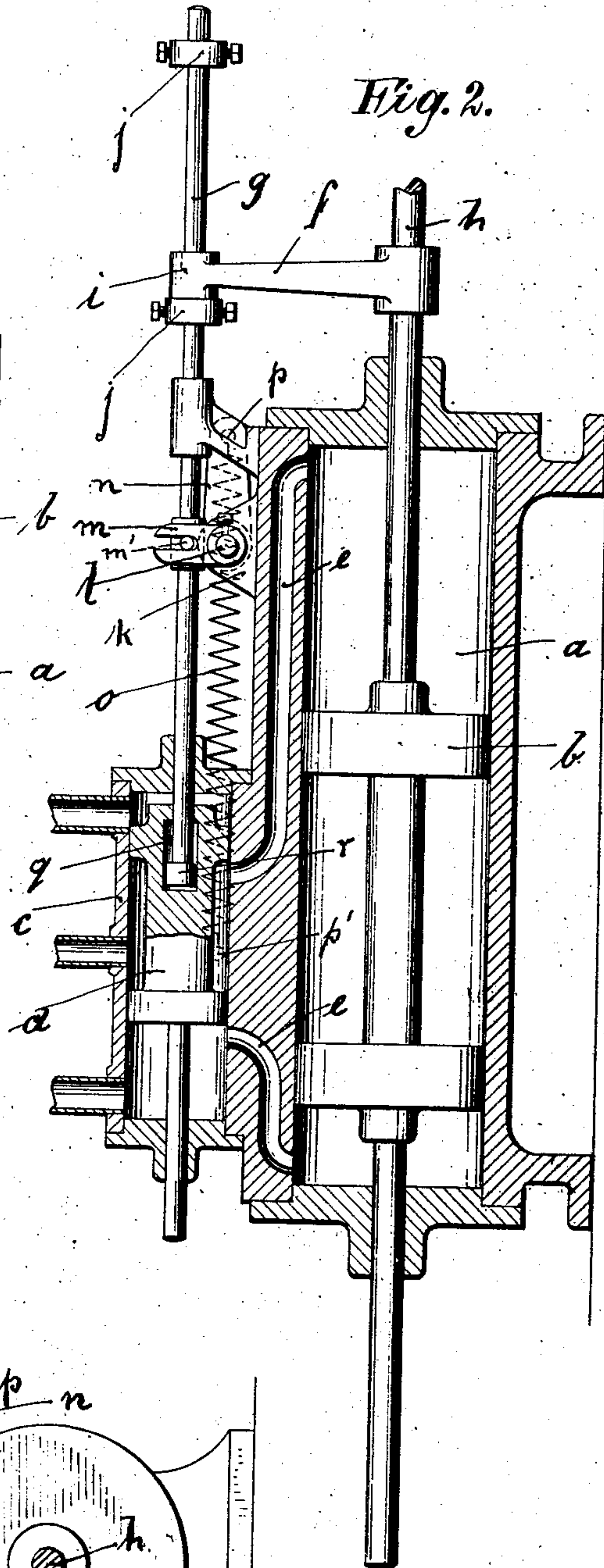
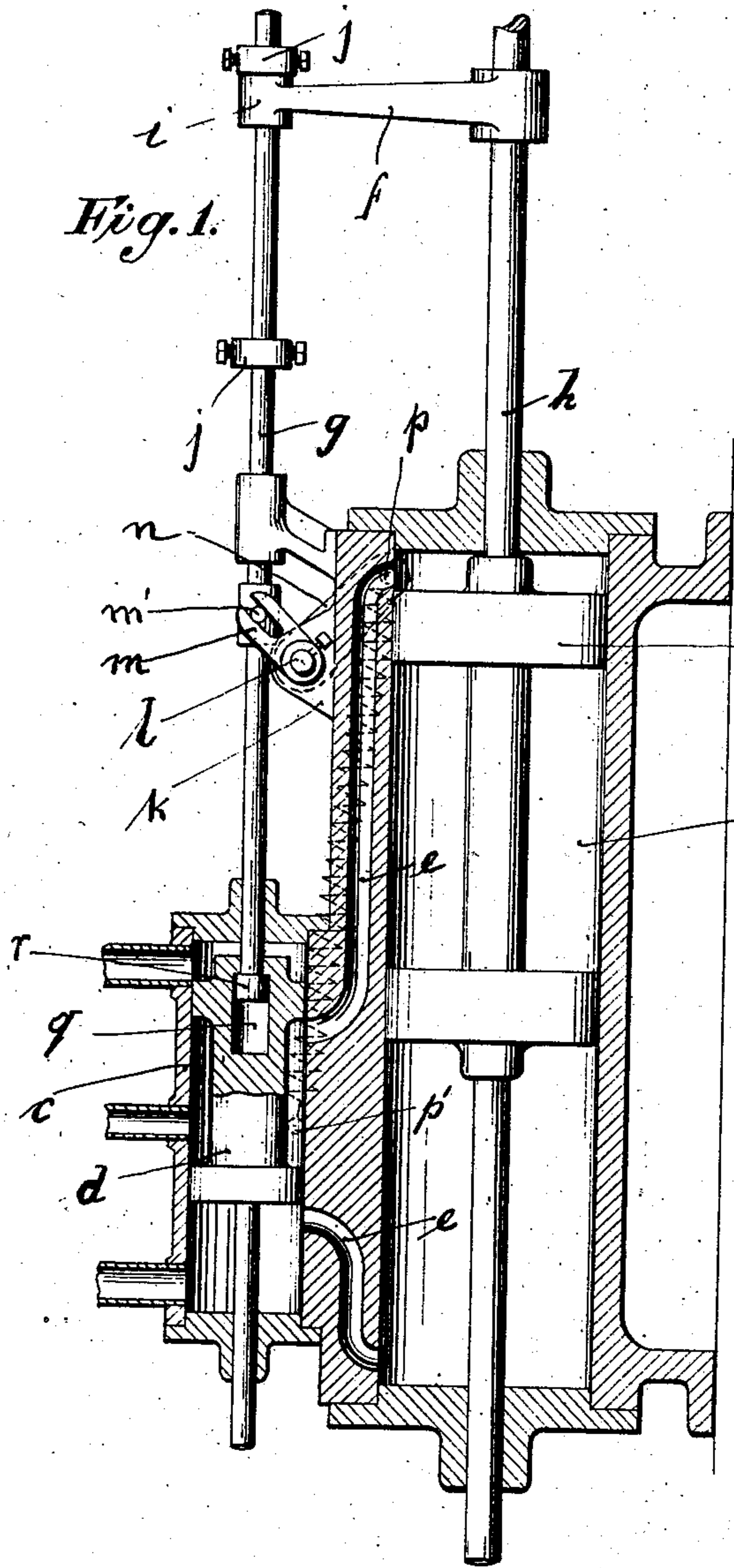


No. 859,961.

PATENTED JULY 16, 1907.

H. B. MEIER.
WATER PRESSURE PISTON ENGINE.

APPLICATION FILED APR. 12, 1907.



WITNESSES

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HENRY B. MEIER, OF NEW YORK, N. Y.

WATER-PRESSURE PISTON-ENGINE.

No. 859,961.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed April 12, 1907. Serial No. 367,894.

To all whom it may concern:

Be it known that I, HENRY B. MEIER, a citizen of the United States, and a resident of New York, county and State of New York, have invented certain new and useful Improvements in Water-Pressure Piston-Engines, of which the following is a specification.

The present invention pertains to water pressure piston engines, particularly to such that are used to operate pipe organs, and has for its object to provide a construction that will allow a full and quick valve opening at the commencement of the stroke, and by giving the piston a full pressure at the start, the wire drawing of the power medium in the ports of the engine and valve is reduced to a minimum.

In hitherto known water pressure piston engines, the valve being opened with the same speed as the engine travels there is wire drawing, and small supply of water at the commencement of the stroke. In such engines that have auxiliary valves, to control the main valves, the leather rings, when worn out, and allowing leakage, cause pressure on the ends of the main valve which will therefore easily stick and open only partly. Another disadvantage connected with such water pressure piston engines, is that the small ports of the auxiliary valve become easily clogged by foreign matters contained in the water, such as grease, straw, etc.

My invention consists in the combination of a water pressure piston engine having a single piston valve with a device that at the end of the piston stroke will forcibly move the valve to rapidly open the ports of the cylinder to allow of a full pressure for the commencement of the new stroke.

In order to make my invention more clear, the same is illustrated in the accompanying drawing, in which similar reference letters denote corresponding parts, and in which

Figures 1 and 2 are longitudinal sections through the engine illustrating the operation of my device, and Fig. 3 is a top plan view thereof.

In the drawing, *a* denotes the cylinder, *b* the piston working therein, *c* the valve casing, *d* the valve, and *e, e* the ports leading from the valve casing into the cylinder.

g denotes the valve rod, and *h* the piston rod. To one end of the latter, an arm *f* is rigidly secured, which is formed with a sleeve *i* to loosely engage the valve rod *g*, and to slide thereon during the backward and forward movement of the piston between two adjustable stops or collars *j, j*. Journaled in a bracket *k* projecting from the cylinder is a rocking shaft *l* that extends transversely to the valve rod, and that carries bifurcated levers *m, m*. The latter are rigidly connected with the

rocking shaft *l* and are each to embrace a pin or projection *m'* extending laterally from the sides of the valve rod *g*. Secured to each end of said shaft is also a crank *n*, the free end of which is connected at *p* with a coil spring *o* that at *p'* is attached to the cylinder *a*.

The valve *d* is provided with a bore *q* that is reduced at its outer end and adapted to receive the lower end of the valve rod *g*. By means of a collar *r* the rod is prevented from disengaging the valve, but allowed to slide up and down in the wider portion of the bore. The latter must be of such a depth that when the arm *f* of the piston rod *h* forces the valve rod forward or backward and moves the levers *m, m* swinging the cranks against the tension of their springs *o, o* from their inclined left or right position (Fig. 1) toward and into the central or vertical position (Fig. 2), the end of the valve rod will freely slide within the bore *q* without moving the valve. Upon further movement of the piston rod and of the valve rod, the latter will strike the inner end of the bore *q* while at the same time the cranks will be swung out of their vertical or central position to be instantaneously and forcibly drawn by the springs *o, o* to the farthest end of their swinging movement. Thereby the levers *m, m* cause the valve rod to rapidly move the valve so as to entirely open the port *e* at the end of the corresponding stroke of the piston. It is evident, that the same valve motion can be used with engines driven by any other fluid pressure, as compressed air, steam, etc.

What I claim and desire to secure by Letters Patent is:

1. In a fluid pressure piston engine, the combination with a single piston valve, the latter having a longitudinal bore, of a valve rod slidably engaging said bore and connected with said valve, means to impart a preliminary movement to the said valve rod, a spring actuated rocking shaft, supported from the engine and extending transversely thereto, bifurcated levers rigidly secured to said rocking shaft and projections on the valve rod engaged by said bifurcated levers, substantially as and for the purpose specified.

2. In a fluid pressure piston engine, the combination with a single piston valve, the latter having a longitudinal bore, of a valve rod slidably engaging said bore and connected with the valve, the piston rod operating said valve rod, a rocking shaft supported from the engine and extending transversely thereto, cranks secured to said rocking shaft, coil springs secured to the engine and connected with said cranks, bifurcated arms rigidly secured to said rocking shaft and projections on the valve rod engaged by said levers, substantially as and for the purpose specified.

Signed at New York this 10th day of April 1907.

HENRY B. MEIER.

Witnesses:

ROBT. CARTER,

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