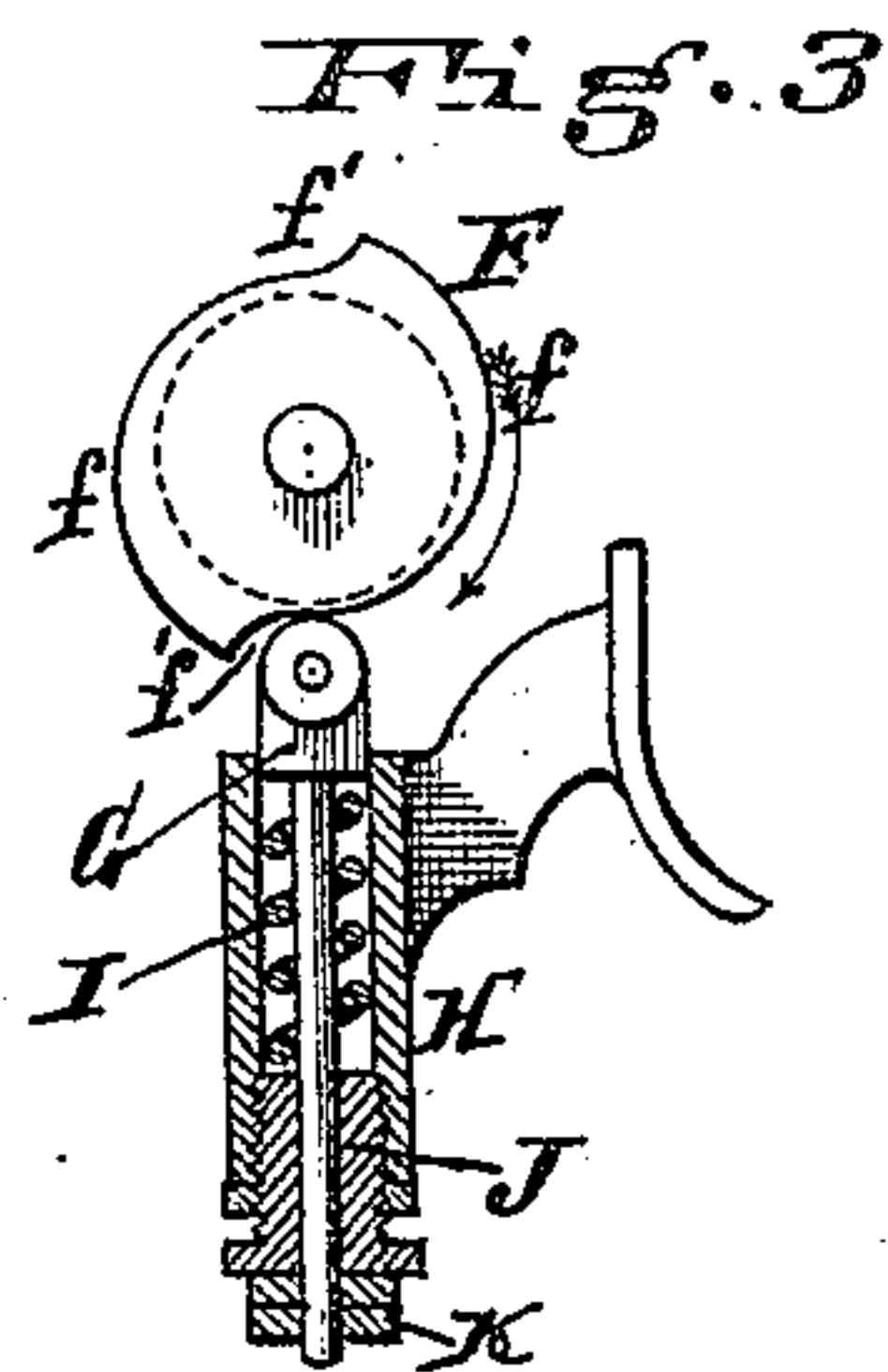
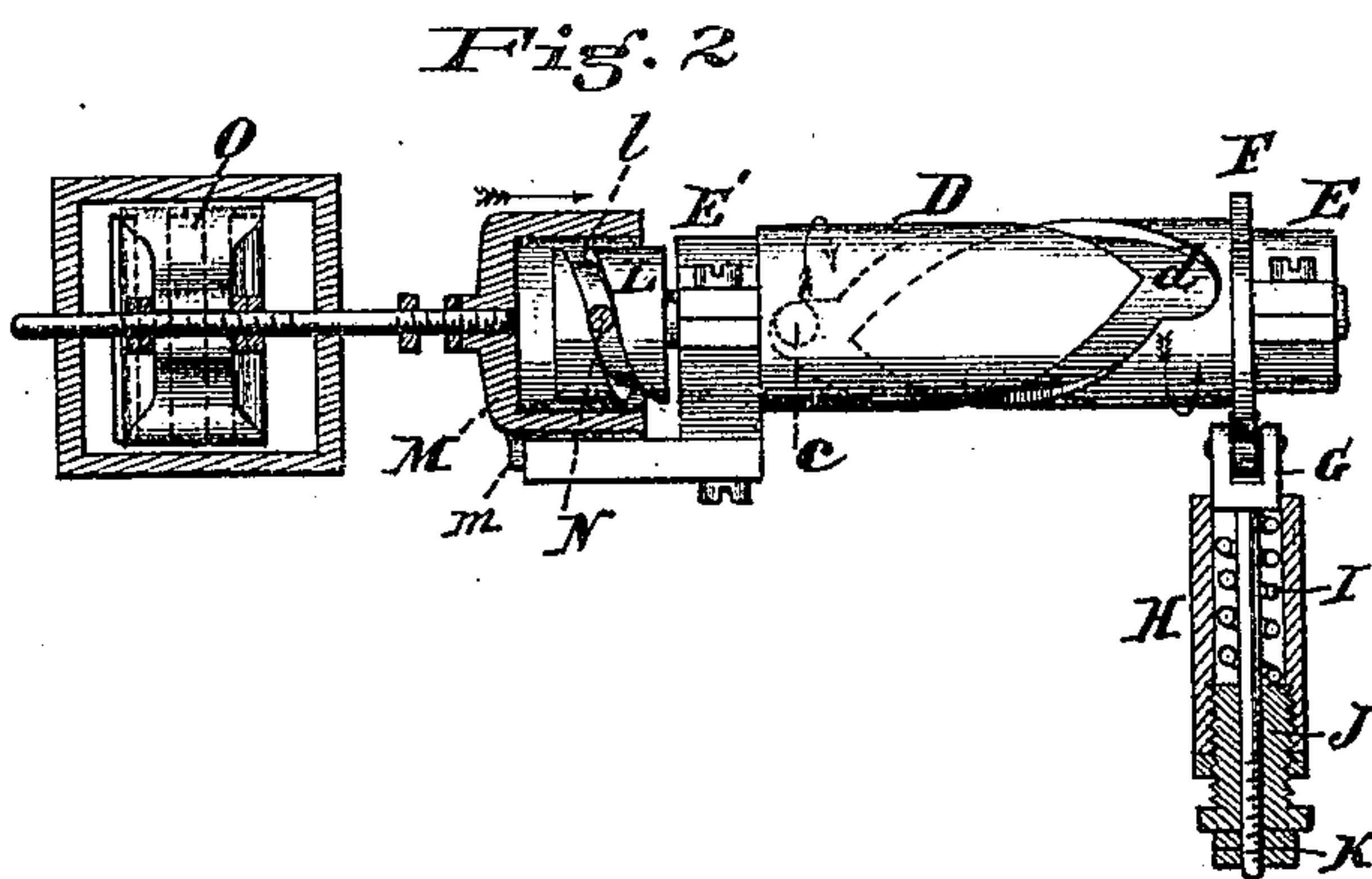
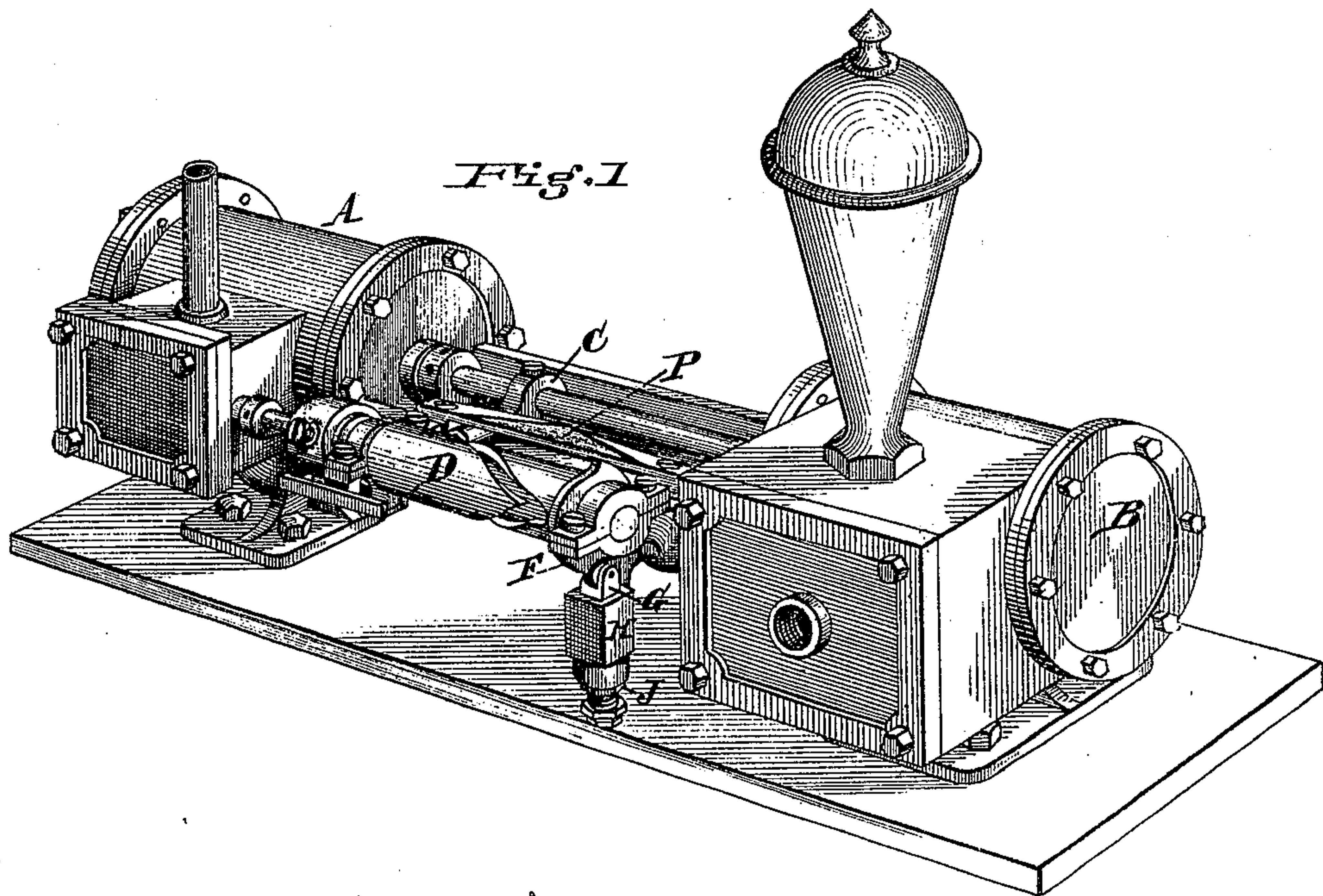


H. TESSEYMAN.

VALVE-GEAR FOR DIRECT-ACTING ENGINES.

No. 174,590.

Patented March 7, 1871.



*Attest*

*Edgar J. Gross*  
*John. C. Jones*

*Inventor*

*Henry Tesseyman*  
*By F. Millward*  
*Attorney*



# UNITED STATES PATENT OFFICE.

HENRY TESSEYMAN, OF SPRINGFIELD, OHIO.

## IMPROVEMENT IN VALVE-GEARS FOR DIRECT-ACTING ENGINES.

Specification forming part of Letters Patent No. **174,590**, dated March 7, 1876; application filed January 12, 1876.

*To all whom it may concern:*

Be it known that I, HENRY TESSEYMAN, of Springfield, Clarke county, State of Ohio, have invented an Improvement in Valve-Gear of Pumps and Engines, of which the following is a specification:

My invention has for its object such a construction and arrangement of parts as that all the valve-moving appliances, with the exception of the actuating-arm of the piston-rod and spring device for helping the valve over on the ends, can be arranged in line with the valve-rod; and consists, first, in a rotating grooved drum, operated by the arm of the piston-rod to give a reciprocating motion to the valve through proper connections; second, in connection with said grooved drum, in the provision of an angularly-grooved rotating head and sliding socket on the valve-rod, having a pin to fit said groove, by which the grooved drum is enabled to give the proper motion to the valve; third, in connection with said grooved drum, of a cam and spring device, by which the said drum and valve are helped over at the ends of the stroke of the piston.

Figure 1 represents my improvement attached to a steam-pump. Fig. 2 is a partly-sectionized elevation of my valve-gear. Fig. 3 is an end view of the cam and spring device.

A and B represent, respectively, the steam and water cylinders of a steam-pump, and C the valve-actuating arm of the piston-rod thereof. D represents my grooved drum, having the peculiar form shown, and fitted to revolve in the bearings E E', which are secured to the frame of the pump. The pin *c* at the end of the actuating-arm fits into the groove *d* of the drum. The reciprocating movement of the arm C gives to the drum D the rotary movement in one direction, with a certain cessation of movement at each half-revolution; and, in order to facilitate the continuation in the proper direction after each cessation, I provide a cam, F, having two inclined surfaces, *f*, and two curved surfaces, *f'*. In connection with this cam I provide a rolled plunger, G, fitting into a socket, H, supported by the frame of the machine. The stem of

this plunger is surrounded by a spring, I, which, pressing upon the adjustable abutment J, keeps the plunger against the cam at all points, the stem of the plunger being fitted at the ends with lock-nuts to regulate the force of the roller against the cam.

The provision of the adjustable abutment and adjustable nuts K enables the operator to adjust the tension of the spring without necessarily changing the pressure of the roller against the lowest part of the cam.

The action of the rolled plunger, after it reaches the highest prominence of the cam, serves, while sliding down the parts *f'*, by the retraction of the spring at those times, to so move the drum at the ends of the stroke in its proper direction of rotation.

At the valve end of the shaft of the drum D I provide a head, L, having a groove, *l*, which is cut in an inclined plane with relation to the face of the heads, so that, in revolving, it will give a reciprocating motion to the sliding head M, to which it connects by means of an interiorly-projecting pin, N, fitting into the groove *l*.

The reciprocation of the head M, held to a proper line by slide *m*, gives the proper motion to the valve O, which is of the ordinary kind, and fitted within the ordinary valve-chest of the steam-cylinder.

By this arrangement of parts it will be seen that there are no reciprocating parts excepting the spring-plunger and the arm C, the latter running in guides P, and that the principal parts of the valve-gear continue in one direction, and are all arranged in line with the valve itself, without the intervention of any levers or other objectionable contrivances; and the pump, therefore, is put up in a compact form, and is necessarily of a durable character.

I claim—

1. The combination, substantially as specified, of the actuating-arm, the grooved drum, and a separate means for imparting a slight turn to the drum at the end of each stroke of the actuating-arm, thus insuring the continuous rotation of said drum for giving a reciprocating movement to the valve through proper connections.

2. In combination with the arm C c and drum D d, the grooved head L l and reciprocating valve-head M N, operated substantially as and for the purpose specified.

3. In combination with the arm C c and valve-moving drum D d, the cam F and spring-plunger G, operating substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

HENRY TESSEYMAN.

Witnesses:

B. MOFFATT,

A. O. LONGSTREET.