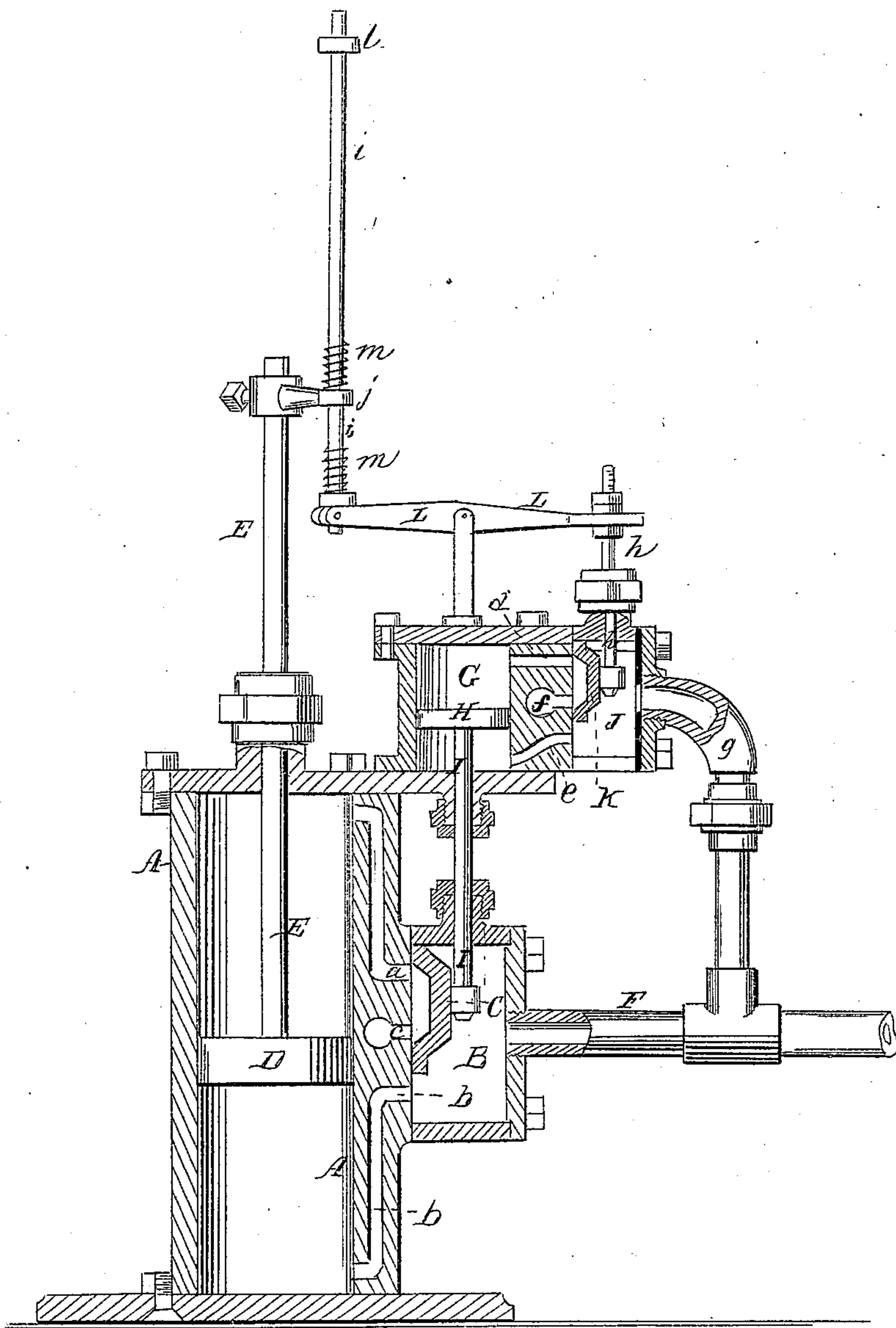


*I. N. Forrester,
Cut Off Valve.*

No. 92,813,

Patented July 20, 1869



Witnesses:

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I. N. FORRESTER, OF BRIDGEPORT, CONNECTICUT.

Letters Patent No. 92,813, dated July 20, 1869.

IMPROVEMENT IN VALVE-GEAR FOR ACTUATING STEAM AND OTHER ENGINERY.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, I. N. FORRESTER, of Bridgeport, in the county of Fairfield, and State of Connecticut, have invented a new and useful Improvement in Water and Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification.

The drawing represents a vertical longitudinal section of my improved engine.

My invention relates to regulating the stroke of the piston of a steam, water, or other engine; and

It consists in a new and improved arrangement and construction of parts for effecting the same, as will be hereinafter fully described.

A, in the drawing, represents the main cylinder;

B is its valve-chest;

C, the slide-valve;

a b, the ports;

c, the exhaust port;

D, the piston;

E, the piston-rod; and

F, the water or steam-supply pipe.

G is a small cylinder, arranged above or below the valve-chest B.

H is its piston, and

I, the piston-rod.

This rod I is secured to the slide-valve C, as shown.

J is a small valve-chest, arranged on the cylinder G, communicating with the same by means of ports *d e*, and provided with an exhaust-port, *f*, and with a small slide-valve, K.

A branch, *g*, from the pipe F, supplies the valve-chest J.

The rod *h*, of the valve K, is fastened to a pivoted beam L, which has a projecting rod, *i*, that fits through an arm, *j*, projecting from the main piston-rod E.

A shoulder, *l*, is formed on the upper end of the rod *i*, and a spring, *m*, is interposed between the arm *j* and the upper and lower ends of the rod *i*, said springs being fitted loosely upon the rod *i*, as shown.

It will be readily seen, that when, for example, the valve C is raised to open the port *b*, and when, consequently, the piston D is moving upward, the arm *j* of the piston-rod E will, at the end of the upward motion, strike the shoulder *l*, and will elevate the inner end of the beam L, thereby lowering the valve K.

The upper port *d* of the cylinder G is thus opened, and the piston H is caused to move downward, carrying down also the slide C, which opens the port *a* and lets the piston descend.

The springs *m m* are interposed between the setting-arm and the shoulder operated by it, mainly to gain time for setting the valves, while the piston is completing its stroke, and also to prevent any jarring or sharp motion.

The valve K cannot stop in the middle of its motion, as it is set by the moving piston D during the full motion of the same, and when the valve K is once set, the valve C must also finish its motion, as the action of the driving-fluid, on the piston H, is complete and reliable.

Thus, without a fly-wheel, the motion of the slide-valve C is made certain, and the action of the piston reliable.

The machine illustrated in the drawing, is more especially intended as a hydraulic organ-blower; but the same system can be applied to all other machinery, whether driven by water, steam, air, or other liquid or fluid, and which may be used for suitable purposes.

Having thus described my invention,

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

The arrangement of the rod *i*, provided with the adjustable collar *l* and springs *m*, and the setting adjustable arm *j*, with relation to each other, and the beam L, valve K, piston H, valve C, and piston D, constructed substantially as herein shown and described.

I. N. FORRESTER.

Witnesses:

F. W. SMITH, Jr.,

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