R. H. Fletcher,

Operating Steam Slide Valves.

No. 16,358. Patented Jan. 6, 1857.

Fig. 1

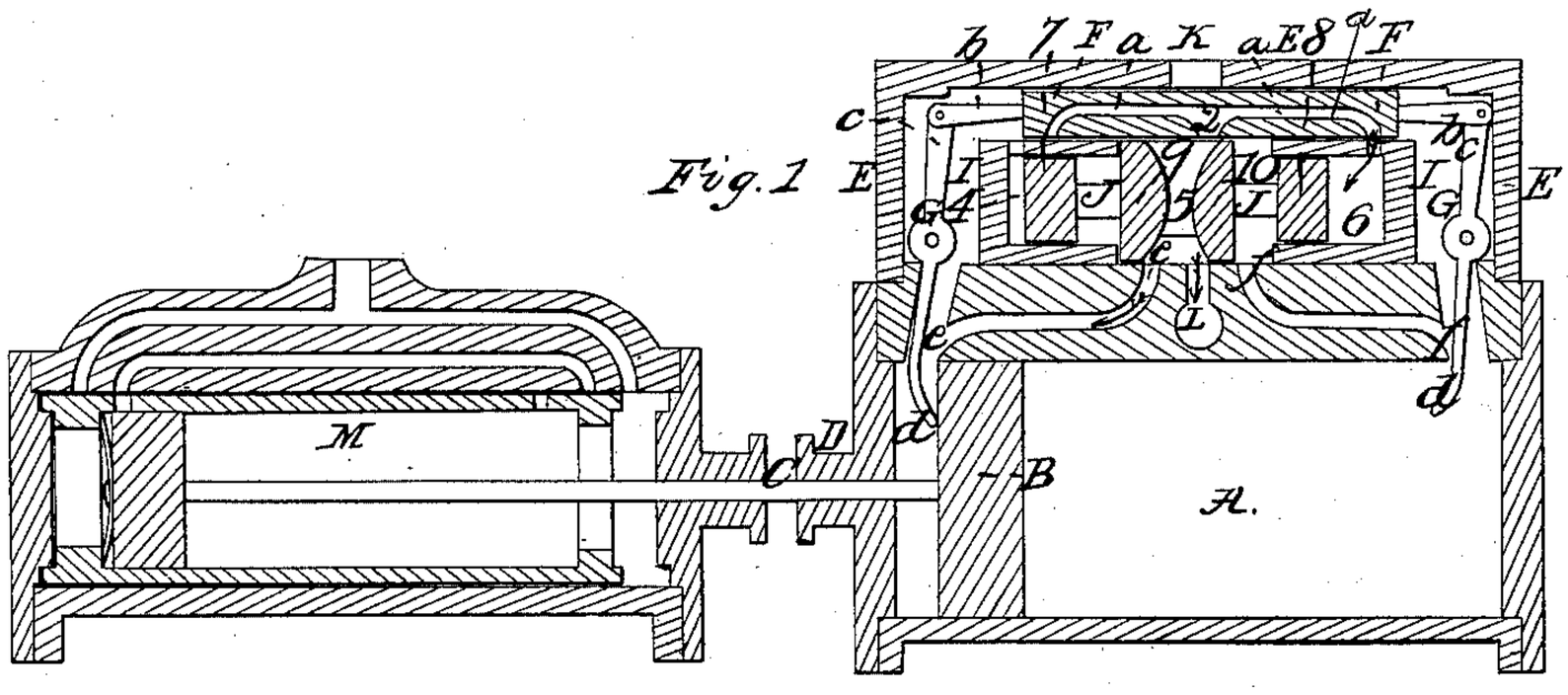
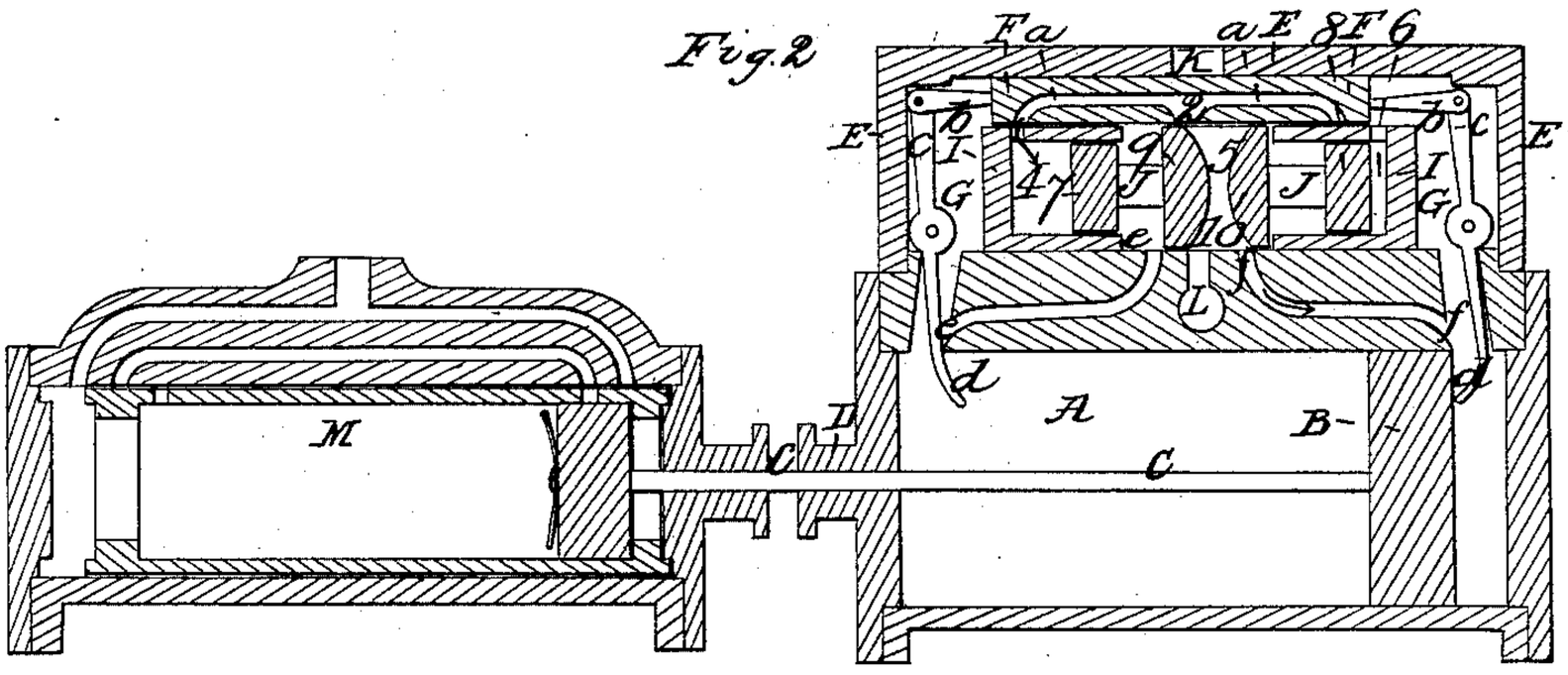


Fig. 2



UNITED STATES PATENT OFFICE.

ROBERT H. FLETCHER, OF BROOKLYN, NEW YORK.

OPERATING SLIDE-VALVES OF STEAM-ENGINES.

Specification of Letters Patent No. 16,358, dated January 6, 1857.

To all whom it may concern:

Be it known that I, ROBERT H. FLETCHER, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Operating the Slide-Valves of Steam-Engines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents the several parts, by section, in one position, and Fig. 2 represents the same parts as they stand when the piston has traveled to the opposite end of the cylinder.

Similar letters of reference where they occur in the separate figures denote like parts in each.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A, represents an ordinary steam cylinder, and B, the piston head working therein.

C is the piston rod packed at D, in any well known manner.

E, is a steam chest, connected to the cylinder A, within which is placed a slide valve F, having a steam way *a* in it with three inlets 1, 2, 3, which communicate respectively with the steam spaces 4, 5, 6, to be hereafter described. An arm *b*, is attached to each end of the slide valve F, and to each of which arms, is connected one end *c* of pivoted lever G, the other ends *d* of said levers G, extending into the cylinder A, so as to be struck alternately by the piston head B, at the end of its stroke, to move said slide valve F. In a chamber I, underneath the slide valve F, is a rod or stem J, carrying four heads 7, 8, 9, 10—of which 7 and 8 are of equal area, but of less area than the others 9 and 10, which are also equal in area.

In Fig. 1, the piston head B, is represented at the end of its stroke, and as having struck the end *d*, of the lever G, and moved the slide valve F into the position therein shown, and bringing the steam inlet 3, in communication with the steam space 6, and driving the stem J, with its heads into the position shown in said figure. This brings the steam way 5 between the heads 9, 10, in direct communication with the inlet or steam channel *e*, and the steam entering behind the piston B, drives it forward to the other end of the cylinder, where coming in contact with the other lever G, through its projecting end *d*, the slide and stem are reversed, and put into the positions shown in Fig. 2, and placing the steam way 5, in communication with the inlet or channel *f*, and the piston again returns to the other end of the cylinder, where the operation is repeated.

The steam is constantly passing through 2, 5, and its pressure on the heads 9, 10 being equal, the stem J is not moved or influenced by the steam on said heads—but when the slide valve F, is moved so as to allow steam upon either the head 7, or 8, and cutting it off from the other, the stem J immediately shifts, and changes the steam inlet from *e* to *f*, or from *f* to *e*, as the case may be.

K is the inlet, and L, the exit port for the steam. The lever G, may be packed, where it passes from the steam cylinder into the steam chest, and an escape from the spaces 4, 6 may be made, to let off the steam therefrom.

M, represents a double acting pump, to which I propose to apply my steam engine, but constitute no part of this invention, as the engine may be equally well applied to any other machinery.

Having thus fully described the nature of my invention, what I claim therein as new and desire to secure by Letters Patent, is,

The arrangement of the slide valve F, and stem J, with their operative parts within the steam chest as herein described, so that they may be operated from the piston head within the steam cylinder, by means such as set forth.

ROBERT H. FLETCHER.

Witnesses:

THOS. H. UPPERMAN,

A. B. STOUGHTON.