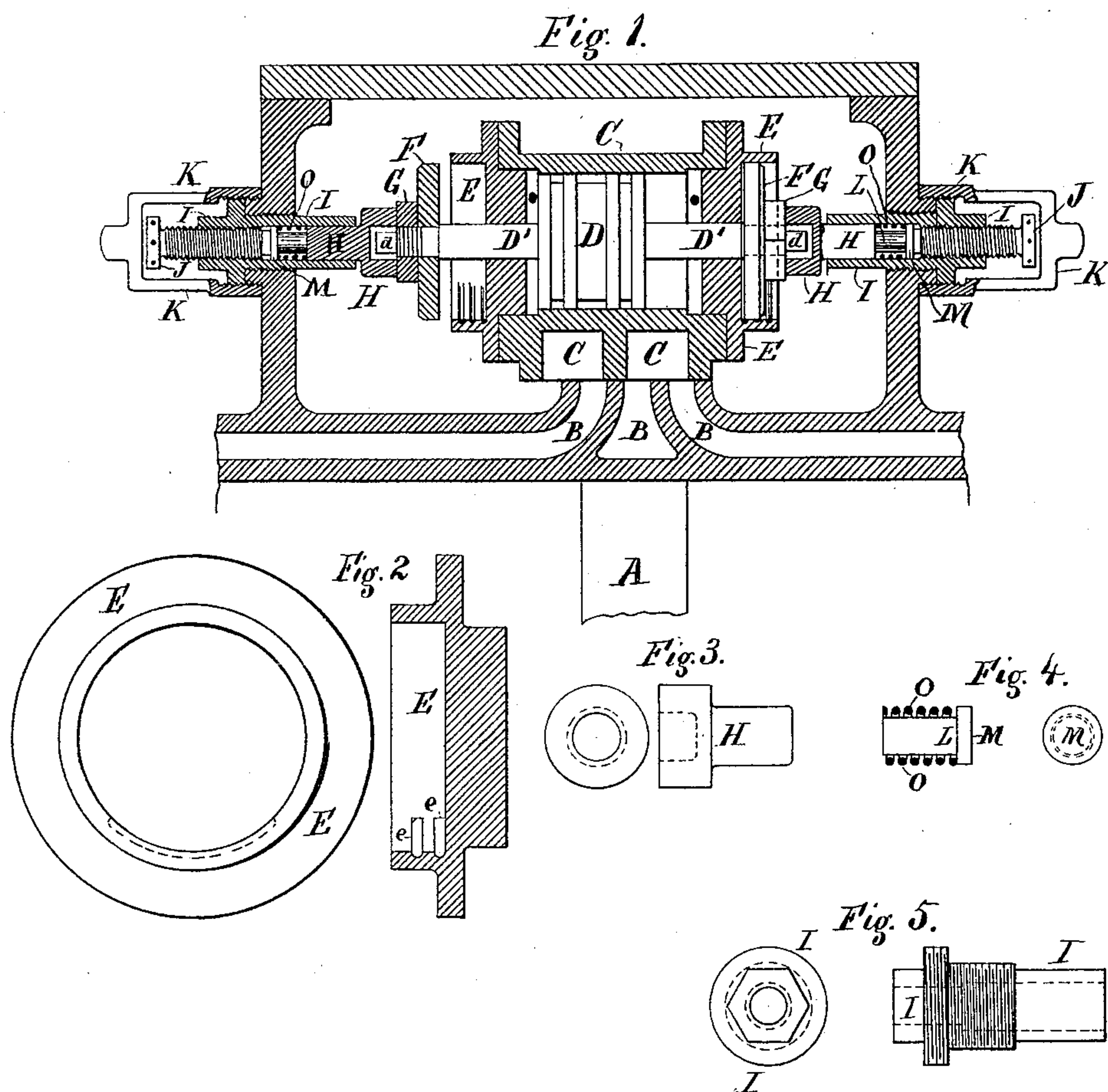


(No Model.)

M. HASTINGS.  
STEAM ACTUATED VALVE.

No. 368,209.

Patented Aug. 16, 1887.



WITNESSES:-

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# UNITED STATES PATENT OFFICE.

MICHAEL HASTINGS, OF BROOKLYN, NEW YORK.

## STEAM-ACTUATED VALVE.

SPECIFICATION forming part of Letters Patent No. 368,209, dated August 16, 1887.

Application filed April 14, 1887. Serial No. 234,743. (No model.)

*To all whom it may concern:*

Be it known that I, MICHAEL HASTINGS, a citizen of the United States, residing in the city of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Steam-Actuated Valves for Steam-Engine Cylinders, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates specially to the improvement of steam-actuated valves in which the slide-valve is directly attached to a cylinder operated to and fro upon a piston held fixed within a steam-chest, the object of such improvements being to obtain a more efficient control of the movements of the valve while closed within the chest and to render its operation easy and noiseless, as well as to improve the durability of the several details of construction and operation.

In the accompanying drawings, Figure 1 represents a longitudinal section through a steam-chest provided with a steam-actuated valve, and means of adjustment embodying my improvements. Figs. 2, 3, 4, and 5 represent views in detail of the several parts or portions combined to effect my improvements.

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

A designates a portion of main-cylinder piston; B, the steam and exhaust ports of the main cylinder; C, the movable valve-carrying cylinder; D, the piston upon which the valve-carrying cylinder moves to and fro to open the steam and exhaust ports of the main cylinder. The movable valve-carrying cylinder is operated by the admission of steam through small ports in the usual manner.

D' designates the piston-rods extending in both directions from the piston itself, such rods acting as guides to the valve-carrying cylinder.

E designates the heads at each end of valve-carrying cylinder.

F designates a pair of stop-disks, each of which fits snugly into a pocket or recess formed in the outer face of heads E.

G designates a nut for fastening these stop-disks F firmly in place upon the piston-rods D'.

H is a cup-guide fitting loosely over the ends of piston-rods D'. It also fits at the opposite end into the sleeve end of adjusting-box

I. This adjusting-box I is fastened into the ends of chest, and takes the whole thrust of the operation of the valve.

J is an adjusting-screw, through which the throw of the valve is regulated in relation to the position of main-cylinder ports and the equalized admission of steam to the main piston.

K is an open guard protecting adjusting-screw J and jamming the adjusting-box I in place in the ends of steam-chest.

L is a special filler, made preferably of cork, placed within pressure-spring O to prevent clatter, or to prevent trouble in case of the weakening or breaking of the spring O.

M is a special washer between the point or end of adjusting-screw and pressure-spring O.

*e e e* are water-channels located at the lower circular surface of stop-disk pocket in heads E. *d d* designate the ends of piston-rods D', extending into pocket of cup-guide H.

The valve-carrying cylinder, the piston, and rods, as also the disks, are constructed after common methods; but my improvements consist specially in providing the adjusting-box and its associate details or equivalents so that the throw and location of the valve with reference to the main-cylinder ports may be regulated without opening the chest, and even while the piston and valves are in operation. This adjusting-box is preferably constructed as shown. The steam-chest is somewhat lengthened and into its ends is fastened the adjusting-box I, screwed into place and jammed by means of the guard K, as shown. Into the outer end of this adjusting-box I a screw-bolt, J, is set, pressing against a washer, M, bearing upon a strong spring, which in turn bears upon the turned ends of cup-guide H, as shown. Both ends of steam-chest are fitted with the same means of adjustment, and by the release of one and screwing up of the other the position of the valve in its relation to the port faces and edges is changed and controlled. To assist the spring O in taking care of the thrust of operation, a series of water-grooves, *e e*, are cut in the bottom face of disk-pocket in head E. Into these grooves or channels water lodges, and upon the inward movement of stop-disk F the water is forced up into the space between the disks and heads as they come together, ef-

fecting an easy cushioning of the valve in its movement over the ports.

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

- 5 1. In a steam-actuated valve, the combination of the stop-disk pocket E, a series of grooves or channels, *e*, cut into the bottom of said stop-disk pocket, and the stop-disk F, substantially as and for the purposes specified.
- 10 2. A regulator for steam-actuated valves, consisting of an adjusting-box attached to the ends of the steam-chest, and adjusting-screw operating within said box, a cushion-spring, O, and cup-guide H, acted upon by said ad-
- 15 justing-screw, substantially as shown and described.

3. In combination with a steam-actuated valve of the character herein shown and described, a valve-regulator consisting of the cup-guide H, spring O, special filler L, washer 20 M, adjusting-screw J, and adjusting-box I, substantially as and for the purposes set forth.

4. In a regulator for steam-actuated valves, the combination of the cup-guide H, spring O, special filler L, washer M, adjusting-screw J, 25 adjusting-box I, and protecting-guard K, substantially as shown and described.

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Witnesses:

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