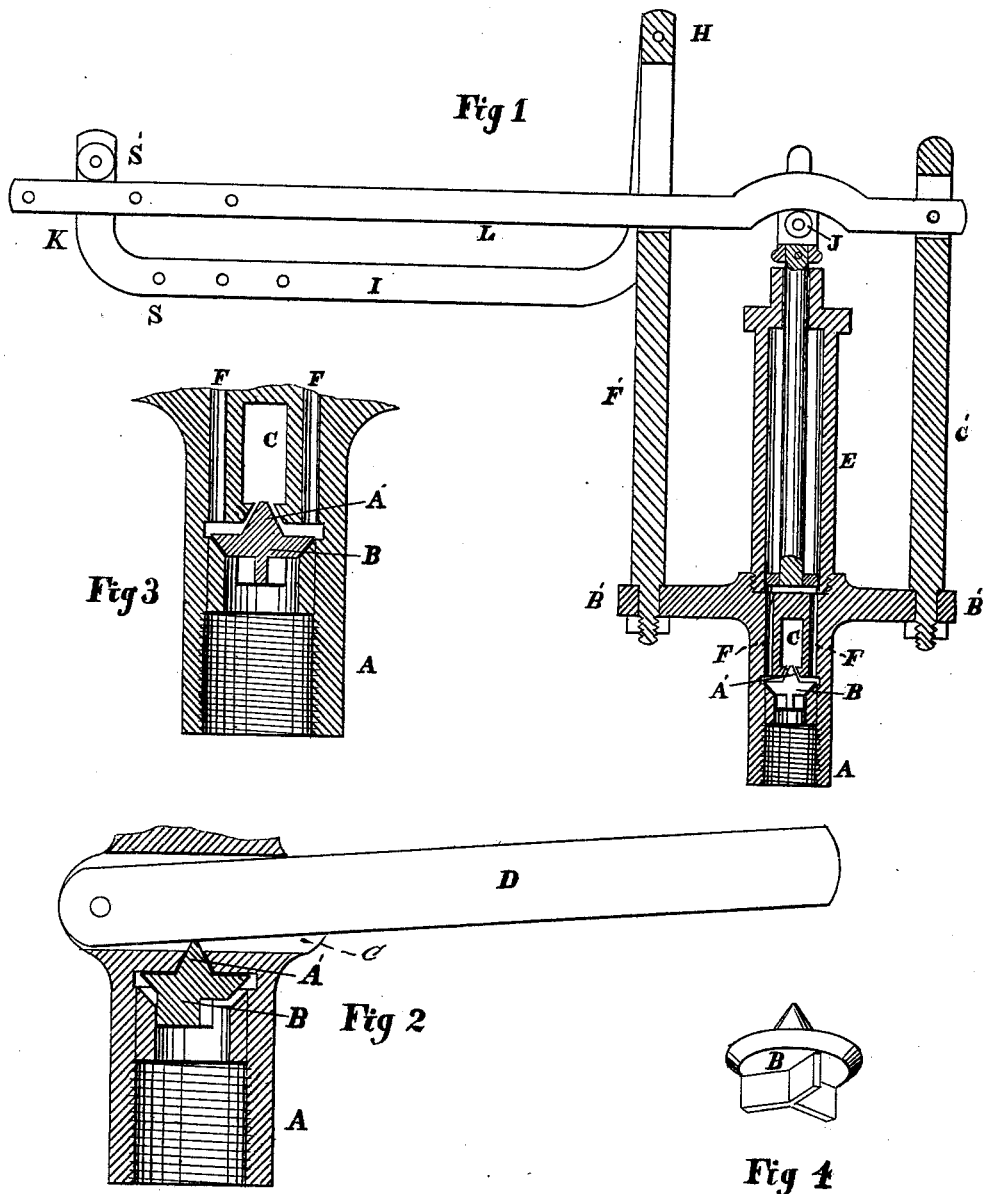


R. B. WALKER.  
Steam-Damper.

No. 220,004.

Patented Sept. 23, 1879.



Attest:  
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By *P. V. Fuller atty*

# UNITED STATES PATENT OFFICE.

RUSSEL B. WALKER, OF LANSING, MICHIGAN, ASSIGNOR OF ONE-HALF OF HIS  
RIGHT TO ABNER L. SHATTUCK AND HUGH LYONS, OF SAME PLACE.

## IMPROVEMENT IN STEAM-DAMPERS.

Specification forming part of Letters Patent No. **220,004**, dated September 23, 1879; application filed  
March 17, 1879.

*To all whom it may concern:*

Be it known that I, RUSSEL B. WALKER, of the city of Lansing, in the county of Ingham and State of Michigan, have invented a new and useful Improvement in Steam-Dampers, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a vertical elevation, partly in section, of my improved device. Fig. 2 is a vertical section of the lower part of the same on an enlarged scale, and is a section through at right angles to that in Fig. 1. Fig. 3 is an enlarged sectional view of the lower part of Fig. 1. Fig. 4 is a perspective view of the valve B.

The object of my invention is to furnish a device to be operated by steam, by which the draft-dampers may be operated and controlled automatically, so that the steam in the boiler shall be kept at a uniform pressure, thereby saving fuel and also preventing explosions.

In the drawings, A is a metal casing, which is made hollow from the bottom up one-half of its length, within which is fitted a three-winged valve, B, the lower seat of which is a short cylinder, fitted and driven to place after the valve is placed in position.

The casing A is provided at its lower end with an internal screw-thread for attaching to a pipe that shall connect with the steam-dome.

The valve B is provided with a cone-valve upon its upper side, that extends through an aperture from the chamber to the slot C, as shown by Fig. 3. This opening around the cone-valve is the exhaust-port.

D is a lever passing through slot C, pivoted at the end and operating upon the conical point of the valve B, it being adjusted by a weight to hold the valve down against the desired pressure of steam in the boiler.

F F are steam-ports, one upon each side of the slot C, through which the steam passes to the cylinder E.

B' B' is a yoke, the arms of which are attached to and cast solid with A. Upon the outer end of said yoke are attached, by a screw-thread, the standards F' and C'.

L is a lever, one end of which is pivoted to

the standard C', and extends through the slot in the standard F', which is for a way or guide in its movement.

To the upper end of the piston-rod is attached a head having a slot, within which is provided an anti-friction roller, J, upon which the lever L rests. The lever L at this point is of such cycloidal shape that it always bears directly upon the top of the roller J, no matter what position the lever may be in, thus preventing any side pressure on the piston-rod.

To the outer end of the lever, at K, are attached, in any suitable manner, the dampers to be operated. (Dampers not shown.)

The lever L is balanced by a weight, (not shown,) said lever being attached to a carrier, I, which has one end pivoted to the upper end of the standard F', at H, the other end being provided with an anti-friction roller, S', which rests upon the lever L, and travels outward as the lever is raised, thereby maintaining the same proportional length between the long and short arms of the lever L throughout its movement.

Its operation is as follows: When the steam in the boiler is raised above the desired pressure, the valve B and lever D are forced up, at the same time closing the exhaust-port at valve A', and the steam is admitted through the ports F F to the cylinder E. The piston is forced up, and its action upon the lever L closes the dampers. Everything remains in this position until the fire is checked sufficiently and the steam lowered to the desired pressure, when the lever D closes the valve upon the steam, and at the same time opens the exhaust-valve A'. The piston returns, and the lever L, by its balanced weight, opens the dampers.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a steam-damper regulator, the combination of the valve B and its seat, provided with conical valve A', casing A, aperture C, lever D, and ports F F, all arranged to operate as set forth and described.

2. In a steam-damper regulator, the combination and arrangement of the valve B and its

cone A', casing A, provided with aperture C, lever D, ports F F, and yoke B' B', and standards F' and C', all operating in the manner and for the purpose specified.

3. In steam-damper regulators, cylinder E and piston, the piston-rod having at its upper end an anti-friction roller, J, lever L, with its cycloidal curve, operating upon said anti-fric-

tion roller, and carrier I, having anti-friction roller in its outer end, all constructed to readily and automatically operate the damper, substantially as shown and described.

RUSSEL B. WALKER.

Witnesses:

W. K. PRUDDEN,  
J. GILLOTT.