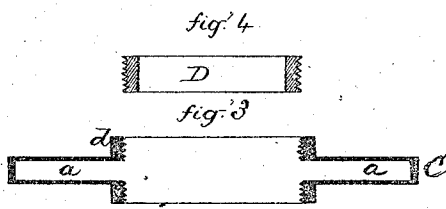
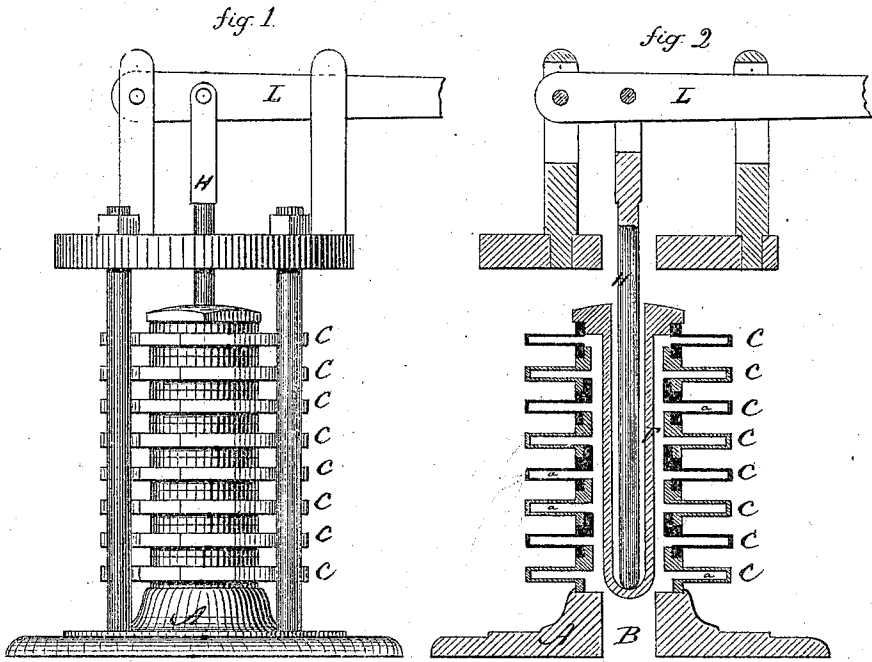


E. B. BEACH.

Improvement in Steam-Pressure Damper-Regulators.

No. 131,992.

Patented Oct. 8, 1872.



Witnesses:
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UNITED STATES PATENT OFFICE.

EDGAR B. BEACH, OF WEST MERIDEN, CONNECTICUT.

IMPROVEMENT IN STEAM-PRESSURE DAMPER-REGULATORS.

Specification forming part of Letters Patent No. 131,992, dated October 8, 1872.

To all whom it may concern:

Be it known that I, EDGAR B. BEACH, of West Meriden, in the county of New Haven and State of Connecticut, have invented a new Improvement in Draft-Regulator; and I do hereby declare the following, when taken in connection with the accompanying drawing and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawing constitutes part of this specification, and represents, in—

Figure 1, a front view; Fig. 2, a vertical central section; and in Figs. 3 and 4, detached parts.

This invention relates to a device designed especially for regulating the draft of furnaces for steam-boilers, but is applicable, also, for steam or water indicators; the object being to employ the pressure within the boiler to actuate a lever which will open or close the draft as a greater or less amount of heat is required; and it consists in forming a spring or elastic body by means of a succession of thin hollow plates, constructed as hereinafter described, so that the pressure within the plates will raise the center to actuate the lever, or without the pressure the lever will compress the center, as more fully hereinafter described.

A is the base, which is fitted to any convenient position, having a communication, B, into the boiler. On this, base-plates C, more or less in number, are arranged, as seen in Figs. 1 and 2. These plates are constructed as seen in Fig. 3, and are made hollow, so as to form a chamber, *a*, within the plates, leaving the surfaces thin. At the center a raised rib, *d*, is formed, by which to connect to the next plate. These plates are formed by casting them solid, turning the outer surface, and then, by a suitable tool, working out the inside, which makes the inner surfaces parallel, or nearly so, to each other, whereby a greater elasticity is attained than can be by the union of sheet metal-disks, forming a V-shape in cross-section, the rib *d* on the plates being threaded, for the purpose of connecting one plate with another. The plates are best connected together by means of a coupling, D, threaded, so as to screw into the flange of one

plate, and a corresponding flange of the other plate screwed onto the coupling until the flanges come to a bearing; or, as seen in Fig. 2, the flange upon one side may be screwed into the flange on the next plate, the center being open for communication from the boiler into the plates, as seen in Fig. 2. Onto the last plate a tube, F, is placed, extending down through the center, but so as to leave a space around the said tube, and this should extend to nearly the bottom or lower plate. Into this tube a spindle, H, is inserted, to bear upon the lower end of the tube, and upon this a lever, L, is arranged, upon which the requisite weight or gage is placed.

Steam being admitted through the opening B to the plates, the pressure will extend the plates, and when the pressure within the plates has become greater than that for which the lever is set, the lever will be raised, and the damper, being in connection with the said lever, will be closed as the lever rises. The pressure diminishing, the lever will settle and open the damper.

As an indicator, the expansion of the plates in connection with any suitable device will show the pressure within the boiler.

The plates thus constructed, and of elastic metal, form a spring which may be applicable to many purposes where a coil, helical, or similar spring is now employed. I therefore do not confine myself to any particular use of the said plates.

I claim as my invention the following:

2. A succession of plates, C, in which the internal chamber *a* is formed by cutting out the metal so that the surfaces are parallel, or nearly so, to each other, combined with a rib, *d*, around the center, by which the several plates of the series are connected to each other, substantially as set forth.

2. In combination with the subject-matter of the first clause of claim, I claim the tube F, extending down through the center of the said plates, combined with the spindle H, resting on the bottom of the said tube, substantially as described.

EDGAR B. BEACH.

Witnesses:

EDWARD C. EARLE,
JOHN E. EARLE.