

(Model.)

I. CUMBERBATCH.
DAMPER REGULATOR.

No. 283,578.

Patented Aug. 21, 1883.

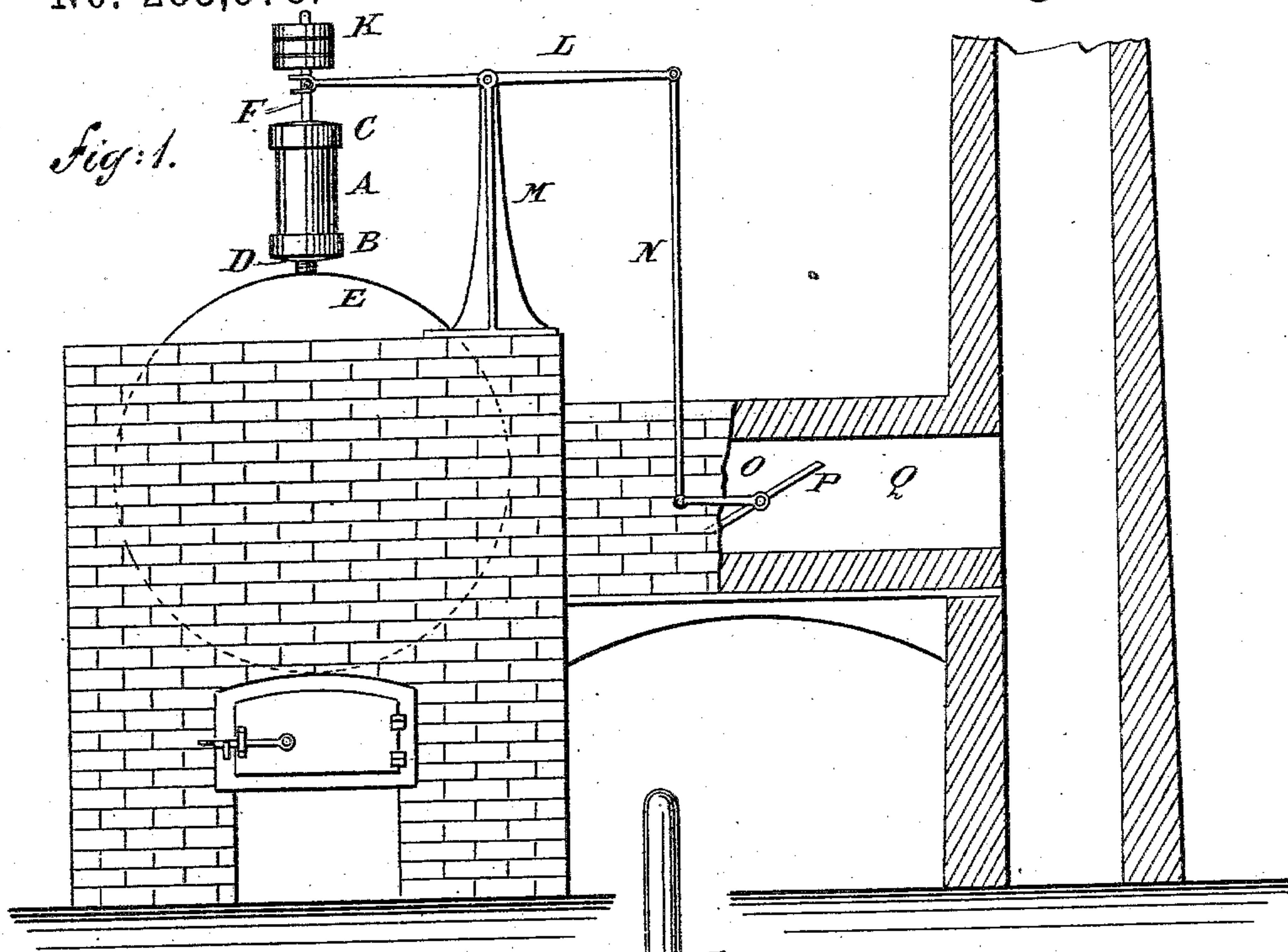
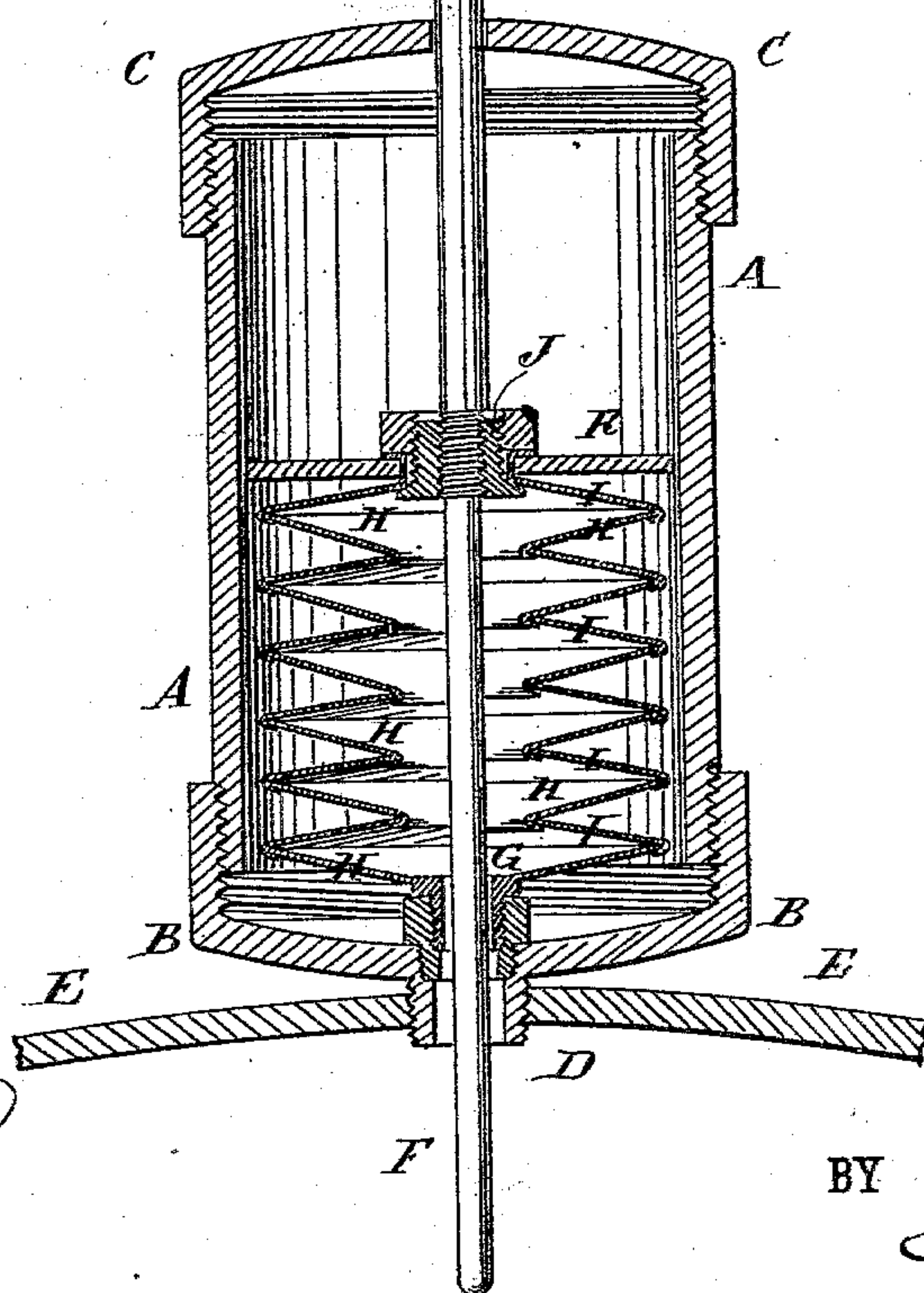


Fig: 2.



WITNESSES:

Chas. Nida
C. Sedgwick

INVENTOR:

I. Cumberbatch

BY

Mum & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ISAAC CUMBERBATCH, OF NEWARK, NEW JERSEY.

DAMPER-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 283,578, dated August 21, 1883.

Application filed January 9, 1883. (Model.)

To all whom it may concern:

Be it known that I, ISAAC CUMBERBATCH, of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Damper-Regulators for Steam-Boilers, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 is a front elevation of my improvement, illustrating its use, the draft-flue and the smoke-stack being shown in section. Fig. 2 is a sectional elevation of the improvement.

The object of this invention is to provide a simple and reliable device for controlling the draft in a steam-boiler.

A is a small hollow cylinder or drum, which is closed at its lower end by a cap, B, and can be closed at its upper end by a cap, C, or left open, as may be desired.

Upon the center of the lower cap, B, is formed a hollow nozzle, D, which has a screw-thread formed upon its outer surface to screw into a screw-hole in the shell of a boiler, E, or in a pipe connected with the steam-space of the said boiler, or with other steam-supply. Through the interior of the hollow screw D and an aperture in the cap C, when used, passes a rod, F, which is made smaller than the interior of the screw D, so that the steam can pass in around the said rod freely. The rod F also passes through the interior of the hollow screw G, which is screwed into the opening in the cap B, or into a screw-coupling screwed into the said opening.

To the screw G is secured the perforated center of a concaved disk, H, to the edge of which is seamed or otherwise secured the edge of a disk, I, which is concaved in the opposite direction from the disk H, forming a chamber in the shape of a double cone. The disks H I are made of elastic metal, and may have one or more pairs of similar disks connected with them.

To the perforated center of the upper disk, I, of the pair or series is secured a female screw, J, which screws upon a screw-thread formed upon the middle part of the rod F. With this

construction steam from the boiler or other steam-supply can enter the expansion-chamber H I, and will cause the said chamber to expand and contract as the steam-pressure increases and diminishes, the expansion of the chamber H I raising the rod F and the contraction of the said chamber lowering the said rod. The resistance of the expansion-chamber H I to the steam-pressure can be regulated by weights K, placed upon the upper end of the rod F.

To the upper part of the rod F is hinged the end of a lever, L, which is fulcrumed to a standard, M, secured to the casing of the boiler, or to some other suitable support. To the other end of the lever L is hinged the end of a connecting-rod, N, the other end of which is hinged to the end of a lever, O, attached to the journal of the damper P, placed in the draft-flue Q, so that the said damper will be closed by the expansion of the chamber H I and opened by the contraction of the said chamber.

The manner in which the rod F is connected with the damper-lever O will depend upon the arrangement of the cylinder A in connection with the flue Q. In some cases the rod F can be connected directly with the damper-lever O, reversely arranged.

If desired, a disk, R, can be fastened to the screw J at the upper end of the expansion-chamber H I, the said disk being made of such a size as to fit into the interior of the cylinder A, and thus center the said chamber as it expands and contracts.

The guide-disk R need not be used when the cylinder A is provided with a cap, C.

I am aware that it is not new to arrange in a cylinder provided with steam admission and discharge openings a spindle and annular spring-disks to form a spring regulator or governor; but

What I do claim as new and of my invention is—

1. The combination, with the bottom-closed drum A and central rod, F, of a series of concavo-convex spring-disks, H I, connected together, forming one continuous interior chamber about the rod, connecting closely with the rod at top, and communicating at the lower

end by an annular passage about the rod with the steam-space of a boiler, as shown and described.

2. The drum-cap B, having hollow screw D, 5 and the bottom spring-disk having hollow screw G, in combination with a hollow screw working in a central thread of cap and receiving the screw G in a female thread of its upper part, said screws being all arranged in 10 axial alignment, to form a communicating passage between the chamber within the spring and the boiler, as shown and described.

3. The combination, with an outer nut and a thread on rod F, of the intermediate hollow 15 nut, J, threaded externally and internally, to form a close connection between the rod and springs, as described.

4. The combination, with the expansible chamber formed by the springs H I, of the disk R, secured to and above said springs and 20 fitting the cylinder A, whereby the springs will expand and contract directly upward, as described.

5. The combination, with the rod F, rigidly attached to a chamber expanded by steam, of 25 the lever L, rod N, lever O, and valve P, the latter arranged in the boiler-furnace flue Q, as shown and described.

ISAAC CUMBERBATCH.

Witnesses:

JAMES T. GRAHAM,
C. SEDGWICK.