

(No Model.)

J. A. HOUSE & C. H. DIMOND.

AUTOMATIC DAMPER REGULATOR.

No. 310,943.

Patented Jan. 20, 1885.

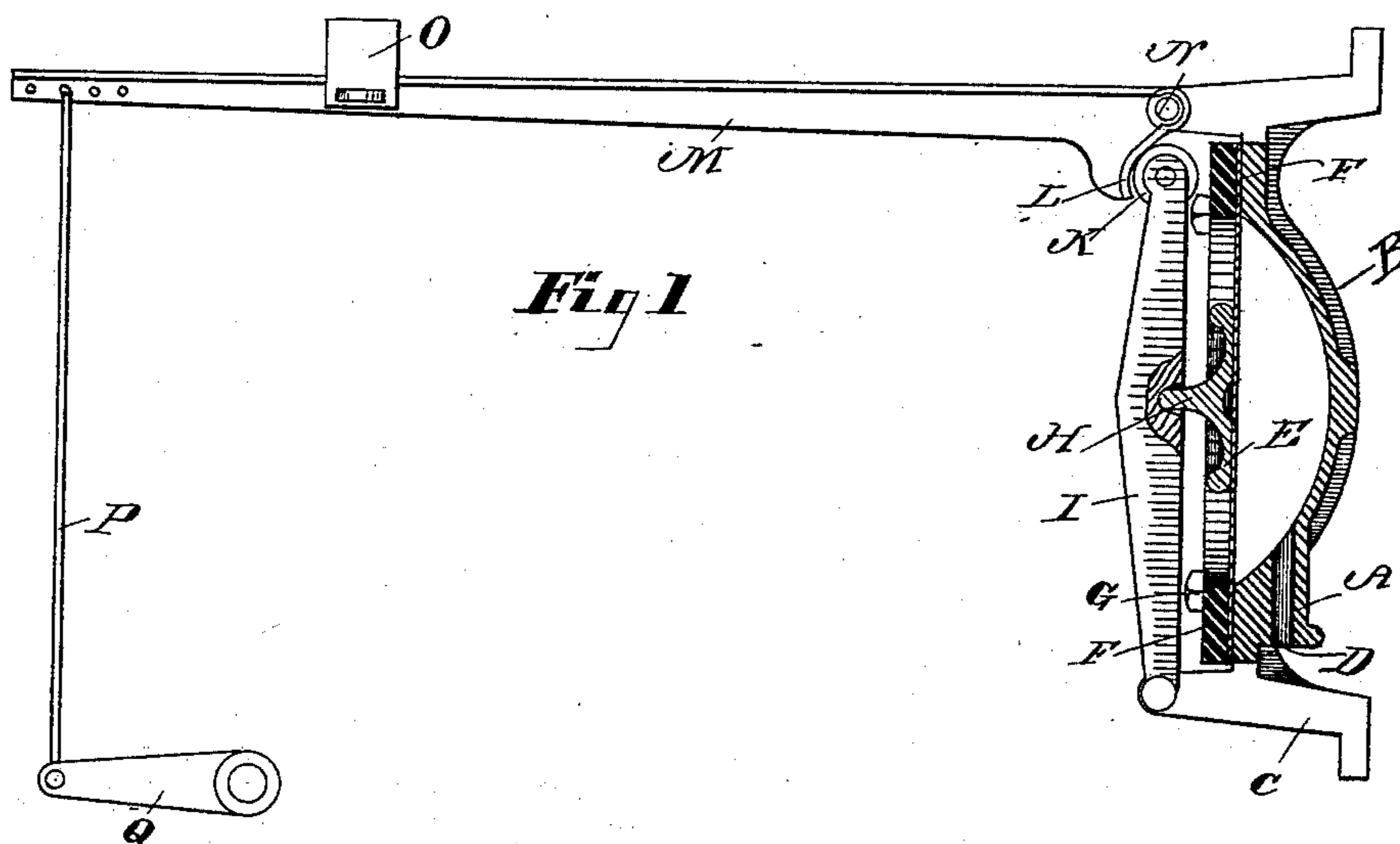
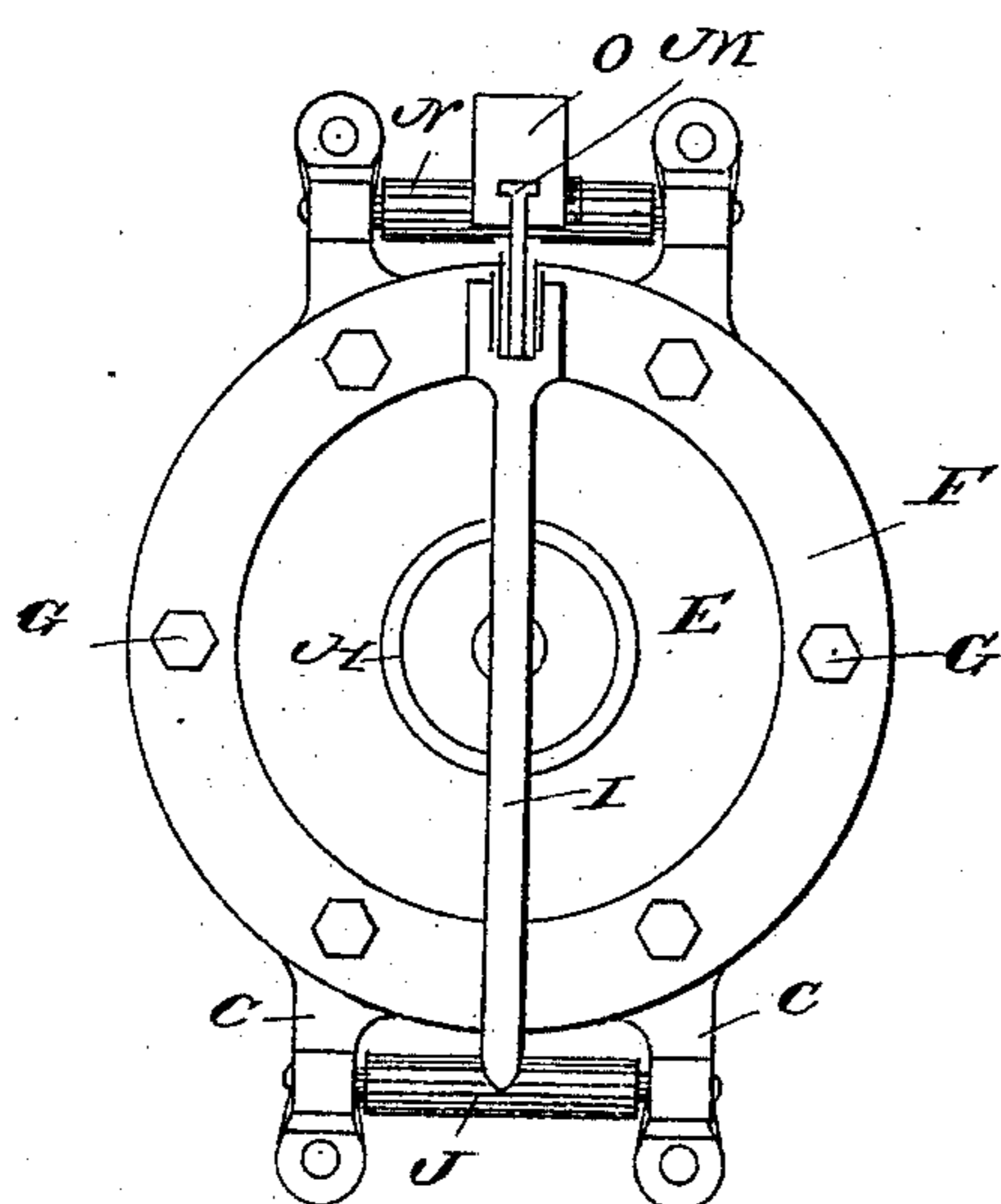


Fig 2



Witnesses

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# UNITED STATES PATENT OFFICE.

JAMES ALFORD HOUSE AND CHARLES H. DIMOND, OF BRIDGEPORT, CONN.

## AUTOMATIC DAMPER-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 310,943, dated January 20, 1885.

Application filed June 10, 1884. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES ALFORD HOUSE and CHARLES H. DIMOND, citizens of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Automatic Damper-Regulators; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to certain novel and useful improvements in automatic damper-regulators, and has for its object to provide a device adapted to be connected with an ordinary steam-boiler, and which will, by means of the pressure of the steam within the boiler, open or close the damper controlling the draft in the chimney, and so keep the steam at any pressure desired; and with these ends in view our invention consists in the details of construction and combination of elements, hereinafter fully and in detail explained, and then specifically designated by the claims.

In order that those skilled in the art to which our invention appertains may more fully understand its construction and operation and how to make and use the same, we will proceed to describe our improvement, referring by letter to the accompanying drawings, forming a part of this specification, in which—

Figure 1 shows a central vertical section of the compartment-diaphragm and gasket-ring of our improvement, and having the weighted arm attached and connected by a link or rod with the damper-lever; and Fig. 2, a front elevation of our improvement.

A is a reservoir or chamber, of metal, provided with a re-enforcement, B, at its rear side; and C is a frame adapted to be secured to the chimney or other stationary object in sufficient proximity to the chimney or smoke-stack to admit of the use of a damper-arm of reasonable length. From the interior of the chamber extends an opening, D, adapted to receive a tube connected with the boiler.

E is a diaphragm, which we preferably make of vulcanized rubber, but which may be made from sheet metal or other elastic substance, and which covers and closes the front of the chamber A, in which position it is held by the

gasket-ring F, firmly fastened to the chamber A by screws G, which pass through the ring and diaphragm and hold in the metal forming the chamber.

H is a cap, whose rear surface is adapted to rest against the surface of the diaphragm, and whose forward end rests within an opening in the bar I, whose lower end is pivotally attached to the frame C by means of the short shaft J.

K is a roller journaled in the upper end of the bar I, and bearing against the cam-surface L of the arm M, which is pivoted to the frame at N.

O is a weight sliding upon the arm M, and by means of which the pressure at which the damper shall open and close may be regulated.

P is any ordinary link or connection from arm M to the crank Q, which controls the damper within the stack or chimney.

The operation of our improvement is as follows: When operatively attached to the boiler by means of a tube or pipe entering the chamber at D, steam will ascend the tube; but, on account of the distance from the boiler at which the apparatus is placed, it will reach the chamber in the form of water, which will be comparatively cold. The pressure of the steam in the boiler will of course exert a corresponding pressure upon the water within the chamber, and that pressure of the water tend to push the rubber diaphragm outward, and with it the cap H, whose rear end rests upon the diaphragm. The tendency of the pressure within the chamber is therefore to push the pivoted bar I outward, and by the action of the end of said bar on the arm M to raise said arm and close the damper.

The construction of the cam-surface L is such that the pressure on the bar must be sufficient to overcome the resistance of the weight O before the arm will be raised at all and the damper closed, and also such that when raised it will by continued pressure be retained in that position until the force is removed, and the weight O, descending once again, opens the damper and gives renewed draft through the stack. The weight O may of course be moved upon the arm so as to adjust the opening and closing of the damper at any desired pressure, as in ordinary safety-valves.

In some cases the chamber may not be en-

5 tirely filled with water, but partly with water and partly with air; but it is not material, for the pressure will be exerted from the boiler through the tube and the operation of the mechanism be the same, though no water should be in the chamber. The chamber will, however, ordinarily contain some water from the condensation of steam in its passage up the tube.

10 We do not wish to be confined to the application of our improvements solely to the damper within the chimney, as it may with equal facility be used to operate the draft beneath the grate-bars.

15 Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

20 1. In a damper-regulator, the diaphragm held to the chamber by the gasket-ring, in combination with a cap, as described, resting against said diaphragm, and adapted to actuate a pivoted bar, substantially as set forth.

2. The bar pivotally attached to the frame, and provided at its upper end with an anti-friction roller, in combination with a weighted arm having at its point of contact with the roller a cam-surface upon which said roller may act, substantially as described. 25

3. In a damper-regulator, the combination, with the chamber A, having outlet D, of the diaphragm E, ring F, cap H, pivoted bar I, having roller K, and arm M, pivoted with cam-surface L, all arranged as described, and for the purpose set forth. 30

In testimony whereof we affix our signatures 35 in presence of two witnesses.

JAMES ALFORD HOUSE.  
CHARLES H. DIMOND.

Witnesses:

JAMES CARR,  
FRANK GOODSSELL.