A. C. WARREN.

Dampers for Hot-Air Furnaces.

No. 136,291. Patented Feb. 25, 1873.

Fig. 1.

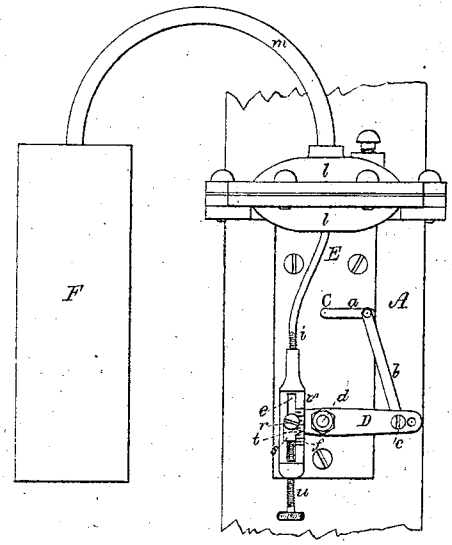


Fig. 2.

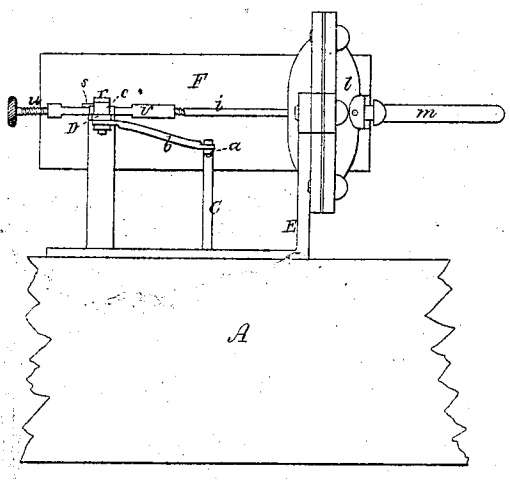
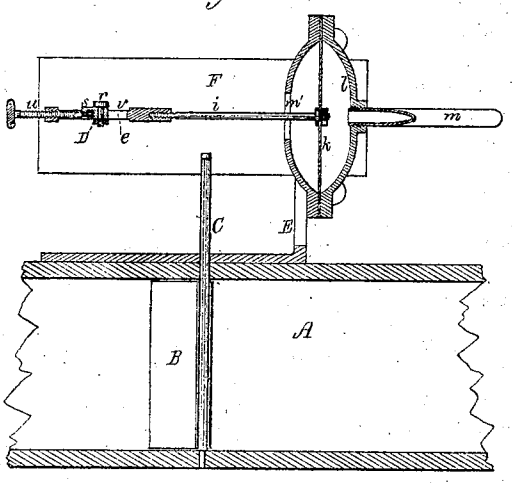


Fig. 3.



Witnesses.
S. W. Piper
L. N. Möller.

Amos C. Warren.
by his attorney.
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UNITED STATES PATENT OFFICE.

AMOS C. WARREN, OF CONCORD, NEW HAMPSHIRE.

IMPROVEMENT IN DAMPERS FOR HOT-AIR FURNACES.

Specification forming part of Letters Patent No. **136,291**, dated February 25, 1873.

To all whom it may concern:

Be it known that I, AMOS C. WARREN, of Concord, of the county of Merrimac and State of New Hampshire, have invented an Improvement in Mechanism for Regulating the Flow of Air into the Air-Heating Chamber of a Hot-Air Furnace for warming a building; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawing, of which—

Figure 1 is a top view, Fig. 2 a front elevation, and Fig. 3 a longitudinal section, of my improved air-regulator.

It is shown as applied to the air box or conduit for the supply of air to the air-heating chamber of the furnace, such conduit being represented at A, and as having a valve or damper, B, arranged within it and upon a spindle, C, all as usual. From the upper part of the spindle an arm, *a*, is projected at a right angle to the spindle, and is pivoted to a connecting-rod, *b*, at or near one end thereof. The said rod, at or near its other end, is supported by and so as to turn on a pivot, *c*, so applied to the longer arm of a lever, D, as to be capable of being moved either toward or away from the fulcrum *d* of such lever, and of being clamped in position in either of two or more holes made in such arm. To the shorter arm of the lever D a rod, *i*, is pivoted, such rod being extended from the central part of an elastic diaphragm, *k*, going across a hollow case, *l*, which, next to the lever D, is open, as shown at *m'*. Such case and the fulcrum of the lever D are supported by a bracket, E, erected on or fixed to the air-box or conduit A. The rod *i* has a head, *v*, which is slotted lengthwise, as shown at *e*, and may be provided with a scale of divisions, as shown at *f*. The pivot *r* extends up through a block, *s*, which, arranged in the slot, is provided with an index-point, *t*, and so connected with an adjusting-screw, *u*, screwed into the bar, as to be movable by such screw longitudinally in the slot in either direction, or toward and away from either extreme of the slot. A pipe, *m*, leading out of the case *l* in manner as shown, extends to and opens into a hollow drum or cylinder F, which, when the apparatus is in use, is to be arranged within the air-heating chamber of the furnace. As the temperature of the air within such chamber may either increase or diminish so will the air within the drum be expanded or contracted, and, as a consequence, the diaphragm will be moved so as, through the rod *i*, to move the lever D, and thereby cause the damper to be moved or turned within the air-box or duct.

In apparatus of the kind it has been customary to connect the rod *i* directly with the arm of the damper-spindle; but in carrying out my invention I do not do this, but make use of the slotted head of the rod *i*, the adjustable pivot *r*, and the connecting-rod *b*, such devices enabling me to adjust the damper to any angular position in the conduit, in order to have it more or less open at the commencement of pressure on the diaphragm—a matter which is very important—in order to have a due amount of air supplied by the air-duct, as it is not desirable to have the damper closed so as to prevent any ingress of air. With my apparatus the column of air to be admitted may be increased or diminished without being stopped; or, in fact, it may be regulated to much better advantage than it could be were the rod of the diaphragm attached directly to the arm of the spindle.

I make no claim to the cylinder F, the case *l*, diaphragm *k*, and diaphragm-rod *i*, arranged and connected substantially as described and shown, and for application to a damper.

What I claim as my invention is—

1. The combination of the connecting-rod *b*, the lever D, the adjustable pivot *r*, the slotted head *v*, the screw *u*, and block *s*, such being for application to the diaphragm and the damper, in manner as shown and described.

2. The combination of the rod *b*, the lever D, adjustable pivot *r*, slotted head *v*, the screw *u*, and block *s* with the rod *i*, the diaphragm *k*, the case *l*, the pipe *m*, and the drum or cylinder F, all being constructed, arranged, and applied together, substantially as explained and shown.

AMOS C. WARREN.

Witnesses:

R. H. EDDY,

J. R. SNOW.