E. L. DODGE.

Automatic Heat-Regulator for Furnaces.

No. 218,718. Patented Aug. 19, 1879.

Fig. 1.

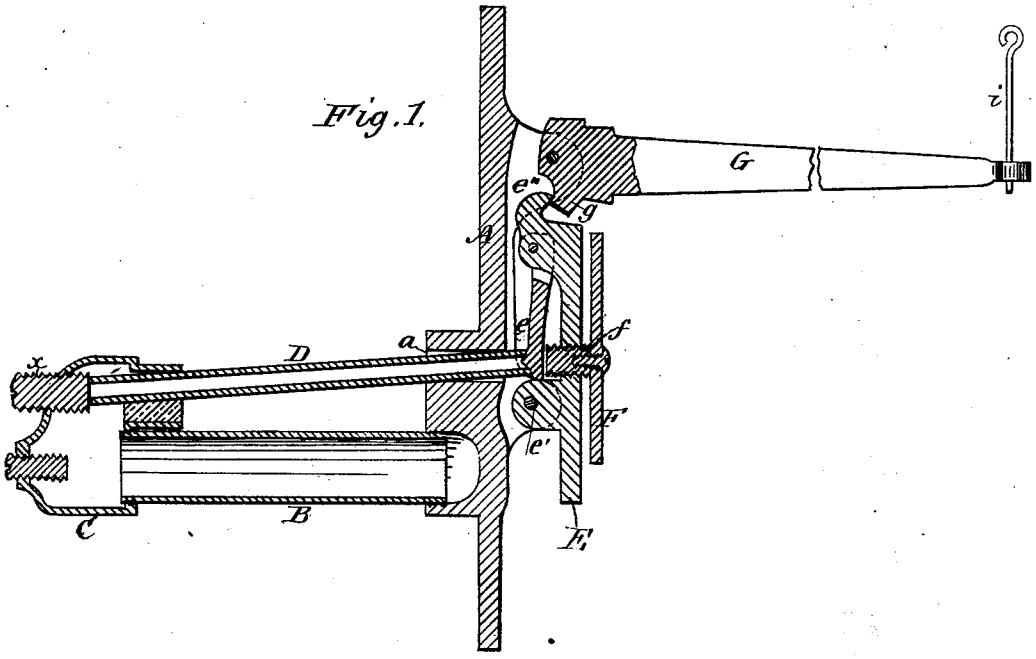
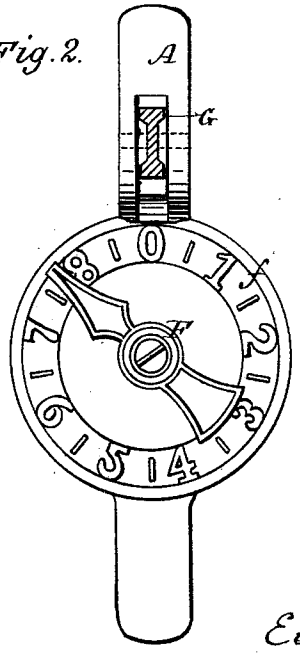


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

EDWIN L. DODGE, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN AUTOMATIC HEAT-REGULATORS FOR FURNACES.

Specification forming part of Letters Patent No. **218,718**, dated August 19, 1879; application filed June 9, 1879.

To all whom it may concern:

Be it known that I, EDWIN L. DODGE, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Automatic Heat-Regulators for Furnaces, of which the following is a specification.

Figure 1 is a vertical central section of the device. Fig. 2 is a front view of the dial and index-hand.

This invention relates to that class of devices denominated "automatic heat-regulators for furnaces;" and the novelty consists in the construction and combination of the several parts, all as I will now more in detail set out and explain.

In the accompanying drawings, A is the head-piece, suitably fixed in the furnace-wall, and to its rear side is secured the large hollow tube or bar B, of expansible metal. The other end of this tube is held in the metal socket *c*. Above this tube or bar B is a smaller tube or rod, D, of non-expansible or very slightly expansible metal or material. The outer end of this is fixed in the said socket *c*, and the inner is so adapted in the enlarged opening *a* in the head-piece A that it can move in and out freely. In the forward movements of such play this end of said tube or bar will act on the lower end of the pendent arm *e*, which is pivoted in the upper edge or part of the index-plate E. This plate E, being pivoted below its center, at *e'*, in ears on the front of head A, will, when the end of rod D presses on the lower end of the pendent arm *e*, its upper end hinged in the top part of E, be caused to tilt outwardly at the top. This pendent arm *e* may be set forward toward the head of the rod D by means of the screw *f*, which passes centrally through the plate E, and is operated by the dial-hand F, (which can be moved over the dial-face *f'*,) so as to regulate the limit of the action of the plate E.

The hinged arm *e* is designed to be so constructed and fitted in place that it will supply a sure and certain bearing between D and E.

This forward-tilting motion of the plate E is communicated to the lever G, pivoted in the face of the head A above the plate E, by means of the projection *e''* on the inner upper edge of the plate E, which, engaging on the downward projection *g* on the heel of the lever, will, as the rod D is pressed forward, cause the said lever to rise, and, by the reverse movement, allow it to fall. These motions are gained by means of the expansion under heat of the hollow tube or bar B, which, carrying the socket *c*, causes the rod D to be withdrawn from pendent arm *e*, and as the tube or bar B becomes cool the rod D will be forced toward *e*.

The movements of the lever G are communicated to the damper of the furnace by means of rod or chain *i*, or in any convenient way.

The device in use is so placed in the furnace that the expansible and non-expansible parts shall be within the hot-air chambers, and thus be readily affected by the inner temperature of the furnace.

The screw-plug *x* in the socket *c* serves to adjust the rod D so as to make it project exactly to the proper distance for effective operation against the parts that move the damper-lever.

I am aware that thermostats and other automatic devices have been heretofore used for regulating dampers, and that in some of these rods have been employed; also expansible tubes filled with non-expansible rods, and in other ways the same end has been attained; but none of these devices presents the special points or features which constitute my invention as set out and claimed.

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

1. The combination of head A, having slot or opening *a*, expansible bar or tube B, socket *c*, and non-expansible bar or tube D, with the pivoted plate E, having pendent arm *e*, adjustable by screw *f* and projection *e''*, acting on lever G, substantially in the manner and for the purposes set forth.

2. In an automatic heat-regulator, substantially as described, the combination of the hinged plate E, having pendent arm *e*, adjustable by the dial-screw *f* and projection *e''* on its upper edge, with lever G, having projection *g*, substantially in the manner and for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

EDWIN LUTHER DODGE.

Witnesses:

GEO. H. TOWLE,

FRED. NOURSE.