

A. C. NORCROSS.

AUTOMATIC HEAT REGULATOR FOR FURNACE.

No. 175,375

Patented March 28, 1876.

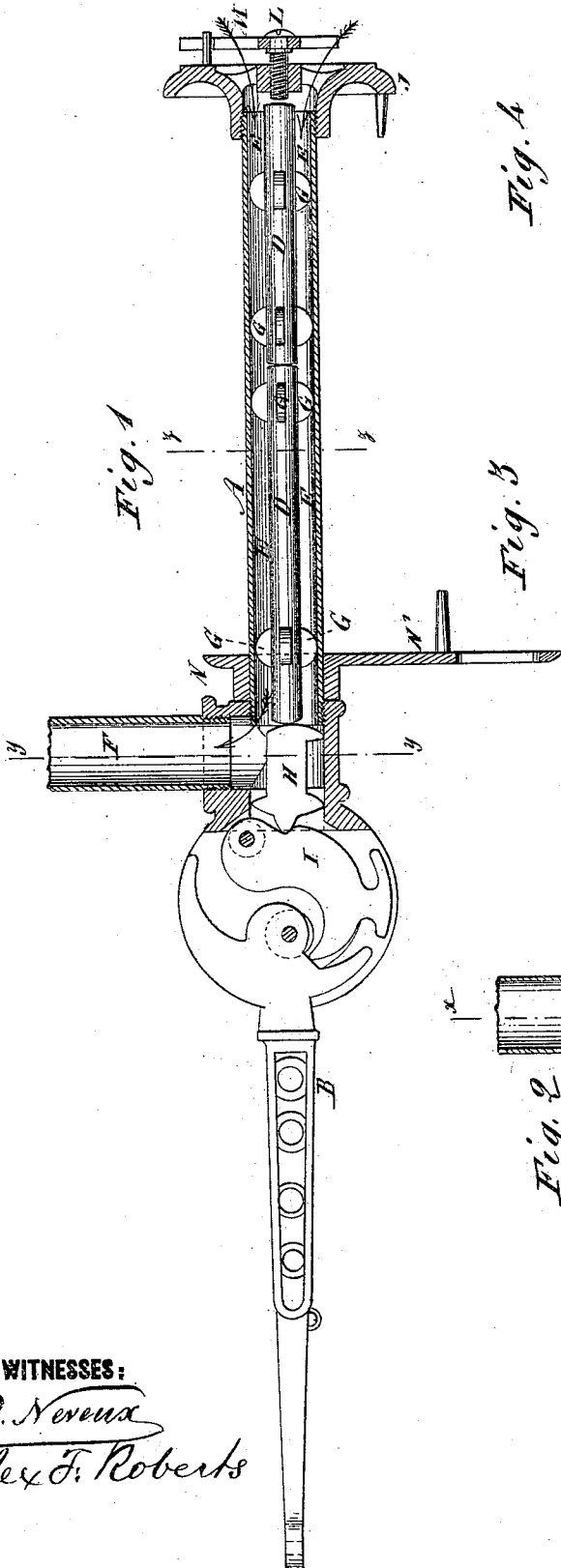


Fig. 1

Fig. 4

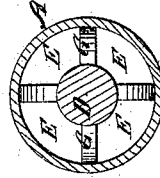


Fig. 3

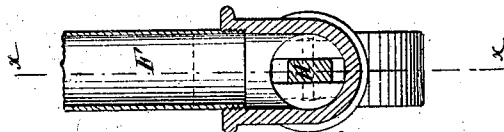
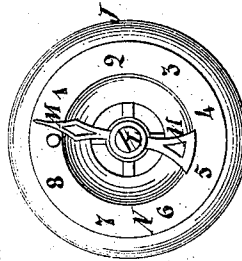


Fig. 2

WITNESSES:

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UNITED STATES PATENT OFFICE.

ALVIN C. NORCROSS, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN AUTOMATIC HEAT-REGULATORS FOR FURNACES.

Specification forming part of Letters Patent No. **175,375**, dated March 28, 1876; application filed October 16, 1875.

To all whom it may concern:

Be it known that I, ALVIN C. NORCROSS, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Automatic Heat-Regulator for Furnaces, of which the following is a specification:

My invention relates to automatic regulators for furnaces, consisting of one expanding and contracting part and another non-expanding, or comparatively non-expanding, part, so placed in the furnace as to be subject to the heat of the furnace for working the regulator by the expanding and contracting part as the heat rises and falls; and the invention consists of the part which is not required to expand located within a tubular expanding part having provision for a current of air to flow through it from outside of the furnace to keep the other part from heating, the object being to enable a metal rod of ordinary expanding and contracting qualities to be used where a substance of non-expanding properties has been heretofore required.

The air-current also causes a quicker action of the contracting part when the heat of the furnace falls, and thus makes the regulator more sensitive.

The air will be taken from outside of the building to utilize the variations of the exterior temperature, to facilitate the responsive action of the regulator to the requirements of colder or warmer weather.

My invention also consists of the inclosed rod having radial flanges or studs, in combination with the inclosing-tube for centering it in said tube, so that the current of air passing through the tube will circulate all around it.

Figure 1 is a longitudinal sectional elevation of my improved regulator, the section being taken on line *xx*. Fig. 2 is a transverse section on line *yy* of Fig. 1. Fig. 3 is a front elevation of the indicator of the regulator, and Fig. 4 is a transverse section on line *yy*.

Similar letters of reference indicate corresponding parts.

A is the expanding and contracting tube for working the regulating-lever B with the variations of the heat. D is the inclosed rod, which is required not to expand. This rod

I now propose to arrange inside of tube A, which I make enough larger than the rod to afford ample space for a current of air wholly surrounding the rod, and provide inlet-openings at E, and a draft flue or tube at F, to effect the circulation, the inlet and draft flue being in communication with the exterior atmosphere, while the rod and the tube are mostly located within the heating-chamber of the furnace.

In order to maintain the rod in the center of the tube, so that it shall be exposed alike on all sides to the air, I provide the rod with radial studs or flanges G, which keep it in the middle, as shown.

In practice, the inclosed rod will, when arranged to push, be made of a number of short sections of different lengths; to facilitate the filling of the regulators to furnaces of different sizes without having to cut the rods when pulling them up; but when made to pull it will be made of one piece.

The tube F may connect with the chimney, for facilitating the draft or not, as preferred.

J is a cap for connection to the outside of the furnace-wall, for the support of the tube D, the air-inlets being made in it, and it supports an adjusting-screw, L, for setting the rod to alter the regulator, as may be required, from time to time. This screw also carries a pointer or index-finder, M, in connection with the dial N on cap O, by which to set the screw to any required position.

N is a keeper, for the support of the tube at the other side of the furnace. The regulator is arranged horizontally across the hot-air chamber of the furnace, extending through the walls at the cup and the keeper.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of expanding-tube A, non-expanding rod D, intermediate air-channel E, and a tube, F, forming a draft-flue, as and for the purpose specified.

2. The regulating-rod, having the radial studs G, in combination with the inclosing-tube, substantially as specified.

ALVIN C. NORCROSS.

Witnesses:

T. B. MOSHER,
ALEX. F. ROBERTS.