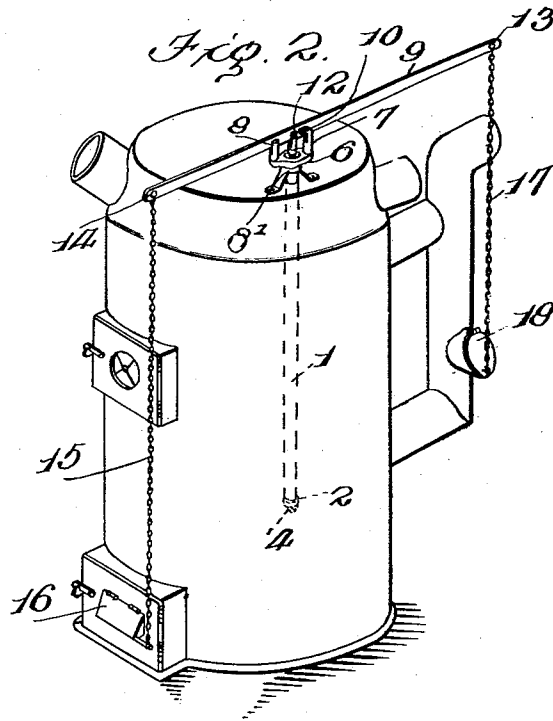
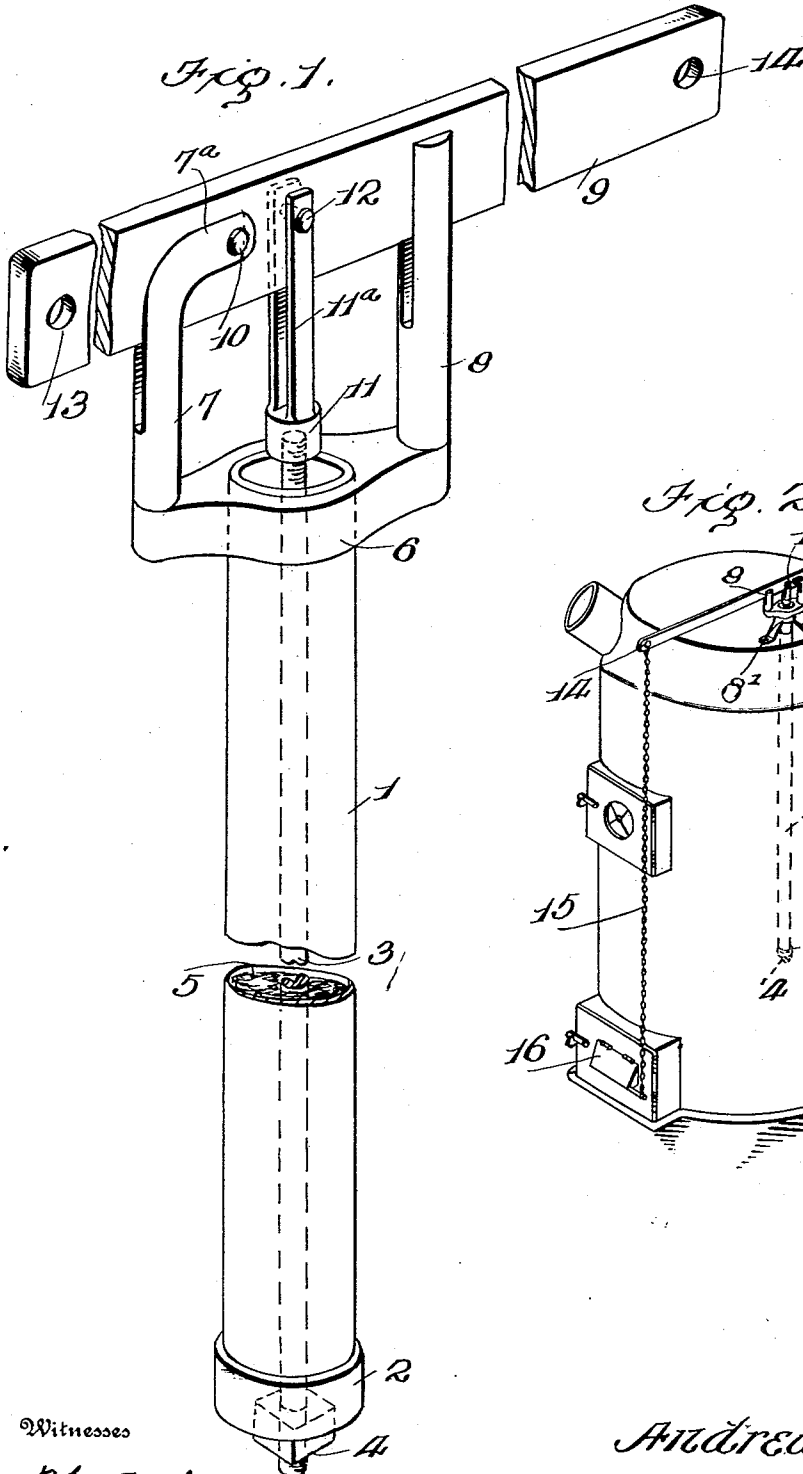


A. STEWART.
FURNACE REGULATOR.
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969,669.

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Witnesses

W. A. Williams.

W. S. Hudson

Inventor

Andrew Stewart

By

Tha. May.

Attorneys

UNITED STATES PATENT OFFICE.

ANDREW STEWART, OF UHRICHSVILLE. OHIO.

FURNACE-REGULATOR.

969,669.

Specification of Letters Patent.

Patented Sept. 6, 1910.

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To all whom it may concern:

Be it known that I, ANDREW STEWART, a citizen of the United States, residing at Uhrichsville, in the county of Tuscarawas and State of Ohio, have invented certain new and useful Improvements in Furnace-Regulators, of which the following is a specification.

The present invention relates to a novel means for automatically controlling the fire within a furnace whereby a house or other building may be maintained at a uniform temperature regardless of whether or not the operator be an inexperienced person.

The invention further contemplates a regulator of this character which will hold the fire in check and thus produce a saving in fuel, but which at the same time will not permit the fire to become low and thereby bring about a lowering of the temperature within the house as long as the furnace is supplied with fuel.

The object of the invention is the provision of a furnace regulator which is simple and durable in its construction and will operate in a positive manner to control the draft and regulate the fire.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a detached perspective view of the improved furnace regulator, portions being broken away. Fig. 2 is a view showing the regulator applied to a furnace.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Specifically describing the present embodiment of the invention the numeral 1 designates a metallic pipe or tube which for an ordinary furnace is approximately five feet long and is applied to the furnace so that it will be disposed close to the casting which contains the fire and be acted upon by the heat. This tube 1 is designed to actuate the regulator by the expansion and contraction produced therein by changes of temperature and is preferably formed of copper since that metal has a comparatively large coefficient of expansion.

Threaded upon the lower end of the tube 1 is a cap 2 which is provided with a central

opening receiving a rod 3 which extends upwardly through the tube, the lower end of the rod being threaded and receiving a nut 4 which normally bears against the cap 2. The space between the rod 3 and the tube 1 is filled with some non-heat conducting material 5 such as asbestos.

Applied to the upper end of the tube 1 is a head 6, the said head projecting laterally upon opposite sides of the tube and being formed with the upwardly extending arms 7 and 8. Both of these arms are bifurcated at their upper ends and the extremity of the arm 7 is deflected inwardly at 7^a. A lever 9 which is loosely received within the bifurcated upper ends of the arms 7 and 8 is pivotally mounted at an intermediate point upon a pin 10 at the extremity of the inwardly deflected portion 7^a of the arm 7. A sleeve or casting 11 is threaded upon the upper end of the rod 3 and is formed with the spaced extensions 11^a which project upwardly upon opposite sides of the lever 9 and are pivotally connected thereto at 12. By means of this screw-threaded sleeve 11, the position of the arm 9 may be regulated so that the furnace draft doors may be properly opened and closed to the extent desired. It will thus be obvious that any relative longitudinal movement of the tube 1 and rod 3 such as that produced by the expansion and contraction due to changes in temperature will operate to produce a swinging movement of the lever 9.

The tube 1 extends through an opening in the top of the furnace casing and is supported within the latter by means of a bracket 8', secured to the top of said casing and bearing against the lower surface of the head 6, as best shown in Fig. 2 of the drawing.

The usual length of the lever 9 would be approximately six feet and the two ends of the lever are shown as provided with the openings 13 and 14 respectively. The opening 14 is directly connected by a link such as the chain 15 to the direct draft door 16 of the furnace while the opening 13 is connected in a similar manner by a chain 17 to the check draft 18 on the smoke pipe, the various parts being so adjusted that when the furnace is cool the direct draft door is raised while the check draft is closed. As soon as the furnace becomes heated however the copper tube 1 expands and causes the rod 3 to pull downwardly upon the lever so that

the end of the lever provided with the opening 13 is lowered while the opposite end provided with the opening 14 is raised. When the lever is thus moved the direct draft door is lowered and the check draft opened so as to check or hold the fire. In this manner both the direct draft and the check draft are automatically regulated so as to maintain a uniform temperature in the house or building being heated.

Having thus described the invention, what is claimed as new is:

1. The combination with a furnace including a casing having an opening in the top thereof and provided with a draft door, of a bracket detachably secured to the top of the casing at said opening, a thermostatic tube having its body extending through the opening in the casing and contained within the furnace, said tube at its lower end being provided with a terminal cap, a head secured to the upper end of the tube supported on said bracket, said head being provided with a bifurcated standard at one end, a rod disposed within and extending longitudinally of the tube, said rod being small in cross section relatively to the tube and having one end thereof threaded and projecting through the cap and its upper end threaded and extending above the head, an internally screw-threaded sleeve engaging the upper threaded end of the rod, a nonheat-conducting packing located within the vertical tube and around the rod, an operating lever pivotally mounted on the upwardly extending arm on said head and pivotally connected to the sleeve, and flexible connections between the lever and said draft door.

2. The combination with a furnace includ-

ing a casing having an opening in the top thereof and provided with a direct draft and a check draft, a bracket secured to the top of the casing at said opening, a thermostatic tube suspended from the bracket and having its lower end extending through the opening in the casing and provided with a terminal cap, a head secured to the upper end of the tube and resting on said bracket, said head being extended laterally in a horizontal plane on opposite sides of the tube and provided with standards, the free ends of which are bifurcated, a rod disposed within and extending longitudinally of the tube and having its lower end threaded and projecting through the cap and its upper end threaded and extending above the head, an interiorly screw-threaded sleeve engaging the upper threaded end of the rod and provided with spaced vertically disposed arms, said rod being spaced from the interior walls of the tube to form a circumferential chamber adapted to receive a non-heat conducting packing, an operating lever pivotally mounted between said arms and extending through the bifurcated ends of the standards, the upper end of one of said standards being bent laterally in the direction of the arms of the sleeve and pivotally connected with said lever in addition to the pivot pin of said arms and within the lines of the head, and flexible connections between the opposite ends of the lever and direct draft and check draft respectively.

In testimony whereof I affix my signature in presence of two witnesses.

ANDREW STEWART. [L. S.]

Witnesses:

R. W. BURNS,

D. I. THOMPSON.