

O. F. LAWRENCE.
FURNACE REGULATOR.
APPLICATION FILED APR. 23, 1909.

954,036.

Patented Apr. 5, 1910.

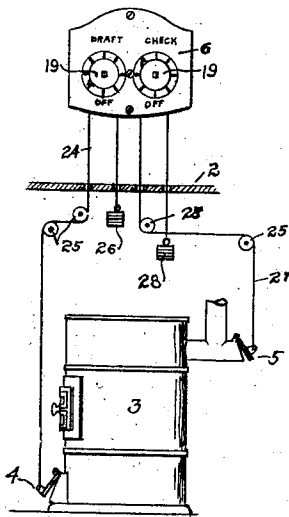


Fig. 1.

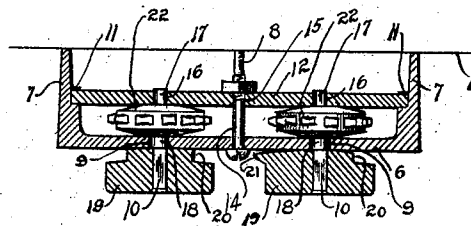


Fig. 3.

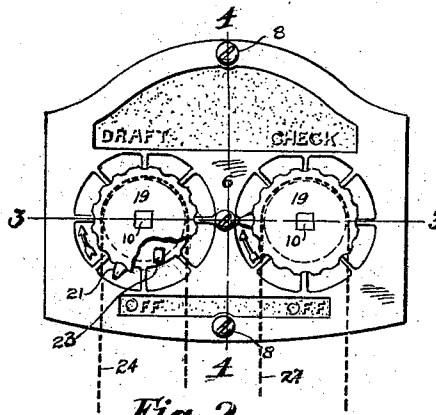


Fig. 2.

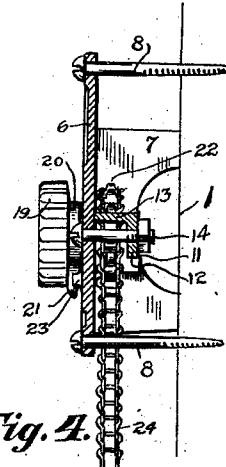


Fig. 4.

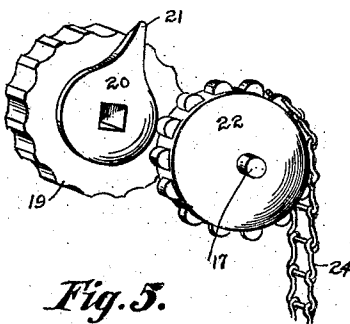


Fig. 5.

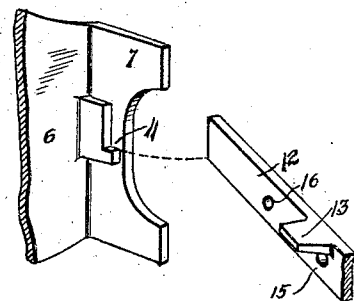


Fig. 6.

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ORRIN F. LAWRENCE, OF CANTON, OHIO.

FURNACE-REGULATOR.

954,036.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed April 23, 1909. Serial No. 491,796.

To all whom it may concern:

Be it known that I, ORRIN F. LAWRENCE, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented a new and useful Furnace-Regulator, of which the following is a specification.

Furnaces and other heating apparatus for residences and the like are usually provided with what is termed a draft damper, which is adapted to be opened for the inlet of air to increase combustion, and also with what is known as a check damper, usually located on the smoke pipe leading from the furnace to the flue and designed, when opened, to admit air into the said pipe for the purpose of reducing the amount of draft and thereby checking combustion. Devices for opening the draft and check dampers of furnaces from a distance, and especially from the floor above the furnace are of extreme importance.

My invention relates to an improvement in the construction of such devices, the object being to provide a furnace regulator whereby the two dampers may be independently and accurately regulated from a distance in a convenient manner. I attain this object, together with other objects readily apparent to those skilled in the art, by the construction illustrated in the accompanying drawing in which—

Figure 1 is an elevation illustrating a furnace regulator embodying my invention and its appropriate connection and arrangement with reference to a furnace. Fig. 2 is a front elevation of the regulator. Fig. 3 is a horizontal section on the line 3—3 of Fig. 2. Fig. 4 is a vertical section on the line 4—4 of Fig. 2. Fig. 5 is a detached perspective view of one of the indicator knobs, one of the sprockets and a portion of the chain adapted to be arranged on said sprocket. Fig. 6 is a fragmentary view illustrating a detail of construction and showing the method of supporting the cross-piece provided with the rear sprocket bearings.

In the drawings the numeral 1 indicates the wall line, 2 is a floor of a room.

3 is a furnace of ordinary construction of

which 4 is a draft damper and 5 is the check damper.

The regulator frame is preferably formed with a front flat portion 6 adapted to lie in a perpendicular plane, and integral rearwardly extending wall flanges 7 adapted to rest against the wall when the device is properly arranged as illustrated in Figs. 3 and 4. In the front portion 6 are arranged appropriate apertures through which fastening screws 8 may extend into the wall for the purpose of supporting the device. In the front 6 are also arranged spaced apertures at 9, which apertures form the front bearings for the sprocket shafts 10. Formed upon the inner sides of the wall flanges 7 are ledges 11, upon and against which the ends of the cross-piece 12 may bear. Intermediate the ends of the cross-piece 12 is a forwardly extending lug 13 adapted to engage the back surface of the front 6 for the purpose of properly spacing the said front and cross-piece from each other. For the purpose of maintaining the cross-piece properly in place a bolt 14 or its equivalent extends through the front 6 and through the aperture 15 in the cross-piece to clamp the said front and cross-piece together. In the cross-piece 11 are arranged apertures 16 forming the rear bearings for the sprocket shafts 10.

The portions 17 and 18 of the sprocket shafts are rounded and adapted to rotate within the apertures 9 and the apertures 16. From the portions 18 forwardly the shafts 10 are squared and adapted to enter squared apertures in the indicator knobs. The indicator knobs are preferably of the form illustrated in Fig. 5 and comprise a rounded knob portion 19 and indicator portion 20, the indicator portion forming a boss around the squared aperture and having a projection terminating in a pointer, 21, extending beyond the periphery of the knob portion for the purpose which will hereinafter more fully appear. Fixedly mounted upon the sprocket shafts are the sprockets 22 each of which consists of a thick disk or wheel provided upon its periphery with teeth or projections adapted to engage the links of a chain, as illustrated in Fig. 5.

Upon the front surface of the front por-

tion 6 and concentrically arranged with reference to the spaced apertures at 9 are series of depressions forming graduations over which the pointer 21 is adapted to move when the knobs 19 are rotated. Upon the front surface of the portion 6 and projecting therefrom at a point between the edge of the indicator portion 20 and the periphery of the knob portion 19 is a lug 23 which prevents the further rotation of the knob 19 when the projection of the portion 20 comes into engagement with said lug, as illustrated in Fig. 4. It will be understood that each of the knobs is provided with a device of this character and that the purpose is to prevent the accidental turning of the knob in the wrong direction. The location of each lug 23 is preferably such that when the knob 19 is stopped in its rotation by such lug the pointer 21 will be extended directly downwardly.

If desired, an arrow or other indicating symbol may be arranged upon the face of the portion 6 to show the proper direction for turning the knobs 19 in opening the dampers. Some means of differentiating the draft from the check knobs may be provided if desired such as the words "Draft" and "Check" as illustrated in Fig.

2. The word "Off" may also be arranged at the bottommost point of the annular graduations to indicate that when the pointer 21 is directed to such word the corresponding damper of the furnace is closed.

The chain 24 is connected to the draft damper 4 and runs over the guide pulleys, 25, whence it extends upwardly and over the sprocket 22 on the "draft" side of the regulator, thence downwardly, again through the floor 2, and is provided with a counter-balancing weight 26. This weight 26 is adapted to substantially counter-balance the weight of the draft damper 4 so that there may be no tendency to a further opening or closing of the said damper when it has been adjusted according to the desire of the operator. In a similar manner the chain 27 is connected to the check damper 5, runs over the guide pulleys, 25, and over the sprocket 22 of the "check" side of the regulator. The weight 28 is adapted to counter-balance the check damper 5.

It will be understood that when the pointers 21 are directed downwardly both draft and check dampers will be in their closed positions. It will then be possible to operate either damper by turning the appropriate knob. When the knob is turned the corresponding sprocket will be also turned or rotated, thus operating the corresponding chain in the direction desired to open or to close the damper as the case may be.

It should be noted that the draft and check sides of the regulator are entirely in-

dependent of each other in so far as their operation is concerned and that it is not necessary to open one damper when the other is closed, as is commonly the practice in constructions heretofore employed. In the operation of the device it should also be noted that the pointers, 21, moving over the annularly arranged graduations on the front portion 6 will indicate in an accurate manner the amount of movement of the corresponding dampers.

It will be seen from the above that the device described and illustrated is well adapted to accomplish the result desired and that the construction is such as to render the cost of manufacture of the device extremely small in view of the efficiency, accuracy and the convenience of the device in use.

I claim:

1. In a device of the character described, a furnace provided with a draft damper and a check damper, a regulator frame provided with bearings, a cross-piece arranged at the back of and spaced from said regulator frame, said cross-piece provided with bearings corresponding with the bearings in said regulator frame, sprocket shafts journaled in the bearings in said frame and cross-piece, indicator knobs comprising rounded portions and indicator portions, said indicator knobs arranged on said sprocket shafts, sprockets mounted upon said sprocket shafts intermediate said indicator frame and said cross-piece, said regulator frame provided with graduations over which the said indicator portions of said indicator knobs are adapted to move and chains connected to said draft and check dampers respectively, extending over separate sprockets, and provided with separate counter-balancing weights.

2. In a furnace regulator of the class described a regulator frame comprising a front portion adapted to lie in a vertical plane, integral rearwardly extending wall flanges adapted to rest against the wall, means for connecting the said frame to the wall, said front portion provided with spaced apertures, a cross-piece extending between said wall flanges at the rear of said front portion, maintained in spaced relation with reference to said front portion, and provided with apertures, the spaced apertures in the said front portion and in the said cross-piece forming bearings for sprocket shafts, sprocket shafts journaled in said bearings, sprockets fixedly mounted upon said sprocket shafts between said front portion and said cross-piece, said sprocket shafts extending forwardly from the front face of the said front portion, indicator knobs fixedly mounted upon said forward extensions of said shafts, and provided with pointers, said front portion provided with annular graduations concentrically arranged

with reference to said shafts, said pointers
on said indicator knobs adapted to move
over said graduations, separate chains oper-
atively connected to the draft and to the
5 check damper of a furnace and extending
over separate sprockets, and means for coun-
terbalancing the weight of said dampers.

In testimony that I claim the above, I
have hereunto subscribed my name in the
presence of two witnesses.

ORRIN F. LAWRENCE.

Witnesses:

LAURA R. KLINE,
WILLIAM H. MILLER.