

T. H. & F. RHODES.
DAMPER REGULATOR FOR FURNACES.
APPLICATION FILED DEC. 8, 1910.

1,055,655.

Patented Mar. 11, 1913.

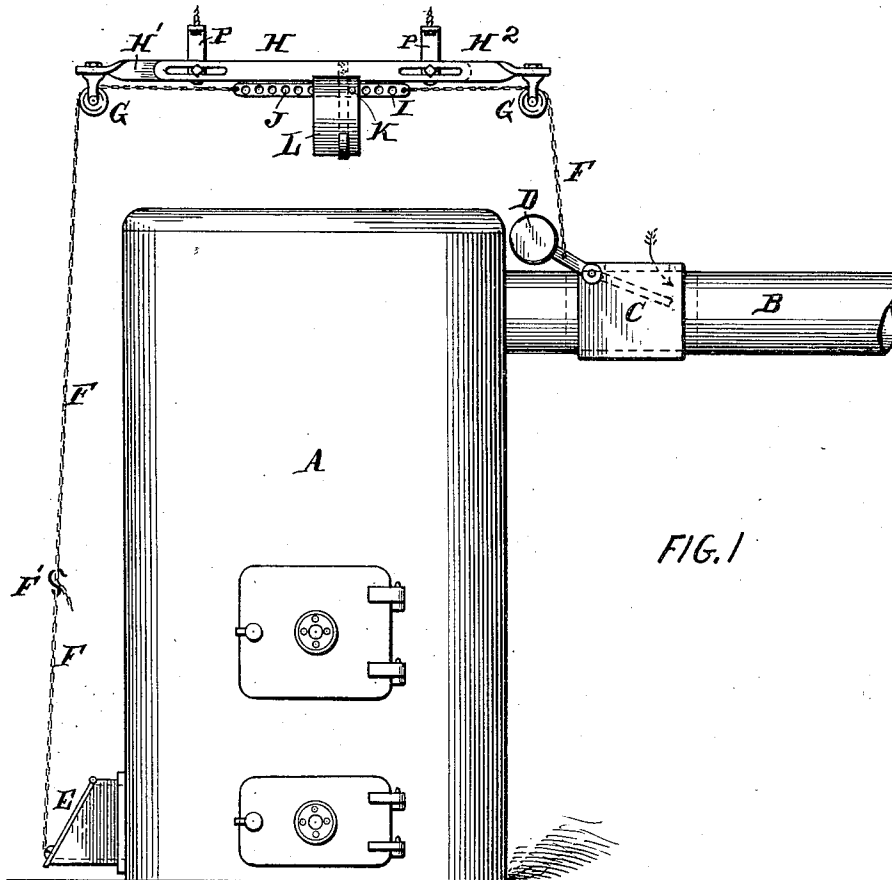


FIG. 1

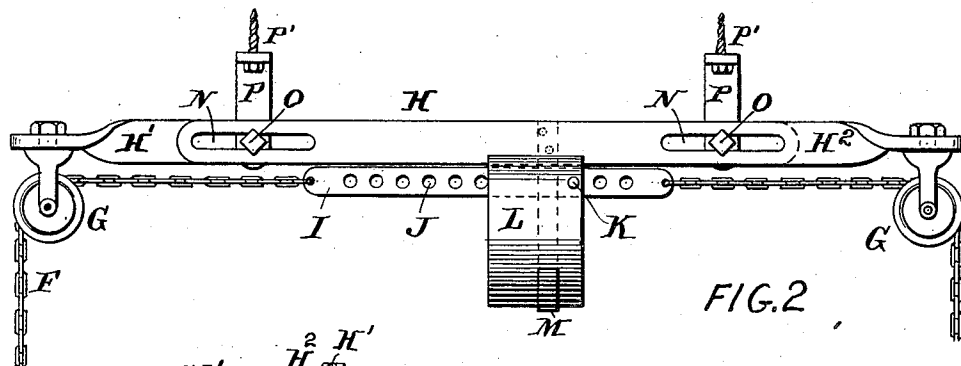


FIG. 2

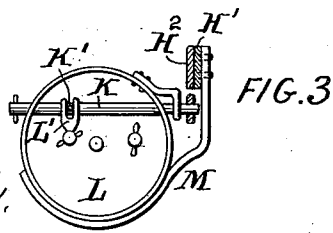


FIG. 3

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UNITED STATES PATENT OFFICE.

THOMAS H. RHODES AND FREDERICK RHODES, OF PHILADELPHIA, PENNSYLVANIA.

DAMPER-REGULATOR FOR FURNACES.

1,055,655.

Specification of Letters Patent.

Patented Mar. 11, 1913.

Application filed December 8, 1910. Serial No. 596,197.

To all whom it may concern:

Be it known that we, THOMAS H. RHODES and FREDERICK RHODES, both citizens of the United States, and residents of the city of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented an Improvement in Damper-Regulators for Furnaces, of which the following is a specification.

Our invention has reference to damper regulators for furnaces and consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings which form a part thereof.

The object of our invention is to provide a construction of damper regulator which shall have capacity for automatically putting on the draft of a furnace at a definite predetermined time, whereby it is possible to cause the furnace to automatically increase its temperature early in the morning before the occupants of the house find it desirable to arise. Heretofore, it has been necessary for some one to go to the cellar and properly adjust the dampers of the furnace to increase the temperature in the upper portion of the house, and it is to avoid this great inconvenience in houses not employing servants that our invention has its special utility.

Our invention consists essentially in providing the furnace with means to control the draft and combining therewith an automatic clock controlled mechanism which will act to permit the means for controlling the draft to come into operation to increase the draft at a definite time, said time being governed by the special appliances of the clock which are automatically actuated similarly to the operation which will cause an alarm at a definite hour.

Our invention also comprehends details of construction, which, together with features above specified, will be better understood by reference to the drawings, in which:—

Figure 1 is an elevation of a furnace having our improvements applied thereto; Fig. 2 is an enlarged view of a portion of Fig. 1 showing more clearly the details of con-

struction of our improved mechanism; and Fig. 3 is a cross section of the same looking toward the clock.

A is the furnace and may be of any ordinary or suitable construction.

B is the smoke pipe leading from the furnace and preferably provided with a draft controlled valve C which when open permits the air to enter the chimney pipe B and thus reduce the draft thereof upon the furnace.

E is the ordinary draft controlling damper to the ash pit of the furnace. When the damper E is closed and the valve C is open, there is little or no draft through the furnace, but when the damper E is open and the valve C closed, the draft will then be increased and it is the purpose of our invention to be able to make this change in the damper automatically and at a predetermined time.

F is a chain connected at one end to the damper E leading into the ash pit of the furnace and at the other end to a weighted lever D which is connected with the damper or valve C in the chimney. This chain is guided over two guide pulleys G G which are respectively above the damper E and the weighted lever D, and furthermore, the said chain has secured to it a rod I having a series of apertures J and said rod I may be considered as a link in the length of the chain.

L is a clock of any suitable construction and is provided with a transverse bolt K which engages the apertures in the rod I, and which bolt is operated by the lever L' acting upon a pin K' on the bolt K in such a manner that when the mechanism of the clock, such as any alarm clock for operating the alarm, is liberated at the predetermined time at which the dial is set, the lever L' draws the bolt K from the set position and liberates the link I and thereby frees the chain F and permits it to be actuated under the counterbalance lever D with the result that the valve or damper C is closed and the damper E is opened, so that the full draft is put upon the furnace in an automatic manner and at the predetermined time governed by the setting of the mechanism of the

clock which has heretofore been considered as the alarm mechanism. It is to be understood that the clock may be provided with an alarm mechanism, if desired, but the bell portion thereof would, of course, not be of any value in this improvement, and consequently my reference to the alarm mechanism of the clock is only employed for convenience in designating that portion of any ordinary clock which has heretofore been used to ring the bell or alarm, but which in the present case is utilized to withdraw the bolt K.

By providing a series of holes J, it is evident that the relative opening or closing of the two dampers E and C may be adjusted to that desired to insure the requisite draft being normally kept upon the furnace during the night; and while this is a convenient and satisfactory way of securing the said adjustment, it is evident that such adjustment may be made by other means, such as by employing a hook F' in the chain F to vary the length of the chain leading to the damper E, and thereby permitting the damper E to be opened or closed to a greater or less extent even though only a single aperture J was employed in the rod I.

As a convenient mode of connecting the guide wheels G and the clock mechanism L, in definite correlation and for attaching them to the cellar ceiling in a convenient manner, we provide the construction now to be described. A compound horizontal bar H is provided and consists of two superimposed slotted bars H' and H², to the opposite ends of which bars the respective guide wheels G are supported. The superimposed slotted bars H' and H² are secured together by means of bolts O passing through the slots N and engaging the hangers P, which may be secured to the floor joists overhead by means of the lag screws P'. By this construction, the distance apart of the two guide rollers G may be increased or decreased to suit the positions of the dampers on the furnace. From the bar H', there extends a downwardly projecting bracket M to which is secured the clock mechanism. Any other suitable means for guiding the chain and supporting the clock in proper correlation may be employed in lieu of that chain; and though I have shown the means as adapted for being secured to the joists overhead, it will be understood that the supporting frame H, of whatever character it may be, may be clamped to any convenient stationary part found in basements or cellars of buildings, such as pipes, walls or brackets of various characters, it being immaterial to our invention as to what kind of support is provided for this frame H, so long as the dampers are properly operated by the chains. It will also be understood that the mecha-

nism may be employed for operating the damper or valve C alone, or for operating the damper E alone, in those cases where only one of these dampers is employed. In the case of operating the damper C alone, the counterweighted arm D will close the damper whenever the bolt K is withdrawn, the end of the chain shown as connected with the damper E would in this case operate nothing but would merely be acting as a weight to hold the rod I horizontal. If the device was intended to operate the damper E alone, then the counterweighted lever D or an equivalent counterweight would be employed for the purpose of lifting this damper E, in which case the damper C would be omitted.

While we prefer the construction shown, we do not limit ourselves to the details thereof, as these may be modified in various ways without departing from the spirit of the invention.

Having now described our invention what we claim as new and desire to secure by Letters Patent is:—

1. A damper regulating means for furnaces, consisting in a damper to control the draft of the furnace, a chain to control the operation of the damper, a bar connected with the chain and having a series of apertures, a bolt adapted to engage one or other of the apertures of the bar to hold the damper in a preadjusted position to provide the minimum draft desired to be normally upon the furnace, and a clock mechanism provided with an automatic mechanism to operate the bolt at a predetermined specific time whereby said bolt may be withdrawn to liberate the damper for the purpose of increasing the draft of the furnace.

2. A furnace with draft controlling means, combined with a chain connected with the draft controlling means, guide wheels arranged at a distance apart over which the chain is guided, a horizontal frame carrying the guide wheels and having means for attachment to a place of support, a clock mechanism of the alarm clock variety having a movable engaging part for holding the chain against movement over the guide wheels until a predetermined time, and means for varying the point of engagement between the clock mechanism and the chain whereby the chain may be locked in different positions of longitudinal adjustment upon the pulleys.

3. A furnace with draft controlling means, combined with a chain connected with the draft controlling means, guide wheels arranged at a distance apart over which the chain is guided, a horizontal frame comprising two bars adjustably connected together so as to be extensible longitudinally relatively to each other and each of the bars

respectively supporting one of the guide
pulleys and having means for attachment to
a place of support, and a clock mechanism of
the alarm clock variety secured to one of
5 the bars and having movable engaging part
for holding the chain against movement over
the guide wheels until a predetermined time.

In testimony of which invention, we here-
unto set our hands.

THOMAS H. RHODES.
FREDERICK RHODES.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
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