Aug. 11, 1925. 1,549,653

J. M. CORSON

DAMPER REGULATOR

Filed March 24, 1924

Fig. 1.

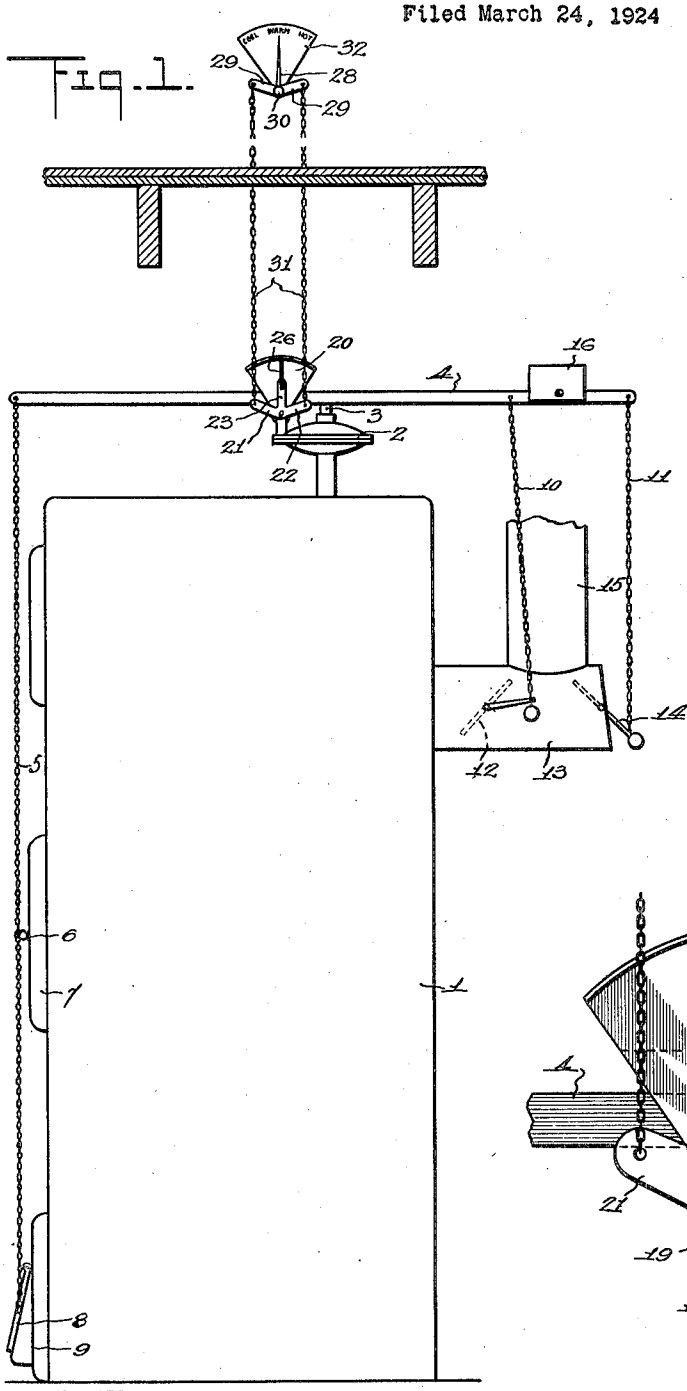


Fig. 2.

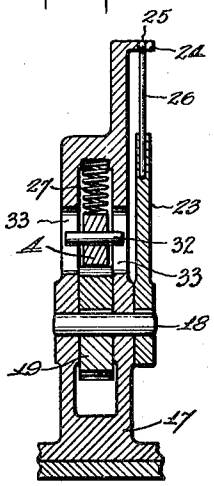
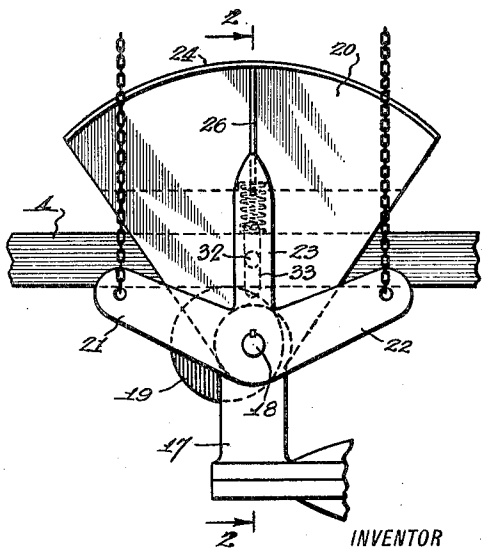


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

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DAMPER REGULATOR.

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To all whom it may concern:

Be it known that I, JOHN M. CORSON, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Damper Regulator, of which the following is a full, clear, and exact description.

This invention relates to damper regulators and more particularly to regulating means for simultaneously varying the positions of the dampers of a stove or furnace whereby the consumption of fuel and the temperature of the stove or furnace may be maintained at the desired degree.

It is a well known fact that all of the dampers of a stove or furnace, for example, have co-operation in the control of combustion of fuel and it is only by a proper relation of all the dampers that the desired result with economy of fuel can be had.

With this fact in mind, I have devised an attachment or mechanism, which may be employed in connection with almost any type of stove and furnace by slight modification, which is manually operated to vary or control the positions of the different dampers of the stove or furnace, or, in other words, set such dampers to maintain a desired temperature and yet permit the functioning of automatic means for changing the positions of said dampers should the temperature rise or fall above or below a predetermined degree.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts which will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings—

Figure 1 is a view mainly in elevation and partly in diagram illustrating my invention as applied to one type of furnace;

Figure 2 is an enlarged view in section on the line 2—2 of Figure 3;

Figure 3 is a view in side elevation illustrating my improved attachment.

1 represents a furnace, which for convenience of description we will assume to be a steam boiler furnace for heating purposes although it is obvious that the invention is not limited to any particular type of stove or furnace, and I wish it distinctly understood that in the employment of this term "furnace" I use the same in its broadest possible sense to cover any apparatus on which my improvement may be applied.

The furnace 1 is illustrated as equipped with an ordinary automatic diaphragm apparatus 2 controlling the movement of a plunger 3 engaging a lever 4 to move the dampers of the furnace. Such an apparatus is in common use and it is in connection with the same that my invention is particularly adaptable and will be hereinafter described in detail.

For the purpose of illustration I have shown one end of the lever 4 as having a chain 5 which is connected to a damper 6 at the fuel door 7 of the furnace and also connected with a damper 8 at the ash pit door 9. At the other end of the lever 4 I provide two chains 10 and 11, one of which is connected to the butterfly damper 12 in the smoke pipe 13 and the other of said chains is connected to a damper 14 controlling the air inlet to the smoke pipe 15.

I shall hereinafter refer to all of these parts 6, 8, 12 and 14 as dampers, and use this term broadly to cover any construction by which the inlet of air, draft, choke or other function is carried out.

A weight 16 is adjustably secured on one end of lever 4 to move this end downwardly when permitted. My improved attachment comprises any suitable supporting bracket 17 which may be secured to the device 2 and which provides mounting for a shaft 18 on which a cam 19 is fixed. This cam 19 is located under and supports the lever 4, constituting a fulcrum for said lever. The bracket 17 supports a segment 20 and also a pair of crank arms 21 and 22 with a pointer 23 between them. This pointer 23 engages with the segment 20 in any approved manner to hold it against accidental movement but permitting free movement. As a means for this purpose I provide a flange 24 on the segment 20 with a series of openings or recesses 25 therein into which a spring finger 26 on the pointer 23 may find an entrance and exert sufficient resistance to accidental movement.

Bracket 17 also houses a coil spring 27 above the lever 4 so as to maintain the lever upon the cam 19. To prevent longitudinal movement of the lever 4 I provide a pin 32, preferably fixed in the lever, and located in vertical slots 33 in the walls of brackets 17, as clearly shown in Figure 2..

In any convenient portion of the house or building above the cellar or other room in which the furnace is located I preferably provide a pointer 28 having a pair of crank arms 29 fixed to the pointer and pivotally mounted as shown at 30, and connect these arms 29 by chains or other flexible connecting devices 31 with the crank arms 21 so that by manual movement of the pointer or any of the parts fixed thereto the cam 19 can be turned from any convenient location in the building.

In connection with the pointer 28 I provide a segment 32 having suitable indicia thereon as, for example, the words "Cool," "Warm" and "Hot" with which the pointer may be moved into register manually.

The operation is as follows:

With the parts as shown in Figure 1, the dampers 6 and 8 are closed while the dampers 12 and 14 are partially open. This permits the proper draft for ordinary temperature. If it is desired to have the temperature rise in the furnace the pointer 28 is moved to the right, which, through the medium of the crank arms 29, chains 31, crank arms 22 and shaft 28, will cause the cam 19 to turn bringing the high point of the cam upwardly, thus elevating the end of the lever 4 to the left of plunger 3. It will thus be noted that while the cam 19 functions as a fulcrum it also functions as an adjusting means to elevate or lower one end of the lever 4, utilizing the plunger 3 as a fulcrum during this adjusting operation.

Assuming that the cam has thus been moved, it will cause the lever 4 to assume a position different from that shown in Figure 1. In other words, the right hand end of the lever will be lowered and the left hand end elevated. This will cause the damper 12 to open, and the damper 14 to close and the dampers 6 and 8 to open. Thus a full draft will be had through the furnace. If the pointer 28 is swung to the extreme left the cam 19 will be turned so as to bring its low point under the lever 4 and the dampers 12 and 14 will be fully opened and the dampers 6 and 8 entirely closed.

It is obvious that between these extremes of movement a wide variation is possible in the relative positions of all the dampers, but in any or all cases the operation of the device functions to bring about a proper positioning of dampers to give the results desired.

It will thus be seen that by reason of a manually movable device of this kind the furnace can be controlled with great nicety to give the desired results at a minimum expenditure of fuel.

Various slight changes and alterations might be made in the general form of the parts described without departing from my invention, and hence I do not limit myself to the precise details set forth but consider myself at liberty to make such slight changes and alterations as fairly fall within the spirit and scope of the appended claims.

I claim:

1. The combination with a furnace and an automatically movable lever connected to the dampers of the furnace, of a support, a cam on the support below the lever constituting a fulcrum for the lever at one side of the automatic lever moving means, crank arms fixed to turn with the cam, and means at a point removed from the furnace for moving the crank arms.

2. The combination with a furnace and an automatically movable lever connected to the dampers of the furnace, of a support, a cam on the support constituting a fulcrum for the lever at one side of the automatic lever moving means, a bracket providing mounting for the cam and receiving the lever therethrough, a spring in the bracket holding the lever on the cam, and means for manually turning the cam to any desired position of adjustment.

3. The combination with a furnace and an automatically movable lever connected to the dampers of the furnace, of a support, a cam on the support constituting a fulcrum for the lever at one side of the automatic lever moving means, crank arms fixed to turn with the cam, a similar pair of crank arms at a point removed from the controlling device, flexible devices connecting said pairs of crank arms, a pointer fixed to move with the last-mentioned pair of crank arms, and a device containing indicia with which the pointer registers and to which positions the pointer is manually moved to turn the cam.

JOHN M. CORSON.