

J. E. WINTERBOTHAM.
DAMPER CONTROL MEANS.
APPLICATION FILED APR. 14, 1915.

1,296,249.

Patented Mar. 4, 1919.

Fig. 1.

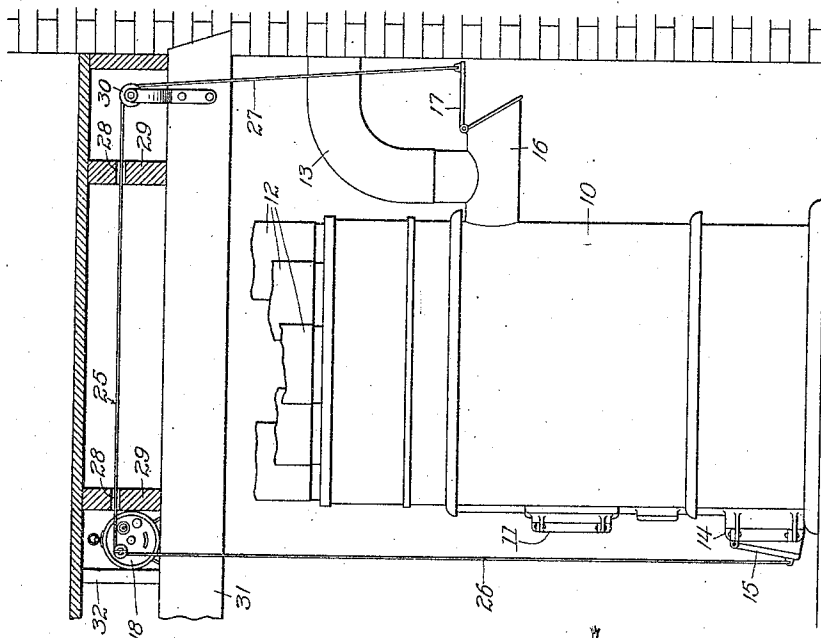


Fig. 3.

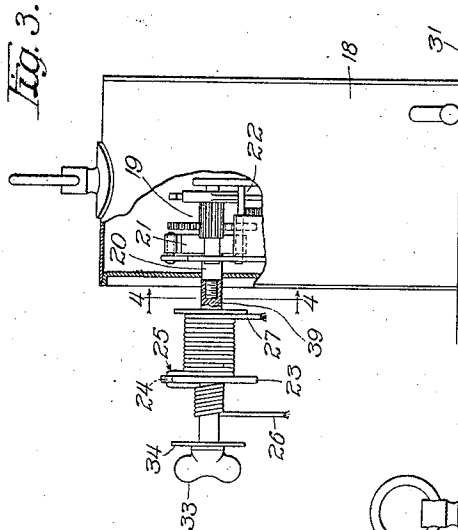


Fig. 2.

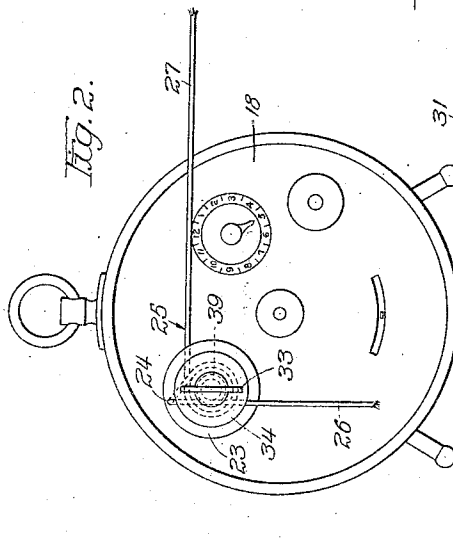
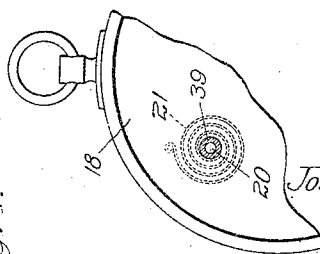


Fig. 4.



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DAMPER-CONTROL MEANS.

1,296,249.

Specification of Letters Patent.

Patented Mar. 4, 1919.

Application filed April 14, 1915. Serial No. 21,224.

To all whom it may concern:

Be it known that I, JOSEPH E. WINTERBOTHAM, a citizen of the United States, residing at Winnetka, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Damper-Control Means, of which the following is a full, clear, and exact specification.

This invention relates to damper control means or mechanism, and more particularly to such mechanism whereby effective action thereof is timed.

I am aware of the fact that there are many devices of a similar nature on the market, but in each case the mechanism is comparatively complicated and correspondingly expensive. At the same time such mechanisms are the most apt to be rendered inoperative.

Therefore, it is the main object of my invention to simplify and improve damper regulating apparatus and produce a durable and inexpensive arrangement.

Another object is to provide an arrangement adapted to meet the requirement for successful commercial operation.

These and other objects are accomplished by providing damper regulating apparatus having a minimum number of simple cooperating parts including a timed actuating member for automatically changing draft conditions after the same has been properly set.

The invention is illustrated on the accompanying sheet of drawings in which Figure 1 is a side elevation of a furnace and my improved damper regulating means associated therewith;

Fig. 2 is an enlarged rear elevation of the alarm clock forming a part of my improved mechanism;

Fig. 3 is a side elevation of the same clock, parts being broken away, showing simplified arrangement of parts for accomplishing the desired results; and

Fig. 4 is a fragmentary sectional view of the same clock taken in the plane of line 4-4 of Fig. 3 showing the damper actuating spring.

The various novel features of my invention will be apparent from the following description and drawings, and will be particularly pointed out in the appended claims.

My invention is illustrated in connection with a furnace 10 having the usual firing

door 11, hot air conveying pipes 12, smoke pipe 13 and ash door 14. The ash door is provided with the usual pivotally mounted draft damper 15 and the bottom portion 16 of the smoke pipe has a common form of pivotally mounted check damper 17. To control the operation of these draft and check dampers in an efficient manner is a problem to which a great deal of attention has been directed. This particular type of control means finds effective application where the dampers are set by a manual operation at night and are automatically actuated in the morning at a desired time to cause a proper heating effect to prevail. All devices of this nature heretofore produced are relatively expensive, more or less complicated, having too many parts, which readily get out of order, and are generally inefficient and unsatisfactory.

My improved and simplified damper control means includes a clock 18 having an alarm mechanism 19 provided with a shaft 20, an actuating spring 21 therefor, and tripping mechanism 22. Removably secured to this shaft 20 is an auxiliary shaft or key member 39 formed integrally with which is a circular disk 23 having an opening 24 extending transversely therethrough, there being a flexible member 25 passed through said opening and adapted to be wound and unwound on said auxiliary shaft or key on opposite sides of said disk. It will be noted that the flexible member 25 is wound in different directions on opposite sides of said disk, the free end of one portion 26 of the flexible member being connected to the draft damper 15 and the free end of the other portion 27 being connected to the check damper 17. This latter portion 27 may be passed through guide openings 28 in rafters 29 and over a suitably supported pulley 30, the clock itself being suitably supported on a beam 31 between one of the rafters 29 and another member 32. To manually operate the shaft 39 and thereby the shaft 20, the former is provided with an integrally formed handle 33, adjacent to which also is an integrally formed collar 34 to limit the width of winding of the flexible member 25 in one direction.

The operation of this damper control mechanism is as follows: As shown in Fig. 1, the draft damper 15 is closed and the check damper 17 is opened, it being assumed

that the furnace fire has been banked for the night. The opening of damper 17 and closing of damper 15 is accomplished by turning the shafts 39 and 20, by means of the handle 33, in a counter-clockwise direction, as viewed in Figs. 1 and 2, one portion 26 of the flexible member being unwound to a certain extent from the key shaft 39 on one side of the disk 23 to permit the draft damper 15 to close of its own weight. At the same time, the other portion 27 of the flexible member is wound a certain amount on said key shaft 39 on the other side of said disk 23, causing the check damper 17 to be opened. During this same operation the alarm or actuating spring 21 is wound up to a desired degree to store an increased amount of energy therein. The fire with this setting of the dampers is checked for the night. As is well known, under these conditions the temperature of the house decreases. To cause an increase in the temperature to a comfortable degree by the usual time of arising, it is necessary that the damper conditions be reversed a few hours in advance thereof, such for example as five o'clock in the morning. Such being the case, the alarm is set, as indicated in Figs. 1 and 2, to trip at the desired hour. When this hour in the morning is reached, the tripping mechanism is actuated in the usual way, the shafts 20 and 39 thereby being free to rotate in a clockwise direction under the influence of the spring 21, causing portion 26 of flexible member to wind up on the key shaft 39 on the first side of disk 23 to open draft damper 15 and permitting portion 27 of flexible member to unwind from said key shaft on the second side of said disk under the influence of the automatic closing movement of check damper 17. Under these conditions, the draft damper 15 will be open and the check damper 17 closed to cause a more rapid combustion of the fuel to raise the temperature of the house. At night the dampers and clock may be manually set again preparatory to an automatic reversing of damper conditions in the morning at a desired time.

This simple, compact and durable arrangement which is reliable and inexpensive, is adapted to and does meet the requirements for which it is intended.

It is evident that modifications of this arrangement may be made, and it is my intention to cover all such modifications which do not involve a departure from the spirit and scope of my invention as set forth in the following claims.

What I claim as new is:—

1. In damper control means for furnaces, a clock having an alarm mechanism provided with a shaft, an actuating spring and tripping mechanism, said shaft including an integrally formed disk and handle, said disk having an opening therethrough, and a flexible member extending through said opening to form securing means for the flexible member and being operatively connected to the dampers of the furnace, said flexible member being arranged to be wound on said shaft on one side of said disk and unwound from said shaft on the other side of said disk when said shaft is actuated by said handle to store actuating energy in said spring and cause a manual operation of the dampers in one direction.

2. In damper control means for furnaces, a clock having an alarm mechanism provided with a shaft, an actuating spring and tripping mechanism, said shaft including an integrally formed disk and handle, said disk having an opening therethrough and a flexible member extending through said opening to form securing means for the flexible member and being operatively connected to the dampers of the furnace, said flexible member being arranged to be wound on said shaft on one side of said disk and unwound from said shaft on the other side of said disk when said shaft is actuated by said handle to store actuating energy in said spring and cause a manual operation of the dampers in one direction, said shaft when released from said tripping mechanism being actuated by said spring whereupon said flexible member is unwound from said shaft on the first side of said disk to cause an automatic operation of the dampers in another direction.

3. In damper control means for furnaces, a clock having an alarm mechanism provided with a controlled shaft having a disk intermediate the ends of the shaft, a flexible member the ends of which are connected to the dampers of the furnace and an intermediate portion secured to said disk and adapted to be wound and unwound on said shaft on opposite sides of said disk.

4. In damper control means for furnaces, a clock having an alarm mechanism provided with a controlled shaft, a key secured thereto having a disk, a flexible member connected to the dampers of the furnace and associated with said disk and adapted to be wound and unwound on said key on opposite sides of said disk simultaneously, when the key is actuated.

JOSEPH E. WINTERBOTHAM.