

W. H. SCHUBERT.
FURNACE DRAFT OPERATING APPARATUS.
APPLICATION FILED DEC. 1, 1910.

987,496.

Patented Mar. 21, 1911.

2 SHEETS—SHEET 2.

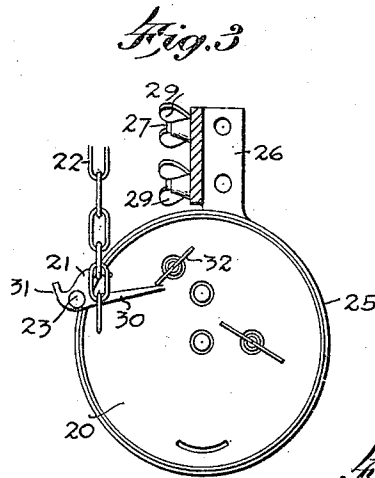
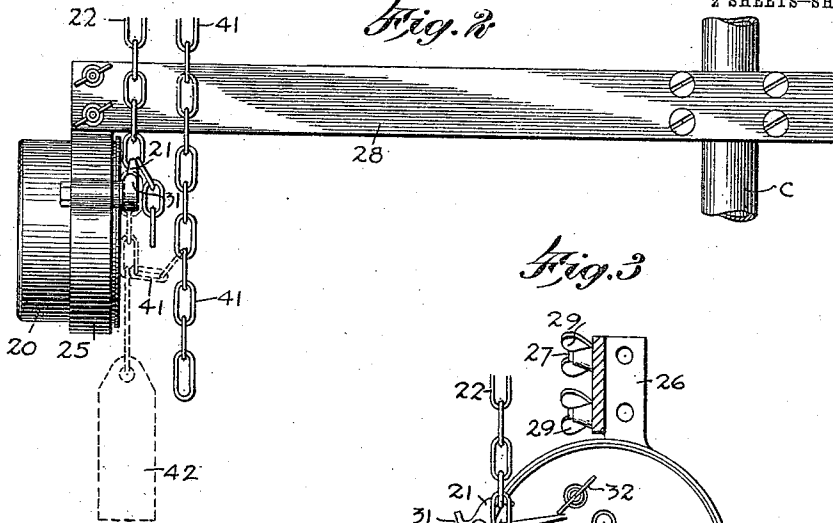


Fig. 4

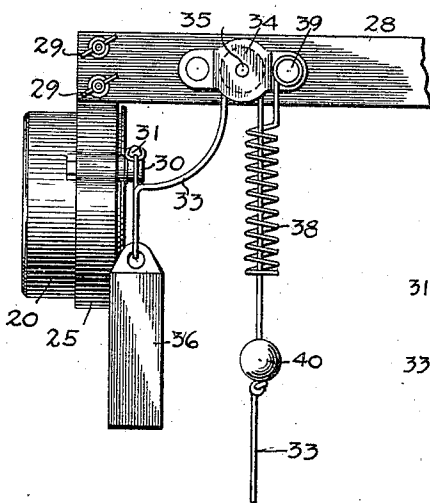


Fig. 6

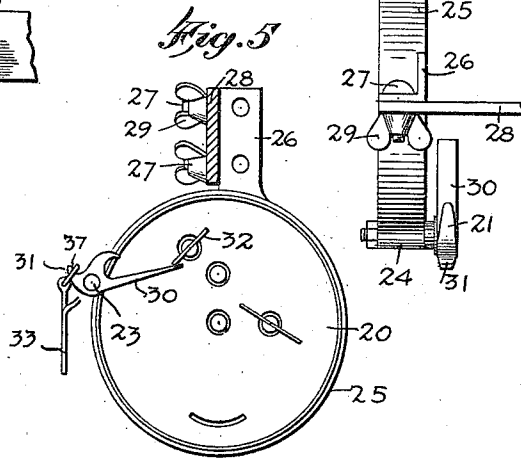
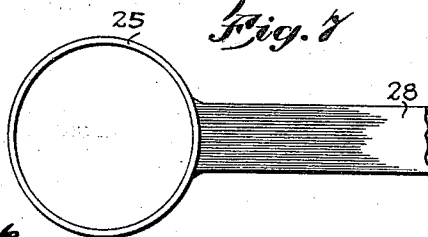


Fig. 7



WITNESSES
V. D. Smith
C. A. Muddock

INVENTOR
William H. Schubert
BY *Munn & Co.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM H. SCHUBERT, OF NEW YORK, N. Y.

FURNACE-DRAFT-OPERATING APPARATUS.

987,496.

Specification of Letters Patent. Patented Mar. 21, 1911.

Application filed December 1, 1910. Serial No. 595,032.

To all whom it may concern:

Be it known that I, WILLIAM H. SCHUBERT, a citizen of the United States, and a resident of the city of New York, borough of the Bronx, in the county and State of New York, have invented a new and Improved Furnace-Draft-Operating Apparatus, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: to provide an apparatus for opening and closing the dampers of a furnace and a time actuated mechanism for releasing the same; to provide a time actuating mechanism for releasing suitable devices for opening and closing the damper drafts of a furnace having a tripping mechanism economical in construction and simplified in its operation; and to provide means durable and simple in construction and application for mounting a time releasing mechanism of the character specified in convenient position upon a furnace.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a side elevation of a furnace for steam heating, showing in conjunction therewith a draft operating mechanism constructed and arranged in accordance with the present invention; Fig. 2 is a detail view, on an enlarged scale, and in side elevation, showing two methods of operating the draft and controlling apparatus; Fig. 3 is a detail view, on an enlarged scale, showing the time operated mechanism employed in the present invention and means for mounting the same; Fig. 4 is a detail view, on an enlarged scale, showing the outer end of the supporting bracket with clock mounted therein, and a modified form of weight operated lifting cable; Fig. 5 is a rear view of a portion of the construction shown in Fig. 4; Fig. 6 is a detail view, in side elevation, showing the mounting ring and trigger, also the bracket bar, the view being taken from above; and Fig. 7 is a detail view, on an enlarged scale, showing the outer end of a modified form of bracket bar and clock supporting ring integrally constructed therewith.

An apparatus constructed and arranged as shown in the accompanying drawings is utilized to automatically control the fire of

a furnace by at certain times opening and closing the damper door A and air check B in furnaces which are provided with both, and for controlling the damper door A singly where furnaces are provided with the damper door only. For this purpose the furnace is provided with a rocking bar 12, pivotally mounted at 13 upon a standard 14, as shown in the accompanying drawings in Fig. 1. The bar 12 is pivotally connected by a bracket 15 to a pressure regulator 16, whereby the bar 12 is rocked to partially open and close the damper A and check B in accordance with the steam pressure transmitted within the said regulator 16. To balance the bar 12 and the steam pressure within the regulator 16 the bar 12 is provided with a sliding weight 17. The bar 12, regulator 16, weight 17, and connecting chains 18 and 19 are well known devices at present sold on the market, and may be utilized by me, the nature and style of the parts being selected to suit.

The present apparatus is utilized principally for completely closing or opening the door A and check B. Such action is desirable at stated times, as for instance, in the early morning when it is necessary to accelerate the fire. To accomplish this the usual method would be to shift the weight 17 to the right of the bar 12 to cause a positive action of the bar overcoming all pressures produced in the regulator 16. Lifting the outer end of the bar 12 opens the door A, as shown in Fig. 1 of the drawings, by means of the chain 19, while the check B is closed, the chain 18 being slacked by the rock of the bar.

The operation above set forth is caused to occur at a time stated by a clock 20 releasing a hook 21, which hook 21 has been engaged by a chain 22 connected with the bar 12. The hook 21 is pivotally mounted at 23 on a bracket extension 24 set out from the side of a holding ring or pocket 25. The ring 25 is provided with an attaching bracket 26, which bracket is perforated to receive screw bolts 27, 27 for attachment to a supporting bracket 28. The bolts 27 are provided with wing nuts 29 whereby the said bolts and bracket 26 are tightened upon the supporting bracket 28.

The supporting bracket 28 is clamped upon the steam pipe C, as shown in the accompanying drawings, or upon any convenient pipe or structural member of the fur-

nace. In placing the bracket 28 two ends are desired, first that the hook 21 shall be disposed directly below the bar 12, and second that the clock 20 shall be faced convenient
 5 to the operator. It is for this reason, and to accommodate these desires that I have constructed the bracket 26 in the shape of an angle iron. By perforating both extensions of the angle iron of the bracket 26 the ring
 10 25 may be disposed upon the supporting bracket 28 in a variety of positions, one of which may be selected to accommodate the clock in its arrangement with reference to the furnace and the bar 12.

15 The hook 21 is mounted upon a trigger 30. It is the trigger 30 which is pivoted at 23 and from which is upset the hook 21, as shown best in Fig. 3 of the drawings. Said trigger 30 is also provided with a hook 31.
 20 The long arm of the trigger 30 is regulated to pass under and in holding engagement with the winding handle 32 of the alarm mechanism of an ordinary alarm clock. The type of alarm clock employed in the present
 25 invention is that where the winding post and winding handle are rotated when released by the time mechanism of the clock. In rotating the handle 32 the wing thereof is passed out of engagement with the trig-
 30 ger 30, permitting the weight 17 or substitute therefor to lift the chain 22, rocking the trigger 30 to upturn the hook 21, permitting thereby the release of the chain 22.

If the bar 12 is not employed, as is the
 35 case in hot air and hot water furnaces, I connect the damper door A with a cable 33. The cable 33 is reeved over a sheave 34 pivotally mounted at 35 upon the bracket 28. Upon the free end of the cable 33 I at-
 40 tach a weight 36, as seen best in Fig. 4 of the drawings. The weight 36 is suspended by means of a ring 37 on the hook 31. When the weight 36 is thus suspended the trigger
 45 30 is held by the handle 32 of the clock 20, as seen in Fig. 5 of the drawings, and the cable 33 is slack. When, at the time set, the alarm mechanism rotates the handle 32, and the trigger 30 is released, the trigger ro-
 50 tates on the pivot 23 to invert the hook 31 and drop the ring 37 and weight 36 therefrom. The weight 36 thus dropping draws upward the section of the cable 33 connected with the door A and opens the same.

It is to stop the rise of the cable 33, and at
 55 the same time to arrest the same without shock, that I have provided a spiral spring buffer 38. One end of the spring buffer 38 is secured under the head of a screw 39. The buffer 38 encircles the cable 33, and is dis-
 60 posed to receive at the outer end thereof a pawl 40.

It is to provide for closing the damper door A and check B that I have provided an auxiliary chain 41. To the auxiliary chain
 65 41 is attached a weight 42, when the chain

41 is being employed. The weight 42 is supported by a ring upon the hook 31, much in the manner as illustrated in Fig. 4 of the drawings with reference to the weight 36. The chain 41 is suspended from the bar 12, 70 as seen in Fig. 1.

The operation of the apparatus, in connection with the employment of the weight 42, is as follows: When it is desired to set the apparatus so that at a time certain the
 75 door A is closed and the check B opened, the alarm mechanism of the clock 20 is wound and set, and the weight 42 is attached to the chain 41, the nut then through the hook 31 and trigger 30 being set under the 80 handle 32. When now the alarm mechanism is operated, the trigger 30 is released, dropping the weight 42, which depresses the outer end of the bar 12 to close the door A and open the check B. 85

It will be seen that when employing a time operated mechanism of the character described, an owner may arrange his furnace at night and set the apparatus for operation to open the door A and close the
 90 check B at a time certain the following morning. Further, if leaving the house and desiring that the heat be cut down by closing the damper door A and opening the check B at a time certain, he may arrange
 95 the apparatus with reference to such operation, employing for this purpose the chain 41 and the weight 42, as above described.

Having thus described my invention, what I claim as new and desire to secure by Let- 100 ters Patent is:—

1. In a furnace draft operating apparatus embodying a rocking bar and flexible connections between said rocking bar and the damper door and air check, a supporting
 105 bracket fixedly mounted upon the standing structure of said furnace and extended to near the front thereof; a clock supporting ring fixedly mounted on said bracket at the outer end thereof, said ring being provided
 110 with an attaching bracket having angularly related perforated flange members; and fastening bolts for uniting said brackets.

2. In a furnace draft operating apparatus embodying a rocking bar and flexible
 115 connections between said rocking bar and the damper door and air check, a clock holding ring; a trigger pivotally mounted on said ring, having a supporting hook extended to the outside of said ring and a trip
 120 member extended to the inside of said ring to engage the winding attachment of a clock when mounted in said ring; and a mounting bracket rigidly connected with said ring, said bracket having a plurality of relatively
 125 angularly disposed flanges for mounting said ring to vary the plane of said ring.

3. In a furnace draft operating apparatus embodying a rocking bar and flexible connections between said rocking bar and the 130

damper door and air check, a clock holding ring; a trigger pivotally mounted on said ring having a hook arranged to hold a flexible connection from rising, and said trigger
5 having a tripping device to the inside of said ring to engage the winding attachment of a clock when mounted in said ring; and a mounting bracket rigidly connected with said ring, said bracket having a plurality
10 of relatively angularly disposed flanges mounted in said ring to vary the plane of said ring.

4. In a furnace draft operating apparatus embodying a rocking bar and flexible
15 connections between said rocking bar and the damper door and air check, a clock holding ring; a trigger pivotally mounted on said ring having a plurality of hooks disposed about the pivot of said trigger, one
20 of said hooks adapted to hold against a downward pulling strain and the other of

said hooks adapted to hold against an upward pulling strain, said hooks being extended to opposite sides of the pivotal
mounting of said trigger, and said trigger
25 having further a tripping device extended to the side of said ring to engage the alarm winding attachment of a clock when said clock is mounted in said ring; and a mounting bracket rigidly connected with said
30 ring, said bracket having a plurality of relatively angularly disposed flanges for mounting said ring to vary the plane of said ring.

In testimony whereof I have signed my
35 name to this specification in the presence of two subscribing witnesses.

WILLIAM H. SCHUBERT.

Witnesses:

E. F. MURDOCK,
PHILIP D. ROLLHAUS.

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