

E. WEBB.
 DRAFT CONTROL FOR FURNACES,
 APPLICATION FILED MAY 9, 1910.

999,926.

Patented Aug. 8, 1911.

2 SHEETS—SHEET 1.

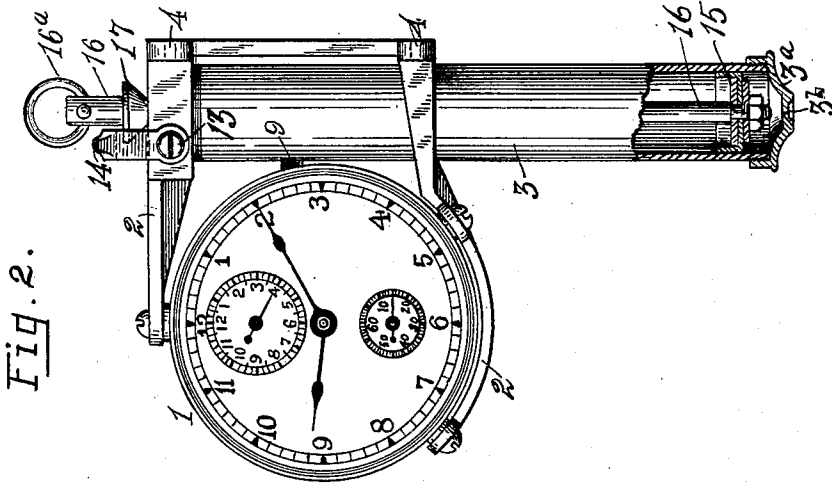


Fig. 2.

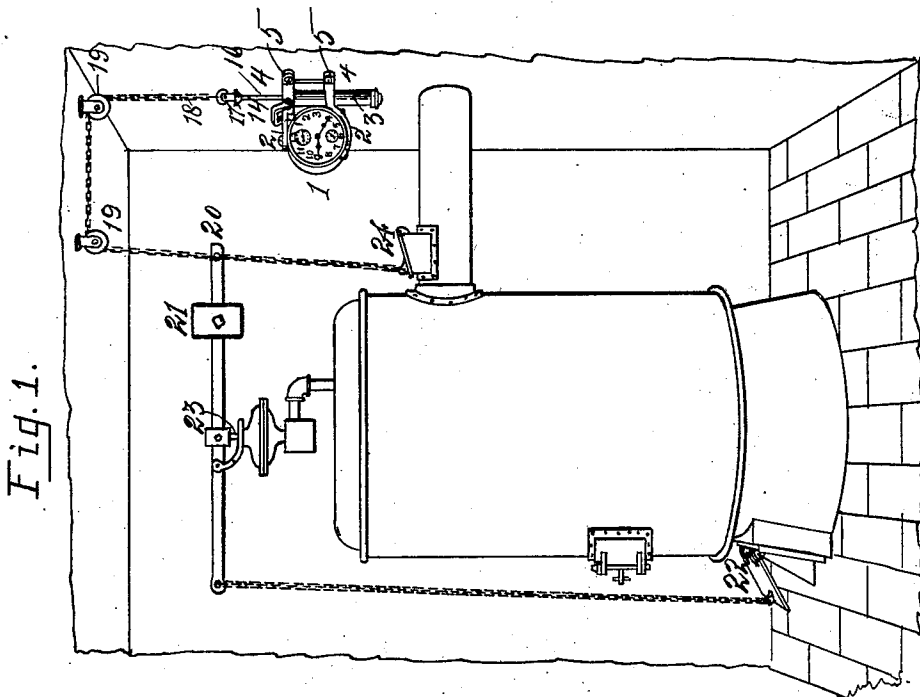


Fig. 1.

WITNESSES:

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By Howard Hall, Atty.

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2 SHEETS—SHEET 2.

Fig. 3.

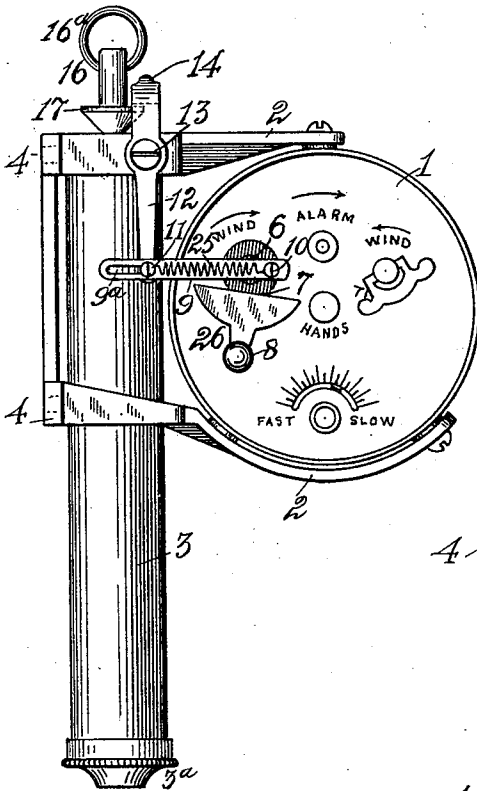
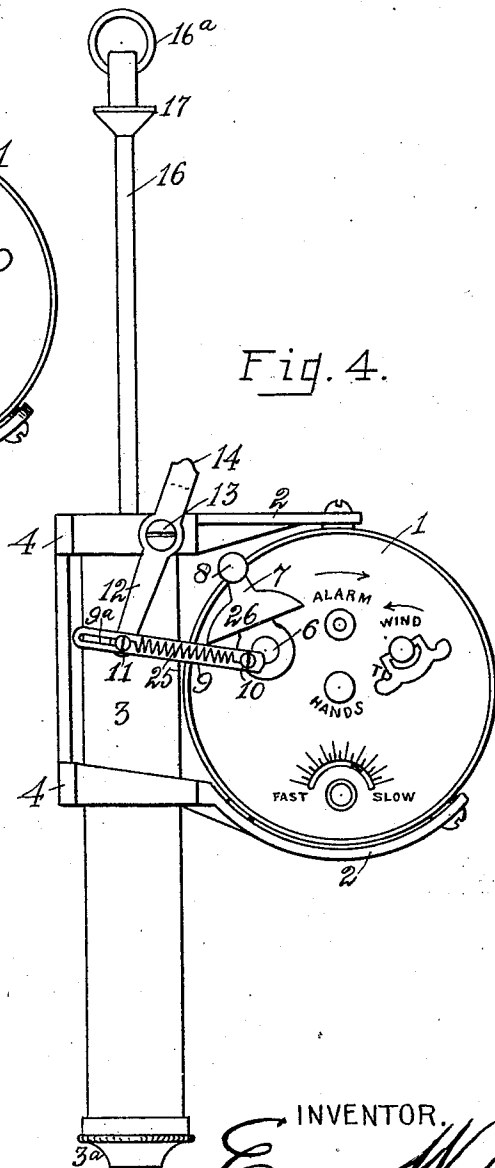


Fig. 4.



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UNITED STATES PATENT OFFICE.

EUGENE WEBB, OF CHICAGO, ILLINOIS.

DRAFT CONTROL FOR FURNACES.

999,926.

Specification of Letters Patent.

Patented Aug. 8, 1911.

Application filed May 9, 1910. Serial No. 560,165.

To all whom it may concern:

Be it known that I, EUGENE WEBB, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Draft Control for Furnaces; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

In heating devices, more particularly those used in domestic heating, the advantages of means for automatically opening draft-doors, closing draft-check doors, turning on steam or hot water, or the like, at any given pre-determined time, are well understood.

My invention relates to a device of the character here indicated, and its object is to provide a cheap, simple, durable mechanism which may be operatively connected with any furnace or boiler, and which will automatically operate the doors and valves with which it may be connected to start the fires, turn on the steam, or to perform such other operation as may be necessary at a pre-determined hour.

My device is also intended to provide means for overcoming the shocks and jars which usually accompany the operation of devices of this character and to thereby increase the durability of the controlling mechanism and its connected parts.

My device is also intended to furnish a construction by which the controlling mechanism may be set readily and conveniently with but a half turn of the winding mechanism.

My device is also intended to provide means whereby the controlled devices may be operated independently of the controlling mechanism without disturbing the latter.

To these ends my invention consists in the construction devices and arrangement of parts hereinafter described, and shown and illustrated in the accompanying drawings, in which,—

Figure 1 is a side-elevation of a domestic steam heater connected with and controlled by my starting device; Fig. 2 a front elevation of my starting device, detached, and set in position to hold the draft controlling doors so positioned that the heat shall be

held checked, and so that the doors shall be actuated to start the fire at—for illustration—four o'clock. In this figure, part of the air-tube, hereinafter referred to, is broken away to show the construction of the plunger and the plunger-rod therein; Fig. 3 is a rear-elevation of the same; Fig. 4 the same, showing the locking mechanism, hereinafter referred to, in unlocked position, and with the plunger-rod, hereinafter referred to, elevated to position the draft and check doors for lively combustion in the furnace.

Like numerals of reference indicate like parts throughout the drawings.

In the drawings, 1 is an alarm clock of the usual or any preferred construction, mounted and supported between arms 2, secured to and extending horizontally from a cylindrical tube 3. 4—4 are flat horizontal lugs or ears having screw-holes for screws 5 by means of which the tube 3 and the clock 1 may be rigidly secured to a vertical wall at any suitable point. At the back of the clock, secured upon the projecting end of the winding arbor 6 for the alarm mechanism, is a lever or small crank-arm 7, at the outer end of which is a handle 8.

9 is a link or bar, one end of which is pivotally connected with one side of the hub of the lever 6, by means of pivot-pin 10, the other end being pivotally and slidably connected, as at 11 with the lower end of a lever 12 fulcrumed, as at 13, near the top of the tube 3 and extending over the top of the tube in the form of a loop or stirrup, as at 14.

Fitting snugly within the tube is a plunger 15 fixed to the lower end of plunger-rod 16 extending to a point above the top of the tube 3 and provided near its upper end with a shoulder 17. With this shoulder the loop or stirrup 14 of the lever 12 is adapted to be thrown into or out of engagement to lock or to release the plunger-rod. The lower end of the tube 3 is closed by a cap 3^a through which is a small orifice 3^b. At the top of the plunger-rod 16 is a ring 16^a to which is secured a chain or cord 18 passing over pulleys 19 and connected with one end of lever 20. This lever is provided, near one end, with a sliding weight 21, the opposite end of the lever being connected by a chain or cord with the draft-door 22. The lever 20 is also connected, as at 23, with the diaphragm of an automatic steam-controlled draft regulator, of the usual or any pre-

ferred construction. The chain 18 is also connected with a check-draft door 24.

The end of the link or bar 9, which engages the pivot-pin 11, is slotted, as at 9^a, and through the slot extends the pivot-pin 11. The pivot-pin 11 is connected with the pivot-pin 10 by means of a coiled spring 25, the arrangement being such that when the handle 8 is turned in the direction of the arrow (see Fig. 3,) the lever 12 is swung on its fulcrum by the pull of the spring, thus throwing the loop or stirrup 14 into locking relation with the shoulder 17. The slot 9^a and the spring 25 now permit the swing of the lever 12 upon its fulcrum independently of the handle 8 and the link 9, so that when the winding arbor 6 of the alarm mechanism is wound up or set for operation the lever 12 may be actuated manually to release the plunger-rod without waiting for the clock to actuate the releasing mechanism. The spring and slot 25—9^a also permit the movement of the lever 12 when the shoulder 17,—the underside of which is beveled,—is forced down to its lowermost position. The loop or stirrup 14 yields to the wedge-like action of the beveled surface and snaps into engagement with the shoulder, locking the plunger-rod against the pull of the weight 21 until the loop or stirrup is disengaged from the shoulder either manually or by the movement of the alarm mechanism.

The alarm-mechanism within the clock is normally wound up to nearly its full extent. The winding and unwinding movement of the arbor 6 is limited to about a half turn by means of a bar 26 secured to the lever 7 at a right angle thereto and in the same plane with the link or bar 9. When the lever 7—8 is swung downwardly, as in Fig. 3, to wind the alarm mechanism, one end of the bar 26 strikes the underside of the link or bar 9 which forms a stop to limit the throw of the winding lever. Now the winding lever is held against return rotation, by the usual or any preferred mechanism, until released by the time-piece at the proper indicated time. When released the winding lever and the winding arbor 7—6 swing back a half turn, as in Fig. 4, until the other end of bar 26 strikes the top of the link or bar 9 which now forms a stop to limit the reverse movement of the winding lever.

* The clock and tube 3 being assembled and secured to a wall or partition at any convenient point, as above described, and the plunger-rod 16 being connected by the cord or chain 18 with the lever and the doors, as above explained, the device is ready for use. To secure the necessary movement of the doors, at the desired hour, the hand upon the alarm dial 27 is turned to the appropriate point. The crank-arm 7—8 of the alarm winding arbor is next given a half turn downwardly to complete the winding of the

alarm mechanism,—being held against unwinding by the usual detent in the clock mechanism,—while at the same time the loop or stirrup 14—through the connections 25—12—is swung into the path of the shoulder 17 on the plunger-rod. Next the plunger-rod is forced down until the loop or stirrup 14 snaps over the shoulder 17, as above explained. Now, by this operation, the draft and check doors are held in position for low combustion until the clock releases the alarm mechanism. This causes the reverse or upward turn of the lever 7, which—through the stress of link or bar 9 upon the lower end of the lever 12—throws the loop 14 out of engagement with the plunger-rod. This rod—now freed—responds to the pull of the weight 21 upon the chain and moves upwardly while the doors are, by the movement of the chain and lever, disposed in position for starting the fire. The upward movement of the rod 16 is retarded and noise and shock are avoided by the partial vacuum produced behind the plunger, the vacuum being slowly broken by the thin stream of air admitted through the aperture 3^b.

The device for retarding the movement of my starting device which I have—by way of illustration—here described, admits of various modifications which will suggest themselves to those skilled in the art. So also will many ways of connecting my starting device with levers, valves, doors and the like, be obvious to others. I do not, therefore, limit my invention to these specific mechanisms.

It is found in practice that my starting device is admirably well adapted for automatically and gradually, at a pre-determined time, turning on electricity through a rheostat, where the sudden throwing on of the full current might cause damage and loss.

Having described my invention, what I claim and desire to secure by Letters Patent is,—

1. In a device of the described character, in combination, an alarm clock, a winding arbor for the alarm mechanism of such clock, a lever carried by said arbor, a weight, a detent, connections between the weight and detent, a link which connects the detent and the lever, and a stop on the lever adapted to engage the link to limit the turning of the arbor.

2. In a device of the described character, in combination, an alarm clock, a winding arbor for the alarm mechanism of such clock, a lever carried by said arbor, a weight, a detent, connections between the weight and detent, a slotted link which connects the detent and the lever, a spring connection between the lever and detent, and a stop on the lever adapted to engage the link to limit the turning of the arbor.

3. In a device of the described character, an alarm clock, a winding arbor for the alarm mechanism of such clock, a lever carried by said arbor, a weight, a detent, connections between the weight and detent, and means controlled by the lever for releasing the detent, combined with means for retarding the movement of the weight, comprising a tube, having a contracted aperture at its lower end, a plunger and plunger-rod in the tube, the plunger-rod being adapted for connection with the weight, and a housing upon which the detent is pivoted and which supports the tube and clock in operative relation.

4. In a device of the described character, an alarm clock, a winding arbor for the alarm mechanism of the clock, a lever carried by said arbor, a tube, a plunger and plunger-rod in the tube, a detent for holding the rod locked against movement, and connections between said lever and detent which permit a limited independent movement of the detent.

5. In a device of the described character, an alarm clock, a winding arbor for the alarm mechanism of the clock, a lever carried by the arbor, a detent, a spring connec-

tion between the lever and the detent for throwing the detent into locked position, and a link connection between the lever and the detent for releasing the detent.

6. A device of the described character comprising an alarm clock, a tube having a limited aperture at its lower end, means for securing the clock and tube side by side in operative relation, a plunger and plunger-rod in the tube, said rod being adapted for connection with the draft regulating doors of a furnace, a shoulder on the rod having a beveled under side, a lever having a portion adapted for engagement with said shoulder, a lever carried by the winding arbor of the alarm mechanism of the clock, connections between said two levers consisting of a spring and a link, and means for limiting the rotation of the winding arbor to less than a whole turn.

In testimony whereof I affix my signature in presence of two witnesses.

EUGENE WEBB.

Witnesses:

MARIE BEITUER-WEBB,
GEORGE J. FLEMING.