

(No Model.)

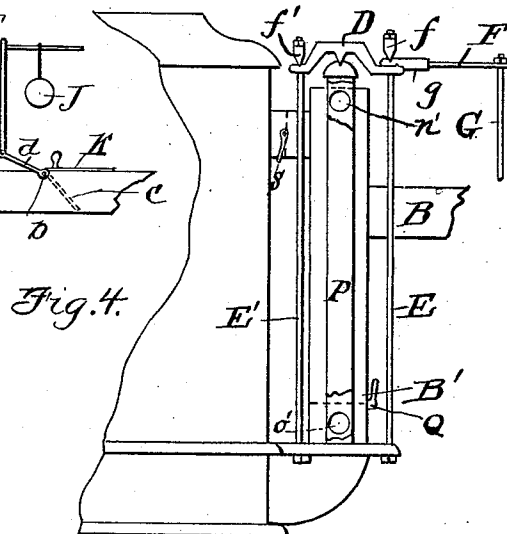
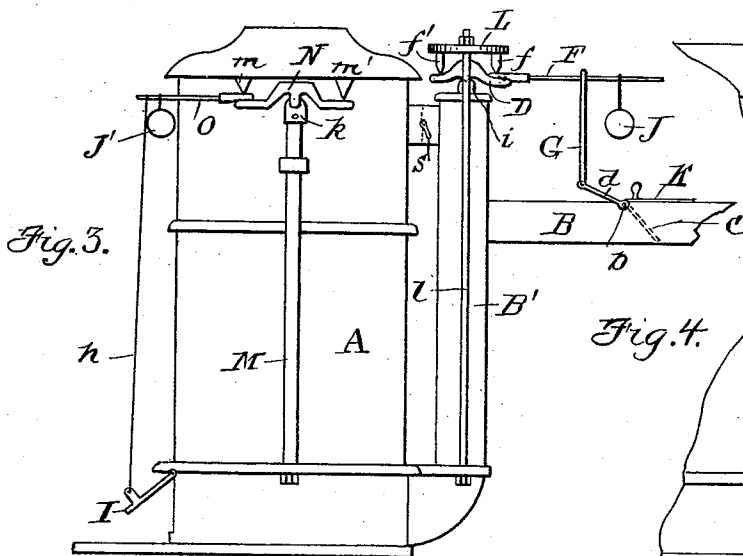
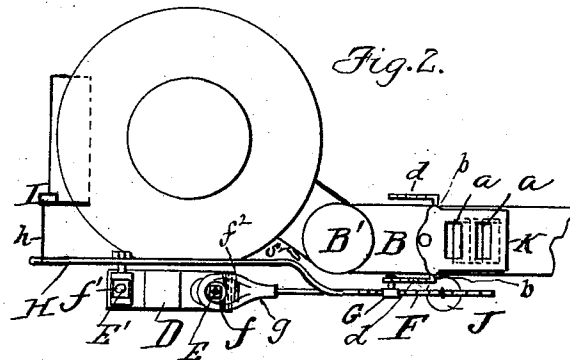
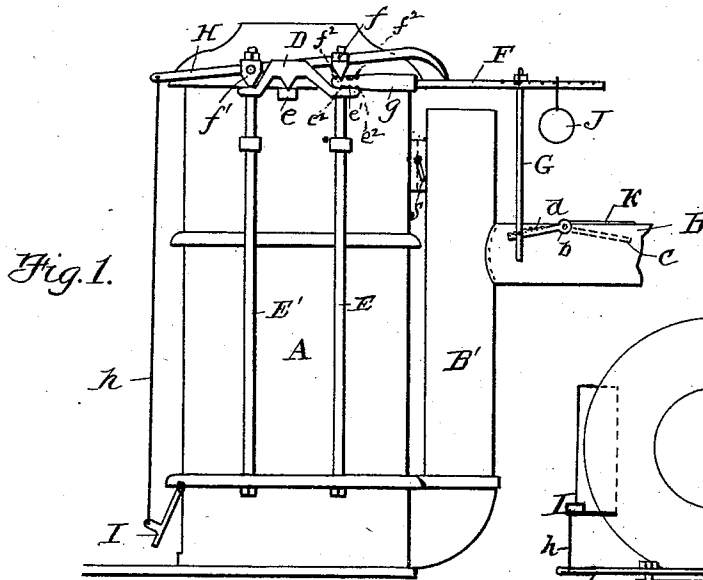
2 Sheets—Sheet 1.

L. H. FISHER.

HEAT REGULATING DEVICE FOR STOVES OR OTHER HEATERS.

No. 509,152.

Patented Nov. 21, 1893.



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Fig. 5.

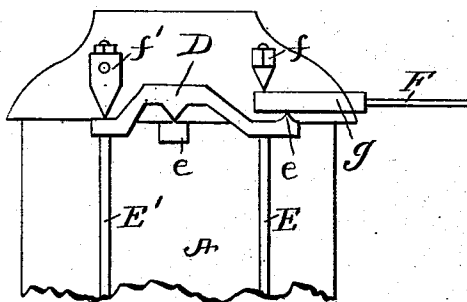


Fig. 6.

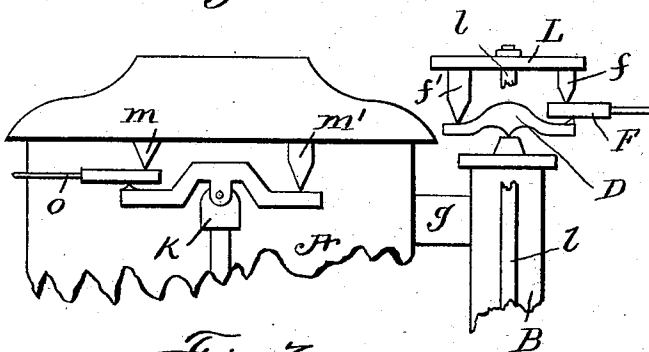
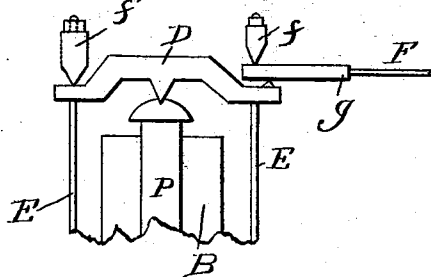


Fig. 7.



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UNITED STATES PATENT OFFICE.

LEWIS H. FISHER, OF WALPOLE, MASSACHUSETTS.

HEAT-REGULATING DEVICE FOR STOVES OR OTHER HEATERS.

SPECIFICATION forming part of Letters Patent No. 509,152, dated November 21, 1893.

Application filed April 6, 1892. Serial No. 428,050. (No model.)

To all whom it may concern:

Be it known that I, LEWIS H. FISHER, of Walpole, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Heat-Regulating Devices for Stoves or other Heaters; and I do hereby declare that the following is a full, clear, and exact description of the invention, which 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 letters of reference marked thereon, which form a part of this specification.

My invention relates to heat regulating devices for stoves, furnaces and other heaters.

The object of my invention is to utilize the expansion and contraction of that part of the heater through which the products of combustion pass on their way to the chimney, to automatically open or close a damper in the wall of the smoke pipe.

To this end my invention consists generally in connecting the portion of the heater through which the products of combustion pass by intermediate mechanism with said valve or damper in the smoke pipe, whereby the expansion of said portion of the heater will open the check draft damper in the smoke pipe to cool the heater, and the contraction of said portion of the heater will close said damper to increase the combustion of said heater, all as more particularly hereinafter described.

In the accompanying drawings, Figure 1 illustrates in side elevation the application of one method of my invention to an ordinary cylindrical stove. Fig. 2 is a plan view of Fig. 1. Fig. 3 is a similar view to Fig. 1, but showing another means of applying my invention. Fig. 4 is a side elevation of a portion of a stove similar to that represented in Fig. 1 but showing still another method of applying my invention; Fig. 4* a detail showing the pipes P. and B', at right angles to their position as shown in Fig. 4; and Figs 5, 6, and 7, are details showing the levers and bearings on a larger scale.

Similar letters represent like parts in all the figures.

A is the cylindrical body of the stove, and B is the smoke flue or pipe leading from the rear vertical smoke pipe B', or in the case of

a stove not having the pipe B', said pipe B will be attached directly to the stove body A. In the wall of the pipe B are one or more holes *a*.

C is a damper or valve inclosed in the pipe B and journaled at *b b* beyond either end of said hole or series of holes, and when said damper is raised, it is adapted to cover the hole or holes *a*. Arms *d d* project at right angles from outward extensions of said journals *b b*, by either of which the damper C may be raised or lowered.

D is a lever having a bearing point or edge between its ends which rests upon a lug *e* secured to the stove body above the plane of the pipe B. The ends of the lever D are yoked as shown in Fig. 2, and loosely embrace respectively two vertical parallel rods E E' which are secured at their lower ends to the stove outside of the same, and pass through suitable guides attached to the stove body.

F is a lever having a yoked end *g* for loosely embracing the rod E, extending over, and bearing upon the upper surface of the lever D. The upper portion of the lever D has a bearing point *e'* or edge upon the lever F beyond the block *f*, and the lever F has upon its upper and lower surfaces notches *f² c²* in order that the distance between the fulcrum block *f* and power *c'* may be varied. The two adjustable blocks *f f'* attached respectively to the rods E E' and having chisel edges, or points bear respectively upon the upper sides of the levers F, D, and serve to keep said levers firmly in their places. The outward portion of the lever F extends above the arm *d* of the valve C, and an adjusting link G connects said lever and arm *d*.

H is a lever of the first class pivoted laterally to the block *f'*, with one end resting on the lever F, and the other end connected by a link or wire *h* with a swinging damper door I, for covering and uncovering the lower draft opening of the stove.

J is a hanging weight which is adjustably movable upon the lever F, for the purpose of regulating the pressure to be overcome by the expansion of the heat to move the damper C.

The operation is as follows: The heat of the stove or heater will cause the body A to lengthen by expansion, and consequently raise the lug *e* upon which the lever D rests.

The two blocks ff' , bearing respectively upon the upper surfaces of the two levers D and F, and being secured by the virtually non-expandable rods E, E', the block f' will form a fulcrum for the lever D, the power being the rising lug e . This power will cause the end of the lever D under the lever F to rise, and as said end extends beyond the fulcrum of the lever F, which is the block f , the lever F will also rise, lifting up the arm d and causing the valve or damper C to drop in the pipe B and uncover the aperture or apertures a so as to cause a draft of air through said aperture or apertures from the outside and thus cool off the heater, by checking the draft through the fire and lessening the combustion. At the time this operation is taking place, the rise of the lever F causes the end of the lever H resting upon said lever F to rise, and consequently lower the other end of the lever H so that the damper door I will drop and close by gravity. The heater or stove will then begin to cool, the body A to contract, and the bearing lug e to lower, and allow the gravity of the lever F and its weight J to tend to close the damper C, bring the levers F and D back to their former positions, and by said dropping of the lever F, cause the long arm of lever H resting on lever F to fall, thus raising the other arm of lever H and raising the damper door I to increase the draft and combustion.

K is a sliding damper attached to the pipe B over the apertures a for constituting an additional means for regulating the heat and combustion in the heater, for it is sometimes desirable to prevent the admission of outside air to the pipe B, and to prevent the cooling of the heater that would otherwise take place, and this can be readily done in a moment by closing the apertures a with the damper K.

In Fig. 3 the lever D is shown as supported on a projection i extending upward from the top of the pipe B', and the blocks ff' are secured to the under side of a plate L, which is secured above the top of the pipe B' on rods l extending down and secured to the heater at or near the bottom of said pipe. Only one of said rods is shown, the other one being behind and hid by the pipe B'.

In the construction just above described the expansion and contraction of the pipe B', will raise and lower the projection i and cause the other devices to work in a similar manner to the construction shown in Fig. 1. I have also shown in Fig. 3 a different means of opening and closing the damper door I, from that shown in Fig. 1.

M is a single rod or tube to the upper end of which is attached an adjustable thimble k , upon which is laterally fulcrumed the lever N. A lever O bears upon one arm of the lever N, and extends outward and is secured to the link h , and lugs $m m'$, secured to the heater, bear respectively upon the upper surface of lever O between the adjacent ends of the lever N and its fulcrum, and the upper

surface of the opposite arm of said lever N. The tendency of the damper door I to drop by reason of its own gravity and that of the lever O and its weight J', will cause said lever to bear constantly upon the adjacent arm of the lever N. The lugs $m m'$ however prevent said parts from dropping when the heater is cool. When however the body A of the heater expands by reason of the heat within it, the lugs $m m'$ will rise, and free the pressure on the levers N, O, so that the gravity of the parts above named will be allowed to operate to cause the door I to drop and close, relative to the play given the lever N by the rise of said lugs. The contraction of the body A, will cause the lugs $m m'$ to descend, and thus reverse the action of the parts, and cause the door I to rise and open.

In Fig. 4, I have shown still another application of my invention, wherein a single bearing point upon that portion of the heater through which the products of combustion pass to the chimney, is utilized, by the expansion and contraction of said portion of the heater, to operate the levers to open and close the valve C. P is a small auxiliary pipe, extending parallel with the pipe B', and connected laterally with said pipe B' by the passages or pipes $n' o'$.

Q is a damper in the lower portion of the pipe B', by which the passage of the products of combustion to the pipe P is controlled. The lever D is supported upon the closed upper end of the pipe P, and the rods E E' supporting the bearing blocks ff' are secured at their lower ends to the outwardly extending flange of the pipe B' and pass through guides secured to said pipe in a similar manner to that shown in Fig. 1.

In the construction just above described, it is the expansion and contraction of the pipe P which will raise and lower the lever D and cause the devices to work in a similar manner to those shown and described in Figs. 1 and 3. To enable said heat regulating devices to work, the damper Q must be closed in order to admit the products of combustion into the pipe P and to prevent them from rising in the pipe B' and passing directly into the chimney from said pipe B'. When said damper Q is shut, as well as the ordinary regulating damper S, the products of combustion will pass from the stove into the lower portion of pipe B', thence through the passage o' up pipe P, heating and expanding the same, thence through pipe n into pipe B', down through the same and out of pipe B to the chimney. When however the damper Q is open and the damper S is closed, the products of combustion will follow the shortest course from the stove, up through pipe B' through pipe B into the chimney so that the regulating devices will not be operated.

What I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a stove or other heater, a lever supported by a projection ex-

tending from that part of the heater through which the products of combustion pass, a second lever resting upon the first and connected with a damper for closing and unclosing an aperture in the wall of the smoke pipe, fixed parallel rods secured outside the heater, and two lugs supported by said rods and bearing down upon the two levers respectively, all as and for the purposes set forth.

10 2. In combination with a stove or other heater, fixed parallel vertical rods secured outside the heater, the lever D supported on a projection extending from that part of the heater through which the products of combustion pass, the lever F resting upon one
15 arm of the lever D, and connected by a link to the damper for opening and closing an aperture in the wall of the smoke pipe, and the two vertically adjustable blocks f f' supported by said vertical rods and bearing respectively upon that part of the lever F over-

lapping the lever D, and the arm of the lever D opposite the lever F, all as and for the purposes set forth.

3. In combination with a stove or heater 25 the pipes B B' and P, the pipe P being connected with the pipe B' by passageways, the damper Q situated in the pipe B' below the pipe B, a lever resting upon the upper end of the pipe P, a second lever resting upon one 30 arm of the first lever, a damper connected with said second lever for closing and unclosing an aperture or apertures in the wall of the smoke pipe, and vertically adjustable blocks secured above said levers to non-ex- 35 pansible supports, said blocks bearing upon the upper surfaces of said levers, all as and for the purpose set forth.

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Witnesses:

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