# W. Race,

## Stove Damper,

No. 4,443. Patented Apr. 4, 1846.

Fig: 1.

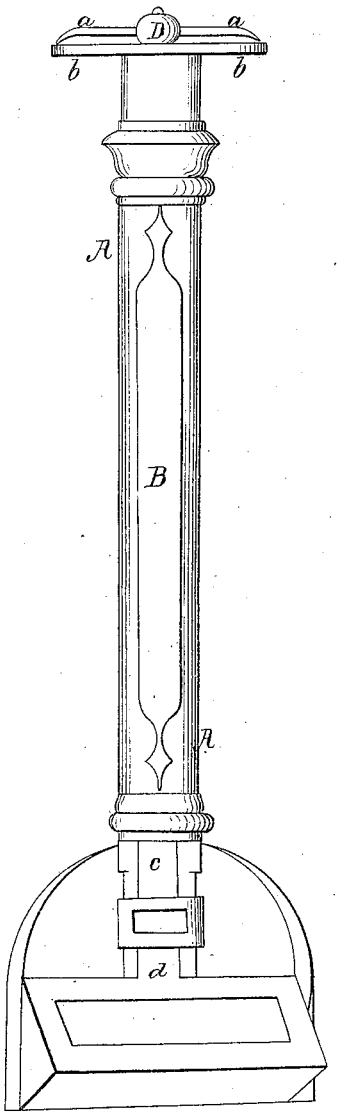



Fig: 2.

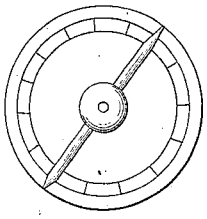
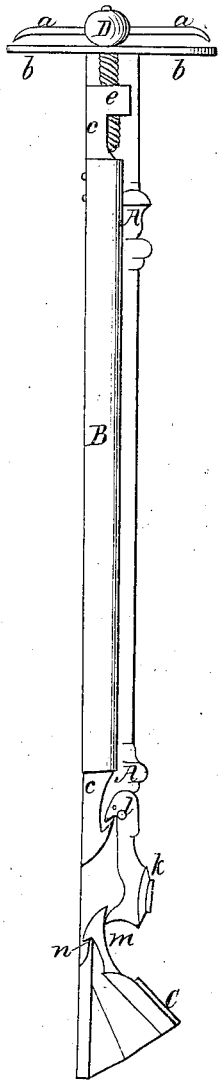


Fig: 4.


Fig: 3.




N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

WASHBURN RACE, OF SENECA FALLS, NEW YORK.

## REGISTER FOR STOVES.

Specification forming part of Letters Patent No. 4,443, dated April 4, 1846; Reissued February 19, 1861, No. 1,139.

*To all whom it may concern:*

Be it known that I, WASHBURN RACE, of Seneca Falls, in the county of Seneca and State of New York, have invented a new and improved apparatus for rendering the registers of stoves and other inclosed fireplaces self-acting by the unequal contraction and expansion of different metals by equal changes of temperature; and I do hereby declare that the following is a full and exact description thereof.

The apparatus of my self acting register is intended generally to be attached to the outside of the stove but in contact therewith or so near thereto as to be readily affected by the heat thereof and is constructed as follows: I have a plate of iron (wrought or cast but I prefer cast iron) which I call the sustaining plate, this plate is from one to two feet in length but for convenience sake as well as for appearance I make this plate in length the equal to the height of the stove and at or near the lower end it is enlarged the width so as to contain and surround the air hole by a border or curb upon which the register rests when closed as hereinafter described, this sustaining plate may be of any width thickness and shape which fancy or convenience may dictate, but the width of about one and a half inch and thickness of one-fourth of an inch is sufficient. In the back side of the sustaining plate or the side next to the stove is a longitudinal groove (the section of which may be rectangular semicircular or any other convenient shape) extending from within about a quarter of an inch from the top of the sustaining plate to the upper end of the vertical lever hereinafter mentioned, this groove is from one quarter of an inch to one inch in width and from one quarter to one half an inch in depth. In this groove a slip or rod of brass which I call the expansion rod is suspended by a screw which I call the regulating screw passing through the upper end of the sustaining plate into the groove above mentioned and tapped into the upper end of the brass slip or rod which is here enlarged in thickness for that purpose by riveting thereto a short piece of iron or other metal of sufficient size to receive the screw, the head of the screw or a collar thereon resting upon the top of the sustaining plate. To the lower end of the expansion rod is firmly fastened by riveting or otherwise a piece of iron or other hard metal about one and a half inch in length and half an inch in width and thickness near the lower end of which upon the front side a sharp hook or barb is made pointing outward and upward which hook or barb falls into the bottom of a niche cut in the upper end of a vertical lever of about two inches in length, the bottom of the niche in the vertical lever being about one eighth of an inch from its fulcrum and in a line horizontal with the fulcrum—this fulcrum may be a small pin about one twelfth of an inch in diameter passing through the vertical lever and through two projecting pieces or ears made for that purpose on the sustaining plate. It will be seen this lever is in effect a lever bent at right angles, the longer end being vertical and the shorter end horizontal the fulcrum being in the angle. This lever moves backward and forward in a slot or mortise made through the sustaining plate. The register is a piece of metal made plane and smooth upon its lower surface and when closed lies at an angle from a vertical sufficiently inclined to cause it to close by its own weight. From the upper part of the register a tail piece or short lever projects upward and behind the lower end of the vertical lever, in the back side of this tail piece a niche is cut which fits upon an edge formed at the lower end of the slot or mortise in the sustaining plate above mentioned so that the register is sustained by this edge and turns upon it as a fulcrum or center—a small projection upon the inner side of the vertical lever at or near its lower end strikes the tail piece about one eighth of an inch above the edge aforesaid so that when the expansion rod is contracted by cooling the vertical lever is caused to press upon the tail piece of the register and open it, and when the expansion rod becomes dilated by heat the vertical lever will permit the register to close more or less by its own weight according to the degree of heat to which the expansion rod is subjected. To the screw in the upper end of the sustaining plate is attached an index, under which and attached to the stove or the sustaining plate is a circular index plate marked as may be convenient, so that by turning the screw the register may be caused to open and close at any desired temperature. In order to render the reg-

ister more sensitive I sometimes make openings quite through the sustaining plate along the whole or nearly the whole length of the expansion rod thus exposing it to air in the room.

The sustaining plate with the expansion rod, vertical lever and register connected with it as above described, is fastened by screws or otherwise in a vertical position to the stove so that the air hole in the sustaining plate shall coincide with a similar one in the stove and it is then ready for use. And I do further declare that I do occasionally dispense with the separate sustaining plate and use the plate forming the stove or a part thereof instead and in such case I prefer placing the expansion rod upon the outside of the stove, it may however be placed inside the stove with or without a separate sustaining plate. And in order more clearly to describe my said invention I have hereunto annexed drawings thereof as follows viz:

Figure I, is a front view of my said apparatus; A, A, is the sustaining plate; B, the expansion rod seen through a longitudinal opening in the sustaining plate; C, the register partly open, showing E, the air hole through which the air passes into the stove; D, the head of the regulating screw; *a*, *a*, the index attached to the same screw; *b*, *b*, the index plate in section; *c*, the vertical lever; *d*, the tail piece of the register.

Fig. II, is a plan of the index and circular index plate.

Fig. III, is a longitudinal section of the whole apparatus above described; A, A, is the sustaining plate; B, the expansion rod (which is semicircular in its cross section as shown in Fig. 4); C, the register partly open; D, the regulating screw; *a*, *a*, the index attached to the same; *b*, *b*, the index plate; *c*, *c*, short pieces of iron riveted to the ends of the expansion rod, into the upper one of which the regulating screw is tapped at *e;* the lower piece of iron is formed into a hook or barb as shown at, *i; k*, is the vertical lever having its fulcrum at, *l;* at, *o*, the hook attached to the lower end of the expansion rod falls into the bottom of the niche in the vertical lever; *m*, is the tail piece of the register projecting upward and behind the lower end of the vertical lever, a niche being cut therein which sustains the register upon the acute angle, at, *n*.

The advantages of my said invention are, as I conceive, 1st, cheapness and simplicity in construction, 2nd certainty and regularity in its action, 3d durability and not being liable to derangement.

Having thus fully described the construction and operation of my improved self acting register for stoves or close fire places, what I claim therein as new and desire to secure by Letters Patent, is—

The manner in which I combine the expansion rod B, with the register or valve C, by means of the lever *k;* the whole constructed and operating in the manner and for the purpose herein set forth; or in any manner substantially the same, by which the ordinary connecting joints are avoided.

WASHBURN RACE.

Witnesses:
NELSON KLINE,
N. J. MILLIKIN.

[FIRST PRINTED 1913.]