

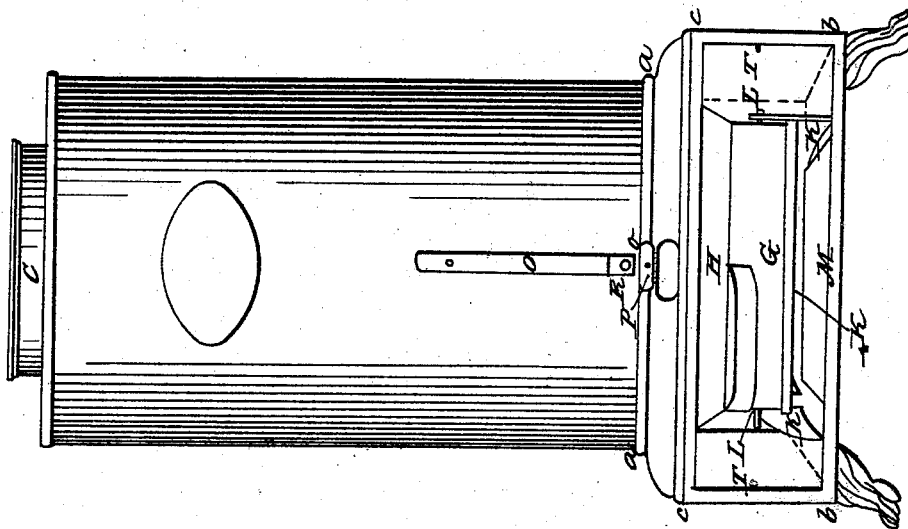
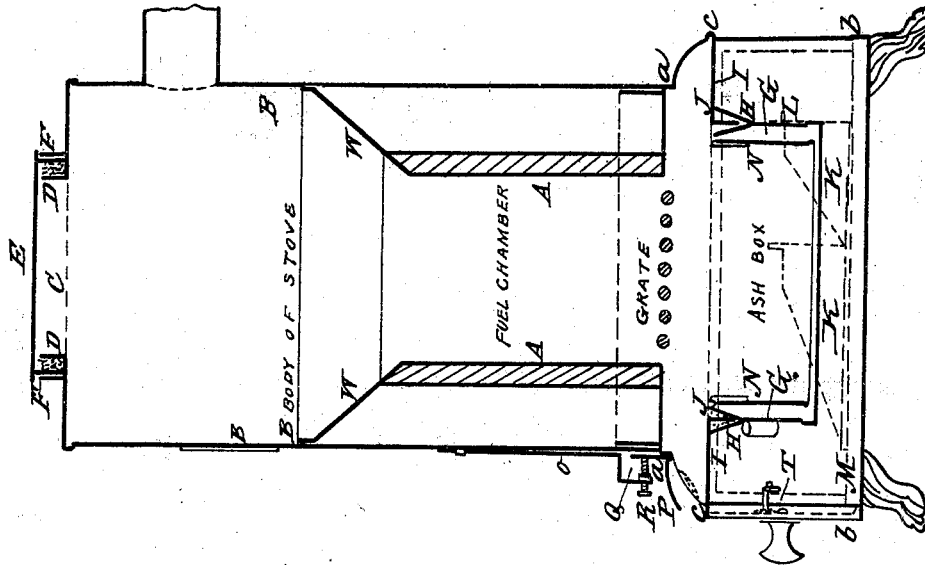
SAXTON & ELLIOT.

2 Sheets—Sheet 1.

Heating Stove.

No. 3,806.

Patented Oct. 30, 1844.



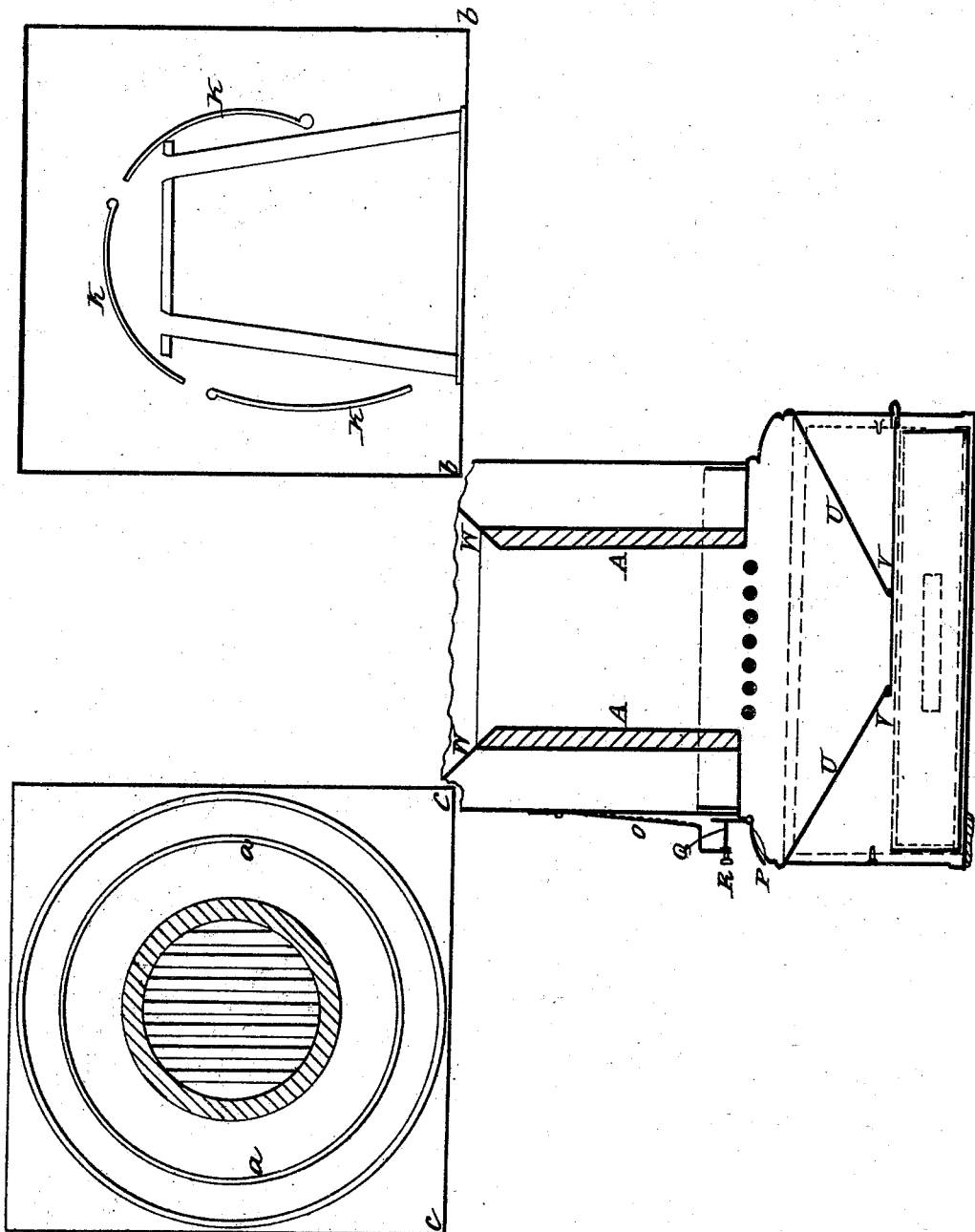
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UNITED STATES PATENT OFFICE.

JOSEPH SAXTON AND GEO. ELLIOTT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO
HARNED & ELLIOTT.

AIR-TIGHT SELF-REGULATING STOVE.

Specification of Letters Patent No. 3,806, dated October 30, 1844.

To all whom it may concern:

Be it known that we, JOSEPH SAXTON and GEORGE ELLIOTT, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and Improved Mode of Constructing Stoves and Furnaces; and we do hereby declare that the following is a full, clear, and exact description.

Our improvements in stoves and furnaces for burning anthracite coal, or other fuel economically consists in making the stove air tight; or rather in the peculiar manner of effecting this object and in the method whereby the amount of draft for the support of combustion is admitted to the fire.

Our stove may be made of sheet or cast iron, or other material; the joints or seams being made air tight by grooving, riveting or luting, as the case may be. The exterior of the stove may be of almost any form dictated by fancy; round, square, &c., &c. To close and keep sufficiently tight the openings or doors of the stove, as well as to secure a complete control of the draft, some device more efficient than the ordinary door, is essentially necessary and it is in the peculiar mode of accomplishing these objects that our invention consists.

To enable others skilled in the art, to make and use our inventions, we will proceed to describe their construction and operation, reference being had to the annexed drawings which make a part of this specification.

The chamber, (A, A,) for containing the coal or other fuel, and the grate, thereto are of the ordinary construction, and are placed within the body of the stove (B, B,) which we usually make of considerably larger diameter than the fire chamber for the purpose of obtaining a larger surface for radiation. To prevent the coal or other fuel from falling outside the fire chamber we place a funnel or inverted cone (W W) within the body of the stove connecting, at its lower end, with the fire clay cylinder and projecting outward and upward so as to connect with the body of the stove. The aperture (C) through which the fuel is supplied, is in the top of the stove and has an annular cup or trough (D) formed around its edge for containing sand with which it is partially filled. The door or cover (E) is formed with a flanch or rim (F) around its outer edge which when closed dips into the sand in the annular cup or trough and thus

forms at once an air tight joint. Within the base or chamber beneath the grate (which may be made either square, round or of other form) we place a shallow cylindrical vessel (G) which is of greater diameter than the area occupied by the grate. Around, attached to and concentric with this vessel is placed a conical rim or ring (H) forming at and around the top of said vessel an annular cup or trough which is to be partially filled with sand or other similar material. From the ring or diaphragm (I) placed below the plate which supports the fire chamber depends a rim or short cylinder (J) which, when the vessel or ash box (G) is raised up to the proper elevation dips into the sand in the annular box at the top of said vessel thus forming an air tight joint beneath the grate.

The manner of raising the ash box so as to form the joint with the depending rim (J) is by means of three inclined planes or wedge shaped pieces of metal (K K K) each forming a segment of a circle upon the bottom of the base, as shown upon the "transverse section (b b)." Three arms (L, L, L,) stand out from the sides of the ash-box and rest upon the inclined planes, causing the box to rise or fall, as it is turned, one way or the other. When the arms are at the foot of the planes the box is readily withdrawn from the stove, through the opening (M) in the exterior of the base. To avoid the waste of sand from the annular trough, when the ashes are to be emptied, a second and smaller box (N) is placed within the first, which is readily lifted out, and the ashes discharged therefrom.

To regulate the draft and the temperature of the stove we make use of the compensation bar applied in the following manner. This compensation bar (O) is formed of two bars of metal of different expansibility which are put together and attached to the stove on the outside, the most expansive metal inward. This compound bar extends down over a lever (Q) attached to a valve (P) and projecting outward and up above the joint of said valve at an angle therefrom; a screw (R) is put through the end of the compensation bar that is outside of and opposite to the lever (Q) above named and rests against said lever, so that when the compensation bar is pressed inward it

opens the valve (P) which is placed over a small aperture that admits the air beneath the grate; we also make a hole about one quarter of an inch in diameter which when
5 the valve is closed allows a small current of air to pass through it sufficient to sustain a slow combustion.

When the valve is opened and the draft and heat thereby increased the radiation
10 thereof from the stove causes the inside of the compensation bar to expand and release the valve so as to close it; if the heat decreases the end of the bar draws in and again opens the valve; the set screw (R)
15 regulates the point to which the bar is required to move before acting on the valves and consequently by it the heat is regulated.

We intend sometimes to form the air
20 tight joints by means of ground plates of metal in place of the annular troughs for sand. When we use a door (S) with ground surfaces; to close the openings (M) in the base we held it to its place by means of a
25 hook (T) and pin at each end and substitute a larger square pan for the ash box (G) dispensing with the inclined planes (K K K) and with the sand lute. We also intend sometimes to form the air tight joints by
30 constructing a hopper as funnel (U) (see

figure marked "Section of base of stove") extending downwards below the grate and closed at the lower end by means of a sliding valve (V) upon which the ashes necessarily fall, and thus the admission of air is
35 effectually excluded. By opening this valve the ashes are permitted to fall into the area below.

We do not claim the use of a compensation bar for regulating the heat of stoves, 40 but

What we do claim is—

1. The manner herein described of combining with our stove or any other, substantially the same in principle the compensating bar, the construction and arrangement being substantially the same as herein
45 set forth.

2. We also claim the manner of closing the draft by means of the combination of
50 the ash box, sand lute and inclined planes in the manner herein set forth.

JOS. SAXTON.

GEORGE ELLIOTT.

Witnesses for Saxton:

T. H. GODDARD,

J. J. GREENOUGH.

Witnesses for Elliott:

JOSEPH PARK,

WM. H. A. RIVEHL.