No. 688,748. Patented Dec. 10, 1901.

T. D. PIERCE.

SELF HEATING SAD IRON.

(Application filed Dec. 5, 1900.)

(No Model.)

FIG. 1.

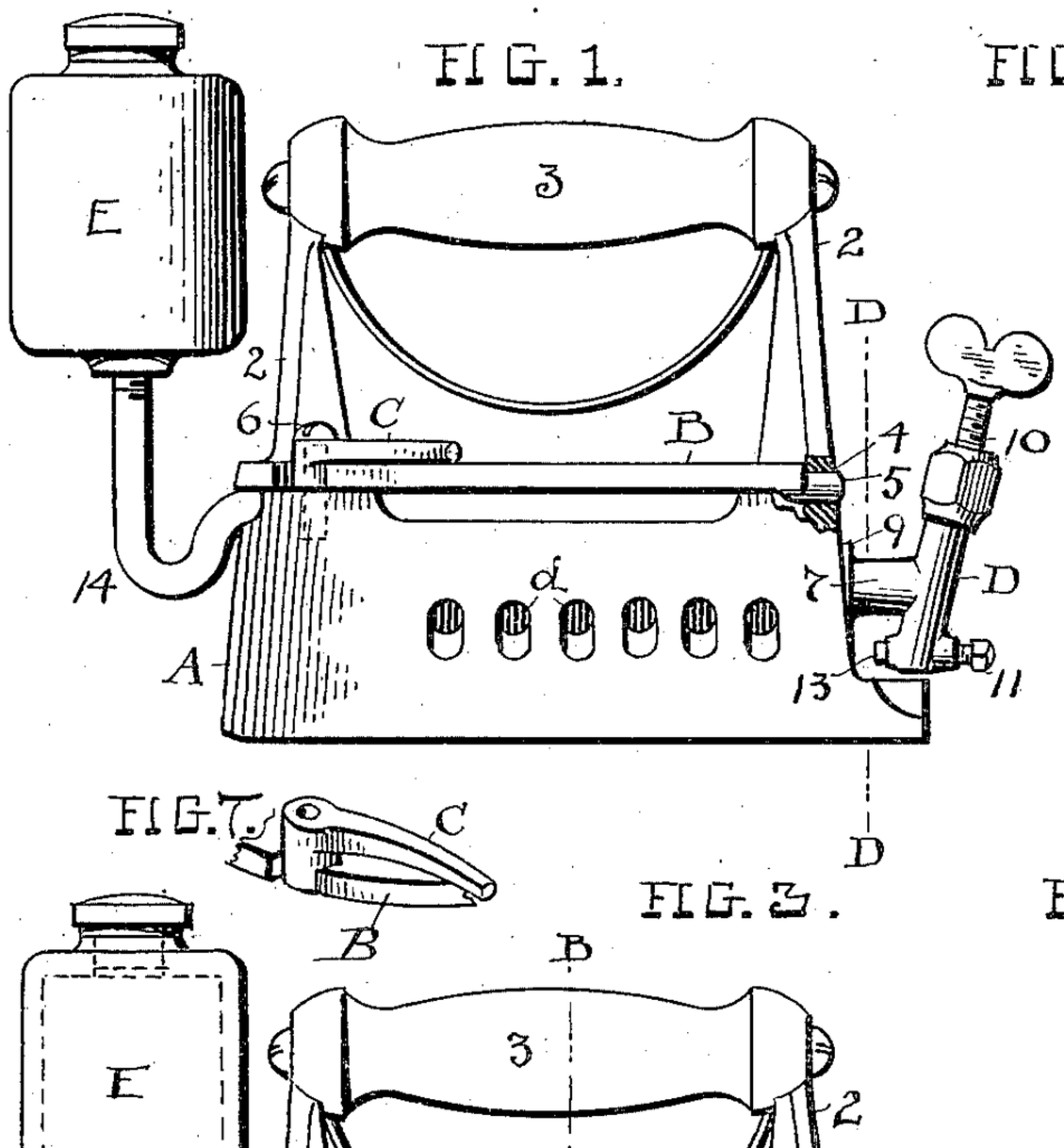

FIG. 2.

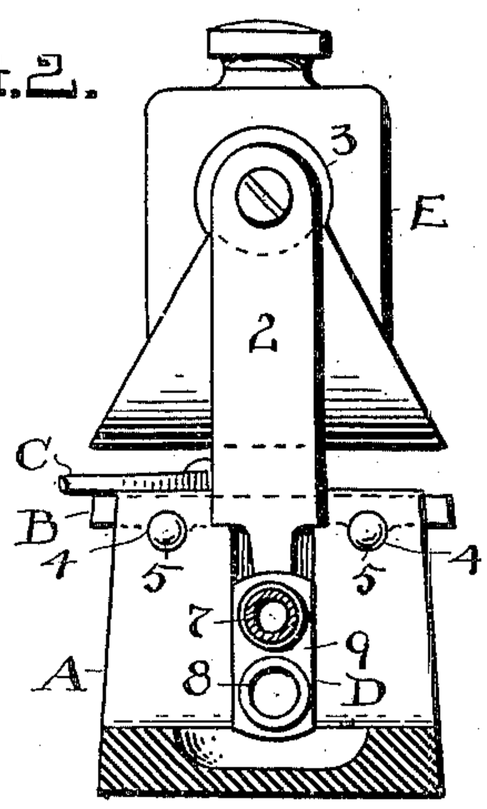

FIG. 7.

FIG. 3.

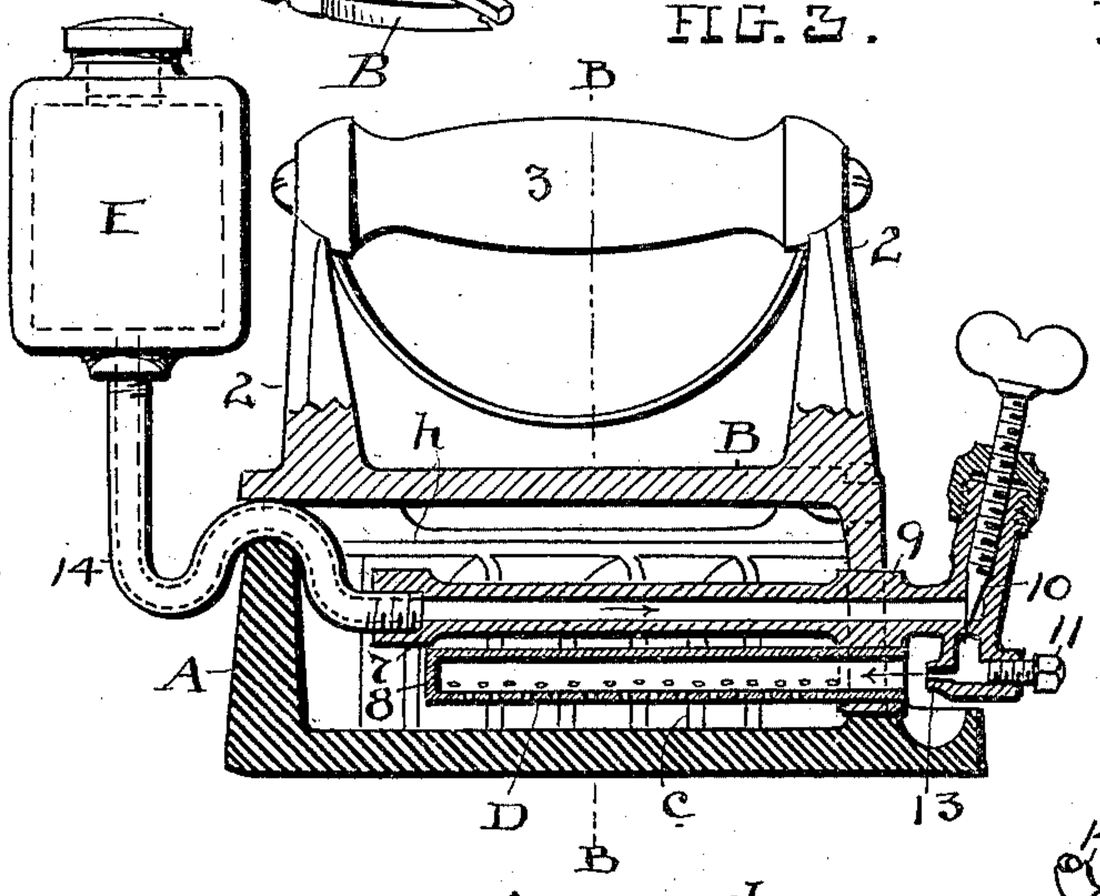

FIG. 4.

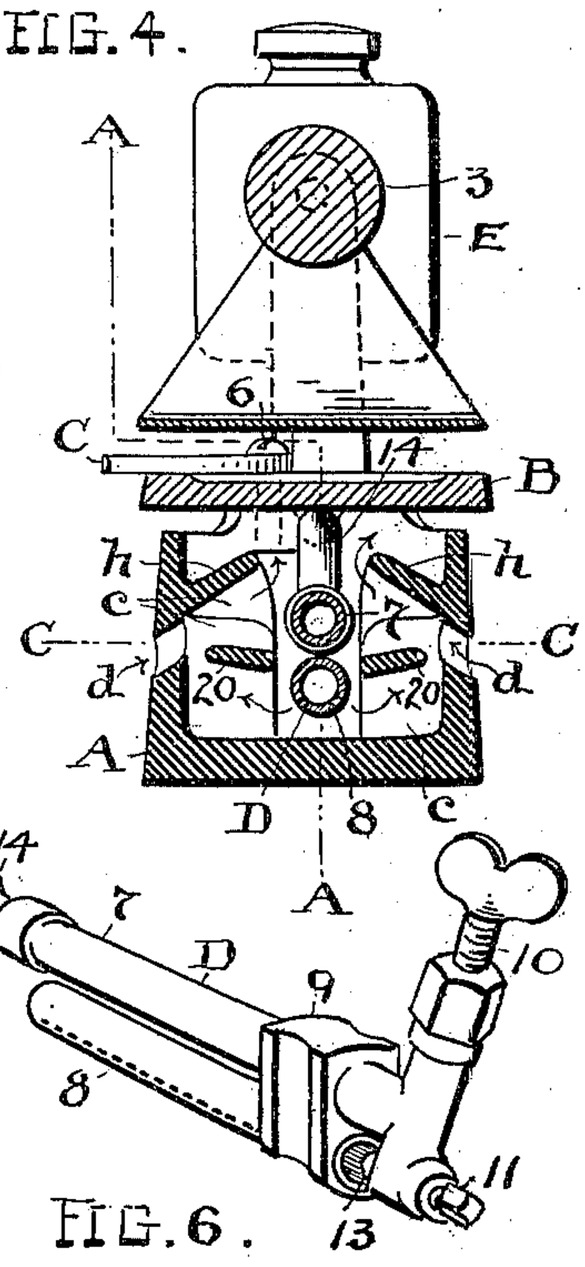

FIG. 5.

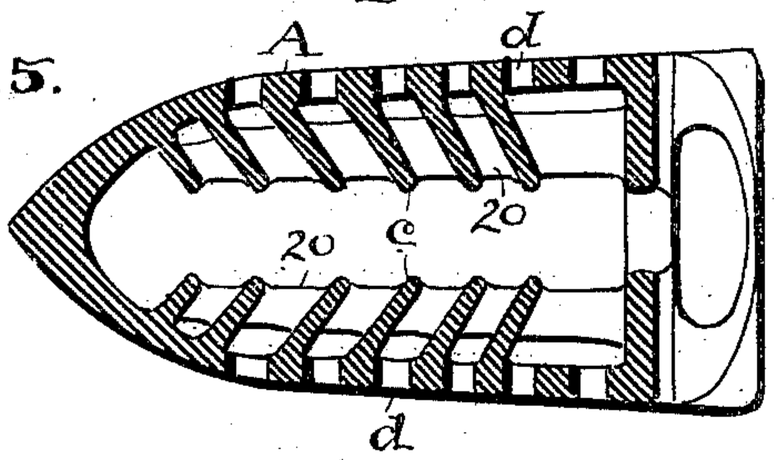

FIG. 6.

ATTEST
W. B. Moore
W. A. Sheehan.

INVENTOR.
Thomas D. Pierce

BY H. F. Fisher ATTY

UNITED STATES PATENT OFFICE.

THOMAS D. PIERCE, OF CLEVELAND, OHIO.

SELF-HEATING SAD-IRON.

SPECIFICATION forming part of Letters Patent No. 688,748, dated December 10, 1901.

Application filed December 5, 1900. Serial No. 38,737. (No model.)

To all whom it may concern:

Be it known that I, THOMAS D. PIERCE, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Self-Heating Sad-Irons; and I do 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.

My invention relates to self-heating sad-irons of the kind which are heated by oil-burners arranged internally and which carry a supply of oil, all substantially as shown and described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of my improved sad-iron with all the attachments in place; and Fig. 2 is a rear end elevation thereof, partly in section, as indicated by line D D, Fig. 1. Fig. 3 is a longitudinal sectional elevation of the iron on a line corresponding to A A, Fig. 4. Fig. 4 is a cross-section of the complete iron on a line corresponding to B B, Fig. 3. Fig. 5 is a plan view on a line corresponding to C C, Fig. 4, looking down and showing the series of heat-absorbing vanes which rise from the bottom in cross-section. Fig. 6 is a perspective view of the burner itself removed from the iron. Fig. 7 is a perspective detail of the top-fastening lever.

I am of course aware that in its broadest sense a self-heating sad-iron carrying its own oil-supply is not a new invention, and I am also aware that numerous improvements in this class of sad-irons have been made and patented from time to time; but I am not aware that the special features of improvement which are shown and fully set forth in this specification have ever before been known or used or that the advantages secured thereby are found in any other iron.

Referring now again to the drawings, A represents the sad-iron body or iron proper, which, as usual, is a hollow casting having the required weight, size of body, and finish and is constructed to attach the other parts thereto, as will appear.

In all self-heating sad-irons having internal burner-chambers with outlet-flues or ventilating-passages there is an ever-present tendency for the heat to rise and pass off with the products of combustion, and a very large percentage of the heat goes off this way. If this were not so and the heat generated could practically all be utilized for heating the iron, a very considerably less volume of heat would be required and there would be corresponding economy of fuel.

One of the objects of my invention, therefore, is to preserve to the iron the largest possible percentage of whatever heat is developed, and thus work economy both in its use and in the expense of fuel. To these ends I have arranged in the path of the outgoing products of combustion from the burner D a series of heat-absorbing and distributing vanes *c*, which are cast integral with the bottom of the iron and terminate in this instance at an elevation somewhat above the air-inlets *d* at both sides of the iron and every alternate one below and apart from the longitudinal shields or flanges *h*. The said shields or flanges are integral with the side walls of the iron above the ventilating-openings *d* and incline upward from their base relatively, as shown. The oil-burner comes between the inner edges of vanes *c* at its sides and in such close relation thereto that the vanes are fully exposed on both surfaces to the heat which rises from the sides of the burner. The said vanes are therefore intended to intercept and absorb this otherwise waste heat as much as possible and carry it down to the bottom of the iron. This they are found to do very effectually, and the inwardly and upwardly inclined flanges *h*, which overlie the vanes, assist in confining the heat and in promoting the action of the vanes. Of course any suitably-constructed projections which will serve the purpose of the vanes here shown may be used.

B represents the top part or cover of the iron, having suitable standards 2 at its ends to carry the handle or grip 3, and said part is bodily removable and replaceable as the iron is ordinarily used. To this end the base or iron proper, A, has two perforations or holes 4 in its rear upright wall, adapted to be engaged by corresponding lugs or projections 5 on the

rear edge of the top plate B. Said plate abuts against the said upright wall of the base about said holes and is locked down on the front wall by a horizontally-rotatable lever C, having a hub through which it is rotatably secured by screw 6 to the base. The top plate B has a notch or recess in one side of its nose to engage about said lever-hub, and the lever itself is constructed to bear fast upon said plate when closed. Hence when the lugs 4 have been inserted in holes 5 at the rear and the lever C is turned to locking position the top plate B is securely locked in place. Obviously these special means for fastening the top plate might be more or less modified and yet be within the spirit and purpose of this part of the invention. Ordinarily there is no occasion to remove the top, because there is no interchange in irons of this kind, and a single iron is used continuously the day through.

The burner comprises, essentially, the generating-tube 7 and the mixing and burner tube 8 beneath and separate from tube 7. These tubes are alike supported by head 9, which is integral with tube 7 and has an opening for the introduction of tube 8. The construction of tube 7 and head 9 in one piece is of very great advantage, because it avoids a possible leaky joint in the pipe carrying the oil or gas and which is subject to so much heat that it is difficult to make a joint in it which will not spring a leak sooner or later. In this construction I also make the valve-seat and gas-duct to the burner-tube in the same casting with head 9 and tube 7, and a plug 11 enters said duct below the valve-seat in line with the jet-opening 13, so that said jet-opening can be easily cleaned when it becomes choked or stopped from any cause. In that case the plug 11 is withdrawn, and a needle serves to clean said jet opening or orifice. It will be noticed as a feature that the needle-valve 10 inclines outward from the iron sufficiently to allow convenient manipulation thereof. A pipe 14, having a substantially **S**-shaped portion, connects the tank E with generating-pipe 7 and has threaded connections at both ends. As already observed, there comes to be considerable pressure in the generating-pipe 7 after the iron has been used for some time and gets thoroughly heated through, at which time there is set up a tendency to crowd the gases back toward the oil-tank E. One of the effects of this back pressure is to cause what is known as "pulsation" or "regurgitation" in the oil-supply, and this produces unsteady and unreliable operation at the burner; but by employing a trap substantially of the kind here shown or having its effects the entire action from the tank to the burner-tube becomes quiet, steady, and regular. All noise absolutely ceases, as does also all tendency to pulse or choke in the oil and gas passages, and it becomes an easy matter for any one to set the valve for any desired amount of heat with certainty that the amount will be steady and reliable.

The neck of the **S**-trap rests in a notch in the front wall of the base, while the head 9 of the burner has its straight slightly-grooved sides resting down between the edges of the central opening in the rear wall of the base A and in which it is held from rotation or shaking by and between said walls. The oil-tank E is at the front of the iron elevated, as here shown, and is held from rotation or turning sidewise by head 9 at the rear of the iron. This occurs because the burner and pipe 14 are rigidly connected.

In order that the heat may be caused to flow laterally from the bottom of the burner, and thus promote the heating of the bottom of the iron more than it would if it rose directly from the burner, I have found it advantageous to place slightly-inclined webs 20 between the vanes *c*, but leaving an upward passage at the sides of the iron. Then as the heat impinges against said vanes it is deflected outward and flows up through said passages, and the whole effect is to get a better heating of the bottom of the iron than occurs without said webs. As here shown, every alternate vane *c* goes up to the flanges *h*.

Each series of vanes *c* standing up from the bottom of the sad-iron along each side has heat-deflecting webs between the vanes, and each series of vanes has its own webs confined within the perpendicular edges of the vanes and apart from the walls of the iron, thereby leaving a space between the webs and vanes for the burner.

What I claim is—

1. A sad-iron having vanes along its sides, webs connecting said vanes and inclined flanges lengthwise along the sides of the iron over said vanes, substantially as described.

2. A sad-iron having a series of vertically-disposed vanes standing up from the bottom thereof on each side wall and heat-deflecting webs between said vanes, each series of vanes having its own webs confined within the perpendicular edges of the vanes and apart from the walls of the iron, thereby leaving a space between the webs and vanes for the burner, substantially as described.

3. A sad-iron having a set of vertical vanes along each side and integral webs connecting the vanes in each set and separate from the side walls of the iron, in combination with a burner-tube between said vanes having outlet-openings along its bottom on a plane beneath said webs, substantially as described.

4. A sad-iron having a series of vanes along its side, webs connecting said vanes in series and arranged apart from the walls of the iron to allow a draft upward past said webs next to said walls, air-openings in said walls and inwardly and upwardly inclined flanges above said openings, substantially as described.

5. A sad-iron having a series of vertical vanes standing up from the bottom along each side and a separate set of webs connecting each series of vanes and inwardly and upwardly inclined flanges over said vanes, in combination with a burner-tube having outlet-openings along its bottom on a plane beneath said webs and in position to cause the webs to deflect heat from the burner laterally to the walls of the iron, substantially as described.

Witness my hand to the foregoing specification this 19th day of November, 1900.

THOMAS D. PIERCE.

Witnesses:
M. A. SHEEHAN,
R. B. MOSER.