J. A. WERTZ.

GAS HEATED SAD IRON.

APPLICATION FILED FEB. 19, 1909.

966,144.

Patented Aug. 2, 1910.

2 SHEETS—SHEET 1.

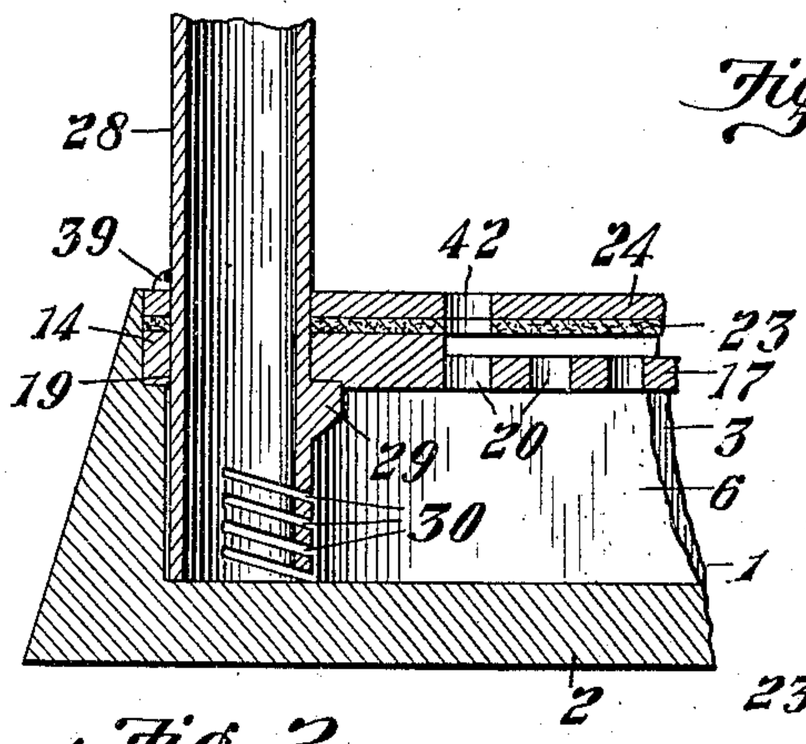

Fig. 2.

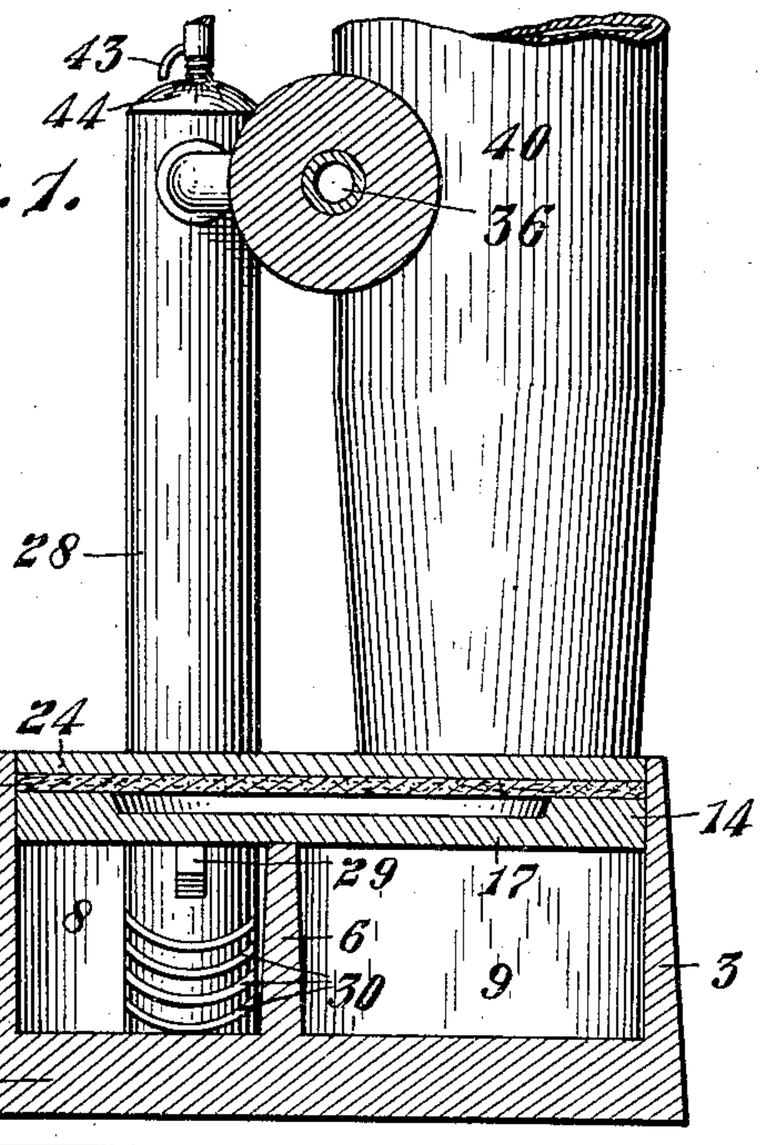

Fig. 1.

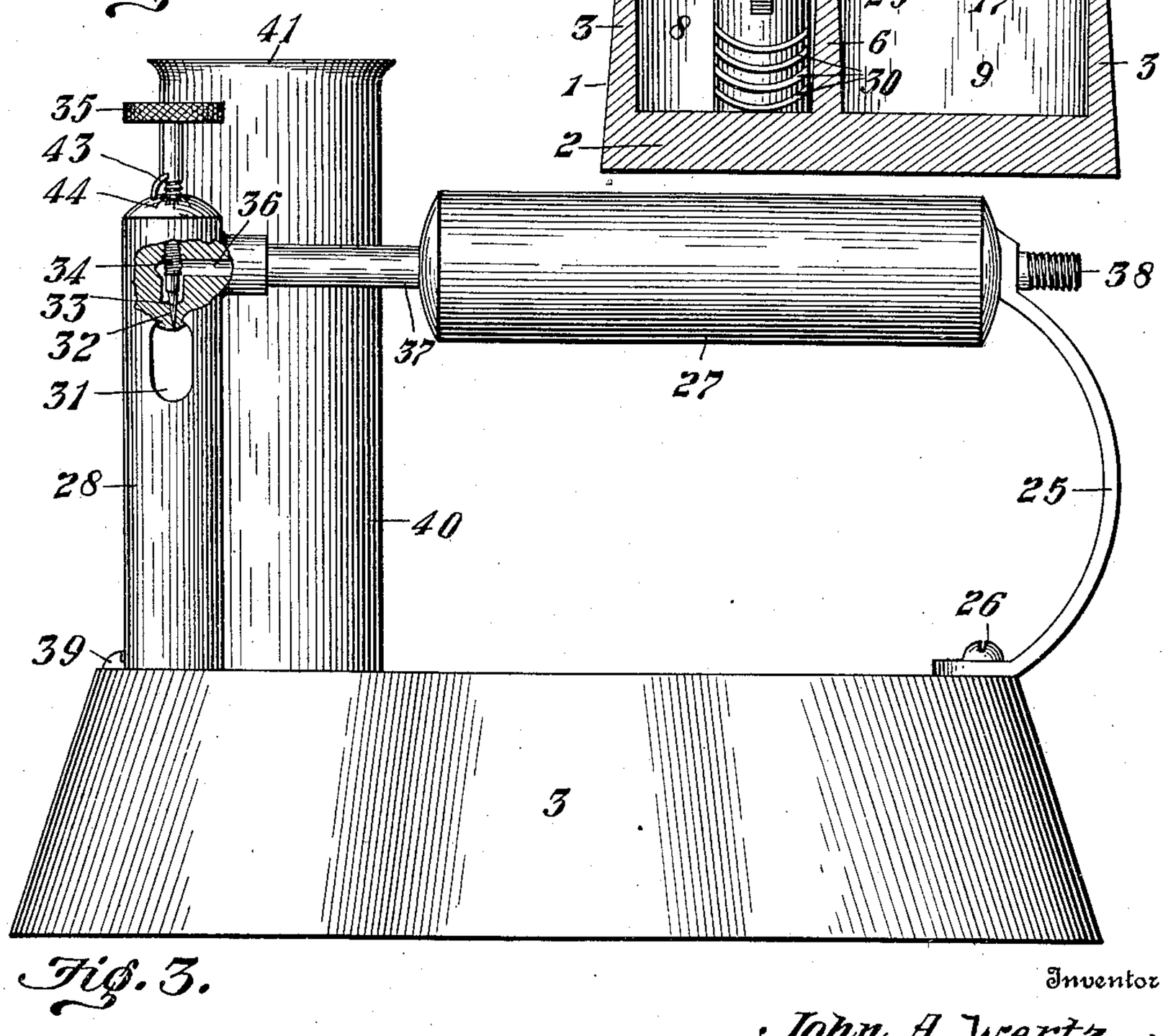

Fig. 3.

Witnesses

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Fig. 4.

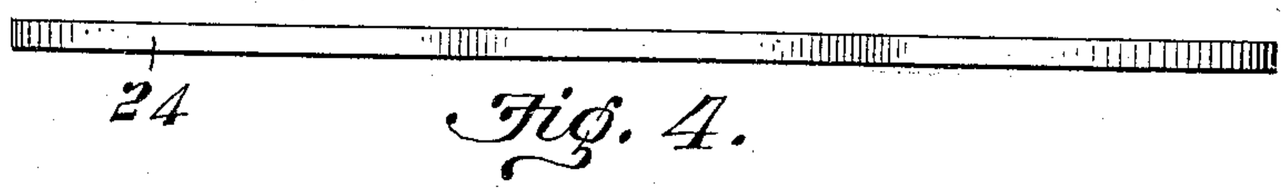

Fig. 5.

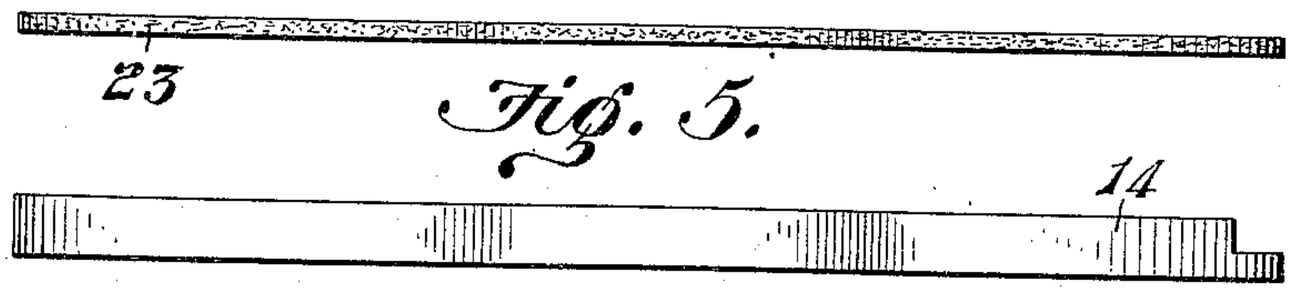

Fig. 6.

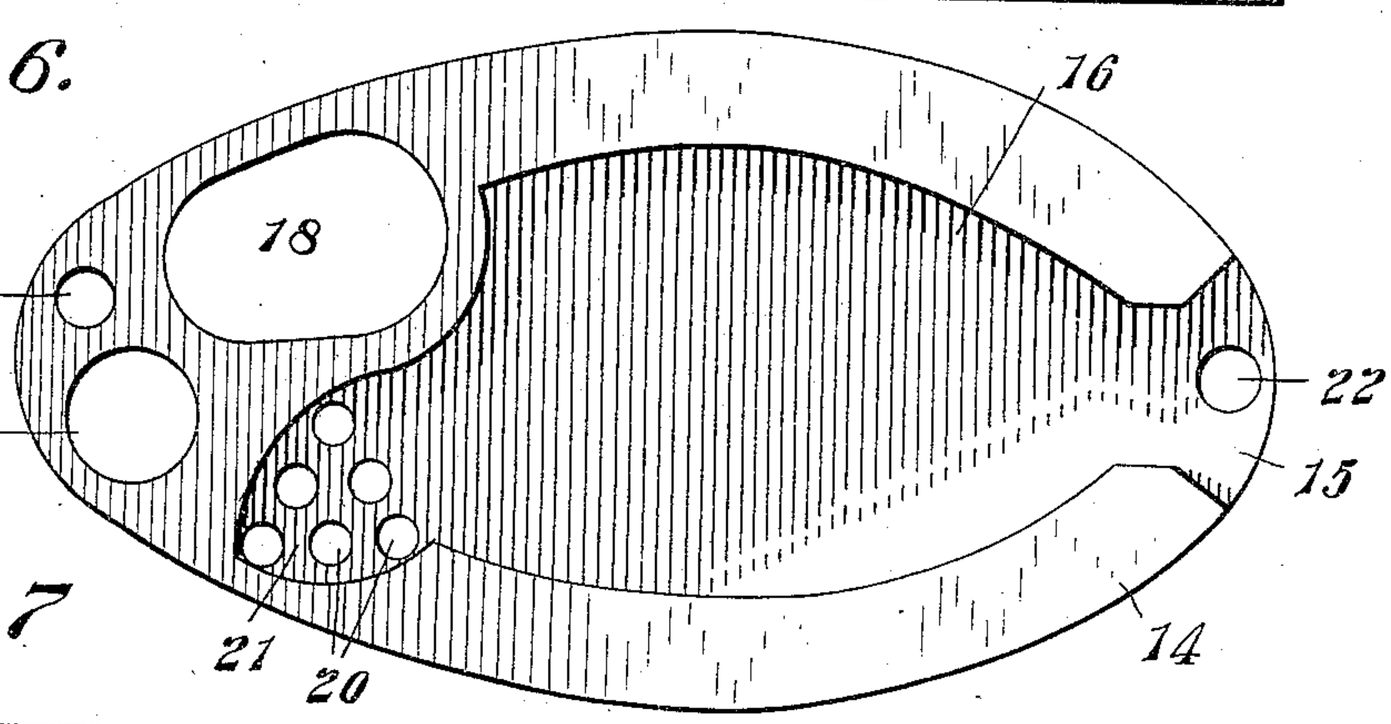

Fig. 7

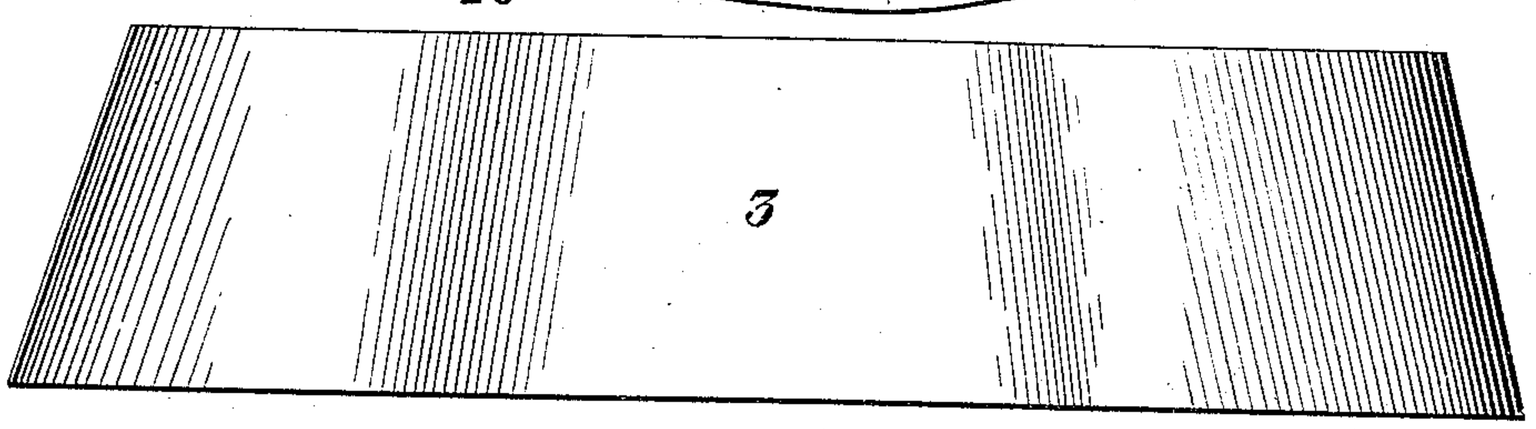

Fig. 8.

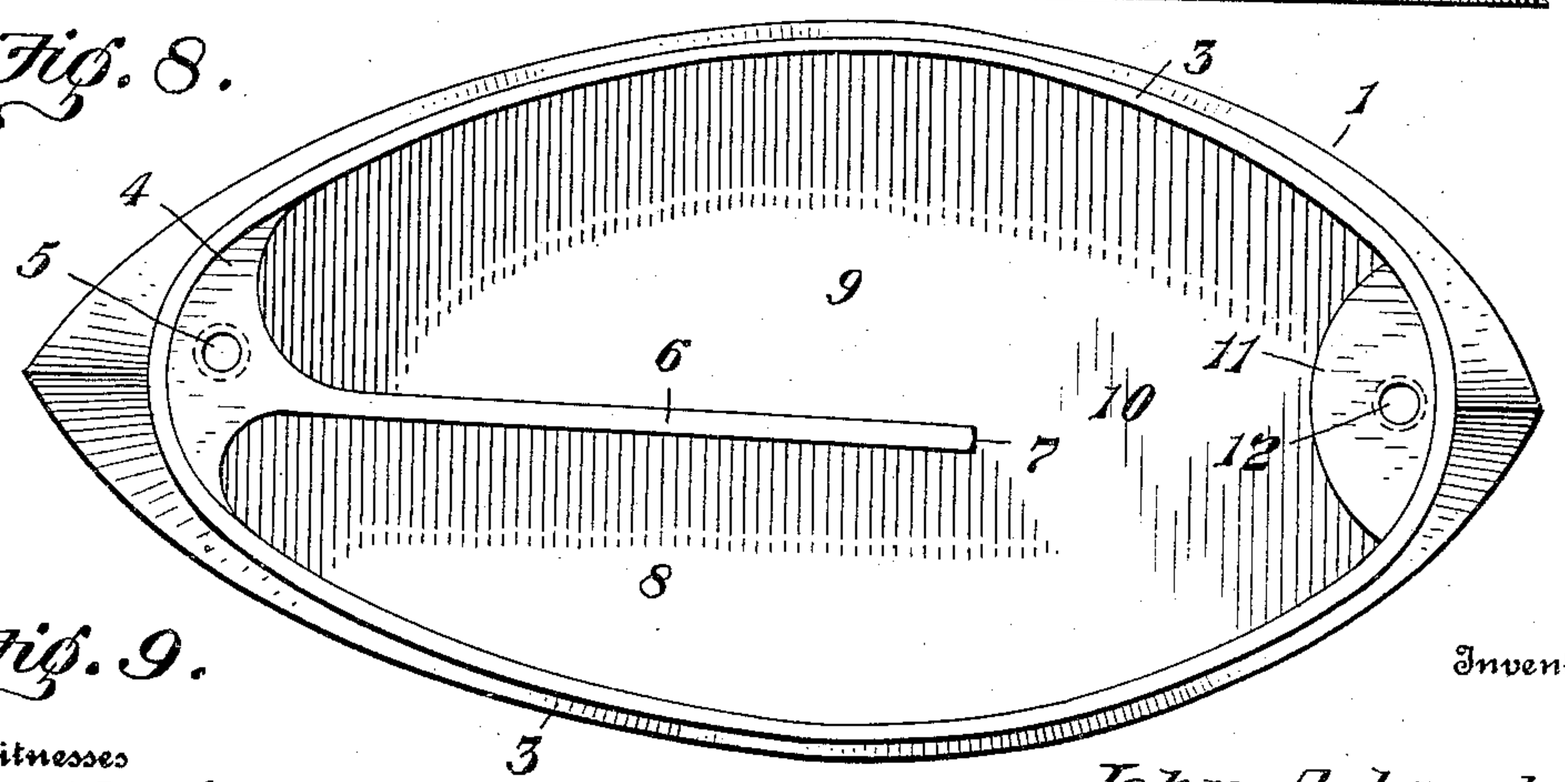

Fig. 9.

Witnesses

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JOHN A. WERTZ, OF CANTON, OHIO.

GAS-HEATED SAD-IRON.

966,144. Specification of Letters Patent. **Patented Aug. 2, 1910.**

Application filed February 19, 1909. Serial No. 478,882.

To all whom it may concern:

Be it known that I, JOHN A. WERTZ, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented a new and useful Gas-Heated Sad-Iron, of which the following is a specification.

My invention relates to improvements in self-heated sad irons and particularly to that class of such irons as are heated by means of gas conducted to said irons through a suitable flexible tube; and the objects of my improvement are to improve the heating efficiency of said irons, to provide a gas heated sad iron in which the flame will be so inclosed as to eliminate danger of fire, to insure perfect combustion by an appropriate mixture of air and gas, to provide for automatically cooling the top of said iron so as to relieve the operator from exposure to unnecessary heat and to provide for the proper distribution of the flame and hot air and to allow for the expansion of said air in the interior of said iron. These objects, together with other objects readily apparent to those skilled in the art, I attain by the construction illustrated in the accompanying drawing, in which—

Figure 1 is a transverse sectional view through the iron. Fig. 2 is a longitudinal sectional view through the point or front end of the iron, the greater part of the iron being broken away. Fig. 3 is a side elevation of the iron, a portion of the valve and mixer being broken away to more fully disclose the construction. Fig. 4 is an edge view of the iron cap. Fig. 5 is an edge view of the asbestos lining. Fig. 6 is an edge view of the ventilating plate. Fig. 7 is a top view of the ventilating plate. Fig. 8 is a side view of the body of the iron. Fig. 9 is a top view of the body of the iron, the cap, asbestos lining and ventilating plate being removed.

Throughout the several views similar numerals of reference indicate similar parts.

The body of the iron 1 is preferably cast in one piece and is provided with the bottom 2 and the sides 3, which are continuous around the entire body of the iron without lateral break or aperture. The top of the body of the iron is open and the interior thereof is hollow and substantially elliptical in shape, as illustrated in Fig. 9. At the front end of the body of the iron on the interior thereof the integral base portion 4 is provided in which is arranged a screw threaded aperture, 5, for the purpose hereinafter disclosed, and from which arises the rearwardly extending partition 6, which is not arranged in the median or axial line of the iron body, but is nearer to one of the sides than to the other, for the purpose hereinafter more fully disclosed. The said partition also does not extend entirely to the rear of the iron but terminates at the point 7. The interior of the iron is thus divided into three principal divisions or spaces, the divison 8, less than the division 9, said divisions 8 and 9 extending from the sides of the iron to the partition 6, and the division 10 at the rear of the partition 6 extending entirely from side to side of the iron and forming the continuation of and the connection between the divisions 8 and 9. At the rear of the iron the base 11 is provided, in which is arranged a screw threaded aperture, 12, for the purpose hereinafter more fully disclosed.

The ventilating plate 14 is of the form illustrated in Fig. 7 and is adapted to be arranged inside of the sides 3 and to rest upon the top surface of the base portion 4, the partition 6 and the base 11. The said ventilating plate is preferably cast in a single piece. The relative maximum thickness of said plate being illustrated in Fig. 6. The said thickness illustrated in Fig. 6 is maintained entirely around the edge of said ventilating plate with the exception of the rear end, where said plate is cut away for a portion of its thickness, as illustrated at 15 in Fig. 7. The plate is also partially cut away for a considerable portion of its area, as indicated at 16, leaving the reduced portion 17, forming a thinner wall or plate at the bottom of said cut away portion. The aperture 18 extends entirely through the plate 14 for the purpose of affording communication with the stack, as hereinafter more fully disclosed. The aperture 19 also extends through said plate into the interior of the iron. Other apertures, 20, extend through the reduced portion of the plate and provide communication between the interior of the iron and an extension of the cut away portion of the ventilating plate, said extension being numbered 21. From an inspection of the drawings it will be noted that the said apertures 20 extend through the lower surface of the plate 14

at the point in the division 8 near the location of the burner, to be hereinafter more fully described. Through the plate 14 the apertures 22 are also arranged for the accommodation of the screws for holding the said plate 14, asbestos lining 23 and iron cap 24 to the body of the iron.

The asbestos lining is of the form indicated by the peripheral lines of the ventilating plate illustrated in Fig. 7 and forms the top or covering for the ventilating plate. Suitable apertures are arranged in said asbestos lining registering with the apertures 18, 19 and 22 in the ventilating plate.

The iron cap 24 is of the same form and shape as the asbestos lining but is of greater thickness. It is provided with apertures registering with the apertures 18, 19 and 22 as in the case of the asbestos lining. The said iron cap is preferably formed of metal and is intended for the top or upper external side of the iron body.

It will be understood that when the ventilating plate, asbestos lining and iron cap are assembled in their proper relative positions the reduced portion 17, the thick edges of the ventilating plate 14 and the asbestos lining will form a flat hollow pocket within the ventilating plate, into which the opening 15 at the rear of the same will permit air to enter and from which the apertures 20 will permit air to pass into the interior of the body of the iron.

Arranged upon the top of the iron cap at the rear of the iron is the handle support 25 which is fastened to the iron by means of the screw 26, which extends through an aperture in said handle support, through the iron cap 24, the asbestos lining 23, and through the aperture 22 in the ventilating plate, into the screw threaded aperture 12 in the base 11, thus uniting all of the parts mentioned and holding them in their appropriate relative position. To the upper end of the handle support 25 is fixedly attached the rear end of the handle 27 which is of appropriate size and form to be used as a grip in manipulating the iron.

The mixer 28 consists of a tube extending through the cap 24, the asbestos lining 23 and through the aperture 19 in the ventilating plate. The said tube extends to the bottom of the iron, against which it rests as shown in Fig. 2. If desired a lug, 29, may be formed upon the side of said tube for the purpose of affording additional support for the ventilating plate as well as for the purpose of holding the mixer firmly in place, or other suitable means may be used to accomplish the same purpose.

The tube of the mixer 28, it will be understood, is arranged practically perpendicular to the bottom 2, and the lower end of said tube is provided with a series of inclined lateral slots, 30, cut into the side of said tube, as more fully illustrated in Fig. 2. At the top of the mixer tube 28 is provided an aperture, 31, for the entrance of air and above said aperture is arranged a needle valve comprising a valve seat, 32, and a needle, 33, provided with screw threads, 34, arranged in appropriate screw threads (not shown) in the top of said mixer. The thumb piece 35 is provided for the purpose of rotating the needle 33 to operate the needle valve in the usual and well known manner. The top of the mixer 28 from the valve seat 32 upwardly is solid, with the exception of the space within which the needle valve 33 operates and the duct 36 adapted to convey the gas to the valve. The pipe 37 is continuous with the duct 36 and extends through the handle 27, through the handle support, 25, and is provided with a screw threaded nipple, 38, to which a suitable flexible rubber tube may be connected for the purpose of supplying gas for heating the iron.

A suitable screw, 39, extends through the iron cap 24, the asbestos lining 23, and the front aperture 22 in the ventilating plate, and into the screw threaded aperture 5 in the base 4, thus completing the fastening of the parts mentioned in their appropriate relative position.

The stack 40 communicates through the aperture 18 in the ventilating plate and corresponding apertures in the iron cap and asbestos lining with the interior of the iron body at the front end of the division 9. Said stack is, of course, hollow and opens exteriorly at the top 41 for the exhaust of the burned gases.

An iron of the character described having been provided and gas supplied through a flexible tube to the pipe 37, as hereinbefore described, the operation of the device is as follows: The thumb piece 35 is turned to open the needle valve sufficiently to allow the proper amount of gas to enter the mixer. Said gas is directed downwardly through the tube 28, drawing in with it a proper quantity of air through the aperture 31 and discharging through the series of inclined slots 30 into the interior of the iron body at the front end of the division 8. The gas will then find its way rearwardly through the division 8 and division 10 and outwardly from said division 10 through the division 9 and exhaust through the stack 40. To light the burner a flame is held at the top opening of the stack 40, when the gas will ignite back through the iron to the burner at the base of the tube 28. The flame will then extend from the slots 30 rearwardly through the division 8, strike the base 12 at the rear of the iron as well as the sides 3 and be deflected into the division 9 in such way that all parts of the iron will be very evenly heated. The burned gases will exhaust

through the stack 40, which is the only direct opening from the interior of the iron.

The arrangement of the ventilating plate 14 with its air inlet, pocket and apertures 20 constitutes an auxiliary mixer. Heretofore much difficulty has been experienced in providing sufficient air in self-heated irons for thorough combustion of the gases. In my construction, however, air is drawn into the air pocket in the ventilating plate through the rear opening 15 and directed downwardly through the apertures 20 into the interior of the iron body at a point closely adjacent the burner. The down draft of the air through the apertures 20 will direct the flame from said burner against the bottom 2 of the iron, thus, in a practical manner placing the heat where it will be most effectual. As the air entering through the apertures 20 becomes mixed with the gases and is heated, expanded and burned, it produces increased heat heretofore unattained in analogous devices, and the location of the partition 6 is such that abundant provision is made for the expansion of the gases and air as the same pass from the front of the division 8 to the rear of the iron and forward to the front end of the division 9.

One of the desirable results of my peculiar construction is that the top of the iron, which is the portion nearest to the hand of the operator, is maintained at a very moderate temperature by reason of the fact that the inflow of air through the ventilating plate continually cools said plate and prevents the heat in the iron body from passing through the ventilating plate, asbestos lining and iron cap. It should be noted also that by reason of the peculiar construction herein set forth danger from fire in the use of my gas-heated sad-iron is very remote. There are no openings in the iron body which will permit contact with flame, and there are also no openings which will be affected by the movements of the operator in such way as to interfere with the proper mixture of air and gas. Heretofore much inconvenience has been experienced in the use of analogous devices by reason of the fact that lateral apertures in the bodies of the irons have permitted the flames on the interior of said irons to come into contact with the fine embroideries, ruffles and other readily inflammable materials upon which it is customary to use irons of this class.

It should be stated that the inclination of the lateral slots 30 in the tube of the mixer 28 aid in directing the flame against the bottom 2 of the iron. This feature is adapted to co-act with the down draft of air through the apertures 20 to dispose the flame along the bottom of the iron.

If desired an aperture such as illustrated at 42 may be made through the asbestos lining 23 and the iron cap 24, registering with one of the apertures 20 in the ventilating plate. The purpose of this aperture is to permit the operator to ascertain the quality and condition of the flame by looking through said aperture, and the down draft through said aperture and the remainder of the apertures 20 will keep the flame on the interior of the iron away from said aperture so that no danger of fire or heat will result from providing said aperture 42. Another feature which it may be desired to provide is the indicator 43, which is a small pin or index fixedly attached to the stem of the needle 33 and adapted to rotate with said needle, the said indicator moving over the graduations 44 marked upon the top of the mixer tube 28 for the purpose of indicating the amount of opening of the needle valve.

It should be understood that the partition 6 not only causes the flame to travel in a circuitous way through the body of the iron, but is also adapted to conduct heat from the flame to the bottom. The partition being in the midst of the flame is in the most advantageous position for thorough heating of said partition, and the partition being formed integrally with the bottom 2 conducts the heat to said bottom as do also the sides of the body, although the partition being in the midst of the flame and baffling the same is much the better adapted to economize heat and thus reduce the necessary consumption of gas.

It will be seen from the above that the structure described and illustrated in the drawings is such as may be easily made, will prove efficient, and thoroughly adapted to fully accomplish the objects and purposes for which it is intended.

I claim:

1. The herein described gas heated sad iron, comprising a hollow body provided with continuous and un-apertured sides, a longitudinally disposed vertical partition extending from top to bottom and separating the interior of said body into lateral divisions communicating with each other, means for conducting a mixture of gas and air into the interior of said iron body, and means for conducting the burned gases from said iron body.

2. In a gas heated sad iron, a hollow body portion provided with a vertical partition extending from top to bottom and separating the interior into a horizontally disposed series of communicating divisions, means for conducting gas and air into the division at one end of the series and means for exhausting the burned gas and air from the division at the other end of the series.

3. In a gas heated sad iron, a hollow body, vertically disposed separating means extending from top to bottom and dividing the interior of said body into communicating divisions, means for conducting a mixture of gas

and air into said body, and means for exhausting burned gas and air from said body, said conducting means and said exhausting means being so located with reference to the said divisions that the flame of the burning gas and air will be conducted progressively through the various communicating divisions.

4. The herein described gas heated sad iron, comprising a hollow body, said body provided with un-apertured sides, a partition arranged in the interior of said body and extending for a portion of the distance from end to end of said body, a ventilating plate arranged within said sides and upon the top of said partition, said ventilating plate provided with a cut away portion forming a pocket therein said cut away portion at one point extending through the edge of said ventilating plate and opening exteriorly, said ventilating plate also provided with apertures leading from said pocket to the interior of said body upon one side of the partition therein, a non-heat-conducting lining arranged upon the top of said ventilating plate and forming the top side of the pocket in said plate, a cap arranged upon said lining, means for conducting a mixture of gas and air into the interior of said body upon one side of the partition therein at a point near the apertures between the pocket in the ventilating plate and the interior of the body, and means for conducting burned gases from the interior of the body, said last mentioned means being located upon the other side of said partition.

5. In a gas heated sad iron, a hollow body adapted to contain a flame and a hollow ventilating top for said body, the hollow portion of said top extending substantially throughout said top and constituting an air pocket, said pocket opening exteriorly for the inlet of air, and said top provided with apertures providing communication between said pocket and the interior of said body, whereby air may be drawn into said pocket through said exterior opening and through said apertures into the interior of the body for the purpose of cooling said top.

6. In a gas heated sad iron, a hollow body divided by a vertically disposed partition extending from top to bottom of said body into a horizontally disposed series of internal, communicating divisions, means for conducting gas and air into the division at one end of the series and means for exhausting the burned gas and air from the division at the other end of the series, the divisions of the series increasing in size from the point of entrance of said gas and air to the point of exhaust of said burned gas and air.

In testimony that I claim the above, I have hereunto subscribed my name in the presence of two witnesses.

JOHN A. WERTZ.

Witnesses:

WILLIAM H. MILLER,

JOHN H. SPONSELLER.