

F. MAIWORM & C. E. MITCHELL.
 SELF HEATING FLAT IRON.
 APPLICATION FILED APR. 19, 1909.

1,023,947.

Patented Apr. 23, 1912.

2 SHEETS—SHEET 1.

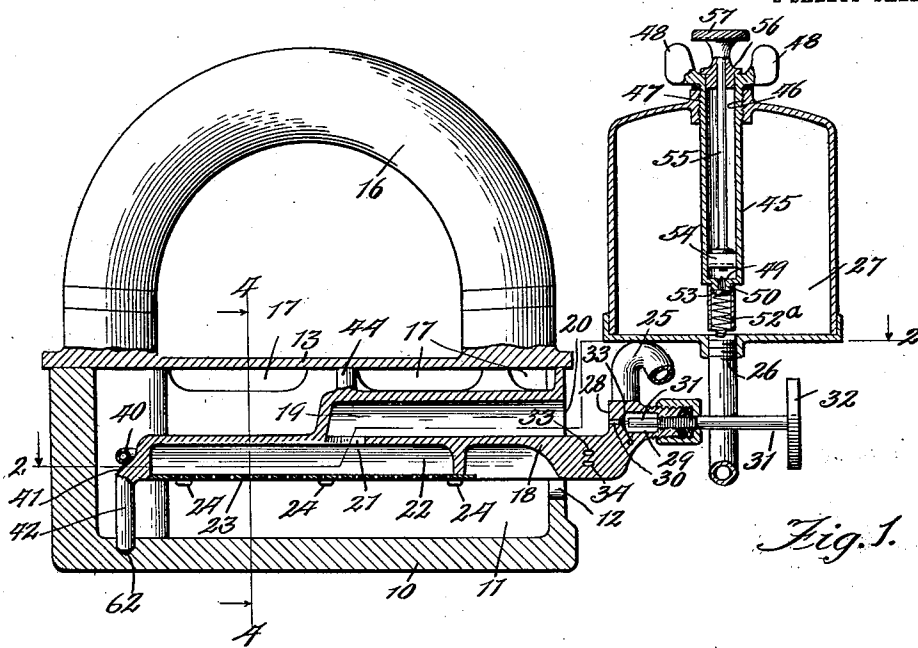


Fig. 1.

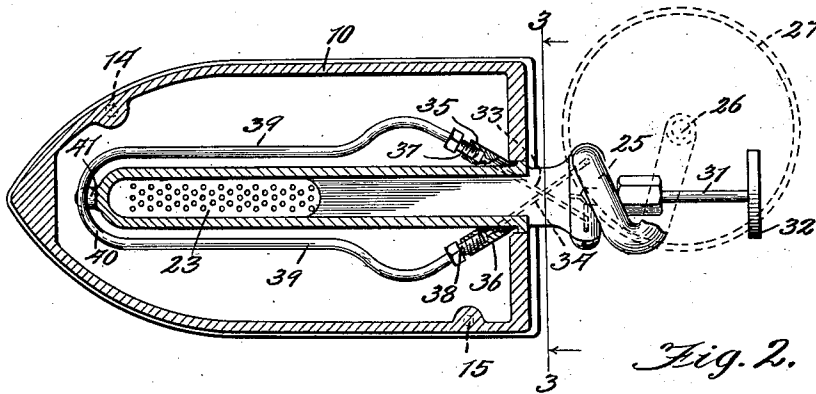


Fig. 2.

Witnesses:

W. H. Perry
W. H. Perry
W. H. Perry

Inventors
F. Maiworm
C. E. Mitchell
 By *Brown & Hopkins*
Attys.

F. MAIWORM & C. E. MITCHELL.

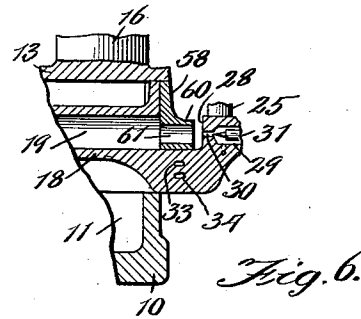
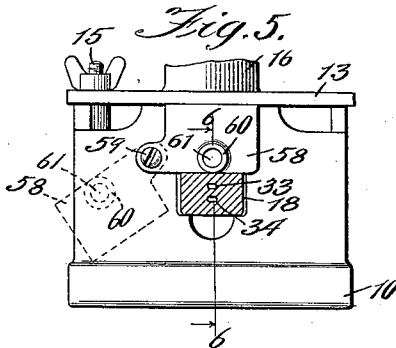
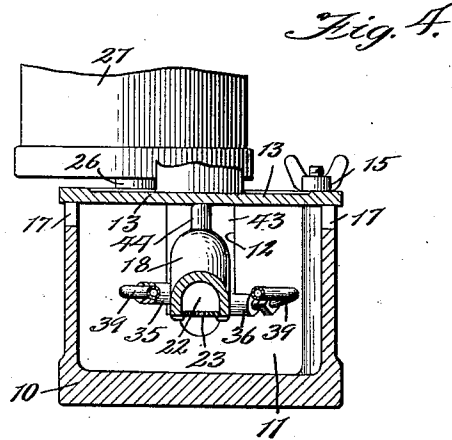
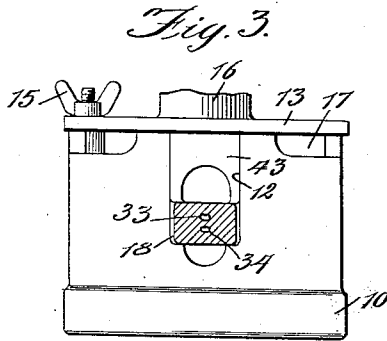
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Witnesses:

H. D. Perry
J. F. Gochum Jr.

Inventors

J. Maiworm
C. E. Mitchell

By *Brown & Hooper*

Attys.

UNITED STATES PATENT OFFICE.

FRANK MAIWORM AND CHARLES E. MITCHELL, OF CHICAGO, ILLINOIS.

SELF-HEATING FLAT-IRON.

1,023,947.

Specification of Letters Patent.

Patented Apr. 23, 1912.

Application filed April 19, 1909. Serial No. 490,822.

To all whom it may concern:

Be it known that we, FRANK MAIWORM and CHARLES E. MITCHELL, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Self-Heating Flat-Irons, of which the following is a specification.

This invention relates to improvements in self-heating flat irons and more particularly to that type in which the iron is heated from a burner, which latter is supplied with vapor generated from hydrocarbon oil, and one of the primary objects of the invention is to provide an improved burner and vaporizer which may be readily and easily detached from the iron.

A further object is to provide an improved vaporizer tube, which may be readily removed from the burner for the purpose of cleaning.

A further object is to provide improved means for forcing or supplying the liquid to be vaporized into the vaporizing tube.

A further object is to provide an improved attachment whereby alcohol may be employed as a heating fluid.

A further object is to provide improved means for holding the burner in position within the iron.

A further object is to provide an improved device of this character which will be simple, durable and cheap in construction and effective and efficient in operation.

To the attainment of these ends and the accomplishment of other new and useful objects, as will appear, the invention consists in the features of novelty in the construction, combination and arrangement of the several parts hereinafter more fully described and claimed and shown in the accompanying drawings, illustrating an embodiment of the invention, and in which—

Figure 1 is a longitudinal sectional view of an improved device of this character constructed in accordance with the principles of this invention. Fig. 2 is a sectional view on line 2—2 of Fig. 1. Fig. 3 is a sectional view on line 3—3 of Fig. 2. Fig. 4 is a sectional view on line 4—4 of Fig. 1. Fig. 5 is a view similar to Fig. 3, showing a modification of the invention. Fig. 6 is an enlarged detail sectional view on line 6—6 of Fig. 5, showing the needle valve for regulating the supply of vapor to the burner. Fig. 7 is a detail perspective view of a por-

tion of the pump for forcing the liquid into the vaporizer.

Referring more particularly to the drawings and in the present exemplification of the invention, the numeral 10 designates the iron, which is provided with a chamber 11, having an opening 12 in the rear wall thereof, in the usual manner. The chamber 11 is provided with a closure 13 which is mounted for movement upon a pivot 14 to swing laterally with respect to the iron and a fastening nut 15 for engaging and securing the closure in position. The handle 16 is secured to the closure and serves as a means whereby the closure may be opened. The walls of the chamber 11 are provided with the usual openings 17, which are arranged at the top of the chamber and adjacent the closure 13.

The burner proper comprises a body portion, designated generally by the reference numeral 18, in which portion is provided a mixing chamber 19, which opens, as at 20, to the rear. The bottom of the chamber 19 is provided with an opening 21, which communicates with a distributing chamber 22 arranged below the chamber 19. The chamber 22 preferably projects for some distance beyond the forward end of the chamber 19, and the bottom of the chamber 22 is formed by a reticulated member 23 in the form of a perforated strip of metal. The rear end of the chamber 22 preferably terminates short of the open end 20 of the chamber 19, and the perforated or reticulated member 23 may be secured in position in any desired or suitable manner, preferably by means of lugs or projections 24, on the body portion 18, which engages the edges of the member 23. The body portion 18 of the burner preferably projects beyond the open end 20 of the chamber 19 and terminates in a coil 25, one end 26 of which communicates with an oil reservoir or chamber 27, and which latter is supported by the coil 25. The body portion 18 of the burner is provided with an upright portion 28, which is arranged adjacent to and spaced from the open end 20 of the chamber 19 and provided with a chamber 29 having an outlet opening 30 in one wall thereof, which is arranged in alignment with the opening 20 of the chamber 19, and a needle valve 31 projects through the chamber 29 to control the opening 30. The handle 32 of the needle valve is arranged preferably below the reservoir chamber 27

and in a convenient position for ready access by the operator.

The body portion of the burner is provided with passages 33—34, one of which, preferably the passage 33, has communication at one end with the coil 25 and the other 34 has communication at one end with the chamber 29.

Projecting from the sides of the body portion of the burner and communicating respectively with the passages 33, 34, are tubular extensions 35—36, with which respectively the extremities 37—38 of a generating or vaporizing tube 39 are secured. This tube 39 may be of any desired size and configuration, but is preferably formed so as to extend around the forward extremity of the body portion of the burner and may be constructed of any suitable material, preferably of metal, which is readily heated. The forward extremity 40 of the tube extends around the forward end of the body of the burner and may be supported in any desired or suitable manner, preferably by means of a shoulder 41 formed on the body portion of the burner adjacent a foot or support 42 at said end, which latter supports the end of the burner. The extremities 37—38 of the tube are removably secured to the tubular projections 35—36 in any desired or suitable manner, so as to form fluid tight joints and at the same time to permit the tube to be readily detached for the purpose of cleaning the latter.

The burner is provided with a portion 43 at the rear end thereof, which is adapted to fit within and is of a width to extend across the opening 12 in the rear wall of the chamber 11, so as to hold the burner against lateral displacement and the rear end of the burner will rest upon the bottom of the opening which latter forms a support for said end. When the burner is in this position, the portion 43 will form a partition between the chamber 11 and the opening 30 of the chamber 29, so that the vapor discharged through said opening will be directed into the mixing chamber 19 and at the same time air will be admitted into the chamber through the end 20 thereof to form the proper mixture.

A projection 44 extends above the top of the burner and is adapted to be engaged by and rest against the closure 13 of the chamber 11, so that when the burner is in position and the closure closed, the burner will be held against displacement caused by the weight of the oil chamber or receptacle 27.

Arranged within the reservoir or tank 27 is a pump cylinder 45, which latter forms a closure for the reservoir and is provided with peripheral threads 46 adjacent one end thereof, which engage with corresponding threads in an opening 47 in the top of the chamber 27, and the pump cylinder is pro-

vided with wings or projections 48, by means of which the latter may be secured in position to close the reservoir or to be removed when it is desired to fill the latter.

The cylinder 45 is of a length to terminate some distance short of the bottom of the tank, and is provided with an opening 49 in the bottom thereof. A portion of the bottom of the cylinder is reduced to form a tubular projecting portion 50 surrounding the opening therein, and a tubular member 51 is provided into the end of which the tubular projection 50 extends, and this tubular member 51 is secured to the bottom of the pump cylinder preferably by friction. The tubular member 51 is provided with laterally projecting ears 52 extending thereacross, and an elastic member 52^a, such as a coil spring or the like, is arranged within the tubular member so that one end thereof rests against the projections 52 and the other end engages a valve 53, which is provided to form a closure for the opening in the bottom of the pump cylinder. The tubular member 51 is of a length to terminate short of the bottom of the tank 27. Arranged to move within the pump cylinder 45 is a piston 54, to which is connected a piston rod 55, which latter passes through a bushing or bearing 56, removably seated in the top of the cylinder 45, which also forms a closure for the cylinder. An operating handle 57 is provided on the plunger 55, by means of which the piston 54 may be reciprocated.

After the tank 27 has been supplied with the liquid, the piston 54 may be reciprocated to force air into the tank to create a pressure upon the liquid, the valve 31 being first closed. A sufficient amount of oil may be placed within the chamber 11 and ignited so as to heat the generating tube 39, after which the valve 31 may be opened to permit the vapor which is generated from the oil and which latter flows into the tube 39 from the coil 25 through the passage 33, to be discharged through the opening 30 and into the mixing chamber 19. From this chamber 19 the vapor will pass into the chamber 22, to be discharged through the perforated or reticulated member 23 to be ignited, and the flame is directed in a downward direction against the bottom of the iron, the products of combustion passing out of the openings 17 in the walls of the chamber. As the liquid flows from the tank into the tube 39 it will be vaporized and the liquid will be forced into the tube by the pressure in the tank 27. The supply of vapor to the mixing chamber 19 may be regulated by the needle valve, as will be understood.

If it is desired to use alcohol as a heating medium, it will be necessary to reduce the space between the open end 20 of the chamber 19 and the discharge opening 30 in the wall of the chamber 29, and for this purpose

a gate 58 is provided which is pivotally supported as at 59, preferably to the end wall of the chamber 11. This gate is provided with an extended portion 60 of a length to terminate a short distance from the wall 28 through which the opening 30 extends, and the extension 60 is provided with an opening 61 passing therethrough which is arranged in alinement with the opening 30 so that the vapor generated from the alcohol will be directed into the mixing chamber. This gate 58 also serves as a means whereby the vapor will be prevented from rising between the wall 28 and the chamber 19, when the pressure is not sufficient to direct the same across the space therebetween and into the chamber 19. The gate 58 rests upon the projecting portion of the burner proper and is held against displacement by the closure 13. When it is desired to move the gate out of operative position, the closure 13 is first opened and then the gate moved to the position shown in dotted lines in Fig. 5.

If desired, the bottom of the chamber 11 may be provided with a recess 62, into which the support 42 rests so as to serve as an additional means for preventing displacement of the burner.

In order that the invention might be fully understood the details of the foregoing embodiment thereof have been thus specifically described, but

What is claimed as new, is:

1. The combination of an iron having an open chamber therein and provided with an opening in one wall, a burner extending into the chamber, one end thereof resting upon the wall at the bottom of the opening, a support for the free end of the burner depending from said end and resting upon the bottom of the chamber, a fuel supply tank supported by the burner and located outside of the chamber, a closure for the chamber, and means whereby the closure will hold the burner against displacement by the weight of the fuel tank.

2. The combination of an iron having an open chamber therein and provided with an opening in one wall, a burner extending into the chamber, one end thereof resting upon the wall at the bottom of the opening, a support for the free end of the burner depending from said end and resting upon the bottom of the chamber, a fuel supply tank supported by the burner and located outside of the chamber, and a closure for the chamber, said burner being provided with a projection adapted to be engaged by the closure for pressing the said support against the bottom of the chamber to hold the burner against displacement by the weight of the fuel tank.

3. The combination of an iron having a chamber therein, a burner extending into the chamber, a mixing chamber in the burner, a fuel tank supported by the burner,

a vaporizing tube the ends of which are removably secured to the burner adjacent one end, one end of the tube having communication with the tank for receiving a supply therefrom, means whereby the vapor from the other end of the tube will be discharged into the mixing chamber, said tube being of substantially U shaped formation and extending around the burner, and a support at the bend in the tube and upon which the tube rests.

4. The combination of an iron having a chamber therein, a burner extending into the chamber through the wall thereof, a mixing chamber in the burner, a vaporizing tube supported by the burner adjacent the latter, a fuel supply tank with which one end of the tube has communication, a vapor discharge outlet spaced from the mixing chamber arranged to discharge into the chamber and with which outlet the other end of the tube has communication; means for controlling the outlet, and an independent apertured member supported for free pivotal movement adapted to be inserted into and removed from the space between the said outlet and the mixing chamber and substantially filling said space with the aperture arranged in alinement with the inlet of the mixing chamber.

5. The combination of an iron having a chamber therein, a burner extending into the chamber through the wall thereof, a mixing chamber in the burner, a vaporizing tube supported by the burner adjacent the latter, a fuel supply tank with which one end of the tube has communication, a vapor discharge outlet spaced from the mixing chamber arranged to discharge into the chamber and with which outlet the other end of the tube has communication, means for controlling the outlet, a member pivotally supported by the iron and adapted to be inserted into and removed from the space between the outlet and the mixing chamber, said member having an aperture there-through, a tubular extension surrounding the aperture and adapted to aline with the said outlet and substantially fill the said space, and means for preventing displacement of said member.

6. The combination of an iron having an open chamber therein, a burner extending into the chamber through the wall thereof, a mixing chamber in the burner, a vaporizing tube removably supported by the burner adjacent the latter, a fuel supply tank with which one end of the tube has communication, a vapor discharge outlet spaced from the mixing chamber arranged to discharge into the chamber and with which outlet the other end of the tube has communication, means for controlling the outlet, a member pivotally supported by the iron and adapted to be inserted between the outlet and the

mixing chamber, said member having an aperture therethrough, a tubular extension surrounding the aperture and adapted to align with the said outlet, and a closure for the chamber in the iron, said closure also serving to hold the said pivoted member against displacement.

7. In a self-heating iron, a hollow body open on top, and having an opening in its rear wall, a cover fitting said top, a burner within the body supported at its rear end in the opening of the rear wall, and having a leg at its front end whereby it is spaced from the floor of the body, and a stem rising from the top of the burner at its front end, and engageable with the cover.

8. In a self-heating iron, a hollow body having an opening in the rear wall, a re-

movable cover for said body, and a burner entering the body through the opening in the rear wall, said burner being grooved on opposite sides, into which grooves opposite walls of the opening extend, and the top of the burner being engageable by the cover whereby it is held in the opening of the rear wall.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, on this 17th day of April A. D. 1909.

FRANK MAIWORM.
CHARLES E. MITCHELL.

Witnesses:

J. H. JOCHUM, Jr.,
C. H. SEEM.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
