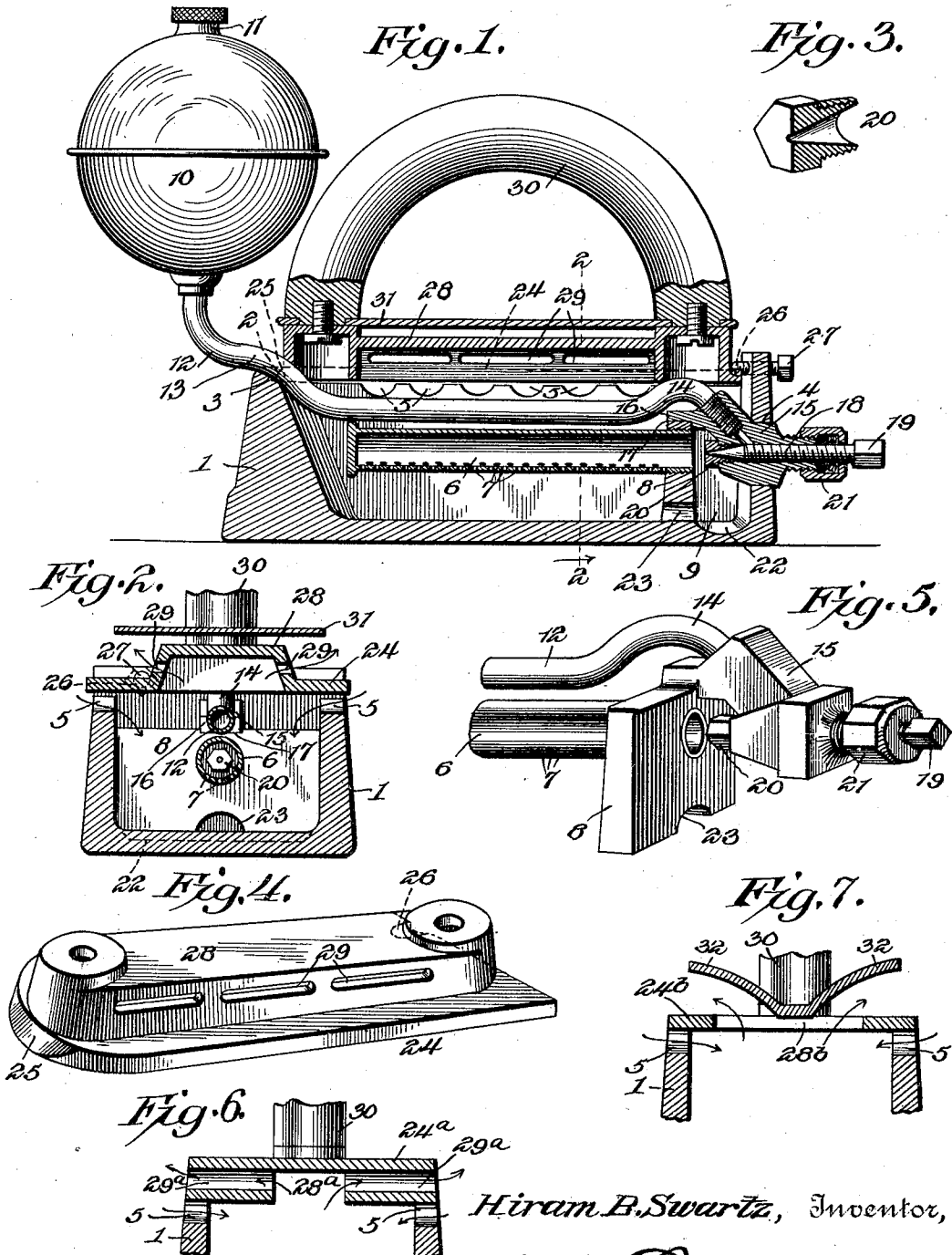


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PATENTED SEPT. 13, 1904.

H. B. SWARTZ.
SELF HEATING SAD IRON.
APPLICATION FILED JULY 26, 1902.

NO MODEL.



Witnesses
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UNITED STATES PATENT OFFICE.

HIRAM B. SWARTZ, OF WOOSTER, OHIO.

SELF-HEATING SAD-IRON.

SPECIFICATION forming part of Letters Patent No. 770,196, dated September 13, 1904.

Application filed July 26, 1902. Serial No. 117,097. (No model.)

To all whom it may concern:

Be it known that I, HIRAM B. SWARTZ, a citizen of the United States, residing at Wooster, in the county of Wayne and State of Ohio, have invented a new and useful Self-Heating Sad-Iron, of which the following is a specification.

This invention relates to self-heating sad-irons, and is particularly designed to provide certain new and useful improvements in the construction and arrangement shown in my prior patent, No. 698,757, dated April 29, 1902.

It is furthermore designed to provide for conveniently removing obstructions from the valve-seat without interfering with the needle-valve and the stuffing-box therefor and also to arrange the valve-casing within the body of the iron, so as to be maintained in a highly-heated condition for the purpose of promoting combustion and at the same time give convenient access to the needle-valve for controlling the flow of the fluid fuel to the burner-tube.

Another object is to improve the means for carrying off the products of combustion, so as to maintain the proper draft and at the same time to conduct said heated products of combustion to opposite sides of the top of the iron in a manner to prevent injuring the hand of the operator and in this connection to dispense with the shield shown in my former patent above referred to, although said shield may be employed, if desired, for protection.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a longitudinal sectional view of a self-heating sad-iron embodying the features of the present invention. Fig. 2 is a cross-sectional view thereof on the line 2 2 of Fig. 1. Fig. 3 is a detail sectional perspective view of the removable valve-seat. Fig. 4 is a detail perspective view of the cover

of the iron. Fig. 5 is a detail perspective of a portion of a modified arrangement of the gas-generating apparatus. Figs. 6 and 7 are detail transverse sectional views showing modifications of the means for conducting the heated products of combustion to the sides of the top of the iron body.

Like characters of reference designate corresponding parts in all of the figures of the drawings.

Referring to the accompanying drawings, 1 designates the body of the iron, which, as in my prior device, is hollow with an open top, the upper edge of the front of the body being undercut, as at 2, and provided at its middle with a recess or seat 3, while the rear end of the iron is provided with an opening or seat 4 for the reception of the valve-casing of the gas-generating apparatus, as will be hereinafter described. In each side of the iron body and at the upper edge thereof there is provided a plurality of openings or notches 5, which intersect the top edge of the iron body and are designed to form ingress-openings for the ingress of air to the burner.

As in my prior device, the burner consists of a tube 6, which is disposed longitudinally within the body of the burner and is provided throughout its under side with a plurality of perforations 7, through which the flame projects downwardly to heat the bottom of the iron. The rear end of the burner-tube is open and, as shown in Fig. 1, is screw-threaded into a transverse head or partition 8, which extends transversely across the body of the iron at a suitable distance from the rear wall of the iron, so that besides forming the support for the burner it also forms a chamber or compartment 9 between the partition and the rear end of the iron, it of course being understood that the partition terminates short of the top of the iron body, so as to accommodate the service-pipe of the gas-generating apparatus.

The gas-generating apparatus comprises a fluid tank or reservoir 10, the filling-opening of which is closed by the removable cap or cover 11, there being a service-pipe 12 leading from the bottom of the tank and directed horizontally therefrom, the forward portion

of the pipe having a bend or offset 13 to lie in the recess or seat 3 at the front of the iron body, where the intermediate straight portion of the service-pipe is let down close to and lies longitudinally above the burner-tube 6. The rear end portion of the service-pipe is provided with an upwardly-directed bend or offset 14, so as to bridge or pass over the partition 8. Carried by the rear end of the service-pipe is a substantially L-shaped valve-casing 15, which has its lower rear end portion projected through the opening 4, so as to give access to the casing from the exterior of the iron body and also to prevent tilting of the fuel-reservoir. The upper forward portion of the casing is provided with a forwardly-directed projection 16, which normally rests in a socket or seat 17 in the top of the partition 8, so as to form an additional support for the casing and the rear end of the service-pipe. A substantially horizontal needle-valve 18 extends through the lower member of the valve-casing and is provided with a polygonal outer end or head 19 for engagement by a wrench to adjust the screw-threaded stem of the valve in an endwise direction to vary the flow of the liquid fuel. At the inner end of the valve-casing there is a removable valve-seat 20, which is in the form of an externally-screw-threaded nipple fitted into an internally-screw-threaded opening or recess in the front of the casing and has a smooth tapered bore for the reception of the pointed end of the needle-valve 18. It will of course be understood that the bore of the nipple or valve-seat tapers forwardly and pierces the forward or outer end of the seat with a very small opening. The forward end or head of the valve-seat is made polygonal for the reception of a wrench and normally projects beyond the casing for convenience in applying and removing the seat. The purpose of having the valve-seat removable is to facilitate the removal of obstructions therefrom without interfering with the stuffing-box 21. The exit-opening in the valve-seat is of course aligned centrally with the rear open end of the burner-tube 6, and the latter pierces the partition 8, so as to receive the fuel which is projected from the valve-seat. The bottom of the compartment 9 is dished or recessed, as at 22, for collecting the original supply of the liquid fuel, which is to be ignited, so as to heat the valve-casing for the purpose of converting the liquid fuel into gas. The partition 8 is provided with one or more perforations 23 at the base thereof, so that the oil which is projected into the burner-tube and flows down through the perforation therein may readily run back into the recess or chamber 22.

As shown in Figs. 1 and 2, the partition 8 is integral with the body of the iron and the valve-casing is separate therefrom, whereby said casing, the service-pipe, and the fuel-reservoir may be removed without interfer-

ing with the partition and the burner-tube. However, if preferred, the partition 8 may be separate from the body of the iron and carried by the forward portion of the valve-casing, as indicated in Fig. 4, whereby the partition and the gas-burner are removable with the valve-casing.

The open top of the iron body, through which the burner and gas-generating apparatus are inserted into the iron, is normally closed by means of a cover 24, which is provided at its forward end with a beveled shoulder 25, to underlie the undercut shoulder 2 of the body thereof, so as to detachably interlock the forward ends of the cover and the iron body. The rear end of the cover is provided in its upper side with a seat or recess 26 for the reception of the forward end of a set-screw 27, which pierces the rear end of the iron body and is adapted to be engaged with the cover after it has been fitted in place, thereby to detachably connect the rear ends of the cover and the iron. The central portion of the cover is provided with a raised or elevated longitudinal portion 28, forming a longitudinal flue, aligned substantially above the burner-tube, the side walls of this raised portion or flue being provided with a series of longitudinal openings 29, which form side flues leading from the central flue laterally outward, so as to carry off the heated products of combustion at opposite sides of the iron body, thereby to insure the required draft, to prevent smoking of the burner, and also to protect the hand of the operator when grasping the handle 30, which is disposed longitudinally above the cover and has its opposite ends connected thereto in any suitable manner. It will here be observed that the elevated portion 28 of the cover, or, in other words, the top of the longitudinal flue, forms a shield to protect the hand of the operator, and while I prefer to employ an additional shield 31, disposed above the elevated portion and carried by the handle, it will of course be understood that this additional shield may be dispensed with without interfering in any manner whatsoever with the operation of the burner, as it is merely an additional guard or shield to protect the hand of the operator.

The course of the incoming currents of air and the outgoing heated products of combustion has been indicated by arrows in Fig. 2 of the drawings, wherein it will be observed that the external air passes inwardly through the inlet-openings 5 at the tops of the sides of the iron body, thence downwardly and inwardly to the burner, thence vertically upward from the burner to the longitudinal flue, and, finally, outward in a lateral direction through the transverse flues 29, whereby the heated products of combustion are carried to the sides of the iron body, and therefore do not rise into contact with the hand of the operator, the top of the elevated cover portion

28 thereby forming a shield to prevent excessive heating of the operator's hand.

As shown in Fig. 6, the cover 24^a may be made comparatively thick, with a reduced under portion extending longitudinally throughout its middle to form a flue 28^a, with transverse openings or flues 29^a formed through the opposite thick portions of the cover and leading from the flue 28^a outwardly through opposite longitudinal sides of the cover.

Another modified form of cover has been shown in Fig. 7, wherein the cover 24^b is comparatively thin and is provided throughout its longitudinal center with an opening which forms a longitudinal flue 28^b, from the center of which flue arise longitudinal flanges or shields 32, which incline upwardly and outwardly and overlap the respective outer longitudinal edges of the opening 28^b, whereby these shields cooperate with the cover to form transverse flues leading outwardly from the longitudinal flue 28^b, so as to carry the heated products of combustion to the opposite sides of the iron body, and thereby protect the hand of the operator.

To heat the iron preparatory to using the same, the cover is removed and the valve 18 is opened, so as to supply a small quantity of liquid fuel to the interior of the iron body, which fuel is quickly collected in the chamber 22. It will here be noted that when the cover is removed the fuel reservoir or tank 10 is prevented from tilting by reason of the valve-casing 15 being inserted in the seat or opening 4, or, in other words, underlies a portion of the stationary iron body. After a suitable quantity of oil has been collected the supply is shut off and the oil is ignited, thereby to heat the valve-casing and generate gas. When the oil in the chamber 9 has become entirely consumed, the valve is again opened and the gas ignited, after which the cover is fitted in place, and the iron is in readiness for use as soon as it has become suitably heated.

It is desired to especially call attention to the fact that the handle is alined vertically over the burner, so as to evenly balance the iron, and in each form of cover there is an imperforate portion alined between the burner and the handle, so as to form a shield to prevent the heated products of combustion from rising into contact with the hand of the operator, whereby it is not absolutely necessary to employ a separate shield, as in my former device. Moreover, the opening or flues in the cover are arranged to discharge the heated products of combustion at considerable distances beyond opposite sides of the handle, whereby the hand of the operator is not heated by the escaping products of combustion. Another important feature of the present invention resides in the fact that the valve-casing is located within the body of the iron, and thereby directly subjected to the internal heat

of the iron. Moreover, the service-pipe and valve-casing being inclosed within the iron body are not subjected to the cooling effect of external air, so that after the fuel once enters the body of the iron it does not again pass to the exterior thereof, wherefore there is no partial cooling of the fuel before it reaches the burner and is therefore more effectively converted into gas than in my prior device, wherein the valve-casing was located externally of the body of the iron. Also by having the rear end of the sad-iron entirely closed the backward movement of the iron will not interfere with the jet or the flame.

What I claim is—

1. In a sad-iron, the combination of a hollow iron body provided at one end with an opening, a transverse partition located within the body adjacent to the said opening, a burner located within the hollow body and mounted on the partition, a valve-casing fitted within and entirely filling the said end opening, whereby that end of the iron body is closed to prevent the backward and forward movement of the sad-iron from affecting the jet or flame, said valve-casing being extended into the body, a fuel-pipe connected with the valve-casing, an exteriorly-operable valve carried by the valve-casing, a removable top covering the upper portion of the body and detachably secured to the same, and a handle connected with the said top and carried by the same when the top is removed from the body, substantially as described.

2. In a sad-iron, the combination of a body having a handle and provided at one end with an opening, a transverse partition located within the body adjacent to the said opening and provided at the top with a seat, a burner carried by the partition, a valve-casing fitting within and entirely filling the said end opening, whereby that end of the iron body is closed to prevent the backward movement of the iron from affecting the jet or the flame, said valve-casing being extended into the body and provided with a lug fitted in the said seat, and a fuel-pipe connected with the valve-casing at the said lug, substantially as described.

3. In a sad-iron, the combination with a hollow body having an air-inlet in the side thereof at or near the top, of a centrally-arranged burner disposed longitudinally within the body of the iron and located below the plane of the air-inlet, a top for covering the upper portion of the body, a centrally-arranged handle rising above the top and alined vertically over the burner, the top having an imperforate portion alined with and interposed between the burner and the handle, and provided with a flue located above the burner and having a lateral outlet disposed at one side of the vertical plane of the handle and at a point above the air-inlet, substantially as described.

4. In a sad-iron, the combination with a hollow body having an air-inlet in the side there-

of at or near the top, of a centrally-arranged burner disposed longitudinally within the body of the iron and located below the air-inlet, a cover for the body, and a centrally-arranged handle rising above the cover and alined vertically over the burner, the cover having an imperforate portion alined with and interposed between the burner and the handle and centrally elevated to form a longitudinal flue, the side walls of the flue being provided with openings lying outwardly beyond the ver-

tical plane of the handle and disposed above the air-inlet openings of the body, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HIRAM B. SWARTZ.

Witnesses:

FRANK TAGGART,
H. R. SMITH.