No. 636,060. Patented Oct. 31, 1899.

W. PITT.

VAPOR BURNER FOR SELF HEATING SAD IRONS.

(Application filed Dec. 31, 1898.)

(No Model.)

Fig. 1.

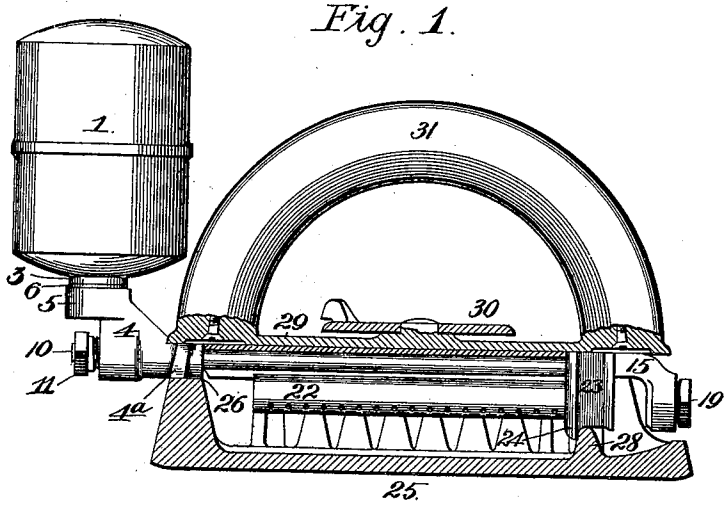
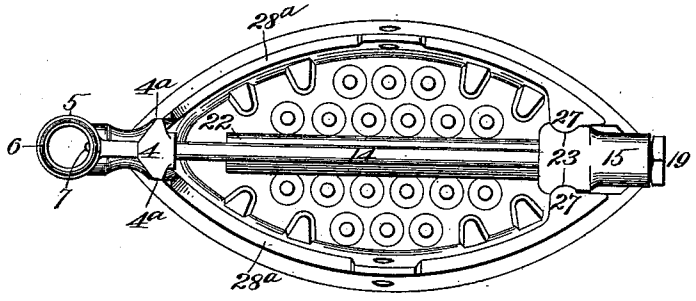



Fig. 2.



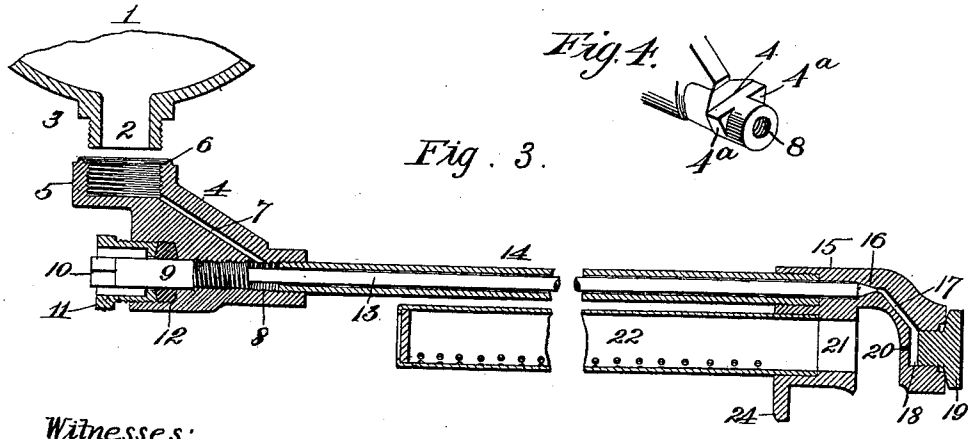




Fig. 3.

Fig. 4.




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# UNITED STATES PATENT OFFICE.

WILLIAM PITT, OF INDEPENDENCE, MISSOURI, ASSIGNOR TO B. C. SMITH, OF KANSAS CITY, MISSOURI, AND J. H. MERCHANT AND M. H. REDFIELD, OF OMAHA, NEBRASKA.

## VAPOR-BURNER FOR SELF-HEATING SAD-IRONS.

SPECIFICATION forming part of Letters Patent No. 636,060, dated October 31, 1899.

Application filed December 31, 1898. Serial No. 700,871. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM PITT, of Independence, Jackson county, Missouri, have invented certain new and useful Improvements in Vapor-Burners for Self-Heating Sad-Irons, of which the following is a specification.

My invention relates to vapor-burners for self-heating sad-irons; and my object is to produce a burner of this character of simple, strong, durable, and inexpensive construction, wherein the number of joints is reduced to diminish the chances of leakage, and thereby secure more satisfactory service for a longer period of time than can be obtained by the use of the generality of such devices, wherein the chances of the vapor jet-orifice becoming choked up are reduced by locating the packing-box at a point beyond the suctional influence of the escaping vapor, it being well known that each removal and insertion of the valve tends to free particles of the packing, which in ordinary burners are frequently drawn into the jet-orifice by the forceful ejection of the vapor, and wherein an obstruction in the jet-orifice can be removed easily and quickly without reducing the pressure—that is, while the process of generation is in operation.

With this object in view the invention consists in certain novel and peculiar features of construction and combinations of parts, as will be hereinafter described and claimed, and in order that it may be fully understood I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 represents in side elevation a vapor-burner embodying my invention, said burner being shown in operative position in a sad-iron, the latter being sectioned in order to more clearly disclose this relation. Fig. 2 is a top plan view of the burner with the oil-tank removed and of the "iron" with its cover omitted. Fig. 3 is an enlarged vertical longitudinal section of the burner. Fig. 4 is a perspective view of a part of the head-casting.

In the said drawings, 1 designates the oil-tank, of peculiar construction in that its one opening 2 is utilized in filling the tank and also as an exit for the oil on its passage to the vaporizing-tube, hereinafter referred to. In fact it is in use simply an inverted tank having its neck externally threaded and formed with a shoulder 3, said tank being thus made in one piece without a filling cap or plug at its upper end, so that the upper end of the tank shall afford as little obstruction as possible when the iron is pushed, for instance, into the sleeve of a shirt being ironed, where it is obvious a cap or projection on the top of the tank would be decidedly objectionable, as it would not only cause the operator to lose time by manipulating the iron more slowly, but would also be apt to catch into the sleeve or other part of the garment being ironed and tear the same. In fact this is one of the standing objections to self-heating irons which are provided with caps or other projections, as most of them are at the top of the tank.

4 designates the head-casting of the generator, said head-casting being formed at its upper front end with an internally-threaded inverted cap 5 to receive the threaded neck of the tube, and in order to make the joint practically perfect without packing the upper end of the cap is formed with an annular V-shaped flange 6, which abuts squarely against the opposing shoulder 3 of the inverted tank. By this construction the more frequently the cap and tank are screwed together the more perfect the joint becomes between the flange 6 and the shoulder 3. Said head-casting is provided with a passage 7, communicating at its upper end with the hollow cap 5 and at its lower and rear end with the longitudinally-threaded passage 8, wherein is mounted the threaded portion 9 of the needle-valve rod, the front end of said threaded portion 9 being squared, as at 10, to conveniently receive a key (not shown) for adjusting the valve. This portion 9 extends through the base of the hollow packing-nut 11 and through the packing 12, interposed between the base of said nut and the head-casting, this packing performing its usual function—viz., preventing the leakage of oil. The needle-valve rod 13, of reduced diameter, extends rearward from the threaded portion

9 clear through the vaporizing-tube 14, screwed at its front end into the passage 8 just rearward of the passage 7. The rod 13 almost completely fills the passage of said tube, to the end that it shall act also to facilitate the vaporization of the oil by permitting only a thin cylindrical film of oil to pass through the tube, as will be readily understood by reference to Fig. 3. The needle-valve rod, terminating at its rear end, as usual, in a conical point or needle, is adapted to be seated with more or less pressure against the needle-valve seat 16 of the tail-casting 15 of the generator, said casting being screwed upon the rear end of the tube 14. 17 designates an oblique vapor-passage leading downward and rearward from the valve-seat opening and communicating with the front end of the relatively large threaded opening 18, whose axis is parallel with and vertically below the extended axis of the vaporizing-tube.

In the manufacture of this burner the passage 17 can be drilled by projecting a drill obliquely through the opening 18. To close the rear end of the opening 18, which is threaded, I employ the threaded clean-out plug 19, this plug being necessary in order that the fine vapor jet-orifice 20 may be easily and quickly cleaned when necessary. This clean-out plug serves not only to close the rear end of the opening 18, but also serves as a closure for what would otherwise be a superfluous extension of passage 17—that is to say, if the passage 17 were so disposed that it could not be formed by projecting the drill into opening 18, but would have to be drilled from the outside surface of the tail-casting, a plug would have to be employed to close up the lower end of said passage, and through this closed end the vapor, in time, would leak to some extent and the result would be unsatisfactory service.

The tail-casting 15 is provided with a pendent arm a slight distance forward of the arm in which the orifice 20 is formed, and said pendent arm is provided with a longitudinal opening 21 in axial alinement with said orifice, and secured in said arm and communicating with the opening 21 thereof is the usual perforated burner-tube 22. The tail-casting is provided in its opposite sides with vertical grooves 23 and forward thereof with the flange 24, pendent from the lower end of the front arm of said casting.

The iron with which this "burner" is primarily adapted for service is herewith illustrated, the base portion being numbered 25 and provided at its front end with a notch 26 and at its rear end with the vertical parallel ribs 27 and cross-rib 28, to the end that the burner may be reliably supported when placed in the iron, the flat ribs $4^a$ of the head-casting fitting snugly in the notch 26, and the front arm of the tail-casting resting upon the cross-rib 28 of the iron, with the flange 24 overlapping and bearing against the front side of said rib and serving to prevent longitudinal movement of the burner and also to cut off the escape of burned vapor at such point, such burned vapor being adapted to escape through openings or recesses $28^a$, formed in the walls of the iron forward of its center. To any described peculiarity of the iron, however, no claim is made in this application.

The burner is prevented from lateral movement by the engagement of the ribs 27 of the iron with the grooves 23 of the tail-casting. The cover 29 of the iron is fitted down upon the base portion of the latter and may be secured reliably thereto through instrumentalities (not shown) actuated by the hand-disk 30 or in any other suitable manner, and secured also to the cover is the handle 31.

Supposing the tank to be empty and it be necessary to recharge it, the cover of the iron is taken off and the burner removed from position. The operator then grasps the tank firmly in one hand and the tail end of the burner with the other and uses the latter as a lever in unscrewing said parts. The tank is then charged with gasolene or its equivalent, and the burner-cap 15 is fitted thereon and screwed down in place by utilizing the burner as a lever. Thus it will be seen that I dispense with the use of a wrench in both the connection and disconnection of the said parts.

In practice a little gasolene is poured in the hollow base portion of the iron and then the burner is placed on the iron. The gasolene is then ignited and the flames enveloping the vaporizing-tube 14 raise the same and the rod therein to vaporizing temperature. The key (not shown) is then engaged with the squared end 10 of the needle-valve rod, and the latter is moved back slightly from its seat 16, so as to permit the vapor in tube 14 to pass down through passage 17 and escape under considerable pressure through the orifice 20 into the opening 21, where it mixes with the air drawn into said opening by the stream of vapor, this mixing of air and vapor producing a combustible gas, which as it escapes through the perforations of the burner-tube is ignited. The cover is then screwed in place, and the gas burning with intense heat soon raises the temperature of the iron sufficiently to perform its required function. This action continues as long as the valve is open and oil is admitted to the tube, and may be terminated at any time by simply closing said valve. Substances foreign to the oil and conveyed by the vapor down through the passage 17 find a lodgment in the opening 18, said opening being of such capacity that it will accommodate the accumulations of such sediment for an extended period of time, and thereby obviate the necessity of frequently removing the clean-out plug and running a needle or equivalent device through the vapor jet-orifice to clean it, this operation being necessary very frequently in burners where the vapor-passage leads direct from the valve-seat to the orifice. In this connection it may be stated that as the head-casting

and tank constitute a relatively large surface for radiating the heat conducted thereto the packing is not subjected to such a damaging heat as it would be if located in the tail-casting near the jet-orifice, as is customary. An intense heat causes asbestos or equivalent packing to harden or solidify, and therefore in time perform its function so imperfectly that a frequent renewal of the packing is necessary. My chief objects are, however, in this connection, to produce a burner with its parts occupying relative positions which reduce the chances of the vapor jet-orifice becoming clogged up, and consequently insuring a more continuous and satisfactory service, to produce a construction whereby the jet-orifice when clogged up may be quickly and easily cleaned by the removal of the clean-out plug and the projection of a needle through the orifice without reducing the pressure, and to produce a burner wherein the number of joints is reduced to limit chances of leakage and consequent reduced pressure and imperfect service.

The drawings illustrate the preferred embodiment of my invention; but it is to be understood that I reserve the right to make such changes as do not involve a departure from its spirit and scope.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A vapor-burner, embodying a casting of approximately inverted-**U** form and provided with a valve-seat opening in its bridge portion, a mixing-chamber opening in one of the depending arms, and a threaded opening in the other depending arm, and provided also with a jet-orifice communicating with the threaded opening and adapted to discharge vapor toward and into the mixing-chamber opening, said casting being provided also with a passage connecting the valve-seat opening with said threaded opening, and a plug 19 closing the latter, substantially as described.

2. A vapor-burner, comprising a head-casting, having a packing-box, an inverted cap, a threaded passage, and a passage connecting the interior of the cap with the threaded passage, a tail-casting provided with a valve-seat opening, and a burner, a tube connecting the head and tail castings, and a needle-valve rod extending through said tube and packing-box and engaging the valve-seat opening, and provided with a threaded portion engaging said threaded passage, substantially as described.

3. A vapor-burner, comprising a head-casting having a packing-box, an inverted cap, a threaded passage, and a passage connecting the interior of the cap with the threaded passage, a tail-casting provided with a valve-seat opening and a burner, a tube connecting the head and tail castings, a needle-valve rod extending through said tube and packing-box and engaging the valve-seat opening, and provided with a threaded portion engaging said threaded passage, and a tank secured to the head-casting and communicating with the interior of said cap, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

WILLIAM PITT.

Witnesses:
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G. Y. THORPE.