O. SPAHR & C. STICHLER.

SAD IRON.

APPLICATION FILED NOV. 22, 1911.

1,050,572.

Patented Jan. 14, 1913.

3 SHEETS—SHEET 1.

Fig. 1.

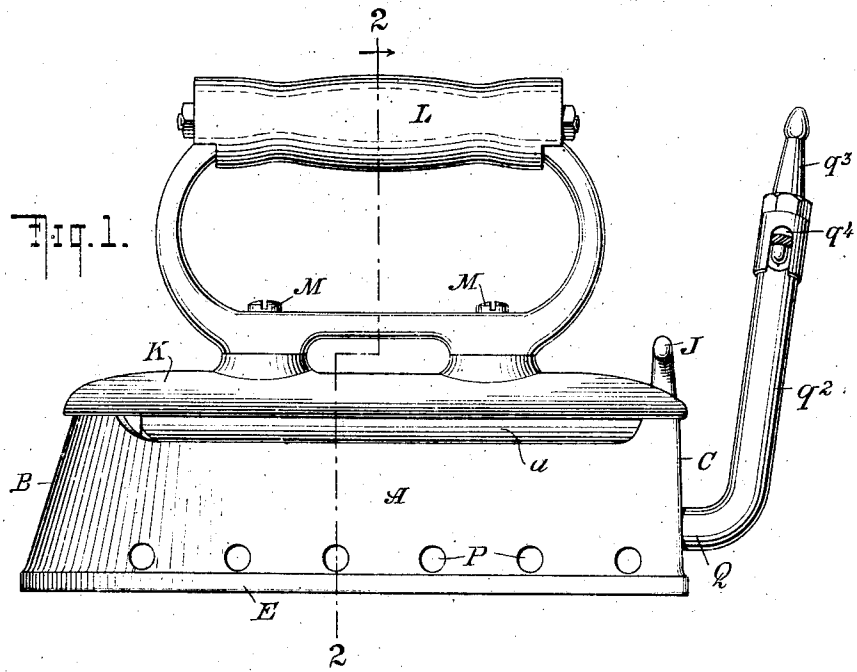


Fig. 2.

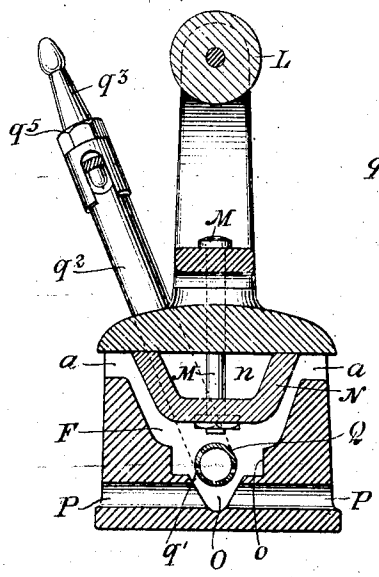


Fig. 10.

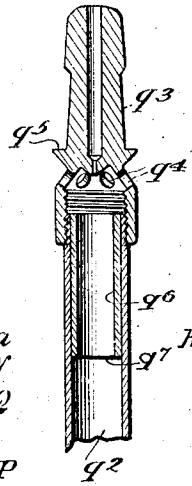
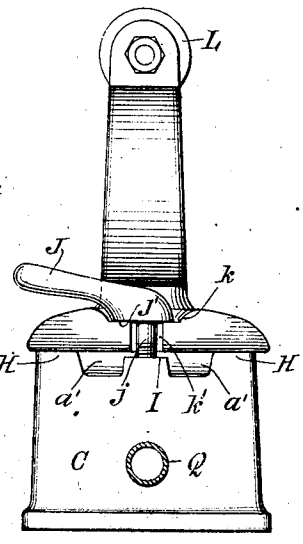


Fig. 3.



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3 SHEETS—SHEET 2.

Fig. 4.

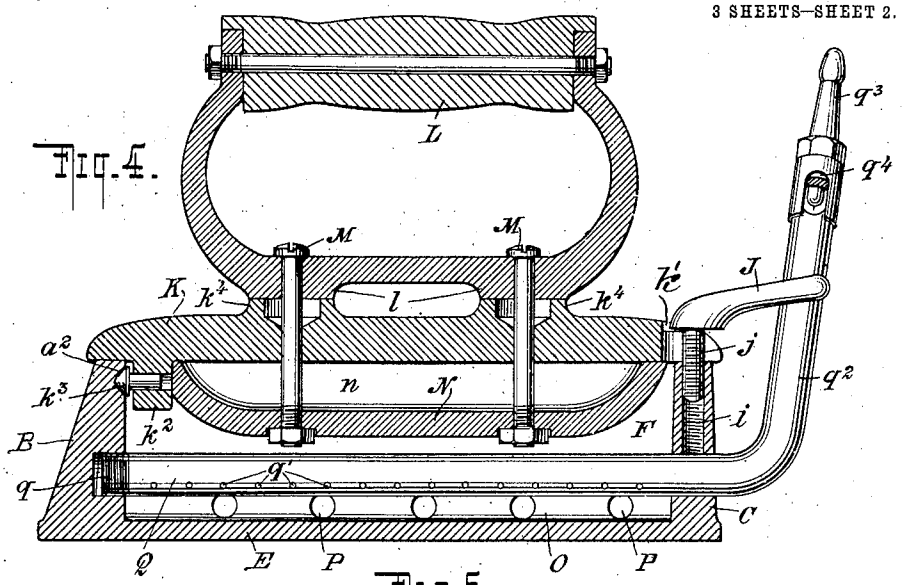


Fig. 5.

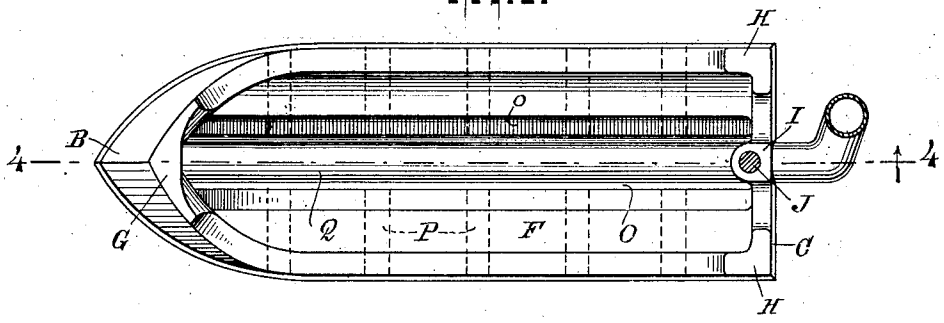
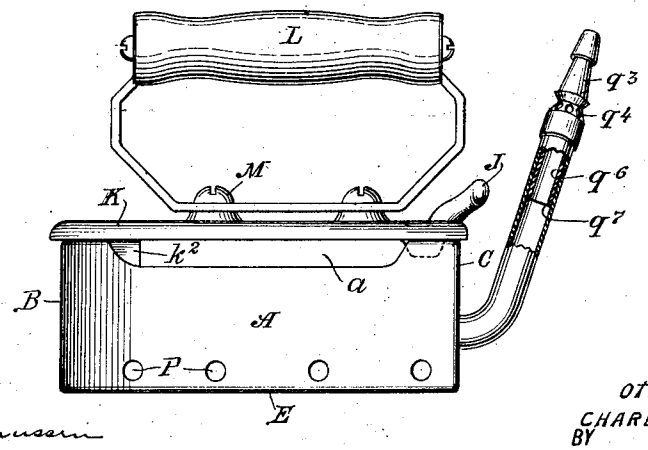


Fig. 6.



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3 SHEETS—SHEET 3.

Fig. 7.

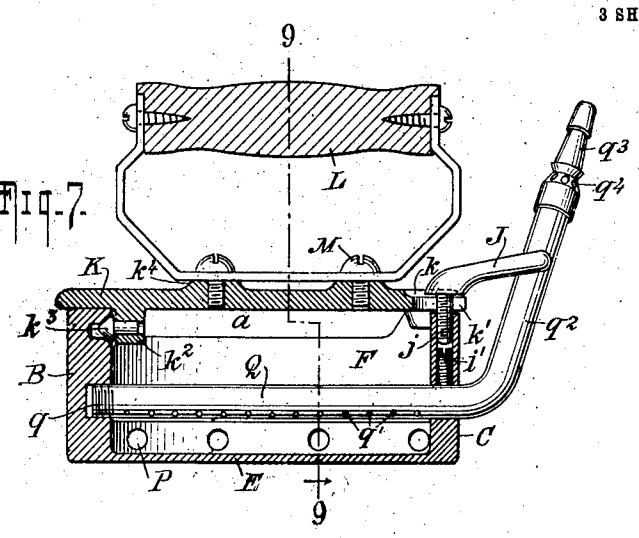


Fig. 8.

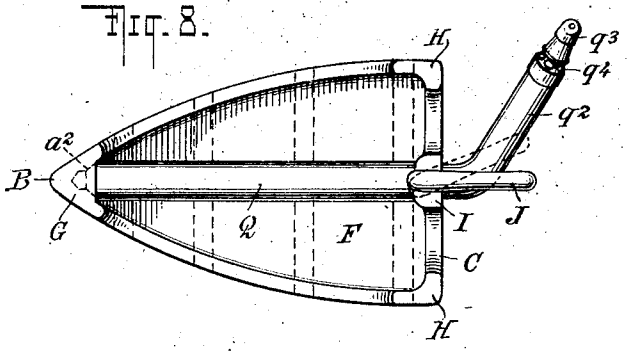
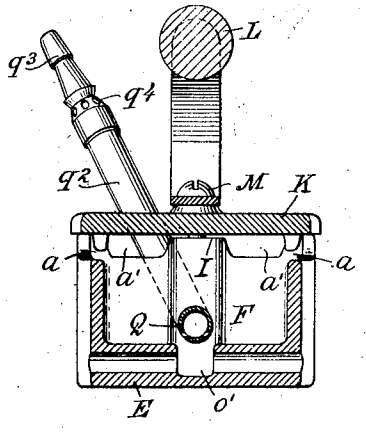


Fig. 9.



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UNITED STATES PATENT OFFICE.

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SAD-IRON.

1,050,572. Specification of Letters Patent. Patented Jan. 14, 1913.

Application filed November 22, 1911. Serial No. 661,821.

To all whom it may concern:

Be it known that we, OTTO SPAHR and CHARLES STICHLER, the former a citizen of the United States and the latter a subject of the German Emperor, both residents of Philadelphia, county of Philadelphia, State of Pennsylvania, have jointly invented certain new and useful Improvements in Sad-Irons, of which the following is a specification.

Our invention relates to sad irons of the kind which are heated internally by means of jets of flame and has for its object to provide a structure in which the flames are broken up and distributed so that the heating effect thereof on the iron will be increased and become quickly apparent.

A further object of our invention is to secure a perfect mixture of the heating gases and air to secure perfect combustion and a consequent maximum amount of heat with a minimum expenditure of fuel.

Other objects of our invention are to provide a cover which may be easily moved to expose the interior of the body of the iron and a readily operated locking means for securing said cover in position on the body.

Still other objects of our invention will appear from the description hereinafter and the features of novelty will be pointed out in the appended claims.

Reference is to be had to the accompanying drawings in which—

Figure 1 is a side elevation of a tailor's iron or goose constructed according to our invention; Fig. 2 is a cross-section thereof on the line 2—2 of Fig. 1; Fig. 3 is an end elevation thereof with parts in section; Fig. 4 is a central longitudinal section of our improved iron on the line 4—4 of Fig. 5; Fig. 5 is a plan view of the body of the iron and with the cover removed and parts in section; Fig. 6 is a side elevation of a small household iron constructed according to our invention; Fig. 7 is a central longitudinal section thereof; Fig. 8 is a plan view similar to Fig. 5; Fig. 9 is a cross-section on the line 9—9 of Fig. 7 and Fig. 10 is a longitudinal section of the Bunsen tube.

In the drawings A represents the hollow body of the iron which is provided with side walls terminating in an apex B and a rear wall C connecting the two side walls as clearly shown in Fig. 5. The said body A is further provided with the usual bottom E and is preferably open at the top, the hollow interior forming a heating chamber F. An upwardly extending projection G is located at the upper portion of the apex B of the body and preferably extends along the upper portion of each side wall for a short distance as shown in Fig. 5, similar projections H being located at the corners formed at the points of connection between the said side walls and the rear walls C, said projections H also preferably extending along the side walls and the rear wall for a short distance as best illustrated in Fig. 5. An upwardly projecting lug I is located on the rear wall C intermediate of the two projections H and as shown best in Fig. 3 has its upper surface in a plane lower than the upper surfaces of said projections H, or in other words is not as high as said projections H for reasons which will appear more fully hereinafter. A lever J is rotatably mounted on the lug I, preferably by means of a screw-threaded stem *j* which screws into an internally screw-threaded aperture *i* formed in the lug I. The said lever thus in addition to being rotatable relatively to the body of the iron, will also move up or down in the direction of the axis of the stem *j* according to the direction of rotation and is further provided with projections or shoulders *j'* which extend on opposite sides of the axis of said stem *j*, the whole comprising a locking means for the purpose to be described hereinafter. A cover K of substantially the same shape as the body A when looked at in plan and movable relatively thereto is arranged to cover the open top of the body A and is supported by the projections G and H. The projections G and H come into contact with the cover at its apex and at the corners formed by the side and rear edges thereof, so that said cover, with this arrangement engages the body and is supported only at three spaced points. It will be seen by a reference to Fig. 1 that the upper edges of the side walls between the projections G and H are thus spaced from the cover to form continuous apertures *a* extending substantially throughout the length of the body and by referring to Fig. 3 that the portions of the upper edge of the rear wall C between each projection H and the lug I are similarly spaced to form apertures *a'*. The cover K is preferably though not necessarily formed with a depressed portion *k* extend-

ing inwardly from the rear edge thereof and provided with an open ended slot k' for the accommodation of the stem j of the lever J when the cover K is in position on the body A. At its front portion or apex the cover K is connected with the body in any suitable manner to permit said cover to be moved relatively to said body as for instance by means of a lug k^2 projecting downwardly from its lower surface and carrying a pin or other projection k^3 arranged to extend into an aperture or recess a^2 formed within the front portion or apex of the body A. A handle L for manipulating the iron is secured to said cover K by means of bolts and nuts M as clearly shown in Fig. 4, it being understood that instead of being made separate from the cover the handle may be made integral therewith. The said handle is preferably made with offsets l which are of relatively small area and preferably engage similar offsets k^4 formed on the cover K. With this construction the contacting surfaces of the cover and handle are of relatively small area so that the tendency of the handle to become heated through heat conduction from the body is considerably reduced. To further minimize the tendency of the handle to become heated, especially in large irons such as used by tailors the cover K is provided on its lower or inner surface with a curved or otherwise recessed shield N which may be secured in position on said cover in any suitable manner as for instance by the same bolts and nuts M which fasten the handle to the said cover. The method of attachment should preferably be such as to make the shield N easily removable from the cover K. This shield N when in position in the cover forms in conjunction therewith a chamber n in which air is contained and which acts as an insulating medium to protect the cover and consequently the handle against the effects of the heat generated in the chamber F. In addition to the function described the shield N may also serve as a means for adjusting the weight of the iron and thus do away with the necessity for individual molds for irons of different weights. That is the bodies and covers of a certain type of irons may all be made in the same mold and if a heavy iron is desired all that is necessary is to attach a shield heavy enough to bring the assembled parts to the desired weight and vice versa if an iron of less weight is desired.

A well or recess O is formed in the bottom E so as to extend longitudinally of the body A and is preferably of different widths in cross section from top to bottom or more specifically is formed with steps o as clearly shown in Fig. 2. Spaced air inlets P extend at an angle to the axis of the body A between the inner and outer surfaces of the bottom E and have their one end open to the atmosphere and their opposite ends communicating with the well or recess O.

In order to provide a means for heating the iron a burner is located in the interior heating chamber F thereof and in the present case comprises a tube Q which passes through a suitable opening in the rear wall C of the iron and has its one end q screw-threaded to screw into a suitable screw threaded aperture in the front or apex B of the body A. This tube Q extends longitudinally of the body A in registry with the well or recess O and is provided with two series of apertures q' arranged lengthwise thereof on opposite sides of a vertical line drawn through the center of the tube and at about the level of the horizontal walls of the steps o as shown best in Fig. 2. The portion q^2 of the tube Q which is external of the body A is bent upwardly and has its free end arranged to accommodate the nipple q^3 adapted to receive the one end of the customary flexible hose, the other end of which is connected with a source of fuel supply. The said nipple q^3 is provided with the usual air inlets q^4 necessary in a Bunsen burner and is further provided with a preferably annular shoulder q^5 located between said air inlets q^4 and the free end of said nipple. This shoulder q^5 acts as a stop for the end of the flexible hose and prevents said hose from being slipped over the nipple q^3 far enough to cover or obstruct the air inlet q^4.

From an inspection of Fig. 2 of the drawings it will be seen that the exterior portion q^2 of the tube Q in addition to projecting upwardly also extends at an angle to a vertical line or in other words at an angle to a line perpendicular to the base of the iron. In order to maintain the portion q^2 of the tube Q in this position various means may be adopted. For instance the screw-threaded aperture i may be made to extend down to the tube Q and a short screw i' screwed therein so as to bear on said tube and thus secure it in its intended position, as shown in Fig. 7. This screw i' would of course be of such a length as not to interfere with the operation of the lever J and would be inserted into position before the stem j of the said lever is screwed into the opening i. This can be accomplished by forcing the lever J past the portion q^2 of the tube Q. The tube Q may also be tightly screwed into the body of the iron with the portion q^2 thereof in the proper inclined position and the parts then heated so thoroughly as to practically weld them together.

It is of course to be understood that the above are only examples of how the tube Q may be fixed in the body and that other ways may be provided to suit special and individual conditions. With this arrangement the flexible gas supply hose is main-

tained out of the way and enables the operator to freely use the iron without interfering with said hose thus giving said operator more freedom of action and also a greater range of action than if the portion q^2 of the tube Q extended perpendicularly to the bottom of the iron. The said inclined exterior portion of the tube also acts as a stop to prevent the lever J from being readily and completely rotated, which lever otherwise might by careless manipulation become entirely separated from the body of the iron or at least too loose to effectively lock the cover in position. In the preferred form the portion q^2 of the tube Q outside of the body A preferably has a tube q^6 inserted therein thus forming two different internal diameters and a shoulder q^7. The mixture of gas and air thus first enters the tube q^6 comprising the smaller diameter, and then reaches the larger diameter of the tube and becomes slightly expanded and consequently under less pressure than is the mixture in the reduced portion of the tube Q. Thus the portion of the mixture which is nearer to the burner or in the largest portion of the tube Q is being continually propelled forward by the force exerted by that portion of the mixture which is under greater compression in the reduced portion formed by the tube q^6. The danger of flare back or back fire in the Bunsen burner is thus materially reduced. In this form of iron the cover K is moved relatively to the body to uncover the same when it is desired to ignite the burner and then returned to normal position as by replacing the pin k^3 in the aperture a^2 and the stem j of the lever J in position in the slot k'. The said lever J is now rotated in the proper direction to cause the stem j to screw into the aperture i and the shoulders j' thus to exert a pressure on the depressed portion k of the cover on each side of the slot k' the said lever J, shoulders j' and stem j forming a locking means for securing the cover in its normal position. Owing to the fact that the upper surface of the lug I is lower than the upper surfaces of the projections H the cover K does not engage said lug I and the pressure of the shoulders j' will take advantage of any flexibility in said cover at this point to more firmly and securely lock it in position. The cover K engaging the body only at the projections G and H or in other words at only three points need not have its lower surface carefully finished to remove inequalities or imperfections therefrom and similarly the body of the iron need not be carefully finished at its upper portion to secure a perfect fit of the cover on the body as would be necessary if the entire upper edges of the walls of the body were in contact with the lower surface of the cover. In addition to this the construction described and illustrated produces unobstructed openings or apertures to provide the draft or ventilation necessary to secure complete combustion.

The jets of flame at the apertures q' in the burner Q will first strike the horizontal surfaces of the steps o and then also the vertical walls thereof and will thereby become spread over an enlarged surface and consume the gas much more thoroughly and give out a greater amount of heat than if the step or analogous construction of the well were omitted. By having the air inlets P located between the inner and outer surfaces of the bottom E and the apertures a and a' located above the burner, air is drawn through said inlets P and passes all around and through the jets of flame and the products of combustion pass out of the apertures a and a' thus securing perfect combustion and preventing the flames from flaring through the inlets P to the outside of the iron. The iron even though of large size is therefore quickly heated and is ready for use in a minimum period of time.

It will be noted that when the cover K is in position to cover the body the walls of the shield N are spaced from and substantially parallel with the inner surface of the body thus forming passages through which the products of combustion are effectively conducted to the apertures a. This is best shown in Fig. 2 and insures an absolutely perfect and complete consumption of the gas thus preventing a smell of unburned gas as is the case in many existing constructions.

In Figs. 6, 7, 8 and 9 we have illustrated a small or household iron constructed according to our invention. This form of iron in the main is substantially the same as the larger form first described and differs therefrom mainly only in the form of the well with which it is provided. In the small iron the well o' is simply a recess extending lengthwise of the body and located in alinement or registry with the burner Q which is the same as in the form of iron first described. Otherwise as already stated this small form of iron may be constructed and operate the same as the larger form.

In both forms of our invention a substantially perfect and complete consumption of the gas takes place resulting in a maximum degree of heat with a minimum amount of gas and each iron is capable of easy operation over an enlarged area without interfering with the gas supply hose.

While we have shown a burner comprising a continuous tube other equivalent forms of burner having an exterior inlet tube arranged at an angle to the vertical may be used in combination with the iron as described if desired.

Various changes in the specific forms

shown and described may be made within the scope of the claims without departing from the spirit of our invention.

We claim:

1. A sad iron comprising a hollow body, a cover therefor, a burner located in said body for heating said iron and having an inclined fuel inlet portion located exteriorly of said body, and rotatable means for locking said cover on said body and comprising a portion adapted to engage said inclined fuel inlet portion whereby complete rotation of the locking means is normally prevented.

2. A sad iron comprising a hollow body and a cover movable relatively thereto, said body being provided with a well extending longitudinally thereof, a burner located in said body above said well and having one end united to a fuel inlet portion located exteriorly of said body and inclined to the vertical in combination with a locking means for holding the cover down, said means having a portion adapted to bear against said inclined tube.

3. A sad iron comprising a hollow body and a cover movable relatively thereto, said body being provided with a well extending longitudinally thereof and having air inlets located between its interior and exterior bottom surfaces and communicating with said well and a burner tube extending into said body above and in registry with said well and having an exterior portion inclined to the vertical in combination with a locking means for holding the cover down, said means having a portion adapted to bear against said inclined tube.

4. A sad iron comprising a hollow body provided with a well extending lengthwise thereof and step shaped in cross section, the upper surface of said step being unbroken and a burner tube extending into said body and located within the widest portion of said well and having apertures adjacent to the step thereof.

5. A sad iron comprising a hollow body having a locking recess, a cover therefor movable relatively to said body provided with a depressed portion and a slot located therein, a projection on said cover arranged to enter said recess to prevent removal of said cover from the body and a locking lever rotatably mounted on said body and having a portion arranged to extend through said slot and projections on said locking lever adapted to exert a pressure on the depressed portion of said cover on opposite sides of said slot to lock said cover in operative position.

6. A sad iron comprising a hollow body, a burner in said body, a cover therefor movable relatively to said body, spaced projections on said body for engaging said cover adjacent to one end thereof, a lug on said body intermediate of said projections and having its upper surface in a plane lower than the upper surfaces of said projections and means on said lug for locking said cover in position by exerting a pressure thereon.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

OTTO SPAHR.
CHARLES STICHLER.

Witnesses:
E. LAURENCE WEBSTER,
EARL T. KRAMER.