J. LIDELL.

Sad-Iron.

No. 205,656. Patented July 2, 1878.

Fig. 3.

Fig. 1.

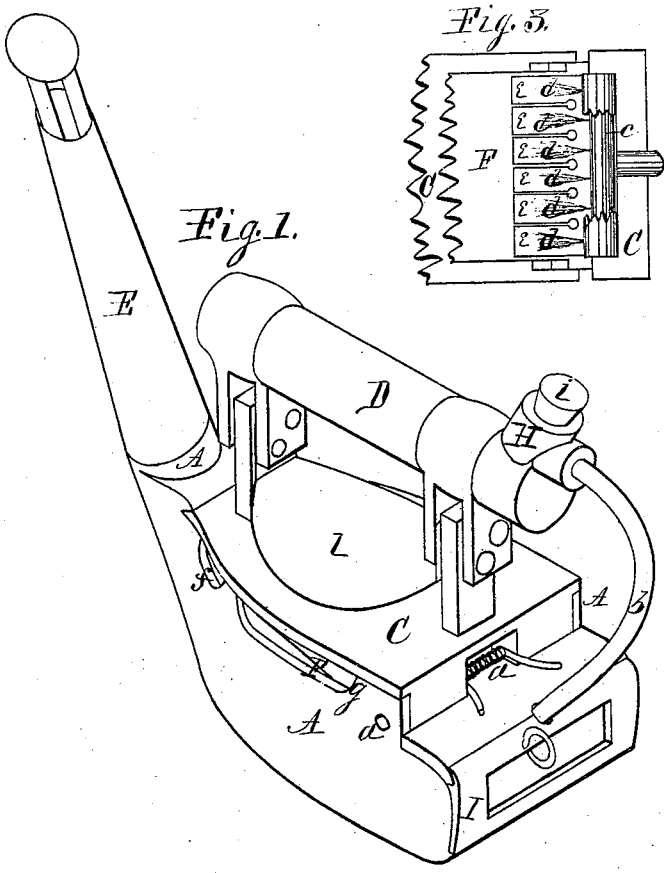
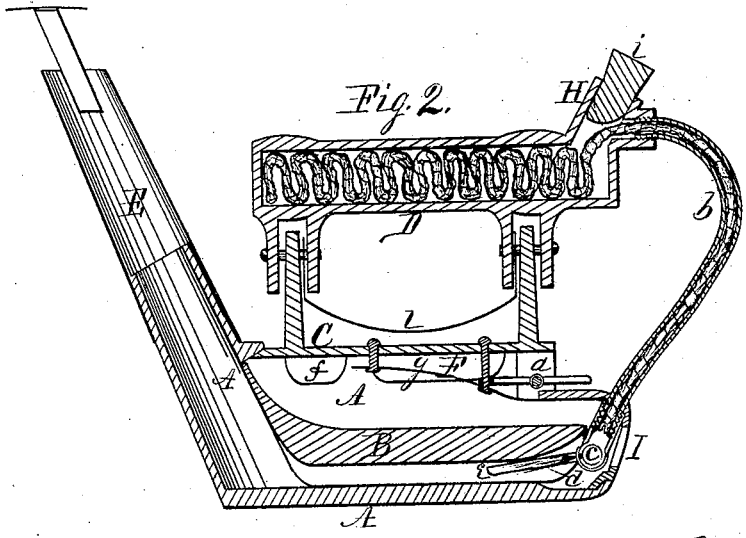


Fig. 2.



Witnesses.
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UNITED STATES PATENT OFFICE.

JOHN LIDELL, OF ROCKFORD, ILLINOIS, ASSIGNOR OF ONE-HALF HIS RIGHT TO CHARLES A. JOHNSON, OF SAME PLACE.

IMPROVEMENT IN SAD-IRONS.

Specification forming part of Letters Patent No. **205,656**, dated July 2, 1878; application filed May 22, 1878.

To all whom it may concern:

Be it known that I, JOHN LIDELL, of the city of Rockford, in the county of Winnebago and State of Illinois, have invented a new and useful Improvement in Sad-Irons, of which the following is a specification:

My invention relates to that class known as "self-heating" irons.

The object of my invention is to produce an iron for the purposes for which sad or other similar irons are used, in which a burning-fluid of any suitable kind may be employed to heat the iron when in use. To this end I have designed and constructed the iron represented in the accompanying drawings, in which—

Figure 1 is an isometrical representation of a sad-iron embodying my invention, of which Fig. 2 is a lengthwise vertical central section, and Fig. 3 is an under face view of the transverse gas-tube, flame-guards, and some of the parts seen above.

In the figures, A represents the side walls, bottom, and chimney-base of a box formed of hollow iron. The under surface forms the face employed in practice, and, in this instance, is of the form of the standard flat-iron of the past, and as now found in the trade. B represents a diaphragm placed in the box-formed shell, supported at its edges, forming a heating-chamber between it and the upper surface of the bottom. This chamber communicates at its forward end with the escape-flue E. C represents the cover or upper surface of the box or chest formed iron, and is fitted to rest on the side walls, and is held in place by transverse spring-bolts *a*, operating to engage the side walls. D represents a tubular handle, supported on the cover C in such a manner as to present the least conducting-surface. Its rear end is connected by a tube, *b*, with a transverse gas-tube, *c*, placed in the rear end of the heating-chamber, suspended in position from the lower end of the tube *b*. The gas-tube *c* is pierced at proper intervals on its forward edge, from which issue small jets of gas, as at *d*, under the flame-guards *e*, which project from the gas-tube forward into the heating-chamber between the diaphragm B and the upper surface of the bottom plate. F is a second diaphragm, placed between the diaphragm B and the cover in such a manner that the air received through the side openings *f* at the forward end of the iron will be conducted between the two diaphragms to the rear of the iron, where it is returned round the upper and lower sides of the gas-tube, and conducted to the gas-jets to support combustion; and the air received above the upper diaphragm through the side openings *g* or the rear portion of the iron will be conducted forward between the upper diaphragm F and the under surface of the cover, to pass the forward end of the upper diaphragm F, where it will meet the rearward current, and will be returned rearward with the current, passing between the two diaphragms to the burners, as above described. The directions of all these currents are clearly indicated by the arrows.

The current of cool air received at the rear portion of the iron and carried rearward under the cover aids in keeping the upper portion of the iron cool. The tubular handle D serves as a reservoir to contain the burning-fluid. It is loosely filled with a suitable fibrous wick, which is also passed from the tubular handle through the curved tube *b*, and serves to conduct the fluid from the reservoir to the gas-tube by capillary attraction aided by the action of the siphon. The tubular handle is provided with an induction-tube, H, through which the burning-fluid is passed into the reservoir; and when the reservoir is filled the induction-tube is closed, for which purpose I usually employ an ordinary cork, *i*, adapted to the opening, and of such form as to be capable of compressing the wick where it leaves the reservoir to enter the curved tube, to stop or regulate the flow of fluid through the tube to regulate the heating of the iron; but, instead of the cork, other and more expensive means may be employed for the purpose.

I is a detachable door, which can be readily removed for the purpose of introducing a lighted match to ignite the burners. This door is provided with a mica window, through which the burning jets can be seen without removing the door. L is a shield, of zinc or other non-conducting material, employed to protect the hand of the user from the heated iron.

In my improved iron I usually employ as a heating substance what is known in the trade as "burning-fluid," but can use any of the usual volatile oils or fluids used for similar purposes.

In use, the tubular handle forming the reservoir is filled with the fluid, which will soon be carried through the curved tube to the gas-tube, where it can be ignited, and will burn at first as a fluid until the transverse gas-tube and flame-guards become sufficiently heated to generate gas in the tube, after which the gas will be thrown forward under the flame-guards in forcible jets, and the air to support the flames being carried over the upper heated surface of the lower diaphragm will soon become sufficiently heated to produce complete combustion and completely consume all smoke. When a sufficient degree of heat has been attained the cork *i* can be changed, as represented in the dotted lines, to compress the wick to check or regulate the flow of the fluid through the tube, which can be regulated as circumstances may require.

In the foregoing I have represented my improvement in connection with a sad-iron of the standard form, but do not wish to confine myself to this particular application, as it is evident that it is applicable to irons of all the various forms; but in its application to some other forms it may require slight changes, particularly in the gas tubes and jets, which may be made in any proper form to distribute the heat properly over the working-surface. This may be accomplished in tailors' irons by a central lengthwise tube capable of producing side or lengthwise forward oblique jets; or any other proper form may be employed that will properly distribute the heating-flames.

I claim as my invention—

1. The combination, with the upper and lower diaphragms herein described, forming an air-chamber to conduct the air over the heated upper surface of the lower diaphragm, of a gas-tube located between the lower diaphragm and bottom of the sad-iron, and a feeding-tube connecting said gas-tube and a hollow handle, substantially as set forth.

2. The combination of the upper and lower diaphragms herein described, forming an air-chamber, through which the air from the forward end of the iron is conducted over the heated upper surface of the lower diaphragm, by which it is heated in its passage to the burners, as and for the purpose hereinbefore set forth.

3. The combination, with the lower diaphragm and the upper plate or cover, of a second diaphragm, dividing the space into two chambers or flues, to conduct the cool air received at the rear portion of the iron between the upper diaphragm and the under surface of the cover forward, to be returned with the rearward current over the heated upper surface of the lower diaphragm to the burners, substantially as and for the purpose hereinbefore set forth.

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Witnesses:
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