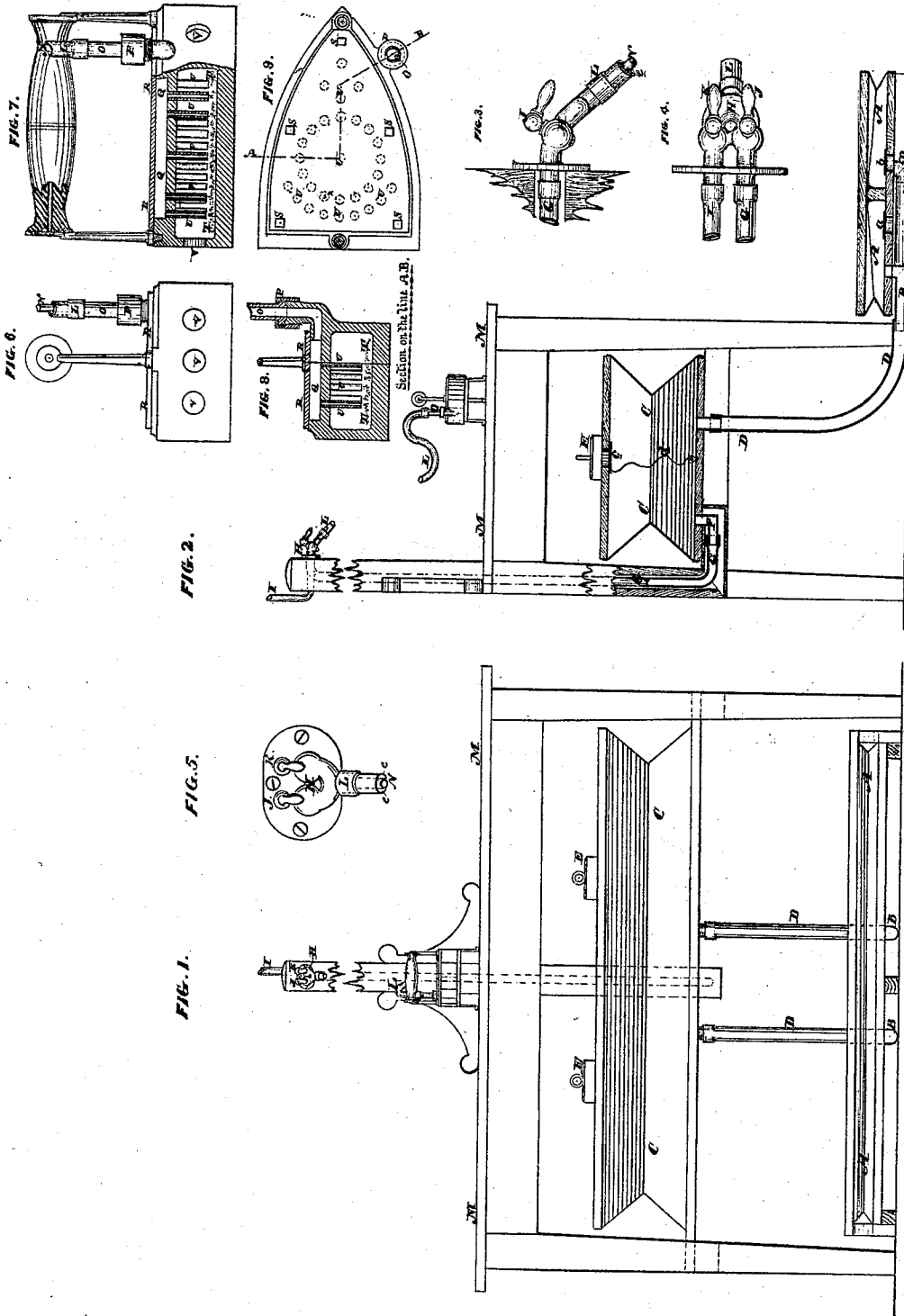


**J. ROBERTSON.**  
**Hand or Sad-Irons.**

No. 151,160.

Patented May 19, 1874.



Witnesses,  
*Edward Fisher Bamber*  
*John Clark*

Inventor,  
*John Robertson*

# UNITED STATES PATENT OFFICE.

JOHN ROBERTSON, OF NITSHILL, NORTH BRITAIN.

## IMPROVEMENT IN HAND OR SAD IRONS.

Specification forming part of Letters Patent No. **151,160**, dated May 19, 1874; application filed May 4, 1874.

*To all whom it may concern:*

Be it known that I, JOHN ROBERTSON, of Nitshill, in the county of Renfrew, North Britain, have invented Improvements in Hand or Sad Irons, and in apparatus connected therewith, of which the following is a specification:

This invention relates to improved hand or sad irons and apparatus wherewith the same are or may be used for finishing textile fabrics, or articles of apparel composed of such fabrics.

Figure 1 on the sheet of drawings hereunto appended is a front elevation of the complete apparatus for dressing or finishing textile fabrics or articles composed thereof. Fig. 2 is a partial section and side elevation of the same at right angles to Fig. 1.

The pressure of air is produced by the movements of the operator, who stands upon the upper leaf of the bellows A. This upper leaf is hinged and rocks upon a central ridge or partition of wood or other material. (Shown in section at Fig. 2.) The two flap-valves *a b* are for the admission of the atmosphere into the bellows. Pipes or nozzles B are inserted into the under part of the bellows, which are connected to the reservoir C by flexible pipes D. The reservoir C is provided with a safety flap-valve, *e*, to which is attached a check-string, *d*, secured to the lower part of the reservoir. To maintain a constant pressure of air in the reservoir, weights E are placed upon the top of the reservoir. A pipe, F, is provided for the passage of the air from the reservoir C, and from thence a flexible tube, G, is led up to one branch of the double cock H. (Shown more particularly on an enlarged scale at Figs. 3, 4, and 5.) To the other branch of this double cock is attached a tube, I, through which is conducted gas or other inflammable vapor. After passing the regulating-cocks J K, Figs. 4 and 5, the two branches converge into one. From this single branch a flexible tube, L, leads to the iron, the tube L being of sufficient length to allow the iron free range over the whole length and breadth of the table M. Within the tube L a smaller tube, N, is situated, as shown at Figs. 3, 4, and 5, through which the gas or other inflammable vapor is led after passing through the regulating-cock K. The air-passage is the space marked *e* be-

tween the outside of the tube N and the inside of the tube L. Thus the air and gas do not mix or combine until they reach the nozzle O, (shown more particularly at Figs. 6, 7, 8, and 9,) where the gas issuing from the smaller tube N mixes with the air conducted through the space *e* at the interior of the tube L, or otherwise. The two tubes L and N may be separate and independent of one another until they reach a double branch and regulating-cocks upon the pipe O. The nozzle O is secured to a projection on the hand or sad iron by a box-nut, P. A chamber, Q, Figs. 7 and 8, is formed in the upper part of the iron, which is made easily accessible for inspection by a cover, R, secured to the top of the iron by pins S. Through the bottom of this chamber Q, and into another chamber, T, in the lower part of the iron, are led any number of jets or burners U, at the lower extremity of which combustion takes place. To enable the operator to ignite the gases issuing from these jets or burners U, as well as to allow free ingress of air and egress of the gases generated by combustion in the chamber T, holes V are formed in the outer shell of the iron.

The mode of operation is as follows: The pressure of air generated by the bellows A finds its way through the tubes D to the reservoir C, which is thus filled. The check-string *d* is of such a length that when the reservoir C has risen to its full height, and can contain no more air with safety, the check-string *d* acts upon the safety flap-valve *e*, and, by pulling it down, opens it and allows the surplus air to escape. The weights E, placed upon the reservoir C, keep up a constant and equable pressure of air in the reservoir, which is conducted by the tube G to one of the branches on the double cock. (Shown more particularly at Figs. 3, 4, and 5.) On passing the cock J, the air is conducted through the space marked *e* until it reaches the nozzle O, where it is mixed with the gas or other inflammable vapor, which is led through the cock K, and thence through the smaller tube N. A mixture or combination of gas and air is thus formed before issuing from the burners, and this mixture or combination is forced into the chamber Q, and thence through the jets or burners U, at the lower extremity of which combustion takes

place. The jets of flame playing upon the bottom of the iron heat it; but in order to diffuse the effect of the jets of flame as much as possible, broken fire-clay, asbestos, or some such substance is preferred to be placed upon the bottom of the chamber T. The heat may be regulated by means of the cocks J K, (shown particularly at Figs. 3, 4, and 5,) one of which, J, commands the supply of air, while by the other, K, the supply of gas or other inflammable vapor may be regulated.

It is to be understood that it is not essential to use the improved hand or sad irons in connection with the ironing-table and apparatus hereinbefore described, as the same may be used in connection with pipes leading from a vessel or vessels containing gas and air under pressure, which may be mixed in the vessels or after leaving them, so that the mixture or combination of gas and air under pressure enters and issues from the burners in the iron in a mixed or combined state.

I claim—

1. The combination of the bellows, air-reservoir, table, and one or more hand or sad irons, adapted to connect with the sources of air and gas supply, as specified, for finishing textile fabrics, as hereinbefore set forth, and described on the annexed sheet of drawings.

2. In an apparatus for heating sad or hand irons by means of air and gas combined under pressure, the combination, with one or more air-reservoirs, of bellows adapted to be actuated by the feet of the operator to supply air to said reservoir, as set forth.

3. The hand or sad iron formed with an internal gas-receiving chamber, having burners leading therefrom for the combustion of the air and gas mixed under pressure, and issuing from the burner in the combined or mixed state, as and for the purposes shown and set forth.

4. The combination, with the hand or sad iron, of air and gas supply tubes, connected with the hand or sad iron, and arranged substantially as described, so that the air and gas supplied by them shall combine or mix under pressure previous to issuing from the burners. In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN ROBERTSON. [L. S.]

Witnesses:

EDWARD FISHER BAMBER,  
JOHN CLARK.