No. 695,598. Patented Mar. 18, 1902.

D. R. BLAIR.

GAS HEATED SAD IRON.

(Application filed Feb. 16, 1901.)

(No Model.)

Fig. 1.

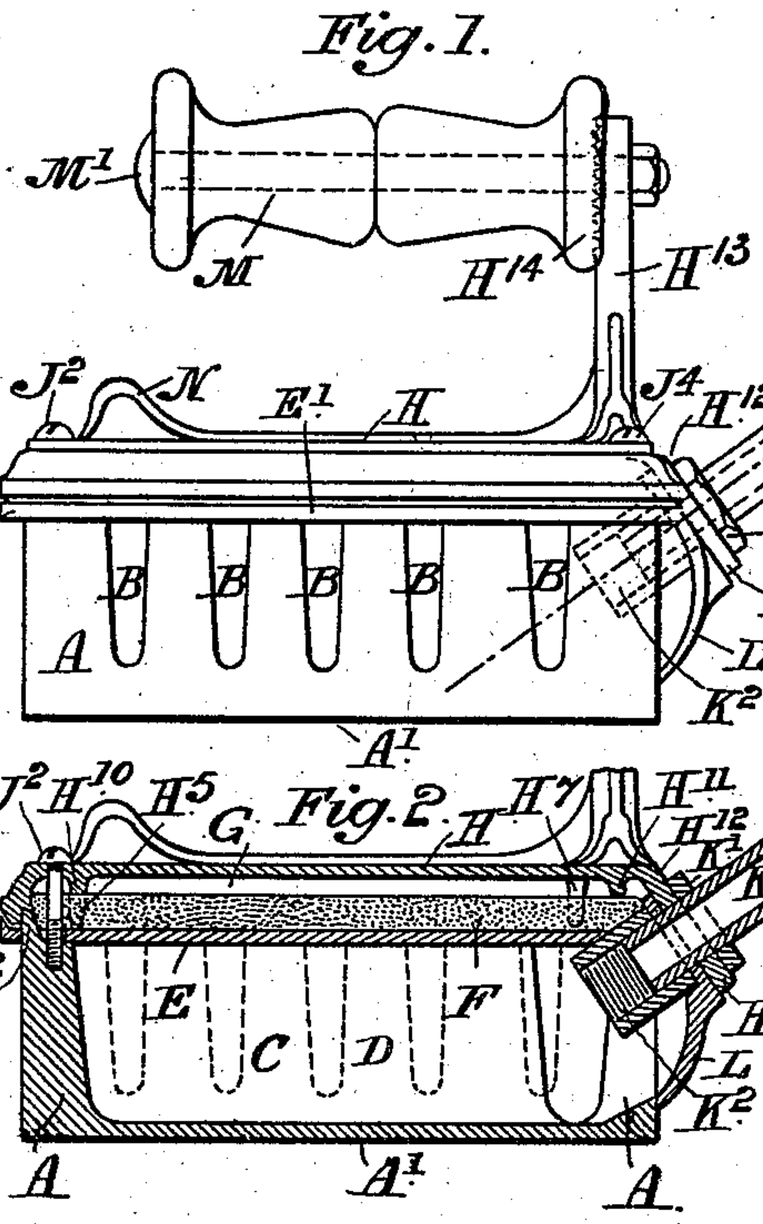


Fig. 5.

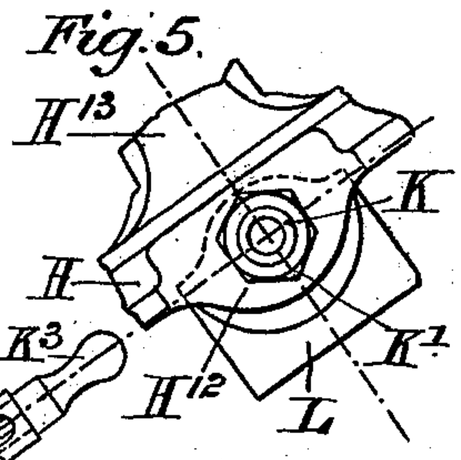


Fig. 6.

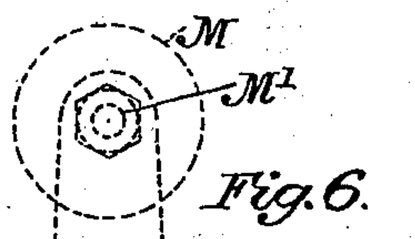


Fig. 2.

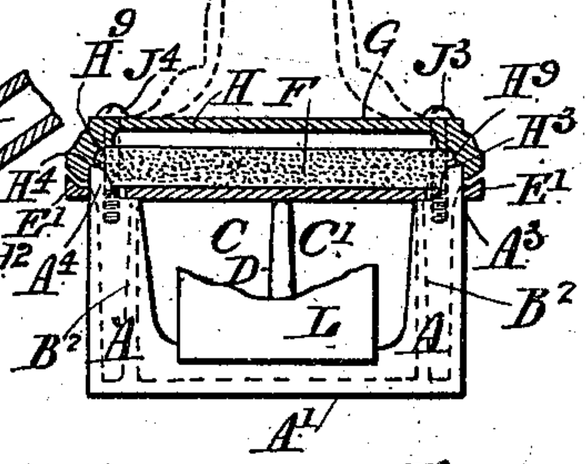


Fig. 3.

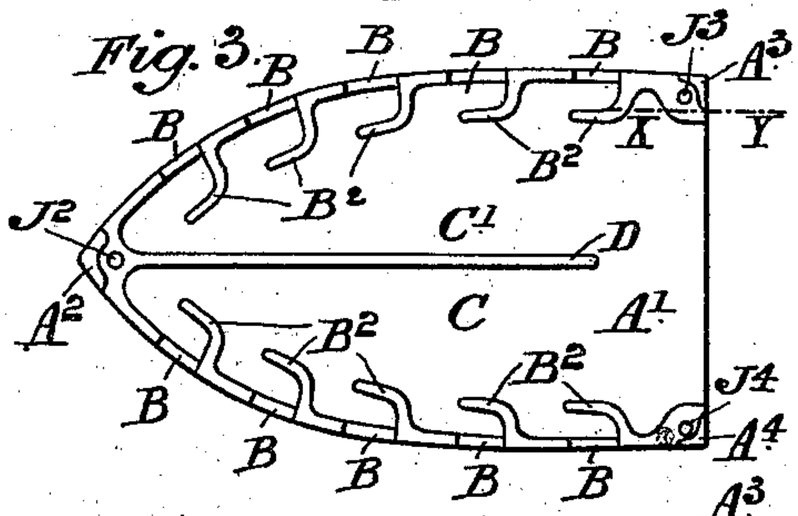


Fig. 7.

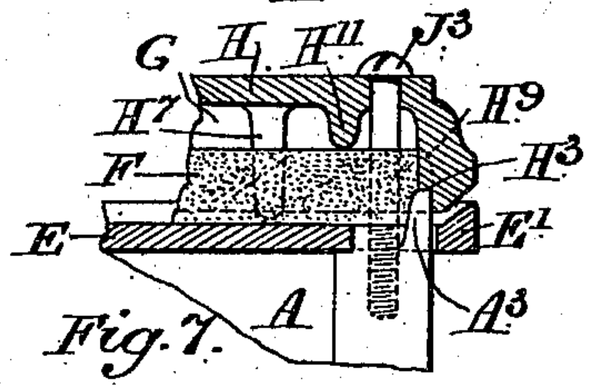


Fig. 4.

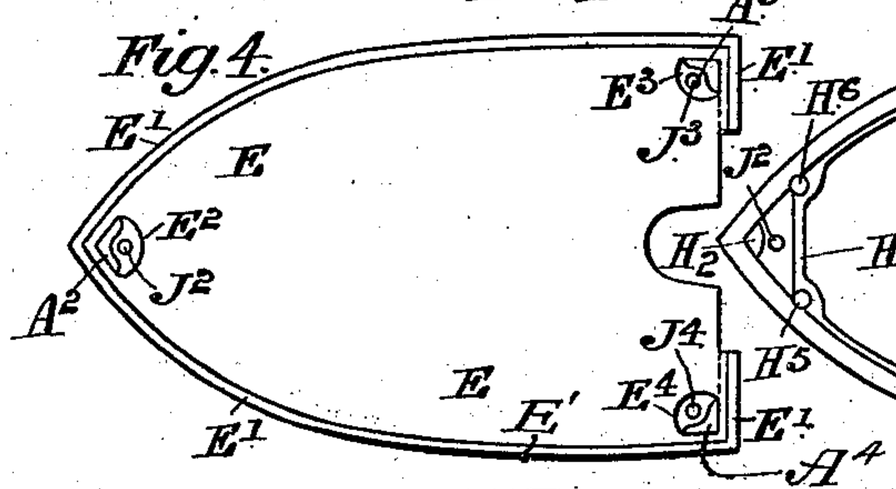


Fig. 8.

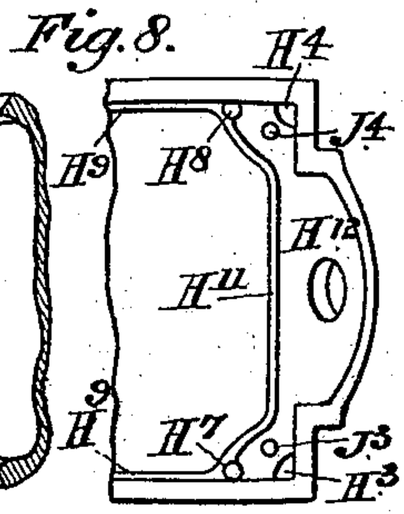
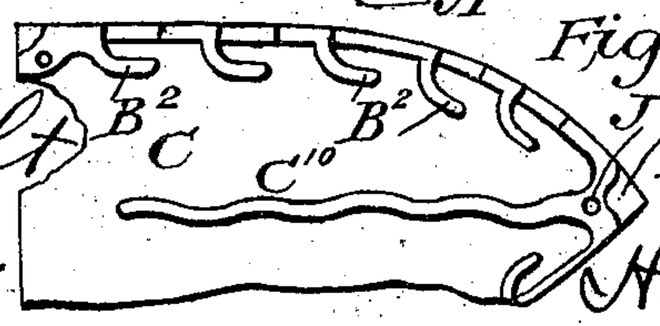


Fig. 9.



WITNESSES.

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DUNCAN RAMSAY BLAIR, OF BIRMINGHAM, ENGLAND.

GAS-HEATED SAD-IRON.

SPECIFICATION forming part of Letters Patent No. 695,598, dated March 18, 1902.

Application filed February 16, 1901. Serial No. 47,593. (No model.)

To all whom it may concern:

Be it known that I, DUNCAN RAMSAY BLAIR, secretary, a subject of the King of Great Britain and Ireland, residing at 94 Bull street, Birmingham, in the county of Warwick, England, have invented certain new and useful Improvements in Gas-Heated Sad-Irons; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to gas-heated sad-irons for laundry-work and similar smoothing and pressing purposes, and has for its object to provide an iron which requires no chimney and in which the heat is conducted down to the base in a better manner than hitherto, side flashing of flame when the iron is swayed transversely and tendency to lighting back of the gas at the inlet being prevented or greatly diminished and a minimum of heat being given off upward toward the user's hand, and the iron being very readily manufactured.

The accompanying drawings illustrate an iron made in accordance with my invention.

Figure 1 is a side elevation of the iron. Fig. 2 is a longitudinal section, the handle and supply-pipe being shown broken away. Fig. 3 is a plan of the body of the iron with the upper parts removed. Fig. 4 is a plan of the diaphragm-plate. Fig. 5 is a detail showing in end view, as seen in a straight line with the supply-pipe, the tail-bracket, supply-pipe, and back shield. Fig. 6 is a transverse sectional elevation of the iron with the handle-bracket and handle shown in dotted lines. Fig. 7 is a section of a part drawn to a larger scale, the section being approximately on the line X Y in Fig. 3; and Fig. 8 is an under view of the lid shown partly broken away, with the supply-pipe removed. Fig. 9 is a view, partly broken away, similar to Fig. 3, but showing a modified form of mid-feather.

The same reference-letters denote the same parts in all the figures.

Through each side of the body A of the iron are deep open-topped openings B, which communicate with the respective compartments C C′ of the interior-combustion chamber. The said openings B are provided with inner screens B^2, cast with the base A′ of the body A, and therefore acting to conduct heat thereto. The said screens cover the sides of the openings B toward the heel of the iron and point toward the end, so that they direct the incoming air toward the toe end. An internal mid-feather D extends from the toe end and vertically from the base and divides the combustion-chamber into the aforesaid compartments C C′ and serves also to conduct heat down to the base A′, as well as forward to the toe. This mid-feather extends up to the diaphragm-plate E′, and by checking cross-drafts prevents or minimizes side flashings of the flame.

For simplicity in molding I make the side openings B taper, and I also make the screens and the sides of the iron and also the mid-feather taper, so that everything leaves the sand easily without requiring any loose cores or the like.

In Fig. 9 I have shown the mid-feather C^{10} as corrugated.

Instead of placing an ordinary lining-plate in the lid of the iron I provide a diaphragm-plate E, which extends over the body of the iron and outwardly as far as or a little beyond the rim of the lid, as shown at E′. Above this diaphragm-plate I place asbestos board or other non-heat-conducting substance F of such thickness as to leave between it and the lid an air-space G for non-conducting purposes. This arrangement of the diaphragm-plate with its extending edges prevents the heated gases from the interior of the iron coming into contact with the lower rim of the lid, and so protects the lid and the user's hand from excessive heat. I prefer to thicken and incline the edge of the diaphragm-plate, as shown at E′ in Fig. 7, and to incline the lip of the lid to correspond. Though I have shown the diaphragm in one piece, it is obvious that to avoid cracking under expansion it may be formed in two or more parts.

In order to fit the body A and the lid H together, I arrange on the body A projecting horns, one at the toe A^2, and two at the heel, A^3 and A^4, and these pass up through holes E^2, E^3, and E^4 in the diaphragm-plate E and form abutments against which the inner edges of the lid bear, both sidewise and end-

wise, and also against which the stops H^2, H^3, and H^4 on the lid may be screwed down without binding down rigidly the diaphragm-plate, which requires freedom for expansion and contraction. These three horns, which regulate the position of the diaphragm-plate, are in proximity to the three fixing-screws J^2, J^3, and J^4, which pass down through the holes E^2, E^3, and E^4 aforesaid. Projections—say four—H^5, H^6, H^7, and H^8 are arranged around the rim of the lid so as to come nearly into contact with the diaphragm-plate; but this space must not be so great as to cause the diaphragm to rattle when the iron is turned upside down.

The edges of the insulating material F are cut to fit the inside of the lid H, and to keep it down in position I provide a ledge H^9 H^9, which runs around the inside, and to keep any hot gases from rising up through the holes in the diaphragm-plate, and so gaining access to the air-space G, I continue this ledge across the lid from side to side in the form of ribs, as shown at H^{10} and H^{11}, and so isolate the end portions. This ledge and its continuation in rib form are shown in Fig. 8 and on a larger scale in Fig. 7, together with the horn A^3 and its stop H^3, &c. Fig. 4 clearly shows the holes in the diaphragm-plate, through which the horns pass upward.

At the rear end of the lid H a tail-bracket H^{12} inclines downward at the angle shown, and through it passes the supply-pipe K in the direction required. Beneath this bracket is mounted the back shield L to prevent any excessive rush of air when the iron is drawn rapidly backward. Where this shield meets the base A′ a ridge runs across the base from side to side as a further draft-guard. The back shield L, which is curved to admit air freely at the sides, is fixed in position by the same means that secure the supply-pipe. This pipe, which carries an outside lock-nut K′ and passes through the tail-bracket and also through the back shield, is secured inside by a piece of screwed tube K^2, which when screwed up secures the pipe and shield in position. The tube K^2 is arranged to project considerably beyond the supply-pipe end, as shown, so that the mixture of gas and air burns at the end of an expanded outlet, which gives considerable security against back-drafts passing up the tube and causing the gas to light back at its inlet. The means provided to keep down the heat in the lid H also keeps down the heat in the supply-pipe fixings and militates against lighting back. The tail-bracket H^{12}, in which the back shield and supply-pipe are fixed, is formed projecting backward at an angle from the lid, as shown in the drawings, thereby permitting the insertion of the supply-pipe and its securing means without necessitating an undue amount of cutting and fitting of the asbestos board.

The handle-bracket H^{13}, I lead straight up, and both it and the tail-bracket details are so arranged that in molding they draw out of the sand without requiring loose cores or the like. For the purpose of preventing the wooden (or like) handle M from turning on its bolt M′, I cast or form sharp-edged grooves or the like at the upper part of the handle-bracket at H^{14}, where the handle beds itself, and when the handle is forced on by the screw-nut the material of the handle is forced into the said grooves or the like, and so the handle is secured in position.

K^4 is the gas-injecting nozzle, and K^5 is the air-entrance into the tube K, which is fitted with a nose end K^3 for the flexible tubing.

N is an ornamental knob, acting as a balance-weight to keep down the toe of the iron.

I claim as my invention—

1. A chimneyless gas-heated sad-iron comprising a body having side openings, screens for said openings, said screens being open at their ends farthest from the burner-tube, a mid-feather, a lid portion, a diaphragm between the lid portion and the body portion, and a burner-tube, substantially as described.

2. A gas-heated sad-iron comprising a body having side openings, screens for said openings and a mid-feather, all cast in one, in combination with a lid, a diaphragm-plate over the body portion and having its edges extending beyond the sides of the lid, substantially as described.

3. A gas-heated sad-iron having a body with deep open-topped side openings, screens for said openings and a mid-feather, in combination with a lid, a diaphragm-plate between the lid and the body and an inclined tail-bracket on the lid, substantially as and for the purpose described.

4. In a gas-heated sad-iron, a body portion, a lid, and a diaphragm between the lid and the body portion and extending beyond them, horns on the body portion and stops on the lid against which the horns are adapted to abut, said diaphragm having openings through which the horns freely pass to allow expansion of the diaphragm, substantially as described.

5. A gas-heated sad-iron having a body portion, a lid, and a diaphragm between the body and the lid, heat-insulating material between the diaphragm and lid, an air-space above said material, horns on the body portion, stops on the lid and openings in the diaphragm for the horns, and ribs on and extending across the lid and bearing on the insulating material, as and for the purpose described.

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

DUNCAN RAMSAY BLAIR.

Witnesses:
EDWARD CLEMENT,
WILLIAM HENRY BOOTH.