(No Model.) 4 Sheets—Sheet 1.

R. H. & J. W. GARDNER.

DEVICE FOR HEATING SAD IRONS BY BURNING GAS.

No. 251,108. Patented Dec. 20, 1881.

Fig. 1

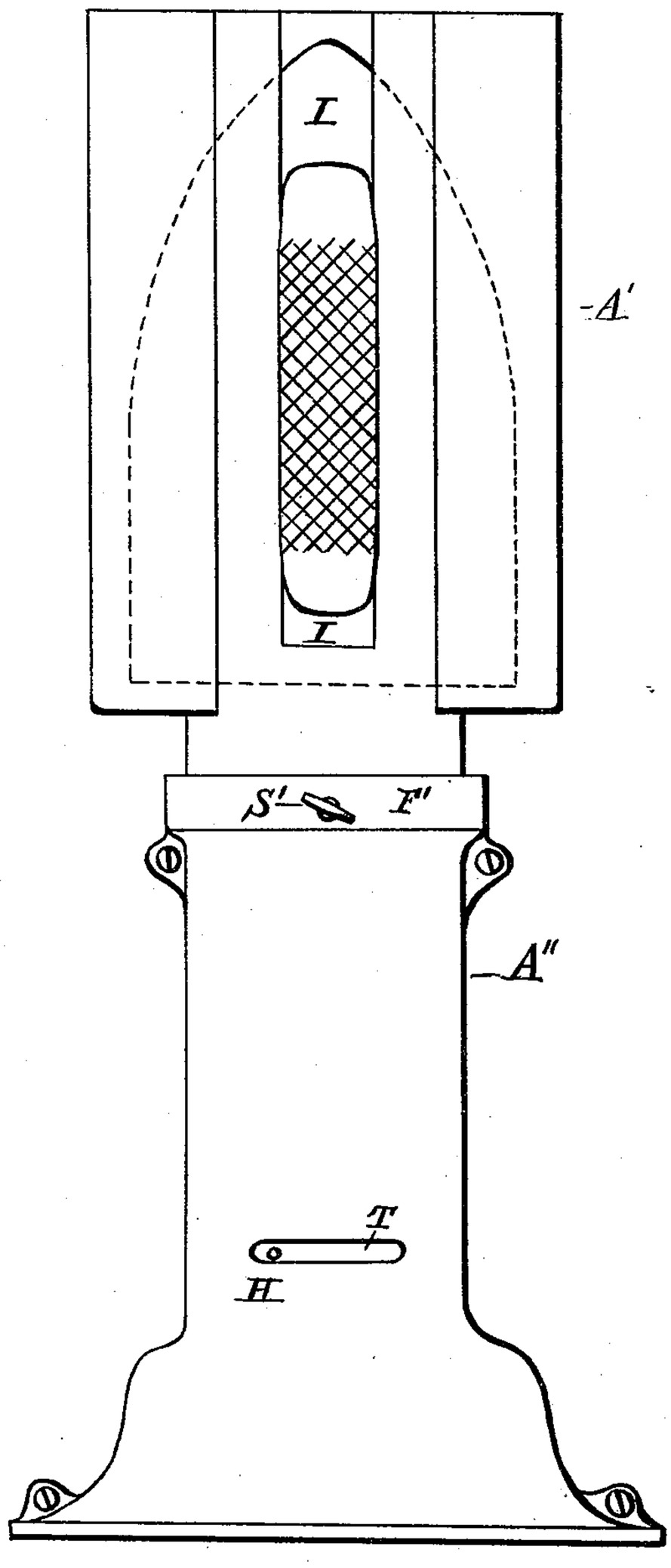

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Fig. 2

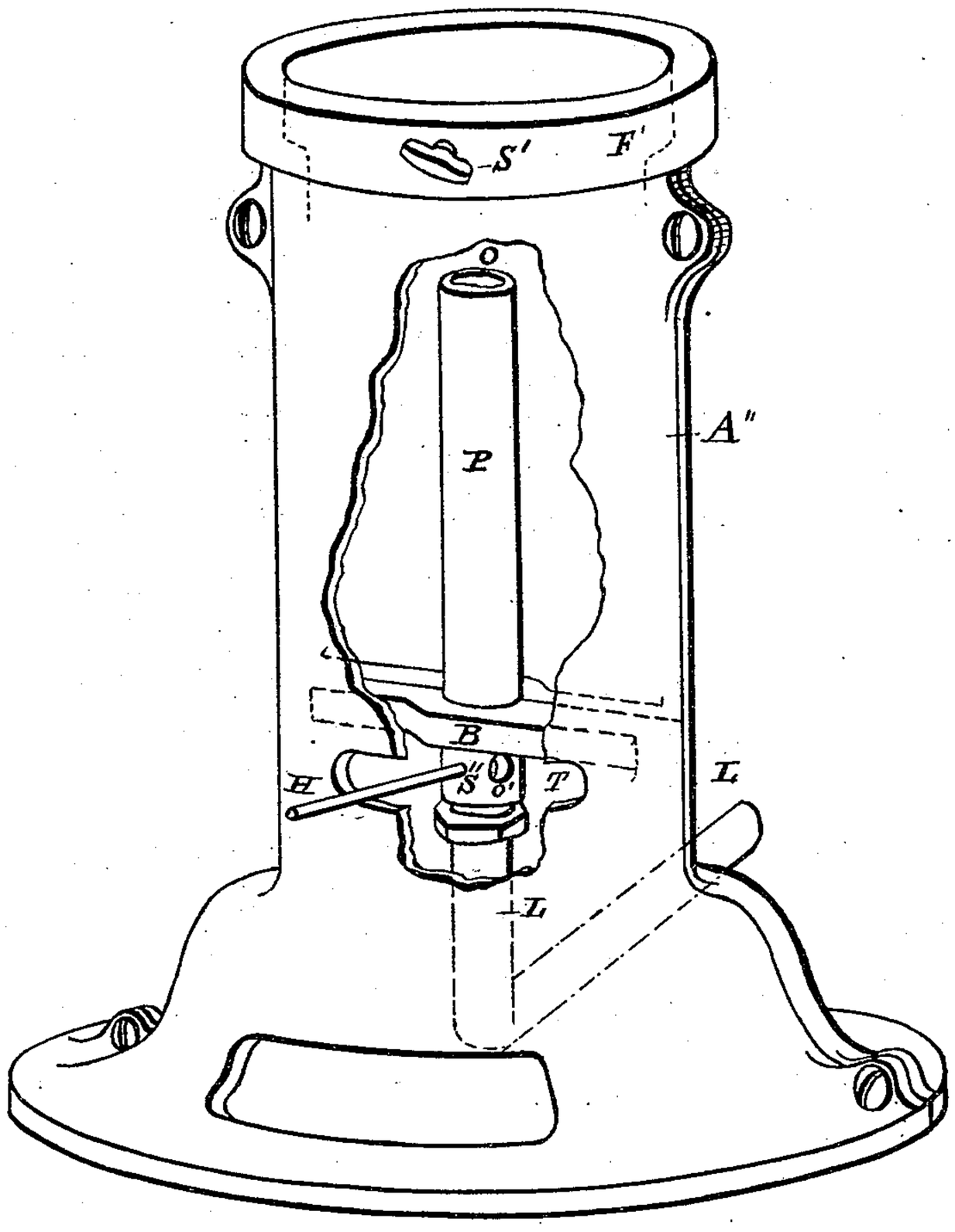

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Fig. 4

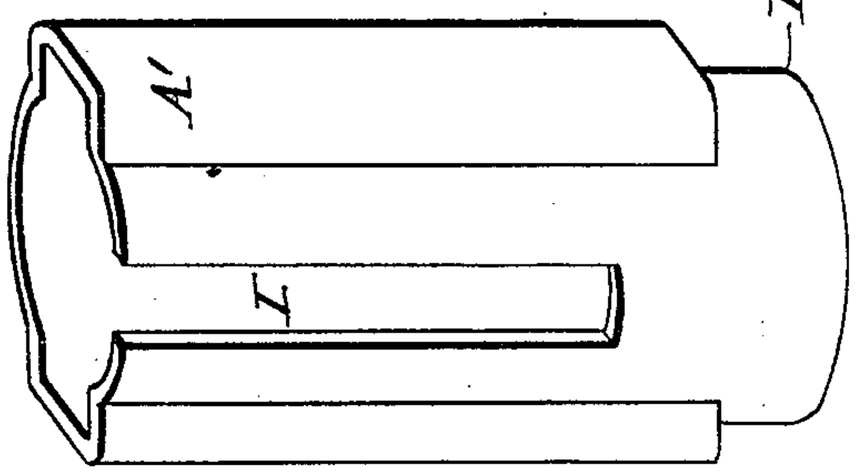


Fig. 5

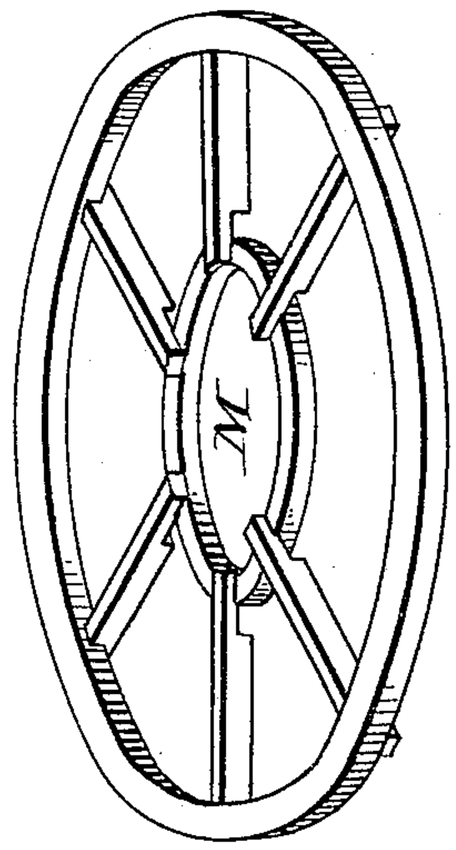
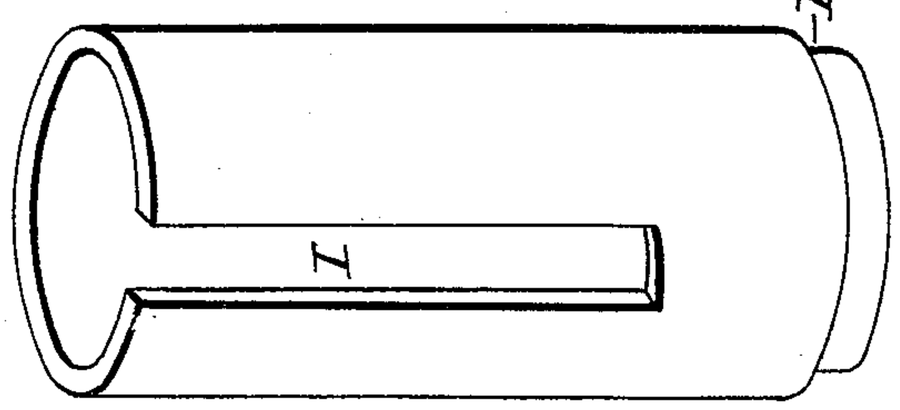


Fig 3



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DEVICE FOR HEATING SAD IRONS BY BURNING GAS.

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Fig. 6

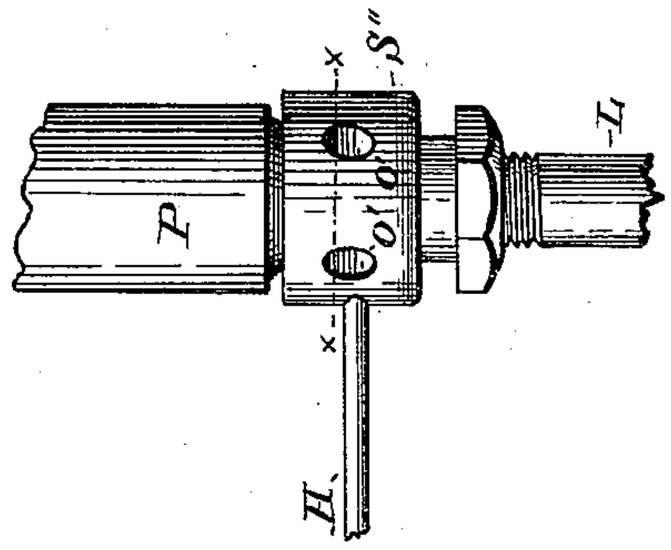


Fig. 8

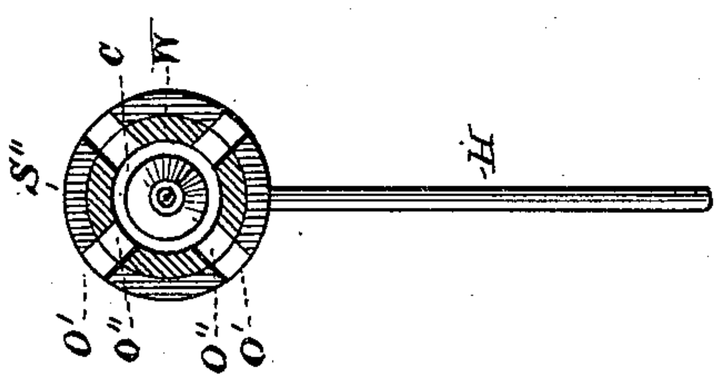
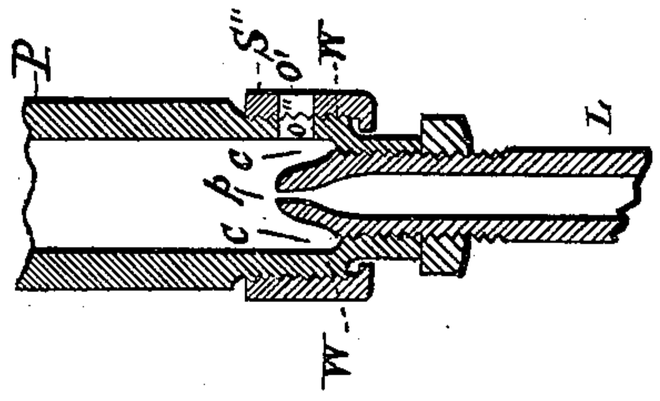


Fig. 7



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UNITED STATES PATENT OFFICE.

RICHARD H. GARDNER AND J. WRIGHT GARDNER, OF TROY, NEW YORK.

DEVICE FOR HEATING SAD-IRONS BY BURNING GAS.

SPECIFICATION forming part of Letters Patent No. 251,108, dated December 20, 1881.

Application filed September 22, 1880. (No model.)

To all whom it may concern:

Be it known that we, RICHARD H. GARDNER and J. WRIGHT GARDNER, of the city of Troy, county of Rensselaer, and State of New York, have invented a new and useful Improvement in Devices for Heating Sad-Irons by Burning Gas, of which the following is a specification.

Our invention relates to a manner of constructing a device to heat sad-irons and tailors' irons by means of burning gas which is mechanically mixed with air before reaching the igniting-point, so as to prevent depositing soot upon the surface of the irons.

Our invention consists in the manner of constructing a cylinder or inclosure of metal with a slot through which the handle of the sad-iron may pass exteriorly, and so that the iron therein placed to be heated shall be in contact with the gas-flame upon its side, or its heel or toe, and not upon its face, and so that the heat absorbed by contact with the flame shall pass upwardly through the iron in a line of direction parallel to the face of the iron, the object being to utilize the heat by the contact of the metal with the flame and the sad-iron, in such a position that its molecular expansion and transmission of heat through the iron by conduction shall be vertically through a longer line of traverse than when the iron is heated on its face, and there is only the thickness of the metal between the point of contact and absorption and that of departure by radiation. In the former case the heat, having a longer line of traverse with greater resistance to its motion, is absorbed and accumulated in the metal to a higher degree than in the latter instance, where the vertical line of its motion is through the smaller measure of metal forming the thickness of the iron from its face upwardly.

Our invention also consists in a manner, as hereinafter described, of constructing a device for heating sad-irons by means of burning gas, so that the iron shall be in contact with the flame upon its side, heel, or toe, within an inclosure of metal provided with a slot for the exterior projection of the handle, and which sad-iron inclosure may be detached from the rest of the device which contains the gas-burning apparatus and the latter employed for culinary and other uses.

Accompanying this specification, and forming a part of it, there are four plates of drawings, containing eight figures illustrating our invention, and in all of which the same letters designate the same parts of it.

Figure 1 shows an elevation of the device, taken at the front, illustrating the upper inclosure for heating sad-irons and the lower inclosure containing the apparatus for mixing air and gas, and the two parts of the device connected by means of a flange and set-screw. This illustration shows also the position of the slot and sad-iron handle, with the latter projected through the slot exteriorly and the iron within the inclosure and resting on its heel, the position of the iron being indicated by a dotted line. Fig. 2 illustrates a front elevation of that part of the device containing the air-and-gas-mixing mechanism, with the upper sad-iron inclosure removed from the flange and the front wall of the inclosure in part cut away, so as to show the interior position of pipe from which the gas enters, the switch which regulates the amount of air entering to mix with the gas, and the pipe in which the air and gas rise to burn. Fig. 3 shows the sad-iron-heating inclosure removed and separated from the lower section, illustrating the slot for the sad-iron handle and the manner of forming the flange upon its base to connect it with the lower part of the inclosure, where the gas is burned. Fig. 4 shows an inclosure differing in form from that shown in Fig. 3, and designed for heating tailors' irons in the same manner, the iron being placed in the inclosure vertically, so that the gas-flame at the bottom shall come in contact with its heel or toe, and the iron held in position by inserting the handle in the slot so as to project exteriorly, with the iron resting against the wall of the inclosure. Fig. 5 illustrates a grate-support to be applied to the lower section for culinary uses when the iron-heating inclosure is removed from the flange. Fig. 6 shows an elevation of the gas-and-air-mixing apparatus, illustrating the position of the external sleeve and the air-apertures in the latter. It also shows the switch by which the sleeve is turned to bring the apertures in the latter opposite those in the annular chamber. Fig. 7 shows a vertical section of the mechanism shown in Fig. 6, with

the end of the pipe from which the gas and air pass to burn cut off. This illustration also shows the position of the gas-jet and the annular chamber surrounding it, also the external sleeve surrounding the wall of the annular chamber and one of the apertures in the wall and sleeve as opposite, so that air can enter. Fig. 8 shows a horizontal cross-section of the apparatus, taken in the line *x x* of Fig. 6, illustrating the position of the sleeve, the wall of the annular chamber, and with the openings in the latter opposite those in the sleeve for the admission of air. This also shows the switch by which the sleeve is moved around the wall of the annular chamber.

The several parts of the apparatus are designated by letter reference, and their operation described as follows:

A′ and A″ denote two cylindrically-formed inclosures connecting in vertical continuity by means of an offset flange or rim, F′, formed in the top of the cylinder A″ and the contracted rim formed in the cylinder A′ at F″, with the lower cylinder provided at its top and in the flange offset with the set-screw S′, to secure the cylinders when attached. In the side of the upper cylinder, A′, there is formed the vertical slot I, and this is made wide enough for the handle of a sad-iron to pass down from the top within the slot, and so that the iron will be within the inclosure vertically placed and the gas-flame will be in contact with its lower end. Within the lower cylinder, A″, there is constructed the horizontal brace B, to support the air and gas delivery pipe P and its connections, this pipe being vertical within the inclosure, and having the flame-orifice O at its top.

At *p* there is shown a gas-jet having a pointed nozzle and a single round discharge-opening, pointing upward.

The letter W designates the wall of an annular chamber, C, surrounding the gas-jet, and at S″ a sleeve arranged to rotate in contact with and around the exterior of the annular-chamber wall.

At O′ O′ are shown apertures formed in the sleeve, and at O″ O″ apertures in the wall of the annular chamber, and blank places in both the wall and the cylinder between the apertures. When the sleeve is moved around the wall of the annular chamber by the switch-handle H and is stepped with the apertures in both opposite each other, then air will enter the annular chamber through them by the draft force produced by the upward discharge of the gas, and the air and gas passing up will mingle sufficiently to burn at the mouth of the pipe without producing smoke, and the amount of air entering may be regulated by the switch and the relative position of the apertures in the sleeve to those in the wall of the annular inclosure.

At T is designated a slot horizontally formed in the cylinder-wall for the outward projection of the switch-handle.

A device thus constructed of two parts that are made attachable, as described, and containing our improved device for utilizing gas as a heating means, enables the person operating it to perform several different operations in which heat is required, and this result is due entirely to the elements of construction which our invention embodies.

While we have shown the inclosures for supporting the sad-irons, in connection with the slot and handles, as circular, we do not limit our invention to the precise form shown, for they may be modified in this respect to receive various kinds of irons, and to support them in precisely the same way and for the same application of heat to the ends of the irons.

We are well aware that gas has been discharged into an inclosure and the draft force produced by it employed to draw in a current of air with it, and which mixed with the gas before the same was burned, and we make no broad claim to such an application, our invention, in this connection, relating to the better manner and means employed to make it applicable.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

A device for heating sad-irons, consisting of the slotted cylinder and inclosure A′, constructed to support and heat the irons in a vertical position within said inclosure by means of a gas-flame directed upwardly and in contact with the lower end of the iron thus placed, and the lower cylinder and inclosure, A″, containing the upwardly-directed flame orifice of the pipe P, with the cylinders forming the inclosures made attachable and detachable by means of a contracted rim formed on the bottom of the upper cylinder and a flange and set-screw upon the top of the lower cylinder and inclosure, A″, as and for the purposes described and set forth.

Signed at Troy, New York, this 31st day of July, 1880.

RICHARD H. GARDNER.
J. WRIGHT GARDNER.

Witnesses:
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CHARLES S. BRINTNALL.