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C. A. BREWER

PRESSING APPLIANCE

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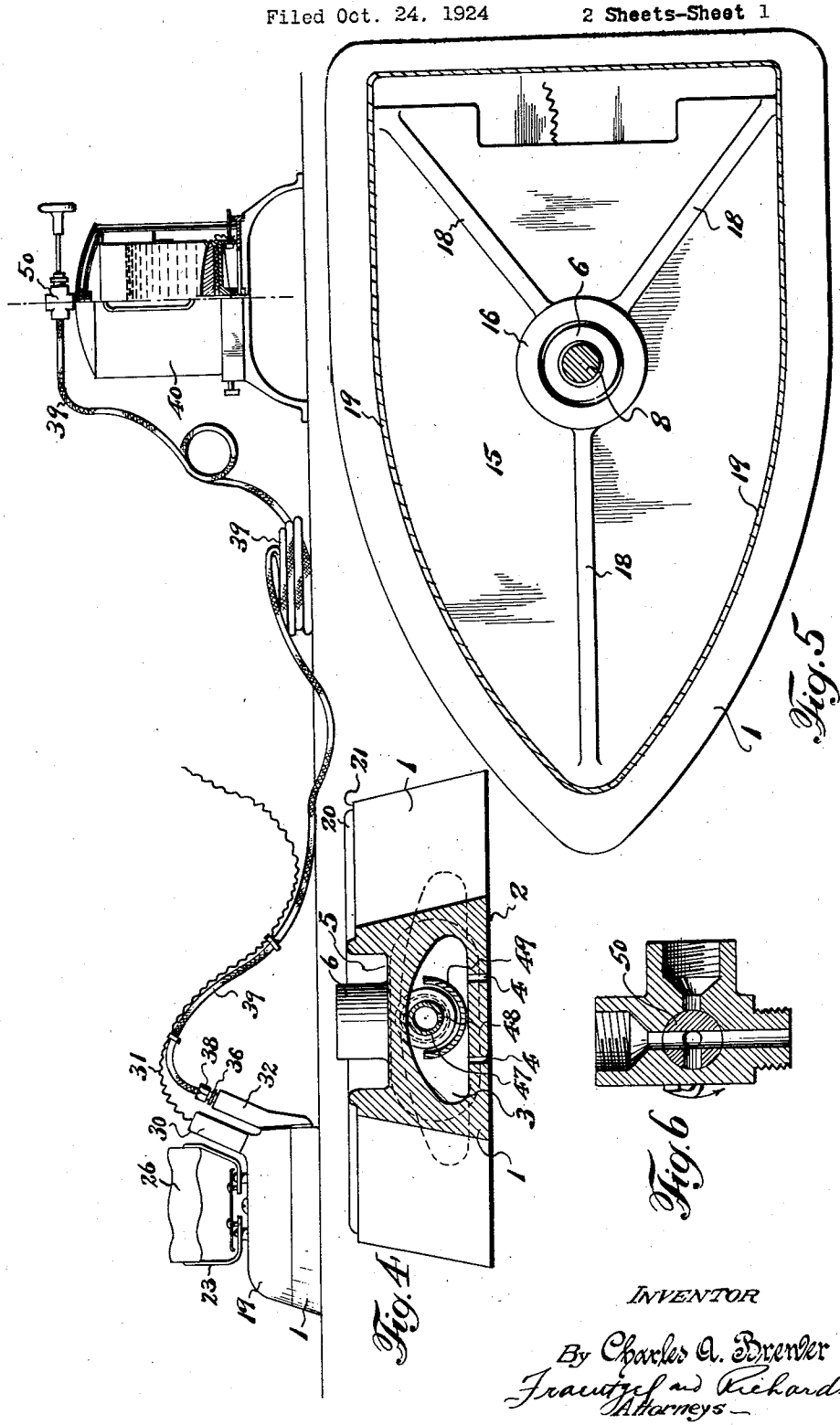


Fig. 1

Fig. 4

Fig. 5

Fig. 6

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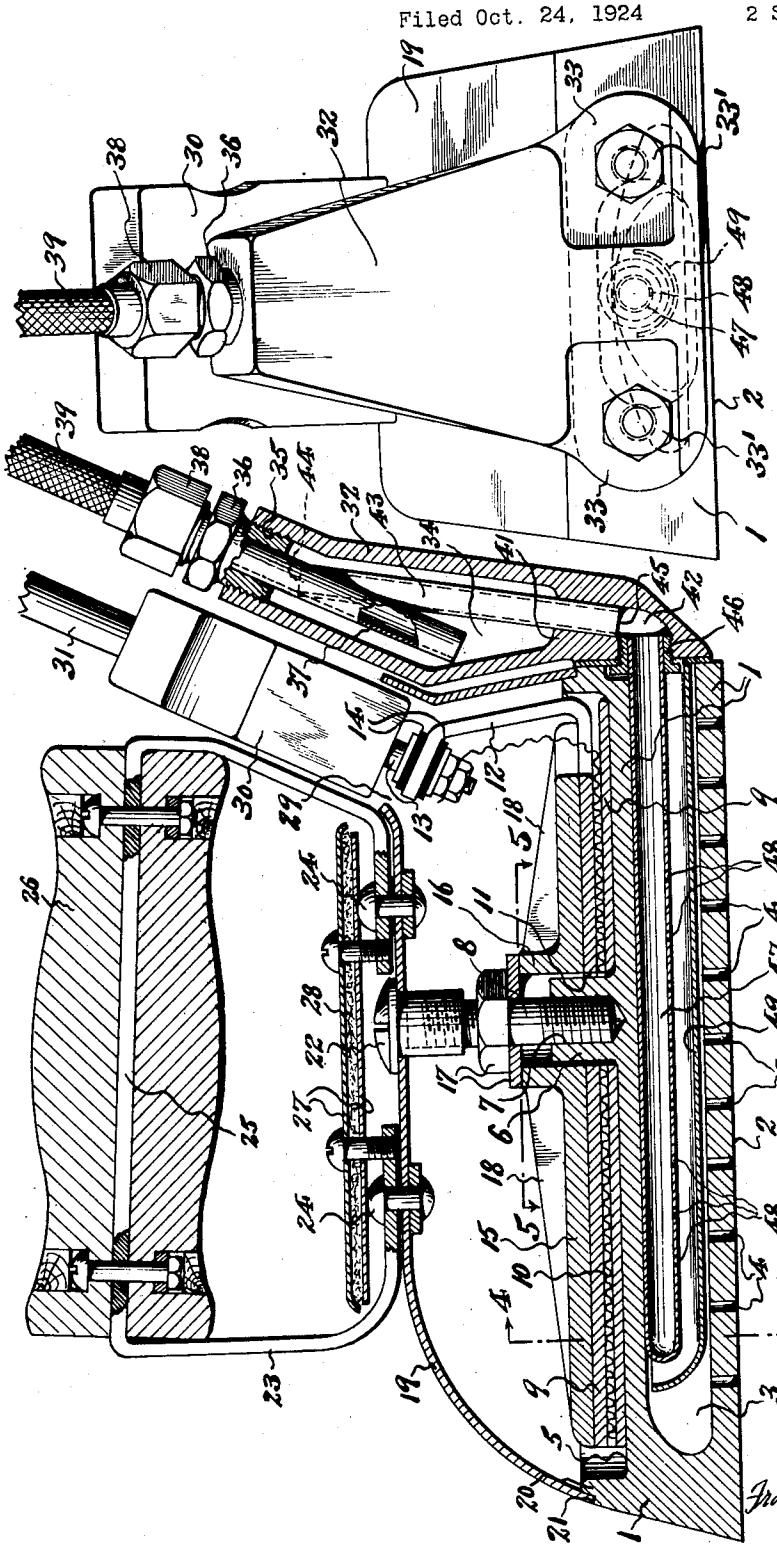


Fig. 2

Fig. 3

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UNITED STATES PATENT OFFICE.

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PRESSING APPLIANCE.

Application filed October 24, 1924. Serial No. 745,593.

This invention relates, generally, to improvements in pressing appliances; and the invention has reference, more particularly, to an improved construction of steam pressing iron appliances.

The invention has for its principal object to provide a novel construction of manually operable electrically heated iron for pressing textiles and other goods, provided with means to extravasate steam from its pressing face, and being further provided with a water separator and secondary or auxiliary steam generator device which is coupled, by means of a suitable flexible conduit, to and which cooperates with a main source of steam supply, to the end that condensation from the steam conduit is trapped and reconverted to steam in said secondary or auxiliary generator before delivery through the face of the iron, whereby the escape of condensed moisture through the pressing face of the iron and upon the goods being pressed (with consequent likelihood of spotting or staining the latter) is avoided, and whereby the desired steam temperature is maintained without drop during the pressing operations.

The invention has for a further object to provide a compact, strong and durable, and efficient construction of steam pressing iron of comparatively simple character, requiring but few parts, and those so designed and related as to be capable of comparatively easy and rapid assembly during manufacture.

Other objects of this invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

With the various objects of this invention in view, the same consists, primarily, in the novel steam pressing iron appliances hereinafter set forth; and, the invention consists, furthermore, in the novel arrangements and combinations of the various devices and parts, as well as in the details of the construction of the said parts, all of which will be hereinafter more fully described in the following specification, and then finally embodied is the claims appended thereto.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a side elevation of the steam pressing appliance made according to and embodying the principles of this invention, the main steam generator or boiler being shown in part vertical section; Figure 2 is a rear end elevation of the pressing iron, drawn on an enlarged scale; Figure 3 is a vertical longitudinal section through the pressing iron; Figure 4 is a fragmentary transverse section, taken on line 4—4 in Figure 3; Figure 5 is a fragmentary horizontal section, taken on line 5—5 in Figure 3; and Figure 6 is an enlarged sectional view of a valve connected with the main steam generator or boiler for controlling the flow of steam therefrom to the iron.

Similar characters of reference are employed in all of the hereinabove described views, to indicate corresponding parts.

Referring now to said drawings, the reference character 1 indicates the main body of the pressing iron, the same being cast from a suitable metal, so as to provide on its under side a smooth pressing face 2. The body 1 of the iron is cored to provide an internal steam chamber 3 entering its heel or rear end and extending longitudinally forward toward the toe thereof. The body of the iron, intermediate its pressing face 2 and the steam chamber 3, is provided with a plurality of suitably spaced and disposed steam vents or openings 4 leading from said steam chamber to the pressing face of the iron. The body 1 of the iron is further provided at its upper side or top, and above said steam chamber 3, with a countersunk seat or recess 5, preferably corresponding in shape to the peripheral outline of the iron. Integrally formed with the body of the iron, so as to project upwardly from the bottom of said seat or recess 5, and from a point located in a substantially central position relative to the latter, is a boss or stud 6 having an internally threaded opening 7 to receive one end of a stud bolt 8, which is thus firmly secured to the iron body so as to project upwardly from said boss or stud. Disposed in said seat or recess 5 is an electrical heating unit 9 of any suitable construction, and provided with current conducting wires or other conductive elements 10 which are suitably imbedded therein. Said heating unit 9 is provided with a properly disposed perforation or opening 11, through which extends said boss or stud 6. Said heating unit 9 is further provided at its rear end

with an upwardly projected bracket arm 12 adapted to support male terminal contacts or plugs 13 of opposite polarity, to which the extremities of the wires or conductive elements 10 are secured, said contacts or plugs 13 being electricaly insulated from the supporting bracket arm 12 by insulation material 14 applied in any suitable or well known manner. The heating unit 9 is retained in engagement with the bottom of the seat or recess 5 by means of a keeper plate 15, and is, therefore, retained in such contact with the body 1 of the iron as to readily transfer its heat thereto. Said keeper plate 15 is provided with a properly disposed perforate boss 16, which is engaged over the boss or stud 6 so that the stud bolt 8 extends upwardly therethrough with its free end projected above said keeper plate 15. To retain the keeper plate 15, and through it the heating unit 9, in firmly fixed assembled relation to the iron body 1, I engage a nut and washer 17 on the projecting end portion of the stud bolt 8, and turn the same down against the end of the perforate boss 16, thus binding all of said parts together. In order to stiffen the keeper plate against warping or distortion from any cause, I provide the same with stiffening ribs 18 which radiate outwardly from said perforate boss 16.

To enclose the heating unit 9 and associate parts, I provide a top-casing 19, which is suitably shaped to conform to the outline shape of the iron as well as to close over said heating unit and associate parts. The peripheral upper margin of the iron body 1 is provided with an inwardly off-set peripheral shoulder 20 adapted to provide in conjunction therewith a peripheral seat 21. The marginal edge portions of the top-casing 19 are telescopically engaged over said peripheral shoulder 20, with the free edge of the former seated upon or abutting the peripheral seat 21, thus holding the top-casing against lateral displacement. The top-casing 19 is secured in assembled relation to the iron body and retained against vertical displacement therefrom by a cap-screw 22, the shank of which passes through the top-wall of the top-casing, and, being internally threaded, is thereupon engaged with the free threaded end of the stud bolt 8, as shown, more particularly, in Figure 3 of the drawings. It will be understood that the means above described for interlocking or securing together in assembled relation the iron body, the heating unit and associate parts, and the top-casing is subject to more or less variation, and consequently I do not limit this invention necessarily to the particular means and arrangement described above and illustrated in the drawings.

A suitable handle bail or arch 23, of any desired shape, is secured by rivets 24 or otherwise to the top-casing 19 so as to be disposed longitudinally of the iron. Said bail or arch 23 is provided with a hand-grip member 26 which is secured to the top-rail 25 of the said bail or arch 23. Said hand-grip member is preferably made of a material which is a poor conductor of heat, such e. g. as wood, fiber, hard rubber, phenol condensation products, or other suitable material.

Suitably secured intermediate the top-casing 19 and the underside of the hand-grip member 26 is a shield-plate, which may consist of a pair of metallic plates 27, or plates of other suitable material, intermediate which is secured a heat resistant sheet or layer 28 of asbestos or other material which is heat non-conductive. This shield-plate intercepts heat radiated from the top of the iron and thus shields the hand of the user when gripping the iron and manipulating the same in use.

The top-casing 19 is provided at its rear end with an opening 29 through which project the male terminal contacts or plugs 13 of the heating unit 9, all in such manner that said contacts or plugs are exteriorly projected so as to be accessible for the engagement therewith of a female contact plug or circuit coupling device 30 to which are attached the feed wires of a flexible electric cable 31, adapted to conduct electrical energy to the heating unit 9 from a suitable source of such electrical energy.

The reference character 32 indicates the water separator and secondary or auxiliary steam generator or boiler with which the iron is equipped, the same comprising a suitably shaped metallic casting having at its lower end oppositely and laterally extending perforate wings or ears 33 through which are passed bolts 33′, or other desirable fastening means, for operatively connecting the same to the heel or rear end of the iron body 1. When thus connected to the iron body 1, said casting projects upwardly from the heel or rear end of the iron. Said casting is cored to provide a substantically vertical internal chamber 34, which serves both as a trap for condensed water and as a boiler chamber in which the trapped condensed water is reconverted into steam before delivery into the main steam chamber 3 of the iron body 1. Provided in the upper free end of the casting is an internally threaded opening 35 leading into the upper end of said combined trap and boiler chamber 34, in which is engaged a bushing 36 adapted to support a steam-intake pipe 37, which extends downwardly within said chamber 34 so as to terminate intermediate the upper and lower ends thereof. Connected with the outer end of said steam-intake pipe 37, by a suitable union device 38, is one end of a flexible steam

conduit 39 which leads from a main or primary steam generator or boiler 40 adapted to serve as the main source of steam supply to the iron. Said chamber 34 is closed at its bottom end by a partition or wall 41 which separates the interior of the chamber 34 from a discharge orifice 42 with which the lower end of said casting is provided. Extending through said wall upwardly into said chamber 34 is a steam discharge pipe 43, the open intake end 44 of which terminates within the upper end of said chamber 34 while its lower discharge end 45 communicates with said discharge orifice 42.

When the casting which forms the water separator and secondary or auxiliary steam generator or boiler 32 is operatively assembled with the heel of the iron body 1, it closes the rearward open end of the steam chamber 3 of the latter, and the discharge orifice 42 of the former is properly alined with the said open end of said steam chamber 3. Supported by a bushing 46, which is engaged in the outer end of said discharge orifice 42, or otherwise connected and supported in communication with the latter, is a hollow steam distributing member 47 which extends longitudinally forward through the interior of the steam chamber 3 of the iron. Said steam distributing member 47 is perforated at its underside to provide a plurality of steam delivery orifices 48. Suitably supported within said steam chamber 3 of the iron, so as to be alined with and so as to be disposed beneath the perforated side of said steam distributing member 47, is a longitudinal drip trough or pan 49, which catches any condensed moisture which may possibly be discharged from said steam distributing member 47, and which thus prevents such condensed moisture from accompanying the steam or being otherwise discharged through the steam vents 4 at the pressing face of the iron.

The main or primary steam generator or boiler 40 may be provided with a two-way outlet valve 50 similar to that shown in Figure 6, with one discharge orifice or port of which is connected the flexible steam conduit 39, while the other discharge port is open to the atmosphere. By proper manipulation of the valve, the primary steam may be discharged from the boiler into and through the conduit 39 to the iron, or such communication with the iron may be cut off and the steam discharged through the valve directly to the atmosphere. The main or primary steam generator or boiler 40 may be of any type or size desired. For convenience of illustration, I have shown the boiler 40 to be of the electrically heated type, but this invention is not concerned with the specific type or detail construction of the primary steam generator or boiler, it being intended that the appended claims are to be read broadly in this respect to cover and embrace any primary source of steam, whatever its form may be, in combination with my novel steam iron and its combined water separator and secondary or auxiliary steam generator.

In operating the novel construction of iron, steam is delivered from a suitable initial or primary source, such e. g. as the generator or boiler 40, through the flexible steam conduit 39 to the steam intake pipe 37 of the water separator and secondary or auxiliary steam generator or boiler 32. The steam thus delivered enters the chamber 34, and then finds exit therefrom through the steam discharge pipe 43, to flow thence through the discharge orifice 42 into the steam distributing member 47. The steam escapes from the distributing member 47 through the delivery orifices 48 thereof, and thereupon fills the steam chamber 3 of the iron body 1, so that, as the operator manipulates the iron to press goods, the steam from the chamber 3 will be extravasated through the vents 4 in the pressing face 2 of the iron as the pressing operations are carried on. The extravasation of steam during the pressing operations will sufficiently dampen the goods being pressed as to assure a rapid and complete smoothing out of all wrinkles, etc., in a manner well understood by those familiar with such operations. Before beginning the use of the iron, the electric circuit through the heating unit 9 is closed, so that the latter generates the heat required for the iron; the heat thus generated being conducted through the body 1 of the iron to the pressing face 2. The heat thus provided not only serves to keep the body of the iron hot, but also serves to keep down condensation of steam within the iron during the use thereof. Even under the most favorable circumstances there is likely to occur more or less condensation of the steam flowing through the flexible delivery conduit 39, which, if no measures are taken to prevent, would work its way into the steam chamber 3, and would be likely to pass with the steam through the vents 4 in the pressing face 2 of the iron on to the goods being pressed, with the further likelihood of spotting or staining the goods. With my novel construction of iron all likelihood of such occurrence is eliminated, for the reason that such condensation from the delivery conduit 39 must first enter the chamber 34 of the water separator and secondary or auxiliary steam generator or boiler 32, there gravitating to the bottom of the chamber 34 and being trapped against escape therefrom by the elevated steam discharge pipe 43. The condensation or water thus entering the chamber 34 is separated from the accompanying

steam, the latter rising in the chamber 34 and readily escaping through the elevated intake end of the steam discharge pipe 43. The casting which forms the water separator and secondary or auxiliary steam generator or boiler 32 being directly attached to and engaged with body 1 of the iron, the heat conducted through the iron body from the heating unit 9 is readily transferred by conductivity to the casting, whereby the latter is so heated as to effect the vaporization or reconversion into steam of the condensation or water trapped in the chamber 34, and consequently the steam thus reconverted joins the main outflow of steam passing through the discharge pipe 43 for delivery into the steam chamber 3 of the iron body. The heat of the iron body substantially maintains the temperature of the steam passing through the steam distributing member 47 and the steam chamber 3 against abnormal drop. In the event of any condensation of steam occurring in the distributing member 47, the drip-pan 49 which underlies the same will catch such condensation so as to prevent its accompanying the steam through the vents 4 in the pressing face 2 of the iron. The distributing member 47 and drip-pan 49 combined therewith thus provide a secondary water separator within said steam chamber 3. While the iron is hot, which is its normal condition when in use, condensation of steam is not likely to occur in the distributing member 47. When, however, use of the iron is interrupted, and the same is allowed to cool, some condensation will take place, the water thus formed being thereupon caught in said drip-pan 49. When the iron is again put in use, and to such end is again heated, the heat both radiated by and conducted through the body of the iron to the drip-pan 49 will again vaporize or reconvert the water caught in the drip-pan to steam, which is therefore free to mingle with the steam circulated through the steam chamber 3 for extravasation through the vents 4 in the pressing face of the iron.

From the above description of the construction and operation of my novel electric steam pressing iron, it will be clearly evident that I have provided a very efficient appliance, whereby the benefits of steam extravasation without likelihood of any accompanying and undesired free water is assured. It will also be understood that by shutting off the supply of steam to the iron, the same may be used as an electrically heated dry iron when it is so desired.

I am aware that some changes may be made in the general arrangements and combinations of the various devices and parts, as well as in the details of the construction of the same, without departing from the scope of my present invention as described in the foreging specification, and as defined in the appended claims. Hence, I do not limit my invention to the exact arrangements and combinations of the devices and parts as set forth in the foregoing specification, nor do I confine myself to the exact details of the construction of said parts as illustrated in the accompanying drawings.

I claim:—

1. In a pressing appliance of the kind described, the combination with an iron body having an internal steam chamber and vents leading from the latter to its pressing face, of an electrical means for heating said iron body, a steam and water separator and secondary steam generator mounted on and heated by said iron and communicating with said steam chamber, means for initially introducing steam into said separator and generator, and a secondary steam and water separator means within said steam chamber through which steam passes from said separator and generator for final delivery into the interior of said steam chamber.

2. A pressing appliance, comprising an iron body having an internal steam chamber and vents leading from the latter to its pressing face, said iron body having a recess in its upper side, an electrical heating unit seated in said recess, a keeper-plate engaged upon said heating unit, a top-casing connected with said iron body to enclose said heating unit and its keeper-plate, means for securing said iron body, heating unit, keeper-plate and top-casing in assembled relation, a handle secured to said top-casing, a steam and water separator and secondary steam generator mounted on the heel of said iron body and to which heat is transferred from said iron body, said separator and generator being adapted to initially receive steam delivered to said iron whereby water is separated therefrom and revaporized prior to delivery into said steam chamber.

3. A pressing appliance, comprising an iron body having an internal steam chamber and vents leading from the latter to its pressing face, said iron body having a recess in its upper side, an electrical heating unit seated in said recess, a keeper-plate engaged upon said heating unit, a top-casing connected with said iron body to enclose said heating unit and its keeper-plate, means for securing said iron body, heating unit, keeper-plate and top-casing in assembled relation, a handle secured to said top-casing, a steam and water separator and secondary steam generator mounted on the heel of said iron body and to which heat is transferred from said iron body, said separator and generator being adapted to initially receive the steam delivered to said iron to trap and revaporize accompanying condensation, and a secondary steam and water separator means within said steam chamber through which

steam passes from said separator and generator into the interior of said steam chamber.

4. A pressing appliance, comprising an iron body having an internal steam chamber extending from its heel toward the toe thereof, said body having a plurality of steam vents leading from said steam chamber to the pressing face thereof; a water trap and secondary steam generator consisting in a casting providing an internal chamber having a discharge orifice at its lower end, means for securing said casting to the heel of the iron body with said discharge orifice alined with said steam chamber, a steam discharge pipe communicating with said discharge orifice and extending upwardly within said internal chamber with its intake end elevated above the bottom of the latter, means for delivering steam from a primary source of supply into said internal chamber; and means for heating said iron body and said water trap and secondary steam generator.

5. A pressing appliance, comprising an iron body having an internal steam chamber extending from its heel toward the toe thereof, said body having a plurality of steam vents leading from said steam chamber to the pressing face thereof; a water trap and secondary steam generator consisting in a casting providing an internal chamber having a discharge orifice at its lower end, means for securing said casting to the heel of the iron body with said discharge orifice alined with said steam chamber, a steam discharge pipe communicating with said discharge orifice and extending upwardly within said internal chamber with its intake end elevated above the bottom of the latter, means for delivering steam from a primary source of supply into said internal chamber; and said iron body having a recess in its upper side, an electrical heating unit seated in said recess, means for retaining said heating unit in assembled relation to said iron body adapted to both heat said iron body and said water trap and secondary steam generator.

6. A pressing appliance, comprising an iron body having an internal steam chamber extending from its heel toward the toe thereof, said body having a plurality of steam vents leading from said steam chamber to the pressing face thereof; a water trap and secondary steam generator consisting in a casting providing an internal chamber having a discharge orifice at its lower end, means for securing said casting to the heel of the iron body with said discharge orifice alined with said steam chamber, a steam discharge pipe communicating with said discharge orifice and extending upwardly within said internal chamber with its intake end elevated above the bottom of the latter, means for delivering steam from a primary source of supply into said internal chamber; a steam distributing member connected in communication with said discharge orifice of said water trap and steam generator casting, and disposed to extend longitudinally forward through said steam chamber of said iron body, said distributing member having a plurality of steam delivery orifices in its under side, a drip-pan secured within said steam chamber to extend beneath said distributing member and its delivery orifices; and means for heating said iron body and said water trap and secondary steam generator.

7. A pressing appliance, comprising an iron body having an internal stream chamber and vents leading from the latter to its pressing face, a longitudinal perforate steam distributing member extending horizontally into said steam chamber, and means beneath and coextensive with said distributing member for trapping water and separating the same from the steam passing from said distributing member into said steam chamber.

In testimony that I claim the invention set forth above I have hereunto set my hand this 8th day of October, 1924.

CHARLES A. BREWER.