No. 726,343. PATENTED APR. 28, 1903.

H. D. RAEMISCH.

SELF HEATING SAD IRON.

APPLICATION FILED APR. 5, 1901.

NO MODEL. 2 SHEETS—SHEET 1.

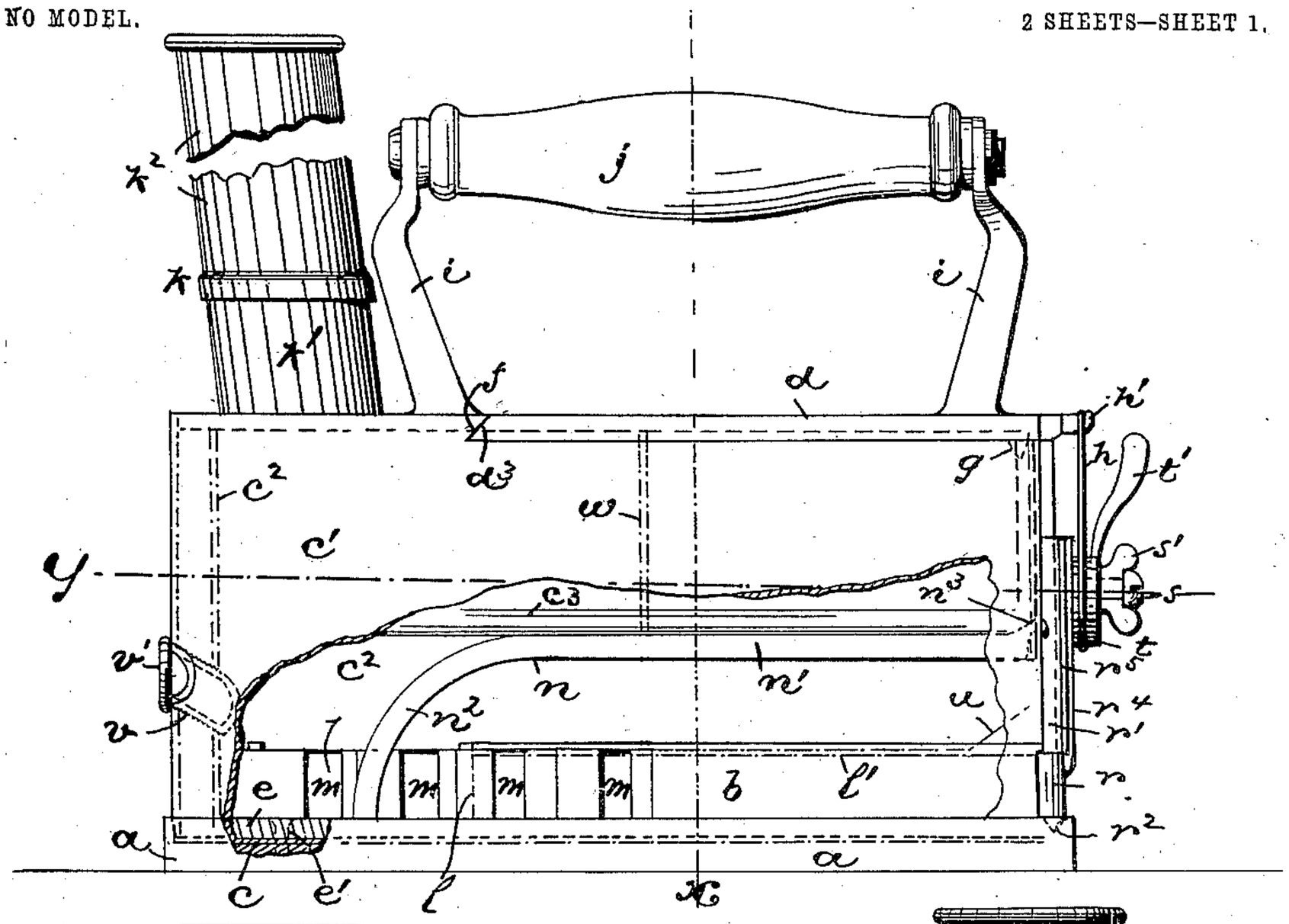

Fig. 1.

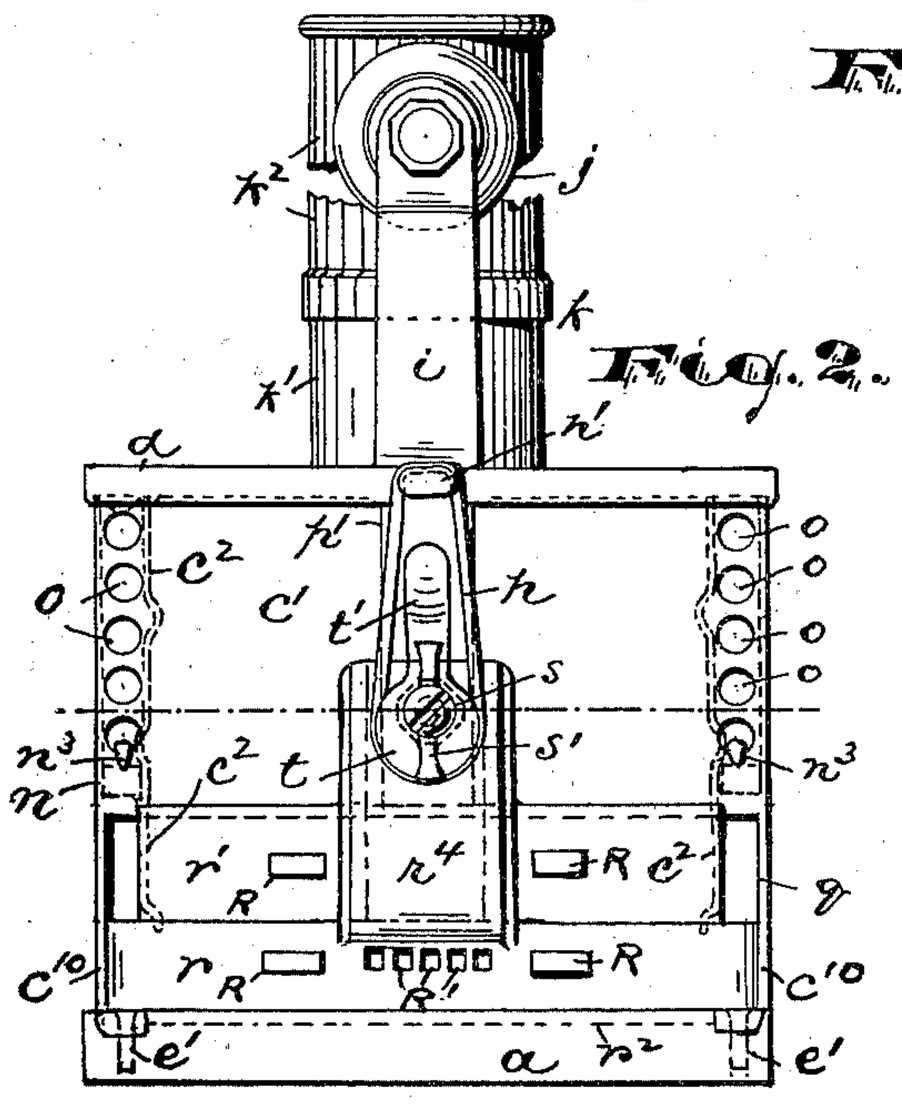

Fig. 2.

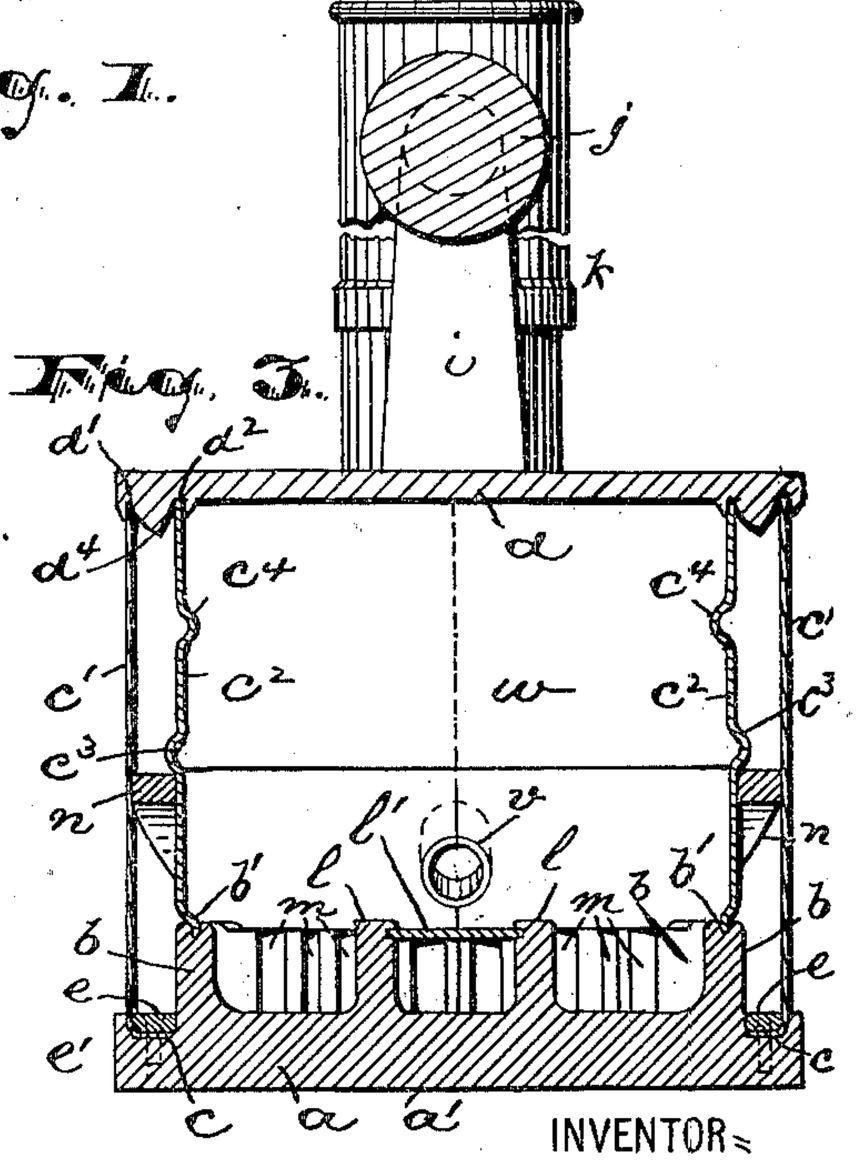

Fig. 3.

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NO MODEL. 2 SHEETS—SHEET 2.

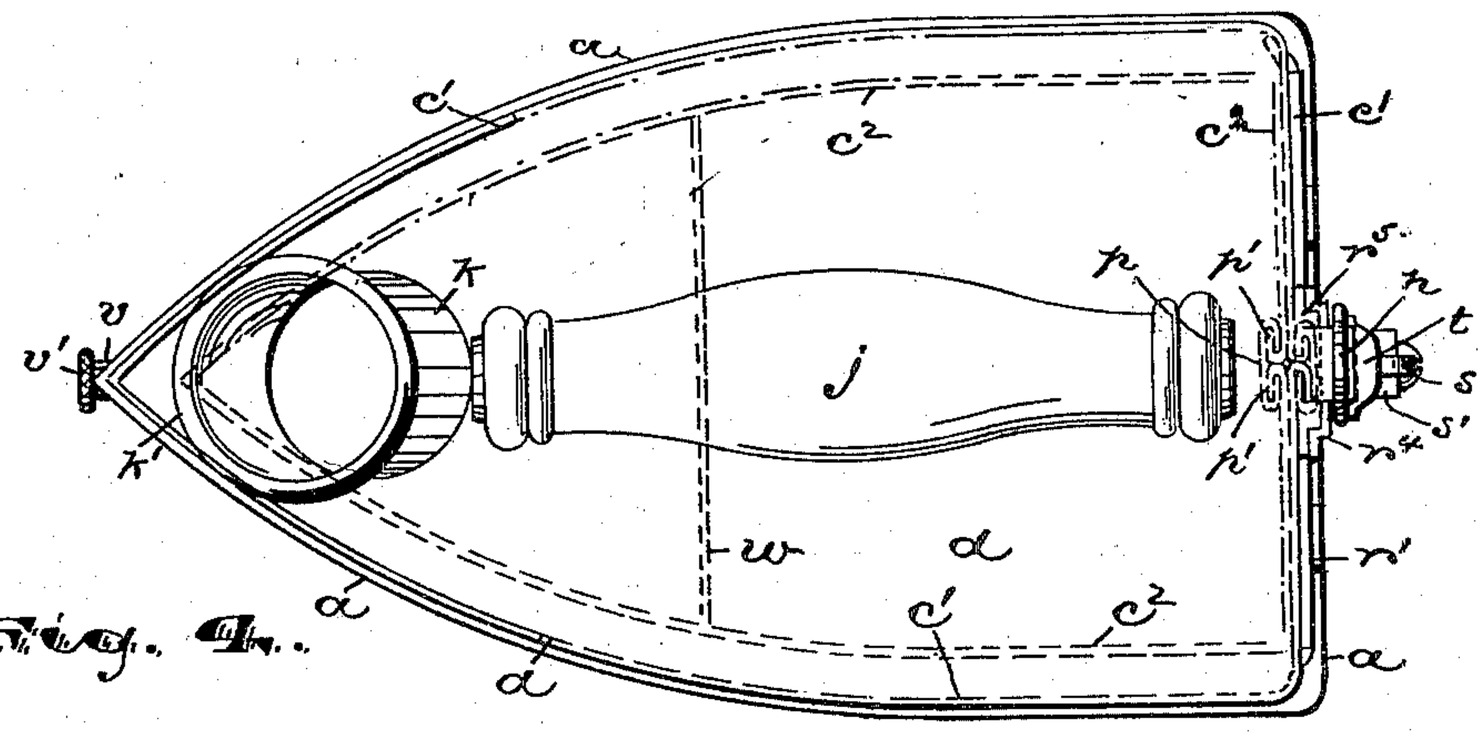

Fig. 4.

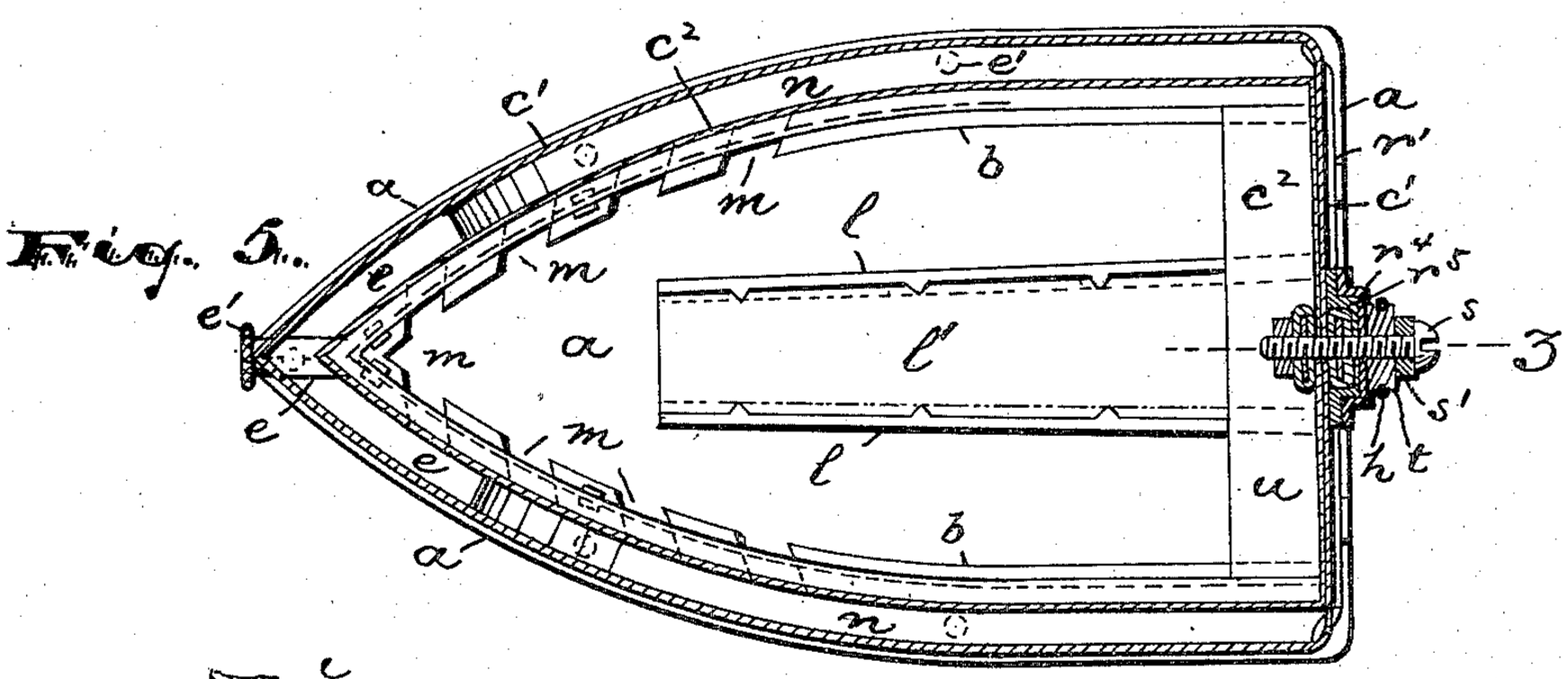

Fig. 5.

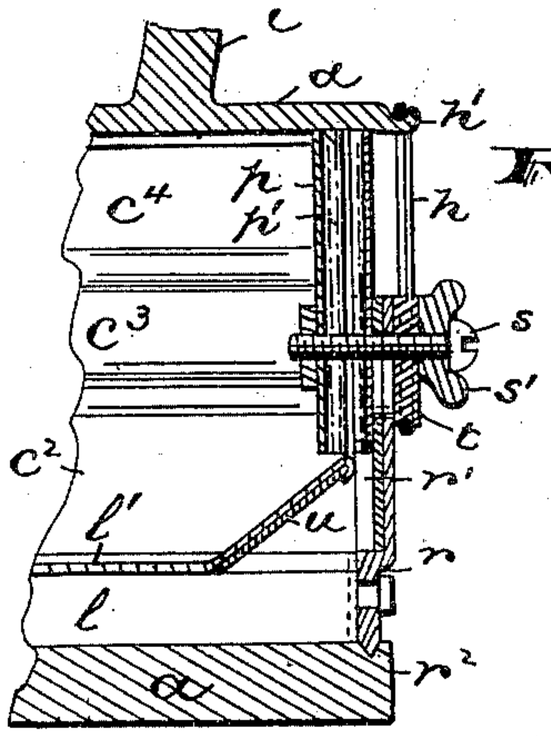

Fig. 6.

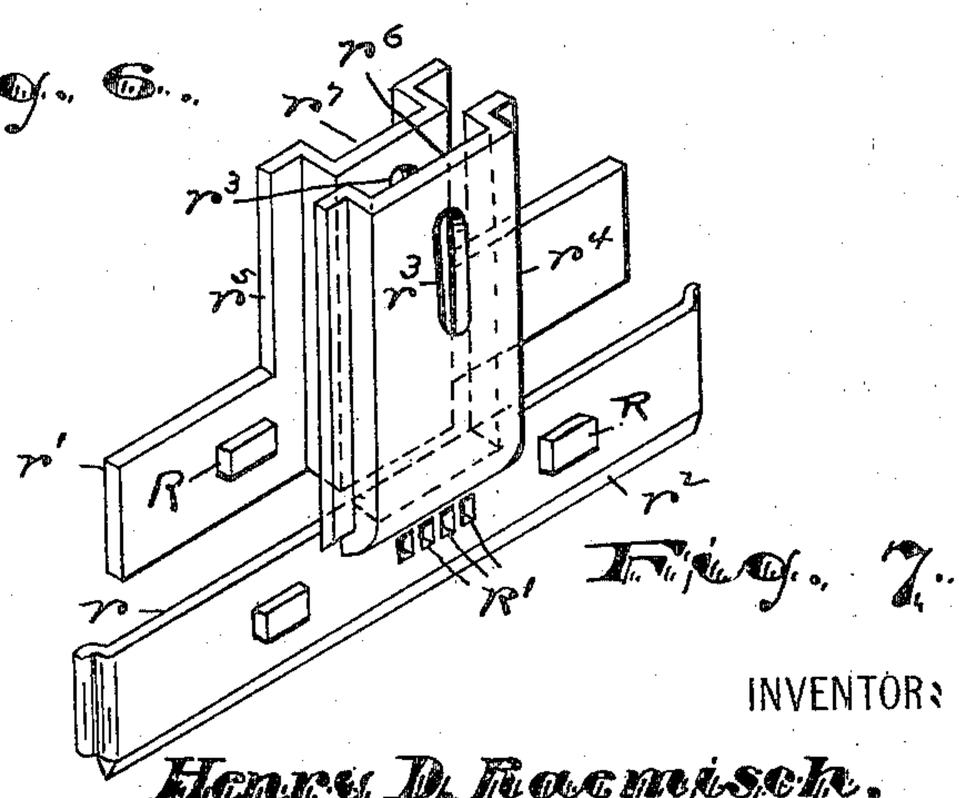

Fig. 7.

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# UNITED STATES PATENT OFFICE.

HENRY D. RAEMISCH, OF NEWARK, NEW JERSEY.

## SELF-HEATING SAD-IRON.

SPECIFICATION forming part of Letters Patent No. 726,343, dated April 28, 1903.

Application filed April 5, 1901. Serial No. 54,501. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY D. RAEMISCH, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Self-Heating 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of sad-irons which are self-heating or have a central chamber in which fuel may be ignited to keep the iron continually hot as it is used.

The objects of the invention are to provide improved draft appliances for such a sad-iron; to secure an active combustion up close to the point of the iron, whereby said point of the iron will be better heated; to secure a construction in which the walls are formed of sheet metal providing internal draft-passages and being more easily constructed; to provide a base or bottom plate which can be cast in one approximately flat piece without danger of unequal shrinkage or warping; to obtain improved means for regulating the air-supply and for fastening the top or cover of the sad-iron in position, and to secure other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved self-heating sad-iron and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several figures, Figure 1 is a side elevation of my improved sad-iron with a portion of the outer wall or shell broken away to show the interior construction more clearly. Fig. 2 is a rear elevation of the sad-iron looking at its heel. Fig. 3 is a vertical cross-section on line $x$, Fig. 1. Fig. 4 is a plan of the sad-iron; and Fig. 5 is a horizontal section of the same on line $y$, Fig. 1. Fig. 6 is a detail section taken vertically and longitudinally of the flat-iron, as on line $z$, Fig. 5; and Fig. 7 is a perspective view of a certain pair of slides for regulating the air-supply, said slides being slightly separated from one another, but otherwise in the same relative position they occupy in use.

In said drawings, $a$ indicates the base of my improved iron, said base being preferably cast of metal and providing at its lower side a smoothing-surface $a'$. Said base $a$ is of the usual triangular form of a sad-iron with outwardly-rounded sides and is provided at its upper surface and a little distance in from the edges with an upwardly-projecting integral rib $b$, grooved at its top, as at $b'$. Between said rib and the outer edge of the base-plate $a$ is a groove $c$, adapted to receive the inwardly-curved lower edge of an outer shell $c'$, forming the upright wall of the sad-iron, said edge being laid in said groove and held by a suitably-shaped superposed strip $e$, which is riveted in place upon rivets $e'$, cast in the bottom plate $a$ and passing through perforations in the edge to be secured.

It will be understood that in my improved construction the base or bottom plate of the sad-iron and the walls of the sad-iron are formed independently and then connected instead of being cast in one integral piece. This enables the base $a$ to be cast as an approximately flat plate without the dangers of unequal shrinkage and warping which are incident to a casting of base and walls all in one piece.

The walls of the sad-iron are composed of two sheets or strips $c'$ $c^2$ of metal, preferably steel, bent into the required shape over suitable formers and arranged one within the other and a slight distance apart at the sides of the iron, so as to provide draft-spaces between at said sides of the sad-iron. The inner shell $c^2$ sits at its lower edge in the groove $b'$ at the top of the rib $b$ on the base $a$ of the sad-iron, and the upper edges of the two walls or shells lie for the greater part in one horizontal plane. The top of the sad-iron is closed by a cover or plate $d$, which near its edges has parallel grooves $d'$ $d^2$, adapted to receive the upper edges of the steel shells $c'$

$c^2$, respectively, a downward projection $d^4$ between said grooves serving to hold the shells at a fixed distance apart.

At the forward end of the sad-iron the top plate $d$ is recessed inwardly from its edges, as at $d^3$, and the outer shell or wall extends upward in said recess, the rear edges of said extended portion being undercut, as at $f$, to overlap upon the beveled edges of the recess $d^3$ in the top or cover, as shown in Fig. 1. This serves to hold the forward end of the cover $d$ down upon the walls or shells, and at the rear end said cover has a downwardly-projecting transverse rib $g$ on its inner side to slip inside the rear end walls of the sad-iron when the cover is crowded forward into place, and thus preventing any rearward displacement of the cover. A projection $h'$ from the rear end of the cover $d$ receives a band or loop $h$, which extends downward around an eccentric $t$, hereinafter more fully described, and by means of which strain is brought upon the loop to hold the cover down in place. From said cover or top $d$ standards $i$ extend upward to support a handle $j$, by which the sad-iron is operated, as usual. Forward of said handle and on the cover or top $d$ is a chimney $k$, comprising sections $k'$ $k^2$, and opening at its lower end into the interior cavity or fire-chamber of the sad-iron.

The strips of sheet metal forming the walls of the sad-iron are each joined or have their two ends united at the rear end or heel of the sad-iron, and preferably on a vertical line midway between the two sides of the iron. These joints may be effected in any manner common to the art of sheet-metal working; but preferably the meeting ends are oppositely returned, as at $p'$, at the same side of the wall and covered by a key or binder $p$, which hooks at its edges beneath the said returned ends $p'$, the whole being pressed tightly together. The outer and inner shells $c'$ $c^2$ lie at the rear end of the sad-iron flat against each other, the joints described projecting one inwardly and one outwardly, to permit the walls to come close together, as shown in Figs. 4 and 5.

The interior chamber of the sad-iron, formed by the base-plate $a$, with its side ribs $b$ and the walls or shells $c'$ $c^2$ extending upward therefrom, is adapted to receive the fuel, usually charcoal, which is burned to secure the desired heat. To secure a supply of air into the combustion of said fuel, I have provided, adjacent to the bottom of the interior chamber of the sad-iron, a longitudinally-disposed draft-passage, which is formed by integral ribs $l$, projecting upward from the base-plate $a$ of the sad-iron and grooved at their adjacent faces near the upper edges to receive a removable sliding top $l'$. Said ribs $l$ start at the extreme rear end or heel of the sad-iron and extend forward two-thirds (more or less) of the distance to the point of the iron, and air entering the rear or heel end of the sad-iron by means hereinafter described is conducted through the draft-passage thus formed to the forward lower portion of the interior chamber. To further supply draft to said forward and lower portion of the chamber, where combustion is naturally liable to be inactive, I have provided lateral draft-openings, formed by gaps or notches $m$, cut through the ribs $b$ of the bottom plate well up toward the point of the iron. At each side of the sad-iron several of these openings are formed and a dividing strip or partition $n$ is then arranged between the inner and outer shells $c^2$ $c'$, extending for a distance from the heel end of the sad-iron horizontally inward toward the point about halfway up on the height of the iron, as at $n'$, and then curving downward, as at $n^2$, to abut against the bottom of the space between the two shells at a point between two of the openings $m$, through the rib $b$, so that there is communication from the combustion-chamber with the draft-space between the double walls, both in front of and behind the partition $n$. The rear end of said partition $n$ is supported by means of a curved or hook-shaped lug $n^3$, hooked into a draft-opening, hereinafter described, through the shells or walls, and the partition is held against vertically-upward movement by a corrugation $c^3$, formed in the inner shell. A second corrugation $c^4$ may also be formed in the inner shell above the first to secure greater stiffness.

Air entering at the rear end of the sad-iron into the lower part of the draft-spaces between the two shells in a manner hereinafter described will be led beneath the partition-strips $n$ $n$ forward toward the point of the iron to escape into the interior chamber through the apertures $m$. Thence after supplying oxygen to the burning fuel it may escape through the chimney $k$ or a portion of the products of combustion may pass out through the forward openings $m$, which are in front of the partition-strip $n$, into the space between the two shells, and so be conducted above the partition-strip $n$ rearwardly to escape at the upper part of the rear end of the sad-iron through apertures $o$.

For admission of air at the rear end of the sad-iron and the removal of ashes I have cut through the double wall at said end an aperture $q$, extending from one extreme side of the sad-iron to the other and upwardly nearly to the plane of the partition-strips $n$. Said opening is adapted to be regulated or closed by two slides $r$ $r'$, arranged in the same vertical plane one above the other. The lower slide $r$ underlies at its ends the edges $c^{10}$ of the outer shell $c'$, and at its lower edge is beveled, as at $r^2$, to enter a groove in the projecting end of the base $a$ of the sad-iron. The upper slide $r'$ is adapted to rest at its bottom upon the lower slide $r$ and overlaps at its top the outer shell of the sad-iron. Said upper slide $r'$ is cut off at its opposite ends even with the inner shell $c^2$ of the sad-iron, thus

leaving a permanently-open space at the heel of the iron into the draft-passage between the two shells and below the partition-strip $n$. Above the partition-strip $n$ are the permanently-open apertures $o$, before referred to, and which may be of any desired form. Each slide has an upwardly-extending handle $r^4$ $r^5$, respectively, grooved at its inner face, (as at $r^6$ $r^7$, respectively,) the handle of the upper slide $r'$ fitting over and sliding upon the joint or rib of the outer shell $c'$, while the lower slide $r$ works in a similar manner upon the upper slide. Both are slotted, as at $r^3$, to receive a threaded bolt $s$, fixed in the walls of the sad-iron, a thumb-nut $s'$ being placed at the outer end of the bolt, by means of which the slides can be clamped in any desired position. Between the thumb-nut and slides is an eccentric $t$, having a projecting handle $t'$, and around said eccentric is passed the band or loop $h$, before referred to, which holds the top plate or cover $d$ in place. Said eccentric when turned into locking position by its handle may, therefore, also be clamped by the thumb-nut $s$, together with the slides.

Just inside the draft-slides $r$ $r'$ is a shelf $u$, extending transversely across the interior chamber of the sad-iron and sloping inwardly downward from the top of the draft-aperture $q$ to the top of the central draft-passage along the bottom of the chamber. The cover or top $l'$ of said draft-passage does not extend rearward to the slides $r$ $r'$, but where it meets the shelf $u$ described is preferably connected thereto in any suitable manner, as by continuing upwardly across the shelf and being at its end bent or hooked over the forward upper edge of said shelf, as shown in Fig. 6. This shelf $u$ holds the fuel and ashes forward away from the slides $r$ $r'$.

The slides $r$ $r'$ have finger-holds R, by which they may be operated, and the lower one has apertures R', opening into the central draft-passage permanently. Said draft-passage also receives draft beneath the shelf $u$ when the upper slide $r'$ is raised away from the lower one to supply air to the rear of the combustion-chamber.

The lower slide $r$ is not intended to be raised except when it is desired to clean the ashes from the bottom of the fire. When said slide is raised, there are no transversely-disposed obstructions on the floor of the chamber from one end of the iron to the other, and a poker or other tool can be readily inserted to draw out the ashes. I prefer, however, to blow out the ashes, and for this purpose have arranged at the toe or point of the sad-iron and slightly above the base $a$ a nipple $v$, sloping downward through the two walls $c'$ $c^2$ of the sad-iron and preferably screwed into place. This nipple is adapted to receive the nozzle of a small bellows or the like, and when not in use may be closed by a stopper $v'$ or other suitable means.

The base $a$ of my improved sad-iron becomes very hot in use, being comparatively thick and provided at its inside with the various ribs described, which serve as heat-accumulators. The sheet-metal walls give great lightness to the sad-iron and, moreover, do not absorb much heat. Again, because of the draft-space between the outer and inner wall the outer shell or wall does not become hot enough to burn off its nickel or other finish or to be dangerous to the operator.

Under some conditions I may arrange across the interior chamber of the sad-iron, about half-way between the toe and heel of the iron, a vertical bulkhead $w$, closing the upper part of the chamber to compel draft from the rear to keep downward toward the point of the sad-iron.

A cap of any suitable construction may, furthermore, be used to close the chimney $k$, if desired, when the iron is set one side and it is not desired that the fuel burn too rapidly.

Having thus described the invention, what I claim as new is—

1. In a self-heating sad-iron, the combination with a plate or casting forming the bottom of the iron, and inner walls independent of said plate or casting and extending upward therefrom somewhat in from its edges, of a band or strip of sheet metal extending around said inner walls and having its ends brought together and each bent outward and returned oppositely apart, a key or binder comprising a strip of sheet metal having its edges turned inwardly toward each other and hooked over the said outwardly and oppositely returned ends of the band, the said band thus forming an endless wall and being secured at its lower edges to the bottom plate or casting and having its upper edges free and forming a seat for a removable cover, and said cover.

2. In a self-heating sad-iron, double walls inclosing a fire-chamber and providing at the sides thereof outlet-flues, each of which communicates at a lower point with the forward part of the fire-chamber and has at an upper point an exit, and intake-flues leading from the lower part of the heel of the iron forward and opening into the fire-chamber back of said outlet-flues.

3. In a self-heating sad-iron, double walls providing draft-spaces at the sides of the iron and, partitions in said draft-spaces extending from points about half-way up on their rear ends to points on their bottoms near the forward end of the iron, the inner wall having openings on both sides of said partition, and the outer wall having lower intake-openings beneath said partitions and upper outlet-openings above said partitions.

4. In a self-heating sad-iron, double walls inclosing a fire-chamber and providing draft-spaces at the sides of said chamber, partitions in said draft-spaces dividing them into inlet and outlet flues, the walls of the inlet-flues having intake-openings at the heel of the iron and delivery-openings into the fire-chamber and the said outlet-flues having

openings from the fire-chamber near the point of the iron and communicating at their upper parts with the open air.

5. In a self-heating sad-iron, having a base or bottom plate and walls cut away at their lower portion at the rear end of the iron and forming a draft-aperture extending from the surface of said bottom plate upward, upper and lower vertically-sliding slides at the rear end of the iron to close said draft-aperture, the lower slide being adapted to be seated at its lower edge against said base-plate and the upper to abut edgewise against the lower one, said slides having superposed extensions or tongues slotted to receive the same pin and both being grooved at their inner sides, the inner one to engage a guide-rib upon the iron body and the outer one to receive the inner one, and being independently movable.

6. In a self-heating sad-iron, a bottom plate or casting, a strip of sheet metal bent entirely around the iron and forming the outer peripheral walls thereof, the extremities of said strip meeting at the central vertical line of the heel of the iron and being each turned outwardly backward, and a binding-piece being laid upon said returned ends and having its margins bent or turned in under said returned ends and the whole pressed firmly together, the said strip being secured at its bottom edge to the base of the iron and being free at its upper edge and forming a seat for a cover, and said cover.

7. In a self-heating sad-iron, the combination with the cover *d*, and a body portion having a draft-aperture at its rear end, of slides *r*, *r'*, working vertically to close said aperture and having upwardly-extending superposed tongues or handles, a threaded bolt projecting from the body of the sad-iron through registering slots in said tongues, a clamping-nut on said bolt, and between said nut and tongues a handled eccentric, and a band extending from said eccentric to the rear end of the cover of the sad-iron, whereby the slides and cover are locked by one and the same means.

8. In a self-heating sad-iron, a base *a*, of cast metal, a cover *d*, parallel to said base, and sheet-metal walls between said cover and base, the strip of metal from which the outer wall is formed having its ends joined on a vertical central line at the rear end of the sad-iron, slides *r*, *r'*, working in the same vertical plane to close a draft-aperture in the lower part of the rear end of the sad-iron, said slides having upward extensions or tongues, vertically grooved at their inner faces, the inner tongue to slide upon the joint of the sheet-metal outer wall of the sad-iron and the outer tongue to slide upon the inner, and means for clamping the said slides in any desired position.

In testimony that I claim the foregoing I have hereunto set my hand this 13th day of March, 1901.

H. D. RAEMISCH.

Witnesses:

CHARLES H. PELL,

C. B. PITNEY.