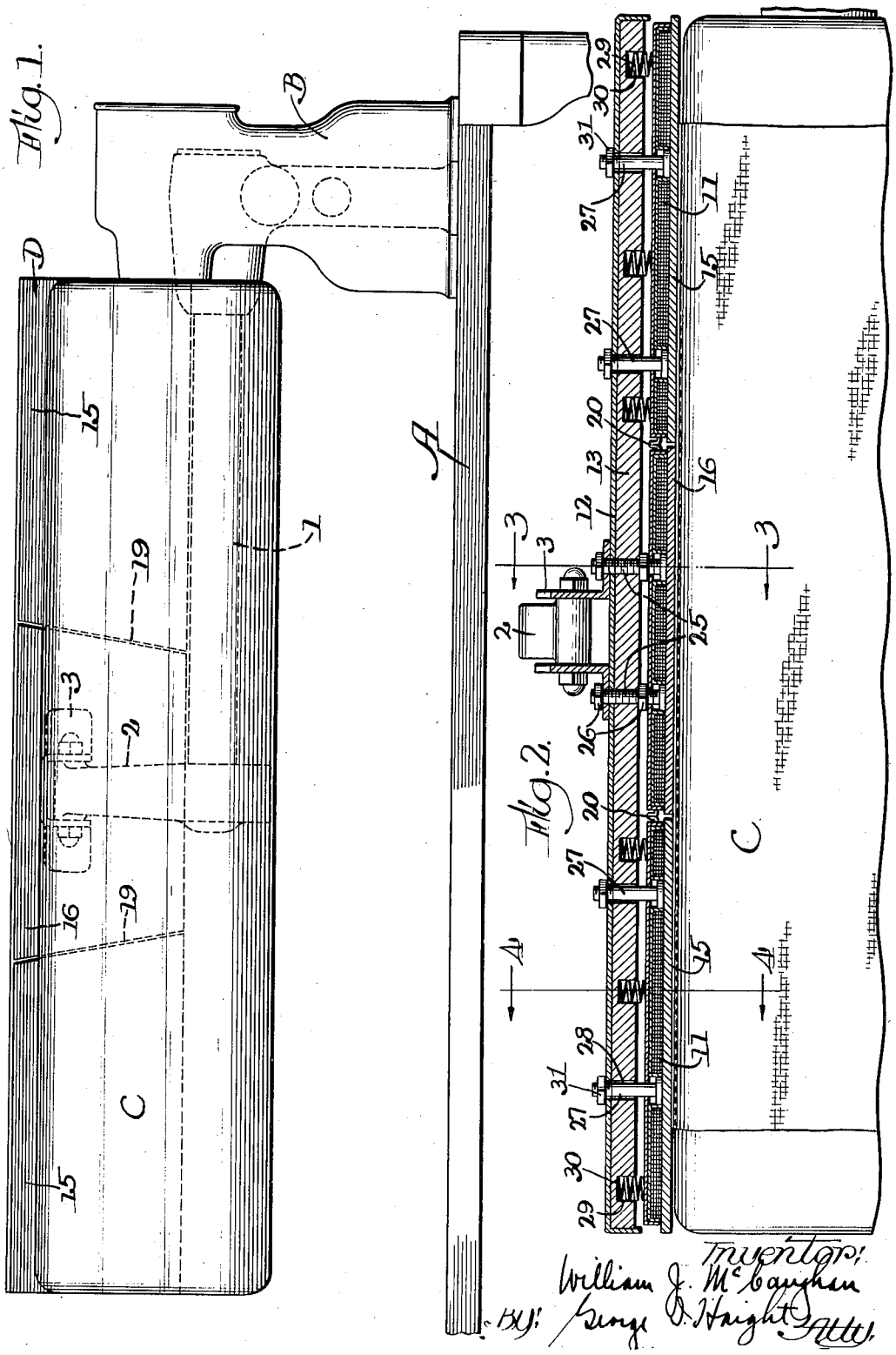
Dec. 17, 1935. W. J. McCAUGHAN 2,024,939

SHOE FOR IRONING MACHINES

Filed June 8, 1934 2 Sheets-Sheet 1




Inventor:
William J. McCaughan
By: George S. Haight Atty.

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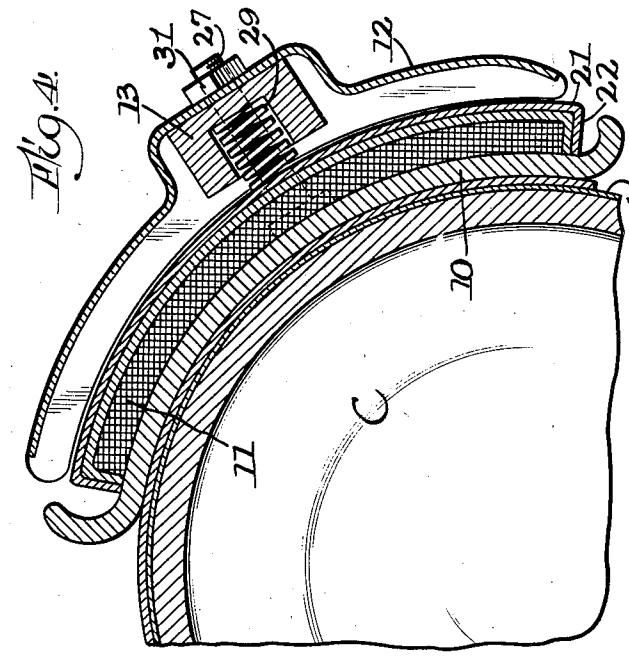


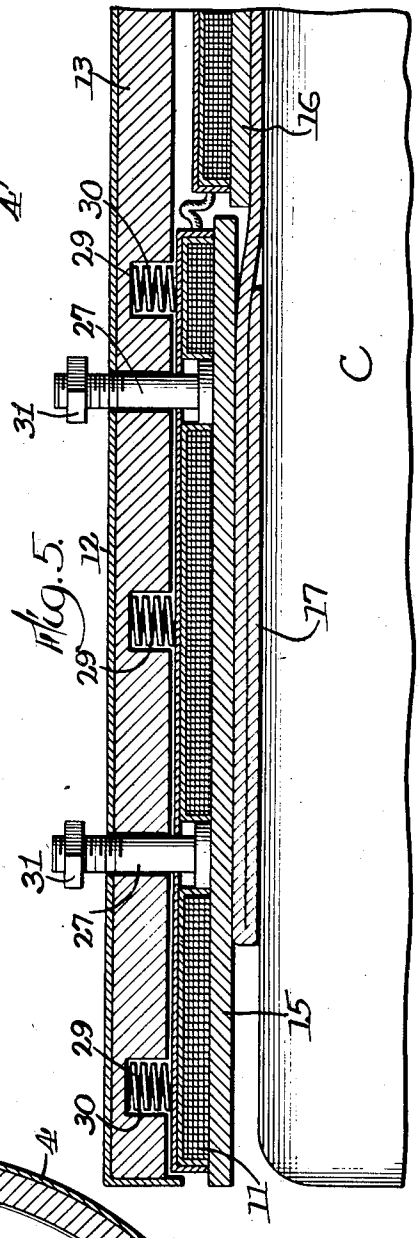


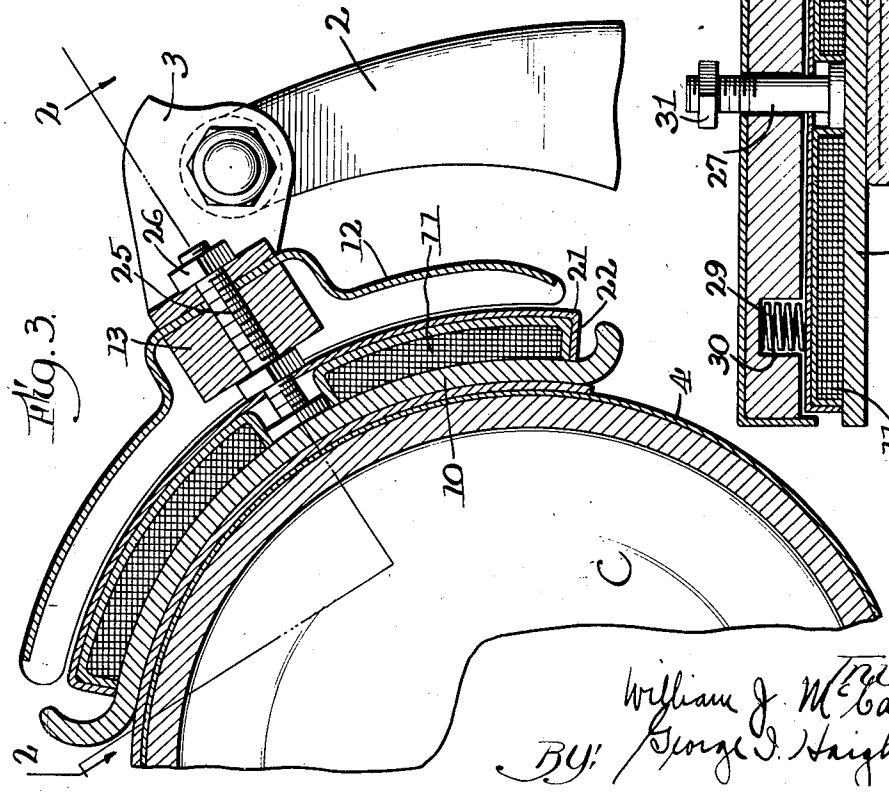


William J. McCaughan
Inventor
By: George D. Haight
Atty.

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# UNITED STATES PATENT OFFICE

2,024,939

## SHOE FOR IRONING MACHINES

William J. McCaughan, River Forest, Ill., assignor to Electric Household Utilities Corporation, Cicero, Ill., a corporation of Illinois

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13 Claims. (Cl. 68—9)

My invention relates to improvements in ironing machines and has more particular reference to improvements in the ironing shoe which carries the heating element and which is usually movable toward and from the other ironing element in the form of a padded roll.

One of the objects of my invention is to provide an ironing element or shoe for ironing machines, which has a flexible ironing surface adaptable to variations in thickness of the material being ironed.

A further object is to provide an ironing element or shoe for ironing machines, in which sections of the ironing surface are relatively movable to enable folds to be made in the material being ironed, without raising the other portions of the ironing surface away from the thinner or unfolded portions of the material.

Other objects of my invention will appear hereinafter.

Referring to the accompanying drawings which illustrate one embodiment of my invention,

Fig. 1 is a general view in elevation of the upper portion of an ironing machine, showing the roll and ironing shoe mounted thereon in operating relation;

Fig. 2 is an enlarged longitudinal sectional view of the shoe, with the roll in elevation, taken substantially on the line 2—2 of Fig. 3;

Fig. 3 is an enlarged transverse sectional view through the shoe and roll, and taken substantially on the line 3—3 of Fig. 2;

Fig. 4 is another transverse sectional view of the shoe and roll, taken substantially on the line 4—4 of Fig. 2; and

Fig. 5 is an enlarged longitudinal detail section illustrating the action of the sectional ironing plate with respect to a folded piece of material being ironed.

In the drawings, a table or stand A is illustrated, upon which the standard B is mounted. The standard supports the ironing elements C and D and contains the driving or actuating mechanism therefor. In ironing machines of this character, the standard B is usually positioned at one end of the ironing elements and has a horizontally projecting shaft upon which the roll C is supported and by which it is rotated. The standard B also carries a horizontally extending rock shaft 1, at the outer end of which a supporting arm 2 for the ironing shoe D is mounted, and by which the shoe is swung toward and from the roll. The shoe D is pivotally mounted on the end of the swinging arm 2 by means of a suitable bracket 3 which extends rearwardly from the center portion of the shoe D. The roll C is in the form of an elongated cylinder and is usually provided with a padding 4 on its surface.

The ironing shoe D is made in the form of an elongated, relatively thin structure, extending substantially the length of the roll and transversely curved to conform to the curvature of the roll with which it cooperates. This shoe comprises a curved ironing surface plate 10, a heating element 11, a cover member 12, and an elongated rigid backing member or bar 13 which serves as a mounting for the other parts of the shoe. The ironing plate 10 which provides the ironing surface contacting with the roll or the material between the roll and the shoe, is made up of three separate sections 15, 16 and 15, although the number of sections may be varied as desired. These sections are all relatively movable with respect to each other. Normally, however, their ironing surfaces are all maintained in the same plane; but when varying thicknesses of material are passed between the roll and the shoe, the sections of the ironing plate yieldably adapt themselves to the varying thicknesses of the material ironed. For instance, as illustrated in Fig. 5, the material 17 passing between the end section and the roll is of greater thickness than the portion between the remaining sections and the roll, due to folding or other conditions which arise in the ironing operations. In this case the end section 15 of the ironing plate yields to the folded or increased thickness, but the other sections remain in ironing relation to the other portions of the material and the result is that the pressure is substantially uniform throughout the area of the piece being ironed, and all portions of the material are ironed.

As shown in Fig. 1, the several sections of the ironing plate are parted or separated on diagonal lines 19 angularly arranged with respect to the direction of movement of the material being ironed, and the purpose of this arrangement is to prevent the material from entering the space between the sections, which would be the case if the parting lines were arranged in a circumferential direction parallel to the line of movement of the material between the shoe and the roll.

The heating element 11 extends substantially throughout the length and width of the ironing plate, and is positioned between the ironing plate and the cover member 12. This heating element is likewise divided into sections corresponding to the plate sections 15, 16 and 15, so that the heating element will accommodate itself to the relative movement of the plate sections. The sections of the heating element are connected by flexible con-

ductors 20. The heating element may be of any suitable type for the purpose. In the present structure, each section is encased within a metal housing 21 which extends throughout the area of the section and has its margins 22 turned over the edges and bearing against the inner face of the plate section, thus forming a rigid, protecting structure for the heating element.

All of the sections of the ironing plate have studs secured to their rear faces and extending through the backing member or supporting bar 13. The intermediate section 16 of the ironing plate is rigidly mounted with respect to the supporting bar, and the studs 25 therefor are secured to the backing member 13 by jam nuts 26 threaded on the studs and clamped against opposite sides of the bar. The outer nuts 26 also serve to clamp the supporting bracket 3 to the bar, as shown more clearly in Fig. 2. The outer or end sections 15 of the ironing plate, however, are movable relatively to the bar 13, and the studs 27 therefor extend through holes 28 in the backing member 13 sufficiently large to permit free movement of the studs therein. Coil springs 29 are positioned in sockets 30 in the inner face of the backing member, and these springs bear against the heating element housing to yieldingly force the ironing plate sections toward the roll. Each of the studs 27 are provided on their outer ends with nuts 31 which serve as stops to limit the movement of the end sections in the direction in which they are forced by the springs. By adjusting these nuts, the ironing surfaces of the end sections may be maintained normally flush with the ironing face of the intermediate section 16 of the shoe.

Since the folds in the pieces being ironed are usually made at the margins, it is necessary to make only the end sections of the ironing plate yielding with respect to the increased thicknesses at the margins of the pieces. It is obvious, however, that if desired the intermediate section 16 of the ironing plate may likewise be made yielding, in the same manner as the end sections, if desired.

It is thus seen that the ironing shoe, instead of being rigid throughout its length, is flexible by virtue of the resiliently mounted sections, and is therefore adaptable to the ironing of wide expanses of material having different thicknesses, and that the whole expanse of the material will be ironed irrespective of these varying thicknesses. A shoe of this type is therefore particularly adaptable to the ironing of folds, plaits, and the like, in the material being ironed.

The whole back of the shoe is protected by the cover plate 12 which extends the length of the shoe and is curved transversely to correspond therewith. The cover is formed with a channel for the supporting bar 13 and is held in position by the studs 25 and nuts 26 thereon.

It is to be understood, of course, that the construction, operation and arrangement of the parts may be changed without departing from the scope and spirit of the invention and I contemplate such changes as fairly fall within the scope of the appended claims.

I claim:

1. An ironing shoe of the class described, adapted for cooperation with the roll of an ironing machine comprising a supporting member arcuate in cross section, an elongated curved ironing plate concentric with said supporting member and attached thereto, said plate being divided transversely of its length into a plurality of sections, and spring means interposed between said supporting member and said plate to urge sections of the same into yielding engagement with said roll.

2. In an ironing shoe of the class described, adapted for cooperation with the roll of an ironing machine, the combination of an elongated ironing plate conformed to the curvature of the roll and comprising a plurality of sections disposed end to end, one of said sections being movable relative to another, a support closely adjacent to the plate and attached thereto, and spring means compressed between said support and plate and bearing against said movable sections to adapt the ironing plate to varying thicknesses of material which pass between the roll and the shoe.

3. An ironing shoe of the class described, adapted for cooperation with the roll of an ironing machine, the combination of an ironing plate conformed to the curvature of the roll and comprising a plurality of relatively movable sections, a supporting means for the plate, and means resiliently acting on the movable sections of the plate to adapt the ironing plate to varying thicknesses of material which pass between the roll and the shoe, each section being separated from its adjacent section on a line at an angle to the direction of movement of the material between the plate and the roll.

4. An ironing shoe element for ironing machines, adapted for cooperation with the roll thereof, comprising an elongated plate contoured to the curvature of the roll and divided on diagonal lines into a plurality of independent sections, a supporting member for the sections, and means for resiliently maintaining selected sections in position so that all sections normally have their ironing surfaces in substantial alignment.

5. In an ironing shoe element for ironing machines of the class described, the combination of an elongated supporting member, an ironing member provided with heating means attached to said supporting member and comprising a plurality of sections at least one of said sections being movably supported by said supporting member, said sections being disposed end to end and substantially covered by said supporting member, and resilient means housed within said supporting member and bearing against said movably supported section to permit independent relative movement thereof with respect to another section.

6. In a shoe element structure of the class described, an elongated backing member, a plurality of ironing plate sections disposed end to end lengthwise of said backing member and each having studs secured thereto and extending through said backing member to support the sections for relative movement with respect to each other, and spring means acting on certain of said sections and interposed between the same and said backing member.

7. In a shoe element structure of the class described, an elongated backing member, a plurality of ironing plate sections each having studs secured thereto and extending through said backing member to support the sections for relative movement, spring means for resiliently acting on said sections and interposed between the sections and said backing member, and means for adjusting said sections to position their ironing surfaces normally in substantial alignment.

8. In a shoe element structure of the class described, an elongated backing member, a plurality of ironing plate sections each having studs

secured thereto and extending through said backing member to support the sections for relative movement, spring means resiliently acting on said sections and interposed between the sections and said backing member, and a heating element comprising a plurality of sections flexibly connected together and mounted on the ironing plate sections.

9. In an ironing machine of the type having a roll and a shoe cooperating therewith, said shoe comprising an elongated bar supporting member, an ironing plate curved transversely to conform to the curvature of the roll of the machine and including a plurality of sections arranged end to end and disposed lengthwise of said supporting member, certain of said sections being provided with studs extending through said bar supporting member, means on said studs for adjusting the specified sections to effect alignment of all of the ironing plate sections, and spring means interposed between the bar supporting member and said specified sections.

10. In an ironing machine shoe of the class described, the combination of an elongated bar supporting member, an ironing plate curved transversely to conform to the curvature of the roll of the machine and including a plurality of sections, each section being provided with studs extending through said bar supporting member, means on said studs for adjusting the sections with their ironing surfaces in substantial alignment, spring means interposed between the bar supporting member and said sections, and a heating element for each section.

11. In an ironing machine shoe of the class described, the combination of an elongated supporting member and an ironing plate carried by said supporting member, comprising an intermediate section and end sections, means rigidly securing the intermediate section to said supporting member, and means resiliently mounting the end sections on said supporting member.

12. In an ironing machine shoe of the class described, the combination of an elongated supporting member, an ironing plate carried thereby having a curved ironing surface on the outer side thereof and comprising an intermediate section rigidly mounted on said supporting member, end sections resiliently mounted on said supporting member for relative movement with respect thereto, and individual heating elements for the sections mounted on the inner sides thereof.

13. In an ironing machine shoe of the class described, the combination of an elongated supporting member, an ironing plate carried thereby and including an intermediate section rigidly mounted on said supporting member, end sections resiliently mounted on said support for relative movement, and means for adjusting the end sections to position their ironing faces in substantial alignment normally with the ironing face of said intermediate section.

WILLIAM J. McCAUGHAN.