

- [54] **STEAM FLATIRON**
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[58] Field of Search **38/77.5, 77.6, 77.7,**
38/77.8, 77.83, 77.9, 97

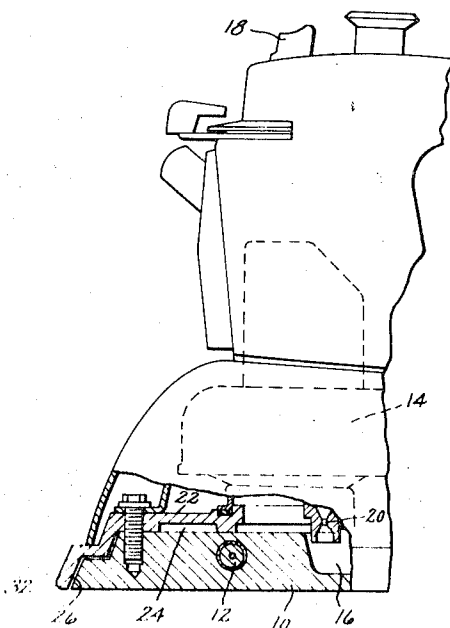
- [56] **References Cited**
UNITED STATES PATENTS
1,697,224 1/1929 Butman..... 38/77.83
2,161,009 6/1939 Brave..... 38/97
2,188,011 1/1940 Miller 38/77.83

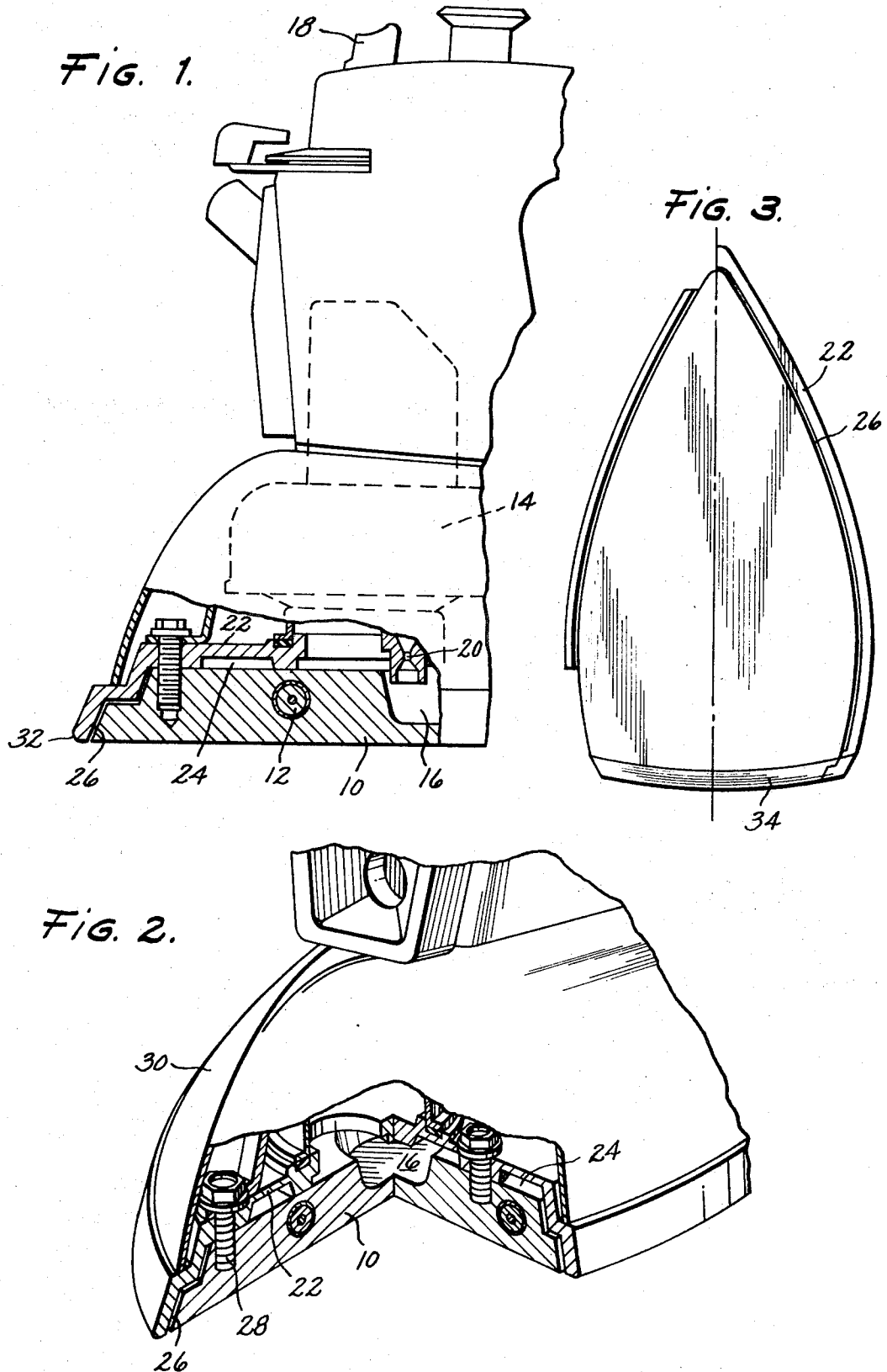
2,928,194 3/1960 Maykemper..... 38/77.83

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[57] **ABSTRACT**
The invention herein discloses a steam flatiron with an integral and continuous smooth heated soleplate without the usual steam ports. In their place there is substituted an alternate supply of steam around the periphery of the soleplate by forming and extending the usual coverplate cup-like to extend substantially down to the ironing surface around most of the soleplate so that it is spaced from the soleplate to define peripheral groove means with the soleplate. The groove may extend along the entire sides of the iron, excluding the heel portion, or only part of the sides of the iron whereby steam exits from the iron along its periphery as a curtain of steam.

6 Claims, 3 Drawing Figures





STEAM FLATIRON

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention herein pertains to a steam flatiron of the flash steam type containing a thermally connected means to the soleplate which, conveniently, is an extension of the usual iron coverplate, to extend beyond the soleplate and provide a peripheral groove means around a smooth unbroken soleplate whereby a curtain of steam is directed peripherally about the entire soleplate or a selected part thereof.

2. Description of the Prior Art

With the advent of irons using water for either steam or spray purposes or both, it is customary to provide a water tank in the iron above the soleplate and use water valve structure to provide controlled water drippage into a steam boiler or generator where it is flashed to steam and directed out apertures or ports in the soleplate to steam the article. If the water valve structure is closed to cut off the water drippage through the orifice into the generator the iron is converted for dry ironing. This is the standard and conventional structure of a steam/dry iron. Generally, the steam ports in the soleplate have been formed by numerous apertures fed by internal steam passages, or by ports emptying into long grooves that extend along the edge of the iron. Some have used separate inserts in the soleplate to form the ports or grooves for variation. Any break in the soleplate ironing surface tends to create wrinkles and is subject to clogging from lint that is generated during the ironing process. Inserts with their necessary fasteners are further subject to uneven temperature gradients since they tend to be cold relative to the soleplate and must be heated by the steam — very inefficient. The temperature differences result in increased drag during operation. Also, inserts break the smooth continuity of the soleplate to provide catching and lint-generating surfaces to subsequently reduce the steam rate of the iron. Still other irons have provided smooth ironing surfaces with means around the soleplate to ingest air and distribute it above the soleplate for temperature control purposes by introducing a cooling effect.

No prior art irons are the type disclosed herein with an integral, continuous, and smooth heated soleplate that is uninterrupted by any ports or recesses or the like and still provides for steaming by providing means to form a curtain of steam along the edge of the soleplate whereby the steam is visible as it enters the fabric during ironing and the entire uninterrupted soleplate is available for ironing purposes at all times.

SUMMARY OF THE INVENTION

Briefly described, the invention is directed to any type steam flatiron with an integral continuous and smooth heated soleplate and having a steam generator formed in the soleplate. A water tank is provided in the iron with the usual valve means to start and stop a metered flow of water from the tank through an orifice into the generator to control steam generation. To this conventional structure there is added a means that may conveniently be the coverplate which is placed in intimate thermal connection with and overlying the soleplate to define steam passages between the soleplate and coverplate. The coverplate is extended over the side of the soleplate substantially down to the ironing surface so that it fits the soleplate cup-like and extends

along the periphery spaced therefrom to define peripheral steam groove means whereby steam exits the iron only along the periphery as a curtain of steam with the entire smooth soleplate available for ironing. The steam groove may extend along both sides of the iron with the exclusion of the heel rest portion or may extend only partially depending on the extent of the steam curtain desired. Thus, the main object is to provide a steam flatiron with an uninterrupted continuous soleplate and, at the same time, provide a full supply of steam as a curtain along the edge of the iron.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevational view of an iron, partially in section and broken away, showing general parts of an iron using the invention;

FIG. 2 is a partial perspective broken view of an iron illustrating the internal arrangement of the soleplate and coverplate with the outer shell; and

FIG. 3 is a bottom view of a typical soleplate using two forms of steam grooves.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, there is shown a typical steam flatiron of any suitable form such as shown in U.S. Pat. No. 3,605,299, of common assignment, and which includes soleplate 10 that, in the present invention, is an integral continuous and smooth soleplate uninterrupted by any usual steam discharge ports or, in effect, a soleplate of the type generally used with a dry iron as opposed to a steam flatiron. In accordance with conventional practise, soleplate 10 may be cast from a suitable material, such as aluminum, with an electrical heating element 12 cast in position. The heating element 12 extends in a loop beginning at the rear of the iron and along one side to the forward end and then rearwardly along the other side. Thus, substantially uniform heat distribution is provided when the iron is turned on and the general form described is well-known.

The iron includes any suitable means for generating steam by providing water tank 14 therein. For convenience of description and illustration, the heated soleplate 10 has a flash steam generator 16 formed therein under control of an on-off water valve structure of known construction and including button 18 to control steam generation by starting and stopping a metered flow of water from the tank through an orifice 20 into the generator in the heated soleplate, the water flashing into steam which is usually distributed under coverplate 22 and normally out soleplate ports onto the fabric.

In accordance with the invention, it is desired to provide steam for ironing in combination with a smooth uninterrupted soleplate and to provide it in the form of a curtain of steam generally around the soleplate. The present invention is a modification and a different combination from that generally shown in application Ser. No. 253,427 filed May 15, 1972 of common assignment wherein a limited curtain of steam is shown in the nozzle portion in combination with soleplate steam ports. To this end, the present invention provides coverplate 22 in intimate thermal connection with and overlying the soleplate 10 as shown in FIG. 1 to define the steam generator as well as steam passages 24 therebetween so that steam created in generator 16 passes

under the coverplate 22 and into passages 24 in a generally known manner. Normally such steam would be directed out soleplate ports but the present iron omits such ports. In lieu thereof, the iron provides a curtain of steam around the periphery of the soleplate. To this end, as seen in FIG. 2, the coverplate 22 is extended beyond the soleplate periphery and directed downwardly substantially to the ironing surface in a cup-like fashion around the periphery of the soleplate. This extension is spaced from the soleplate to define peripheral groove means 26 and the coverplate is suitably formed as seen in FIG. 2 to provide a connection between the steam passages 24 and groove means 26 whereby the steam exits only along the entire groove means.

The intimate thermal connection of the soleplate and coverplate is obtained with fewer bolts 28 than normal and this curtain construction eliminates the need for sealing compound between the coverplate and soleplate as is usually required. The reason for this is that leakage of steam naturally gravitates by the cup-like coverplate to the peripheral groove 26 where it is driven into the fabric so leakage is of little consequence. The extension of the coverplate is provided in a step fashion whereby the outer shell 30 of the iron may conveniently rest on the step to give the outer iron surface the same conventional appearance.

It will be appreciated that the extended coverplate may be directed down to the surface of the soleplate to be coextensive therewith as shown or may end slightly above the surface. As actually constructed, it has been expedient to direct it completely down to the ironing surface and round off the edges as at 32. In effect, the outer edge of the iron becomes a part of the soleplate around its edge and the finishing operation smoothing up the surface of the soleplate and the edge of the coverplate extension creates a surface which, when rounded as shown, provides no wrinkling or drag. This is advantageous because the edge of the iron is the most important surface since it does the flattening, removing of the wrinkles, and it is the edge the operator can see. Thus, the rounded edge creates, in effect, an extension of the soleplate.

It will be appreciated that the curtain of steam or peripheral groove means may extend any substantial distance to cover completely two sides of the iron as shown on the right side of FIG. 3 or it may extend only partially as shown on the left side. Further, it normally will not extend across the heel portion 34 which is grooveless so that it may be used to rest the iron when not in use in conventional fashion. Thus, the groove may extend any length of the two sides and generally will cover a substantial portion as shown in FIG. 3.

With this construction, there is no wrinkling created by the soleplate since it is an integral continuous smooth soleplate that is uniformly heated so the entire surface is available for ironing and drying. With the curtain of steam, it is possible to see the steam on the fabric so that it is visible as it enters the fabric to relax it and then the entire surface of the hot soleplate passes over the already-steamed fabric in the normal manner to dry it. This is especially true in sideways ironing which forms a large portion of the ironing motion. The

steam then also enters the fabric after the soleplate has passed over it but, the fabric being hot, the steam is driven into the fabric on the trailing edge of the iron and immediately dried so no wrinkling occurs. Fewer coverplate fastening bolts 28 are required to reduce cost and weight and sealing is minimal since any leakage is directed down into the fabric. The steam grooves running substantially the full length of the iron soleplate provide the operator with more freedom of movement in ironing while insuring even distribution of the same amount of steam in a completely different manner.

Consequently, the present invention provides a unique steam iron that redirects the steam as a curtain of even distribution around the peripheral edge of the iron where it can be seen and where the entire integral continuous smooth heated surface of the soleplate is available for ironing uninterrupted by any ports or recesses for efficient uniform heating, smoothly, low drag, and resultant easy ironing.

While there has been shown a preferred form of the invention, obvious equivalent variations are possible in light of the above teachings. It is therefore to be understood that, within the scope of the appended claims, the invention may be practised otherwise than as specifically described, and the claims are intended to cover such equivalent variations.

I claim:

1. A steam flatiron having an integral continuous smooth heated soleplate with a steam generator formed therein, a water tank within the iron and means to start and stop a metered flow of water from said tank through an orifice into the generator to control steam generation,

means in intimate thermal connection with and overlying said soleplate to define steam passages therebetween,

said means extending substantially down to the ironing surface cup-like around said soleplate and along the periphery thereof and spaced from the soleplate to define peripheral groove means therewith,

whereby steam exits the iron only along the periphery as a curtain of steam.

2. Apparatus as described in claim 1 wherein said generator is a flash steam generator and said thermal connection means comprises a coverplate over the soleplate to define the generator therewith.

3. Apparatus as described in claim 2 wherein said coverplate is extended beyond the soleplate periphery to define the groove means therewith.

4. Apparatus as described in claim 3 wherein said coverplate is formed to provide a connection between said steam passages and said peripheral groove means.

5. Apparatus as described in claim 4 wherein said groove means is disposed along at least two sides of said iron.

6. Apparatus as described in claim 5 wherein said groove means is continuous along the length of both sides of said iron and the heel portion is grooveless.

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