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Habibi

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(54) **HEATED HAIR STYLING SYSTEM**

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(22) Filed: **Sep. 6, 2002**

Related U.S. Patent Documents

Reissue of:

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Issued: **Sep. 19, 2000**
Appl. No.: **09/258,604**
Filed: **Feb. 26, 1999**

(51) **Int. Cl.**[7] **A45D 1/00**; A45D 2/40

(52) **U.S. Cl.** **132/224**; 132/225; 132/118; 219/225

(58) **Field of Search** 132/223, 224, 132/225, 229, 232, 269, 271, 272; 219/222, 225, 226, 230, 227, 231; 126/408, 409

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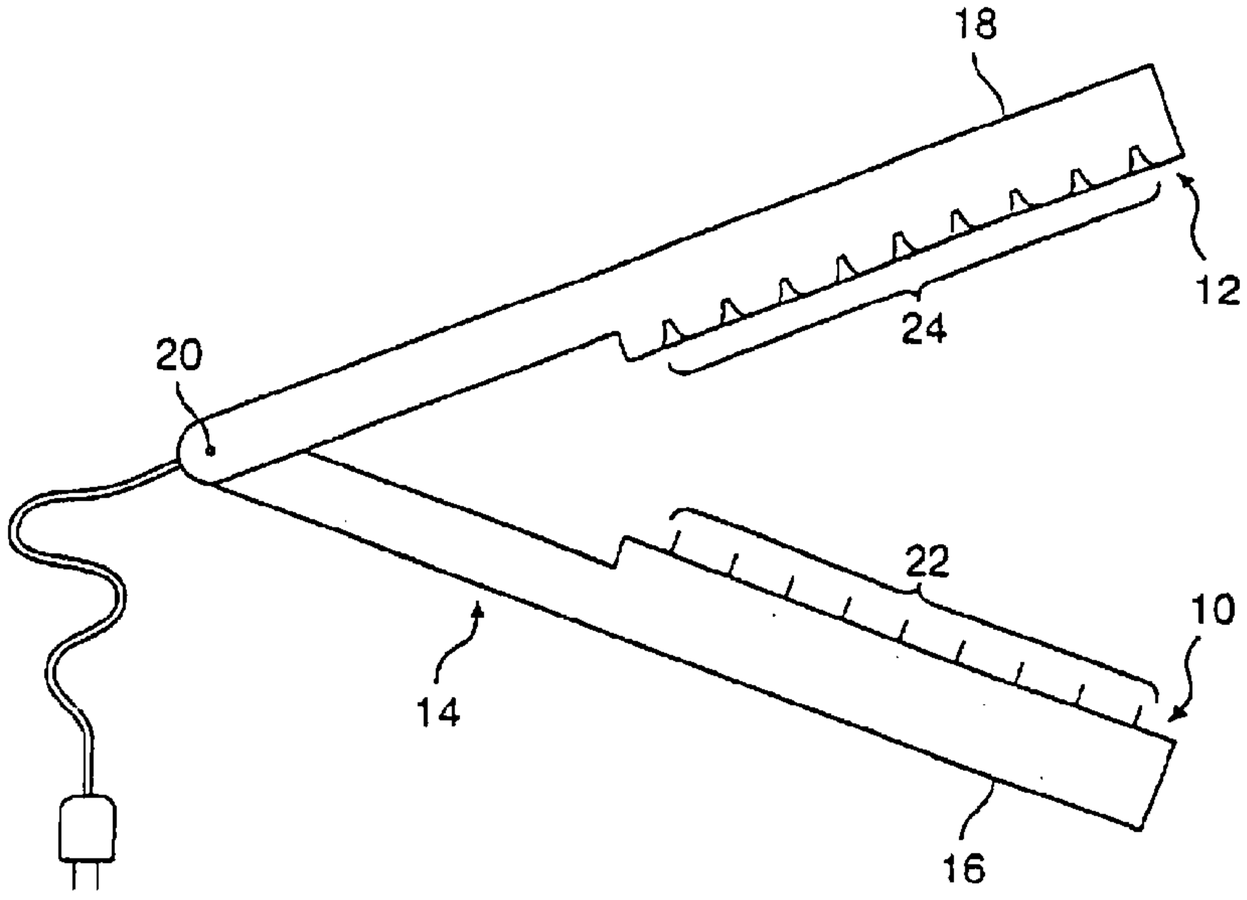
(57) **ABSTRACT**

A hair styling apparatus includes a pair of mating surfaces which engage one another and a handle which guides them into engagement at the manual control of a user. Hair to be styled is placed between the engaged surfaces. A plurality of comb-like pins extend from one of the surfaces and engage holes in the other of the surfaces. In another aspect of the invention, one or both surfaces may incorporate a source of dry heat. In another aspect of the invention, a source of steam is provided together with a trigger for discharging the steam through holes in at least one of the surfaces as an aid to hair styling.

46 Claims, 7 Drawing Sheets



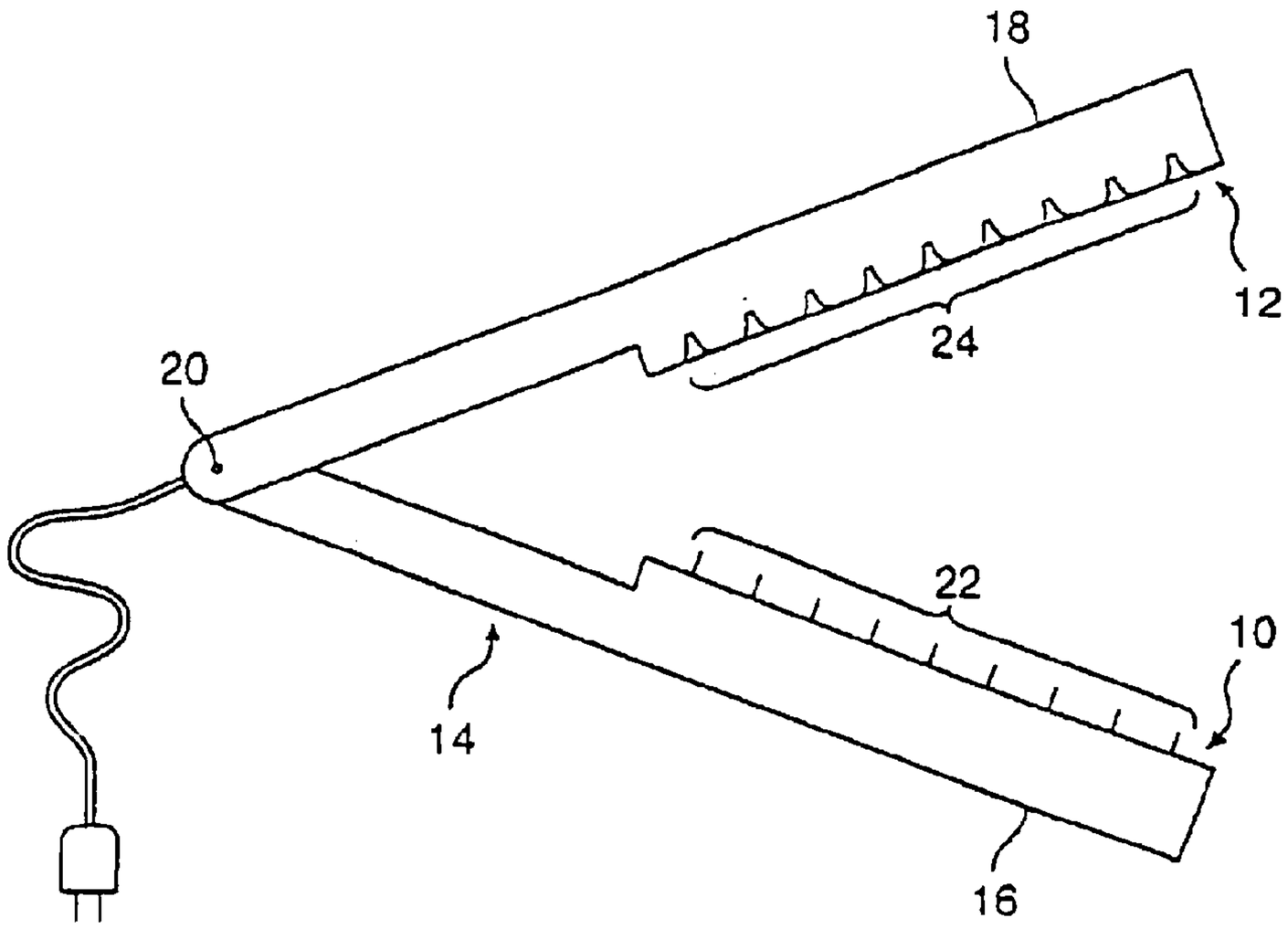


FIG. 1

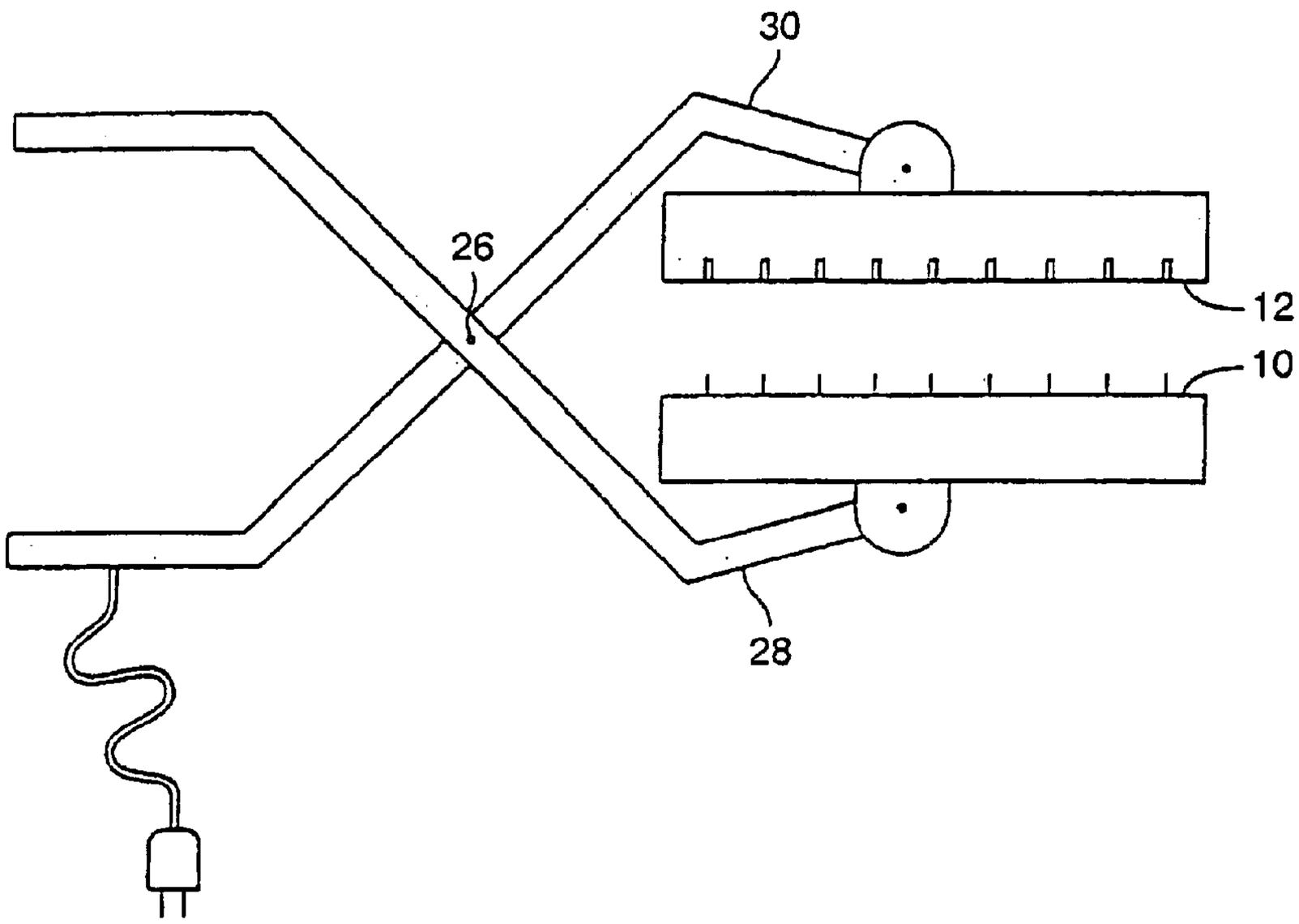


FIG. 2

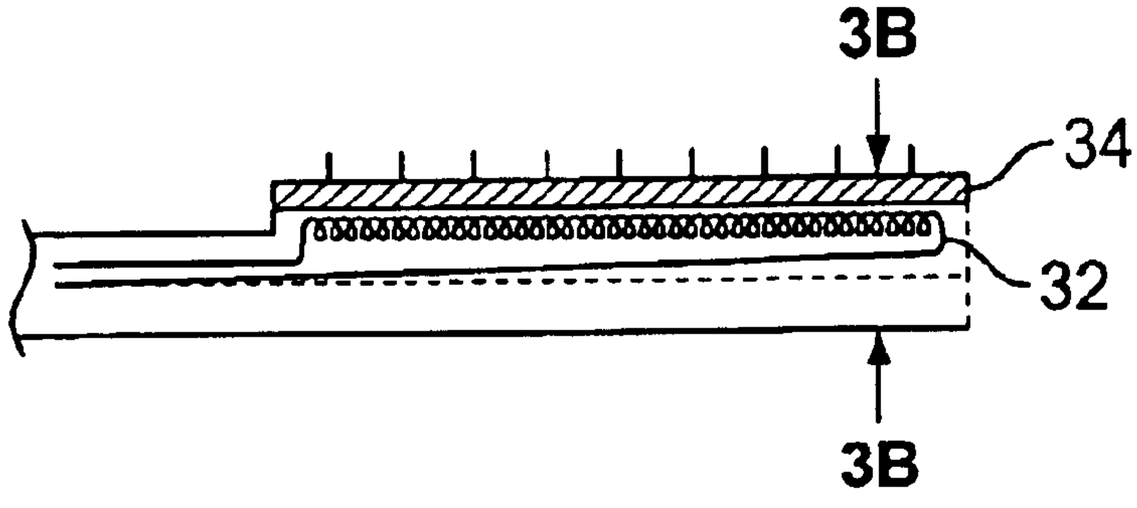


FIG. 3A
(Amended)

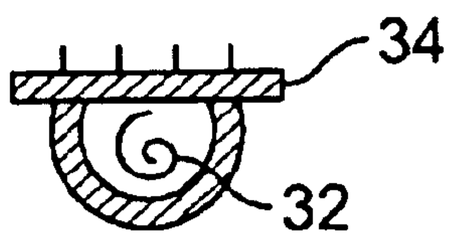


FIG. 3B

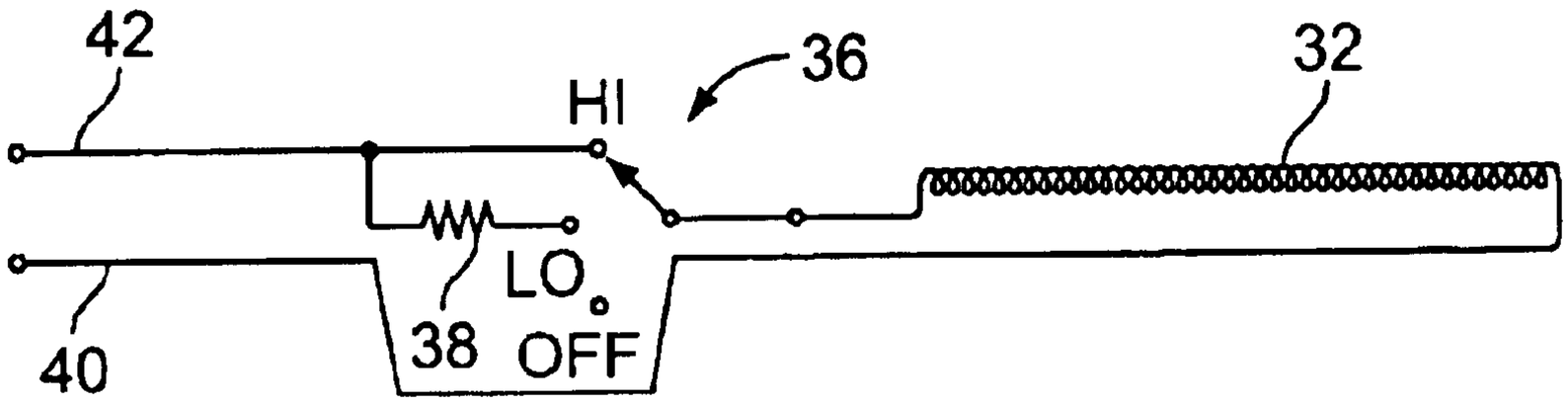


FIG. 4

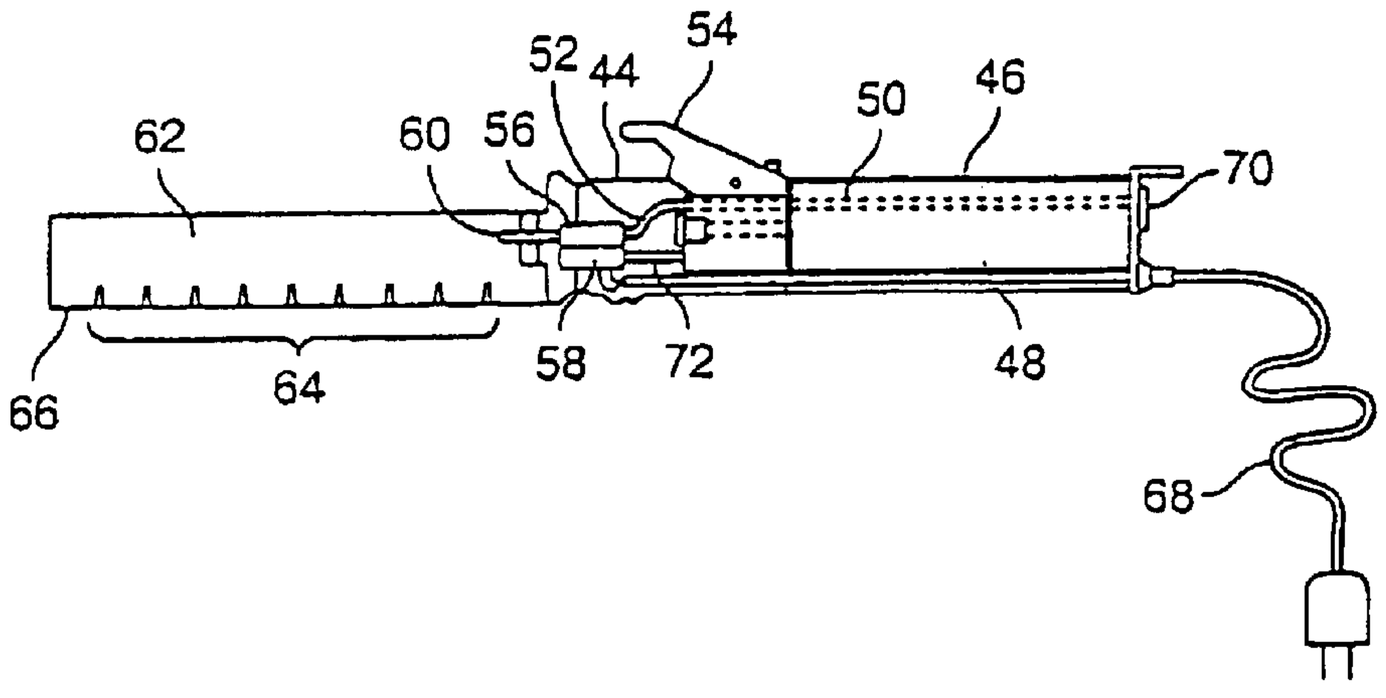

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FIG. 5

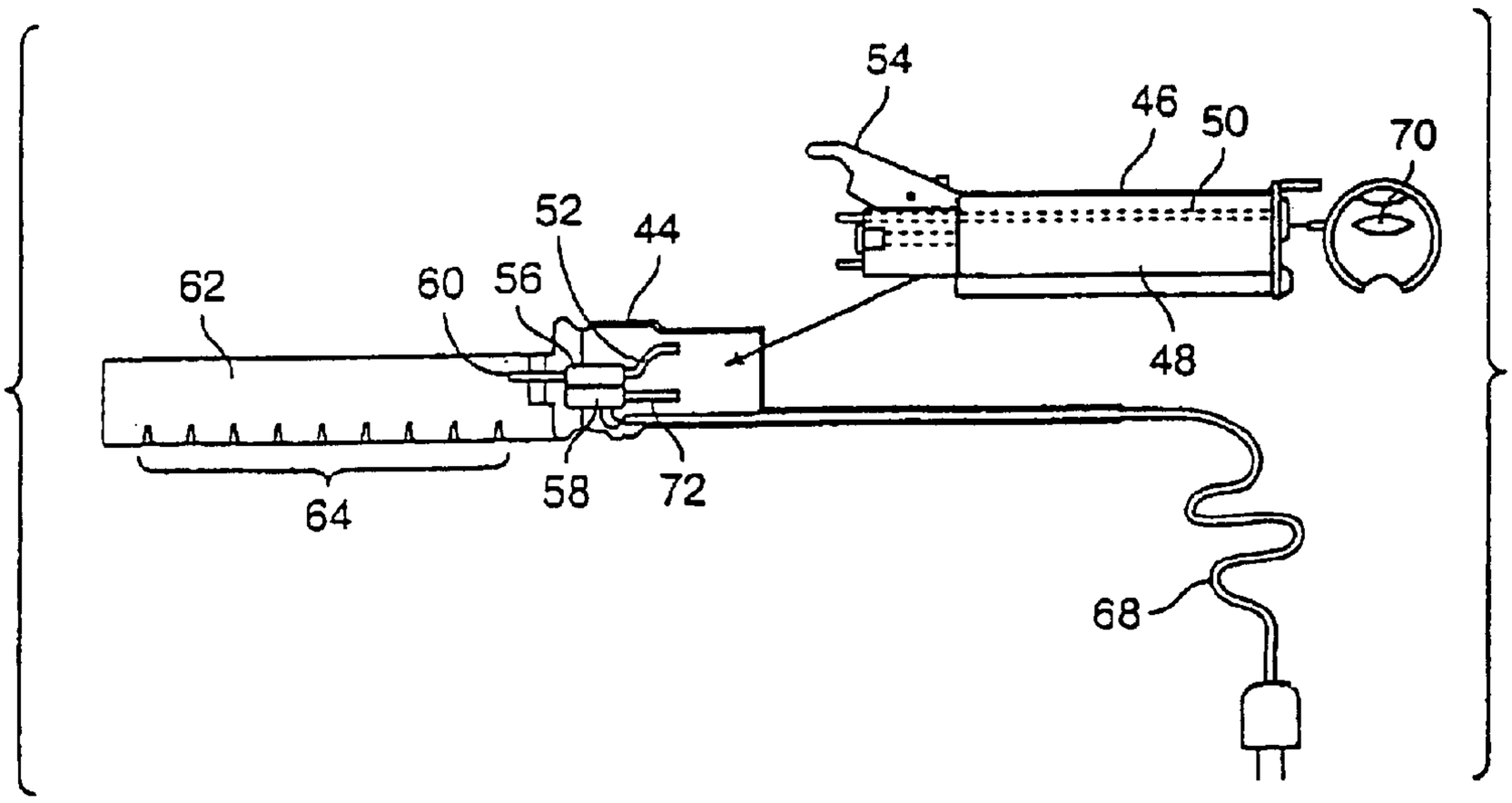
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FIG. 6

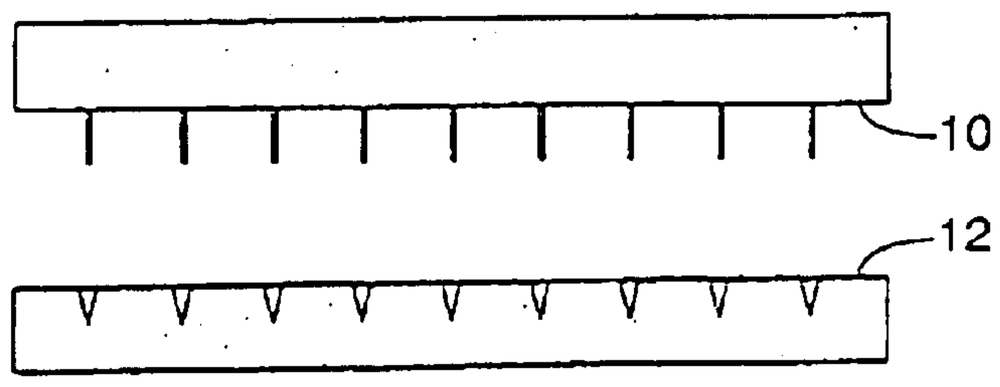

FIG. 7

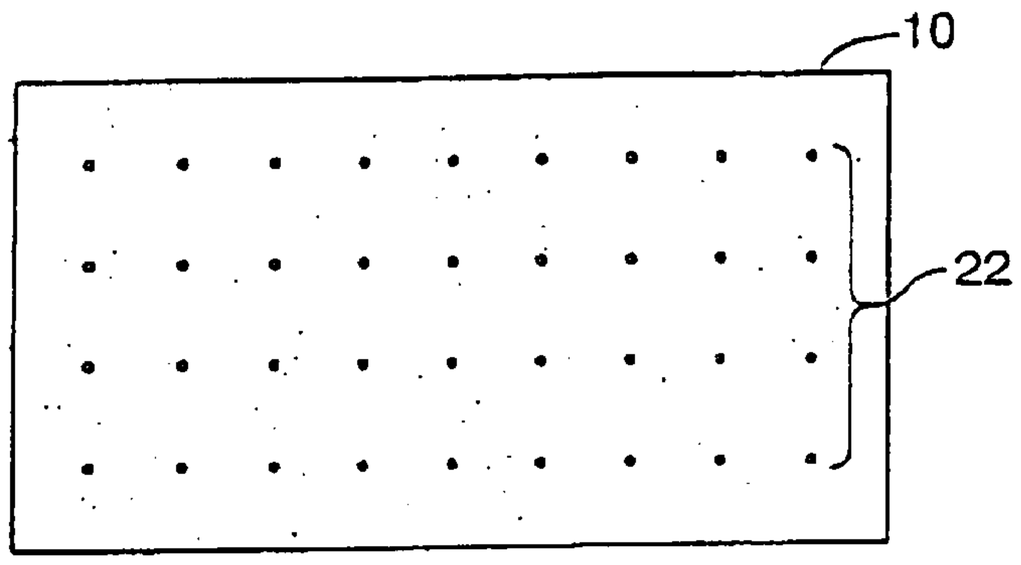

FIG. 8

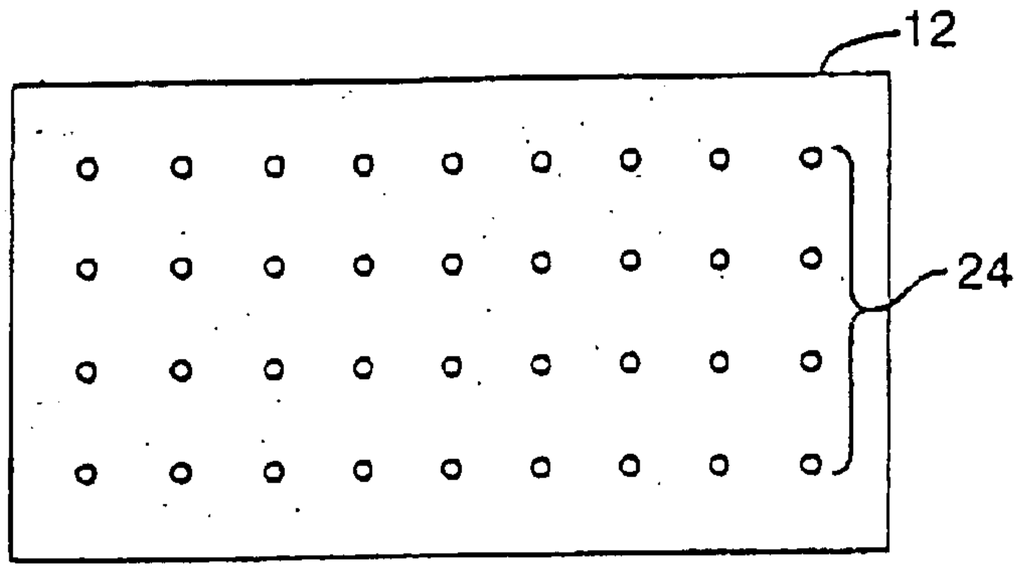

FIG. 9

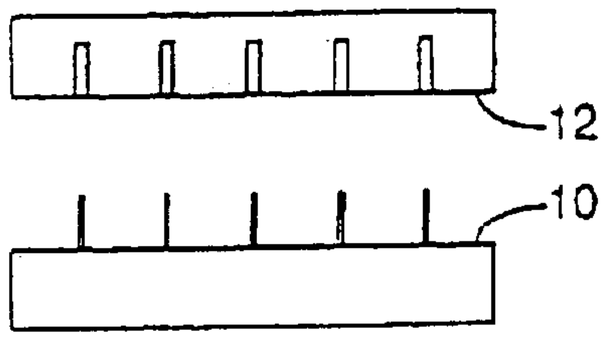

FIG. 10

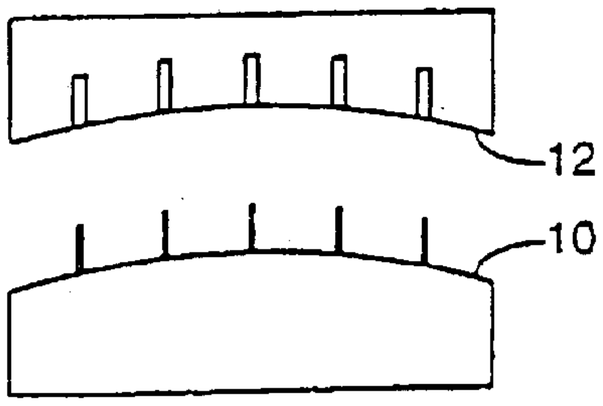

FIG. 11

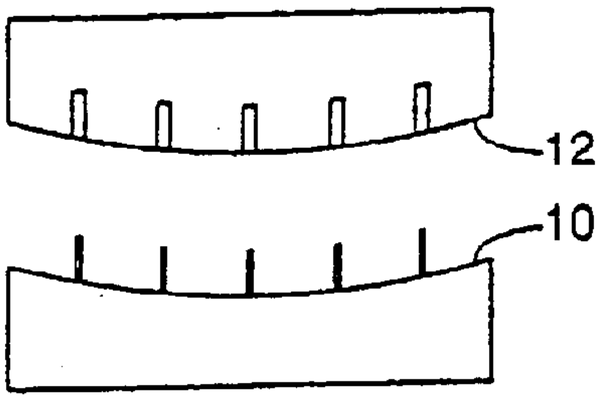

FIG. 12

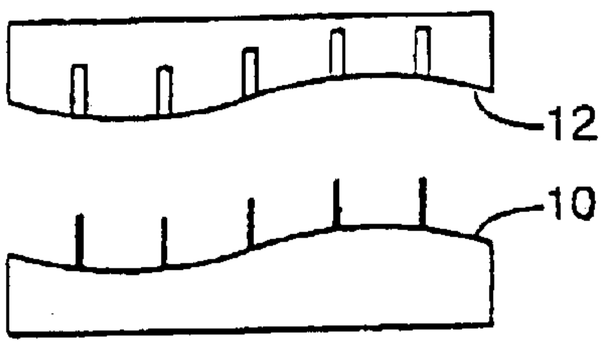

FIG. 13

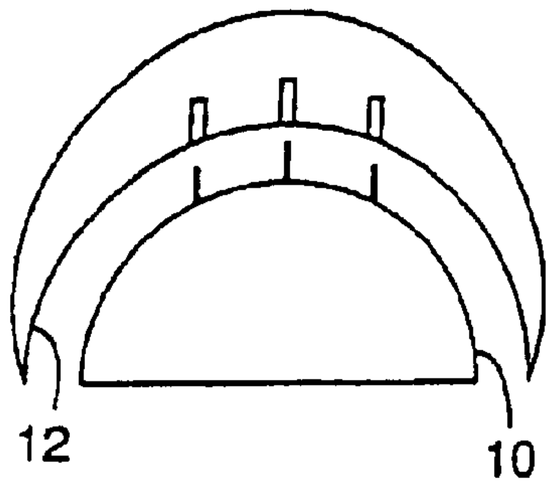

FIG. 14

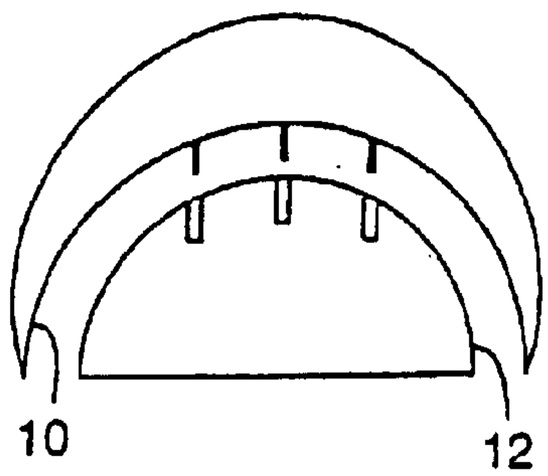

FIG. 15

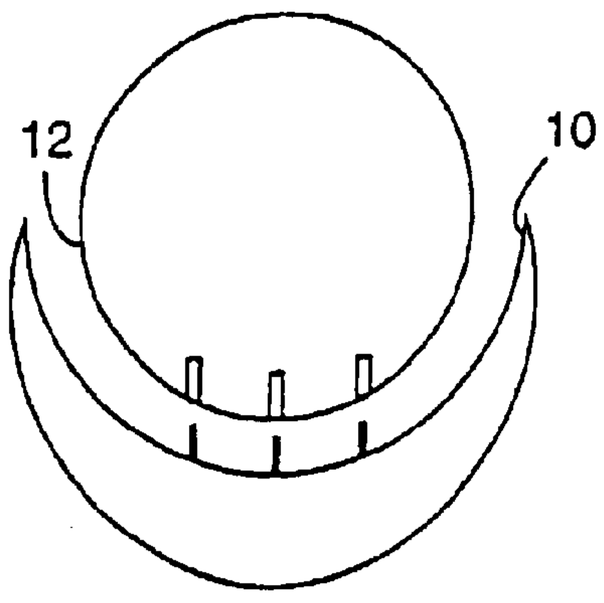

FIG. 16

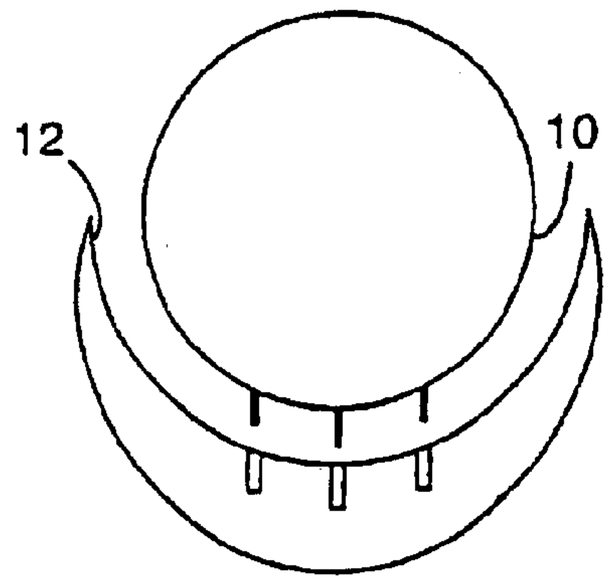

FIG. 17

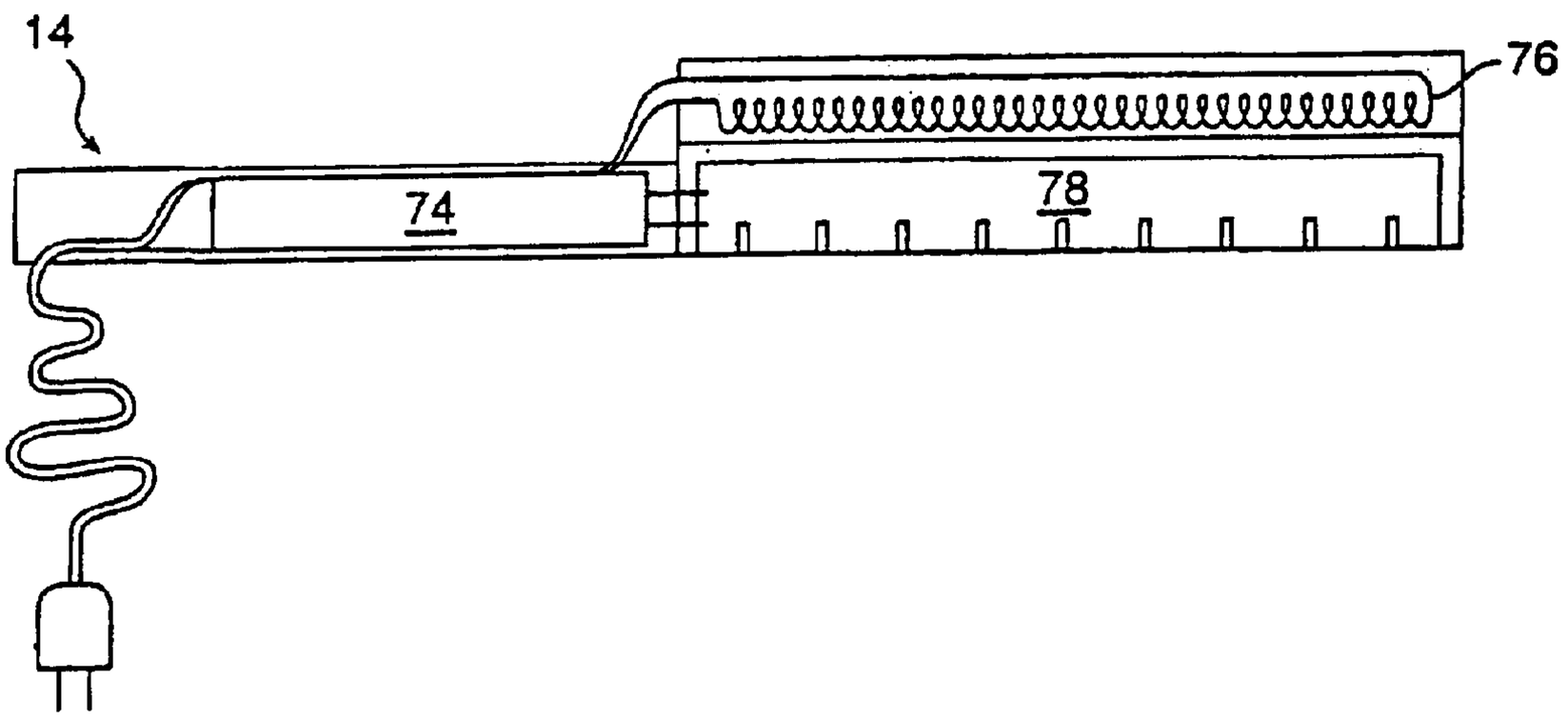

FIG. 18

HEATED HAIR STYLING SYSTEM

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to the field of hair care and styling. More particularly, the present invention relates to a hair styling system which incorporates a heating system so as to provide a new tool for styling hair.

2. The Background

Many devices have been devised over the ages to aid in styling hair. Hair curlers, for example, are used to impart curls into hair. They may be used on dry hair but work best on wet hair. Steam may be applied to assist in setting the hair to the curl of the curlers. Curling irons typically incorporate an electrical heating element to heat one or both sides of a smooth but curved pair of mating surface between which hair is placed to be curled. The hair may preferably be pulled through the interface of the mating surfaces of the curling iron to aid in curling the hair. On the other hand, hair straighteners operate much like curling irons, but they have smooth mating flat surfaces which act to straighten the hair when compressed against and pulled along the hair.

All known examples of such irons and straighteners comprise a pair of untextured surfaces for engaging the hair. As a result, the hair can become tangled, or require much additional combing or brushing with another apparatus such as a comb or brush in order to achieve the desired style. This additional combing and/or brushing can undesirably disrupt the style imparted by the irons and straighteners.

U.S. Pat. No. 5,263,501 to Maznik teaches a steam hair styling apparatus which utilizes a known steam source such as a Sunbeam valet steamer, model no. 10079, as a "steam engine" to provide steam to the center axis of a hair curler. The hair may be wrapped about the curler, the steam engine placed in the center of the curler and the steam source activated for a blast of steam departing radially through the curler from the steam engine. The steam aids in setting the curl in the hair. The patent teaches specifically that a secondary dry heat source should not be used in this application.

Accordingly, it would be desirable to provide a hair styling device capable of use in curling, straightening and/or waving hair which overcomes the limitations of the prior art.

SUMMARY OF THE INVENTION

A hair styling apparatus includes a pair of mating surfaces which engage one another and a handle which guides them into engagement at the manual control of a user. Hair to be styled is placed between the engaged surfaces. A plurality of comb-like pins extend from one of the surfaces and engage holes in the other of the surfaces. In another aspect of the invention, one or both surfaces may incorporate a source of dry heat. In another aspect of the invention, a source of steam is provided together with a trigger for discharging the steam through holes in at least one of the surfaces as an aid to hair styling.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a side view of an apparatus for hair styling in accordance with a presently preferred embodiment of the present invention.

FIG. **2** is a side view of an apparatus for hair styling in accordance with an alternative preferred embodiment of the present invention.

FIG. **3**A is a cut-away cross-sectional drawing of a first surface of a hair styling apparatus in accordance with one embodiment of the present invention.

FIG. **3**B is a cross-sectional drawing taken along lines **3**B—**3**B of FIG. **3**A.

FIG. **4** is an electrical schematic diagram of a heating circuit for a heater for use in conjunction with a presently preferred embodiment of the present invention.

FIGS. **5** and **6** are cross-sectional and assembly drawings, respectively, of a fluid vaporization apparatus for use in an embodiment of the present invention.

FIGS. **7**, **8** and **9** are a side view, top view of first surface **10** and top view of second surface **12** in accordance with an embodiment of the present invention.

FIGS. **10**–**17** are front views of various configurations of mating surfaces **10** and **12** in accordance with various embodiments of the present invention.

FIG. **18** is a cross-sectional drawing of another embodiment of the present invention.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

Those of ordinary skill in the art will realize that the following description of the present invention is illustrative only and not in any way limiting. Other embodiments of the invention will readily suggest themselves to such skilled persons after a perusal of the within disclosure.

In accordance with presently preferred embodiments of the present invention, a pair of surfaces are carried on a handle as shown generally in FIG. **1** and FIG. **2**.

In the embodiment shown in FIG. **1** first surface **10** and second surface **12** are carried by handle structure **14** which includes a first portion **16** to which first surface **10** is attached and a second portion **18** to which second surface **12** is attached. First portion **16** and second portion **18** are mounted together at pivot point **20** and optionally biased toward an open position (as shown) as, for example, with a spring (not shown). An operator may press first portion **16** and second portion **18** together to engage first surface **10** and second surface **12** together in close conformance with hair to be styled disposed between first surface **10** and second surface **12**. First surface **10** has a plurality of pins or tangs **22** disposed thereon as shown. Second surface **12** has a plurality of first holes **24** disposed thereon as shown. Pins **22** and holes **24** are formed so that pins **22** enter holes **24** when first surface **10** and second surface **12** are in close conformance when the apparatus is in the "closed" configuration.

Those of skill in the art will realize that the diameter, especially the entry diameter, of holes **24**, the length and thickness of pins **22** and the length of first portion **16** and second portion **18** need to be coordinated so that pins **22** will engage holes **24**. The precise arrangement will depend on the implementation but is straightforward. FIG. **2** shows an alternative embodiment where such coordination is less crucial. In the embodiment shown in FIG. **2** in addition to a pivot point as shown at **26**, each surface **10** and **12** is pivoted to an arm portion, **28**, **30**, as shown. This arrangement provides an additional degree of freedom and therefore less clearance needs to be provided because it is then a simple matter to bias the surfaces **10**, **12** so that they approach one another with little or no relative tilt, as shown.

In accordance with one embodiment of the present invention, dry heat may be provided to one or both of

surfaces **10**, **12** by incorporating a conventional electrical heating coil **32** behind each respective surface. In this case it would be desirable to form the respective heated (and non-heated) surface of the temperature resistant materials **34**, such as aluminum and high temperature plastics such as Teflon®. Where dry heat is provided, it is desirable to incorporate one or two electrical switches in handle **14** so as to control one or both electrical heating coils. A circuit for controlling one or two heating coils is shown in FIG. **4**. A three position switch **36** is used to select high heat, low heat or off. A resistor **38** is used to provide a low heat setting. Conventional AC mains power may be provided to wires **40**, **42** to power the circuit.

In accordance with another embodiment of the present invention, steam heat is provided through holes in one of first surface **10** and second surface **12** (preferably through existing holes **24** in second surface **12**). In accordance with this embodiment, portion **18** is modified as shown in FIGS. **5** and **6**.

Housing **44** may contain a handle **46** which is detachable as shown in FIG. **6** or integrally attached thereto. Handle **46** contains a fluid reservoir **48** therein. A metered amount of fluid (such as water) is drawn through tubes **50** and **52** by activation of a pumping mechanism by trigger **54**. Although fluid tube **50** is illustrated as being essentially linear it should be appreciated that the tube can be flexible, or semi-rigid and configured as is known in the art to effectively and efficiently withdraw fluid from reservoir **48**. The fluid is passed across heat plate **56** which is heated by heating element **58**. This heated fluid is therein atomized, exiting the steam emitting orifice **60** and into **62**. This steam exits manifold **62** through a plurality of steam emitting holes **64** disposed about the lower surface **66** of manifold **62**. Heating element **58** is supplied electrical current via cord and plug set **68**. The apparatus further includes a fluid viewing window **70** at the end of reservoir **46** opposite the manifold **62**. A return trough **72** and return tube are provided to return condensed fluid back to reservoir **48**. Those of ordinary skill in the art will realize that other sources of steam can also be used.

FIGS. **7**, **8** and **9** show a side view, top view of first surface **10** and a top view of second surface **12**, respectively. Any number of pins **22** and holes **24** can be used and any pattern can be implemented as would be apparent to those of ordinary skill in the art.

FIGS. **10**, **11**, **12**, **13**, **14**, **15**, **16** and **17** show examples of various different patterns which may be imposed on mating surfaces **10**, **12**, in FIG. **10**, a straight pattern is implemented as in a straightening iron. FIGS. **11**, **12**, **14**, **16** and **17** show a curved pattern, both convex and concave, respectively, from the point of view of surface **10**. FIG. **13** shows an "S" curve pattern for imparting a wavy style to the hair. In accordance with one embodiment of the present invention, various patterns of mating surfaces **10**, **12** may be installed as options or interchangeable accessories in the apparatus of the invention. In this event, the surfaces would be removably mounted to respective heating elements and/or steam manifolds.

Where it is desirable to have dry heat and steam heat at the same surface, a configuration as shown in FIG. **18** may be used. In FIG. **18** steam engine **74** and electrical heater **76** are both mounted to one portion of handle structure **14**. Steam manifold **76** is provided adjacent to heater **76** so that dry heat and steam may both be provided as desired. Surfaces in contact with the hair are preferably coated with Teflon® or a similar heatable non-stick material.

While embodiments and applications of this invention have been shown and described, it would be apparent to those skilled in the art that many more modifications than mentioned above are possible without departing from the inventive concepts herein. The invention, therefore, is not to be restricted except in the spirit of the appended claims.

What is claimed is:

1. An apparatus for styling hair, comprising:

a first surface including a plurality of pins extending therefrom;

a second surface including a plurality of first holes therein;

a handle, said first surface and said second surface mounted to said handle, said handle operable between an open position and a closed position;

said pins of said first surface and said first holes of said second surface arranged so as to engage when the handle is in said closed position;

a housing extending from said second surface and having an internal cavity;

a refillable reservoir for containing fluid;

a vapor generator within said internal cavity of said housing, said vapor generator heating the fluid to vaporization;

a pump activated by a trigger attached to said handle, said pump withdrawing a metered volume of fluid from said reservoir and placing said metered volume of fluid in contact with said vapor generator; and

a passage connecting said vapor generator and second holes in said second surface so that vaporized fluid passes from said holes.

2. An apparatus according to claim **1** wherein said second holes in said second surface and said first holes in said second surface are the same.

3. An apparatus according to claim **1** further comprising a first heating element.

4. An apparatus according to claim **3** wherein said first heating element is disposed adjacent to said first surface so as to heat said first surface.

5. An apparatus according to claim **3** wherein said first heating element is disposed adjacent to said second surface so as to heat said second surface.

6. An apparatus according to claim **4** further comprising a second heating element disposed adjacent to said second surface so as to heat said second surface.

7. An apparatus according to claim **2** further comprising a first heating element.

8. An apparatus according to claim **7** wherein said first heating element is disposed adjacent to said first surface so as to heat said first surface.

9. An apparatus according to claim **7** wherein said first heating element is disposed adjacent to said second surface so as to heat said second surface.

10. An apparatus according to claim **8** further comprising a second heating element disposed adjacent to said second surface so as to heat said second surface.

11. An apparatus according to claim **2** wherein said first and second surfaces are curved so that when placed together said first and second surfaces closely conform to one another.

12. An apparatus according to claim **11** wherein said curve includes an "S" curve.

13. An apparatus according to claim **2** wherein said first and second surfaces are flat.

14. An apparatus for styling hair, comprising:

a handle pivotally operable between a first open position and a second closed position;

a first member and a second member disposed on said handle so that they are brought into mutual engagement when said handle is in said closed position;

a first source of dry heat in thermal contact with said first member so that in operation said first member is heated;

a first surface disposed on said first member;

a first two-dimensional array of a plurality of solid pins not all disposed in a line extending from said first surface;

a second source of dry heat in thermal contact with said second member so that in operation said second member is heated;

a second surface disposed on said second member; and

a second two-dimensional array of a plurality of apertures in said second surface, said apertures of said array oriented to receive corresponding pins from said array of pins without bending or distorting said pins.

15. The apparatus in accordance with claim 14, wherein said pins all have substantially a same sectional shape.

16. The apparatus in accordance with claim 15, wherein said pins have a circular sectional shape.

17. The apparatus in accordance with claim 15, wherein said apertures of said second array all have substantially a same sectional shape.

18. The apparatus in accordance with claim 17, wherein individual apertures of said second array are arranged to mate with individual corresponding pins of said first array.

19. The apparatus in accordance with claim 17, wherein said apertures have a circular sectional shape.

20. The apparatus in accordance with claim 14, further comprising:

a source of steam controlled by a trigger member attached to said handle, said source of steam emitting steam through holes in one of said first surface and said second surface in response to activation of said trigger.

21. The apparatus in accordance with claim 14, further comprising:

a source of steam emitting steam through holes in one of said first surface and said second surface.

22. The apparatus in accordance with claim 15, further comprising:

a source of steam controlled by a trigger member attached to said handle, said source of steam emitting steam through holes in one of said first surface and said second surface in response to activation of said trigger.

23. The apparatus in accordance with claim 15, further comprising:

a source of steam emitting steam through holes in one of said first surface and said second surface.

24. The apparatus in accordance with claim 16, further comprising:

a source of steam controlled by a trigger member attached to said handle, said source of steam emitting steam through holes in one of said first surface and said second surface in response to activation of said trigger.

25. The apparatus in accordance with claim 16, further comprising:

a source of steam emitting steam through holes in one of said first surface and said second surface.

26. The apparatus in accordance with claim 17, further comprising:

a source of steam controlled by a trigger member attached to said handle, said source of steam emitting steam through holes in one of said first surface and said second surface in response to activation of said trigger.

27. The apparatus in accordance with claim 17, further comprising:

a source of steam emitting steam through holes in one of said first surface and said second surface.

28. The apparatus in accordance with claim 18, further comprising:

a source of steam controlled by a trigger member attached to said handle, said source of steam emitting steam through holes in one of said first surface and said second surface in response to activation of said trigger.

29. The apparatus in accordance with claim 18, further comprising:

a source of steam emitting steam through holes in one of said first surface and said second surface.

30. The apparatus in accordance with claim 19, further comprising:

a source of steam controlled by a trigger member attached to said handle, said source of steam emitting steam through holes in one of said first surface and said second surface in response to activation of said trigger.

31. The apparatus in accordance with claim 19, further comprising:

a source of steam emitting steam through holes in one of said first surface and said second surface.

32. The apparatus in accordance with claim 20, wherein said holes include at least some of said apertures in said second surface.

33. The apparatus in accordance with claim 14, further comprising:

a housing within said handle extending from said second surface and having an internal cavity;

a refillable reservoir for containing fluid;

a vapor generator within said internal cavity of said housing, said vapor generator heating the fluid to vaporization;

a pump activated by a trigger attached to said handle, said pump withdrawing a metered volume of fluid from said reservoir and placing said metered volume of fluid in contact with said vapor generator; and

a passage connecting said vapor generator and at least some of said apertures in said second surface so that vaporized fluid passes from said at least some apertures.

34. The apparatus in accordance with claim 14, wherein said first and second surfaces are substantially flat.

35. The apparatus in accordance with claim 14, wherein said first and second surfaces are curved so that when said handle is in said closed position and said first and second surfaces are brought together said first and second surfaces closely conform to one another.

36. The apparatus in accordance with claim 35, wherein said curved first and second surfaces each include an "S" curve.

37. The apparatus in accordance with claim 20, wherein said first and second surfaces are substantially flat.

38. The apparatus in accordance with claim 20, wherein said first and second surfaces are curved so that when said handle is in said closed position and said first and second surfaces are brought together said first and second surfaces closely conform to one another.

39. The apparatus in accordance with claim 38, wherein said curved first and second surfaces each include an "S" curve.

40. The apparatus in accordance with claim 33, wherein said first and second surfaces are substantially flat.

41. The apparatus in accordance with claim 33, wherein said first and second surfaces are curved so that when said handle is in said closed position and said first and second surfaces are brought together said first and second surfaces closely conform to one another.

42. The apparatus in accordance with claim 41, wherein said curved first and second surfaces each include an "S" curve.

43. A method for styling hair, comprising:

placing the hair to be styled between a first heated element and a second heated element, the first heated element including a first surface having a first two-dimensional array of a plurality of solid pins not all disposed in a line extending therefrom, said pins of said first array all having substantially a same sectional shape, the second heated element including a second surface having a second a second two-dimensional array of apertures disposed therein, said apertures of said second array all having substantially a same sectional shape and oriented to receive corresponding pins from said first array of pins without bending or distorting said pins;

bringing said first heated and said second heated element into proximity with one another with the hair to be styled between said first heated element and said second heated element; and

pulling the hair to be styled out from between said first heated element and said second heated element so that the hair is pulled through the pins.

44. The method in accordance with claim 43, wherein said pins of said first array all have a substantially same sectional shape.

45. The method in accordance with claim 44, wherein said apertures of said second array all have a substantially same sectional shape.

46. The method in accordance with claim 45, wherein said sectional shape is circular.

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