HAIR CURLING EQUIPMENT

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Abstract

A steam curling iron is provided with a set of interchangeable tubular curling mandrels, each of which is adapted to be slid onto the curling arm of the iron. The curling arm has an operative section constituted by a tubular barrel with a row of perforations in a lower region of the barrel to permit the escape of steam therefrom. The perforations are normally closed by a valve plate which is spring-biased to the closed position and which is displaced to the open position when a mandrel is slid onto the curling arm.

10 Claims, 5 Drawing Figures
HAIR CURLING EQUIPMENT

BACKGROUND OF THE INVENTION

This invention relates to equipment for curling and setting hair by means of curling mandrels of different diameters for winding curls of different sizes. The mandrels are removably mounted on the curling arm of a curling iron, which may alternatively be used in the conventional manner. Hitherto, curling mandrels for this purpose have been of metal, the hair being heated by conduction from the iron through the mandrel. Although it would be desirable to use such mandrels in association with steam curling irons, a serious difficulty is presented by the fact that the quantity of steam required for setting a curl wound on a mandrel is considerably greater than the quantity required from a steam iron used in the conventional manner. Therefore, the user of such an iron in the conventional manner without a mandrel runs the risk of being scalded.

An object of the present invention is to provide a steam curling iron which may be used in association with curling mandrels for setting curls with the assistance of steam or vapour, or may be used safely in the conventional manner without mandrels.

According to the present invention there is provided in combination with a steam curling iron having a curling arm and a clamping arm, the curling arm having an operative section constituted by a tubular barrel housing steam generating means, the clamping arm being adapted in the clamped position to engage a longitudinally extending upper region of the barrel, a tubular mandrel adapted to be mounted on said operative section of the curling arm. The mandrel has a perforate cylindrical wall of substantially larger diameter than the barrel and is formed with resilient arm engaging means interiorly of said wall, the arm engaging means being frictionally engageable with the barrel and slidably therealong. The tubular barrel has a lower region formed with perforations to permit the escape of steam therefrom, and houses a valve member which is displaceable between a first position at which it closes the perforations to block the escape of steam and a second position at which it undercovers the perforations, the valve member being spring-biased to said first position.

The mandrel has an end portion which is engageable with abutment means connected to the valve member for displacing the valve member to the second position when the mandrel is mounted on said operative section of the curling arm.

The combination may include a single tubular mandrel or, preferably, a plurality of interchangeable mandrels of different diameters. Preferably the mandrel is a unitary molding of plastics material.

In order that the invention may be readily understood, one embodiment thereof will now be described by way of example with reference to the accompanying drawings, in which:

FIG. 1 is a perspective view of the curling iron with a mandrel mounted on its curling arm;

FIG. 2 is a perspective view showing the mandrel and the end of the curling arm of the iron;

FIG. 3 is a side elevational view of the curling iron, without the mandrel, the curling arm being shown in section to show internal structure;

FIG. 4 is a sectional view of the operative section of the curling arm, with a mandrel mounted; and

FIG. 5 is a section on line 5-5 in FIG. 4.

Referring to the drawings, the curling iron comprises a hollow curling arm having an operative section constituted by a tubular barrel 10 of circular cross section and a hollow handle portion 11 of plastic. A conventional clamping arm 12 is pivotally mounted on the curling arm and is spring-biased to the clamped position by a torsion spring (not shown). The clamping arm 12 is provided at one end with a plastic handle portion 13, which can be operated by the thumb of a user holding the handle portion 12, for manipulating the clamping arm. The clamping arm is shaped to conform to the cylindrical shape of the barrel 10, and is adapted in the clamped position to co-operate with a longitudinally extending upper region of the barrel, when the mandrel is removed.

Extending axially within the tubular barrel 10 is a steam generating assembly comprising an elongated electric resistance heating element 14, this being encased within a metal sheath 15 having a number of grooves or channels 16 extending along the exterior of its lower portion. The encased heating element assembly 14, 15 is in turn encased within a tubular housing 17, the latter being formed with three longitudinal rows of perforations 18 communicating with the grooves 16 so as to permit the passage of steam therefrom to an intermediate annular space or chamber 19 between the housing 17 and the interior surface of the barrel 10.

The lower region of the barrel 10 is formed with rows of perforations 20 to permit the escape of steam from the space 19. In the configuration shown in FIG. 3, the perforations 20 are closed by means of a valve or closure member 21, this being formed by an elongated, longitudinally slidable, plate of arcuate cross section having a longitudinal row of perforations 22 adapted to register with the perforations 20 of the barrel when the valve member is in the closed position. At one end of the valve member is an upstanding plate 23, to which is connected a headed shank 24, the shank extending through an end portion 25 of the curling arm 10 and being biased outwardly by a spring 26 for urging the valve member 21 into its closed position. The valve plate 21 is formed with a resilient lug 27 which engages the housing 17 of the heating element and urges the plate member into close engagement with the inner surface of the tubular barrel 10, as shown in FIG. 3. It will be seen from FIG. 3 that, when the iron does not carry a curling mandrel, the iron may be used in the conventional manner.

A tubular curling mandrel 28 is adapted to be mounted on the operative section of the curling arm of the iron, the mandrel having a perforate cylindrical wall of substantially larger diameter than the barrel 10. As shown, the mandrel is constructed as a cylindrical cage open at one end, the other end of the cage being closed by an end portion 29. This end portion is provided with a thimble-like extension 30 which is engageable over the end 25 of the tubular barrel 10. This thimble-like extension also provides an interior projection 31 which is adapted to abut against the end of the headed shank 24 and, as the mandrel is slipped onto the curling arm of the iron, displaces the valve plate 21 from the closed to the open position. With this configuration steam can escape through the perforations 20 into the interior of the mandrel 28. When the mandrel is removed, the valve plate is again returned to its closed position and so the iron can be used safely in the conventional manner.
The mandrel 28 is preferably formed as a unitary molding of plastics material. It is formed with a longitudinally extending upper region 28a of arcuate cross section, this upper region being imperforate and, as shown in FIGS. 4 and 5, is dimensioned so that the clamping arm engages along this region when in the clamped position. The mandrel is frictionally held on the clamping arm of the iron by means of a pair of arcuate, longitudinally extending, resilient flanges 33 projecting inwardly from the mandrel wall, the flanges engaging opposite sides of the operative section of the curling arm 10 so that the mandrel is slidable therealong.

The equipment may be provided with a plurality of mandrels 28 of different diameters, the mandrels otherwise being of the same construction and being interchangeable with one another.

It is envisaged that the curling iron may be used in a conventional manner, i.e. without the use of a mandrel, and without the application of steam or vapour for treating the hair. Alternatively, the upper region of the barrel 10 may be formed with a row of perforations of substantially smaller area than the perforations 20, these perforations permitting the flow of steam or vapour to the hair when a mandrel is not employed. Since the perforations 20 are closed in this case, there is no danger of scalding. It will be noted that, when a mandrel is employed, the smaller perforations along the upper region of the barrel 10 are covered by the mandrel.

What I claim as my invention is:

1. In combination with a steam curling iron having a curling arm and a clamping arm, the curling arm having an operative section constituted by a tubular barrel housing steam generating means, the clamping arm being adapted in the clamped position to engage a longitudinally extending upper region of the barrel, and the barrel having a lower region formed with perforations to permit the escape of steam therefrom:
   i. a valve member mounted within the barrel, the valve member being displaceable between a first position at which it closes said perforations to block the escape of steam and a second position at which it uncovers the perforations,
   ii. spring means biasing the valve member to said first position;
   iii. abutment means connected to the valve member, iv. a tubular mandrel adapted to be mounted on said operative section of the curling arm, the mandrel having a perforate cylindrical wall of substantially larger diameter than the barrel, and being formed with resilient arm engaging means interiorly of said wall, the arm engaging means being frictionally engageable with the barrel and slidable therealong, the mandrel further providing an end portion engageable with said abutment means for displacing the valve member to the second position when the mandrel is mounted on said operative section of the curling arm.

2. The combination claimed in claim 1, wherein the mandrel is formed with a longitudinally extending upper region of arcuate cross section, the clamping arm being engageable with said region in its clamped position.

3. The combination claimed in claim 2, wherein the lower region of the barrel is formed with a longitudinal row of perforations, the valve member comprising an elongated, longitudinally slidable, plate of arcuate cross section having a longitudinal row of perforations adapted to register with the perforations of the barrel when the valve member is in the second position.

4. The combination claimed in claim 3, wherein the steam generating means comprises an elongated heating element extending longitudinally within said tubular barrel, the heating element being formed with exterior grooves, a tubular housing encasing the heating element and being spaced from the tubular barrel to define therewith an intermediate space, the tubular housing having perforations communicating with the grooves, and means for supplying treatment liquid to the grooves to be vaporized therein into steam.

5. The combination claimed in claim 4, wherein the plate member is formed with a resilient lug which engages the housing of the heating element and urges the plate member into engagement with the inner surface of the tubular barrel.

6. The combination claimed in claim 2, wherein the mandrel is constructed as a cylindrical cage open at one end, the other end of the cage being closed and having a thimble-like extension engageable over the end of said tubular barrel, the thimble-like extension providing an interior projection engageable with said abutment means for displacing the valve member.

7. The combination claimed in claim 6, wherein the arm engaging means are constituted by a pair of arcuate, longitudinally extending, resilient flanges projecting inwards from the interior of the mandrel wall.

8. The combination claimed in claim 7, wherein the mandrel is a unitary molding of plastics material.

9. The combination claimed in claim 8, further including at least one other mandrel having a diameter different from the first and interchangeable therewith.

10. In combination with a steam curling iron having a curling arm and a clamping arm, the curling arm having an operative section constituted by a tubular barrel housing steam generating means, the clamping arm being adapted in the clamped position to engage a longitudinally extending upper region of the barrel, and the barrel having a lower region formed with perforations to permit the escape of steam therefrom:
   i. an elongated valve plate of arcuate cross section mounted within the barrel, the plate being resiliently urged into engagement with the inside of the barrel and being longitudinally displaceable therein between a first position at which it closes said perforations to block the escape of steam and a second position at which it uncovers the perforations,
   ii. spring means biasing the valve plate to said first position,
   iii. abutment means connected to the valve member, iv. a plurality of tubular mandrels of different sizes each adapted to be mounted on said operative section of the curling arm, each mandrel being a unitary molding of plastics material and being constructed as a cylindrical cage with a pair of arcuate, longitudinally extending, resilient flanges projecting inwardly from the interior of the cage, the flanges being frictionally engageable with the tubular barrel and slidable therealong, the cage being open at one end, the other end of the cage being closed and having a thimble-like extension engageable over the end of said tubular barrel, the thimble-like extension providing an interior projection engageable with said abutment means for displacing the valve member from said first to said second position.

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