United States Patent

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Milwaukee, Wis.

[54] **HAIR DRYING AND SETTING APPLIANCE**
9 Claims, 10 Drawing Figs.

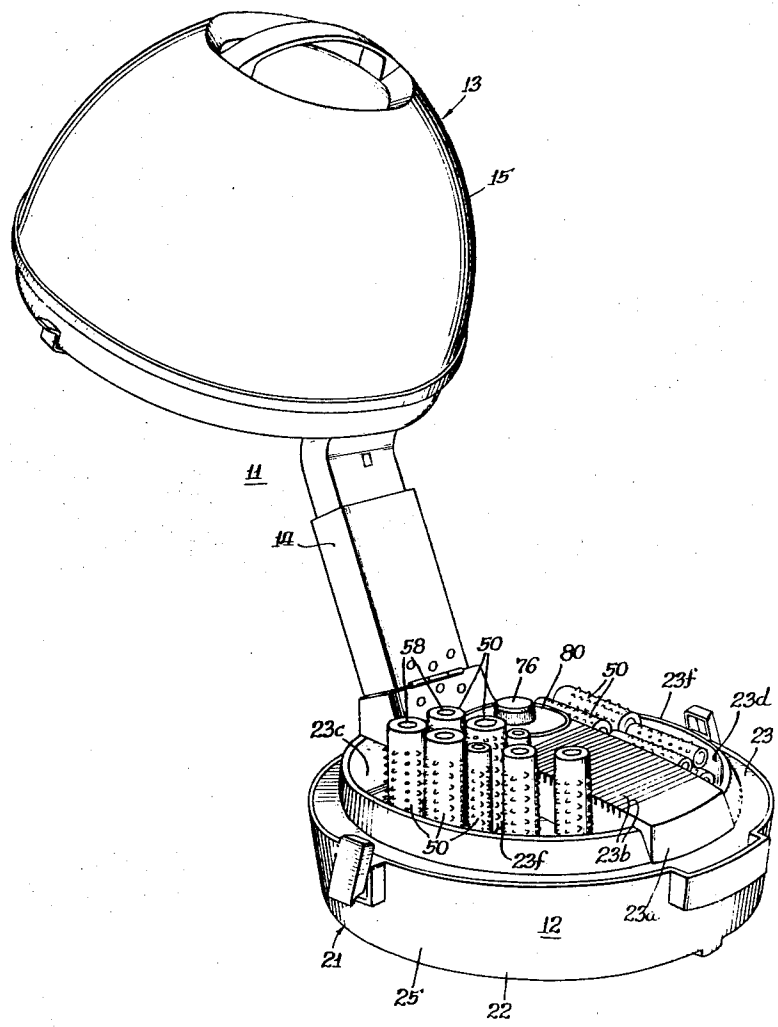
[52] **U.S. Cl.** 132/9
[51] **Int. Cl.** A45d 2/00
[50] **Field of Search** 132/33, 9; 34/99

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ABSTRACT: A hair drying and setting appliance having a base containing a blower for delivering heated air for convection drying of hair and including hair curler supports which heat the curlers for use in conduction drying of hair. The base having a frame which mounts the hair curler support posts and heater and the blower motor on the upper side of the frame overlying a blower fan positioned on the lower side of the frame.



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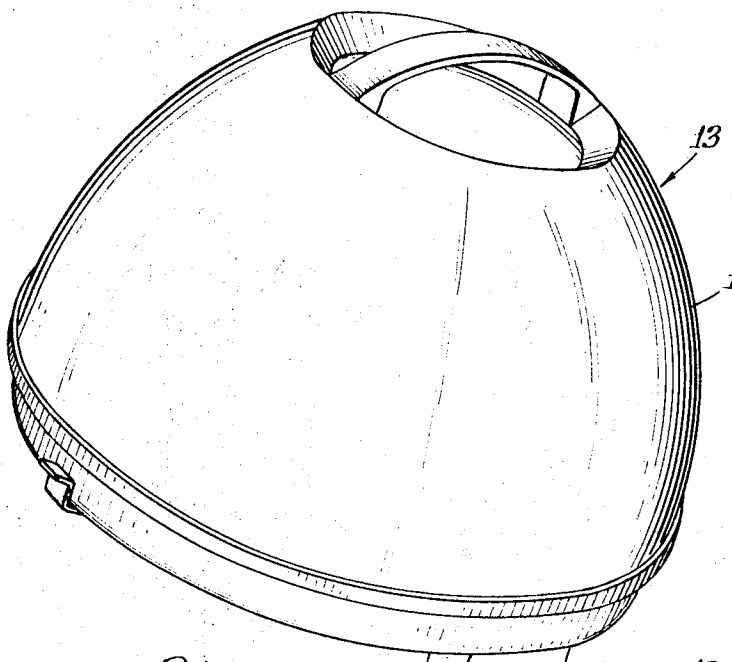


Fig. 2.

Fig. 1.

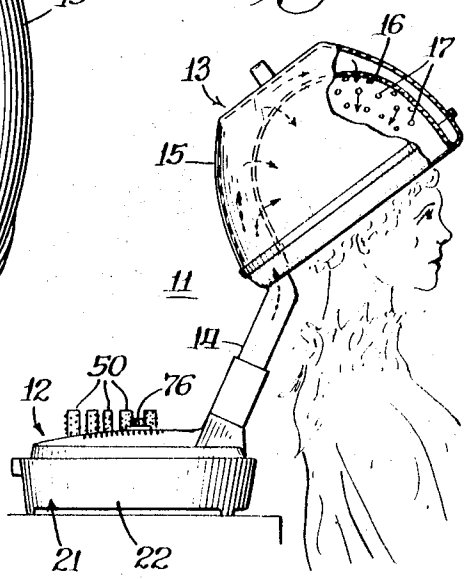
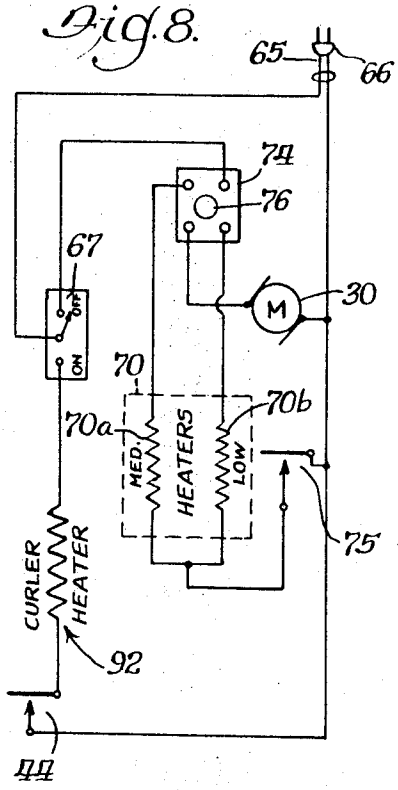
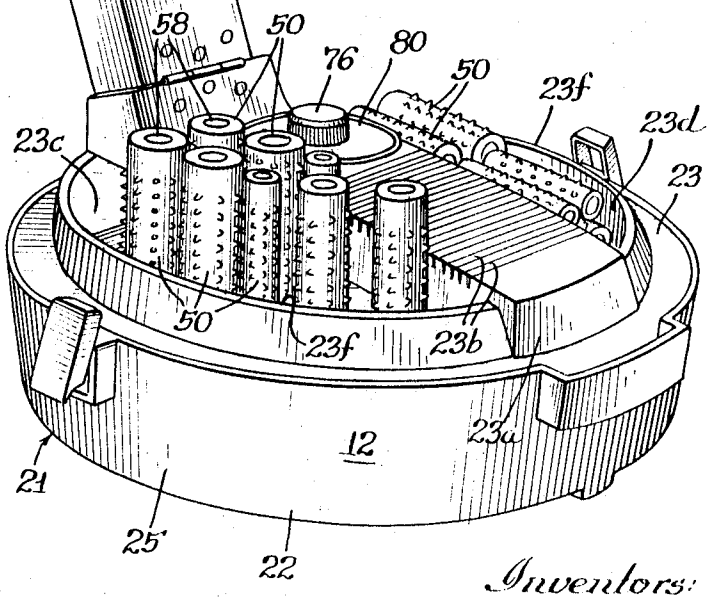


Fig. 8.





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Fig. 3.

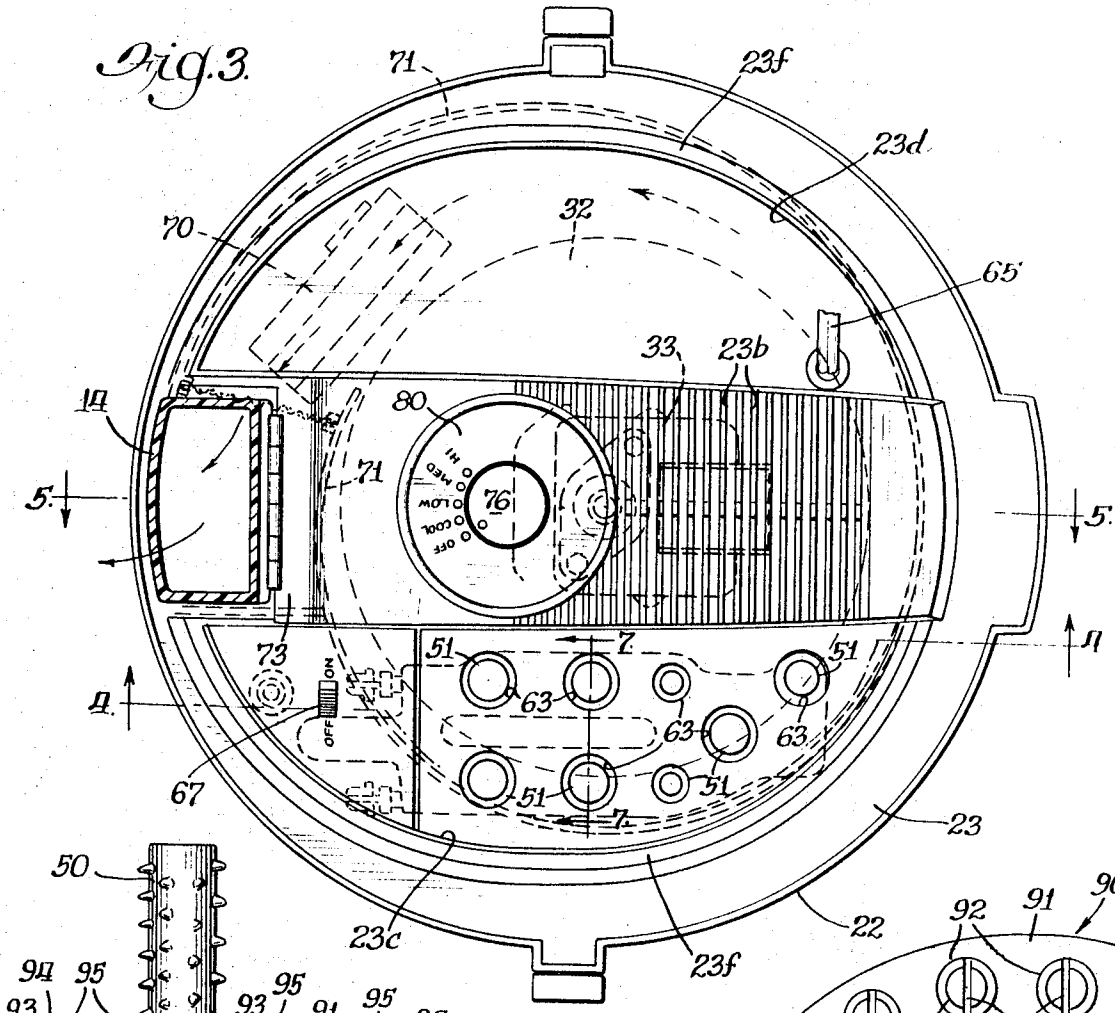


Fig. 10.

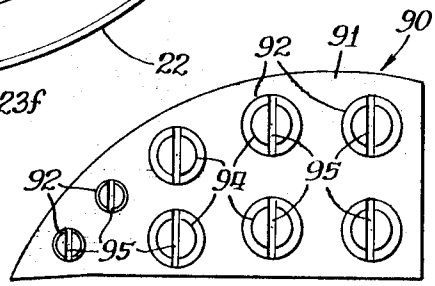
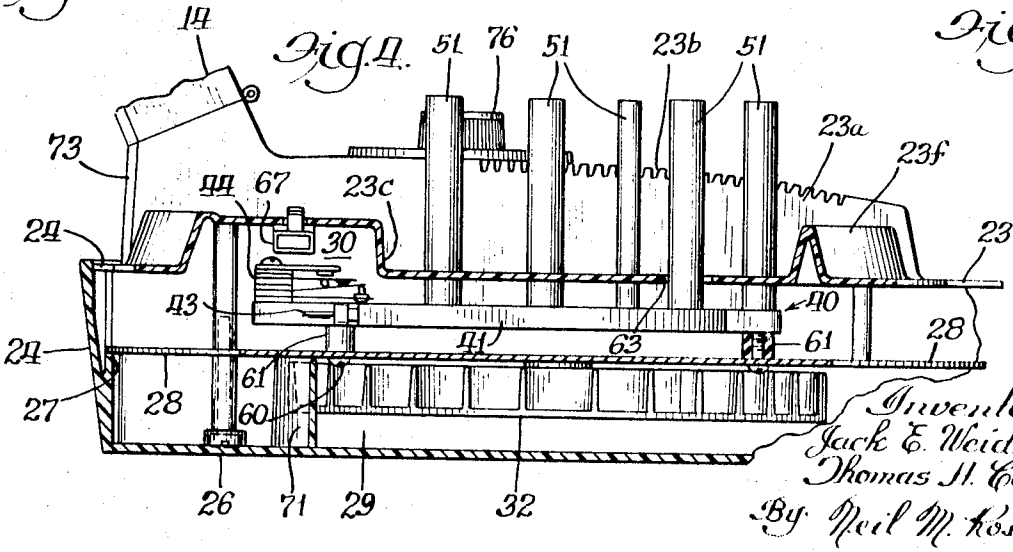


Fig. 9.

Fig. 4.



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Fig. 5.

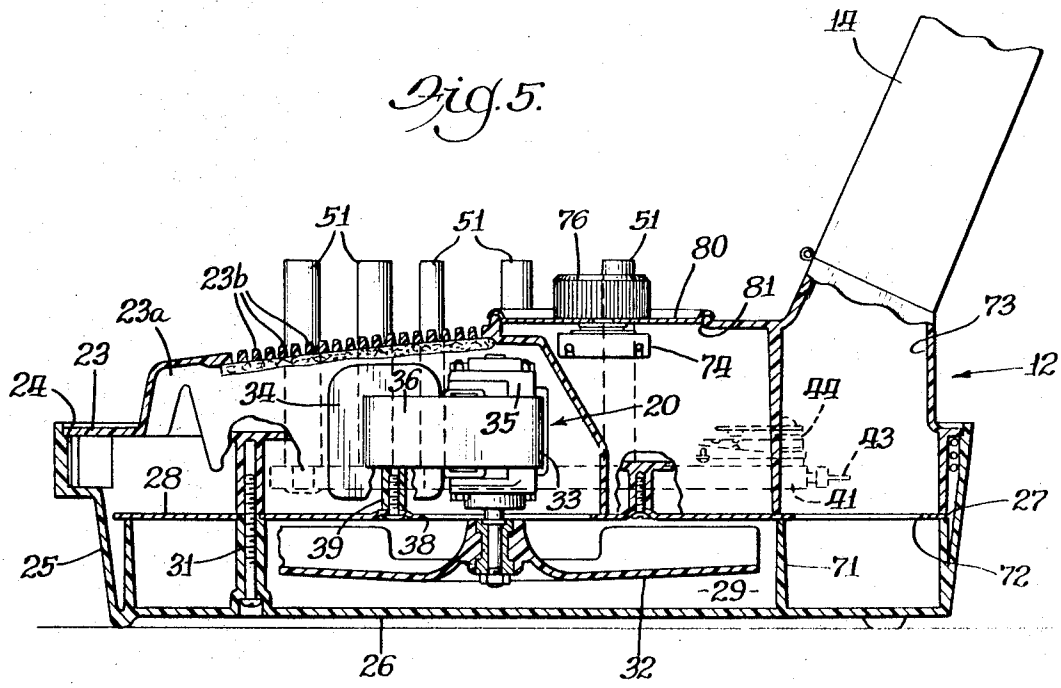


Fig. 6.

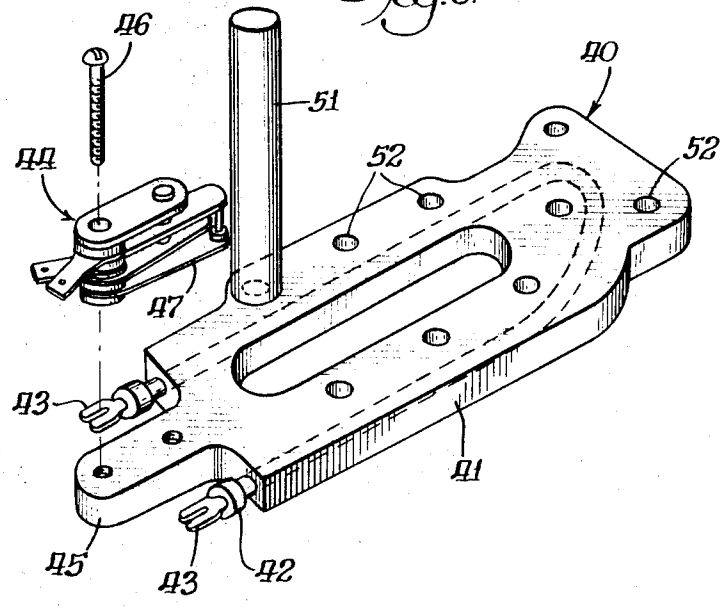
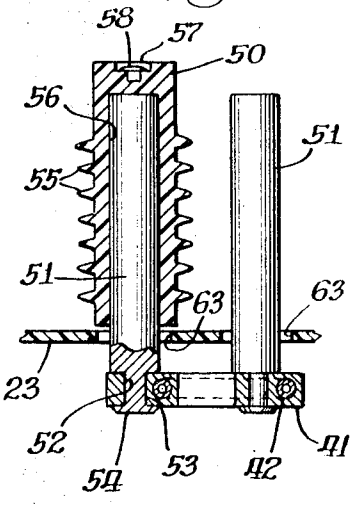


Fig. 7.



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HAIR DRYING AND SETTING APPLIANCE

BACKGROUND OF THE INVENTION

In recent years there has been a great increase in the number and types of personal care applicances on the market. Many of these appliances relate to the care and grooming of women's hair and, more particularly, are hair drying and hair curling devices. The familiar types of hair dryers, which had once been found principally in beauty salons, have been reduced in size and sold widely for home use. An example of one such hair dryer is disclosed and claimed in Rogers et al. U.S. Pat. No. 3,330,048, which is assigned to the same assignee as the instant application.

These hair dryers are characterized by having some type of motor-driven blower and heater arranged so that the blower will deliver heated air through a conduit to a cap or helmet which delivers the air to the various portions of the head where the hair is to be dried. The above-cited Rogers et al. patent discloses a helmet having a rigid interior which is apertured to deliver the heated air across the hair of the user. There are also so-called soft hat- or bonnet-type hair dryers which are supported directly on the head of the user and require no additional support as is characteristic of the rigid helmet type of hair dryer.

Another personal care appliance which has recently increased in popularity is the heated hair curling appliance. This appliance includes a plurality of curlers or rollers which are adapted to be heated and then applied to the hair while in the hot condition. By making the rollers of sufficient heat capacity and heating them to a high enough temperature, it has been found that the rollers will form waves or curls in the hair prior to the curlers cooling down to room temperature. Both the hair dryer and the hair curling appliances have a distinct and necessary place in the normal hair grooming routine of many women.

Some women prefer to use the hair dryer only when they have shampooed their hair which might be done only once a week. On a daily basis, such women may use the heated hair curlers to rejuvinate the curls which were set at the time of the shampooing. The hair curling or waving which is achieved through the use of the heated hair curler appliance is accomplished quickly and is generally of less duration than the curling produced when the hair has been completely dried in its curled form after shampooing. There are also women who use combinations of the two approaches and might use the heated hair curlers even when the hair has been shampooed in order that the drying of the curls may be facilitated or speeded up due to the heat resulting from winding the hair on the already heated curlers. Frequently, the internal portion of the curl is slow to dry, and, therefore, the use of the heated hair curlers in combination with the hair dryer provides a useful and effective combination to speed up the overall drying operation.

SUMMARY OF THE INVENTION

The present invention relates to a hair drying and hair setting appliance which includes both an air circulation type of hair dryer as well as hair curlers and means for heating the hair curlers. The resulting appliance meets the needs of a woman for general hair care including both drying of the hair after shampooing and the more frequent setting of curlers on a day to day basis.

The appliance includes a more or less conventional air circulating hair dryer having a base within which the motor-driven blower is positioned to supply heated air through a combination helmet support and air delivery conduit. This conduit carries at its upper end a double-walled helmet which receives the heated air passing through the conduit and distributes the air through orifices toward the hair of the user. The base housing of the hair dryer is arranged to mount a heating element with roller supporting posts in heat exchange relationship therewith, the supporting posts extending outwardly of the base housing in an exposed position where they may receive the curlers to be heated. The heating element is supported on a common plate to which the blower, motor, and air heating elements are also supported. The supporting plate forms the upper wall of the blower fan chamber and divides the base housing into two separate enclosures, one of which is the fan chamber and the other of which encloses the fan motor and the heating element for the curlers. Circuit means are provided to permit selective energization of either the curler heater or the hair dryer. The cover portion of the base housing is designed to provide recessed areas or pockets within which the curler heating posts are positioned and in which the unused curlers may be stored. The helmet of the hair dryer is adapted to move to a storage position against the base housing enclosing the hair dryer controls as well as the curler storage area and the curler heating posts.

It is an object of the present invention to provide an improved hair drying and hair setting appliance including means for drying hair by circulating warm air and for drying and setting hair through the use of heated hair curlers.

It is a further object of the present invention to provide a hair care appliance having a motor blower housing which also encloses a heating element for hair curlers with curler supporting posts connected to the heating element and extending outside of the housing for engagement with the hair curlers.

It is another object of the present invention to provide a hair drying and hair setting appliance having a base housing divided by a horizontal plate into a fan chamber and a motor chamber, the motor and hair curler heating means being positioned on the side of the plate away from the fan and being enclosed in the motor chamber.

It is still another object of the present invention to provide an improved hair drying appliance of the type having a base housing and a combination support and air delivery conduit supporting a rigid helmet against said base, and in which the base encloses a motor blower unit to deliver air to the hair through said support conduit and also encloses a heater which is in heat exchange relationship with a plurality of removable hair curlers.

Further objects and advantages of the present invention will become apparent as the following description proceeds and the features of novelty which characterize the invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the present invention, reference will be had to the accompanying drawings in which:

FIG. 1 is a side elevational view of a hair dryer embodying the present invention and shown being in use by a woman whose head is received in the hair drying helmet, the helmet being shown partially in section to illustrate the airflow;

FIG. 2 is an enlarged perspective view of the hair dryer of FIG. 1;

FIG. 3 is a top plan view of the base housing of the hair dryer shown in FIGS. 1 and 2 with the helmet and helmet support cut away;

FIG. 4 is a sectional view taken on line 4–4 of FIG. 3;

FIG. 5 is a sectional view taken substantially on line 5–5 of FIG. 3;

FIG. 6 is an exploded perspective view of the hair curler heater;

FIG. 7 is an enlarged fragmentary sectional view taken on line 7–7 of FIG. 3 showing a hair curler in place on one of the supporting posts;

FIG. 8 is an electrical schematic diagram of the hair dryer;

FIG. 9 is a top plan view of a curler storage and supporting element usable with the present invention; and

FIG. 10 is a side elevational view of the curler storage and supporting element of FIG. 9.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, there is shown in FIG. 1 a hair dryer and hair setting appliance embodying our invention and designated generally by reference numeral 11. The appliance 11 includes a base 12, a hair drying helmet 13, and a supporting column 14 which is adapted to deliver heated air between the base 12 and the helmet 13. The helmet 13 is of generally conventional design including an outer rigid imperforate portion 15 and a perforate inner portion 16. As is shown by the arrows in FIG. 1, air delivered through the conduit or supporting column 14 flows through the space between the inner portion 16 and the outer portion 15 and is discharged through openings 17 toward the hair of the user positioned within the helmet 13 as shown in FIG. 1.

In order to create the airflow which is necessary to dry hair within the helmet 13, there is provided in the base 12 a motor-driven blower unit designated generally by reference numeral 20. The motor-driven blower unit 20 is enclosed within a base housing 21 which includes a bottom housing portion 22 and a cover housing portion 23. The two housing portions 22 and 23 fit together as shown in FIGS. 4 and 5 with the periphery of the cover portion 23 resting on a lip or shouldered edge 24 which extends around the upper edge of a cylindrical sidewall 25 formed on the bottom housing portion 22. The cylindrical sidewall 25 extends upwardly from the generally circular bottom wall 26 of the housing portion 22. Midway up the sidewall 25 of the bottom housing portion 22, there is a second shouldered portion 27 which extends partially around the interior of the base housing 21 and serves as a support for a flat, horizontally extending plate 28, one of the purposes of which is to support the motor-driven blower 20. The plate 28 is also supported by a fan scroll wall 71 and integrally formed post 31 which extends upwardly from bottom wall 26 as shown in FIG. 5.

The plate 28 divides the interior of the base housing 21 into fan chamber 29 and motor chamber 30. Received within the fan chamber 29 is a fan 32 which is supported on the lower end of the shaft of motor 33. The motor 33 may be a suitable shaded pole motor including coil 34, rotor 35, and field 36. The rotor 35 includes a downwardly extending shaft 37 which extends through an opening 33 in plate 28 and supports at its lower end the fan 32. The motor 33 is mounted on the upper surface of the plate 28 by upwardly extending posts 39 as shown in FIG. 5.

Also carried by the plate 28 is a hair curler roller heating assembly 40. The heater assembly 40 includes a heating element casting 41 within which there is cast a sheathed heating element 42. The casting 41 is of aluminum or an aluminum alloy to assure good heat conduction. The heating element 42 includes the conventional coiled resistance wire supported within the tubular sheath by compacted magnesium oxide with terminals 43 extending outwardly for connection to a power source.

In order to regulate the temperature of the heater assembly 40, there is provided a thermostat 44 which is connected in series with the heating element 42. The thermostat 44 is secured to a projecting lug 45 on the casing 41 by means of a screw 46 which extends through an opening in one end of the thermostat. The thermostat 44 includes a bimetallic element 47 which is deflected by heat received from the casting 41 thereby causing the bimetal 47 to open the circuit supplying electricity to the heating element 42.

For the purpose of supporting and heating a plurality of hair curlers 50, the heating assembly 40 includes support posts 51 which are received in openings 52 in the casting 41. As is best shown in FIG. 7, the posts 51 are formed with reduced diameter portions 53 at their lower ends which extend through the openings 52 and which are deformed over against the bottom of casting 41 as indicated by reference numeral 54 in FIG. 7. This assembly assures good heat transfer between the heating element casting 41 and the supporting posts 51.

The curlers 50 are of a cylindrical form and are of various sizes, as best shown in FIG. 2, thus permitting the user to select a curler which will produce the type of curl suitable to her particular hair style. All of the curlers 50 are provided with generally, radially extending spikes 55 which engage the hair and prevent the curler from slipping axially out of the curl which is wound thereon. The interior of the curler 50 is formed with an axially extending passageway 56 which is dimensioned to snugly receive a supporting post 51 as shown in FIG. 7. As may be noted from FIGS. 4 and 5, the posts 51 are of different diameter to snugly receive the curlers of various size having passageways 56 of different diameters. In order for the user to tell when the curler has heated up to a proper temperature, the top end of each curler is provided with a recess 57 within which there is received an amount of a known type of paint which is color responsive to temperature, i.e., the paint changes from one color to another when the curler is heated to the desired temperature. It should be appreciated that the curlers 50 may be made of any material so long as they have sufficient capacity to supply a sufficient quantity of heat to form a curl wound thereon before they cool to room temperature. Various plastic and ceramic materials have been found to be suitable for fabricating the curlers 50.

Turning now to FIG. 4 of the drawings, it is noted that the heater assembly 40 is secured to the upper face of the support plate 28 by means of screws 60 which extend through thermal insulating spacers 61 into threaded engagement with the element casting 41. As seen in FIG. 3, the heater assembly 40 is positioned to one side of the motor 33 which is centrally located within the base housing 21.

The cover portion 23 of the housing 21 is formed with a raised, central portion 23*a* which is somewhat inverted channel-shaped and extends over the motor 33. Suitable air admission louvres 23*b* are formed in the central portion 23*a* to permit air to flow downwardly into the base housing 21 and through the opening 38 as it is drawn through by the fan 32. On either side of the raised central portion 23*a*, the cover portion 23 of the housing is formed with recessed depressions 23*c* and 23*d*. These depressions 23*c* and 23*d* are defined on the inside edge by the central raised portion 23*a* and on the outer edges by a peripherally extending rib 23*f*.

The purpose of the recessed depressions 23*c* and 23*d* are to accommodate the hair curlers 50 and their respective heating means, the depression 23*d* being solely for the storage of the curler 50 in a horizontal position, as shown in FIG. 2. The depression 23*c* on the other hand lies directly above the heating element casting 41 and is formed at its bottom with apertures 63 through which the support posts 51 extend into the recessed depression 23*c* and upwardly therefrom. In such position, the curlers 50 may be placed on the support posts 51 as shown in FIG. 2. With the posts 51 and the curlers 50 nested in the recessed depression 23*c*, as shown in FIGS. 2 and 4, the curlers are conveniently stored in a position where they take up a minimum amount of space and are available for immediate use when desired.

As an alternative to storing the curlers 50 in the horizontal position in depression 23*d*, there has been provided a curler storage and supporting element 90 which is shown in FIGS. 9 and 10. Element 90 includes a somewhat sector-shaped, flat base 91 which has curler supporting bosses 92 extending upwardly therefrom. The bosses 92 have conical curler engaging surfaces 93 and upper retaining portions 94 which are divided by diametrically extending slots 95. The element 90 including base 91 and bosses 92 are molded of a high impact plastic material having some resilience. The retaining portions 94 are dimensioned to engage the interior passageways 56 on curlers 50 snugly with the separated portions 94 being deflected slightly so that curlers 50 are effectively retained thereon.

The curler storage and supporting element 90 is adapted to be inserted in depression 23*d* with the base 91 cemented permanently to the bottom of the depression. This arrangement provides means for fixedly storing the curlers in a spaced, upright position as compared to the loose, horizontal storage arrangement illustrated in FIG. 2.

In considering the circuit connections for the hair drying appliance **11**, reference should be made to the circuit diagram included in FIG. **8**. The circuit shown therein includes a power cord **65** with a suitable plug **66** to connect the appliance to a 120 volt 60 cycle power supply. Connected to the power cord **65** is the thermostat **44** which is in series with the heating element **42** and a switch **67**. The purpose of switch **67** is to connect either the curler heater **40** or, alternatively, the motor and air heater in circuit with the power cord. In view of the fact that the hair curlers are normally not heated during the period in which the hair is being dried within the helmet **13**, the switch **67** provides a convenient means for assuring that one or the other portions of the appliance will not be left on while the other is being used.

Included in the hair dryer base is also an air heating element **70** which is positioned below the support plate **28** and is adapted to be supported thereon. The element **70** is positioned in the path of the airstream created by the fan **32**. As is best shown by the dotted lines in FIG. **3**, the fan **32** is surrounded by the scroll wall **71** which is of increasing diameter thereby permitting air to move radially outwardly from the fan **32** to be discharged upwardly through an opening **72** in plate **28** and through the passageway or outlet **73** formed in cover portion **23** as shown in FIG. **3**. The air heater **70** is positioned in the path of the air to heat it prior to its discharge from the outlet **72** into conduit support **14**.

Returning to the circuit diagram shown in FIG. **8**, the air heater **70** is made up of two separate heating elements **70***a* and **70***b* which could be selectively energized by means of a switch **74** so that the air temperature controlled to any one of three different heat levels for drying the hair. The switch **74** also connects the motor **30** in circuit across the line **65** whenever the heater **70** is energized at any one of its levels. A safety thermostat **75** is also connected in series with the heater **70** to prevent dangerous overheating in the event that the flow of air was plugged or in the event that the motor **30** and the fan **32** became inoperative.

In using the hair drying and setting appliance **11**, the operator will conventionally move the switch **67** to the "ON" position thereby establishing the circuit through the curler heating element **42**. This causes the support posts **51** to be heated as well as the curlers **50** positioned thereon. As the temperature responsive paint **58** on the ends of the curler changes color, the operator knows the curlers have been heated to temperature and may be removed and applied to the hair. After a sufficient quantity of curlers have been applied to the hair, the switch **67** is moved to the "OFF" position. This permits the motor **33** and the heater **70** to be controlled by means of the switch **74**. The switch **74** includes a control knob **76** which has five settings which are (1) OFF, (2) COOL (fan only), (3) LOW (with element **70***b* energized), (4) MEDIUM (with element **70***a* energized), and (5) HIGH (with elements **70***a* and **70***b* both energized). The details of the switch **74** have not been shown since such multiple position switches are commercially available on the market. As shown in FIG. **5**, the switch **74** is supported by a circular plate **80** which is received in an opening **81** in the raised central portion **23***a* of the cover **23**.

Thus, after the curlers **50** have been applied to the hair and the switch **67** moved to the "OFF" position, the user may then proceed to dry the hair if the curls have been set following a shampoo. Under such condition, the air discharged from the helmet **13** through the holes **17** against the hair will dry the hair in combination with the heat applied by the heated curlers **50** which had been applied to the hair prior to the hair drying portion of the cycle. The use of the heated curlers also provides a quick curl that is obtained through mere use of the air drying portion of the operation. In instances where the hair has not been shampooed, the user will merely use the heated curlers and not resort to the air drying portion of the cycle utilizing the helmet **13**.

The appliance **11** provides a simple and convenient means for performing all the necessary drying and setting functions on the hair as are normally required. The appliance represents a distinct improvement over the more limited single function appliances heretofore known in the art.

While there has been shown and described one embodiment of the present invention, it will be apparent to those skilled in the art that numerous changes and modifications may occur and it is intended by the appended claims to cover all such changes and modifications which fall within the true spirit and scope of the present invention.

What we claim as new and desire to be secured by Letters Patent of the United States is:

1. A hair drying and setting appliance comprising a base including a housing with a bottom portion and a cover portion enclosing a motor-driven blower having an air heater to heat air delivered by said blower to an air outlet in said housing, air delivery and distribution means connected to said outlet to direct heated air against a head of hair, said blower being supported on a plate positioned between said bottom and cover portions of said housing, said motor being secured to the upper surface of said plate and being drivingly connected to a fan on the other side of said plate, a thermostatically controlled electrical hair curler heating element in heat transfer relation with hair curler support means, said heating element being mounted on said plate adjacent said motor, said support means comprising support posts extending vertically through said cover portion, and hair curlers having central recesses adapted to be received on said rods for heating said curlers.

2. The hair drying and setting appliance of claim **1** wherein said cover housing portion includes air inlet openings positioned above said motor, said motor including an output shaft extending through an enlarged opening in said plate to support said fan in said fan chamber, a scroll wall surrounding said fan to direct air moving downwardly through said plate opening and radially outwardly from said fan toward said air outlet, said cover being provided with enlarged clearance openings through which said posts extend, and said fan drawing air in through said clearance openings as well as through said inlet openings.

3. The hair drying and setting appliance of claim **1** wherein said cover portion of said housing includes a peripheral flange adapted to engage upwardly extending walls on said bottom portion of said housing and a raised central portion which encloses said motor and is formed to include said air outlet, said cover portion being formed with spaced pockets on either side of said raised central portion to receive said hair curlers, one of said pockets receiving said curlers for storage purposes while the other pocket has said support posts positioned therein and receives said curlers being heated thereon.

4. The hair drying and setting appliance of claim **1** including circuit means for energizing said air heater, said motor, and said hair curler heating element; said circuit having first and second switch means; said first switch means connected to alternatively energize either said hair curler heating element or said motor and air heater, said second switch means being connected to control said motor and said air heater whereby said fan may be operated both with said air heater energized and with said air heater deenergized.

5. A hair drying and setting appliance comprising a base including a housing with a bottom portion and a cover portion enclosing a motor-driven blower having an air heater to heat air delivered by said blower to an air outlet in said housing, air delivery and distribution means connected to said outlet to direct heated air against a head of hair, said blower being supported on a plate positioned between said bottom and cover portions of said housing, said motor being secured to the upper surface of said plate and being drivingly connected to a fan on the other side of said plate, a thermostatically controlled electrical hair curler heating assembly including hair curler support means, said heating assembly being mounted on said plate adjacent said motor, said support means comprising support posts extending vertically through said cover portion, hair curlers having central recesses adapted to be received on said rods for heating said curlers, said hair curler heating assembly includes a U-shaped heating element cast therein with the terminal ends of the legs extending from said casting, said casting being relatively flat and being supported between said plate and cover portion in parallel spaced rela-

tion thereto, enlarged openings in said housing surrounding said posts whereby air is drawn in through said post receiving openings by said fan to cool the portions of said housing adjacent to said hair curler heating assembly and said posts.

6. The hair drying and setting appliance of claim 5 wherein said hair curler heating assembly is provided with a thermostat connected in circuit with said heating element to control the temperature of said posts; a second thermostat positioned adjacent to said air heater to prevent overheating of said air in the event of insufficient air being circulated by said blower; electric circuit means interconnecting said motor, said air heater, and said curler heating assembly and including first and second switch means; said first switch means being connected to selectively energize either said hair curler heating assembly or said motor and air heater and said second switch means being connected to energize said fan and selectively control said air heater.

7. A hair drying and setting appliance comprising a housing having a dish-shaped bottom portion with upstanding cylindrical sidewalls and a cover portion engaging said sidewalls, a support plate received between said housing portions to divide said housing into a fan chamber below said plate and a motor chamber above said plate, a fan in said fan chamber surrounded by a scroll wall and adapted to deliver air to an air outlet, an air heater secured to the bottom of said plate and positioned in said fan chamber to heat air passing to said outlet, a curler heater and a motor mounted on the top of said plate in said motor chamber, said cover portion being formed with recessed depressions on both sides of said motor, said curler heater having a plurality of curler support posts extending upwardly through openings in said cover portion into one of said depressions, a plurality of hair curlers having axially extending passageways openings at one end, said curlers being positioned partially within said one recessed depression when received on said posts.

8. The hair drying and setting appliance of claim 7 wherein the air intake for said housing is located in the cover portion between said recessed depressions, said curler heater being mounted on said plate on thermal insulating posts and said openings in said cover being enlarged to space said posts from the surrounding cover portions.

9. The hair drying and setting appliance of claim 8 wherein said curler heater includes an oval casting enclosing a U-shaped sheathed heating element which is cast integrally therewith having only the free ends of the U-shaped sheath extending from said casting to expose the terminal portions, said curler support posts being connected to said casting at positions spaced laterally of said sheathed heating element and extending through said casting, and a temperature control thermostat carried by said casting on a mounting lug extending between the terminal portions of said U-shaped heating element.