United States Patent

Ruffolo

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[54] **HAIR DRYER**

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[52] **U.S. Cl.**.....**34/90,** 34/99

[51] **Int. Cl.**.....**F26b 19/00**

[58] **Field of Search** 34/90, 99; 98/2.03

[56] **References Cited**

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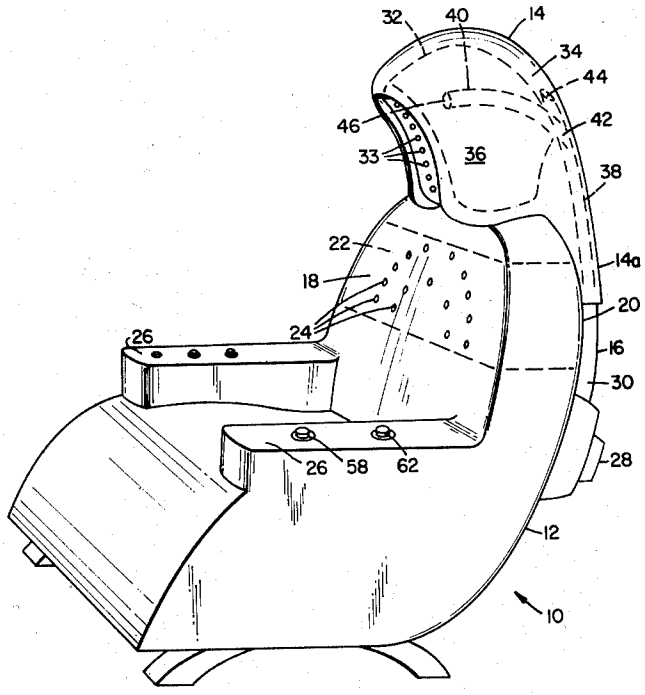
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[57] **ABSTRACT**

A chair-type hair dryer wherein the flow of drying air is conducted through a system of obliquely directed passageways in a liner shell mounted within a drying helmet. The passageways are oriented to direct the drying air through the user's hair in a direction following the contour of the head toward the rear portion of the head and away from the face. Means are provided for selectively diverting a controllable portion of the drying air through a plurality of apertures in the back of the chair and against the user's back and shoulders providing a soothing and relaxing effect.

14 Claims, 6 Drawing Figures



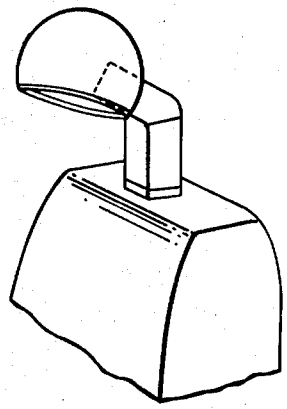


FIG_2
(PRIOR ART)

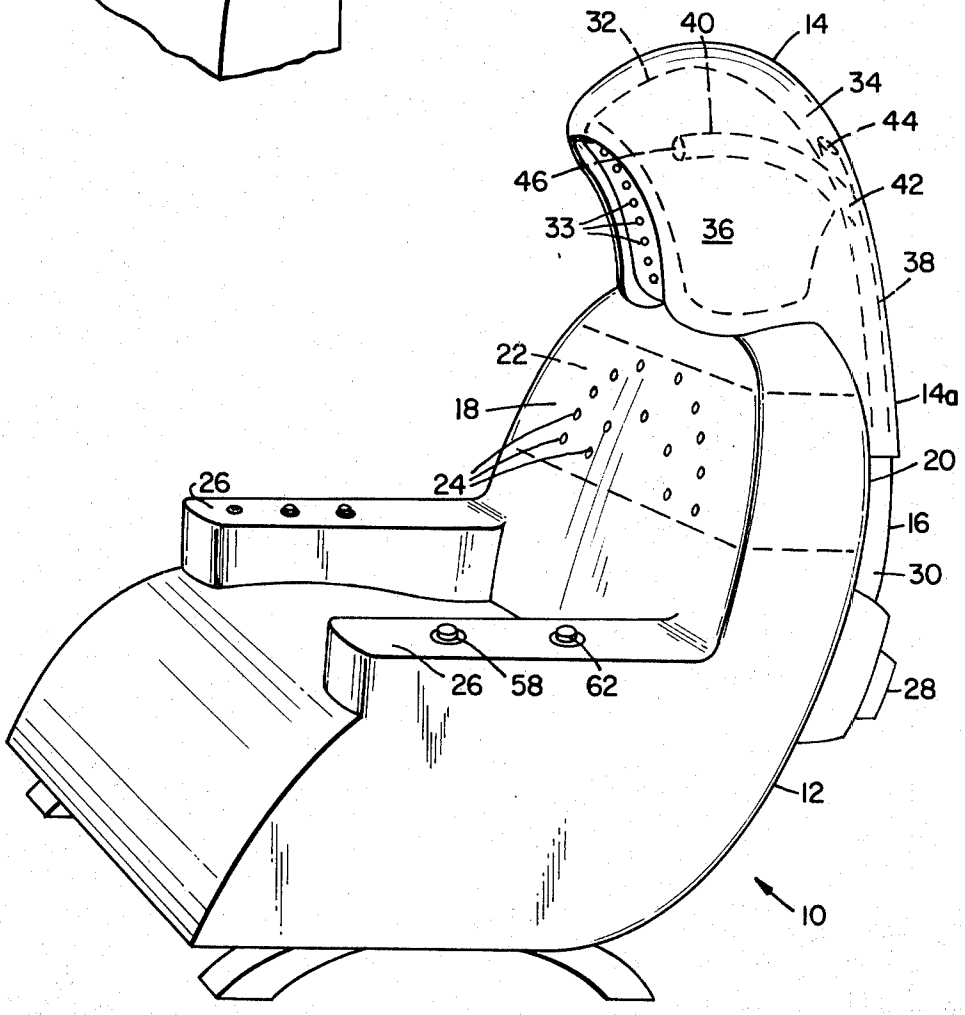


FIG_1

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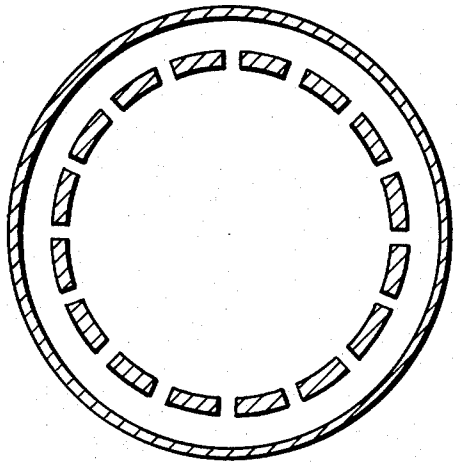


FIG_3

(PRIOR ART)

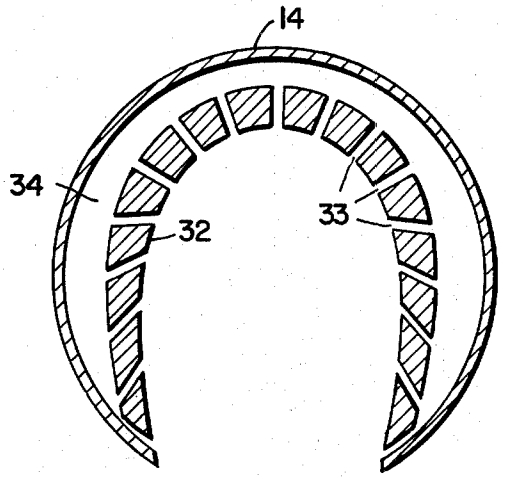


FIG_4

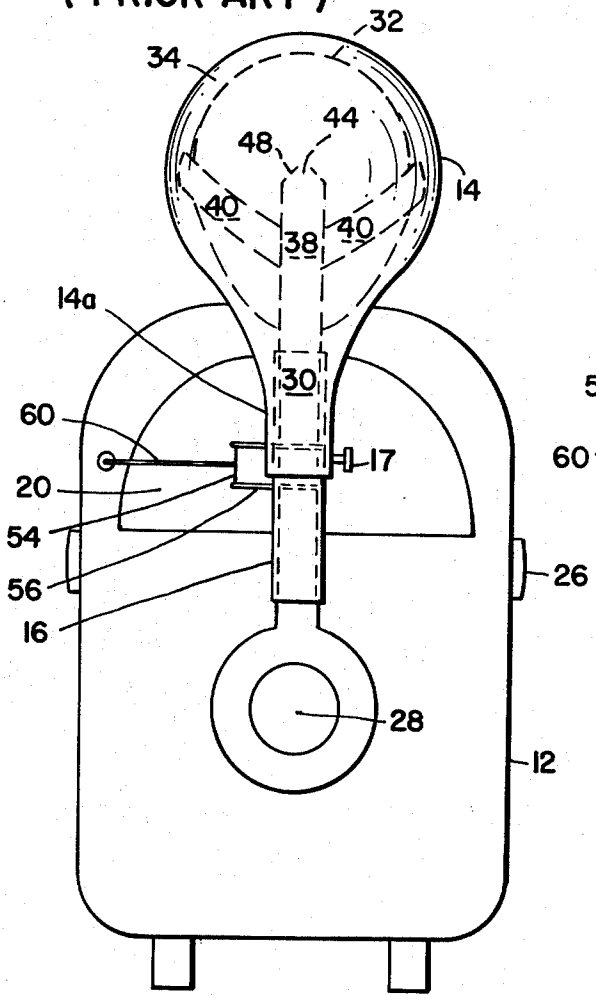


FIG_5

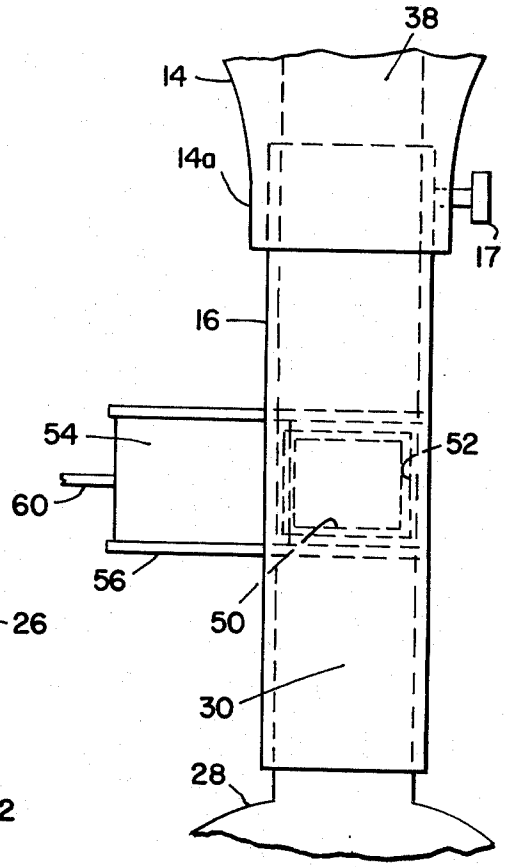


FIG_6

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HAIR DRYER

The present invention relates generally to chair-type hair drying devices commonly found in women's hair treatment salons, and is more particularly directed to a hair dryer structure which achieves increased drying effectiveness while at the same time provides added comfort and relaxation for the user.

In conventional salon-type hair drying machines, the flow of heated drying air is directed through a number of holes in a drying hood and impinges against the hair at an angle substantially normal to the surface of the head. This has the effect not only of creating an uneven and turbulent flow of drying air but also unnecessarily heating the user's scalp with a consequent feeling of discomfort. Further, such conventional drying hoods cover most or all of the user's forehead producing added discomfort in this area due to the amount of heat unnecessarily introduced at a location where no drying is required.

In addition, with conventional drying hoods a steady stream of heated air flows out the front of the hood and across the user's face. This is not only annoying and uncomfortable but tends to unduly dry the skin in these areas.

According to the present invention, the incoming flow of drying air is conducted through a plurality of diagonally directed passageways in a liner shell mounted within a drying hood. These passageways are uniformly distributed over the liner shell and are so formed that the angle of impingement of drying air on the user's head creates a tangential airflow following the contour of the head and being directed at all points toward the center rear portion of the head. This directional airflow has the effect of increasing the drying rate since the air flows through the hair along a controlled path and not directly at the head as with conventional designs. Additionally, in the case of those passageways located near the user's face and forehead, the rearward directed airflow eliminates any undesirable forward flow of drying air downward across the user's face. This latter result makes possible a helmet-shaped hood design which more closely conforms to the user's hairline and allows easier entry and withdrawal of the head.

Since the problem of hot air escaping from the upper frontal area of the hood has been eliminated by the liner shell design the helmet of the present invention need not extend downward over the forehead to confine heated air within it. This allows easier entry and withdrawal of the user's head since she merely seats herself on the dryer chair and slides directly back into position rather than having to more up into the hood from underneath as with prior art devices. The improved hood design also includes downwardly extending side portions and an elongated rear section which covers the lower part of the back of the user's head and her neck, an area heretofore inadequately treated by conventional designs. The drying air introduced at these points has a tendency to rise into the upper portions of the helmet aiding in the overall directional circulation of air produced by the angularly oriented passageways in the liner shell.

The helmet is provided with an air distribution system which introduces drying air into the chamber formed between the helmet and liner shell both at the back of the helmet and on both sides thereof at the front. This air duct system is so designed that the air flow is substantially equalized throughout the chamber resulting in an even and uniform distribution of air through the various passageways regardless of their position within the helmet.

A further feature of the present invention is the provision of a number of air vents in the chairback area which supports the user's back and shoulders, and means for selectively diverting a controllable portion of the heated air flowing toward the helmet into a cavity in the chair back. This back and shoulder warmer provides a soothing and relaxing effect and is especially therapeutic in the case of tight muscles, stiff neck or sore back. This chairback airflow can be adjusted or eliminated by the user from a control located on the arm of the chair.

These and other objects, features and advantages of the present invention will be more readily apparent upon reading the following detailed description with reference to the accompanying drawings wherein:

FIG. **1** is a pictorial representation of a principal embodiment of the present invention;

FIG. **2** is a pictorial representation of a hair drying hood according to the prior art;

FIG. **3** is a cross sectional view of a prior art liner shell taken along a substantially horizontal plane;

FIG. **4** is a cross sectional view of the liner shell of the present invention taken along a substantially horizontal plane;

FIG. **5** is a rear view of the hair dryer of FIG. **1**; and

FIG. **6** is an enlarged view of a portion of the rear of the hair dryer shown in FIG. **5**, with the drying helmet in a raised position.

Referring now to the drawings in which like numerals in the different views refer to the same element, there is provided a chair-type or salon hair drying device **10** having a chair **12** which supports a person whose hair is to be dried in a variety of adjustable positions from full upright to semi-reclining. Mounted on chair **12** and positioned above it is drying helmet **14**. Hollow mounting column **16** is affixed to the back of the chair and allows vertical movement of helmet **14** with respect to the chair so as to comfortably accommodate subjects of varying body proportions and height. The drying helmet **14** is provided with a downwardly extending rear section **14***a* which rides over and is guided by mounting column **16**. A set screw **17** is provided to fix the vertical position of the helmet on mounting column **16**.

Chair **12** is formed with an interior back wall **18** and an exterior back wall **20** which are spaced apart to define a cavity or chamber **22** within the chair back. Interior back wall **18** is provided with a number of vent holes **24** located in the area thereof which contacts the subject's back and shoulders. Chair **12** is also provided with two arm sections **26** on which are located the various controls referred to hereinafter.

Mounted on the exterior back wall **20** of chair **12** is an air conditioning unit **28** of conventional design which generates a supply of heated air to be used in drying the subect's hair. The output of air conditioning unit **28** is connected to the lower end of hollow mounting column **16** the interior of which comprises an air intake duct **30**. The upper end of air duct **30** is connected to the helmet air distribution system to be described.

Helmet **14** is roughly spherical in shape with the front and bottom portions removed to receive the subject's head and neck directly through the front of the helmet. Because of considerations to be more fully discussed below, a helmet design is possible which closely follows the user's hairline and thus the helmet presents an overall appearance similar to a football helmet with the subject's face and forehead fully exposed. In addition, the elongated downwardly extending rear section **14***a* of the helmet covers the lower part of the rear of the subject's head and her neck.

The helmet design of the present invention is to be contrasted with prior art drying hoods as represented by that shown in FIG. **2**. It can be seen from the drawing that such conventional drying hoods in operation extend downwardly over the subject's forehead to a greater extent than does the helmet of the present invention. In addition, conventional drying hoods do not satisfactorily cover the lower rear portion of the head and the neck and consequently drying takes longer in these areas.

A perforate liner shell **32** is removably mounted within the helmet as by screws or other conventional fastening means. Liner shell **32** is of the same general shape as the interior of helmet **14** but of smaller size so that a chamber **34** is formed between the two. This chamber serves as an air manifold for the helmet air distribution system, which will now be described.

Liner shell **32** is provided with a number of passageways **33** which extend through the shell. These passageways are directed diagonally through the liner with respect to a line normal to the liner interior surface and the direction of the various passageways over the surface of the liner shell is varied in such a manner that the air entering the drying cavity **36** formed by the liner interior surface is at all points directed toward the upper rear portion of the cavity. This creates a tangential or laminar air flow which follows the contour of the subject's head. The drying air flows through the subject's hair and along the head rather than impinging directly against the head as with conventional designs.

This important difference between the present invention and the prior art can be more readily understood by referring to FIGS. **3** and **4**. FIG. **3** is a sectional view of a conventional hood liner taken along a horizontal plane and FIG. **4** is a similar view of the liner shell of the present invention.

The directionally controlled airflow has the effect of maximizing drying effectiveness and reducing discomfort to the user. Additionally, in the case of those passageways located near the user's face and forehead, the rearward directed airflow eliminates any undesirable forward flow of drying air downward across the user's face, which in turn makes possible the improved helmet design of the present invention.

An air distribution system is mounted within helmet **14** in the chamber **34** formed between the inner surface of helmet **14** and the outer surface of liner shell **32**. This system includes central air conduit **38** communicating with intake air duct **30** at the bottom of the helmet rear section **14***a*. Conduit **38** terminates at its upper end at the upper rear portion of the helmet chamber **34** in a discharge orifice **44**. Two side conduits **40** branch from central conduit **38** at point **42** just below orifice **44**. These side conduits **40** are directed along the sides of chamber **34** and have their discharge orifices **46** located at the front portion of chamber **34**. This design is intended to overcome the problem recognized by the prior art that if a single air discharge is provided at the rear of the helmet the force of the airflow through the liner **32** will diminish in a direction towards the front of the drying cavity **36**. The air distribution system of the present invention tends to substantially equalize the airflow at all points within chamber **34** by introducing drying air simultaneously at the front and back of the chamber. The uniform flow is further aided by forming a necked restriction **48** on central conduit **38** at its discharge end to create sufficient back pressure to equalize the airflow through the various conduit branches.

The hair drying apparatus of the present invention is provided with a means of selectively diverting a controllable portion of the heated air flowing into helmet **14** and directing this air through the vents **24** in the chair back **18** so as to produce a relaxing and therapeutic effect on the subject.

An aperture **50** is provided in mounting column **16** in the surface thereof which contacts the chair back exterior wall **20**. Contiguous to aperture **50** is a corresponding aperture **52** in chair-back exterior wall **20**. Apertures **50** and **52** are in registration with one another so that air can flow from air duct **30** to chair back cavity **22**. A sliding gate **54** is guided by tracks **56** so that it can be interposed between aperture **50** and aperture **52** thereby cutting off part or all of the airflow from air duct **30** into chair back cavity **22**.

Gate **54** is operably connected to control **58** positioned on the arm of chair **12** through control cable **60**. By means of control **58**, a desired portion of drying air flowing through air duct **30** can be diverted into the chair back cavity **22**, through vents **24** and against the user's back and shoulders providing a soothing and relaxing effect.

Chair **12** is also provided with control **62** which permits the user to adjust the chair in any one of a range of positions from fully upright to semi-reclining. Other features such as a lower back massaging unit or helmet stereo headphones can be included for added comfort and relaxation and the additional controls located on the chair arms.

Various other modifications of the embodiments shown and described are contemplated and will be apparent to those skilled in the art as not departing from the spirit and scope of the present invention as hereinafter defined by the appended claims.

What is claimed is:

1. A chair-type hair dryer comprising a chair and a drying helmet mounted on said chair, a source of drying air, and air discharge means distributed throughout the front portion of said helmet for directing substantially all of said drying air in a streamline manner toward the rear portion thereof through the user's hair in a controlled airstream directed tangentially along the contour of the head toward the rear portion thereof and away from the face.

2. A hair dryer as recited in claim **1** further comprising means for selectively diverting a controllable portion of said drying air through said chair against the user's back and shoulders.

3. A hair dryer as recited in claim 2 wherein said airflow diverting means comprises said chair being provided with a plurality of air vents formed in the surface thereof which support the user's back and shoulders and means for selectively diverting a controllable portion of said drying air through said air vents.

4. A hair dryer as recited in claim 1 wherein said drying helmet is shaped to conform to the user's hair line, said helmet having the form of a substantially spherical shell with the frontal and bottom portions removed to receive the user's head through the front thereof and to allow the user's face and forehead to be exposed, and having elongate side and rear portions to cover the lower rear portion of the user's head and neck;

said air discharge means includes a perforate liner shell removably mounted within said helmet and having substantially the same shape as said helmet and being spaced inwardly therefrom to define a chamber therebetween, said liner further having a plurality of passageways extending therethrough, a number of said passageways being oriented with their axes obliquely inclined to the surface of said liner and being collectively arranged to direct air introduced into said chamber tangentially along the contour of the user's head and through the user's hair in a direction toward the back of the head and away from the face; and

air distribution means for introducing drying air into said chamber.

5. A hair dryer as recited in claim 4 wherein said means for introducing drying air into said chamber comprises a central air duct connected at its lower end to said source of drying air and communicating at its upper end with the rear portion of said chamber and at least two side ducts connected at one end to said main duct and terminating at the other end at a position near the front portion of said chamber on either side of said helmet.

6. A hair dryer as recited in claim 5 wherein said central air duct is provided with a necked restriction at its upper end, whereby the flow of air through said side ducts is equalized with that issuing from said central duct at the rear of said chamber.

7. A hair drying device comprising:

a. a chair for supporting a subject whose hair is to be dried, said chair having a plurality of apertures formed in the surface thereof which support the subject's back and shoulders;

b. a drying helmet mounted on said chair and shaped to conform to the subject's hairline, said helmet comprising a substantially spherical shell having the frontal and bottom portions removed to receive the subject's head directly through the front thereof and to allow the subject's face and forehead to be exposed, and having elongate side and rear portions to cover the lower rear portion of the subject's head and the neck;

c. a perforate liner shell defining a hair drying cavity and being removably mounted within said helmet and having substantially the same shape as said helmet and being spaced inwardly therefrom to define a chamber therebetween, said liner further having a plurality of passageways extending therethrough at the front and rear with substantially all of said passageways at the front having an axis obliquely inclined to the surface of said liner and being collectively arranged to direct air introduced into said chamber in a streamline airflow toward the rear portion of said cavity and tangentially along the subject's head and through the subject's hair in a direction toward the back of the subject's head and away from the face; and

d. air distribution means for introducing drying air into said chamber including means for selectively diverting a controllable portion of said drying air through the apertures in the back of said chair.

8. A hair dryer as recited in claim 7 wherein said means for introducing drying air into said chamber comprises a central air duct connected at its lower end to said source of drying air and communicating at its upper end with the rear portion of said chamber and at least two side ducts connected at one end to said main duct and terminating at the other end at a position near the front portion of said chamber on either side of said helmet.

9. A hair dryer as recited in claim 8 wherein said central air duct is provided with a necked restriction at its upper end, whereby the flow of air through said side ducts is equalized with that issuing from said central duct at the rear of said chamber.

10. In a salon-type hair dryer having a chair for supporting a subject whose hair is to be dried and a drying hood mounted above the chair for receiving the subject's head the improvement comprising the combination of

a. a perforate liner shell defining a hair drying cavity and being removably mounted within said hood and being spaced inwardly therefrom to define a chamber therebetween, said liner further having a plurality of passageways extending therethrough at the front and rear with substantially all of said passageways at the front having an axis obliquely inclined to the surface of said liner and being collectively arranged to direct air introduced into said chamber in a streamline airflow toward the rear portion of said cavity and tangentially along the subject's head and through the subject's hair in a direction toward the back of the subject's head and away from the face; and

b. air distribution means for introducing drying air into said chamber including means for diverting a controllable portion of said drying air through a plurality of apertures formed in the surface of said chair which supports the subject's back and shoulders.

11. A hair dryer as recited in claim 10 wherein said means for introducing drying air into said chamber comprises a central air duct connected at its lower end to said source of drying air and communicating at its upper end with the rear portion of said chamber and at least two side ducts connected at one end to said main duct and terminating at the other end at a position near the front portion of said chamber on either side of said helmet.

12. A hair dryer as recited in claim 11 wherein said central air duct is provided with a necked restriction at its upper end, whereby the flow of air through said side ducts is equalized with that issuing from said central duct at the rear of said chamber.

13. A perforate liner shell defining a hair drying cavity for mounting within a hair drying hood and being so formed as to conform to a user's hairline and cover a user's head of hair, said liner having a plurality of passageways extending therethrough at the front and rear with substantially all of said passageways at the front having an axis obliquely inclined to the surface of said liner shell and being collectively arranged to direct drying air introduced under pressure at the exterior surface thereof into said cavity in a streamline airflow toward the rear portion through the user's hair in a direction following the contour of the head and toward the back of the head and away from the face.

14. A salon-type hair dryer comprising:

a. a chair for supporting a subject whose hair is to be dried;

b. a drying helmet mounted on said chair and shaped to conform to the subject's hairline, said helmet comprising a substantially spherical shell having the frontal and bottom portions removed to receive the subject's head directly through the front thereof and to allow the subject's face and forehead to be exposed, and having elongate side and rear portions to cover the lower rear portion of the subject's head and the neck;

c. a perforate liner shell defining a hair drying cavity and being removably mounted within said helmet and having substantially the same shape as said helmet and being spaced inwardly therefrom to define a chamber therebetween, said liner further having a plurality of passageways extending therethrough with substantially all of the passageways at the frontal portion of said liner shell being disposed with their axes obliquely inclined to said liner shell so as to direct air introduced into said chamber in a streamline airflow toward the rear portion of said cavity and tangentially along the top and sides of subject's head toward the rear portion thereof and away from the face; and

d. air distribution means for introducing drying air into said chamber.

* * * * *