Nov. 1, 1966

J. H. CLARK, JR

3,281,955

HAIR DRYER BONNET

Filed Nov. 26, 1963

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FIG. 1

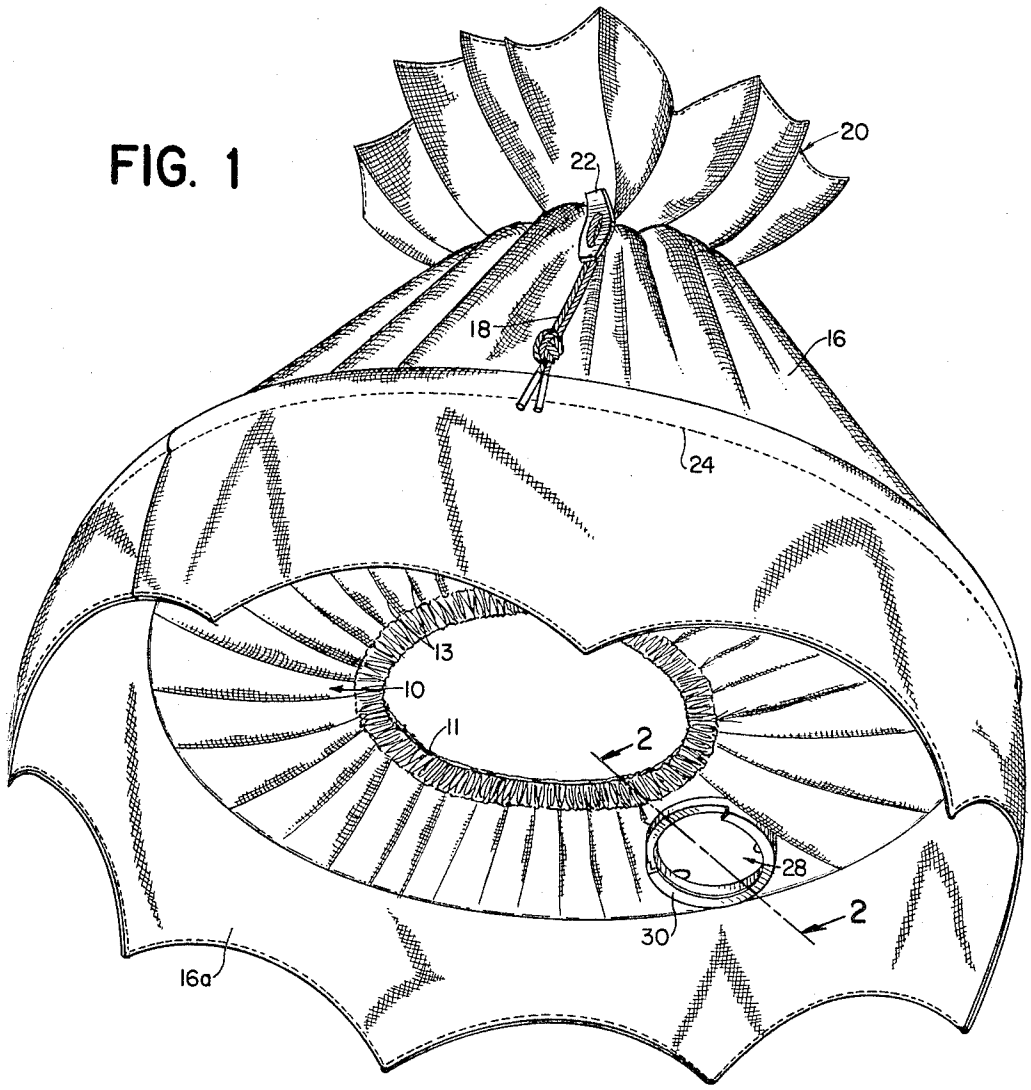
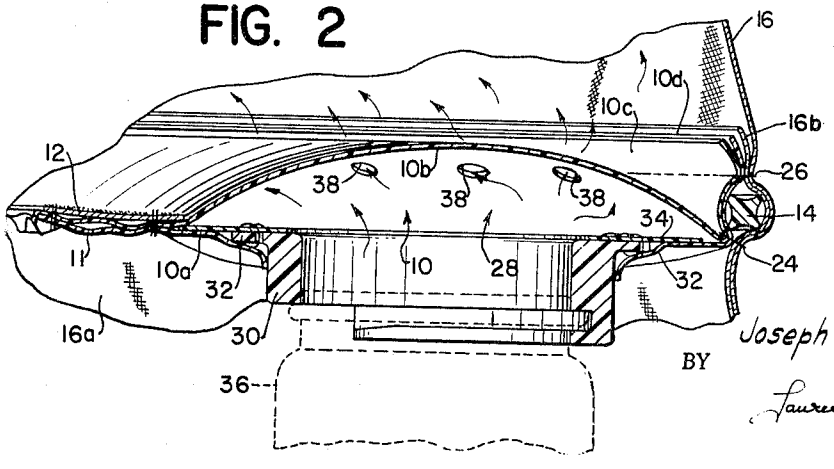


FIG. 2



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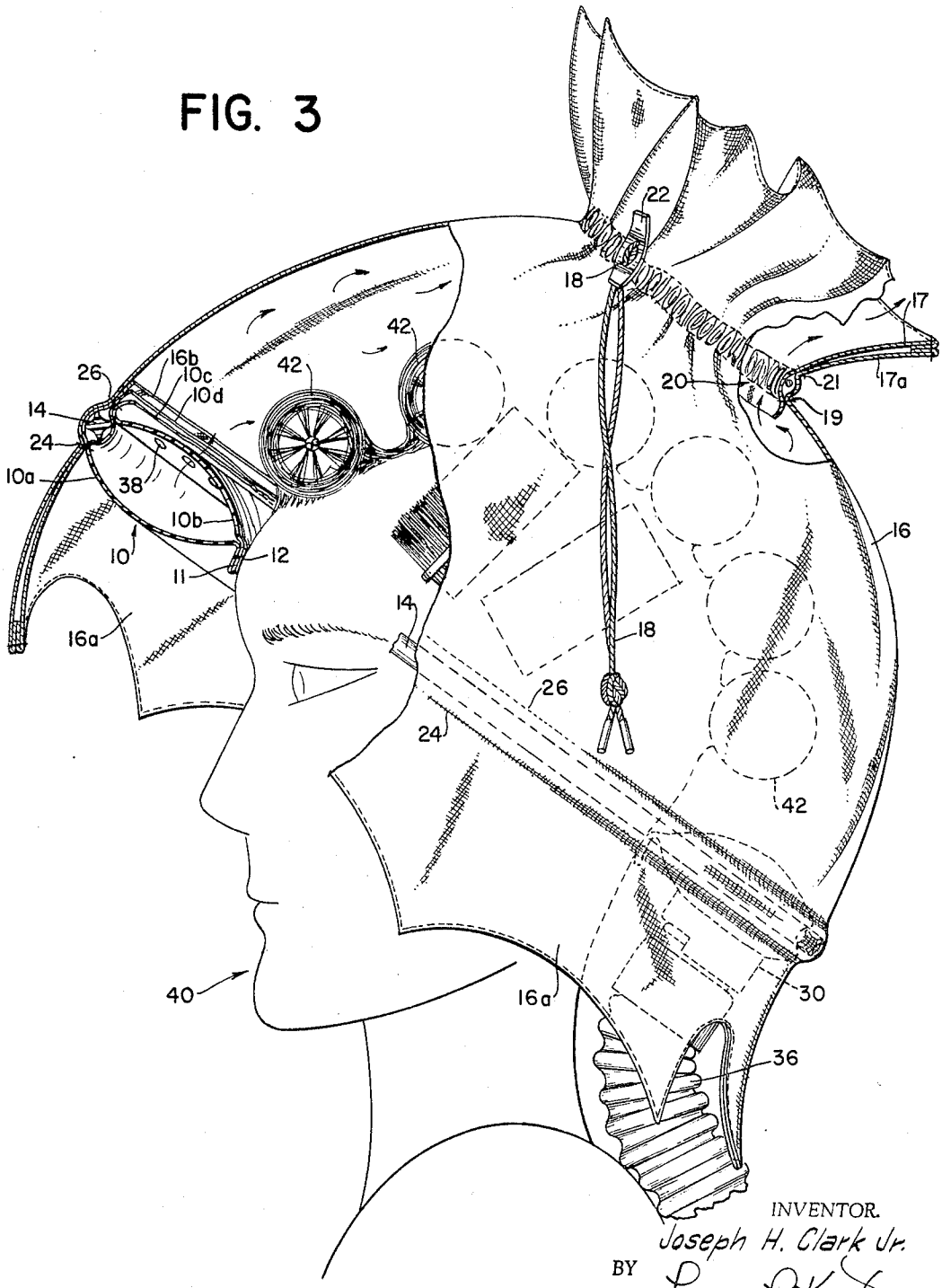
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2 Sheets-Sheet 2

FIG. 3



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HAIR DRYER BONNET

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This invention relates to hair drying apparatus and more particularly to an improved hair bonnet adapted for use with a flexible air delivery hose.

Hair dryer bonnets of the large flexible type adapted for use with personal hair dryers including a flexible air delivery hose are currently being manufactured in large quantities. Thus, it is highly desirable that such bonnets be simple in construction to minimize the cost thereof while yet providing efficient drying operation. At the same time, it is desirable that the bonnet be attractive and well made. Accordingly, it is a primary object of this invention to provide an improved low cost, large, flexible hair dryer bonnet having a unique but simple construction.

Such hair bonnets are preferably made sufficiently large so as to be spaced from the head of the user in order to adequately accommodate the large hair curlers which are currently being used with some hair styles. One difficulty that has been encountered in using large flexible bonnets of the type known in the prior art is that the weight of the air delivery hose tends to pull the portion of the bonnet adjacent the hose connection away from the user's head causing the side of the bonnet opposite from that to which the hose is attached to be pressed against the user's head. This action may restrict the airflow which hampers the drying operation and may result in a damp spot when the remainder of the hair has been adequately dried. It is highly desirable that such difficulty be avoided. Hence, it is a further object of this invention to provide an improved hair dryer bonnet which while in operation will remain adequately spaced from the user's head to accommodate large hair styles, and to obtain uniform drying of the hair.

Briefly stated, the hair dryer bonnet assembly of the invention includes a support ring substantially larger than the human head; a torus of flexible air impervious material having its outer boundary attached to the ring, and a flexible bonnet or head covering secured to the outer diameter of the torus and extending upwardly from the torus. The inner boundary of the torus is defined by a flexible band adapted to fit snugly over a human head to be positioned slightly below the hair line. Since the torus has a maximum diameter approximately equal to the ring diameter, the ring effectively spaces the outer boundary of the flexible torus from the user's head. An air inlet is formed in the lower wall of the torus opening downwardly with respect to the position of the torus when on the head, and the inlet is adapted to be connected to a flexible air delivery hose. A plurality of air jet openings are formed in the upper surface of the torus to discharge air upwardly through the hair of the user, and the bonnet portion above the torus confines the air to the proximity of the head. An air outlet formed in the bonnet permits the escape of the moisture-laden air. Such construction provides efficient hair drying operation and further provides sufficient support for the air delivery hose so that

the weight of the hose does not pull portions of the bonnet against the user's head to restrict air flow.

Further features, objects and advantages will become apparent with reference to the following drawings in which:

FIG. 1 is a perspective view of the hair dryer bonnet assembly of the invention;

FIG. 2 is a cross-sectional view taken along the lines 2—2 of FIG. 1; and

FIG. 3 is a side elevational view of the bonnet of FIG. 1 when in operation on a human head showing a portion of the bonnet assembly in cross-section and further showing the airflow through the bonnet.

Referring now to the drawings, the hair dryer bonnet assembly of the invention may be seen as including means defining an annular passage or torus **10** forming an air distributing channel or manifold. The torus is preferably made of two layers of thin, sheet-like, flexible material such as plastic, tightly woven cloth, or other similar, substantially air impervious material. The inner boundary or circumference of the torus defines an opening for permitting the torus to be placed on the head of a user, as can be seen in FIG. 3. To accommodate various head sizes a resilient band **11** of elastic or similar material may be sewn or otherwise attached to the inner boundary of the torus to insure an adjustable, relatively airtight fit. When the bonnet is not on a user's head, the inner boundary of the torus assumes a position substantially smaller than a normal adult, human head, as seen in FIG. 1. To protect the user's skin, the inner layer **12** of the head engaging band **11**, as viewed in FIG. 3, may be formed of a suitable soft material such as nylon or the like.

A rigid or semi-rigid ring **14** made of plastic, metal or other suitable material, is secured to the outer edge of the torus to give shape and support to the softer more flexible bonnet assembly, as will be later discussed in greater detail. Alternatively, the ring **14** may be encircled by the torus immediately within the torus outer circumferential boundary so that the ring urges the torus outwardly and holds it in a taut or extended position. The ring **14** has a circumference approximately equal to the maximum circumference of the torus and is substantially larger than a normal human head to insure that the bonnet assembly will be sufficiently large to accommodate the various hair styles. As can be seen from FIG. 2, the ring has a cross-section of small area with roughly a square shape with concave sides. Material of such construction is inexpensive and readily available, and yet provides the necessary support. Naturally, other cross-sectional shapes may be utilized if desired.

Also secured to the outer edge of the torus **10** is a flexible bonnet **16** having a single layer portion extending upwardly from the torus. The upper end of the bonnet is drawn together by an adjustable draw string **18** to define an air outlet **20**, as seen in FIG. 3. The draw string **18** may be secured in its adjusted position by means of a suitable retaining member **22**. As a construction technique, the upper end of the bonnet may be doubled on itself to form layers **17** and **17***a* and secured by two seams **19** and **21** defining a slot for receiving and positioning the draw string **18**. The material extending above the draw string including the scalloped upper edge serves primarily a decorative function. Similarly, the lower portion **16***a* of the bonnet is doubled on itself and extends

downwardly from the torus to define a circumferential skirt having a scalloped lower edge. Although the skirt is primarily provided for decoration purposes, its weight does have some minor effect on the positioning of the bonnet.

The bonnet portion **16** may be permanently or removably secured to the torus **10** and the ring **14** in any suitable manner. In the arrangement shown in FIG. 2, the outer portion of the torus **10** has been sewn at seams **24** and **26** to the bonnet **16**. These seams define a circumferential slot or opening for receiving and positioning the ring **14**.

The lower wall **10***a* of the torus **10** is provided with an air inlet opening **28** defined by a coupling member **30**. The coupling member, which is made of plastic or other suitable material, is provided with a plurality of small openings in its radially extending flange **32** so that the member **30** may be sewn to the bottom wall **10***a* intermediate the ring **14** and the head band **11**. An annular layer of heavy material **34** may be secured to the bottom wall **10***a* and to the flange **32** of the coupling member **30** to provide adequate support for the coupling and to prevent air leakage. The coupling member **30** is adapted to receive the end of a lightweight, flexible air delivery hose **36** preferably having a large diameter to handle adequate air flow. It is to be understood that the air delivery hose is connected to a suitable source of heated air such as any one of the well-known portable dryer power units.

The upper wall **10***b* of the torus is provided with a plurality of small apertures **38** spaced to form a series of openings positioned to direct the air more or less upwardly to pass through the user's hair and be exhausted through the air outlet **20**. It should be noted that the apertures in the distribution channel are positioned far enough away from the head engaging band to prevent the air from impinging directly on the scalp. Although the proper positioning is dependent on the size of the torus and other factors, in the arrangement of FIG. 3, the holes are located closer to the outer diameetr of the channel or ring **14** than to the band **11**. Such location also minimizes the possibility of an aperture being blocked by one of the folds **13**. These apertures are of equal size and are equally spaced around the torus to provide uniform air distribution. However, it should be understood that the apertures can be of various sizes and spaced in the manner desired to obtain a particular airflow pattern. In the arrangement shown, 34 holes each with a 7/32 inch diameter are provided.

When air is not being supplied, the torus naturally collapses to a flattened state in view of the soft flexible material employed. When the hair bonnet assembly is in operation on a human head **40**, as in FIG. 3, the air entering through hose **36** into the torus **10** causes the torus to tend to assume a shape having a roughly circular cross-section although the exact shape is dependent on the air pressure, the size and number of air holes **38**, and the size of the user's head. As shown by the arrow in the drawing, the air escapes upwardly through the openings **38** and passes in and around the curls **42** before being exhausted through the top air outlet **20**. It should be noted that the apertures **38** are positioned so that the drying air is not directed toward the scalp but instead is directed somewhat tangentially to the head to pass through the hair.

Since the torus and the support ring are vital elements of the invention, specific dimensions of a preferred form shown in the drawings will be given. To space the bonnet adequately from the head so as to accommodate large hair styles, the diameter of ring **14** and the outer diameter of the torus are each approximately eleven inches, thus defining a closed boundary of approximately thirty-four to thirty-five inches. The radial dimension of the torus when not on the user's head and in the uninflated condition shown in FIG. 1 is typically about three inches, thus making the torus inner diameter roughly five inches with an inner boundary of roughly sixteen inches. Considering the size of a typical human head, it can be realized that the ring and the outer edge of the torus remain adequately spaced about two inches from the head when the bonnet is placed on the head. Naturally these dimensions can be varied somewhat and satisfactory results will still be obtained. Also, it is not essential that the inner boundary be perfectly circular since the typical head is not circular.

The hair bonnet assembly may be fabricated in the manner desired; however, a preferred method will be described. The bonnet portion **16** is formed from a flat blank or piece of rectangular material which is folded and sewn or otherwise connected into its finished shape. As already explained, the upper portion of the rectangular sheet is doubled upon itself and sewn in this position by the two parallel seams **19** and **21** which define a slot for receiving and positioning the draw string **18**, and the lower portion of the rectangular blank is doubled on itself and connected by seams **24** and **26**.

The torus may also be formed from a substantially rectangular blank or sheet of material. After the air discharge openings **38** and the air inlet **28** have been cut, the blank is folded upon itself along its longitudinal axis. The short edges of this double layer of material are then sealed by a seam, and the then semi-finished torus is placed into position on the bonnet blank **16**. The free edges **10***c* and **10***d* of the unfinished torus are aligned with the lower edge **16***b* of the bonnet portion **16** as can be seen in FIG. 2. When in this position, the seams **24** and **26** are formed in the spaced parallel relation shown to serve a three-fold function. In addition to having the lower portion of the bonnet secured in its doubled position by the seams, the torus **10** is secured to the bonnet **16** and the seams define a circumferential slot or groove adapted to position and receive the support ring **14**.

In the next assembly step, the bonnet portion **16** is formed into its cylindrical shape by making a vertical seam along the free edges of the bonnet, and the elastic band **11** is sewn into the edge of the torus eventually forming the inner boundary of the torus. As can be seen from FIG. 1, the band causes the material to be bunched or gathered along the inner edge forming folds or pleats **13** which permit the torus to fit various head sizes. Subsequently, the semi-rigid ring in strip form is inserted into the slot between seams **24** and **26** and the ends of the strip are secured by a suitable sleeve fitting over the loose ends to form the ring shape. If desired, the two ends of the torus may be joined to prevent air leakage. As another finishing step, the draw string **18** is threaded through the slot in the upper portion of the bonnet.

From the foregoing, it may be noted that air communication is not maintained throughout the entire air passage of the torus in that the shorter ends of the blank forming the torus were independently sealed. Nevertheless, it has been found in operation that the air pressure and air velocity characteristics are such that adequate and uniform air distribution is obtained throughout the torus even though the ends are closed. Further, it has been found that it is not absolutely necessary to have the air inlet **28** positioned midway between the closed ends of the torus so as to obtain what might appear to be a balanced arrangement. In other words, even though the outlet **28** may be somewhat closer to one end than the other, uniform distribution is still obtained. In any event, it should be understood that for purposes of this specification the word "torus" includes such closed end construction as well as a complete air ring.

In the event the decorative skirt portion **16***a* of the bonnet is not desired, and the entire assembly is to be made of the same material, a simpler less costly construction method may be employed. For example, a single sheet of material may be doubled on itself at its lower end

and connected by a seam in this position to form the torus. The support ring **14** may be inserted in the torus adjacent the seam and an elastic band secured to the lower edge to form the inner diameter of the torus.

One of the unique features or benefits from the hair dryer construction of the invention which has been shown and described is that during use the outer edge of the air distribution ring or torus **10** remains adequately spaced from the user's head so that rapid and uniform drying of the hair is obtained. The torus is initially positioned in the manner shown by means of the support ring **14** and the elastic band **11**. During operation, the inflation of the torus also helps maintain the proper spacing. The weight of the air hose **36**, however, produces a torque on the bonnet around an imaginary axis extending in an area approximately through the user's ears. Such torque tends to pull the front of the bonnet toward the user's hair. Attaching the hose as shown in the bottom wall of the torus **10**, which is about as close to the head as possible, minimizes the moment arm and thus the torque produced. Also, with such attaching location, the hose is normally partially supported on the user's back or shoulder. The net result is that the semi-rigid ring **14** and the outer edge of the torus are restrained from moving more closely towards the user's head. Thus, the air discharge apertures **38** remain unblocked in all areas of the ring thereby insuring uniform air distribution.

Introducing air into the bonnet may cause the upper bonnet portion **16** to billow outwardly somewhat to affect air circulation in and around the hair. The amount of billowing is of course determined by the air pressure and the weight of the material employed. With lightweight, air impervious material, such as plastic, the bonnet portion **16** is considerably inflated. With a heavier material, which may even be slightly porous, if made of cloth for example, the billowing effect is not so great, but adequate air distribution is nevertheless obtained. The top air outlet opening can of course be adjusted to obtain the most efficient air outlet size consistent with the material used in the bonnet and consistent with the size of the user's head and the style of hair-do. Also, the adjustable opening is advantageous for permitting the user to reach in to test the dryness of the hair as the drying operation proceeds.

It was previously mentioned that the torus may be releasably secured to the bonnet portion. This may be accomplished by any suitable means. Such construction offers several possible advantages and points out the uniqueness and versatility of the basic bonnet assembly of the invention. For example, if the torus is made of plastic and the bonnet portion of cloth, the bonnet portion can be removed and washed separately. As another possibility, the bonnet portions may be made of disposable material; or a person can have several different bonnet portions each having a different ornamental appearance so that the bonnet may be selected to suit the occasion.

While a specific embodiment of the invention has been illustrated and described, it should be understood that various other modifications will come to the mind of one skilled in the art. Accordingly, it is intended that all such variations and modifications that fall within the true spirit and scope of the invention be included within the appended claims.

What I claim is:

1. A hair dryer bonnet assembly comprising: a support ring substantially larger than the human head; a torus of flexible air impervious material having an outer boundary secured to said ring for said ring to hold said outer boundary of said torus away from the head of the user and an inner boundary defining a flexible head engaging band; an air inlet in the lower wall of said torus positioned between said ring and said band; said inlet being adapted to be connected to a source of drying air; a plurality of air jet openings in the upper surface of said torus to discharge air generally upwardly through the hair of the user; flexible bonnet means secured to the outer portion of said torus and extending upwardly from said torus to confine the air to the proximity of the head; and air outlet means formed in said bonnet means for allowing the escape of the moisture-laden air.

2. A hair dryer bonnet assembly comprising: a support ring substantially larger than the human head; a torus of flexible air impervious material of a maximum diameter approximately equal to said ring diameter and having its outer edge secured to said ring for said ring to hold said outer edge of said torus away from the head of the user; said torus having an inner boundary defining a flexible head engaging band, an air inlet positioned in the lower wall of said torus inwardly from said ring opening generally downwardly with respect to the position of said torus when on the head, said inlet being adapted to be connected to a flexible air delivery hose; a plurality of air outlet openings spaced in the upper surface of said torus to discharge air upwardly around the head of the user; a layer of flexible material secured to the outer portion of said torus and extending upwardly from said torus to confine the air to the proximity of the head; means attached to the upper end of the layer of flexible material for drawing the upper ends inwardly to define an adjustable air outlet for allowing the escape of moisture-laden air.

3. A hair dryer bonnet assembly comprising: a torus of flexible plastic air impervious material of a maximum diameter substantially larger than the human head, a support ring attached to the outer boundary of the torus for said ring to hold said outer boundary of said torus away from the head of the user; a flexible head engaging band defining the inner edge of said torus; an air inlet positioned in the lower wall of said torus inwardly from said ring opening downwardly with respect to the position of said torus when on the head; said inlet being adapted to be connected to a flexible air delivery hose, a plurality of air outlet openings spaced in the upper surface of said torus to discharge air upwardly around the head of the user; a single layer of flexible material secured to the outer boundary of said torus and extending upwardly from said torus to confine the air to the proximity of the head; and air outlet means defined by said layer of material for allowing the escape of moisture-laden air.

4. A hair dryer bonnet assembly comprising: a torus of flexible air impervious material having a maximum diameter of approximately eleven inches; a support ring attached to the outer edge of the torus to hold the outer edge spaced from a user's head; a flexible band secured to the inner edge of said torus to define an adjustable opening with a boundary of approximately sixteen inches so that when the torus is placed around the user's head the band will snugly engage the head; an air inlet positioned in the lower wall of said torus inwardly from said ring opening and adapted to be connected to a flexible air delivery hose; a plurality of air outlet openings spaced in the upper surface of said torus to discharge air upwardly around the head of the user; a layer of flexible material secured to the outer portion of said torus and extending upwardly from said torus to confine the air to the proximity of the head; means attached to the upper end of the layer of flexible material for drawing the upper ends inwardly to define an adjustable air outlet for allowing the escape of moisture-laden air.

5. A hair dryer bonnet assembly comprising: a support ring substantially larger than the human head; a double layer of flexible air impervious material arranged to define an annular air passage, said air passage material having an outer boundary substantially equal to and secured to said ring for said ring to hold said outer boundary of said torus away from the head of the user; a flexible head engaging band secured to said air passage material to define an inner boundary; an air inlet in one

layer of said air passage material between the ring and the band, said inlet being adapted to be connected to a source of drying air; a series of spaced air jet openings in the other layer of said air passage material between the ring and the band to discharge air through the hair of the user; flexible bonnet means secured to the ring and the material forming the outer boundary of the passage to confine the air to the proximity of the user's head; and air outlet means formed in said bonnet means for allowing the escape of the moisture-laden air.

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