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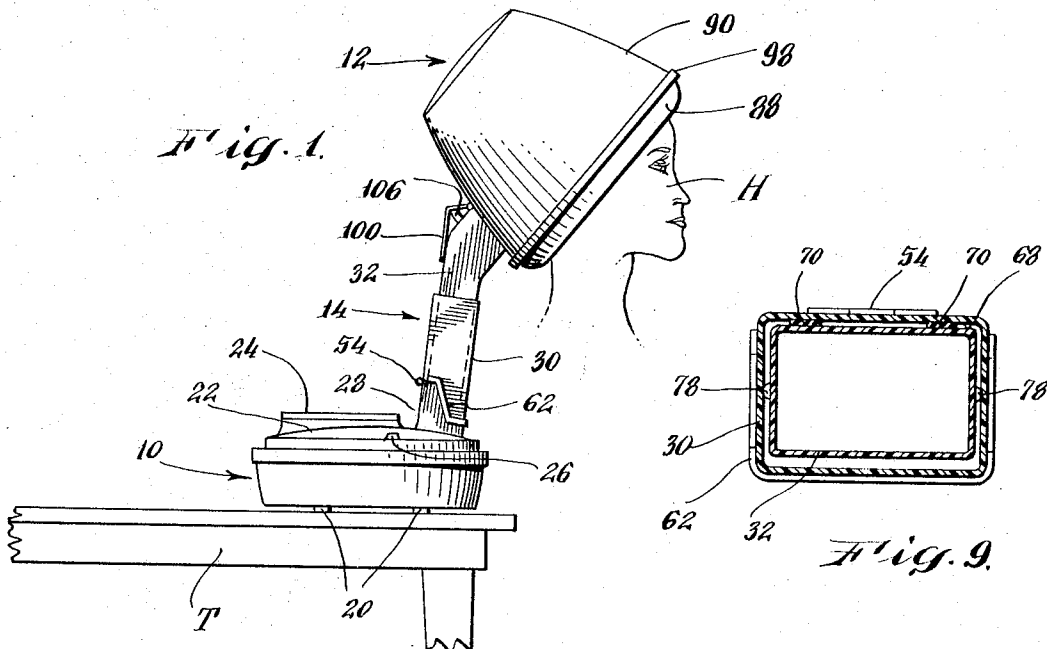
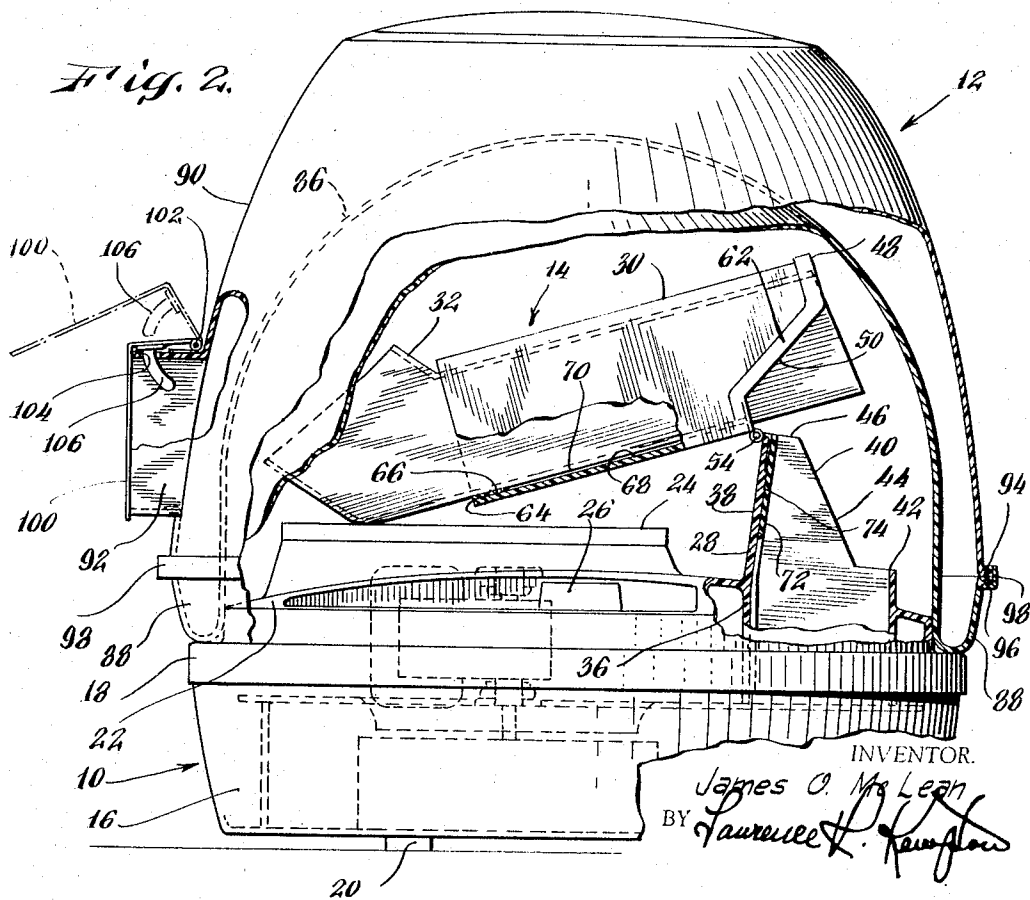
J. O. McLEAN

3,362,086

HAIR DRYER WITH SELECTIVE TELESCOPIC ADJUSTING MEANS

Filed May 31, 1966

2 Sheets-Sheet 1



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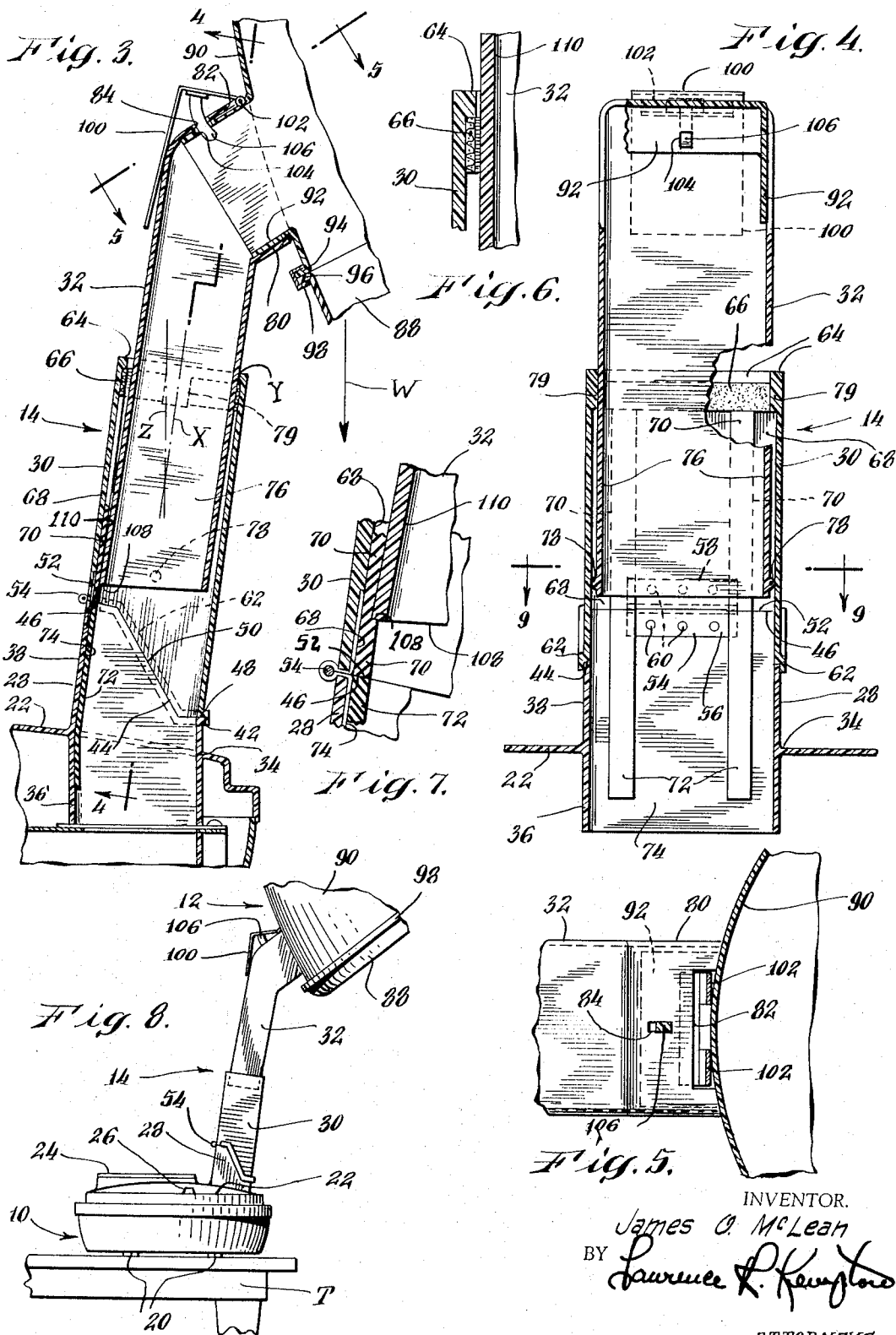
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2 Sheets-Sheet 2



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1

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HAIR DRYER WITH SELECTIVE TELESCOPIC ADJUSTING MEANS

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This invention relates to household hair dryers and, more particularly, to one possessing some of the advantages of the professional type.

Hair dryers generally fall into two types, namely, those of the professional type which usually are in the nature of permanent installations in beauty parlors, and those of the household type which usually are small portable appliances that comprise a means for producing a flow of heated air and a flexible cap or bonnet for placement on the head of the user and distributing the heated air to the hair to be dried. The professional type is massive, costly and does not lend itself to feasible utilization in the home. The household type, while generally satisfying its intended functional purposes, usually does not operate with the efficiency or effectiveness of the professional type and, in general, has considerable room for operational improvement.

A principal structural difference between professional and the household hair dryers is that the former usually employs a rigid heated air distributing hood within which the head of the user is suitably positioned, which is an extremely efficient and effective hair drying means, whereas the latter usually employs a flexible heated air distributing cap or bonnet that the user places on her head, which is not nearly as efficient or effective as the hood. In a beauty parlor where a professional hair dryer is utilized, any adjustments that are necessary to properly position the hood relative to the head of the person whose hair is being dried are made by the attendant, whereas when a household dryer is employed the user herself usually must make any necessary adjustments. Adjustment of a hood is more difficult than adjustment of a cap or bonnet.

Attempts have been made to provide a rigid heated air distributing hood on household hair dryers, but the problem of providing a satisfactory adjustable mounting for the hood that can readily selectively be adjusted for convenient and proper positioning by the user on her head prior to and during operation of the hair dryer has not been solved. Adjustable mountings have been employed which utilize telescoping ducts that are: frictionally associated; include positive mechanical clamping means, or employ coiled strip springs of the negative gradient type; however, all known duct adjusting means are structurally complicated, expensive and/or difficult to operate.

It is an object of this invention to provide an improved hair dryer for utilization in the household but which possesses some of the functional advantages of a professional hair dryer, including a rigid heated air distributing hood and an improved readily selectively operated adjustable mounting means for the hood.

In accordance with one aspect of the invention, there is provided a hair dryer which is constructed so as to be capable of being selectively compactly disassembled into a portable case-like structure for storage or carrying, and assembled into an operating configuration wherein it may be conveniently placed on a table or a suitable counter top. It includes a heated air flow producing means and a rigid heated air distributing hood that may be readily selectively adjustably positioned on the head of a user by the user. In addition to the heated air flow producing means and the rigid hood, the hair dryer includes an inclined, generally vertically extending heated air duct means for supporting the hood and directing heated air from the producing means to and into the hood, where

2

it is distributed throughout the hair of the user. In order to properly position the hood and account for the different environments in which the hair dryer may be employed, such as the different heights of tables and counter tops on which it may be supported, as well as the height of different individuals who may use it, the heated air duct means is constructed of a plurality of tubular telescoping duct members which are longitudinally adjustable selectively by the user. Such adjustment can be readily made even while the user is positioned with her head partially disposed within the hood in the hair drying operating position, to extend or contract the duct means so as to adjust the position of the hood to the desired height. The heated air flow producing means is mounted in a base of the hair dryer, and the duct means is supported by the base so as to generally vertically extend, but to incline at a slight angle to the vertical and, therefore, the weight of the hood and an upper air duct member to which it is attached is operative at a center of gravity which lies on a vertical line that passes laterally of the remaining lower duct members and, therefore, creates an imbalance of the hood and upper duct member relative to the remaining duct members and the base, which imbalance causes the upper duct member to be biased in a direction as to be slightly askew relative to its adjacent lower duct member, which causes upper and lower horizontal lines of contact between portions of the upper duct member on its opposite sides and the adjacent lower duct member. On the inner side of the adjacent lower duct member, resilient material is disposed in the area where the lower line of contact between the duct members occurs, and a portion of the lower edge of the upper duct member is biased into digging contact with the resilient material into a frictional and biting relationship with it, whereby the upper duct member with the attached hood remains securely positioned in any relative longitudinal position to which it is adjusted with regard to the lower duct member as a result of this relationship. Because of the geometrical disposition of the parts, to further adjust the hood, it is only necessary to lift the hood slightly to reorient the upper duct member so as to be coaxial with its adjacent lower duct member, at which time these two duct members may be freely slidable to extend or contract.

Other objects and advantages of this invention will be apparent from the following description taken in connection with the accompanying drawings, in which:

FIG. 1 is a side elevational view of my improved hair dryer shown resting on the top of a table and having its hood mounted on the head of a user;

FIG. 2 is an enlarged side elevational view, with portions cut away and shown in section for clarity, of my improved hair dryer operationally disassembled and illustrated in its compacted storage or carrying condition;

FIG. 3 is a fragmentary central vertical sectional view of my improved hair dryer illustrated in its operative condition taken through a portion of the base, the heated air duct means and a portion of the hood, and drawn on the FIG. 2 scale;

FIG. 4 is a sectional view taken substantially 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 enlarged view of a portion of FIG. 3;

FIG. 7 is an enlarged view of another portion of FIG. 3;

FIG. 8 is a view generally similar to FIG. 1, but showing the heated air duct means adjusted to position the hood at a higher position, and

FIG. 9 is a sectional view taken substantially on line 9—9 of FIG. 4.

Referring to FIGS. 1 and 8, my improved hair dryer is illustrated in condition for use in the home, and it generally comprises: a base assembly 10 mounted on a house-

hold table T; a rigid hood assembly 12 positioned on the head H of a user, and interconnecting selectively longitudinally adjustable heated air duct means 14. FIGS. 1 and 8 illustrate two representative hood positions in the operative condition of use of the hair dryer in the home. As may be visualized, the user may be of varying heights and seated on a chair of varying heights, and the table T may be of varying heights. Therefore, the hair dryer must be selectively adjustable to compensate for all these variables and position the hood comfortably on the user's head. When commencing to use the hair dryer, it may also be visualized that the user will, in all probability, place the entire hair dryer on a table or similar appropriate counter top support, and then sit on a chair and position her head within the rigid hood assembly 12. In order to comfortably position the hood assembly on her head, it may be necessary to adjust its vertical position and, therefore, the user must be able to readily selectively adjust the vertical position of the hood assembly while she is seated with her head disposed within it. It is the principal purpose of the invention to provide an improved adjustable means in the hair dryer which will permit this desirable operation.

The base assembly 10 includes a housing which houses the usual means for producing a flow of heated air which is directed up through the duct means 14 and into the hood assembly 12. The internal heated air flow producing mechanism forms no specific part of my invention and, therefore, will not be described in detail. However, as those skilled in the art know, it usually includes an electrical heating means for heating air; electrically operated impeller means for causing the heated air to flow; suitable control means for the heating and impeller means including a manually operated selector switch accessible from the exterior of the base, and an over-heat protector switch disposed within the base, and suitable air passages formed in the housing including an ambient air inlet and an internal heated air outlet which communicates with the air duct means.

The hood assembly 12 may comprise a hood of known construction, such as the usual dome-shaped, spaced, double walled formation, that includes a solid imperforate outer wall having an air duct coupling member formed on it and communicating with the internal space between the double walls for admitting heated air thereto, and an inner perforate wall which permits heated air which has entered the space through the coupling member to be distributed throughout the interior of the inner wall and passed through the latter in jets to and through the hair to be dried.

The air duct means comprises a plurality of rigid air duct members which connect the base and hood assemblies and perform the dual functions of conveying the heated air produced by the heated air producing means in the base assembly to the hood assembly, and permitting ready selective adjustment of the position of the hood assembly.

The base assembly 10 includes a cup-shaped base member 16 and a cover 18 therefor which are secured to each other in any convenient manner to form the housing within which the aforementioned heated air flow producing means is disposed. The base member and cover may be made of a rigid plastic material of any suitable known type. A plurality of supporting feet 20 made of a suitable resilient material are secured to the bottom of the base member. Some of the internal heated air flow producing mechanism is schematically shown in dotted lines in FIG. 2, wherein the hair dryer is shown disassembled from its operative condition and disposed in its compact carrying or storage condition. The top of the cover 18 forms a deck 22. Centrally at one side of the deck is formed an air inlet grille 24. A suitable heater and impeller control switch operating knob 26 is mounted on the deck and is accessible to the user for manually controlling the heated air flow producing means. The grille 24 is aligned with the

ambient air inlet of the internal heater-impeller mechanism mounted in the base.

The air duct means 14 comprises three sections of air ducts, mounting duct 28, lower duct 30, and upper duct 32. The ducts may be made of the same rigid plastic material as that from which the base housing is made. The ducts are generally tubular members that are rectangular in cross section. Mounting duct 28 comprises a tubular section that is rigidly secured intermediate its ends to the deck 22 and extends through an opening 34 formed therein and, therefore, includes a downwardly depending portion 36 and an upwardly extending portion 38. The lower end of depending portion 36 is open and communicates with the heated air outlet of the heated air flow producing means in the base housing. The upper edge 40 of the upper portion 38 is of stepped configuration and includes horizontal lower edge portion 42, spaced parallel inclined side edge portions 44, and a horizontal upper edge portion 46. The upper portion 38 extends upwardly at a slight angle relative to the true vertical.

The lower duct 30 comprises an elongated tubular section of similar cross section to that of mounting duct 28. Its lower edge is formed in a stepped manner to complement the upper edge 40 of lower duct 38, and includes a lower horizontal edge 48, spaced parallel inclined side edges 50, and an upper horizontal edge 52. The lower duct 30 is hingedly secured to the mounting duct 28 by a metallic hinge assembly 54 which is connected to the mounting and the lower ducts at adjacent edges 46 and 52. As can best be seen in FIG. 4, the hinge assembly 54 comprises a pair of pivotally connected plates 56, 58 that are secured, as by rivets 60, respectively to adjacent walls 74 and 68 of the mounting and lower ducts 28 and 30. Along the edges 48 and 50 of the lower duct 30 there is formed a depending flange-like skirt 62 that overlaps edges 42 and 44 of the mounting duct 28 when the ducts are in operative position. At the upper end of the lower duct 30 there is formed a continuous inwardly extending rib 64 defining a generally rectangular opening which is slightly smaller than that of the rectangular opening throughout most of the duct 30. Adjacent to rib 64 is disposed a discontinuous ring formed by two strips of bristled sealing material 66 which rubs against the outer surface of upper duct 32 to air seal the connection. Extending downwardly and secured to the inner surface of the wall 68 of the lower duct 30 is a pair of spaced strips 70 of resilient material which is preferably sponge-like cellular plastic material, and which may be adhesively or similarly attached to the wall 68. A pair of similar spaced strips 72 are secured to the wall 74 of the mounting duct 28 as continuations of the strips 70.

Upper duct 32 is of a similar rectangular cross section to that of the ducts 28 and 30; however, it is smaller in size and its lower end is telescopically slidably disposed in the upper end of the lower duct 30. Adjacent the lower end of each of the spaced side walls 76 of upper duct 32 is disposed a stop plug 78. The stop plugs slidably contact inner surfaces of walls of the lower duct 30, and prevent the upper duct 32 from being moved entirely out of the lower duct 30 by relative upward movement. When the duct 32 reaches its uppermost position relative to the duct 30, stop lugs 78 contact stop lugs 79, which are enlarged portions of rib 64, to prevent further relative movement. The substantially upwardmost position of upper duct 32 is shown in FIG. 8. The upper end 80 of duct 32 extends at an angle relative to the major longitudinal axis of the duct 32. The exposed edge of the upper end 80 includes arcuate side edges which conform to the curvature of the outer wall of the hood and is adapted to embrace it when the hood is attached to the upper duct. One wall of the upper end is notched at 82 and includes a slot 84 spaced from the edge of the notch to facilitate such attachment.

The hood assembly 12 comprises a rigid hood formed of the same material as the base housing and air ducts, and includes an air duct coupling member for attachment

5

to end 80 of upper duct 32. The hood comprises a pair of spaced dome-like walls, the inner wall 86 of which is perforated in a known manner and includes an upwardly extending rim 88 with a flange 96 for securement to the outer wall 90, which is imperforate except for the heated air inlet coupling hub 92, which is integrally formed with the outer wall 90. The lower edge of the outer wall 90 is open and has an outwardly flared flange 94 which co-operates with a flange 96 formed on the rim 88 to secure the hood walls together. These flanges are secured to each other in any convenient manner and may be covered by a trim ring 98, to form the hood.

Hingedly secured to the outer hood wall 90 at the upper side of the hub 92 by hinge 102 is an angularly bent metal cover plate 100. In FIG. 2 the cover plate 100 is illustrated in solid lines in its position disposed on the hood outer wall to close the air inlet hub 92 when the dryer is in storage condition, and in phantom lines in its open position relative to the air inlet hub when the dryer is in operative condition. The air inlet hub 92 is tubular and generally rectangular in cross section, but slightly smaller than the opening formed by upper end 80 of the upper duct 32 and, therefore, it is adapted to be telescoped within it. The air inlet hub 92 has a slot 104 formed in it. After telescoping the air inlet hub 92 into the upper duct end 80, the cover plate 100 previously having been pivoted to its open position so as to permit sufficient clearance for the connection, the cover plate is swung back. A resilient arcuate finger 106 is carried by the plate 100 and is disposable within the aligned slots 84, 104 to lock the air inlet hub 92 to the upper end 80 of the duct 32 and thereby securely mount the hood assembly on the air duct assembly.

With the hair dryer construction described thus far, it will be apparent to those skilled in the art, a household hair dryer has been provided which includes the desirable professional hair dryer feature of a rigid hood assembly. The practical operational advantages of a rigid hood over the usual household flexible cap or bonnet are well understood in the art. Most importantly, however, novel structural means have been incorporated into my improved hair dryer for permitting selective adjustment of the position of the hood while it is on the head of a user with a minimal amount of effort. This means is exceedingly simple and comprises the utilization of the resilient strips 70, 72 combined with the unique geometrical orientation of the hood and air duct means relative to the base means.

As previously disclosed, the air duct means essentially comprises a plurality of telescoping tubular duct members that as a unit are longitudinally extensible and contractable. Ducts 30 and 32, and upper portion 38 of duct 28, are aligned on a common axis when in operational condition, and are secured to the deck 22, as can best be seen in FIG. 3, so their common axis X inclines slightly relative to a true vertical line Z. This causes the weight of the hood assembly 12 and the upper duct 32 when connected, as illustrated in the referred-to figure, to have its center of gravity disposed to act downwardly on a line arrow W that falls outside of the upper right hand edge of lower duct 30 to cause a clockwise moment of force to act on upper duct 32 which tends to pivot the hood assembly and upper duct about a pivot point formed at the line of engagement indicated by reference character Y in FIG. 3, which is the upper right hand edge of the lower duct 30 and the portion of the upper duct 32 disposed adjacent thereto. The clockwise force thus produced is operative to force the upper duct 32 out of a coaxial position relative to lower duct 30 into one which is askew. This causes the left hand lower edge 108 of wall 110 of upper duct 32 to make frictional contact with and dig into the adjacent portion of strips of resilient material 70 or 72, depending upon the relative position of the ducts 28, 30 and 32. The engagement of edge 108 with the flexible strips creates a sufficient amount of friction between these parts so as to maintain the ducts in any posi-

6

tion to which they are manually adjusted by the user and, in effect, create a form of locked condition. The structural relationship is such that it is only necessary to slightly lift the hood assembly to permit the telescoping ducts 30 and 32 to very readily be either contracted or extended by the user to produce the desired hood height adjustment. Such slight lifting causes the ducts 30 and 32 to assume a coaxial relationship, in which the ducts are, in effect, unlocked and readily adjusted. When the desired position of the hood has been reached, it is simply necessary to release the hood assembly, and its weight will immediately automatically cause the above described operation which results in the edge 108 of the duct 32 being forced into the resilient strips to thereby securely maintain the adjusted ducts to the position to which they have been adjusted.

It will, therefore, be apparent that the simple acts of lifting the hood, moving it to the desired position and releasing it, all of which can be readily done by a user with the hood on her head, are all that is required to comfortably position the hood.

It will, therefore, be apparent that I have provided an improved novel hair dryer which provides a household hair dryer having one of the principal attributes of a professional hair dryer—namely, that of a rigid hood, and yet one wherein the user may readily selectively adjust it to comfortably position the hood on her head. Although there has been shown and described one embodiment of my invention, it will be apparent to those skilled in the art that various other changes and modifications can be made therein without departing from the invention and, therefore, the invention as defined by the appended claims should be construed to cover all changes and modifications as reasonably fall within the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A hair dryer comprising: means for producing a flow of heated air; a rigid hood arranged to be positioned about the head of a user and having means for distributing heated air to the head; heated air duct means for directing heated air from said producing means to said hood including a pair of longitudinally upwardly extending telescoping tubular ducts; said ducts being manually selectively extensible and contractible on a common axis which is disposed at a slight angle to the vertical; said hood being carried by the upper duct of said pair of ducts whereby the weight of said hood and said upper duct tends to pivot said upper duct on a line at one of its sides on and about an upper side edge of the lower duct of said pair, whereby a lower edge at the opposite side of said upper duct is forced toward a side of said lower duct opposite said upper side edge; and an elongated formation of resilient material secured to the inner surface of said last mentioned side of said lower duct in position to be frictionally engaged by said lower edge whereby said ducts are maintained in any relative longitudinal position to which they are selectively adjusted.

2. The hair dryer of claim 1 wherein said heated air flow producing means is housed in a base housing of rigid plastic material; said hood is made of rigid plastic material; and said ducts are made of a rigid plastic material.

3. The hair dryer of claim 1 wherein said hood is detachably secured to said upper duct and includes an air inlet hub having an inlet opening; said hood carries a hinged cover plate which is pivotal into one position to cover said hub opening when said hood is disassembled from said upper duct; the upper end of said upper duct has a notch formed in it; said hub is of a dimension to telescope within said upper end and includes a notch which is disposed to align with the notch in said upper end when said hub is telescoped within said upper end; said cover plate being pivoted to another position wherein it permits said telescoping; and a locking finger carried by said cover plate in position to be inserted into and

extend through said notches when they are aligned and said cover plate is pivoted toward its hub opening closing position after such telescoping.

4. The hair dryer of claim 1 wherein said formation of resilient material comprises a pair of elongated strips of spongelike material that extend over most of the lower duct.

5. The hair dryer of claim 1 wherein said air duct means further comprises a mounting duct having a side to the upper edge of which the lower end of said lower duct is hingedly secured; said elongated formation extends over said last mentioned side; and said ducts are configured so the lower end of said upper duct is disposed within said mounting duct in some relative positions of said duct.

6. The hair dryer of claim 1 wherein the upper end of said lower duct includes an inwardly extending rib; and the lower end of said upper duct has outwardly projecting stop means disposed to engage said rib when said ducts are moved to maximum extended position to prevent their separation.

7. The hair dryer of claim 6 wherein a ring of air sealing material is secured to said lower duct adjacent said rib.

8. A hair dryer comprising: a base housing of rigid material; means for producing a flow of heated air disposed in said housing; said housing defining a deck; an ambient air inlet in said housing; a heated air outlet in said deck; a mounting duct secured in said outlet and having an upwardly extending portion; a lower duct hingedly secured at its lower end to said portion and positionable to be coaxial with said portion; said lower duct and said portion having walls hingedly secured which are inboard of said deck; a pair of spaced strips of resilient material secured to the inner surface of each of said portion and said lower duct; an inwardly extending rib at the upper

end of said lower duct; an upper duct generally coaxially slidably mounted in said lower duct within said rib and having outwardly extending stop means at its lower end which are positioned to contact said rib and prevent complete disassembly of the lower and upper ducts on their attempted separation; the lower end of said upper duct loosely mounted in said lower duct for some play toward and away from said resilient strips whereby it can be disposed to be askew relative to said lower duct; said upper and lower ducts being freely longitudinally adjustable when in coaxial relationship; said portion and said ducts when in operative position extending upwardly from said deck at a slight angle relative to the vertical; and a hood of rigid material carried by said upper duct and disposed to be outboard of and overhang said deck, whereby the weight of said hood and said upper duct tend to pivot said upper duct on a line at an outboard side about an outboard upper edge of said lower duct, and a lower inboard edge of said upper duct is forced into biting frictional engagement with said strips to maintain said ducts in any position to which they are adjusted.

9. The hair dryer of claim 8 wherein a sealing ring is disposed adjacent said rib.

10. The air dryer of claim 8 wherein said hood is detachably secured to said upper duct.

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