United States Patent [19]

Clark, Jr. et al.

[11] **3,849,902**

[45] **Nov. 26, 1974**

[54] **COLLAPSIBLE HAIR DRYER**

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[73] Assignee: **General Electric Company**, Bridgeport, Conn.

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[52] **U.S. Cl.** **34/99**, 34/239

[51] **Int. Cl.** **A45d 20/24**

[58] **Field of Search** 34/90, 91, 96–101, 34/239

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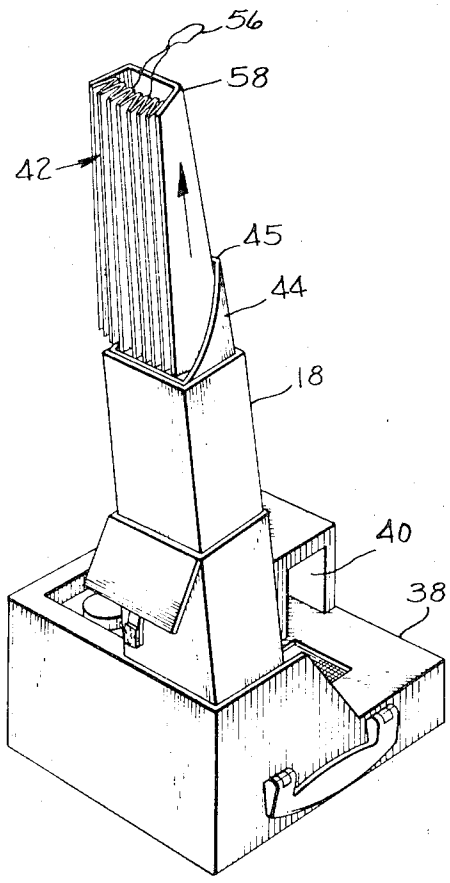
Attorney, Agent, or Firm—John F. Cullen; George R. Powers; Leonard J. Platt

[57] **ABSTRACT**

A collapsible hair dryer with a portable partial housing enclosing suitable means for producing a flow of heated air and having a hood arranged with means for distributing heated air to the head. Duct means directs air from the producing means to the hood and the duct includes a pair of telescoping tubular ducts, both ducts being manually selectively extensible and contractible, and foldable all on common housing axes. The hood is formed to collapse umbrella-like for storage in the ducts or opened to form a rigid hard hat hood in use. The ducts containing the stored collapsed hood may be telescoped together and then folded into a nesting position to complete the partial housing and form a uniform portable package.

16 Claims, 10 Drawing Figures



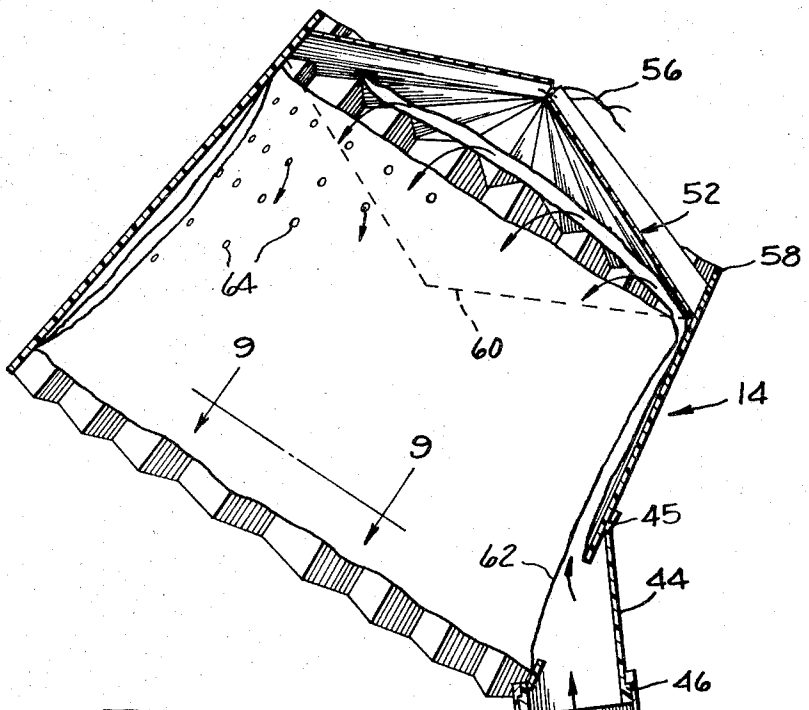
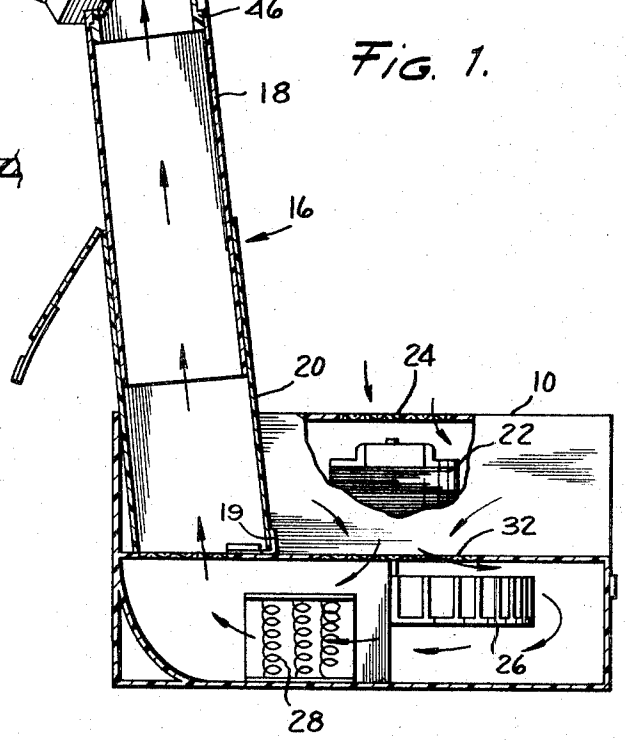


FIG. 9.

FIG. 1.



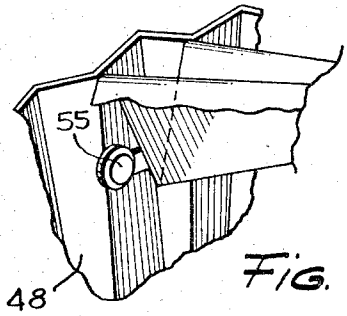


FIG. 7.

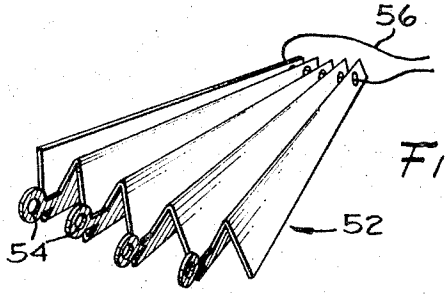


FIG. 8.

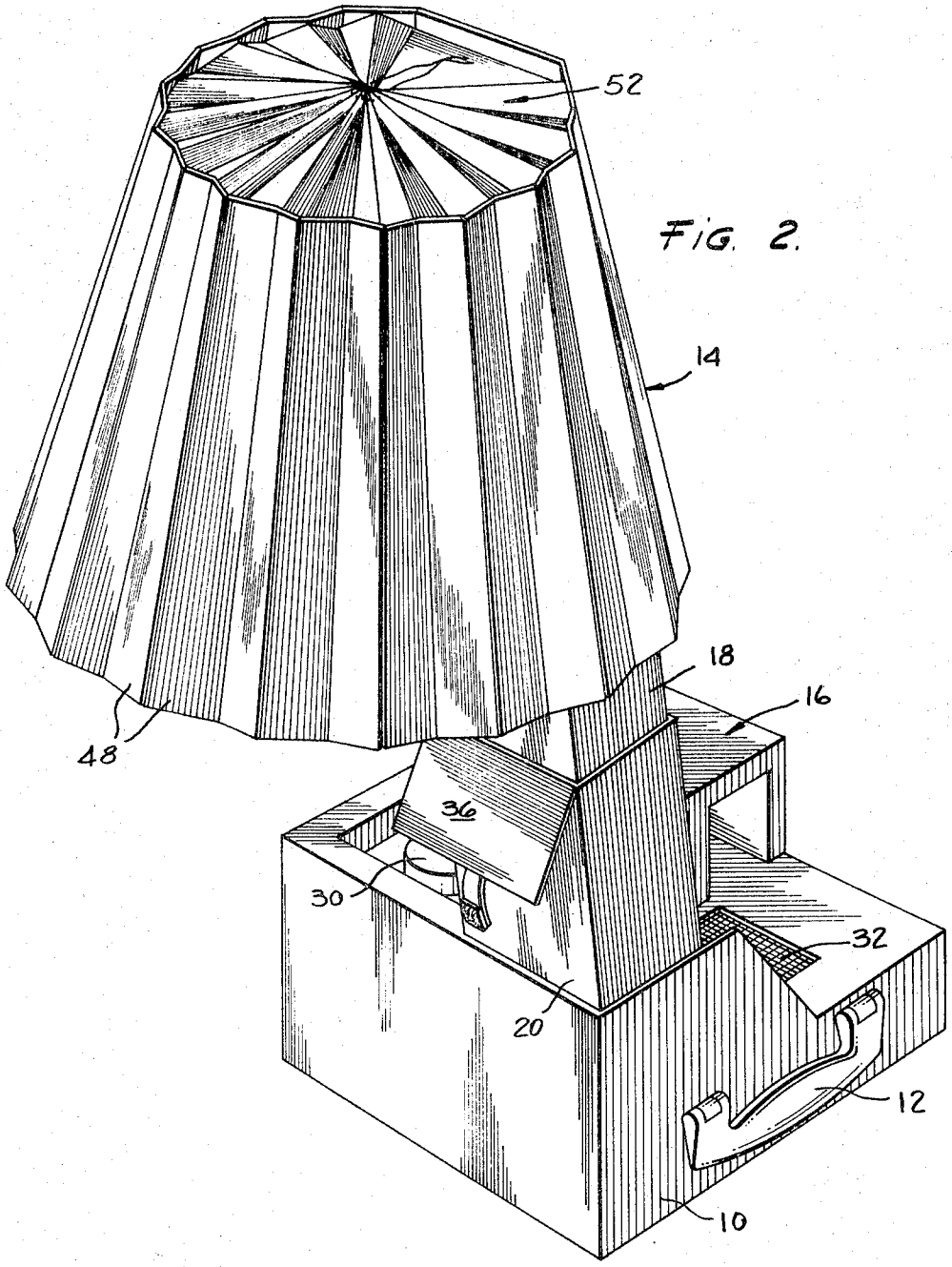


FIG. 2.

FIG. 3.

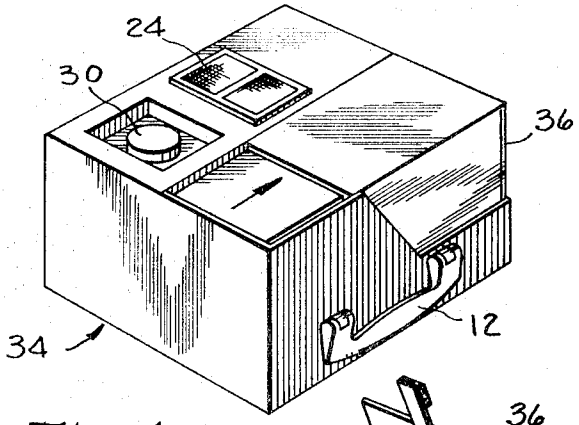


FIG. 10.

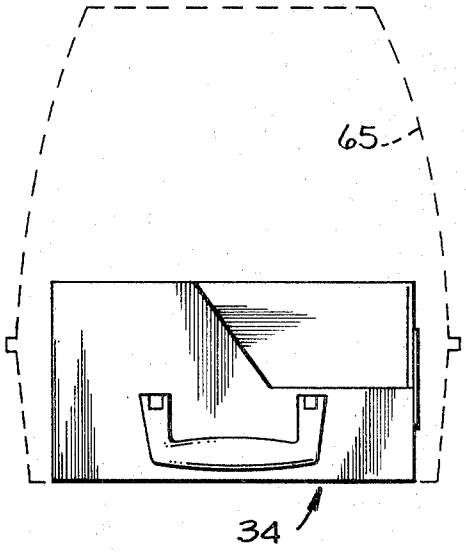
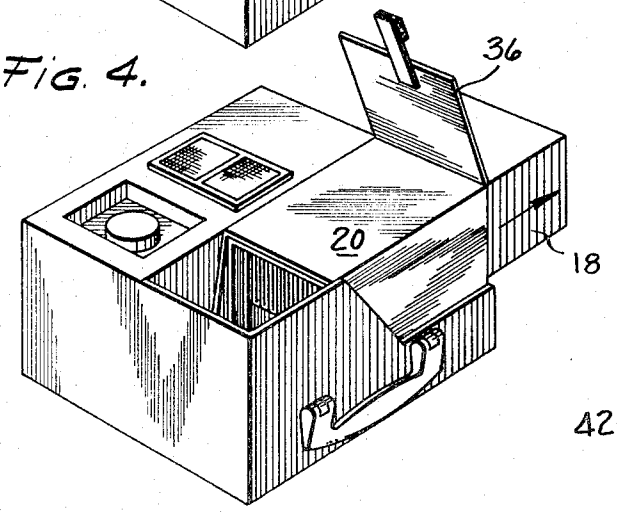


FIG. 4.



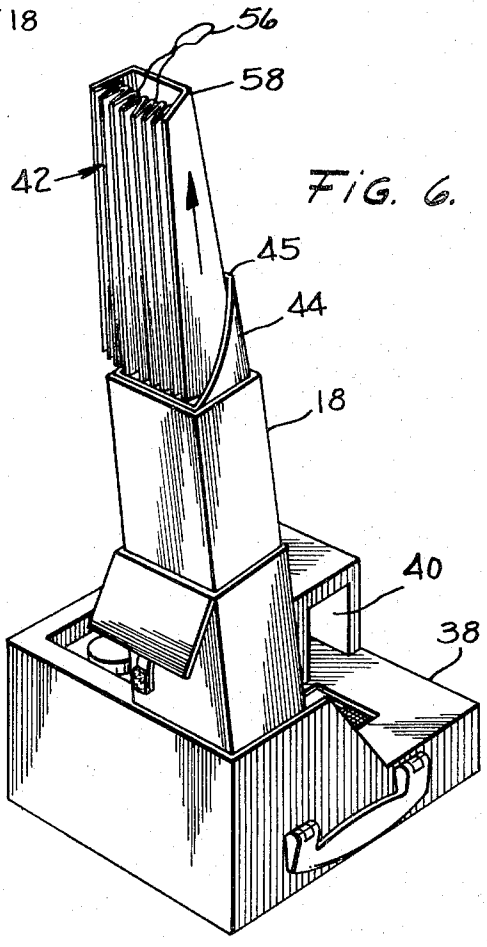


FIG. 6.

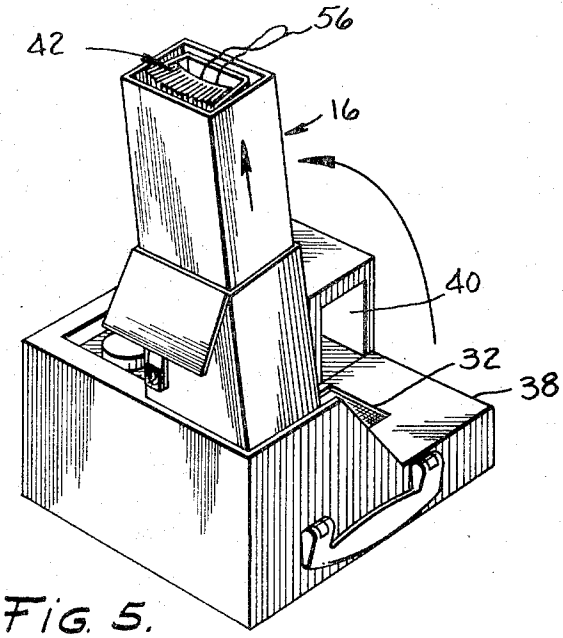


FIG. 5.

COLLAPSIBLE HAIR DRYER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention pertains to a collapsible hair dryer that forms a complete integral small package yet can be expanded to form a rigid hood for the head in the manner of a professional hair dryer while providing a uniform portable package.

2. Description of the Prior Art

Hair dryers generally are two types, those of the professional type usually in the nature of permanent installations in beauty parlors, and those for the home which usually are small portable appliances with means for producing a flow of heated air and a flexible soft cap or a hard hood for the head to distribute the heated air for drying the hair. The professional type is large, costly, and does not lend itself to use in the home. The household type, while doing the job, usually does not operate with the efficiency or effectiveness of the professional type. The main difference between professional and household hair dryers is that the former usually employ a rigid heated air distributing bonnet or hood which is efficient and effective for drying hair as opposed to the soft hat household type that uses a flexible plastic cap that the user places on her head and is much less efficient or effective than the hood to dry the hair but does have compactness. Various home dryers have been built which provide a rigid distributing hood and have approached the professional type in adjustment and function. These have been built using adjustable mountings and telescoping ducts so that the whole device may be folded for storage, usually by lowering the hood over the base of the dryer like a dome and clamping the two together so that the device may be carried by a handle and stored. Usually, the size of the hood determines the minimum size of the telescoped package and is rather large. Some early designs, that have not been commercially acceptable, have proposed collapsible hoods but these have been large, awkward, and are not readily portable. Attempts to reduce the size of the current hard hood type to minimize the size of the stored package have used the hood as a lid, thus fixing the minimum folded size to at least as large as the open hood.

SUMMARY OF THE INVENTION

Briefly described, the invention is directed to a collapsible hair dryer that comprises a portable partial housing enclosing means to produce a flow of heated air and having a hood arranged for positioning on a user with means for distributing heated air to the head. Duct means directs air from the producing means to the hood and includes telescoping tubular ducts with the ducts being manually and selectively extensible and foldable on common housing axes for compactness. The hood is formed generally umbrella-like of segmented portions that can be snapped into a rigid position in a toggle action for use and then collapsed for storage directly in the ducts whereby the ducts containing the stored hood may be contracted or slid together and then folded into a nesting position to complete the partial housing and form a uniform compact portable package. The foldable package is arranged for easy opening and closing to a small valise. Thus, the main object of the invention is to provide a collapsible or

rigid hood type hair dryer which can be compactly closed into a small uniform portable package that is less than half the size of current hard hood home hair dryers.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a view, partly broken and in section, showing the hair dryer in operative open position;

FIG. **2** is a similar perspective view showing the erected position of the dryer and the segmented hood;

FIG. **3** is a perspective view of the closed integral portable valise;

FIGS. **4–6** are perspectives showing various steps in opening the dryer;

FIG. **7** is a partial perspective showing a hood construction;

FIG. **8** is a perspective showing a few segments of the hood closure;

FIG. **9** is a partial section on line **9—9** of FIG. **1** showing the hood segmented side construction flattened out; and

FIG. **10** shows the relative sizes of the present invention in solid lines with the usual dome or bell-shaped dryer in dotted lines.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. **1** and **2,** the improved hair dryer is illustrated in open position for use in the home and it generally comprises a base housing **10** that may be conveniently in the form of a small valise with carrying handle **12** as shown in FIG. **2.** The hair dryer includes a rigid or hard hood assembly **14** for positioning on the head of the user. It is supported on interconnecting selectively longitudinally adjustable heated air duct means **16** that may comprise at least two telescoping tubular ducts **18** and **20** which are manually extensible to be held in an infinite number of positions, usually by friction, for adjusting to varying heights of the user. Thus, the dryer is selectively adjustable to compensate for heights and to position the hood comfortably about the user's head while the dryer is supported on a table or other suitable horizontal plane.

The base housing **10** contains the usual means for producing a flow of heated air which is directed up through the duct means **16** and into the hood assembly **14.** The internal heated air flow producing mechanism forms no specific part of the invention and any well-known arrangement may be used including electric motor **22** drawing air through louvre **24** in the housing by means of impeller or fan **26,** passing the air over electrical heating means **28** and thence into duct means **16.** A manually operated switch **30** selects the heat and speed levels and an additional louvre **32** may be disposed over the fan **26** for higher quantities of air flow. Except for louvre **32,** this structure is generally well-known and used in many prior art devices, such as the general arrangement shown in U.S. Pat. No. 3,362,086, of common assignment.

In accordance with the invention, this general arrangement is improved to make a more compact device for easy portability and yet retain advantages of the hard hood type hair dryer. To this end, the entire operating structure is formed to collapse into a small valise-like portable package **34** as shown in FIG. **3.** The package **34** forms the housing **10** which will generally use

the conventional prior art structure that heats and pumps the air. In order to use such a compact valise **34,** the housing is provided with at least a pair of telescoping tubular ducts **18** and **20** that slide apart along a common longitudinal axis as shown in FIG. **4.** The ducts are held together by a suitable hinged cover **36** that holds them in a nested position in what is otherwise a partial housing so that the nested position completes the housing to form the uniform portable package as shown in FIG. **3.** To erect the dryer, duct **18** is slid out of duct **20** as shown in FIG. 4 and then both are folded upward around common housing axis **19** connecting the ducts to the housing as shown in FIGS. **1** and **5.** The duct means, when extended in FIG. **5,** may be disposed at a slight angle to the vertical away from the housing so that it assumes a more comfortable position for the user as shown in FIG. **1.** FIGS. 5 and **6** more clearly illustrate the partial housing arrangement with niche **38** into which the ducts nest to complete the housing and form the uniform package of FIG. **3.** The extension and folding of duct means **16** also uncovers a cord storage area **40** in which the electric cord may be stuffed. Additionally, a secondary louvre **32** may be uncovered for additional air flow.

In order to obtain the advantages of a rigid hood for the user, a collapsible hood **42** is provided which is connected to and stored directly in the duct means as seen in FIG. **5.** This hood is generally an umbrella-like arrangement that is extended and snapped into a rigid position like a lamp shade as shown in FIGS. **1** and **2.** To this end as seen in FIGS. **1** and **6,** the hood is slidably connected to one of the ducts, such as **18,** to form an integral extension **44** of the duct **18,** and is disposed in the duct and provided with stop means **46** to prevent withdrawal from the duct **18.** It will be seen that the hood **42** when folded as shown in FIGS. **5** and **6** forms an envelope that is smaller than the cross-section of the ducts so that it is easily stored directly in the ducts.

As seen in FIGS. **2** and **9,** the hood may be conveniently formed of connected generally truncated segments **48** of a flexible material such as polypropylene so that it can be folded into the compact arrangement of FIG. **6.** The segments **48** may be joined together by integral or living hinges **50** that are milled or molded in flat sheets of polypropylene to form a repeatably foldable configuration as seen in FIG. **9** to enable the whole device to fold as shown in FIG. **6.** Thus, it may be formed in a general lamp shade shape as shown in FIG. **1** with connected segmented sides **48** that are expanded embrella-like from their pleated position to form an expanded rigid bonnet as shown in FIGS. **1** and **2.** In order to provide the rigidity to the hood, a similar segmented closure **52** covers one end and may be formed of the same material of a thinner gauge. It also assumes a pleated shape as shown in FIG. **8** and may be formed with tabs **54** that can be attached in a hinge arrangement at buttons **55** to the side segments **48** as shown in FIG. **7.** In order to snap the hood into operative rigid position, a suitable manual means is provided in the form of string or cord **56** that serves to withdraw the hood **42** as shown in FIG. **6** and also joins the center portion of the segments of closure **52** as shown in FIG. **8.** The duct extension **44** is hingedly attached at **45** as a support for the hood, to maintain it in position on duct means **16,** and to provide for straight air flow into the hood for most efficient use as shown in FIG. **1.**

With the hood of flexible material, foldable as shown in FIG. **6,** the user's hand may rock about segment **58** while, concurrently pulling on string **56,** with the result that the entire flexible and collapsible hood rotates and unfolds away from extension **44** and snaps into open rigidized position as shown in FIGS. **1** and **2.** This occurs by the pulling on the closure member to pull it over center in a toggle-like action to snap the whole hood into a lamp shade arrangement and in an expanded stressed and rigid open position as shown in FIGS. **1** and **2.**

To close the dryer, the closure member **52** is merely pushed over center at the top to the dotted position **60** as shown in FIG. **1** whereupon the stressed condition is relieved and the entire hood folds on its pleats accordion-like and then rotates into extension **44** as in FIG. **6** to be reinserted into the ducts as shown in FIG. **5,** and the ducts **18** and **20** are telescoped together and folded into the position of FIG. **4** and then locked by cover **36** to the compact valise of FIG. **3.**

For directing air in the hood, any suitable lightweight, flexible inner liner **62** may be inserted in the hood and it merely folds with the segments while suitably directing the air around the hood and through openings **64** for most efficient use. Other arrangements will suggest themselves for the internal structure and air distribution in place of liner **62** as appropriate.

Referring to FIG. **10,** the relative sizes of the present invention is shown in the solid line valise **34** as opposed to the dotted line **65** showing the conventional rigid hood hair dryer. It will be seen that the present collapsible hair dryer uses less than half of the space of the conventional kind and forms a very convenient and compact attractive uniform portable package as shown in FIG. **3.** Various types of collapsible hoods may suggest themselves within the purview of the umbrella-like concept wherein the rigid hood is provided with or without internal rib or strut supports to be collapsed and stored directly within the envelope of the duct work to form a convenient portable package and still retain the advantages of the rigid hood hair dryer. The form described of the polypropylene segments is one form that lends itself well to the concept and other forms such as the currently popular bubble-type umbrella arrangement could also be used.

Thus, while we have shown and described one embodiment of our invention it will be apparent that various other changes and modifications can be made without departing from the collapsible storage directly in the duct work concept of the invention and therefore, the invention as defined by the appended claims should be construed to cover all changes and modifications within the spirit and scope of our invention.

We claim:

1. A hair dryer comprising,

a housing enclosing means for producing a flow of heated air,

a collapsible hood arranged to be positioned on a user with means for distributing heated air to the head,

duct means connected to said hood for directing air from said producing means to said hood including telescoping tubular duct means,

said duct means being manually selectively extensible and foldable on common housing axes,

said hood being collapsible for storage in the duct means,

means connecting said duct means to said housing, whereby the duct means containing the stored hood may be folded into the housing for storage when not in use.

2. Apparatus as described in claim **1** wherein said hood is connected to the duct means as an integral extension thereof.

3. Apparatus as described in claim **1** wherein said hood is rigid in open position, and

folds into an envelope smaller than the cross-section of said duct means for storage therein.

4. Apparatus as described in claim **3** wherein said hood is formed of a flexible material, and

means to snap the hood into an expanded stressed condition for said rigid open position.

5. Apparatus as described in claim **3** wherein said hood is formed in a general lampshade shape having connected segmented sides,

a segmented closure covering one end and hinged to the sides, and

manual means to actuate said closure and pull it over center in a toggle action to rigidize the hood.

6. Apparatus as described in claim **3** wherein said hood is connected to the duct means as an integral extension thereof.

7. Apparatus as described in claim **6** wherein said hood is formed with a duct extension for straight air flow into the hood,

said extension being disposed in the duct means, and

stop means to retain said extension in the duct means.

8. A hair drying comprising,

a portable partial housing enclosing means producing a flow of heated air,

a collapsible hood arranged for positioning on a user with means for distributing heated air to the head,

duct means connected to said hood for directing air from said producing means to said hood including at least a pair of telescoping tubular ducts,

said ducts being manually selectively extensible and foldable on common housing axes,

said hood being collapsible for storage in said ducts,

means connecting said duct means to said housing, whereby the ducts containing the stored hood may be contracted together and then folded into nesting position to complete the partial housing to form a uniform portable package.

9. Apparatus as described in claim **8** wherein said hood is connected to one of said ducts as an integral extension thereof.

10. Apparatus as described in claim **8** wherein said hood is rigid in open position umbrella-like, and

folds into an envelope smaller than the cross-section of said ducts for storage therein.

11. Apparatus as described in claim **10** wherein said hood is formed in segments of flexible material, and

means to snap the hood into said expanded stressed umbrella-condition for said rigid open position.

12. Apparatus as described in claim **10** wherein said hood is formed in a general lampshade shape having connected segmented sides,

a segmented closure covering one end and hinged to the sides,

manual means connected centrally of the closure to actuate said closure and pull it over center in a toggle action to snap the hood into said rigid embrella-like open position.

13. Apparatus as described in claim **10** wherein said hood is connected to one of said ducts as an integral extension thereof.

14. Apparatus as described in claim **13** wherein said hood is formed with a duct extension for straight air flow into the hood,

said extension being disposed in said one duct, and

stop means to retain said extension in said one duct.

15. Apparatus as described in claim **14** wherein said duct means, when extended, is disposed at a slight angle to the vertical away from the housing.

16. Apparatus as described in claim **15** wherein said hood is substantially pleated for folding accordion-like into said ducts.

* * * * *