May 2, 1967 J. F. WAHL 3,316,656

ELECTRIC HAIR DRYER

Filed May 13, 1964 3 Sheets-Sheet 1

Fig. 1.

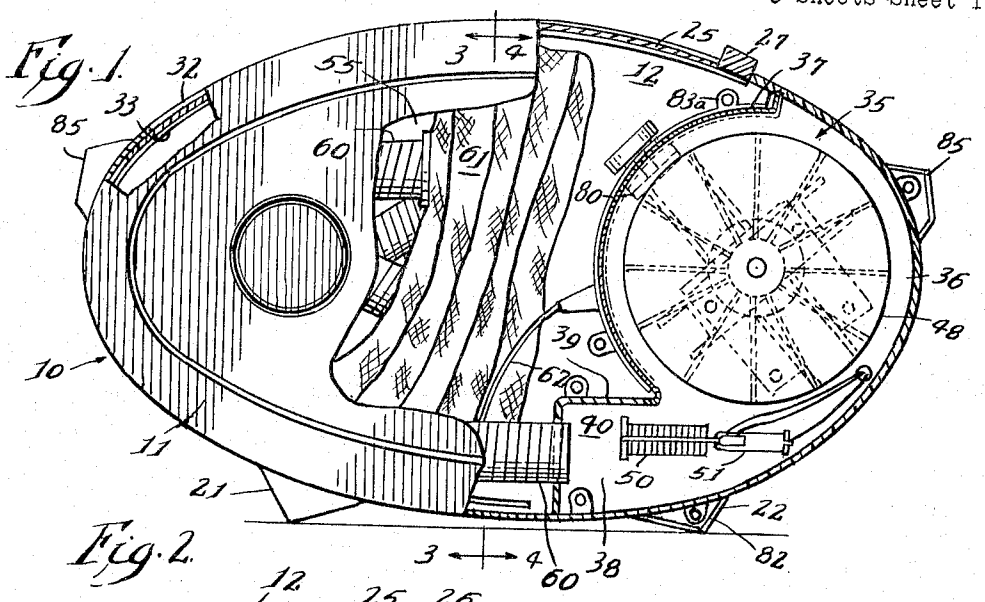
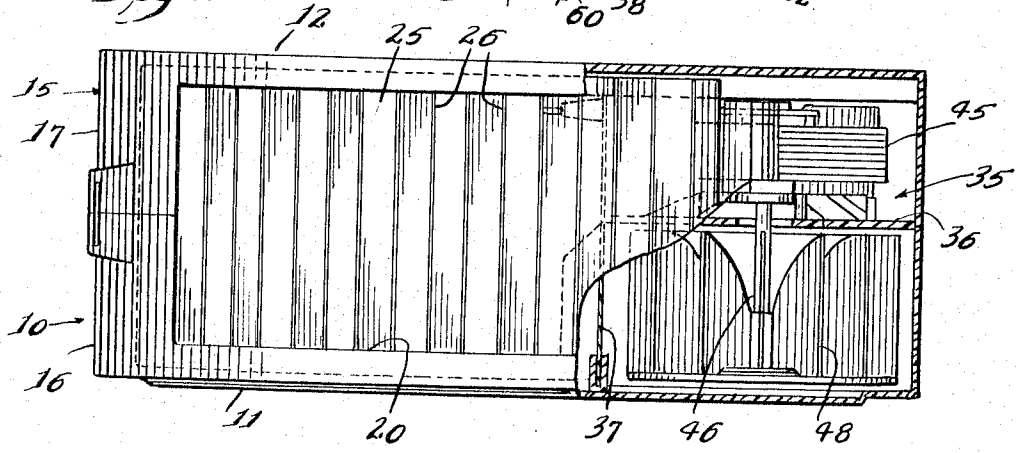


Fig. 2.



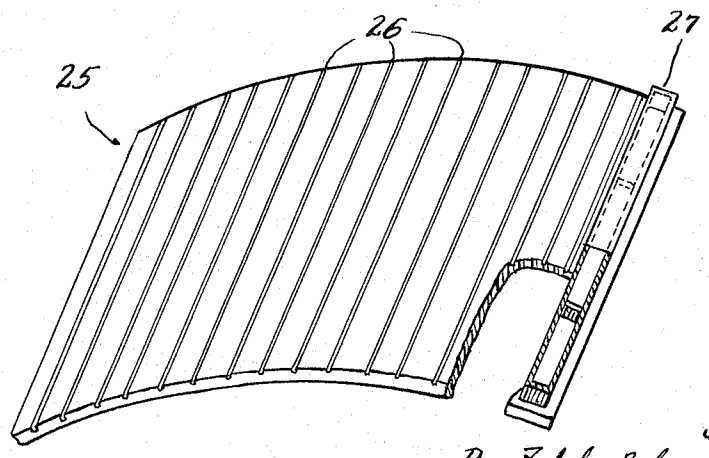


Fig. 5.

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May 2, 1967 J. F. WAHL 3,316,656

ELECTRIC HAIR DRYER

Filed May 13, 1964 3 Sheets-Sheet 2

Fig. 3

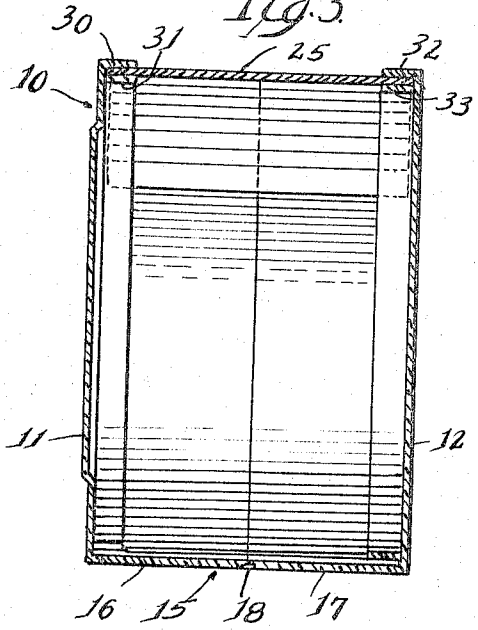


Fig. 4

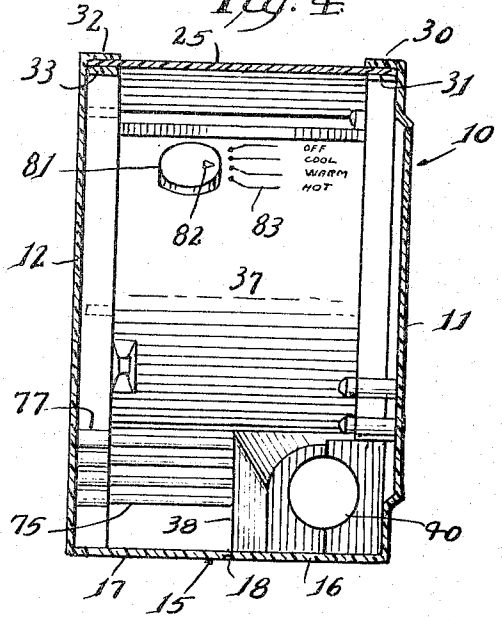


Fig. 6

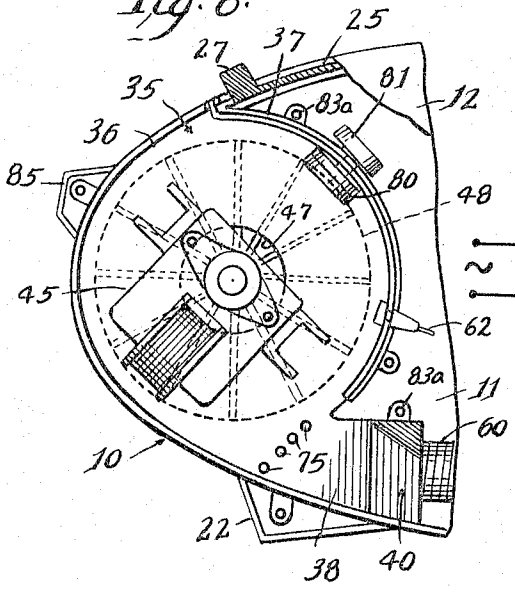
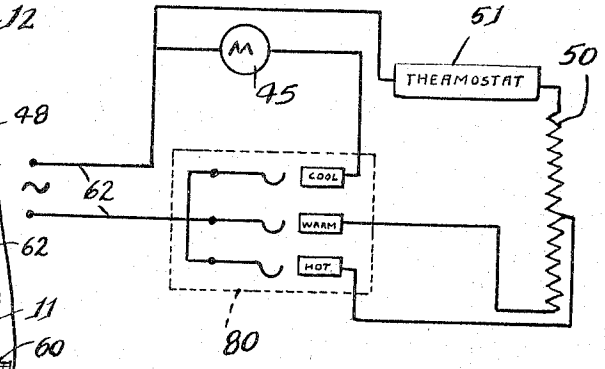


Fig. 9



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May 2, 1967 J. F. WAHL 3,316,656

ELECTRIC HAIR DRYER

Filed May 13, 1964 3 Sheets-Sheet 3

Fig. 7.

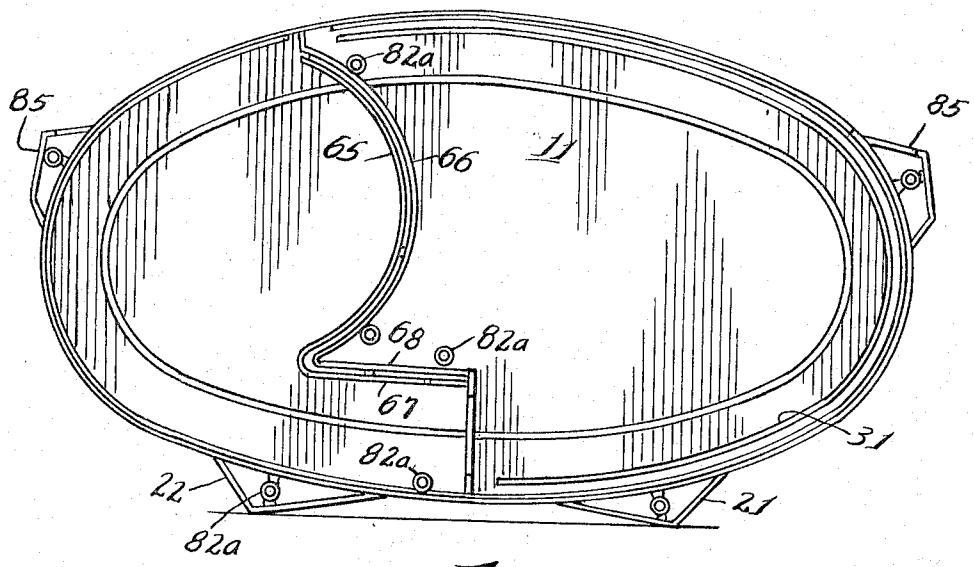
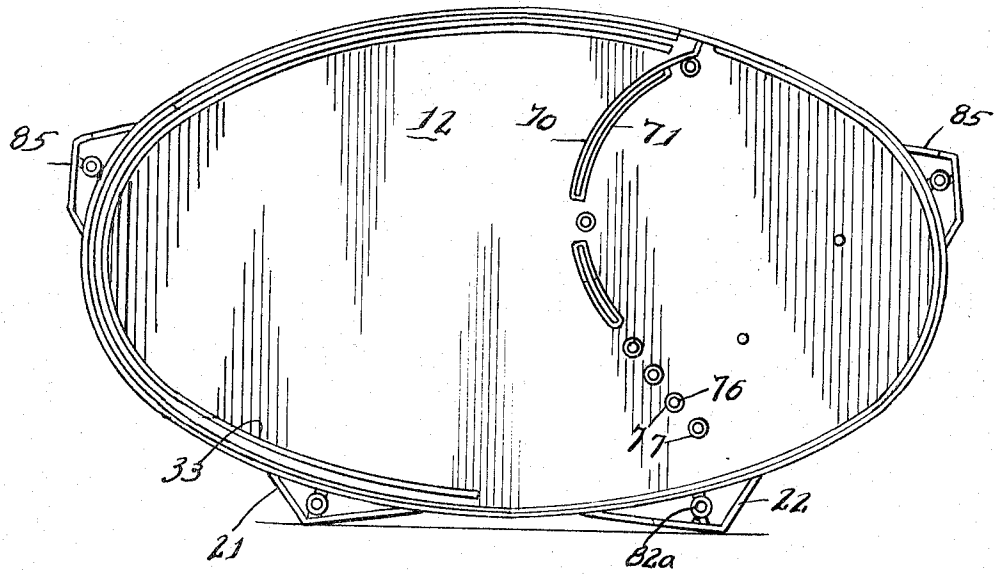


Fig. 8.



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3,316,656

ELECTRIC HAIR DRYER

John F. Wahl, Sterling, Ill., assignor to Wahl Clipper Corporation, Sterling, Ill., a corporation of Illinois

Filed May 13, 1964, Ser. No. 367,174
1 Claim. (Cl. 34—99)

This invention relates to an electric hair dryer, and more particularly to a portable electric hair dryer of light weight and convenient size and shape.

One object of the invention is to provide a compact and efficient electric hair dryer having a single external housing that encloses a fixed motor-fan-heater assembly and also contains space for storage of a permanently connected air hose, dryer hood and power cord.

Another object is to provide such a hair dryer wherein the motor-fan-heater assembly includes wall portions that cooperate in complementary relation with walls of the external housing to form a motor enclosure, a fan enclosure, an air outlet duct and a storage compartment.

Another object is to provide such a hair dryer wherein the external housing has an access opening that is opened and closed by a low friction sliding door.

Another and more detailed object is to provide a portable hair dryer having a housing of generally elliptical shape. In further detail, the housing comprises spaced elliptical front and rear walls and a closure wall extending between them. In preferred form, the access opening for the housing is located in the closure wall, and the sliding door, which is flexible in character, travels on an arcuate path of varying curvature.

Still another object is to provide a one piece sliding door having requisite strength, low friction and flexibility characteristics, and arcuate guide means mounting the door in the housing. The door is formed of thin flexible sheet material, and the longitudinally curved shape provided by the arcuate guide means imparts requisite lateral stiffness, if needed, to the thin material.

Other objects, advantages and details of the invention will be apparent as the description proceeds, reference being had to the accompanying drawings wherein a commercial form of the invention is shown. It is to be understood that the description and drawings are illustrative only, and that the scope of the invention is to be measured by the appended claim.

In the drawings:

FIG. 1 is a front elevational view, partly broken away, of a hair dryer embodying the invention, the sliding door shown in closed position.

FIG. 2 is a plan view, partly in section and partly broken away, of the hair dryer shown in FIG. 1.

FIG. 3 is a sectional view on line 3—3 of FIG. 1, the hose, hood and power cord omitted.

FIG. 4 is a sectional view on line 4—4 of FIG 1, the hose, hood and power cord omitted.

FIG. 5 is a perspective view of the sliding housing door, partly broken away.

FIG. 6 is a fragmentary rear elevational view of the hair dryer, the housing wall broken away.

FIG. 7 is an inside elevational view of the front housing wall.

FIG. 8 is an inside elevational view of the rear housing wall.

FIG. 9 is a schematic diagram of circuitry used in the hair dryer.

Referring to the drawings, an electric hair dryer embodying the invention includes a housing **10** having a front wall **11** and spaced rear wall **12**, both walls generally elliptical in shape. As best shown in FIGS. 2–4, the peripheries of front and rear walls **11** and **12** are connected by a closure wall **15**.

In the form of the invention shown, closure wall **15** of

housing **10** comprises a peripheral flange **16** (FIGS. 3 and 4) on front housing wall **11** and a peripheral flange **17** on rear housing wall **12**, the two flanges engaging at the longitudinal center line of the housing with a tongue and groove joint **18**.

An access opening **20** (FIG. 2) for housing **10** is provided in closure wall **15** at the upper part of the housing. Supporting feet **21** and **22** (FIG. 1) are provided on the bottom part of the housing so the latter may rest stably on a flat surface.

A sliding door **25**, best shown in FIG. 5, is provided to open and close access opening **20**. Door **25** preferably is made of comparatively thin molded plastic material that has a low friction characteristic, for example polyethylene. Such material in sheet form is flexible and resilient. In the illustrated embodiment, door **25** has such thickness that the longitudinal resilience thereof in enhanced by transversely scoring the external surface of the door with spaced grooves **26**. These grooves, incidentally, impart a pleasing appearance. A transverse boss **27** is provided at the free end of door **25** for manual manipulation.

Means are provided for mounting door **25** in access opening **20** of the housing and for guiding the door on its travel path. In the form of the invention shown, front wall **11** adjacent opening **20** has spaced peripheral arcuate guide flanges **30** and **31**, best shown in FIGS. 3 and 4, and rear wall **12** has peripheral arcuate guide flanges **32** and **33** aligned with flanges **30, 31**. The outer flanges **30** and **32** at the ends of opening **20** merge into the larger flanges **16** and **17**, respectively, that form closure wall **15** of the housing. Inner flanges **31** and **33** extend peripherally and arcuately to the lower parts of walls **11** and **12**, as best shown in FIGS. 7 and 8, to guide door **25** throughout its arcuate travel path in cooperation with closure wall **15**. The longitudinal edge portions of door **25** are received between flanges **30, 31** and **32, 33**, as shown in FIGS. 3 and 4, and door **25** at all times, closed or open, is longitudinally curved, a feature that provides requisite lateral stiffness in case the sheet material of the door is extremely thin and flexible.

Referring to FIGS. 1, 2 and 6, a motor-fan-heater assembly **35** is disposed within one end of housing **10**. This assembly **35** is illustrated, described and claimed in copending application of Thaddeus E. Bednarski, John F. Wahl and Warren P. Wahl, Ser. No. 367,173, filed contemporaneously with this application.

Motor-fan-heater assembly **35** includes wall portions that cooperate in complementary relation with the walls of housing **10** to form a motor enclosure, a fan enclosure, an air outlet duct and a storage compartment. The cooperating wall portions of assembly **35** include a generally circular vertical plate portion **36**, an arcuate hood portion **37**, a tangential tail portion **38** of plate portion **36** and a horizontal portion **39** (FIG. 1) that extends from hood portion **37** and cooperates with tail portion **38** to form two walls of an air outlet duct **40** (FIGS. 1, 4 and 6).

Assembly **35** also includes a motor **45** (FIGS. 2 and 6) mounted on the rear side of plate portion **36**. A motor shaft **46** extends through an opening **47** in portion **36** and carries at its free end a fan **48**. The blades of fan **48** are aligned with the aforesaid air duct **40** formed in part by tail and horizontal portions **38** and **39**.

A resistance heater **50** (FIG. 1) is mounted between fan **48** and air duct **40**, projecting somewhat into the duct. A safety thermostat **51** is mounted nearby on plate portion **36**.

As shown, arcuate hood portion **37** of motor-fan-heater assembly **35** divides the interior of housing **10** into two main compartments of unequal size. The smaller of these compartments is sub-divided, mainly by plate portion **36**,

into a motor enclosure, a fan enclosure and air outlet duct **40**. The structures of these smaller enclosures, of course, are completed by the adjacent parts of the front and rear housing walls **11** and **12** and closure wall **15**. Similarly, adjacent parts of front wall **11** and closure wall **15** cooperate with tail and horizontal portions **38** and **39** to define air outlet duct **40**.

The other and larger of the two main compartments within housing **10** is storage compartment **55**. Sliding door **25** and opening **20**, of course, provide ready access to this compartment.

As best shown in FIG. 1, an elongated flexible hose **60** is connected more or less permanently at one end to air outlet duct **40**. The opposite end of hose **60** is connected more or less permanently to a conventional drying hood **61**. Storage compartment **55** is of ample size to store hose **60** and drying hood **61** when not in use, as well as power cord **62** for motor **45** and heater **50**. Thus, all parts of my improved hair dryer are permanently attached to each other, and ready for use at any time without disassembly and reconnection. Further, all such parts are stored readily within compartment **55** when the dryer is not in use.

Continuing with the description, FIG. 7 shows the inside of front housing wall **11**. The inside surface of this wall is provided with spaced arcuate flanges **65** and **66** that receive the adjacent lateral edge of arcuate hood portion **37** of motor-fan-heater assembly **35**. Flanges **65** and **66** merge into spaced horizontal flanges **67** and **68** that receive the adjacent edge of horizontal portion **39** of assembly **35**, thus sealing that corner of air duct **40**.

Similarly, the inside surface of rear wall **12** (FIG. 8) has spaced arcuate flanges **70** and **71** that receive the adjacent edge of arcuate hood portion **37** of assembly **35**.

Hood portion **37** on the rear or motor side of plate portion **36** terminates short of the housing bottom. A row of spaced grill members **75** (FIGS. 4 and 6) extend between plate portion **36** and rear housing wall **12** between the lower edge of hood portion **37** and the housing bottom. The free ends of grill members **75** are received in openings **76** of bosses **77** formed on rear housing wall **12** (FIGS. 4 and 8). Grill members **75** prevent small objects from being drawn into the motor and fan enclosures.

Completing the description, a four-position switch **80** (FIGS. 1, 6 and 9) is mounted on arcuate hood portion **37** of assembly **35**. A control knob **81** for switch **80** is located for convenient adjustment through access opening **20**. Knob **81** has an index mark **82** in effective relation with an adjacent legend **83** on hood portion **37**.

The electrical circuitry of the hair dryer is conventional. The schematic diagram, FIG. 9, shows motor **45**, resistance heater **50**, thermostat **51** and switch **80**. As indicated by legend **83**, the four switch positions are

"OFF," "COOL," "WARM," and "HOT," the motor being energized in each of the last three switch positions.

As best shown in FIGS. 7 and 8, various apertured and threaded bosses **82***a* are provided on front and rear walls **11** and **12** for joining the walls in assembled relation and securing in place the motor-fan-heater assembly **35**. The latter has apertured lugs **83***a* (FIGS. 1 and 6) in alignment with some of the apertured bosses **82**, suitable screws being used to secure the parts together.

Exterior bosses **85**, located at the housing ends, cooperate to anchor the ends of a suitable carrying strap, not shown.

From the above description it is thought that the construction and advantages of this invention will be readily apparent to those skilled in the art. Various changes in detail may be made without departing from the spirit or losing the advantages of the invention.

Having thus described the invention, what is claimed as new and desired to secure by Letters Patent is:

An electric hair dryer comprising:

a housing having spaced front and rear walls of generally elliptical shape and a closure wall extending between said front and rear walls, said closure wall having an access opening;

a motor-fan-heater assembly mounted within an end portion of said housing away from said access opening, said assembly including wall portions cooperating in complementary relation with walls of said housing to form a fan enclosure and an air outlet duct;

a sliding door of thin resilient plastic sheet material in effective relation with said access opening;

arcuate guide means on said housing mounting said door on a longitudinally extending arc to open and close said access opening;

a flexible air hose having one end connected to said air outlet duct; and

a dryer hood connected to the other end of said hose, the space within said housing unoccupied by said motor-fan-heater assembly at least large enough for storing said hose and hood.

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