March 22, 1966 L. F. WILLAT 3,241,560

HAIR DRYING APPARATUS

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Fig. 1.

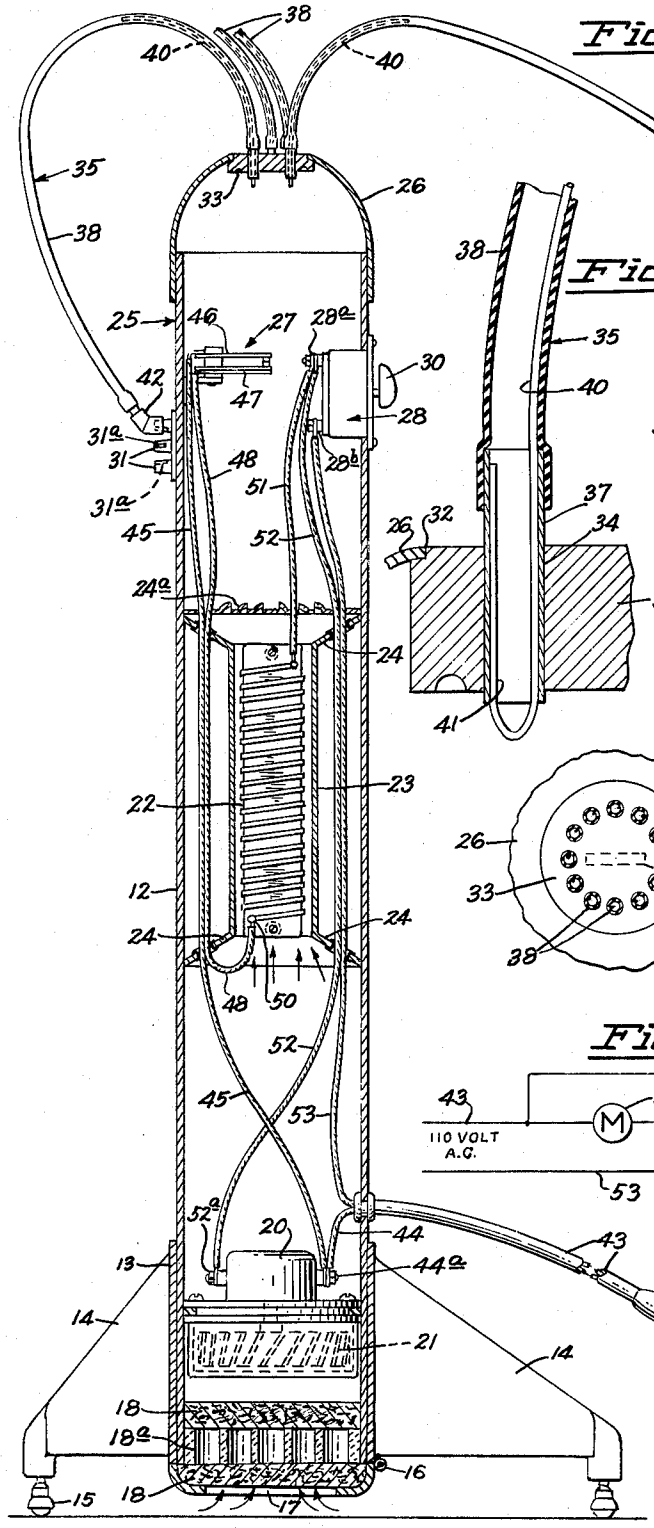



Fig. 2.



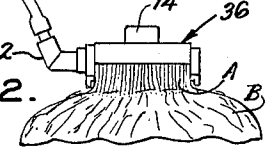




Fig. 3.

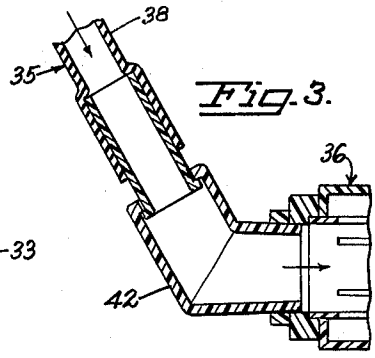
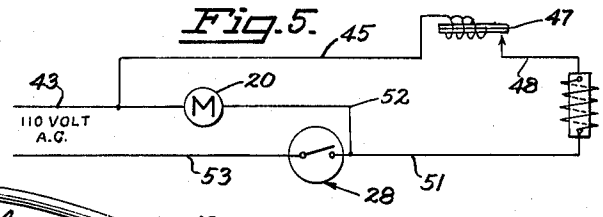



Fig. 4.




Fig. 5.




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Fig. 4a.

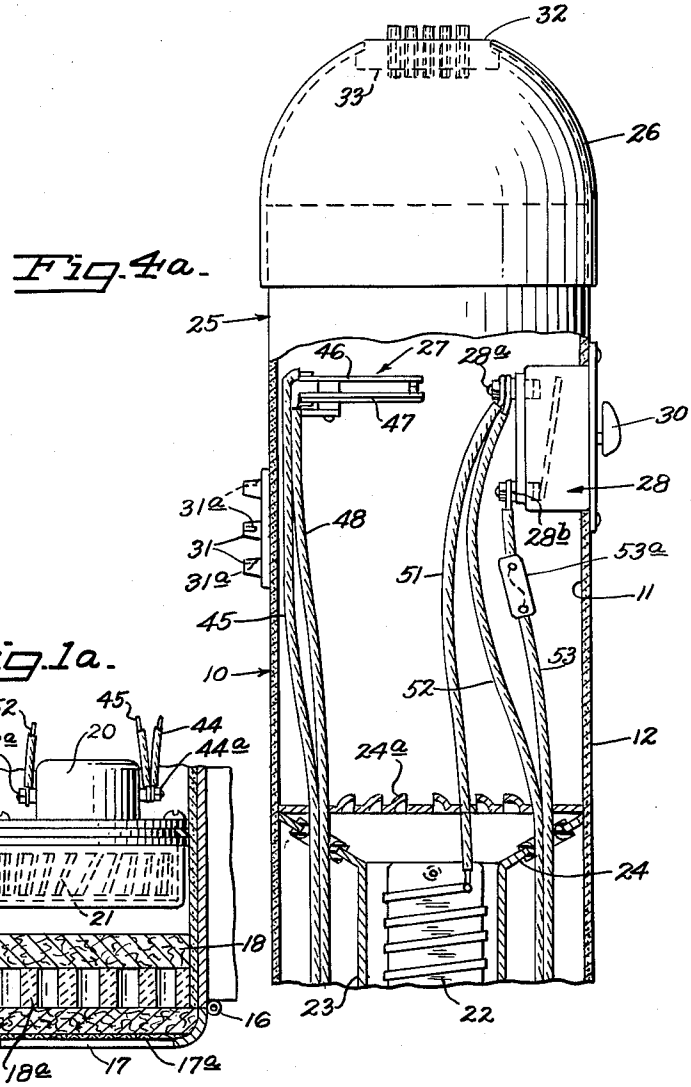
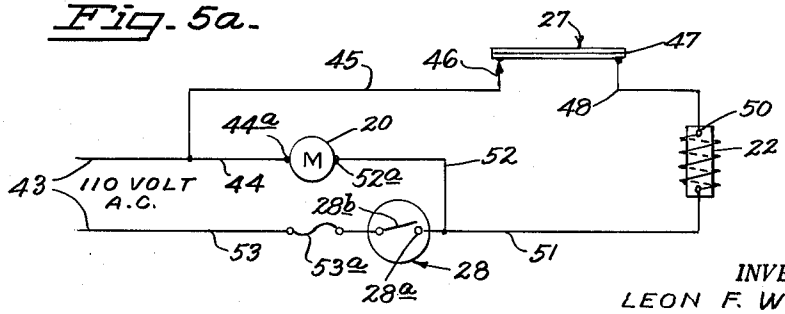



Fig. 1a.




Fig. 5a.




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Fig. 6.

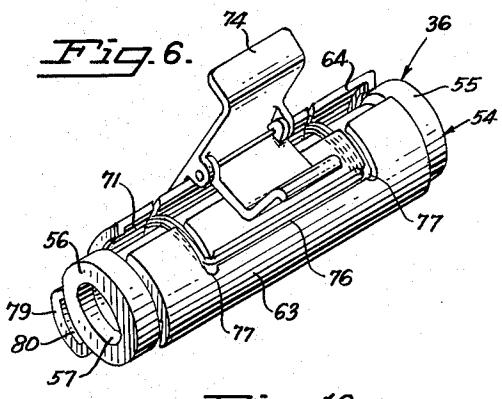



Fig. 7.

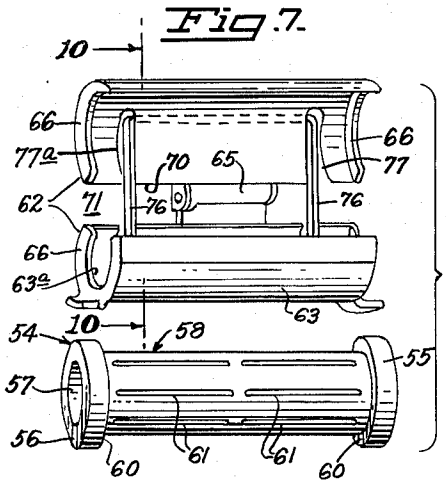



Fig. 10.

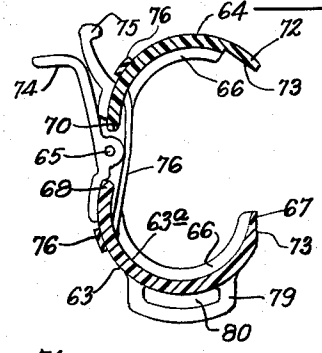



Fig. 8.

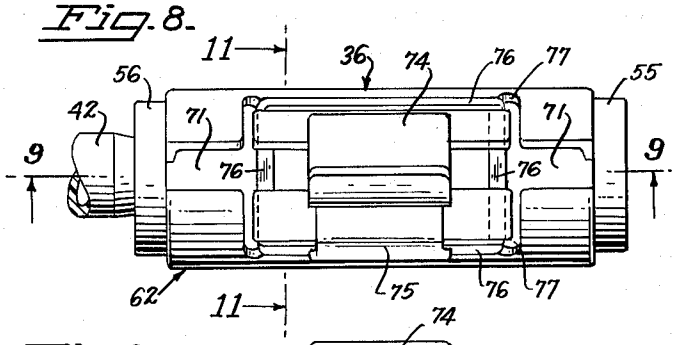
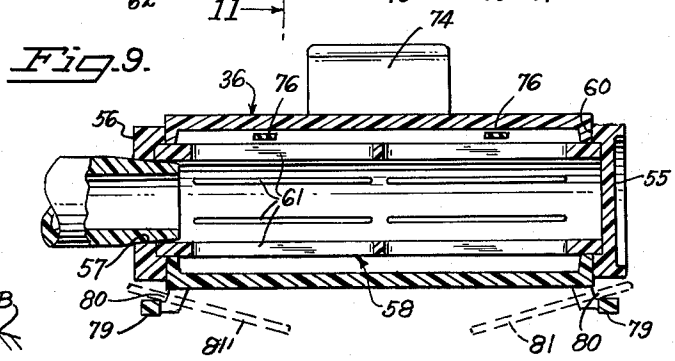



Fig. 9.



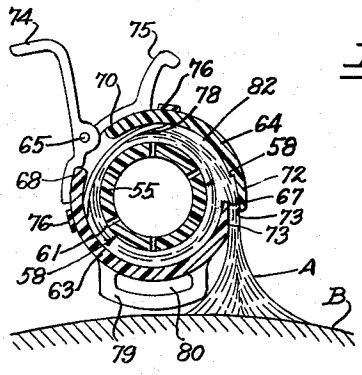
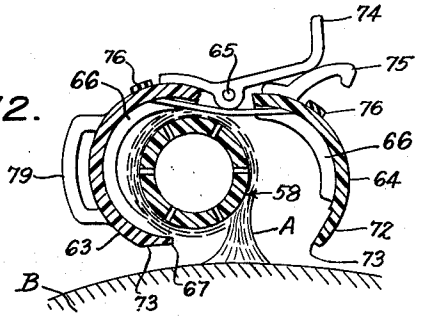




Fig. 11.

Fig. 12.




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Fig. 13.

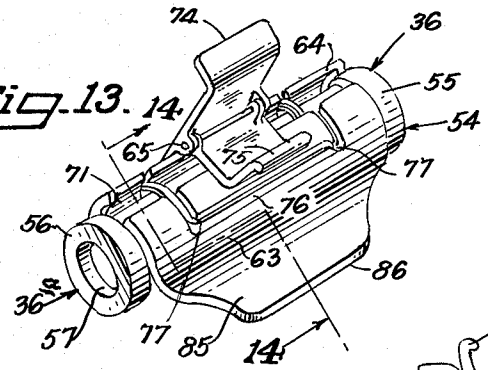



Fig. 14.

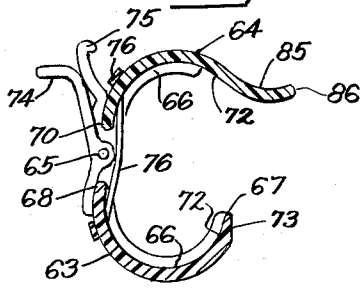



Fig. 16.

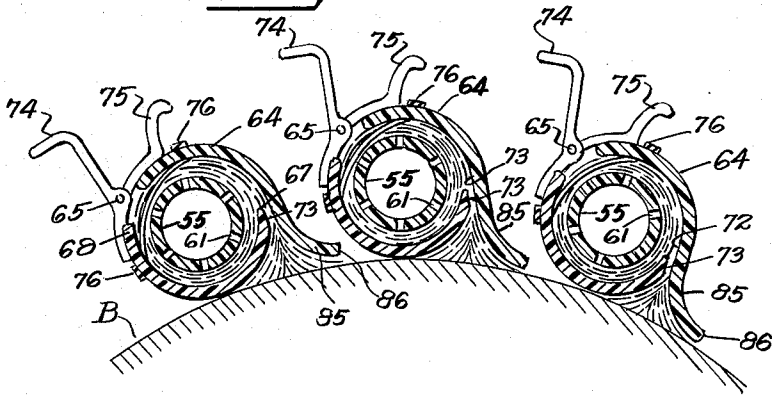
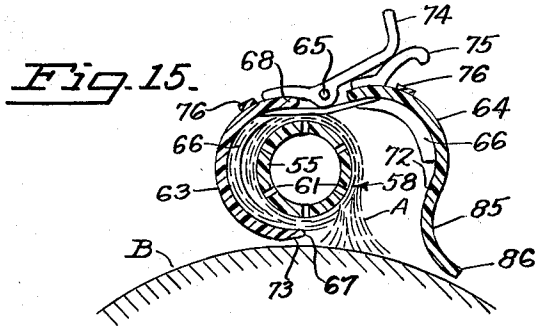



Fig. 15.




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United States Patent Office 3,241,560
Patented Mar. 22, 1966



3,241,560

# HAIR DRYING APPARATUS

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Filed Oct. 26, 1964, Ser. No. 407,619
7 Claims. (Cl. 132—9)

This application is a continuation-in-part of my previously filed application, Serial No. 126,822, filed July 24, 1961 and now abandoned, which in turn was a continuation-in-part of my previously filed application, Serial No. 94,525, filed March 9, 1961 and now abandoned.

This invention relates to hair drying apparatus, and relates more particularly to such apparatus in which orificed tubular rollers are adapted for winding locks of hair thereon, and an enclosing covering is provided for the wound hair, for use with heater means for forcing heated air through the tubular rollers and hair.

Regardless of whether the drying of the hair is a part of the operation of hair waving, hair retouching, or setting after shampooing, the step of drying hair on the human head under the presently known practice requires a very considerable time of both operator and the patron whose hair is being dried, as well as discomfort to the patron, since such hair drying usually requires the patron to sit for a considerable period of time, such as 30 to 40 minutes, beneath a heating hood over and enclosing the hair.

Briefly described, the present invention comprises a tubular perforated roller core for winding a lock of hair, and a hinged casing for enclosing the roller core, the casing being so arranged that when mounted on the roller and rolled hair, there will be no unwinding of the rolled hair, whereupon the heated air may be supplied to and discharged from the perforated roller core and through the wound hair and casing and may be directed away from the scalp of the patron being treated. As part of the drying apparatus for supplying heated air to the tubular roller core there is provided an electrical heating means comprising a portable tubular heater casing having a rotor fan blower at one end and a plurality of outlet tubes for fanned heated air at an opposite hooded end, and a thermostatically controlled electric heater between the blower and outlet tubes, together with a timing switch, each of the outlet tubes being adapted for attachment to the end of one of the tubular roller cores.

Among the objects of the invention is to provide means in hair drying apparatus for expeditiously drying rolled locks of hair by flowing heated air from the inside to the outside of the rolled hair.

Another object is to provide a tubular perforated roller and cover for wound locks of hair, through which heated air may be applied to the wound locks of hair in a manner which will maintain the rolled hair against unwinding, and will dissipate the heated air away from the scalp.

A further object is to provide a hair drying heater and blower which is simple and efficient, portable and thermostatically controlled, and timed for drying locks of hair wound on tubular perforated rollers.

With the foregoing and other objects in view, one form in which the invention may be exemplified is described herein and illustrated in the accompanying drawings, in which:

FIG. 1 is a vertical centrally transverse section of a heater and blower member of the invention, and illustrating conduit tubes for heated air in various positions of operation.

FIG. 1A is a fragmentary enlarged section of a modified form of a portion of FIG. 1, including a reticulated air screen.



FIGURE 2 is a sectional view showing the manner in which the flexible tubes are mounted in the top of the heater and blower assembly.

FIG. 3 is a fragmentary enlarged longitudinal section of a conduit tube at the end opposite to that shown in FIG. 2 and a portion of a roller assembly.

FIG. 4 is an enlarged plan view of a portion of the dome of the casing of the heater and blower member as shown in FIG. 1.

FIG. 4A is an enlarged fragmentary section of a modified portion of FIG. 1 showing elective inclusion of a thermal cut-out fuse.

FIG. 5 is a wiring diagram of the electric circuit of the heater and blower shown in FIG. 1.

FIG. 5A is a wiring diagram of FIG. 4A.

FIG. 6 is a perspective view of hair winding roller assembly is assembled closed relation.

FIG. 7 is a perspective exploded view of hair winding roller core, and casing.

FIG. 8 is a top plan view of the roller assembly.

FIG. 9 is a vertical section on line **9—9**, FIG. 8.

FIG. 10 is a vertical section on line **10—10** of FIG. 7.

FIG. 11 is a vertical section on line **11—11** of FIG. 8.

FIG. 12 is a vertical section of the parts of FIG. 11 at a different operative position.

FIG. 13 is a perspective view of a modified form of the roller assembly of the invention.

FIG. 14 is an enlarged lateral transverse section on line **14—14** of FIG. 13.

FIG. 15 is a lateral transverse section of an operative position of the modification shown in FIG. 13 mounted on the scalp.

FIG. 16 is a lateral transverse section of a plurality of devices of the modification of FIG. 13 mounted on the scalp.

Referring to the drawing in which like reference characters indicate corresponding parts of the several views, and firstly referring to the structures shown in FIGS. 1 to 5, there is a heater and blower assembly unit **10**, comprising an elongated cylindrical tubular casing **12** disposed on a vertical axis, and having its side wall **11** preferably of thermal and electrical insulating material, for which multi-layer paper-board tubing is adaptable and economical as well as having sound-deadening acoustical properties. The lower supporting end of the tubular casing is mounted by insertion within a metal socket base **13** having radially outwardly flared legs **14** and suitable casters **15** for mobility. The bottom of the socket base is a hinged annular closure member **16**, which is provided with a relatively large central opening **17**, which may mount a reticulated air-filter screen **17*a*** as shown in FIG. 1A.

Supported by the closure member **16** within the base portion of the tubular member are layered or relatively overlying air filter pads **18** and an acoustical sound-absorbing member **18*a*** snugly mounted therein and readily replaceable because of the hinged connection of member **16**, the air filter pads and acoustical member being highly permeable for air flow freely therethrough. Within the base portion and adjacently above the air filters and acoustical member, there is mounted in the heater casing a unitary assembly of a suitable motor **20** (in an electrical circuit to be described) and a rotary blower or fan **21** operated by the motor, the mounting of the motor and blower in the base portion of the cylindrical body providing stabilizing weight at the base end of the vertical axis of the tubular casing.

Within the casing spaced above the motor and blower, and intermediate the ends of the casing **12**, is any suitable electrical resistance heater member **22**, preferably having a flat elongated planar core which is mounted longitudinally within an elongated heater flue **23** of small-

er diameter than the casing, the heater flue being supported at its opposite ends and spaced from the casing wall by baffle plates **24** supported by the casing wall, which thereby restricts the passage of forced air from the blower to a concentrated air flow passage through the heater flue **23**. If desired, the wall of flue **23** may be suitably thermally insulated. Adjacently spaced next above the heater flue is a louvered plate **24***a* mounted transversely within and completely across the interior area of the casing for thoroughly mixing air from the heater flue for uniformity of air temperature.

The opposite or upper end portion of the tubular casing, generally indicated **25**, is substantially closed, preferably by a hooded dome **26**, and this upper end portion above the heater member houses a suitable thermostatic switch **27** and a timer switch **28**, both of which are in the electric circuit and are structurally conventional, the thermostat switch being shown as a temperature-responsive bimetal bar type which is adjustable to operate at a desired predetermined temperature. Manifestly, the thermostat is in the path of the heated air flow between the heater **22** and an air outlet means at **32**. The timer switch is adjacent to said upper portion of the casing for convenience of setting by means of a manually operated dial **30** which is exterior of the casing at a convenient height for an operator.

It will also be noted that adjacent to the upper end of the exterior of the casing, preferably opposite to and substantially at the same height as the timer switch, there are a plurality of studs **31**, of which there may be any suitable number up to and including the number of heat conveying tubes which will be described. These studs preferably do not penetrate through the wall of the casing, but they may be provided with a vent means, such as a grooved slot **31***a* in the side wall of the stud, whereby when a tube **35** is connected thereto, heated air passing through the tube may be vented to the atmosphere.

In the apex or crown of the dome closure **26**, there is a central cut-out portion **32**, which is closed by a plate **33** having a plurality of socket openings **34** therethrough for separately receiving snugly therein one end of flexible tube members generally indicated **35**, of which there are a sufficient number to provide a tube for each of a plurality of hair drying roller assemblies generally indicated **36** which, in operation, are mounted upon the scalp and upon which locks of hair are wound, as will be described, it being here noted that it is preferable to have a reasonable surplus number of such tubes over and above the number ordinarily necessary in a single drying operation, in order to make allowance for the requirements of an unusual drying operation, ten to twelve sockets **34** and tubes **35** being preferably provided.

The flexible tubes **35** may be provided at one end with a rigid tubular end piece or nipple **37** for removably fitting snugly with a forced fit into the sockets **34**, and within this rigid end portion and extending longitudinally within a substantial adjacent length of the flexible tube portion **38**, there is mounted a flexible spring wire **40** to prevent the connected flexible end portion of the tube from bending at a sharp angle in use, which would thus prevent heated air from freely flowing therethrough. The end of the spring wire within the rigid nipples may be retroverted upon itself, as at **41**, for resiliently maintaining the wire properly positioned in that end portion of the tube. Suitably coiled or straight spring wire may also be employed intermediate the ends of the tubes as is conventional for reinforcement and to prevent sharp bending. The opposite end of the respective tubes is connectible to the roller assembly, as best shown in FIGS. 1 and 3, by swiveled nipples **42** adapted for snug releasable pressure fit, into an end of a tubular roller member **54** of the roller assembly **36**. The opening of these swivelled nipples **42** is of similar diameter to the diameter of the free end of studs **31**, so that when any of the tubes **35** are not attached to a roller assembly and are not being employed in a hair drying operation, the nipple **42** thereof may be slid over one of the studs and thereby anchored, thus preventing the end of the unused tube from flailing sinuately from the air pressure and simultaneously permitting heated air to escape at the end of the tube through vent **31***a*, since it is desirable to maintain a regulated uniformity of pressure and volume of heated air in the tubes and the number of roller members being employed, which would be decreased if unused tubes were left completely open, and would be increased if a substantial number of the tubes were completely blocked-off from air flow therethrough.

An electrical circuit is provided for the heater and blower assembly comprising a lead-in line **43** having one lead wire **44** to a contact post **44***a* of the motor-blower and a lead **45** to a contact **46** of the fixed member of thermostat switch **27**. The contacts of the thermostat switch are normally closed by its bimetal bar **47**. The circuit thence has a connecting lead **48** from the bimetal bar **47** to one terminal end **50** of resistance heater member **22**, the opposite terminal end of the resistance element of the heater member having a lead **51** to one switch post **28***a* of the timer switch **28**, and thence from said switch post **28***a* by lead **52** to an opposite contact post **52***a* of the motor-blower. The other lead **53** of the lead-in line **43** may connect directly with the opposite post **28***b* of the timer switch, completing one line of a circuit through the resistance heater when the thermostat and timer switches are closed.

Thus, when the timer switch and the thermostat are closed, there is a complete electric circuit, the potential of which operates the motor **20** and blower **21** and energizes the resistance heater element **22** for heating the forced air as it passes through the tubular flue **23** and thence to the socket openings **34** and through tubes **35** to the roller assemblies **36**.

As stated, the contact of the thermostat is normally closed, and it is in the path of the heated air flowing through the heater flue **23**. If the temperature of the current of heated air passing by the thermostat rises to exceed its preselected temperature (to which the operation of the thermostat is attuned), the bimetal bar **47** will flex to break the thermostat contact and thus disconnect the heater in the circuit until the temperature drops to the preselected status. When the temperature of the air is thus reduced to the desired preselected temperature, the thermostat switch will again contact and the heater operation will be resumed, assuming that the timer switch has not run its pre-set time to break the circuit therethrough. The operation of the motor-blower **20**, **21**, however, is not affected by the opening of the thermostatic switch, and continues to operate, subject only to the pre-set time of the timer switch, in which event the circuit to operate the motor-blower would be through the lead-in power line **44** to the contact **44***a* at one side of the motor, and the lead-in power line **53** to one post **28***b* of the timer switch, thence through the closed timer switch to switch post **28***a*, and thence by lead **52** to post **42***a* at the opposite side of the motor **20**. However, when the timer switch **28** has operated for its pre-set period of time, it breaks the circuit through the timer switch and thereby breaks the circuit both to the motor-blower and the resistance heater member, whereupon the entire heater unit ceases to operate until the timer switch is again closed for a repeat operation. If it is desired to break the circuit during a hair drying operation, this may be conveniently accomplished by manual manipulation of the dial **30** at the exterior of the timer switch.

The timer switch **28** may be of any of the many suitable conventional types which may be set with a closed switch for a desired predetermined time period for energizing the circuit, at the end of which time period the timer switch will automatically break the circuit and, in the present exemplification, will thereby de-energize both the heater and the motor-blower.

If desired, any suitable conventional thermally fusible link or meltable cut-out fuse **53***a* may be introduced into the circuit at any suitable place where it is directly responsive to the heat from the resistance heater, as shown in FIGS. 4A and 5A. Such a cut-out fuse is not necessary to the normal operation of the hair drying apparatus, but is a conventional safety requirement of many regulatory boards or agencies as an ultimate safety measure to prevent combustion under emergency temperature conditions, such as an abnormal surge of electric current, the "freezing shut" of the thermostatic switch, or any other condition which might cause combustion. As exemplified herein, the thermal cut-out fuse **53***a* is incorporated in the primary in-put current lead **53** closely adjacent to the timer switch **28** and overlying the upper end of the resistance heater member. Being in a primary in-put lead of the circuit, manifestly if such fuse is melted, that is, burned out, the circuit of the entire heater and blower unit is broken and it ceases to operate as an entirety. The relative preselected temperature at which such a fuse would break the circuit may be any temperature above any reasonable normal operating temperature for the thermostat switch and less than combustion temperature; for example, if the preselected operating temperature of the thermostat switch were considered to be of the order of 130 degrees F., the fusing temperature of the cut-out fuse may be predetermined at 350 degrees F.

Responsive to the foregoing operation, the heated air, with the uniformity of flow and temperature thus regulated and timed, will flow through the tubes **35** to the hair-drying roller assemblies **36**.

The roller assemblies, generally indicated **36**, as more particularly shown in FIGS. 6 to 12, are preferably formed of a vinyl plastic and comprise an elongated tubular cylindrical roller, generally indicated **54**, closed at one end by a circular disc **55** and having at its opposite end a disc **56** of similar outer diameter to disc **55** and which has an opening **57** centrally thereof for receiving and frictionally holding the free end of the swivelled tube nipple **42**. Integrally and coaxially between these opposite end discs, there is a hollow cylindrical core **58** of lesser diameter than the end discs and thereby providing radially outward end flanges **60** at each end of the cylindrical core. The cylindrical core has circumferentially spaced radial orifices therethrough substantially throughout its length between the flanges, illustrated as axial elongated slots **61**.

For removably fitting circumferentially in radially spaced relation around the core member **58**, there is an axially elongated enclosing roller cover or casing, generally indicated **62**, which is of a hinged two-part clamshell type, each part being generally circularly and integrally arcuate in transverse section, as shown in FIGS. 10 and 11, the arcuate members **63** and **64** being connected centrally at their relatively opposed longitudinal edges at one longitudinal side of the casing by hinge **65**, by which the casing members may be manually opened and closed relatively at their free longitudinal diametrally opposite edges **67** and **72**.

The overall length of the roller casing member is substantially similar to the length of the core **58**, whereby, when the casing members are closed around the core, the opposite ends of the casing members are within the core length and fit snugly between the flanges **60** of end discs **55**, **56**. Each of the arcuate casing members **63**, **64** is provided at each of its opposite ends with a radially inward flange **66** which, when the casing is closed around the core, spaces the arcuate members from the core, as well as providing a baffle sufficiently snugly against the disc flanges **60** to insure against heated air passing therebetween.

The hinged arcuate casing member **63** may be termed the lower channel member of the casing, which is the position it occupies in use upon the scalp, as shown in FIG. 11, and provides an arcuate channel **63***a* for receiving the core therein, with the end discs overlying the ends of the channel. This arcuate lower channel member **63** is imperforate and is preferably of substantially greater arcuate dimension than a semi-circle of 180 degrees, whereby it has a free longitudinal edge **67** substantially at the plane of a horizontal diameter of the casing, and has its other longitudinal hinged edge **68** substantially beyond the plane of such diameter.

The other hinged arcuate member **64** of the casing, which may be termed an upper closure cover, is of relatively lesser arcuate dimension than 180 degrees and has its longitudinal hinged edge **70** spaced by the hinge **65** a substantial distance from the opposed longitudinal edge **68** of the lower channel member **63**, thereby providing an elongated relatively widely spaced open gap or slot **71**, which is open in a generally upwardly direction away from the scalp when the roller assembly is mounted on the scalp in operating position, though it may be noted that the exact position of this opening **71** may be varied, such as by providing an elongated slot within the cover member **64**, and maintaining the characteristic that the opening be in direction away from the scalp. The arcuate dimension of the upper arcuately shorter enclosing casing member **64** is such that its diametrally opposite free longitudinal edge portion **72** radially outwardly overlaps the free edge portion **67** of the arcuately longer lower channel casing member **63**, the overlapping faces of said members preferably being smoothly and flatly planar to provide opposed substantially parallel longitudinal planar faces, as at **73**, which, when closed, lie in superficial contact at opposite faces of the lock of hair therebetween and prevent heated air or steam passing therebetween, and more importantly, grip the lock of hair close to the scale in a single plane generally in alignment with the lock of hair as it leaves the scalp, thus avoiding deformation marks or crimps in the lock of hair adjacent the scalp.

The hinge member **65** bridges across the spacing gap **71** and is positioned longitudinally centrally of the roller casing, being substantially spaced from the opposite ends thereof so that the space gap **71** is open for the greater part of the length of the casing. The spacing of the cover members by means of the hinge provides a wider opening at the opposite edges of the cover members for manipulation of the core, as best shown in FIG. 10 and FIG. 12.

The hinge has a pair of finger-grip radial flange portions **74** and **75** connected respectively to the central part of opposed longitudinal edge portions **68** and **70** of the respective casing portions **63** and **64**, and the butt plates of the hinge space the adjacent edges of the casing members relatively to provide the space **71**, and position the casing members so that the respective opposite free horizontal edges **67**, **72** of the casing members may smoothly and flatly overlap at the diametral opposite side of the casing. The hinge is suitably resiliently tensioned to a closed position of the casing such as by a rubber elastic band **76** mounted under tension in slots **77** and **77***a* of the respective casing members and tensioned to hold them at the closed overlapping position specified above, as shown in FIG. 11, but permitting them to be manually opened for insertion and removal of the roller core **54** within the channel **63***a*. It is to be noted that the elastic bands extend in a chord across the internal arc formed by the casing members, as at **78** (FIG. 11), whereby, when a lock of hair is wound upon the core and enclosed in the casing, the chord portion **78** of the elastic band will bear upon the wound hair and stabilize the core against unwinding, and also stabilize the entire roller assembly in its position on the scalp.

The finger-grip flange members **74**, **75** both extend radially outwardly on the same side of a diameter of the casing at the axis of hinge **65** and are longitudinally centrally of the casing so that both of the finger-grip members **74**, **75** closely overlie and substantially contact each

other on one longitudinal side of said diameter at the hinge axis when the arcuate casing members are open, and thereby provide a firm support for manually gripping both of the finger-grips in the fingers of one hand for manipulation of the casing, as shown in FIGS. 10 and 12, as well as facilitating the positioning of the free terminal edge **67** of the lower arcuately longer casing member **63** under a roller core when hair is wound on such core, whereby said free terminal edge and its adjacent planar surface **73** are positioned in a plane in parallel contact with the wound lock of hair extending from the scalp, as best shown on FIGS. 11 and 12.

The casing, at its base portion (being that portion shown in FIGS. 6 to 12, which is mounted next adjacent to the scalp), may be provided at each opposite end with an elongated laterally transverse foot **79** extending radially from the outer face of the channel casing member **63**. This foot member serves to space the casing from the scalp and is provided with an elongated opening **80** therein, through which any suitable pin **81** may be inserted into the hair to anchor the roller assembly in proper operating position on the scalp, whereby it may be insured that the slotted open space or gap **71** is always maintained upwardly away from the scalp, and the overlapping longitudinal edges **67, 72** of the casing members are maintained in substantially spaced relation to the scalp, as in FIG. 11.

The operation of the heater and blower having been previously stated, the cooperative operation therewith of the roller assembly shown in FIGS. 6 to 12 is that a lock of hair A is wound spirally croquignole upon the core portion **58** of the roller **54** between the end discs **55, 56** until the wound roller is as close as practicable to the scalp **B**, the winding being preferably counter-clockwise, as is usual. The core, with the hair wound thereon, is placed in the channel **63** by slipping the lower casing edge **67** below the layers of wound hair adjacent to the scalp, as in FIG. 12, whereupon the casing cover may be slightly axially rotated counter-clockwise approximately 90 degrees and closed around the core and hair, as in FIG. 11, the opposite ends of the casing fitting snugly between the flanges **60** of discs **55, 56** and the casing members being spaced from the wound hair by flanges **66**, thus providing a circumferential space **82** for circulation of heated air around the rolled hair, and the parallel overlapping faces **73** of the casing members flatly gripping the hair between them in a longitudinal plane in closely spaced relation to the scalp, which stabilizes the core and casing assembly on the scalp and maintains the open gap **71** removed from the scalp.

Having closed the casing, the swivelled nipples **42** at the free terminal ends of tubes **35** may be inserted in the openings **57** of the rolled cores, and the nipples of unused tubes may be anchored on the studs **31**.

The heater and blower may then be energized and operated as previously described, for blowing heated air for a preselected time and temperature from the dome **26** through the tubes and nipples **35, 42**, and into the tubular cores **53**, and through the orifices **61**, and thus through the lock of hair wound on the core, the heated air thence passing through and drying the hair from the inside of the body of the wound hair and also circulating around the outer circumference of the wound hair into the circumferential space **82**, whereupon the heated air is dissipated from the closed casing through the slot **71** and is thereby directed away from the scalp, whereby higher temperatures than usual may be employed, the hair is dried quickly by the circulating flow of heated air, and the discomfort of contact of the heated air against the scalp of the patron is thus eliminated. If, for any unanticipated reason, the thermostat should fail to operate to break the circuit to the resistance heater at the predetermined operating temperature, or, if for any other reason, the temperature within the casing became excessively high, the cut-out-fuse **53*a*** will break the entire circuit.

In the modification of the roller assembly as generally indicated **36*a***, shown in FIGS. 13 to 16 of the drawing, the parts, with the exception here noted, may be the same as the roller assembly **36** shown in FIGS. 6 to 12, and, where the parts of the operation are identical, such identical parts may be indicated by the same reference characters and included in the same descriptive specification as in FIGS. 6 to 12.

The modification illustrated in FIGS. 13 to 16 comprises a terminal integral lip **85** which is connected along the longitudinal portion **72** which, in FIGS. 6 to 12, is the overlying planar free terminal edge of the relatively arcuately shorter of the two casing members, though manifestly it ceases to be a free terminal edge of arcuate number **64** in FIGS. 13 to 16 when the extended lip **85** is integrally extended therefrom. The connection of said lip to said terminal arcuate portion is a smooth longitudinal face at the inner face of the joint in order to avoid any formed marks on the hair and preserve the opposed smooth parallel longitudinal faces **73** as previously described. From such connection the lip **85** extends concavely and at an arcuate incline outwardly and downwardly in direction toward the portion of the casing which rests upon the scalp, the lip having a free terminating edge **86** substantially at the plane of the lower portion of the casing, so that the free edge **86** may come very close to contact with the scalp when the roller assembly is in use upon the head with a lock of hair mounted thereon.

The lip **85** serves two important functions in operation of the roller members. Firstly, there is a tendency of the wound hair to expand slightly when it is wet and heat is applied to the center of the roll in the manner as previously described and thereby the hair has a tendency to exert a force to unwind the hair which tips the roller and casing assembly forwardly. Secondly, with special consideration of the roller assemblies which are wound upon a side or inclined surface of the scalp, the wound roller has a tendency to roll forward and thus interfere with the winding operation of a next adjacent roll of hair. The tongue, by the engagement of its free edge **86** against the scalp prevents the roller assembly from such tilting or rolling. The concave arcuate form of the lip presents a curved body intermediate its longitudinal portions **72** and **86** and when the casing is in use upon the scalp, next adjacent roller assemblies may be mounted upon the scalp in very close proximity by seating the cylindrical body portion of a next adjacent roller assembly into the concavity of the lip, as best shown in FIG. 16. With the inclusion of the lip **85** in the casing structure the foot members **79** shown in FIGS. 6 to 12 may be eliminated since the stabilization of the roller assembly on the scalp is accomplished by the free terminal edge of the arcuate lip being in contact with the scalp.

Except for the presence of the lip and its described function, the rolling and drying operation of the hair upon the core within the casing in the modification of FIGS. 13 to 16 is the same as described above relative to FIGS. 6 to 12.

Having described the invention, what is claimed is:

**1.** In apparatus for drying hair, a roller apparatus for positioning on the scalp, including an elongated cylindrical tubular core member for winding a lock of hair thereon, said core having one end closed and being open at its opposite end whereby a conduit tube for heated air may be connected thereto, said core having radial orifices therethrough intermediate its ends, an elongated casing cover generally arcuate in lateral section enclosing the core in radially inwardly spaced relation whereby the core and the lock of hair wound thereon may be enclosed within said casing, said casing comprising a pair of axially elongated members each integrally arcuate in lateral section wherein one of said casing members is of greater arcuate dimension than the other casing member, said casing members having a hinge connecting means there-

between longitudinally centrally of the casing at a first pair of adjacent longitudinal edges, said arcuate casing members having a second pair of longitudinal portions which are substantially diametrally opposite to said hinged edge portion and have longitudinal parallel planar faces relatively overlapping smoothly in a plane longitudinally of the casing whereby a lock of hair may be gripped closely to the scalp between said smoothly overlapping parallel faces in a plane longitudinally of the casing, resilient means for urging the hinged casing members to a closed hair-gripping position at the said hair-gripping smooth overlapping planar longitudinal portions thereof, finger-grip flange members mounted longitudinally centrally adjacent to the said hinged edges of the casing members for manually manipulating the casing members to open position relatively at said hair-gripping edge portions thereof, said finger-grip flanges extending radially from the arcuate casing members at one side of a diameter of the arcuate casing at said hinge whereby the finger-grip members substantially contact each other at one side of the hinge when the casing members are open and provide a finger-grip means which may be manually manipulated as a unit by the fingers of one hand of the operator, said casing having an opening therethrough in a portion of the casing removed from said hair-gripping edge portion, whereby heated air discharged through the radial orifices of the core and through the wound hair may be discharged from the casing in a direction away from the scalp on which the roller apparatus is mounted.

**2.** Hair drying apparatus as set forth in claim **1**, the arcuately shorter of the casing members having its smooth longitudinal hair-gripping portion radially outwardly at said overlap at said hair-gripping portions.

**3.** Hair drying apparatus as set forth in claim **2**, and in which the opposite end portions of the casing cover members have flanges turned radially inwardly for maintaining the cover members in spaced relation to the circumference of the core when the casing is mounted on the core.

**4.** In a hair roller apparatus for drying hair, a casing cover for enclosing an elongated tubular core upon which a lock of hair may be spirally wound, said casing cover comprising a pair of axially elongated members each of which is integral and generally arcuate in lateral section, said elongated casing members having a resiliently actuated axial hinge means longitudinally centrally therebetween at a first pair of adjacent longitudinal edges, said casing members being free for selectively opening and closing relatively at a second pair of longitudinal edges for gripping a lock of hair closely to the scalp, said casing members having relatively planar overlap at said hair-gripping edge portions thereof, the outer of said overlapping members having a lip extended freely therefrom at its hair-gripping edge portion in a direction which is outwardly and toward the scalp when the casing cover is mounted on the scalp, a finger-grip flange member mounted adjacent each of said hinged edge portions longitudinally centrally of the casing members for manually urging said casing members to open position relatively at the hair-gripping edges thereof, said finger-grip flanges both extending radially to one side of said hinge when the casing members are open whereby said flanges may overlie each other in such proximity that they provide a unitary finger-grip at one longitudinal side of the hinge, the said casing having a vent opening therethrough removed from the hair gripping edge portion whereby heated air which is discharged through orifices of a core within the casing and through the hair wound thereon may be discharged from the casing in a direction away from the scalp on which the roller apparatus is mounted.

**5.** A hair drying apparatus as set forth in claim **4**, the said lip being extended arcuately from the overlying hair-gripping edge portion of said one casing member.

**6.** A hair drying apparatus as set forth in claim **4**, and in which said casing members have relatively parallel opposed flat planar faces at said planar overlapped portions adjacent the hair-gripping edges whereby a lock of hair which extends in a planar form from the scalp may be gripped axially lengthwise of the casing between said planar faces of the hair-gripping edges of said casing member.

**7.** A hair drying apparatus as set forth in claim **6**, and in which one of said casing members is of greater arcuate dimension than the other, and the casing member having the greater arcuate dimension has its hair-gripping edge portion radially inwardly at said overlap of hair-gripping edges.

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