

April 8, 1952

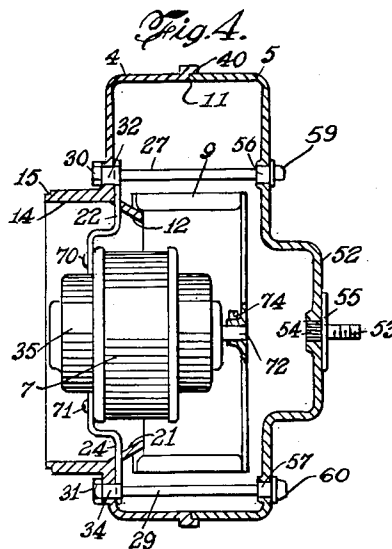
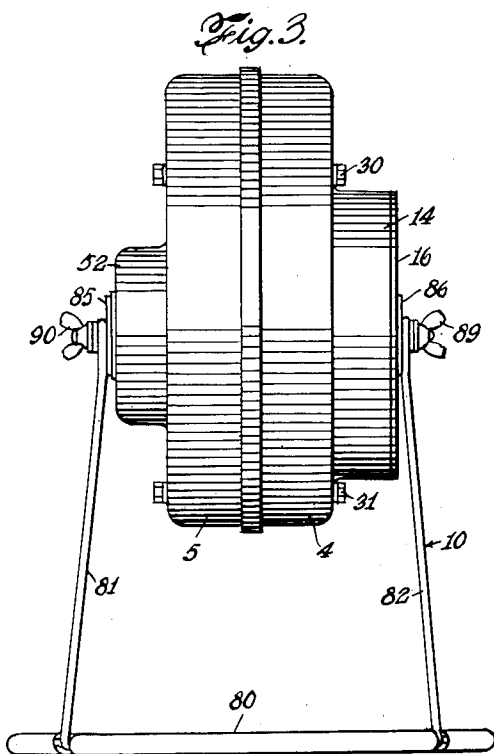
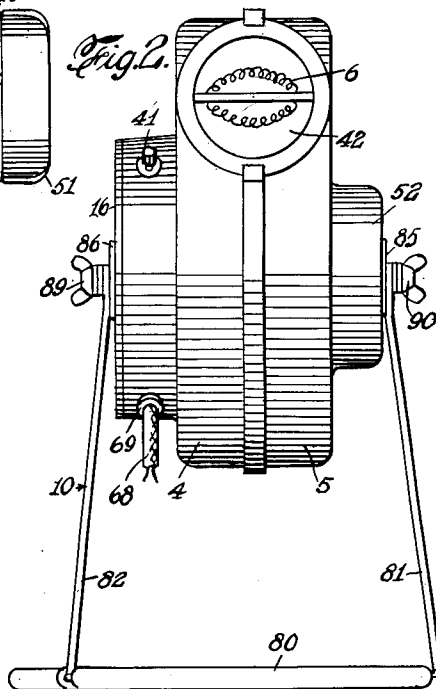
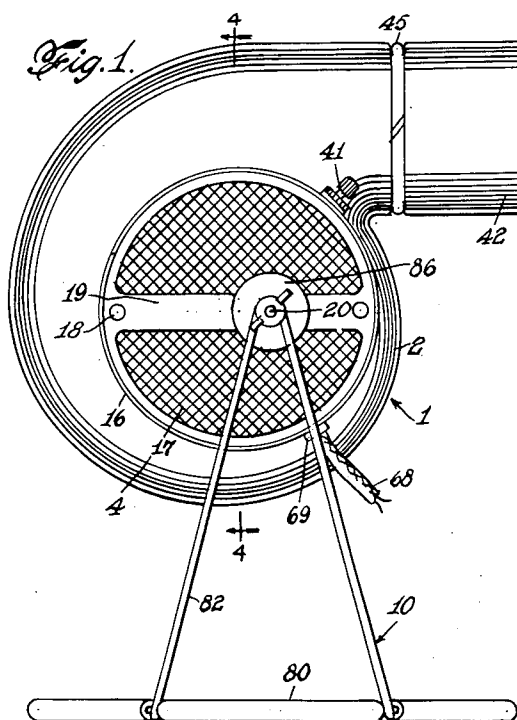
W. H. BUCKNELL ET AL

2,591,669

HAIR DRIER

Filed July 30, 1949

3 Sheets-Sheet 1



INVENTORS
WILLIAM HARLAN BUCKNELL
AND EMIL MIESSMER

BY *Edward T. Connor*

ATTORNEY.

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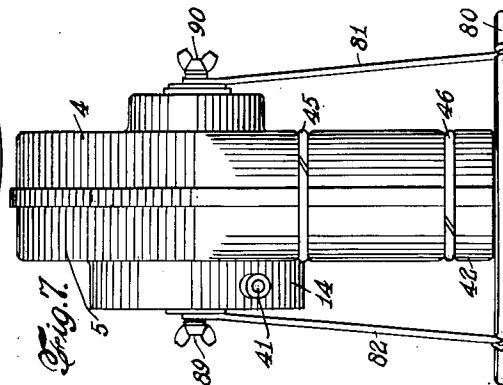
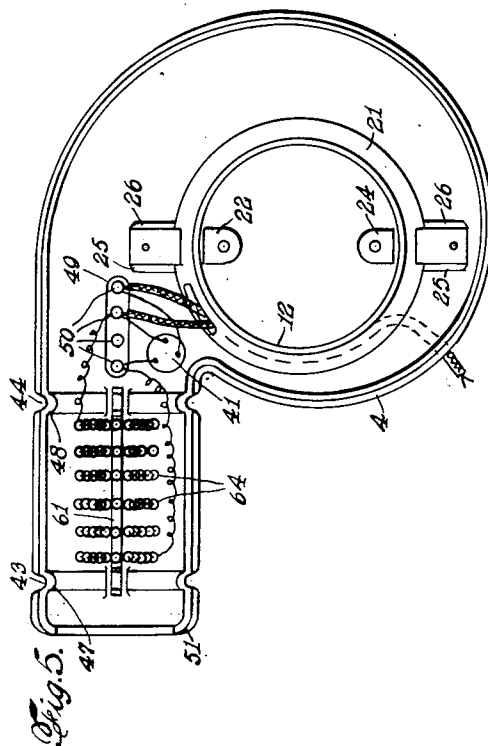
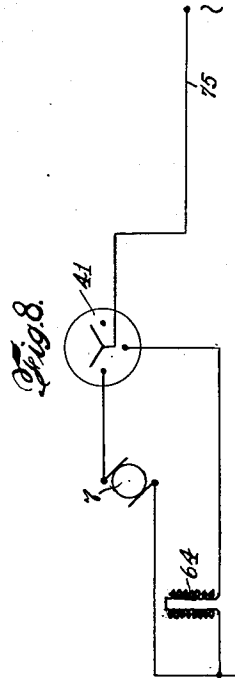
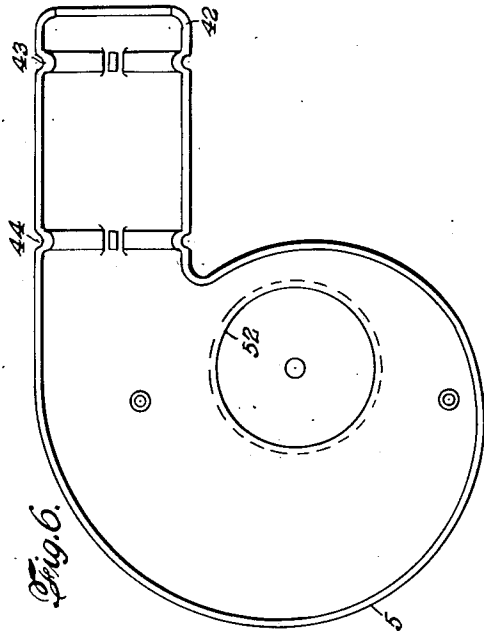
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HAIR DRIER

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3 Sheets-Sheet 2



INVENTORS
WILLIAM HARLAN BUCKNELL
AND EMIL MIESSMER
BY *Edward T. Connor*

ATTORNEY.

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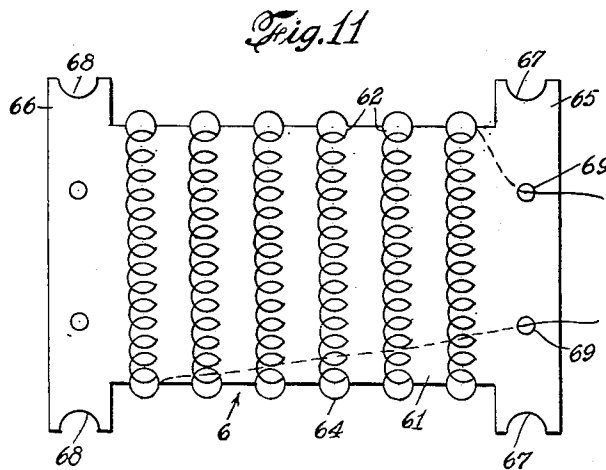
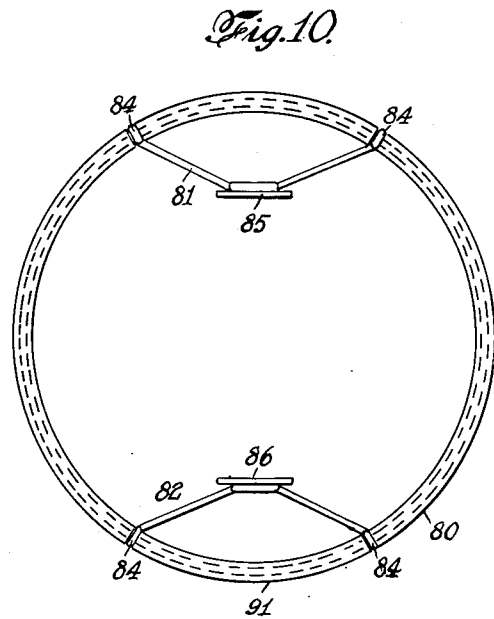
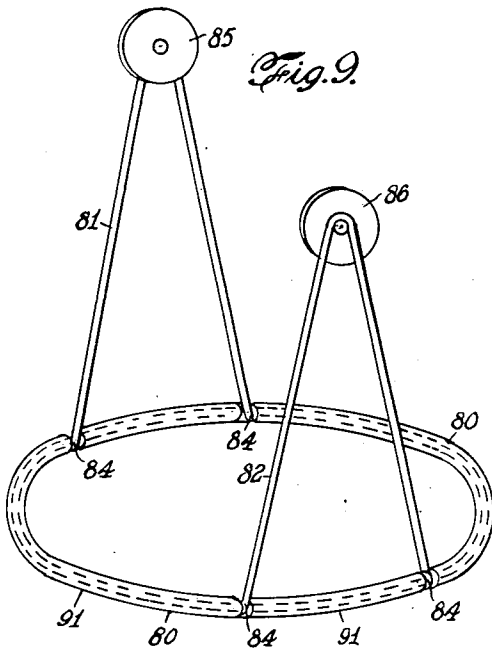
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HAIR DRIER

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3 Sheets-Sheet 3



INVENTORS
WILLIAM HARLAN BUCKNELL
BY AND EMIL MIESSMER

Edward T. Connors
ATTORNEY.

UNITED STATES PATENT OFFICE

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HAIR DRIER

William Harlan Bucknell, Norwalk, Conn., and
Emil Miessmer, Yonkers, N. Y., assignors to
Eastern Laboratories, Inc., New York, N. Y., a
corporation of New York

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7 Claims. (Cl. 219—39)

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This invention relates to an improved hair dryer particularly suitable for home use.

It is important that a hair dryer be light in weight so that it may be easily manipulated, and further, that it deliver a sufficiently large stream of air to dry the hair quickly without the use of excessive heat.

Prior hair dryers have been, in many instances, unsatisfactory because the motor unit has been too small to deliver the requisite amount of drying air without operating at an excessive speed which results in considerable noise being produced by the dryer. Other dryers have been of insufficient air capacity and have attempted to overcome this difficulty by providing an oversized heating unit which is not only injurious to the hair if directed too close thereto, but often results in excessive heating of the outlet of the dryer so that it is liable to cause burns to the hands of the user if contacted. Generally, prior attempts to overcome these difficulties have resulted in the production of a hair dryer too heavy and too expensive for the average home use.

The present invention aims to overcome the foregoing difficulties and disadvantages of prior devices by providing an improved hair dryer which is simple and economical in manufacture, efficient in operation, and durable in use.

In accordance with the invention, a hair dryer is provided in which its casing is formed in sections which may be stamped and molded if desired, the sections of the casing enclosing the heating unit and blower motor in an improved construction. A novel supporting means is used whereby the hair dryer may be readily attached to a wall or supported on a horizontal surface.

Other objects and advantages of the invention will be apparent from the following description and from the accompanying drawings which show, by way of example, an embodiment of the invention.

In the drawings:

Figure 1 is a side view of a hair dryer in accordance with the invention.

Figure 2 is an end view of the hair dryer showing the air outlet looking from the right of Figure 1.

Figure 3 is an end view of the hair dryer looking from the left of Figure 1.

Figure 4 is a partial vertical sectional view of the dryer taken along the line 4—4 of Figure 1.

Figure 5 is a vertical longitudinal view of one section of the dryer showing the heating element.

Figure 6 is a vertical longitudinal view of the other section of the dryer.

Figure 7 is an end view of the dryer with the outlet turned downwardly in its frame illustrating its compactness as for transportation,

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Figure 8 is a wiring diagram of the electrical circuit of the dryer.

Figure 9 is a perspective view of the frame of the dryer.

Figure 10 is a top view of the frame.

Figure 11 is an enlarged side view of the heating element.

Referring to the drawings, there is shown a hair dryer 1 in accordance with the invention comprising a casing 2 formed in two sections 4 and 5. Within the casing is a heating unit 6, a blower motor 7, and a cylindrical rotary fan 9. The dryer is supported by a mounting frame 10.

The casing 2 may be made of any suitable material such as steel, aluminum or preferably of plastic material and may be stamped or molded to the desired form. The casing is formed in the two sections 4 and 5 which have their edges abutting as indicated at 11 along a plane extending through the longitudinal axis of the dryer.

As may be seen in Figures 5 and 6, the two sections of the blower 4 and 5 are generally symmetrical but are somewhat different in construction. The section 4 is the basic section and provides means for supporting the motor, terminal block switch and heating unit, all of which are assembled in place after which the casing section 5 is placed in position to complete the assembly. The casing section 2 is formed with an aperture 12 providing an air inlet for the cylindrical fan 9. An annular extension 14 is formed on the section 4 about the air inlet 12. The outer edge of the annular extension 14 is shouldered as indicated at 15 to receive a retaining member 16 securing in position a screen 17 to prevent foreign matter from entering into the motor and fan. The retaining member 16 has a bar 19 extending across its diameter and with an outwardly extending threaded stud 20 providing one of the mounting means for the dryer. At the inner end of the air inlet 12 a funnel shaped wall 21 directs the air into the center of the cylindrical fan 9. A mounting is provided for the motor 7 by a pair of straps 22 and 24 extending through slots in the funnel member 21 and secured in position between inwardly extending alignment ribs 25 and 26 on the inner wall of the casing 4.

The straps 22 and 24 and the wall of the casing are apertured to receive stud bolts 27 and 29 having threaded ends and secured by nuts 30 and 31. If preferred, the wall of the casing 4 may be formed with molded metallic inserts 32 and 34 to carry the compression stress of the stud bolts 27 and 29. The motor mounting straps 22 and 24 are formed with double reversed L bends so as to support the motor with its end 35 in the air inlet 12. This method of mounting the motor saves space inside the casing and the incoming

air through the air inlet is used to cool the motor and add to the efficiency of the unit by being heated somewhat by the waste heat of the motor. The edge of the casing section 4 is provided with an overlapping edge 40 to cover the joint with the section 5 when the casing section 5 is placed in position. The annular inlet 14 is apertured to receive a 3-way switch 41.

A discharge outlet 42 preferably is formed integrally with the casing sections 4 and 5 and is made with annular grooves 43 and 44 depressed therein to receive split rings 45 and 46 to hold the sections together. The grooves 43 and 44 are depressed to provide inwardly projecting annular protuberances 47 and 48 to retain in position the heating unit 6. On the inner side of the casing section 4, is formed an inwardly projecting terminal block 49 to carry a plurality of contact terminals 50 to attach the various electrical connections for the device. The contact terminals 50 may be molded in the block or otherwise secured thereto. The split rings 45 and 46 preferably are made of spring steel or brass and are adapted to be slipped over the ends of the assembled sections 4 and 5 into the grooves 43 and 44 to hold the sections together. The outer end of the discharge outlet 42 is curved inwardly as indicated at 51 to provide a finished end surface.

The casing 5 is formed similarly to the casing 4 and is adapted to be assembled after the other elements have been placed in position within the casing. The wall of the section 5 is made with an outwardly extending portion 52 apertured to receive a mounting stud 53 with one end threaded and its other end knurled as indicated at 54 to make a press fit with the apertured wall 52. The stud 53 may be formed with an annular ring 55 to distribute the stress over a larger portion of the wall of the casing section.

The wall of the section 5 is apertured and preferably fitted with inserts 56 and 57 to receive the stud bolts 27 and 29 which extend through the casing wall. It should be noted that in a preferred construction the stud bolts 27 and 29 are made with their shanks of somewhat larger diameter than their ends so as to provide a shoulder at one end to abut against the mounting straps 22 and 24 and, on their other end, to abut against the inserts 56 and 57 thereby providing a metal-to-metal contact to relieve the strain on the plastic material.

The heating unit 6, shown in detail in Figure 11, is made of an insulating member 61 fabricated from a thin strip of insulating material notched on its edges as indicated at 62 to receive turns of a heating coil 64. The ends of the insulating member 61 are formed with extensions 65 and 66 having notched ends 67 and 68 to engage with the inwardly extending protuberances 47 and 48 in the dryer outlet to hold the heating unit in position in the dryer. The insulating member 61 is apertured as indicated at 69 to receive the ends of the heating coil 64 and hold them in spaced relationship.

The motor 7 may be of any conventional design although by reason of the construction wherein the outlet air acts as a cooling agent the design of the motor may be such as to make it compact and inexpensive yet capable of delivering a large stream of air. Supporting means for the motor 7 are provided by bolts or screws 70 and 71 extending through apertures in the ends of the mounting straps 22 and 24 into the frame of the motor to hold it in position.

The cylindrical fan 9 is of cup shaped design and is adapted to overlie the end of the motor so as to provide for a compact construction. It is carried by motor shaft 72 and secured in position by a set screw 74.

The wiring diagram of the dryer is shown in Figure 8 and illustrates the connection of the 3-way switch 41 wherein the motor 7, in one position of the switch, may be connected through a duplex supply wire 75 to a source of electrical current without energizing the heating element 64, while in the second position of the switch, both the motor 7 and the heating element 64 are energized, and in the third position of the switch, both elements are in the "off" position.

The frame 10 is shown in detail in Figures 9 and 10 and comprises a base member 80 which is preferably ring like in form although any other suitable shape may be used.

Extending upwardly at opposite sides of the base member 80 are generally inverted V-shaped members 81 and 82. The legs of the supporting members 81 and 82 are turned around the base member 80 as indicated at 84 forming a construction which, if desired, may be folded up when not in use in a compact manner. At the apex of the supporting members 81 and 82 are attached bearing members 85 and 86 secured in position by welding or the like and apertured to rotatably receive the dryer mounting studs 20 and 53 which are adapted to be inserted through the apertures, wing nuts 89 and 90 being used to hold the parts in position. If desired, the ring member 80 may be encased in a cushioning material 91 to prevent marring of any surface on which the device might be placed.

In assembling the unit, the cylindrical fan 9 is attached in position on the motor 7. The motor mounting straps 22 and 24 are inserted through the slots in the funnel wall 21 and attached to the motor 7 by the screws or bolts 70 and 71. The supply wire 75 is inserted through an aperture in the inlet wall 14 and connected to the terminal block 49. The screen 17 is placed in position and retaining member 16 secured by a screw 13 extending through the apertured cross bar 13 into the annular extension 14. The heating unit 6 is inserted in position in the discharge outlet 42 and the necessary connections made from the motor to the terminal block 49 and the switch 41. It should be noted that all of the connections for the unit may be made before the casing section 5 is placed in position and secured by the nuts 59 and 60. The dryer is then mounted in the frame 10 and is ready for operation.

In using the dryer it may be placed on a horizontal surface and rotated to the desired position about its mounting studs 20 and 53 and fixed in the desired position by tightening the wing nuts 89 and 90. Alternately, the dryer may be mounted on a wall hook or the like and the outlet directed as desired. It will be observed that additional flexibility of the mounting may be had by reason of the base construction permitting the dryer to be hung on a wall hook at any desired angle, the discharge outlet of the dryer then being directed as desired.

While the invention has been described and illustrated with reference to a particular embodiment thereof, it will be understood that other embodiments may be resorted to without departing from the invention. Therefore, the form of the invention set out above should be considered

as illustrative and not as limited by the scope of the following claims.

We claim:

1. A hair dryer comprising a casing formed of a pair of sections abutting along a plane through the longitudinal axis thereof, motor actuated air impelling means positioned within the casing, an extension for the casing to provide a discharge outlet for the air impelling means, the extension having an annular groove depressed thereabout and protruding into the discharge outlet, a split ring adapted to be sprung into position in the groove to hold the sections together, and a thin heating element support having notched sides to fit the annular protuberance in the outlet to hold it into position therein.
2. A hair dryer comprising a casing formed of a pair of sections abutting along a plane through the longitudinal axis thereof, motor actuated air impelling means positioned within the casing, an extension for the casing to provide a discharge outlet for the air impelling means, the extension having an annular groove depressed thereabout and protruding into discharge outlet, a split ring adapted to be sprung into position in the groove to hold the sections together, a heating element support having notched sides to fit the annular protuberance in the outlet to hold it into position therein, a heating element carried by the heating element support, and an inwardly extending terminal block positioned within the casing for connecting to the motor and heating unit.
3. A hair dryer comprising a casing formed of a pair of sections abutting along a plane through the longitudinal axis thereof, a motor, a cylindrical fan rotatably carried by the motor shaft, one section of the casing apertured to form an inlet for the blower, screening protecting the blower inlet, a retaining member for the screening, a mounting bar extending across the retaining member, a mounting stud projecting outwardly from the mounting bar, a second mounting stud projecting from the other section in alignment with the first mounting stud, an inwardly extending terminal block positioned within the casing, an extension for the casing to provide a discharge outlet for the fan, the extension having an annular groove depressed thereabout and protruding into the discharge outlet, a split ring adapted to be sprung into position in the groove to hold the sections together, and a heating element support having notched sides to engage with the protuberance in the outlet to retain the support in position.
4. A hair dryer comprising a casing formed of a pair of sections abutting along a plane through the longitudinal axis thereof, a pair of members providing motor mounting means, a motor supported by the mounting members, a cylindrical fan rotatably carried by the motor shaft, one section of the casing apertured to form an inlet for the blower, an annular extension about the blower inlet, screening protecting the blower inlet, a retaining member for the screening, a mounting bar extending across the retaining member, a mounting stud projecting outwardly from the mounting bar, a second mounting stud projecting from the other section in alignment with the first mounting stud, an inwardly extending terminal block positioned within the casing, an extension for the casing to provide a discharge outlet for the fan, the extension having an annular groove depressed thereabout and protruding into the

discharge outlet, a split ring adapted to be sprung into position in the groove to hold the sections together, a heating element support having notched sides to engage with the protuberance in the outlet to retain the support in position, a frame for the pivotal mounting of the blower including a pair of generally V-shaped members each carrying bearing means at their apex to journal the blower mounting studs, and a circular base member to support the V-shaped members.

5. A hair dryer frame comprising a circular base ring, a pair of V-shaped upwardly extending supporting members each with its apex directed upwardly and with its legs turned around the base ring, and an apertured bearing member carried by the apex of each of the supporting members.

6. A hair dryer comprising a casing formed of a pair of sections abutting along a plane through the longitudinal axis thereof, motor actuated air impelling means positioned within the casing, an extension for the casing to provide a discharge outlet for the air impelling means, the extension having an annular groove thereabout, a split ring adapted to be sprung into position in the groove to hold the sections together, a pair of mounting studs extending from the casing, a circular base ring, a pair of V-shaped upwardly extending supporting members each with its apex directed upwardly and with its legs turned around the base ring, and a bearing carried by the apex of each of the supporting members to journal the mounting studs.

7. A hair dryer comprising a casing formed of a pair of sections abutting along a plane through the longitudinal axis thereof, a motor, a cylindrical fan rotatably carried by the motor shaft, one section of the casing apertured to form an inlet for the blower, screening protecting the blower inlet, a retaining member for the screening, a mounting bar extending across the retaining member, a mounting stud projecting outwardly from the mounting bar, a second mounting stud projecting from the other section in alignment with the first mounting stud, an inwardly extending terminal block positioned within the casing, an extension for the casing to provide a discharge outlet for the fan, the extension having an annular groove depressed thereabout and protruding into the discharge outlet, a split ring adapted to be sprung into position in the groove to hold the sections together, a heating element support having notched sides to engage with the protuberance in the outlet to retain the support in position, a circular base ring, a pair of V-shaped upwardly extending supporting members each with its apex directed upwardly and with its legs turned around the base ring, and a bearing carried by the apex of each of the supporting members to journal the mounting studs.

WILLIAM HARLAN BUCKNELL.
EMIL MIESSMER.

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