Oct. 2, 1928. 1,686,024

W. MEYER

HAIR DRIER

Filed Aug. 6, 1927 2 Sheets-Sheet 1

Fig. 1.

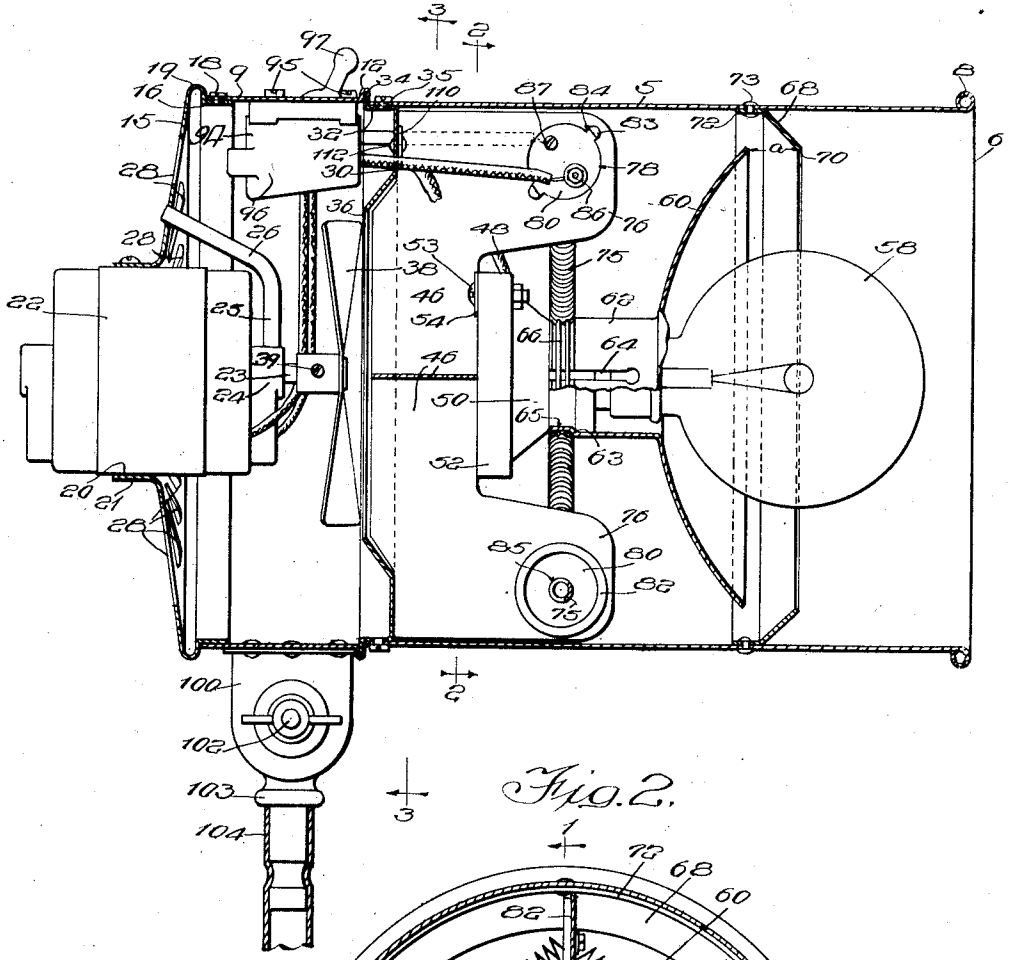
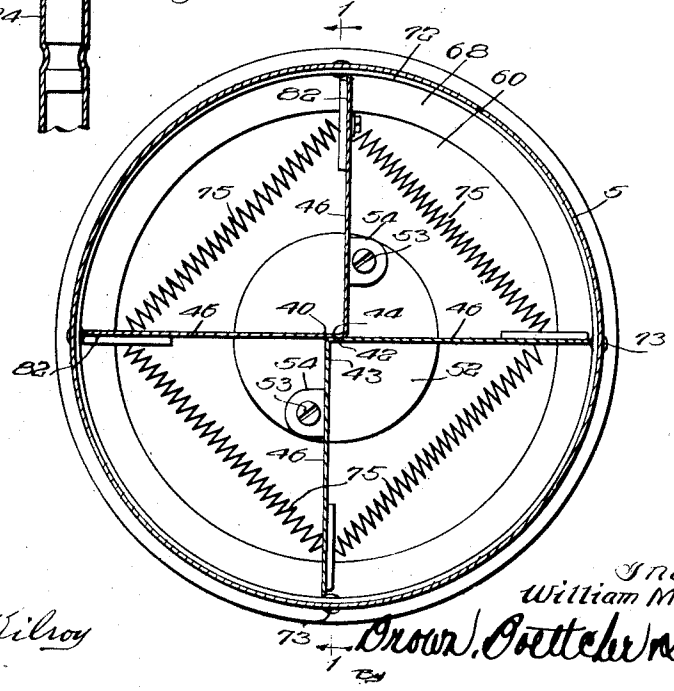


Fig. 2.



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Fig. 3.

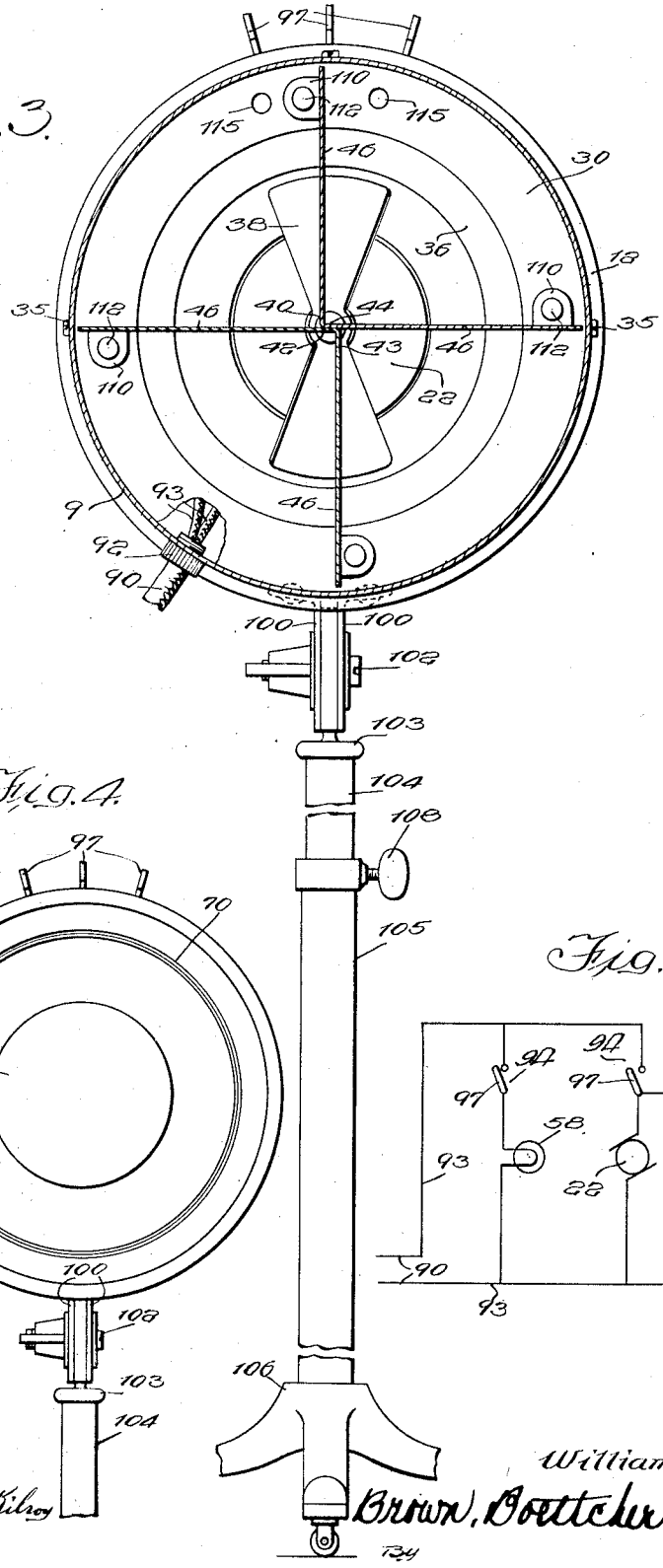


Fig. 4.

Fig. 5.

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Patented Oct. 2, 1928. 1,686,024

UNITED STATES PATENT OFFICE.

WILLIAM MEYER, OF CHICAGO, ILLINOIS.

HAIR DRIER.

Application filed August 6, 1927. Serial No. 211,121.

This invention relates to hair driers and more particularly to hair driers of the type illustrated and described in my prior Patent No. 1,541,988 of June 16, 1925 and in my copending application, Serial No. 161,480 filed January 17, 1927.

The objects of the present invention are to provide a generally improved and simplified construction that may be economically produced and to improve the operation of the device.

According to the particular embodiment which I have shown and described for the purpose of illustrating the invention and which may be varied within the scope of the appended claims, the incandescent lamp or source of radiant heat and light rays is brought toward the front of the casing and the means for preventing swirling or circular motion of the air and for directing the same in a straight line through the device is arranged behind the lamp and supports the heating element or coil.

The lamp is provided with a reflector, the periphery of which is spaced from the interior of the casing and forwardly of the reflector is an inverted conical ring for concentrating the air in its passage through the device. The outer diameter of the reflector is preferably substantially the same as the internal diameter of the opening through the inverted conical ring and the position of the reflector in back of this ring provides an annular space for the passage of the concentrated air through the device.

Rearwardly there is a partition provided with a conical opening adjacent the rearwardly directed smaller end of which the propeller for delivering the air through the device is arranged.

The partition defines the opening through which the propeller projects the air and this partition may support the blades for preventing swirling of the air, these blades in turn providing an admirable mounting for the electric or incandescent lamp.

A particular embodiment of the invention is illustrated in the accompanying drawings, in which

Fig. 1 is a longitudinal section through an embodiment of the invention on the line 1—1 of Fig. 2;

Fig. 2 is a transverse section taken on the line 2—2 of Fig. 1;

Fig. 3 is a transverse section taken on the line 3—3 of Fig. 1 and looking in the opposite direction;

Fig. 4 is an end view taken from the forward end of the device; and

Fig. 5 is a circuit or wiring diagram.

The device shown comprises an open ended cylindrical shell 5, the forward end of which forms an open outlet 6. The outlet end 6 may be beaded at 8, for strengthening and finishing the same.

The rear end of the shell 5 is attached to a cylindrical drum 9 which forms a continuation of the inner end of the shell 5 and the adjacent ends of the shell 5 and drum 9 are secured together through the margin of the partition 30 as will be hereinafter described, the adjacent end of the drum 9 being reflexed at 12, for this purpose.

The drum 9 and shell 5 may be of suitable sheet metal construction, although this may, of course, be varied widely within the spirit and scope of the present invention.

At the rear end of the drum 9 is an end member 15 flanged marginally at 16 to telescope into the adjacent end of the drum 9 and detachably secured therein by suitable screws 18. The end member 15 may be rolled out adjacent the end of the drum 9 at 19 to finish the same and provide a shoulder for limiting the insertion of the end member into the drum 9.

The end member has an axial opening 20 surrounded or defined by an integral hub-like portion 21 and an electric motor 22 is mounted in this opening 20 with the revolvable motor shaft 23 disposed axially with respect to the drum 9 and shell 5. For oiling the forward bearing 24 for the motor shaft 23, a tube 25 extends radially and is turned at 26 out through the end member 15 so that suitable oil may be introduced therein and will be conveyed thereby to the bearing for the motor shaft 23.

The end member 15 is provided between the hub 21 and its periphery with a plurality of radially elongated openings 28 which constitute jointly the inlet through which the air is drawn into the device. This inlet may, of course, be screened if desired.

Arranged forwardly of the motor 22 and mounted in the rear end of the shell 5 is a partition 30 turned longitudinally at 32 to fit snugly in the shell 5 and flanged radially at 34 to engage in the reflexed end 12 of the

drum 9, which reflexed end may be firmly pressed upon the flange 34 to bind the partition and drum securely together. The rear end of the shell 5 fits telescopically over the annular longitudinally disposed portion 32 of the partition 30 and is detachably secured thereto as by means of suitable screws 35.

The partition 30 has a conical axially disposed opening 36, the smaller end of which opens rearwardly as shown. The fan or propeller 38 is disposed adjacent the rear of the opening 36, preferably with its forward edge in substantially the plane of the rear end of the opening 36. The propeller 38 is suitably fixed upon the motor shaft 23, as by means of a set screw 39 so that it will rotate with the motor shaft, upon rotation of the same, drawing air through the rear inlet openings 28 and impelling the same forwardly through the shell 5 and out through the outlet 6.

For the purpose of preventing swirling or circular motion of the air through the device, the shell 5 is provided, forwardly of the partition 30 with a pair of right angle sheet metal anti-swirling members 40 and 42 with their angular corners adjoining at 44 and their legs extending radially to substantially the inner periphery of the shell 5 and forming four blades 46 disposed normal or at right angles to each other. The blades 46 are recessed axially at 48 to receive a socket member 50, the base 52 of which is secured by screws 53 and suitable co-operating nuts to integral lugs or ears 54 struck transversely from the inner recessed edges of the blades 48.

The lamp 58 which may be a high power electric light or incandescent lamp such as a nitrogen or high powered tungsten filament lamp, is mounted in a horizontal position in the socket 50, which may be a standard or ordinary "Edison" socket. The lamp 58 is positioned toward the forward or front outlet end 6 in the focus of the forwardly directed and preferably polished surface of a reflector 60.

The reflector 60 is positioned forwardly of the blades 46 and has an integral hub 62 which fits telescopically over the socket 50 at 63. The hub 62 is split longitudinally, preferably at a plurality of spaced places as indicated at 64 and its rear end is rolled inwardly at 65 to receive a wire 66 or other suitable means which is wrapped around the inwardly rolled end 65 and clamps the reflector 60 firmly upon the socket 50.

The periphery of the reflector 60 is spaced from the inner surface of the shell 5 and forwardly or outwardly of the reflector 60 is an inverted conical ring 68 with its smaller end opening outwardly at 70. The outer open end of the ring 68 is spaced outwardly from the periphery of the reflector 60 at *a* and the opening 70 which is axially disposed and in substantial alignment with the periphery of the reflector 60 is preferably of an internal diameter substantially equal to the external diameter of the reflector 60, although this may be varied. The rear end of the ring 68 fits snugly at 72 in the shell 5 and may be secured thereto by means of suitable rivets 73, although the mounting of this ring may, of course, be detachable if so desired.

A heating coil 75 comprising a suitable metallic wire is wound helically and supported in a substantially closed figure upon the forwardly directed longitudinally extending portions 76 of the blades 46. For the purpose of supporting the heating coil on the blades 46 without electrical contact therebetween, the extending portion of each blade has an opening 78 and a button 80 of suitable non-inflammable insulating material is clamped upon one side of each blade 46 adjacent the openings 78 by rings 82 having lugs 83 turned in through notches 84 in which blades 46 are turned back into cooperation with the opposite sides of the blades to clamp the insulating buttons 80 firmly thereto.

Three of the buttons 80 are apertured at 85 to permit the coil 75 to extend therethrough. One end of the coil 75 is secured to and electrically connected with a terminal screw 86 on one side of the fourth button as indicated at the top of Fig. 1 and the opposite end of the coil 75 is secured to and electrically connected with a terminal screw 87 on the opposite side of the same button.

The current supply conductor 90 enters the drum 9 through an insulating bushing 92 as shown in Fig. 3 and its conductors 93 are connected to three switches 94 grouped together and secured by screws 95 to the top of the wall of the drum 9. The group of switches is indicated generally at 96 and each is provided with an operating handle lever 97, which extends outwardly and is operable in a slot in the wall of the drum 9.

The switches shown are of the toggle lever type more fully disclosed in my co-pending application, Serial No. 72,647 filed December 2, 1925.

The lamp 58, motor 22 and heating coil 75 are connected in parallel as shown in Fig. 5 with one of the switch levers 97 separately controlling each. The supply conductors 90 are adapted to be connected with any suitable source of current such as for example a standard "Edison" outlet. One of the conductors 93 leads to one of the contacts of the lamp controlling switch and to one of the contacts of the motor controlling switch as shown in Fig. 5 and the other conductor 93 leads through the heating coil 75 to one of the contacts of the heating coil controlling switch. The switch levers 97 operate pref-

erably with a snap action and by operating one the lamp circuit is opened or closed independently of the motor and heating coil circuit. By operation of another of the switches 94 the motor circuit is opened or closed independently of the lamp or heating coil circuits and by the operation of the other switch the heating coil circuit is opened or closed independently of the lamp and motor circuits.

In carrying out the present invention, the lamp 58 constitutes the source of radiant heat and radiant light. The rays of light and the heat emitted by the lamp 58 are reflected by the reflector 60 and projected outwardly through the outlet end 6 which, in use, is directed toward the hair and scalp or other surface. When the motor circuit is closed, the fan 38 is started and air is drawn in through the inlet opening 28 and projected with the radiant heat and light through the discharge end 6 of the device and upon the hair and scalp or other surface. The cooperation of the reflector 60 and conical ring 68 concentrates the air in its passage through the device. By closing the circuit through the heating coil 75 with the motor and lamp circuits closed, the air may be heated, in addition, as desired in its passage through the device.

In operation the air is obviously blown across the heater 75 which is arranged between the fan 38 and the lamp 58 and the blades 46 which are disposed between the fan 38 and lamp 58 and support the heater coil 75 prevent circular or swirling motion of the air and direct the same in substantially a straight line through the device.

For supporting the device the drum 9 is provided with a pair of downwardly depending brackets 100 suitably secured to the bottom of the drum and pivoted at 102 between these bracket members 100 is the upper headed end of a post 103 which is in turn suitably secured in a post 104 which fits telescopically into and is extensibly mounted in an upright stand 105 having a suitable supporting base 106. For the purpose of securing the extendible post 104 in any desired extended or retracted position, the upright standard 105 is provided with a thumb screw 108.

The rear edges or ends of the blades 46 have integral laterally turned tongues or ears 110 which fit against and are riveted at 112 or otherwise suitably secured to the partition 30 and thereby firmly support the blades 46 upon the partition 30. Those conductors which extend from the switches 94 on one side of the partition 30 to the heating coil 75 and lamp 58 on the opposite side of the partition 30 may be led through suitable openings 115 in the partition 30.

I do not, of course, intend to be limited to the precise details shown or described.

I claim:

1. In a device of the class described, the combination of a casing having a discharge opening, a transverse partition in said casing, means mounted upon said transverse partition for directing the air in substantially a straight line and for preventing swirling thereof and a heater element supported by said last means, said partition having an opening therethrough.

2. In a device of the class described, the combination of a casing having a discharge opening, and provided internally with a pair of separate V-shaped sheet metal angular members having their bases secured together at the axis of the casing and forming a plurality of longitudinal blades for directing the air in substantially a straight line through the casing and for preventing circular motion thereof, and a transverse partition in said casing, said blades being attached to and supported by said partition, said partition having an opening therethrough.

3. In a device of the class described, the combination of a casing having a discharge opening, a transverse partition in said casing, said partition having a conical opening and a fan mounted adjacent the rear of said opening with its front edge in substantially the plane of said opening.

4. In a device of the class described, the combination of a casing having a discharge opening, a transverse partition in said casing, said partition having a conical opening, a fan mounted adjacent the rear of said opening and means mounted on said partition for directing the air in substantially a straight line and without circular motion.

5. In a device of the class described, the combination of a casing having a discharge opening, a transverse partition in said casing, said partition having a conical opening, a fan mounted adjacent the rear of said opening, blade means mounted on said partition for directing the air in a substantially straight line and without circular motion, a socket mounted upon said blade means and an electric lamp mounted in said socket and disposed forwardly of said blade means.

6. In a device of the class described, the combination of a casing having a discharge opening, a transverse partition in said casing, said partition having a conical opening, a fan mounted adjacent the rear of said opening, blade means mounted on said partition for directing the air in substantially a straight line and without circular motion, a socket mounted upon said blade means, a reflector mounted upon said socket and an electric lamp mounted in said socket in the focus of the reflector and forwardly of said blade means.

7. In a device of the class described, the combination of a casing having a discharge

opening, a transverse partition in said casing, said partition having a conical opening, a fan mounted adjacent the rear of said opening, blade means mounted on said partition for directing the air in substantially a straight line and without circular motion, a socket mounted upon said blade means, a reflector mounted upon said socket, an electric lamp mounted in said socket in the focus of the reflector and forwardly of said blade means and a resistance element supported by said blade means and disposed between said partition and said reflector.

8. In a device of the class described, the combination of a casing having a discharge opening, a transverse partition in said casing, said partition having a conical opening, a fan mounted adjacent the rear of said opening, blade means mounted on said partition for directing the air in substantially a straight line and without circular motion, a socket mounted upon said blade means, a reflector mounted upon said socket, an electric lamp mounted in said socket in the focus of the reflector and forwardly of said blade means, a resistance element supported by said blade means and disposed between said partition and said reflector, the periphery of the reflector being spaced from the inner periphery of the casing and an inverted conical ring opening forwardly of the reflector for concentrating the air in its passage through the casing.

9. In a device of the class described, the combination of a casing having a discharge opening, a transverse partition in said casing, said partition having a conical opening, a fan mounted adjacent the rear of said opening, blade means mounted on said partition for directing the air in substantially a straight line and without circular motion, a socket mounted upon said blade means, a reflector mounted upon said socket, an electric lamp mounted in said socket in the focus of the reflector and forwardly of said blade means, a resistance element supported by said blade means and disposed between said partition and said reflector, the periphery of the reflector being spaced from the inner periphery of the casing, an inverted conical ring opening forwardly of the reflector for concentrating the air in its passage through the casing, said ring being secured marginally to the interior of the casing with its forwardly directed opening spaced forwardly and of substantially the same diameter as the periphery of the reflector..

10. In a device of the class described, the combination of a casing having a discharge opening, a transverse partition in said casing, said partition having a conical opening, a fan mounted adjacent the rear of said opening, blade means mounted on said partition for directing the air in substantially a straight line and without circular motion, a socket mounted upon said blade means, a reflector mounted upon said socket, an electric lamp mounted in said socket in the focus of the reflector and forwardly of said blade means, a resistance element supported by said blade means and disposed between said partition and said reflector, the periphery of the reflector being spaced from the inner periphery of the casing, an inverted conical ring opening forwardly of the reflector for concentrating the air in its passage through the casing, said ring being secured marginally to the interior of the casing with its forwardly directed opening spaced forwardly and of substantially the same diameter as the periphery of the reflector, an end member mounted at the inner end of the casing and provided with an axial hub opening and with a plurality of surrounding air inlet openings and an electric motor mounted in said hub opening for revolving said fan.

11. In a device of the class described, the combination of a casing having a discharge opening, a reflector mounted in said casing with its periphery spaced from the interior of the casing and an air concentrating ring having a forwardly directed conical opening spaced forwardly from and of substantially the same diameter as the periphery of the reflector.

12. In a device of the class described, the combination of a casing having a discharge opening, means toward the rear of said casing for projecting a stream of air therethrough, an incandescent lamp at the front of the casing, a heater disposed within the casing between said air projecting means and said lamp, a reflector for the lamp and having its periphery spaced from the interior of the casing and an air concentrating ring having a forwardly directed conical opening forwardly of the reflector.

13. In a device of the class described, the combination of a casing having an outlet opening, a partition supported in said casing and provided with an opening, a propeller operating adjacent the partition opening for projecting air therethrough and means mounted upon and supported by said partition for directing the air in substantially a straight line and for preventing circular motion thereof.

14. In a device of the class described, the combination of a casing having a discharge opening, means for directing the air in substantially a straight line and for preventing swirling thereof and an electric lamp supported by said last means.

15. In a device of the class described, the combination of a casing having a discharge opening, a reflector mounted in said casing with its periphery spaced from the interior

of the casing, said casing surrounding and extending forwardly of the reflector, and an air concentrating ring having a generally conical opening directed forwardly from the periphery of the reflector.

16. In a drier, the combination of a casing having an inlet and an outlet, an annular passage disposed near and reduced toward the outlet with its smallest section at the outlet to concentrate and increase the air velocity and drying effect, and means for blowing a stream of air through said annular passage and from said outlet.

17. In a drier, the combination of a casing having an inlet and an outlet, an annular passage disposed near and reduced toward the outlet with its smallest section at the outlet to concentrate and increase the air velocity and drying effect, and means for blowing a stream of air through said annular passage and from said outlet, the casing extending beyond said annular passage at the outlet end with said annular passage terminating short of the casing extension.

18. In a drier, the combination of a casing having an inlet and an outlet, an annular passage disposed near and reduced toward the outlet with its smallest section at the outlet to concentrate and increase the air velocity and drying effect, means for blowing a stream of air through said annular passage and from said outlet, and means for preventing the air from issuing in ring form and with a dead center from said outlet.

19. In a device of the class described, the combination of a casing having an outlet, means for blowing a stream of air therethrough, means for guiding the air and preventing whirling of same within the casing, and a reflector mounted upon and supported by said last means.

In witness whereof, I hereunto subscribe my name this 3rd day of August, 1927.

WILLIAM MEYER.