

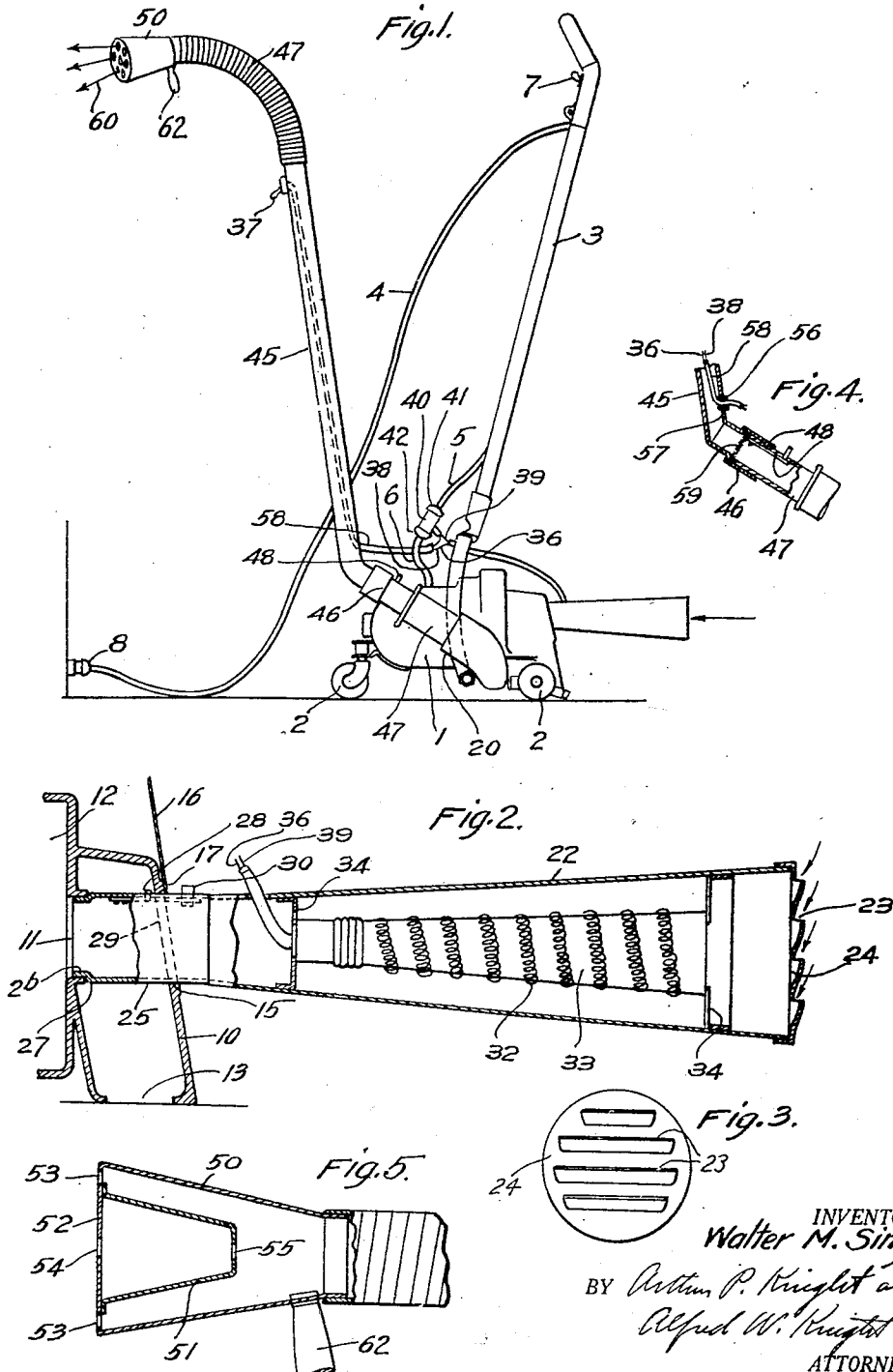
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HAIR DRYING ATTACHMENT FOR VACUUM CLEANERS

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HAIR-DRYING ATTACHMENT FOR VACUUM CLEANERS.

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This invention relates to a device adapted to be attached to an electric vacuum cleaner, to enable the same to deliver a current of warm or heated air for use in drying the hair or for other purposes. The principal object of the invention is to provide a device of this character which may be quickly and easily attached to and detached from a vacuum cleaner and which is highly convenient in operation.

A particular object of the invention is to so construct the attachment that the outlet member through which the heated air current is delivered is both self-supporting and adjustable and is preferably disposed at a position somewhat above the body of the vacuum cleaner, so that with the vacuum cleaner resting on the floor the heated air current is delivered in a position convenient for use by a person sitting in a chair, without necessitating such person holding or supporting the outlet member.

A further object of the invention is to provide, in conjunction with a vacuum cleaner having a main or lower suction opening directed toward the floor and an auxiliary suction opening located for example at the front of the cleaner for the connection of other cleaning attachments thereto, a heating device adapted to fit in said auxiliary opening in such manner as to cut off communication between the blower and the main or lower suction opening, so that only clean air is drawn in through said heating device as hereinafter described. This prevents air from being drawn in from the rug or whatever object the vacuum cleaner is resting upon, as would be the case if the air were drawn in through the main or lower opening, and thus eliminates the possibility of dust or dirt being present in the air to be used for drying the hair or for other purposes.

The heating device comprises essentially a tubular member defining a gas passage and having air inlet means at one end and means at the other end for attachment to the auxiliary suction opening of a vacuum cleaner, and a heating element preferably consisting of an electric heating coil located within said air passage. The apparatus further comprises air delivering means adapted to be connected to the discharge opening of a vacuum cleaner, and preferably extending upwardly therefrom and provided with outlet means at its upper end and with semi-rigid adjusting means for permitting ad-

justment of the outlet member to different positions. Means are also provided for electrically connecting the heating coil to the operating circuit of the vacuum cleaner motor and a switch is also provided in said electric connections, said switch being advantageously mounted upon the air delivering means so as to be close to the person using the supply of heated air.

The accompanying drawings illustrate apparatus embodying my invention and referring thereto:

Fig. 1 is a side elevation of a vacuum cleaner with my hair drying means attached thereto.

Fig. 2 is a vertical section of the heating device and the adjacent parts of a vacuum cleaner.

Fig. 3 is a front elevation of the heating device.

Fig. 4 is a longitudinal section of the lower portion of the air delivering member.

Fig. 5 is a vertical section of the outlet member.

The vacuum cleaner shown in Fig. 1 comprises a casing 1 in which are mounted the usual electric motor and fan or blower operatively connected thereto. Said casing is mounted upon the usual wheels or rollers 2 for supporting the same on the floor, and is provided with a handle 3 for moving the cleaner over the floor. The usual electrical connecting cords for the vacuum cleaner motor are shown at 4, 5 and 6, the switch 7 on handle 3 being included in one of the conductors of said cords for turning the motor on or off. The cord 4 is provided with means such as plug 8 for connection to a suitable source of electric power supply. The casing 1 is shown as provided with a forwardly and downwardly extending portion 10 communicating through opening 11 with the chamber 12 in which the fan or blower is located, the opening 11 constituting the central or inlet opening of said fan or blower. The casing 10 is provided with a main suction opening 13 at the bottom thereof, said opening being disposed toward the floor and constituting the opening ordinarily used for cleaning floors, rugs, etc. Said casing 10 is also shown as provided with an auxiliary suction opening 15 at the front thereof and in line with the fan inlet opening 11, said auxiliary opening being normally closed by a cover plate 16 mounted as by means of pin 17 so as to permit the same to be swung either

to position to close said opening or to the position shown in Fig. 2 so as to permit insertion of the heating device through said opening. The discharge or outlet pipe of the vacuum cleaner is shown at 20, it being understood that in normal operation of the vacuum cleaner for suction purposes the usual dust collecting bag is connected to said discharge pipe.

The heating device is shown in Figs. 2 and 3 as comprising a tubular member 22 provided with air inlet means such as one or more openings 23 in end plate 24 at one end thereof and with a connecting or coupling portion 25 at the other end adapted to fit fairly closely in the auxiliary suction opening 15. The openings 23 are preferably formed as horizontal slots and the portions of end plate 24 below the respective slots are preferably bent or flared outwardly so as to constitute inverted louvers and cause air to be drawn in only from above said slots. The connecting portion 25 is adapted to also extend within the intake opening 11 of the fan or blower as indicated at 26 and is provided with a shoulder 27 adapted to engage the edges of said opening 11 to provide a satisfactorily tight joint. The shoulder 27 is preferably provided by making the end portion 26 of reduced diameter, as shown. A catch member 28 may be mounted upon leaf spring 29 secured inside the connecting portion 25, in position to engage inside the front wall of casing 10 and hold the heating device in the position shown, said leaf spring being provided with a lug 30 whereby the spring may be manually depressed to release said catch member. Any other form of catch means may, however, be used for this purpose. An electric heating coil 32 may be wound upon a suitable refractory supporting member 33 and mounted upon supporting members 34 in a position centrally of the tubular member 32. Said heating coil may be connected to the electric supply circuit for the motor as follows. One of the wires 36 leading from said heating coil may be connected to a manually operated switch 37 located in any convenient position, for example, as herein-after described, and a wire 38 leads from said switch to one of the conductors leading to the motor. The other conductor leading to the motor is connected through wire 39 to the other end of the heating coil. The connection of wires 38 and 39 to the motor circuit may be made by means of a special connecting member 40 adapted to be inserted between the usual socket 41 and plug 42.

The air delivering means comprises a rigid air conducting tube or pipe 45 provided at its lower end with means 46 whereby it may be connected to the discharge pipe 20 of the vacuum cleaner. This means 46 may, if desired, be adapted to fit directly into said discharge pipe, but in order to adapt the de-

vice for use with vacuum cleaners having discharge openings of different sizes I prefer to provide a coupling member 47 which may be detachably secured at one end to discharge pipe 20 as by bayonet joint means and which is adapted to be detachably secured at its other end as by catch means 48, to the lower end of the air conducting member 45. A filter member or screen 59 is preferably provided at a suitable point in the air delivering means, for example, at the bottom of tube 45 as shown in Fig. 4. Said member 45 preferably extends upwardly throughout the major portion of its length and may be provided at its upper end with an adjusting section 49 formed, for example, of semi-rigid tubing. Such tubing may, for example, be formed from a suitably shaped strip of metal wound in helical fashion, similar to the usual gas tubing or the flexible conduit used for electric wiring, but being of the type which is wound sufficiently tight to make it self-supporting in any position while permitting it to be adjusted by application of manual force thereto. Such tubing is, therefore, semi-flexible or semi-rigid, these terms being used to indicate that it may be bent to different positions, but that in the absence of application of an external force it will retain any position to which it is so bent. The switch 37 aforesaid may be conveniently mounted adjacent the upper portion of the air conducting member 45, and the wires 36 and 38 are preferably carried in a cord 58, which enters the pipe 45 through opening 57 adjacent the lower end thereof (see Fig. 4) and extends upwardly inside said pipe to said switch. Means such as a rubber sleeve 56 may be provided where said cord enters said pipe, to prevent leakage of air.

At the end of the air conducting member 45 or the adjusting section 47 thereof, is connected the outlet member 50, said member being shown (see Fig. 5) as flaring outwardly to some extent so as to tend to spread the current of heated air delivered thereby over a sufficient area for the desired purpose. Such spreading of the heated air current may also be promoted by providing a spreading cone 51 within the outlet member and having its walls tapering in the same direction as said outlet member. Said spreading cone may be mounted upon an end plate 52 which may be provided with perforations 53 outside the spreading cone and with one or more perforations 54 inside said spreading cone. The cone 51 may also be provided with opening means 55 at its smaller end, the openings 53, 54 and 55 being so distributed and so proportioned as to size and number as to give the desired spreading and distribution of the heated air delivered through outlet member 50. A wooden handle 62 may be provided on outlet member 50.

The operation of the above apparatus is

as follows: The vacuum cleaner may be placed upon the floor or in any other convenient position. The heating device is then inserted by moving plate 16 to the position shown and inserting the connecting portion 25 in the auxiliary suction opening 15, as shown in Fig. 2. When in this position the portion 25 completely blocks communication between the main or lower suction opening 13 and the fan or blower. The air delivering means including coupling member 47, if the same is used, is connected to the discharge pipe 20 of the vacuum cleaner, with the air conducting tube 45 extending upwardly as shown in Fig. 1. The outlet member 50 may be adjusted to the desired position either before or during the operation, by simply bending or flexing the semi-rigid adjusting means 47, such adjusting means maintaining any position to which it is so moved. In effecting this adjustment, the user may take hold of handle 62, this being particularly advantageous in case the outlet member itself becomes too hot to handle with comfort, due to the heated air passing there-through.

Switch 7 may then be closed to start the motor and fan in operation and switch 37 may also be closed to energize the heating coil 32. Clean air is thus drawn in through openings 23 and passes through the tubular member 22 and around heating coil 32 whereby it is heated to the desired temperature, which is dependent upon the size of said heating coil in relation to the rate at which air is drawn in. The heated air then is drawn from the heating device into the fan or blower in chamber 12 and delivered by said fan or blower through discharge pipe 20 and thence through the air delivering means 45 and 47 to outlet member 50. In passing through said outlet member part of the air enters the spreading cone 51 through opening 55 while the remainder is spread by said cone and passes between the cone and the outer wall. The air entering cone 51 is delivered through opening or openings 54 while that passing outside the cones is delivered through openings 53, so that the warm air current leaving the outlet member is directed in a divergent or fan shaped manner as indicated by the arrows at 60 in Fig. 1. The extent of this divergence or spreading of the warm air current may be such as to distribute such air over the desired area at the position where it is to be used.

It is evident that the above construction is such as to insure the drawing in of clean air at all times, due to the complete obstruction of communication from the main suction opening of the vacuum cleaner and that such obstruction is automatically effected by providing a heating device fitting into the auxiliary suction opening and having the tubular portion 25 extending into the fan inlet

opening 11 so as to prevent entrance of air into the fan except through the interior of said heating device. Furthermore, air is drawn in only from above through openings 23, so that such air is always clean and is free from dirt which might be present if the air were drawn in from near the floor. Any particles of lint or other foreign substances which might be drawn in, however, or which might be dislodged by the passing air stream from any point of temporary lodging within the vacuum cleaner, will be caught by filter member 59 and thus prevented from passing with the heated air through outlet member 50.

It will also be noted that the rigidity of the air conducting pipe 45 and the fact that it extends upwardly for a distance of several feet enables the vacuum cleaner to be placed upon the floor while rigidly holding the outlet member 48 in position adjacent the level of the head of a person seated upon a chair, and hence in convenient position for directing the heated air against the hair of such person to dry the same. A person having started the device in operation and adjusted the outlet member to the desired position may, therefore, simply sit at ease in the chair and carry on any other desired occupation such as reading or sewing while the hair is being dried.

The switch 37 included in the energizing circuit of the heating coil permits such coil to be shut off, if desired, while the fan is still in operation so that the apparatus may be caused to deliver a current of air at substantially atmospheric pressure, if such is desired for any purpose, instead of heated air.

The air heating and air delivering means of my invention may be applied, in general, to any type of electric vacuum cleaner, it being necessary only that such vacuum cleaner have a suction opening to which the heating device may be attached, said opening preferably being an auxiliary opening other than the main suction opening at the bottom of the vacuum cleaner, and that it have an outlet opening to which the air delivering means may be connected.

I claim:

1. A hair drying attachment for vacuum cleaners comprising a heating device adapted to be connected to the auxiliary suction opening of a vacuum cleaner and to heat air drawn therethrough into said opening, and air delivering means adapted to be connected to the discharge opening of a vacuum cleaner so as to extend upwardly therefrom and provided with outlet means for heated air at its upper end, said heating device being formed to obstruct communication from the main suction opening of the vacuum cleaner to the blower thereof, upon connection of said heating device to said auxiliary suction opening, and said heating device being provided at its outer end with opening

means and being so formed adjacent said openings as to cause air to enter the same from above only.

2. A hair drying attachment for an electric vacuum cleaner provided with electric supply connecting means including a detachable plug and socket connection, comprising a heating device consisting of a tubular member adapted for passage of air therethrough and an electric heating element within said tubular member, means for detachably connecting said heating device to the auxiliary suction opening of said vacuum cleaner, air delivering means adapted to be connected to the discharge opening of said vacuum cleaner so as to extend upwardly therefrom and provided at its upper end with outlet means for heated air, and means for electrically connecting said heating element to the electric supply connecting means of said vacuum cleaner comprising a connecting member adapted to be inserted between said plug and socket and having two conducting members extending therethrough to maintain electric connection therebetween and means electrically connecting said heating element to the respective conducting members in said connecting member.

3. In a hair drying attachment for vacuum cleaners, an air inlet and heating device comprising a tubular member adapted for passage of air therethrough and provided with means at one end for detachable connection thereof to the auxiliary opening of a vacuum cleaner, said connecting means being adapted

to substantially cut off communication from the main suction opening at the bottom of the vacuum cleaner to the blower thereof, and a heating element mounted within said tubular member.

4. In a hair drying attachment for vacuum cleaners, air delivering means adapted to be connected to the discharge opening of a vacuum cleaner and comprising a rigid tubular member extending upwardly therefrom, a semi-rigid tubular member connected to the upper end of said rigid member and adapted to be manually bent to the desired position but to retain any position to which it is so bent, and outlet means at the end of said semi-rigid member.

5. In a hair drying attachment for vacuum cleaners, an outlet member comprising an outer tubular member flaring outwardly in the direction of air flow, a spreading cone mounted within said outer member and spaced therefrom and flaring in the same direction, opening means at the smaller end of said cone to limit admission of air thereto, and an end member extending across the larger end of said outer member and provided with opening means permitting outflow of air from the interior of said cone and with outlet means permitting outflow of air from the space between said cone and the outer member.

In testimony whereof I have hereunto subscribed my name this 27th day of April, 1928.

WALTER M. SINGER.