HAIR DRYER SOUND SYSTEM

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This invention relates to a sound system used in conjunction with hair dryers used in beauty salons.

The hair drying units commonly used in beauty salons each include a hollow hair dryer head providing a space therein into which the upper portion of a person's head is extended. Air is circulated within the space to speed up the hair drying process. In most instances the hair dryer head extends over the ears of the user so that the latter cannot readily hear sounds originating externally of the hair dryer unit.

In accordance with the present invention, a speaker unit is associated with the hair dryer unit in a manner such that sound waves are directed into the hair drying space of the dryer head primarily so that the user may be entertained while sitting under the dryer unit. The speaker unit is mounted in such a way that the unit does not touch the user's hair and does not otherwise interfere with the comfort of the user as, for example, would be the case if unsightly, unsanitary and uncomfortable ear phones were to be worn. Further, in a preferred form of the invention, a volume control is provided so that the user may readily vary the volume of the sound. Also, a station selector switch may be provided for enabling the user to selectively vary the source of the sound signals. For example, one sound source may be the audio signals from a television receiver placed in the room. Heretofore, a person having her hair dried could only see the television programs because she could not hear the sound of the television receiver while under a hair dryer head. Alternatively, the sound signals may originate from an FM receiver or from the output of a phonograph amplifier. Signals may also originate from a local microphone where the beauty shop operator may wish to page a customer or otherwise communicate with a customer.

The present invention is conveniently adaptable to practically all hair drying units now available on the market. The speaker unit is exceedingly compact in design and may be mounted in a variety of locations on the dryer units. For example, in one conventional form of hair dryer unit, the compact speaker is mounted within the hair drying space of the unit and contiguous to the defining walls thereof where it clears the head of the user. A volume control is built into the speaker unit and has a control shaft which extends outside of the dryer head and a control knob on the end thereof which is within easy reach of the person sitting under the hair dryer head. The speaker unit may be simply secured to the dryer head by mounting screws extending through suitable holes drilled through the dryer head and threading into threaded holes in the speaker unit. In another form of hair dryer unit, the dryer head comprises inner and outer shells forming an air feeding space therewithin from which air is directed into the hair drying chamber or space of the head through holes in the inner shell. In this type of hair dryer unit, the compact speaker unit may be mounted in the space between the inner and outer shells, and the sound waves are carried by the hair drying air currents through the aforementioned openings in the inner shell to the hair drying space in the head where the sound reaches the user's ears.

In still another form of hair dryer unit, the speaker unit is secured to a feeder conduit leading to the hair drying head, and the speaker unit directs sound waves into the conduit where they are carried to the hair drying space of the dryer head by the air currents flowing through the conduit.

Other features and advantages of the invention will become apparent upon making reference to the specification to follow, the claims and drawings wherein:

Fig. 1 is a perspective view of one form of dryer head which includes a speaker unit and volume control in accordance with the present invention;

Fig. 2 is an enlarged view looking upwardly into the open bottom of the dryer head of Fig. 1;

Fig. 3 is a partly broken away, right side elevational view of the dryer head of Fig. 2;

Fig. 4 is an enlarged perspective view of the speaker unit shown in Figs. 1 through 3;

Fig. 5 is a section through the speaker unit, taken along section line 5—5 in Fig. 3;

Fig. 6 is a sectional view through the speaker unit, taken along section line 6—6 of Fig. 5;

Fig. 7 is a rear view of the contents of the casing of the speaker unit of Figs. 5 and 6;

Fig. 8 is a perspective view of another form of hair drying head which incorporates the features of the present invention;

Fig. 9 is an enlarged fragmentary view through a portion of the dryer head of Fig. 8, showing the manner in which the speaker unit is mounted therein;

Fig. 10 is a partly broken away, right side elevational view of the hair drying unit in Fig. 6;

Fig. 11 is a perspective view of a third form of hair drying unit;

Fig. 12 is a vertical section through the bottom portion of a hair dryer head and the conduit feeding the same of the unit in Fig. 11;

Fig. 13 is a fragmentary section showing the conduit feeding the dryer head in Figs. 11 and 12, showing the manner in which the speaker unit is mounted thereto;

Fig. 14 is a simplified circuit diagram showing the manner in which the speaker units of several hair dryer units are fed from a number of signal sources; and

Fig. 15 is a simplified diagram of a modified form of speaker system wherein each speaker unit has a station selector switch.

Refer now more particularly to the embodiment shown in Figs. 1 through 3.

The hair drying unit shown in Fig. 1 and generally indicated by the reference numeral 1 includes a hollow dryer head 4 secured to a bracket 6 which is adjustable pivoted to a horizontal vertical standard 7 by pivot joint 8. The dryer head 4 has separable upper and lower sections 9 and 10. The rounded casing walls 11 of the lower head section 10 terminate in a radially inwardly extending flange 12 defining a head-receiving opening 13. The dryer head casing provides an unobstructed space 14 adjacent the opening 13 which is sized to easily receive the head of a person as shown in Fig. 1. With the dryer head angled with respect to the vertical as shown, the dryer head envelopes the hair-covered portion of the head from the neck to the forehead and also covers the ears. The upper dryer head section 9 houses a fan assembly 15 which draws air into the central portion of a baffle member 16 which re-circulates the air in the head-receiving space or chamber 14 by directing the air through a peripheral space 17 between the baffle 16 and
the casing walls 11. As is customary in hair dryers, a heater control knob 18 is located on the outside of the dryer head for selectively varying the temperature of the air circulated within the dryer head.

In accordance with the present invention, a speaker unit, generally indicated by the numeral 19, is mounted within the hair drying space 14. Integrally associated with the speaker unit is a volume control means generally indicated by the reference numeral 20.

The speaker unit includes a casing body 21 made of plastic or other suitable material having a gradually and repeatedly tapering side wall portion 22 (Fig. 5) and a more steeply tapering opposite side wall portion 24. The casing has a flat rear wall 25, and removably mounted to the wide front end of the casing body is a perforated plate 26 through which sound waves from a speaker 28 within the casing are directed. The speaker 28 is a miniature type speaker of conventional design chemically treated to withstand high heat and humidity and has terminals 29—29 and a metal mounting frame 30. The mounting frame has a rear wall 31 extending generally parallel to the rear wall 25 of the casing 21. The speaker mounting frame 30 may be secured to the speaker unit casing 21 in any suitable manner, as by screws 33 extending through the rear casing wall 25 and threading into the mounting bracket wall 31. The wall 31 has a pair of threaded holes 31—31 which receive mounting screws 32—32 which pass through corresponding holes drilled in the dryer head casing wall 11 for securing the speaker unit to the dryer head.

Mounted within the gradually tapering portion of the speaker unit casing is the aforementioned volume control means 20 which includes a suitable variable resistance unit 34 forming which may be a constant-resistance potentiometer network, commonly referred to as an L-pad, or other suitable means for varying the amplitude of the signal voltage fed to the speaker terminals 29—29. It is secured within the casing in a suitable manner, such as by a mounting bracket 35 secured to the mounting frame 30 of the speaker 28. The resistance unit 34 has a control shaft 38 which passes through an opening in the rear casing wall 25 and an opening drilled in the dryer head casing wall 11. A control knob 40 is removably secured to the control shaft 38 on the outside of the dryer head.

As shown most clearly in Fig. 1, the speaker unit is preferably mounted in the side of the dryer head 4 opposite the portion thereof which is adjacent to one of the ears of the user. The mounting of the speaker unit in this position places the control knob 40 of the volume control means within easy reach of the user.

The speaker unit is so compact that it projects only a small distance beyond the dryer head casing wall 11, as illustrated most clearly in Fig. 2, where it does not extend into the region of the head-receiving space 14 to be occupied by the user's head. Contact between the speaker unit and the hair of the user is thereby avoided. As an example of the over-all dimensions of the speaker unit, the maximum distance across the wide end of the speaker unit may be approximately two and three-quarter inches while the depth of the speaker unit casing may be approximately one and one-half inches.

Electrical connection with the speaker unit is made through a two-wire cable 42 which passes through an opening in the side of the speaker unit casing 21, as shown most clearly in Fig. 4. As shown most clearly in Fig. 2 and Fig. 3, the cable 42 closely hugs the wall 11 of the dryer head casing about 43 which secure the flange 16 to the dryer head. The cable 42 passes through an opening 44 of the dryer head in which a pair of telescoping rubber grommets 45—45 are secured to protect the cable from damaging contact with the sharp edges around the opening. The cable 42 may then extend down through the hollow standard 7 to connect with a junction box (not shown in Figs. 1—3).

Refer now to the modified form of dryer head 41 shown in Figs. 8 through 10. This dryer head includes an upper fan motor and heater section 9' and a lower head-receiving section 74 joined together by a securing band 47. The lower head section has an inner shell 48 which defines a head-receiving space 14' therein. The inner shell 48 is spaced from an outer shell 50 to provide a peripheral space 52 for circulation of air. The inner shell is perforated throughout and mounted within these perforations are hollow rubber grommets 54.

The upper section 9' of the dryer head houses an air circulating fan and heater which forces air into the peripheral space 52 between the inner and outer shells and through the openings of the grommets 54 into the head-receiving space 14'. This air is then drawn back into the upper portion of the dryer head and recirculated back into the peripheral space 52 in a well known manner.

The speaker unit 19 previously described is mounted in the peripheral space 52 between the inner and outer shells. In the embodiment of the dryer head shown in the drawings, an outer wall 58 is formed from the outer shell 50 proceeding toward the rear thereof. The speaker unit 19 is secured to the side of the outer shell 50 in the wider portion of the space 52 in the same manner described in connection with the embodiment of Fig. 1. That is, the outer shell 50 is provided with three holes which respectively receive the mounting screws 32—32 and the control shaft 38 of the volume control means. Access to the space 52 can be obtained by removing the lower section 10' of the dryer head. The upper portions of the shells 48 and 50 are unconnected leaving an annular space into which the speaker unit may be inserted for mounting.

In this embodiment of the invention, the loud speaker 28 directs sound into the peripheral space 52 where it is carried into the head-receiving space 14' by the movement of the air currents therein through the grommets 54. Reference should now be made to the third modified form of dryer unit shown in Figs. 11 through 13. This unit includes a plastic dryer head 49 having spaced inner and outer shells 62 and 64 which define therebetween an air circulating space 66. The outer shell 64 is provided with a base opening 68 around which is mounted a section 69 of a metal conduit 70 which opens onto the outer shell opening 68 is perforated throughout at 72 to enable passage of air fed to the space 66 into the head-receiving space 14'. The conduit 70 has an inclined upper portion 74 to which the section 69 is pivotally mounted by a hinge 71. The head 49 and the conduit section 69 may thus be swung back as a unit to expose the open top of conduit section 74. The latter section has flat side walls 76—76 forming a convenient mounting surface for speaker unit 19. The bottom of the inclined conduit portion 74 merges with a vertically extending conduit portion 78 passing into a large housing 80. The housing 80 may contain suitable air dehumidifying equipment not shown and a fan blower which blows dehumidified air into the vertical portion 78 of the conduit. This air passes up through the conduit and into the space 66 in the dryer head and then through the inner shell openings 72 into the hair drying space 14'.

In this type of hair drying unit, the speaker unit 19 is most conveniently mounted with the inclined portion 74 of the conduit. The speaker unit is mounted upon one of the flat side walls 76 in the same manner previously described. That is, three holes are drilled therein to respectively receive the mounting screws 32—32 and the control shaft 38. The speaker cable 42 passes out of the conduit through an opening 77 in a rear wall 79. In this embodiment as in the embodiment of Figs. 8-10...
through 10, the sound waves are carried into the hair drying chamber 14° by the movement of the air passing into the hair drying space 14°.

It can thus be seen that the speaker unit may be conveniently mounted in almost any type of hair drying unit now found on the market.

In a given sound installation at a beauty salon, a number if not all of the hair drying units will be provided with a speaker unit similar to speaker unit 19 previously described. Referring to the schematic diagram of Fig. 14, the cables 42 of the various speaker units are connected to respective junction boxes 82 preferably mounted near the baseboard of the wall located adjacent to the drying units. The inputs to the junction boxes are preferably connected to a common line 84 leading to a selector switch generally indicated by the reference numeral 86. The selector switch 86 may comprise a movable contact 88 which is engageable with one of a group of stationary contacts 90 which are connected to different signal sources. For example, one of the stationary contacts may be connected to the output of an amplifier in a television receiver so that the people under the hair drying units may both look at and hear television programs. Another stationary contact may be connected to the output of a frequency modulation radio receiver, and a third stationary contact may be secured to a phonograph amplifier output. If desired, the owner of the beauty shop may install a microphone in connection with the phonograph amplifier so that he may communicate with his customers for paging or advertising purposes.

If desired, individual station selectors may be made an integral part of the speaker units so that the signal sources may be selected by the persons using the dryer units. This system is illustrated schematically in Fig. 15. As there shown, each of the modified speaker units 19° is, in addition to the volume control knobs 44, provided with station selector switches having a control knob 92. This requires a 4-wire cable 42 extending from each speaker unit to a junction box 82°. Each junction box has a separate input for each of the signal sources, in this case three signal sources, and the inputs of all of the junction boxes are connected in parallel and lead to the three respective signal sources.

The present invention provides a very flexible and inexpensive method to install sound system in the hair drying units of a beauty salon. Through it, persons using the hair dryer may be entertained by the incorporation of a speaker unit in each drying unit in a manner which provides for individual control over volume or station or both by readily accessible control knobs mounted usually on or near the dryer heads.

It should be understood that numerous modifications may be made of the preferred embodiments of the invention above described without deviating from the spirit of the broader aspects thereof.

We claim as our invention:

1. In combination, a hair dryer head having a hair drying space into which a person's head may be inserted to a degree that her ears are at least partially within the space, said dryer head having spaced inner and outer shells providing an air circulating space therebetween through which warm air passes on the way to said hair drying space, said inner shell defining the hair drying space and having a multitude of openings therein through which air enters the space from said air circulating space between said inner and outer shells, and a compact speaker unit mounted in the space between said inner and outer shells and arranged to direct sound into said latter space where the sound is conveyed into said hair drying space by the movement of air currents through the air circulating space between the shells and the openings in said inner shell into the hair drying space.

2. In combination, a hair drying unit having a hair drying head providing space into which a person's head may be inserted to a degree that the person's ears are at least partially within the space, a conduit leading to the dryer head and communicating with said hair drying space for conveying air currents thereto, and a speaker unit secured to said hair drying unit and arranged to direct sound waves into said conduit where the sound waves are carried to said hair drying space by the movement of air through the conduit and to the hair drying space in the dryer head.

3. In combination, a hair dryer including wall means forming a hair drying space into which a person's head is inserted to a degree that the ears of such person are at least partially within the hair drying space, means forming a warm air conveying space externally of said hair drying space and which communicates with said hair drying space to carry warm air thereto, and a speaker unit mounted to direct sound into said warm air conveying space, so that the sound is carried into said hair drying space by the movement of warm air currents through said warm air conveying space.

4. The hair dryer of claim 3 wherein said warm air conveying space is defined between said wall means forming said hair drying space and an outer exposed wall surrounding said wall means and defining the extremities of a hair dryer head, said speaker unit being mounted on said outer exposed wall opposite a point on said wall means which is to be contiguous to one of the ears of said person, said wall means forming said hair drying space having warm air conveying openings at least in the vicinity opposite said speaker unit through which openings warm air passes into said hair drying space from said warm air conveying space, and a volume control means including a manually adjustable control member located on the outside of the hair dryer head opposite the point containing said speaker unit for varying the volume of the sound generated by said speaker unit, said control member being within reach of said person while using the hair dryer.

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