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Anzalone

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[54] **HAIR CUTTING APPARATUS**

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[51] **Int. Cl.²** **B26B 19/20;** B26B 19/44

[58] **Field of Search** 30/41.5, 133, 201

[56] **References Cited**

UNITED STATES PATENTS

1,238,061	8/1917	Bourdelat	30/133
2,802,260	8/1957	Allen	30/133 X
3,302,286	2/1967	Zucker	30/133

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[57] **ABSTRACT**

A power hair cutter wherein a hollow open ended enclosure includes air movement means for drawing a subject's hair away from the scalp and into the open end of the enclosure, wherein a cutter effects severance of the drawn hair and the air movement means simultaneously removes the hair cuttings. The apparatus also includes extensile and retractile spacer means for selectively locating the cutting apparatus relative to the subject's head for predetermining the length of cut hair.

6 Claims, 5 Drawing Figures

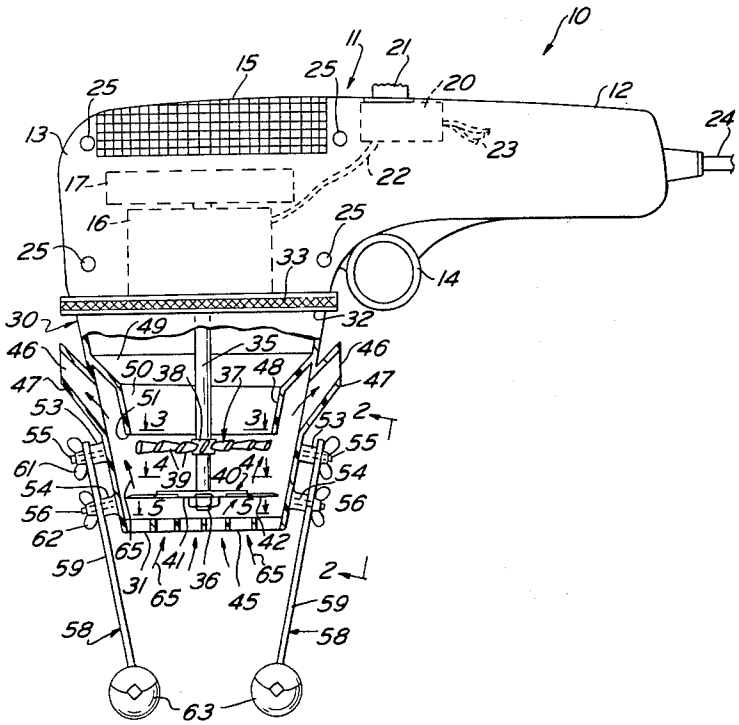


FIG. 1

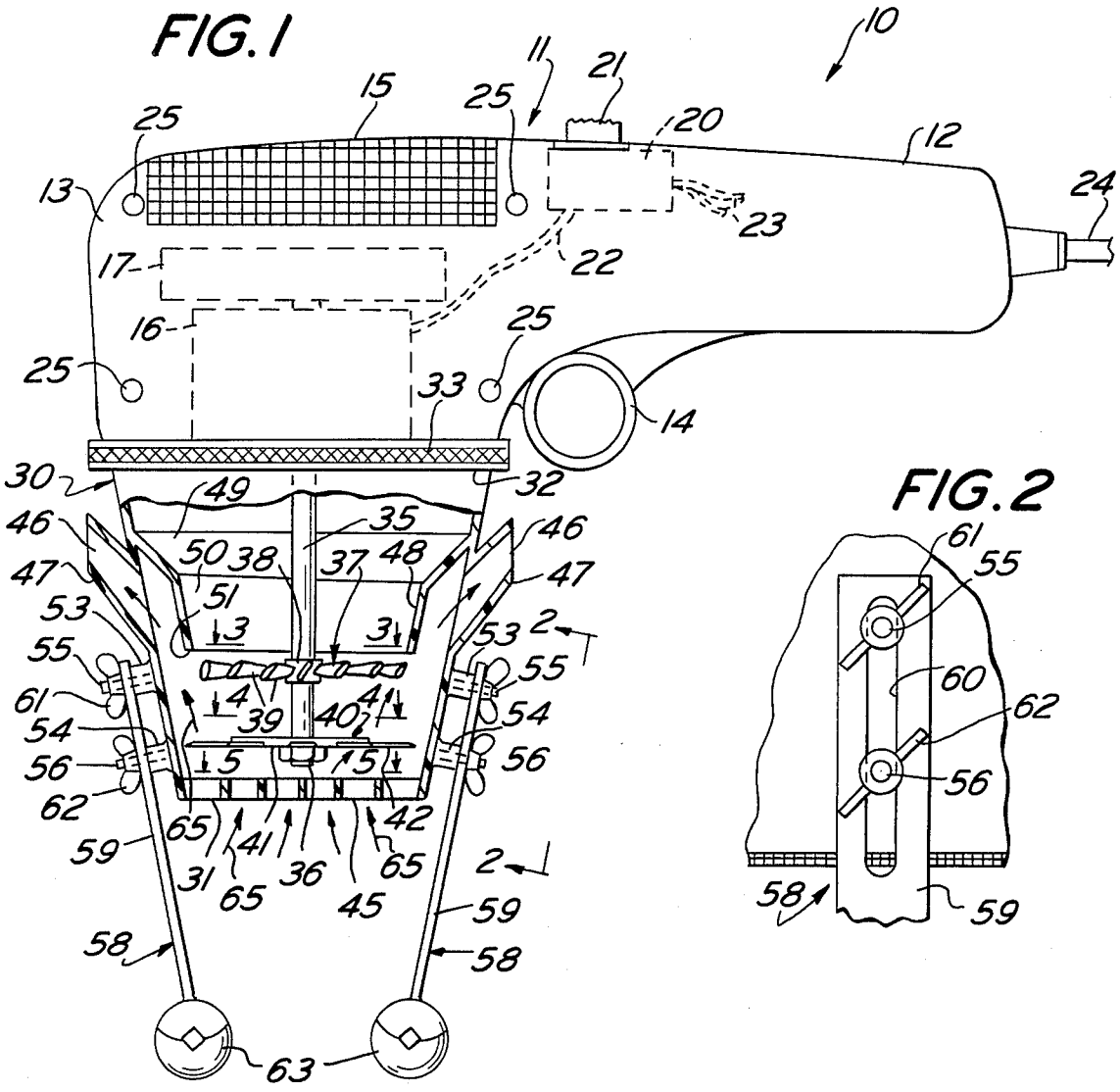


FIG. 2

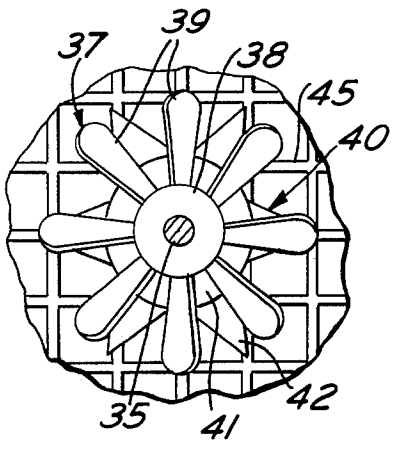


FIG. 3

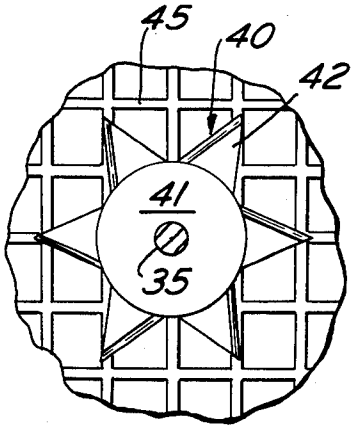


FIG. 4

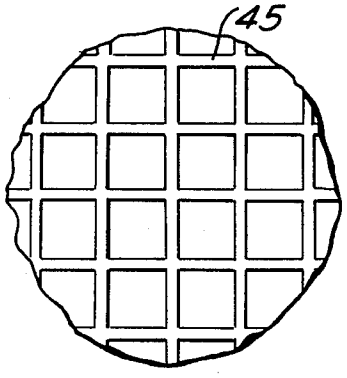


FIG. 5

HAIR CUTTING APPARATUS

BACKGROUND OF THE INVENTION

While the use of electric hair cutters and pneumatic removal of hair cuttings are well known, such devices have been adapted primarily for shaving and close cropping of hair, and incapable of cutting, trimming or styling of hair of substantial length, of the order of several inches.

SUMMARY OF THE INVENTION

It is, therefore, an important object of the present invention to provide hair cutting apparatus which overcomes the above-mentioned difficulties and is well suited for quickly, easily and conveniently cutting scalp hair to any selected length up to several inches, by merely engaging the subject's head with guide or spacer means of the device and energizing the air movement and cutter means to automatically extend the hair generally normal to and out from the scalp for severance by cutting means of predetermined location and simultaneous removal of hair cuttings.

It is a further object of the present invention to provide a hair cutting apparatus of the type described which affords a large range of adjustability for cut hair length, and which adjustability is extremely simple and convenient, accurately repeatable, and readily changeable, as desired.

It is still another object of the present invention to provide hair cutting apparatus having the advantageous characteristics mentioned in the preceding paragraph, which is uniquely simple in structure and operation, for durability and reliability throughout a long useful life.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings, which form a material part of this disclosure.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts, which will be exemplified in the construction hereinafter described, and of which the scope will be indicated by the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a longitudinal elevational view showing hair cutting apparatus of the present invention, partly broken away to illustrate interior construction.

FIG. 2 is a fragmentary view taken generally along the line 2—2 of FIG. 1.

FIG. 3 is a partial sectional view taken generally along the line 3—3 of FIG. 1.

FIG. 4 is a partial sectional view taken generally along the line 4—4 of FIG. 1.

FIG. 5 is a partial sectional view taken generally along the line 5—5 of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now more particularly to the drawings, and specifically to FIG. 1 thereof, the hair cutting device of the present invention is there generally designated **10** and includes a housing or casing **11** having a hand-grip portion **12**, and a motor mounting portion **13**. That is, the housing or casing **11** may be of elongated configuration, the handle part **12** including on one side an external annular finger receiver or hold **14** to simulate a pistol grip configuration. The motor mounting housing

portion **13**, remote from the hand grip part **12**, may be provided with an air permeable screen region or grill work **15** on the side opposite to the finger receiver **14**, and suitably mounted interiorly of the housing portion **13** is a motor **16** and motor cooling fan **17**. The motor is oriented with its axis generally transverse of or normal to the longitudinal dimension of the housing **11**, and located interiorly of the housing generally on the same side thereof as the finger receiver or gripping ring **14**.

On the opposite side of the housing **11**, adjacent to the air passageway **15** and opposite the finger grip **14**, there may be mounted in the housing an electric motor switch **20** having an actuating button **21** exteriorly of the housing. Suitable electrical conductor means or wires, as at **22** extend between the motor **16** and switch **20**, and extend from the latter, as at **23** exteriorly of the housing, say outwardly therefrom through the handgrip end, as at **24**.

The housing **11** may be suitably fabricated, say of plastic or other material, as desired, and may be openably retained in closed condition, say for convenient access to the interior thereof, as in repair or replacement of parts, as by removable fastener means **25**.

A hollow housing extension is generally designated **30**, and extends from the motor mounting portion **13** generally transversely from the housing **11** on the side thereof adjacent to the motor **16**. The housing extension **30** may be generally tubular and open ended in configuration, tapering outwardly toward an outer open end **31**, and having its larger inner end **32** suitably secured, as by a ferrule **33**, or other suitable securement means, to the motor mounting housing portion **13**. Thus, the hollow tubular housing extension **30** detachably secured in generally axial alignment with the motor **16**. A motor shaft **35** extends from the motor **16** generally spacedly within the housing extension **30** and terminates, as at free end **36**, adjacent to and short of the open end **31** of the housing extension. Spaced inwardly from the open housing extension end **31** and free end **36** of the motor shaft **35**, there may be provided on the rotary shaft air movement means **37**, such as a fan including a hub **38** circumposed about the shaft, and a plurality of fan blades **39** projecting from the hub generally radially outwardly of the shaft. The radial fan blades **39** may terminate adjacent to and spaced inwardly from the inner surface of the housing extension **30**.

Also carried by the motor shaft **35**, for rotation therewith, adjacent to the free shaft end **36**, may be a cutter, generally designated **40**. Thus, the cutter **40** is located in spaced relation intermediate the fan or air mover **37** and the open, outer end **31** of the hollow housing extension **30**. The cutter **40** may include a generally flat or disc-shaped hub **41** fixedly secured coaxially on the shaft **35** for rotation therewith, and a plurality of cutting blades **42** projecting from the periphery of the disc or hub **41** generally radially outwardly with respect to the axis of shaft **35**. The cutter blades **42** may terminate at their radially outer edges proximate to the inner surface of the housing extension.

The open outer end **31** of the generally conical, outwardly tapering hollow housing extension **30**, may be provided with an open grillwork, perforate structure or mesh **45**.

The hollow housing extension **30** is provided at spaced locations about its tubular wall, intermediate

the air mover or fan 37 and inner end 32, with a plurality of through openings or outlets 46, each communicating between the interior and exterior of the housing extension through the side wall thereof. The outlet openings 46 may each be provided, on the outer side of housing extension 30, with an open ended, generally tubular projection or nozzle 47 extending obliquely outwardly and away from the housing extension end 31.

On the interior surface of the housing extension 30, there is provided a generally annular internal skirt 48 which-spacedly overlies the outlet openings 46. That is, the internal skirt 48 extends from the inner surface of the housing extension 30, between the inner end 31 and the outlet openings 46, in the form of an annular frusto-conical wall 49, sloping inwardly or tapering in the direction toward the housing extension open outer end 31. From the inner or smaller end of the frusto-conical wall 49, the skirt 48 continues in the form of a frusto-conical wall 50 located in inwardly spaced, facing relation with respect to the housing extension outlet openings 46, and terminating at a longitudinally outer edge 51 of generally annular configuration located proximate to the free ends of sand blades 39. Thus, the skirt 48 defines a baffle for directing fluid flow outwardly through the several outlet openings 46 and discharge nozzles 47.

Exteriorly on the housing extension 30, say between the discharge nozzles 47 and open outer end 31 of the housing extension, there may be provided suitable mounting means, such as pairs of longitudinally spaced bosses 53 and 54, being provided with respective threaded extension or studs 55 and 56. The bosses and studs 53–56 provide mounting means for a plurality of elongate spacers, each generally designated 58. The spacers may each include an elongate member or bar 59 having adjacent to one end a longitudinally extending slot 60 receiving a pair of studs 55 and 56. Holding members, such as wing nuts 61 and 62 may be threadedly engaged about respective studs 55 and 56 for clamping the associated elongate member or bar 59 against the adjacent studs 53 and 54. Thus, each elongate member or bar 59 is selectively adjustably positionable longitudinally, for extension and retraction relative to said housing extension, and releasably holdable in any selected position of its extensile and retractile movement by operationg of the nuts 61 and 62.

It will be seen, FIG. 1, that the spacer bars 59 have their outer ends projecting considerably beyond the open outer end 31 of the housing extension, on the order of several inches beyond the housing extension, for a purpose appearing presently. Carried by the distal or outer ends of respective spacer bars 59 may be rollable elements 63, such as wheels or balls for rolling engagement with a guiding surface.

For example, the hair cutting device 10 may be manually manipulated for rolling engagement of the spacer guide elements 33 with a subject's scalp. There may be a plurality of such rollable guide elements, say three or more, to facilitate maintenance of the housing extension 30 generally normal to the scalp.

In operation, as by energization of the motor 16 upon closure of the switch 20, the shaft 35 is rotated axially, to direct a stream of air generally in the direction of arrows 65, inwardly through the grillwork 45 of open end 31, partially along the housing extension 30, and outwardly therefrom through the skirt or baffle 48, outlet openings 46 and discharge nozzles 47. In addition to this generally longitudinal path of fluid movement, there is imparted to the airstream by the air mover 37 an angular component of movement. That is, the fluid or airstream moves through the housing extension 30 in a generally spiral path.

With the scalp engaging element 63 of spacer means 58 in position on a subject's head, the hereinbefore described airflow operates as a vacuum or suction force to draw the subject's hair outwardly, generally normal to the scalp, for entry into the housing extension through the open grill work 45 of the outer extension end 31. Rotation of the cutter 40 effects severance of the hair ends at a predetermined distance from the scalp, the severed ends or cuttings being pneumatically and centrifugally conveyed in the directions of arrows 65 for exhaust through outlet openings 46 and nozzles 47. The skirt or baffle 48 effectively assures against undue retention of hair cuttings in the housing extension.

While the foregoing description of operation is illustrative of the advantageous operation of spacer means 58, it is appreciated that the hair cutting device 10 may be moved toward a subject's scalp and commence cutting before engagement of the spacer means with the head. That is, by suitably powerful air mover means 37, the subject's hair is caused to stand out from the scalp and enter the housing extension end 31 with the head engaging die means 63 spaced from the head. Thus, hair cutting proceeds until the guide means 63 engages the head, whereupon the hair is automatically cut to the desired length.

From the foregoing, it is seen that the present invention provides a hair cutting apparatus which is uniquely simple in structure and operation, and otherwise fully accomplishes its intended objects.

Although the present invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it is understood that certain changes and modifications may be made within the spirit of the invention.

What is claimed is:

1. A hair cutting apparatus comprising a manually portable housing, a motor in said housing, a hollow extension on said housing extending generally axially of said motor and terminating in an open end, a rotary motor shaft extending from said motor spacedly within said extension and terminating short of said open end, outlet means on said extension communicating between the interior and exterior thereof and spaced inwardly from said open end, air movement means in said extension carried by said shaft intermediate said open end and said outlet means for directing air inwardly through the former and outwardly through the latter, so that a subject's growing hair is drawn away from the subject toward and into said open end, a cutter in said extension carried by said shaft intermediate said air movement means and open end, for severing growing hair and removing the severed hair through said outlet means, said air mover means comprising a plurality of fan blades extending radially from said shaft, said fan blades being spaced inwardly from said cutter and imparting angular movement to directed air for centrifugally displacing hair cuttings radially outwardly toward said outlet means, and a baffle in said extension for directing centrifugally displaced hair cuttings to said outlet means, said baffle comprising an internal skirt in

said extension having an inner edge spaced from the inner surface of said extension, said fan blades terminating proximate to said inner skirt edge.

2. A hair cutting apparatus according to claim 1, in combination with spacer means projecting from said extension beyond said open end for guiding engagement with the person of the subject, and adjustment means for selectively adjusting the distance of projection of said spacer means, to control and determine the length of cut growing hair.

3. A hair cutting apparatus according to claim 2, in combination with roller means on the projecting ends of said spacer means for rolling engagement with a subject's head.

4. A hair cutting apparatus according to claim 1, said cutter comprising a plurality of cutting blades extending generally radially from said shaft.

5. A hair cutting apparatus comprising a manufally portable housing, a motor in said housing, a hollow extension on said housing extending generally axially of said motor and terminating in an open end, a rotary motor shaft extending from said motor spacedly within said extension and terminating short of said open end, outlet means on said extension communicating between the interior and exterior thereof and spaced inwardly from said open end, air movement means in said extension carried by said shaft intermediate said open end and said outlet means for directing air inwardly through the former and outwardly through the latter, so that a subject's growing hair is drawn away from the subject toward and into said open end, a cutter in said extension carried by said shaft intermediate said air movement means and open end, for severing growing hair and removing the severed hair through said outlet means, said air mover means comprising a plurality of fan blades extending radially from said shaft, said fan blades being spaced inwardly from said cutter and imparting angular movement to directed air for centrifugally displacing hair cuttings radially outwardly toward said outlet means, and a baffle in said extension for directing centrifugally displaced hair cuttings to said outlet means, said cutter comprising a hub circumposed about said shaft, and a plurality of cutting blades extending generally radially from said hub, whereby said hair cuttings are formed in an annular region adjacent to the inner surface of said extension for discharge between said skirt and inner surface to said outlet means.

6. A hair cutting apparatus according to claim 5, in combination with spacer means projecting from said extension beyond said open end for guiding engagement with the person of the subject, adjustment means for selectively adjusting the distances of projection of said spacer means to control and determine the length of cut growing hair, and roller means on the projecting ends of said spacer means for rolling engagement with a subject's head.

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