

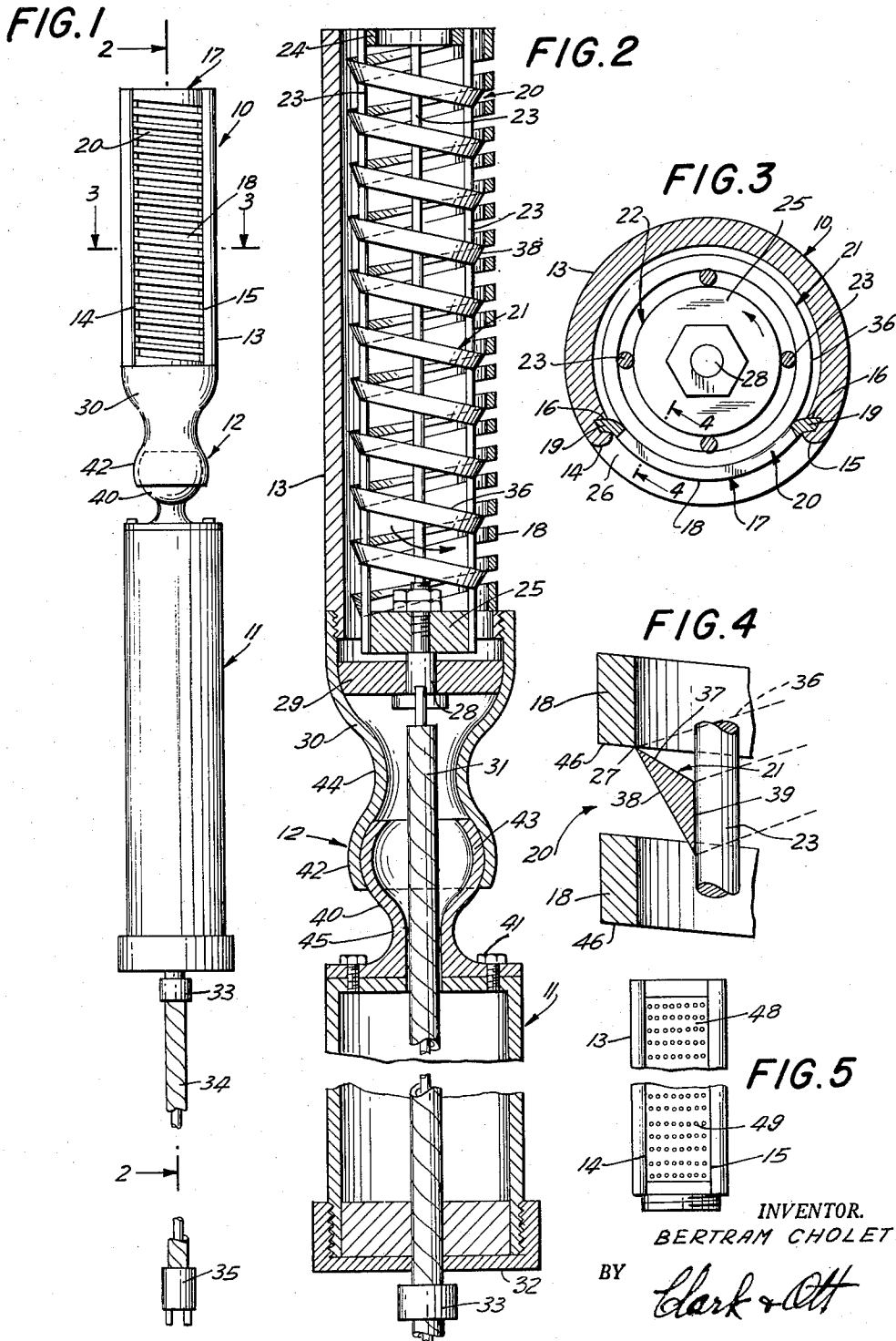
July 24, 1962

B. CHOLET

3,045,344

ELECTRIC RAZOR HAVING ROTATABLE CUTTER OF TRIANGULAR SHAPE

Filed May 27, 1960



INVENTOR.
BERTRAM CHOLET.

BY

Clark & Ott

ATTORNEYS

1

3,045,344 ELECTRIC RAZOR HAVING ROTATABLE CUTTER OF TRIANGULAR SHAPE

Bertram Cholet, 252 Harrison Ave.,

Hasbrouck Heights, N.J.

Filed May 27, 1960, Ser. No. 32,439

3 Claims. (Cl. 30—43)

This invention relates to razors and has particular reference to a razor having cooperating fixed and rotatably mounted cutter members and the application is a continuation in part of application Serial No. 8,255, filed February 12, 1960, now abandoned.

An object of the invention is to provide a rotatable cutter member which traverses the cutting edges of the fixed member by which continuous shearing action is obtained for effectively cutting coarse as well as fine hair without the necessity of a multiplicity of strokes.

Another object of the invention is to provide a rotatable cutter member of helical formation which is of triangular shape in cross section with the cutting edge thereof formed by divergent side faces whereby the cutting edge traverses the cutting edge of the fixed cutter member by thin line engagement throughout the extent of the cutter member which reduces the friction between the fixed and rotatable cutter members.

Another object of the invention is to provide a razor having a cutter head which is mounted on the end of a handle member for movement of the head from longitudinal alignment therewith to positions disposed in angular relation therewith whereby the head may be arranged in various angular positions for facilitating shaving.

Still another object of the invention is to provide an open ended cutter head of substantially cylindrical formation with the rotatable cutter member affixed to a hollow frame rotatably mounted within the head so as to prevent clogging of the cutter members with cut hair.

Still another object of the invention is to provide in a razor of said character a rotatable cutter member in the form of a helical coil which is affixed at its ends to said frame and engages against the inside face of the fixed cutter member.

Still another object of the invention is to provide a cutter head in which the rotatable cutter member and associated parts may be readily removed and replaced and which is light in weight and of relatively small size for convenience in carrying.

With the foregoing and other objects in view, reference is now made to the following specification and accompanying drawings in which the preferred embodiment of the invention is illustrated.

In the drawings:

FIG. 1 is a view in elevation of a razor constructed in accordance with the invention.

FIG. 2 is an enlarged vertical sectional view taken approximately on line 2—2 of FIG. 1.

FIG. 3 is an enlarged cross sectional view taken approximately on line 2—2 of FIG. 1.

FIG. 4 is a fragmentary sectional view taken approximately on line 4—4 of FIG. 3.

FIG. 5 is a view in elevation fragmentarily showing a modified form of head constructed in accordance with the invention.

Referring to the drawings, the razor includes a head 10 which is affixed at one end to a handle 11 by means of a swivel connection 12 whereby the head 10 may be disposed in longitudinal alignment with the handle 11 or disposed in adjusted angular relation therewith.

The head 10 includes an open ended hollow cylindrical member or casing 13 having a longitudinally extending

2

slot or open portion 26 opening through the outer end thereof and providing confronting longitudinally extending edges 14 and 15, each having a narrow slit 16 in which is slidably secured a fixed cutter member 17. The fixed cutter member 17 includes a medial portion 18 of arcuate shaped formation in cross section and with outwardly projecting longitudinally extending lips or flanges 19 which slidably fit the slits 16. The arcuate shaped medial portion 18 is provided with parallel narrow openings 20 which preferably extend at an angle of not less than 3° nor more than 12° to a plane extending transversely at right angles to the axis of rotation of a rotatable cutter member 21. The openings 20 extend substantially the full width of the medial portion 18 of the fixed cutter member 17 between the edges 14 and 15 of the cylindrical member 13 and are spaced longitudinally from one end of the medial portion 18 to the other.

The rotatable cutter member 21 is of helical formation and is mounted on a cylindrically shaped frame 22. The frame 22 is journaled for rotation within the head to dispose the rotatable cutter member 21 in engagement throughout its length with the inner arcuate face of the fixed cutter member 17. The frame 22 includes a plurality of circumferentially spaced longitudinally extending bars 23 affixed at their outer ends to the outer periphery of an annular member 24 and at their inner ends to the outer periphery of an apertured disk 25. The cutter member 21 extends spirally about the bars 23 with the ends thereof welded or otherwise affixed thereto. The disk 25 is releasably connected with a stub shaft 28 journaled for rotation in a bearing 29 carried by a tubular shell 30 threadedly secured on the inner threaded end of the cylindrical member 13. A flexible shaft 31 is releasably secured to said stub shaft and extends through said swivel connection 12 and through the end wall 32 of the handle 11. The shaft 31 has a coupling 33 for connection with a flexible shaft 34 driven by a motor 35 adapted to be connected with a source of current supply for rotating the said shafts and with the rotatable cutter member 21.

The rotatable cutter member 21 consists of a helical coil of triangular shape in cross section secured in surrounding relation to the frame 22 so as to form a peripheral thin line cutting edge 36 extending throughout the helical formation of the coil with the convolutions thereof in engagement with the inner face of the medial portion 18 of the fixed cutter member 17. The helical formation of the cutter member is such that the convolutions of the cutting edge 36 thereof traverse the fixed cutting edges 27 formed by the openings 20 at an angle of not less than 6 degrees nor more than 18 degrees. Preferably the convolutions of the cutter member 21 extend approximately at an angle of 15° to a transverse plane disposed at right angles to the axis of said cutter member. The cutter member 21 includes an upper helical face 37, an outer helical face 38 and an inner face 39, which faces continue spirally throughout the length of said cutter member. The upper face 37 and outer face 38 subtend an arc of approximately 30°, the upper face 37 being approximately at an angle of 30° to the horizontal while the outer face 38 is approximately at an angle of 30° to the vertical and the inner face 39 is substantially vertical and provides a plane surface for securing the cutter member to the bars 23 of the frame 22.

The swivel connection 12 connecting the head 10 with the handle member 11 rigidly retains the head 10 in alignment with the handle or in adjusted angular relation with reference thereto. The swivel connection is of annular formation in cross section and includes the tubular shell 30 threadedly connected with the cylindrical member 13 of the head 10 as hereinbefore described and a tubular shell 40 affixed by screws 41 or equivalent fastening means

to the inner end of the handle 11. The tubular shells 30 and 40 have concentric outer and inner spheroidal portions 42 and 43 respectively which frictionally engage to retain said parts in assembled relation and which permit of the swinging of the head 10 about the center of said spheroidal portions into angular relation with the longitudinal axis of the handle 11. Adjacent the spheroidal portions 42 and 43 the tubular shells 30 and 40 have constricted portions 44 and 45 respectively.

In the embodiment illustrated the motor 35 rotates the frame 22 together with the cutter member 21 in counterclockwise direction as shown by the arrows in FIGS. 2 and 3 of the drawings whereby the upper edges 46 of the openings 20 at the juncture thereof with the inner face of the medial portion 18 of the fixed cutter member 17 form the fixed cutting edges which cooperate with the helical cutting edge 36 to sever the hair protruding through the openings 20. The fixed cutter member 17 is relatively thin and the inner face thereof is substantially concentric with the rotatable cutter member 21 so that the cutting edge 36 is disposed against the inner face of the arcuate portion 18 to provide a shearing action with the fixed cutting edges 46. Constructed in this manner the razor provides an efficient instrumentality for cutting coarse as well as fine hair as a dry shaver, that is, without the necessity of using lather or other means for wetting or softening the hair. The frame 22 being hollow, the severed hair does not accumulate along the cutting edges and after each use the cut hair may be readily discharged through the upper open end of the head.

Instead of the fixed cutter member 17 with the slots 20, the razor may be provided with a foraminulous fixed cutter member 48, that is, having closely spaced small openings 49 extending therethrough throughout the extent thereof between the edges 14 and 15 of the cylindrical member 12 as shown in FIG. 5 of the drawings. In this form the upper portions of the foramina 49 at the juncture thereof with the inner face of the cutter member 48 constitute the fixed cutting edges similar to the edges 46 in the previous form of the invention and cooperate with the helical cutting edge 36 to effect shearing action.

While the preferred form of the invention has been shown and described herein, it is to be understood that the same is not so limited but shall cover and include any and all modifications of the invention which fall within the purview thereof.

What is claimed is:

1. In a razor, a handle, a head, means mounting said head to said handle at one end thereof, said head including a casing formed with a longitudinally extending slot opening through the outer end thereof, a fixed cutter member of arcuate formation in cross section slidably secured in said slot and having narrowly spaced openings throughout the extent thereof providing fixed cutting edges at the inner edges of said perforations, a rotatable cutter member including a helical coil of triangular shape in cross section having two continuous helical faces forming a cutting edge extending continuously throughout the helical formation of said coil, a hollow frame including end members and a plurality of circumferentially spaced longitudinally extending bars affixed to said end members and a central shaft journaled to said head for rotation and mounting said frame in concentric relation with the arcuate face of said fixed cutter member, said helical coil peripherally surrounding said frame with the endmost convolutions thereof affixed to said bars and with the cutting edge of said helical coil disposed in engagement with the inner face of said fixed cutter member and with the convolution of said helical coil crossing said fixed cutting edges at an angle thereto.

2. In a razor, a handle, a head, means mounting said

head to said handle at one end thereof, said head including a casing formed with a longitudinally extending slot opening through the outer end thereof, a fixed cutter member of arcuate formation in cross section slidably secured in said slot and having a series of narrowly spaced parallel slots extending transversely thereof in angular relation to a plane extending at right angle to the axis of the head providing longitudinally spaced fixed cutting edges of the inner edges of said slot, a rotatable cutter member including a helical coil of triangular shape in cross section having two continuous helical faces forming a cutting edge extending continuously throughout the helical formation of said coil, a hollow frame including end members and a plurality of circumferentially spaced longitudinally extending bars affixed to said end members and a central shaft journaled to said head for rotation and mounting said frame in concentric relation with the arcuate face of said fixed cutter member, said helical coil peripherally surrounding said frame with the endmost convolutions thereof affixed to said bars and with the cutting edge of said helical coil disposed in engagement with the inner face of said fixed cutter member and the convolution of said helical coil crossing said fixed cutting edges at an angle thereto.

3. In a razor, a handle, a head, means mounting said head to said handle at one end thereof, said head including a casing formed with a longitudinally extending slot opening through the outer end thereof, a fixed cutter member of arcuate formation in cross section slidably secured in said slot and having a series of narrowly spaced parallel slots extending transversely thereof not less than 3 degrees nor more than 12 degrees in angular relation to a plane extending at right angle to the axis of the head providing longitudinally spaced fixed cutting edges at the inner edges of said slot, a rotatable cutter member including a helical coil of triangular shape in cross section having two continuous helical faces subtending an angle of approximately 30 degrees with said faces being disposed respectively at angles of approximately 30 degrees to planes extending transversely and longitudinally of the axis of rotation of said rotatable cutter member and forming a cutting edge extending continuously throughout the helical formation of said coil and with said cutting edge extending approximately at an angle of 15 degrees to a plane extending in right angular relation to the axis of rotation of said rotatable cutter member, a hollow frame including end members and a plurality of circumferentially spaced longitudinally extending bars affixed to said end members and a central shaft journaled to said head for rotation and mounting said frame in concentric relation with the arcuate face of said fixed cutter member, said helical coil peripherally surrounding said frame with the end most convolutions thereof affixed to said bars with the cutting edge of said helical coil disposed in engagement with the inner face of said fixed cutter member and with the convolution of said helical coil crossing said fixed cutting edges at an angle thereto.

References Cited in the file of this patent

UNITED STATES PATENTS

2,026,630	Harris	Jan. 7, 1936
2,055,517	Branstetter	Sept. 29, 1936
2,161,981	Ruskin	June 13, 1939
2,289,447	Miller	July 14, 1942
2,307,303	Richardson et al.	June 5, 1943
2,324,070	Dalkowitz	July 13, 1943
2,335,607	Penney	Nov. 30, 1943
2,367,686	Neidig	Jan. 23, 1945
2,564,379	Smith	Aug. 14, 1951