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3,036,378 ACCESSORY, IN PARTICULAR HAIR-CLIPPING FIXTURES

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This invention relates to accessories which for massage, manicure and the like can be attached to the housing of an electric motor so as to produce a positive driving connection to a shaft driven by such a motor, and which contain a converting device by which a rotary motion is converted into a reciprocal motion.

According to the invention, the accessory is provided with means of attachment and shaped into a form enabling it to be substituted, in a dry-shaving apparatus, for a shaving head comprising at least one shear plate and rotary cutting members arranged behind the plate or plates.

This arrangement permits of using a dry-shaving apparatus not only for shaving but also for other requirements. In particular, it enables hairs to be trimmed so that the remaining part can have any required length.

In order that the invention may readily be carried out, two embodiments thereof will now be described, by way of example, with reference to the accompanying diagrammatic drawings, in which

FIG. 1 is a longitudinal sectional view of a hair-clipping fixture,

FIG. 2 is a plan view taken along the line II—II of FIG. 1,

FIG. 3 is a longitudinal sectional view of an alternative embodiment, and

FIG. 4 is a plan view of the embodiment shown in FIG. 3.

Referring now to FIGS. 1 and 2, driving shafts 11 and 12 on which rotary cutting members are slipped in the usual manner, are journaled in a housing 10 of a dry-shaving apparatus. An accessory device is arranged on the housing 10 by means of an outer hood-shaped fastening ring 14 with the interposition of an inner fastening ring 15. A guide ring 16 and a blank disc 17 are interposed between the two fastening rings 14 and 15 and clamped into position by the connection of the two fastening rings by means of screws 18. A driving shaft 19 which is coupled to the driving shaft 11 by means of their relative shapes, for example by a squared end of the driving shaft fitting into a square aperture in the disc, is mounted for rotation in the guide ring 16, while the other driving shaft 12 is freely rotatable in a recess in the blank disc 17.

The driving disc 19 is provided with a crank pin 22 which is fitted in a slot 23 of a connecting rod 24. A plate 25 of the accessory device is arranged on the outer fastening ring 14 and secured thereto by means of set screws 25a. A detachable lower cutter 26 is rigidly connected to the plate 25 by means of screws 27 or the like. This cutter carries a bearing and guide bolt 28 on which the connecting rod 24 is mounted so as to be able to reciprocate. An adjusting nut 29 on the bolt 28 acts to support a spring 30 which thrusts a thrust plate 31 against the upper cutter 32 and this cutter against the lower cutter 26. By means of a pin 33 arranged on the end of the rod 24 opposite the end at which the crank pin 22 is

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arranged, the upper cutter 32 is coupled to the connecting rod 24, it is provided with a slot 34 through which the bolt 28 passes so that the cutter is enabled to reciprocate in the direction x along an edge 35 of the plate 25. The upper and lower cutters are provided with cutting teeth at 36 and 37.

After removal of the shaving head (not shown), the accessory device comprising the parts 14 to 37 is arranged on the housing 10 of the dry-shaving apparatus by means of the fastening rings 14 and 15, the driving shaft 11 being coupled to the driving disc 19 for a positive driving connection by means of their relative shapes. At each revolution of the driving disc 19, the connecting rod 24 is given a reciprocating motion by the crank pin 22 engaging the slot 23 so that it rocks about the crank 28 and hence, by means of the pin 33, imparts a corresponding reciprocating motion to the upper cutter 32 which is pressed to the lower cutter by means of the spring 30. The cutting teeth 37 and 36 which move rapidly over one another in opposite directions ensure a clean and straight cut.

In FIGS. 3 and 4, a cover plate 40 is provided with teeth 41 at one end. An arm 43 pivoted about 44 engages the cover plate with some pressure due to a spring 42. Teeth 45 at one end of the arm 43 co-operate with the teeth 41. The other end of the arm 43 is provided with a slot 46 in which an eccentric part 48 of a pin 47 is arranged. Securing tags 49 and 50 enable the hair-clipping fixture to be attached to a dry-shaving apparatus of the kind described in co-pending patent application Ser. No. 761,821, filed September 18, 1958. The pin 47 is provided with an aperture 50a into which a shaft of the dry-shaving apparatus fits which is driven for rotation by the electric motor. Rotation of the pin gives a reciprocal motion to the teeth 45 over the teeth 41.

What is claimed is:

1. A hair clipping attachment for a rotary dry shaver provided with a drive shaft and a shaving head comprising; first means connected to said drive shaft for converting said rotary motion into reciprocating motion, and second means for removably securing said attachment on said dry shaver in place of the shaving head, said hair clipping attachment including at least one fixed cutter and at least one movable cutter, means maintaining said fixed and movable cutters in abutting relationship, said first means being operatively connected to said movable cutter to thereby reciprocate the same.

2. A hair clipping attachment for a rotary dry shaver as claimed in claim 1 further comprising a spring for maintaining said fixed and reciprocating cutters in firm abutting engagement.

3. A hair clipping attachment for a rotary dry shaver provided with a drive shaft and a shaving head comprising; means connected to said drive shaft including a pin having an eccentric part and an arm pivoted at its intermediate portion, said eccentric part engaging one end of said arm to convert the rotary motion of said drive shaft into reciprocating motion, said arm being provided with teeth at the other end thereof, a cover plate provided with teeth adjacent to the teeth of said arm, and means for maintaining said teeth in abutting relationship and removably securing said attachment on said dry shaver in place of the shaving head.

4. A hair clipping attachment for a rotary dry shaver provided with a drive shaft and a shaving head compris-

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ing; first means connected to said drive shaft for converting rotary motion into reciprocating motion, a fixed cutter and a movable cutter, a guided member operatively connected to said cutter and capable of arcuate motion to thereby reciprocate said cutter, second means coupling said guided member to said first means, and third means for removably securing said attachment on said dry shaver in place of the shaving head, and means maintaining said reciprocating cutter in abutting engagement with said fixed cutter.

5. A hair clipping attachment for a rotary dry shaver provided with a drive shaft and a shaving head comprising;

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means connected to said drive shaft for converting rotary motion into reciprocating motion including a pin having an eccentric part, a cutter, a guided member having teeth and being capable of reciprocating motion across the width of said cutter, means coupling said guided member to said eccentric part, and means for removably securing said attachment on said dry shaver in place of the shaving head.

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