

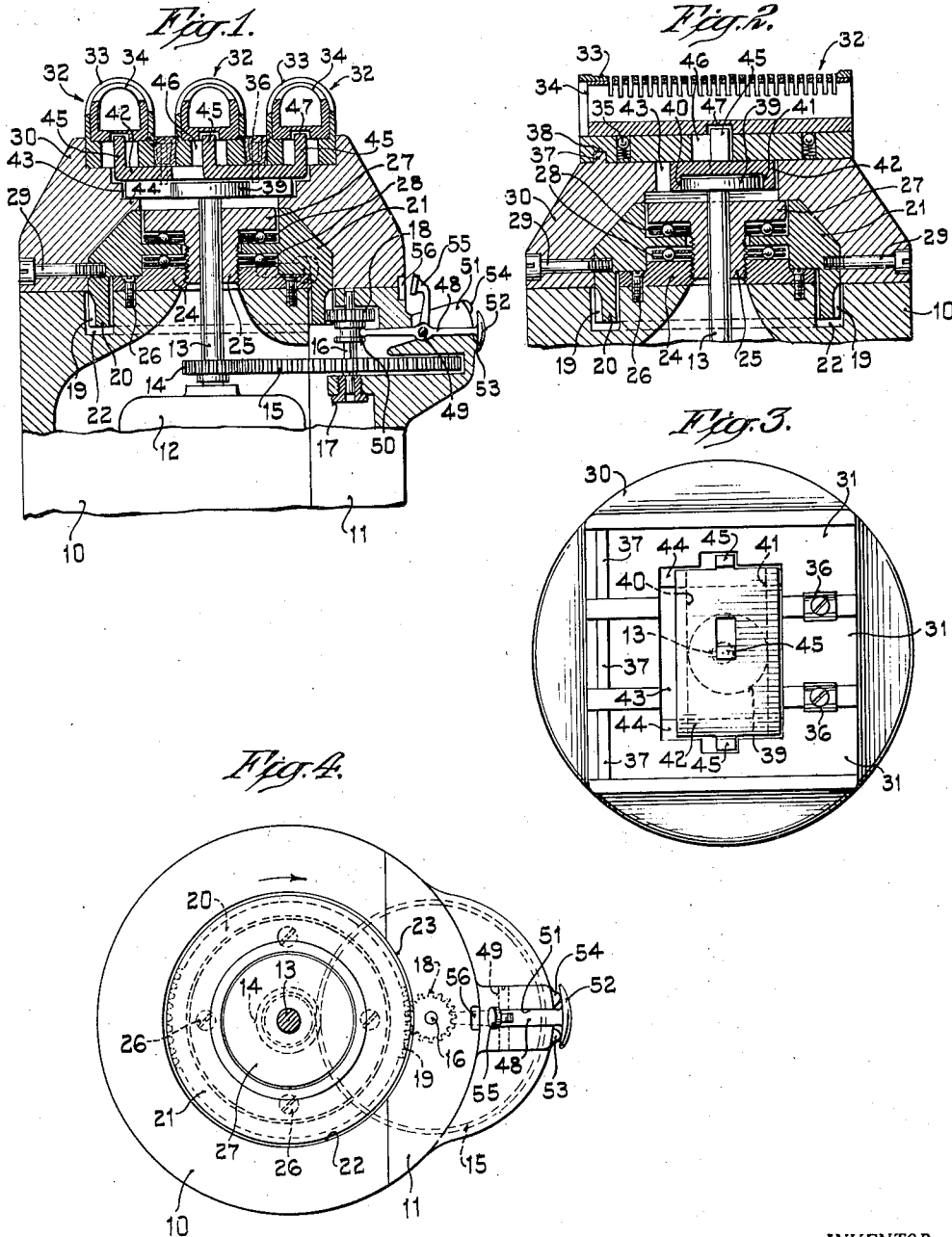
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A. R. WURTELE

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DRY SHAVER

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INVENTOR.

BY *Allan R. Wurtele*

F. Bascom Smith
ATTORNEY

UNITED STATES PATENT OFFICE

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DRY SHAVER

Allan R. Wurtele, Mix, La.; Noemie Garrett
Wurtele, executrix, and N. P. Phillips, executor
of the succession of said Allan R. Wurtele

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This invention relates to shaving devices, and more particularly to the type known as electric dry shavers.

One object of the present invention is to provide an electric dry shaver of novel construction and operation whereby shaving of the face and neck of the user may be effected more expeditiously and more cleanly than heretofore possible with shavers of this type.

Another object of the invention is to provide a novel electric dry shaver of the reciprocating cutter type which will cover a greater shaving area upon each manipulation of the shaver by the user.

Another object is to provide a novel electric dry shaver of the reciprocating cutter type wherein the cutter during reciprocation thereof has imparted thereto a circular motion.

A further object is to provide a novel electric dry shaver of the reciprocating cutter type so constructed that the cutter during reciprocation thereof may, at the will of the user, also have a circular motion imparted thereto.

The above and further objects and novel features of the present invention will more fully appear from the following detailed description when the same is read in connection with the accompanying drawings. It is to be expressly understood, however, that the drawings are for the purpose of illustration only and are not intended as a definition of the limits of the invention, reference for this latter purpose being had primarily to the appended claims.

In the drawings, wherein the same reference characters refer to the same parts throughout the several views,

Fig. 1 is a fragmentary side elevation, partly in section, of a multiple head dry shaver embodying the present invention;

Fig. 2 is a fragmentary vertical, longitudinal sectional view through the central shaving head of the dry shaver shown in Fig. 1;

Fig. 3 is a top plan view, looking down on Fig. 2, of the dry shaver with the shaving heads omitted for purposes of clearer illustration; and

Fig. 4 is a top plan view, partly in section, looking down on Fig. 1, of the dry shaver with the shaving heads and housing therefor omitted for purposes of clearer illustration.

Referring to the drawings, the novel dry shaving instrument contemplated by the present invention comprises a main body or casing 10 and a removable cover 11 both being made of a suitable plastic composition. Suitably mounted within casing 10 is a small electric motor 12 includ-

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ing a shaft 13 driven thereby. Motor 12 is of the usual construction and is operated in the usual manner to rapidly rotate shaft 13, therefore needing no detail illustration or description herein, except to say that it is so arranged within casing 10 that shaft 13 extends vertically of said casing and toward the upper end thereof. Secured to shaft 13 adjacent motor 12 is a spur pinion 14 meshing with a spur gear 15 fixed on a short square bar 16. The latter is turned down at its opposite ends to provide journals rotatable in a suitable bearing formed in cover 11, and in a bushing 17 removably threaded in said cover.

Mounted for sliding movement on bar 16 and rotated by said bar is a spur pinion 18 which meshes with spur gear teeth 19 cut in the periphery of an annular skirt or ring 20 formed integrally with a metallic, truncated circular plate 21 and projecting downwardly beyond the upper ends of casing 10 and cover 11. Casing 10 is formed at its upper end with a circular groove 22 to receive skirt 20, said groove opening adjacent cover 11 to enable engagement of pinion 18 with teeth 19, and said cover being curved, as indicated at 23 (Fig. 4), to provide clearance for said skirt and permit the latter to pass beyond the same. Plate 21 is removably held in operative position on casing 10, and is supported for rotation relative said casing and concentric with the axis of rotation of motor shaft 13, by a metallic flange 24 and an adjustable screw 25 both being made of bronze or any other suitable bearing material. Flange 24 is secured, as by screws 26, to casing 10 and projects upwardly into a suitable counterbore formed in the underside of plate 21. Screw 25 projects downwardly through a suitable central opening in plate 21 and is threaded in flange 24, said screw being formed with an enlarged head 27 extending within a suitable counterbore formed in the upperside of said plate. To reduce the frictional drag of plate 21 on flange 24 and head 27 to a minimum and thereby alleviate the strain or load on motor 12, thrust bearings 28 are placed between said flange and said plate, and between the latter and the head 27 of screw 25. Plate 21, through the described gearing therefor with shaft 13, will thus be rotated by motor 12 in the direction of the arrow indicated in Fig. 4, and at a speed which is considerably slower than the speed of said shaft. The direction of rotation of screw 25 into threaded engagement with flange 24 corresponds to the direction of rotation of plate 21, and accordingly, the rotation of plate

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21 will tend to hold said screw against loosening during operation of the shaver.

Resting on plate 21 and removably secured thereto, as by bolts 29, is a cutter housing 30 preferably made of the same plastic material as the casing 10 and cover 11. Housing 30 is formed at its upper end to provide three channels 31 (Fig. 3) of rectangular shape in cross section to receive and properly position three shaving heads 32 in spaced relation on said housing. Heads 32 are of well known construction, each comprising a stationary outer cutter member 33 and a coacting reciprocating inner cutter member 34, the latter being pressed upwardly into sliding contact with the undersurface of the outer member by spring pressed balls 35 carried in said outer member. Each head 32 is held on housing 30 and against endwise movement relative to said housing, by a U-shaped, screw expanded, spring-steel clamp 36, and by a rib 37, respectively, said clamp being carried by the housing, and said rib being formed on said housing and engaging in a groove 38 formed in the rectangular base of the outer cutter member 33, all in accordance with well known practice. Since housing 30 is coupled to the rotatable plate 21 as above described, said housing and the shaving heads 32 carried thereby will be rotated as a unit about the vertical axis of motor shaft 13 through rotation of pinion 18 and engagement of the latter with ring gear 19.

Cutter members 34 are rapidly reciprocated relative to cutter members 33 during unitary rotation of said members and housing 30 to effect a shearing action and thereby sever the hair raised from the skin of the user and projected in a straightened condition through the apertures in members 33 by the combined rotating action of the heads 32 and bodily movement of the shaver by the user. Accordingly, motor shaft 13 projects upwardly through flange 24 and screw 25, the latter providing an additional bearing for said shaft, and has fixed on its upper end a cam 39. The latter engages the opposed inner surfaces 40 and 41 of an inverted U-shaped member 42 disposed at right angles to the heads 32 and beneath the latter in a rectangular opening 43 formed in housing 30. Opening 43 is of a width sufficient to enable reciprocation of member 42 relative to housing 30 by cam 39, and said opening is of a length only sufficient to receive said member so that the latter will rotate with housing 30. Member 42 is supported at its opposite ends for straight line reciprocation by opposed shoulders 44 formed in housing 30. Reciprocating motion of member 42 is transmitted to cutter members 34 by three spaced tabs or ears 45 formed on member 42 and projecting upwardly therefrom through the usual openings 46 in the base of the outer cutter members 33 and into the usual notches 47 provided in the inner cutter members 34 for this purpose. Cutter members 34 will thus be rapidly reciprocated by cam 39 and member 42 while they are slowly rotating with cutter members 33 and housing 30.

Pinion 18 may be thrown into and out of engagement with ring gear 19, at will, to provide for, or discontinue, rotation of housing 30 and shaving heads 32, whereby the shaver may be used as a conventional type, that is, without the rotary action, as when shaving the temples and lip portion, and used with the rotary action when shaving the neck and other parts of the face. For this purpose, pinion 18 has operatively associated therewith a shift lever 48 pivoted intermediate its

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ends at 49 on cover 11 and having one end engaged with a spool 50 secured to or formed integrally with said pinion. The opposite end of lever 48 projects exteriorly of cover 11 through a suitable slot 51 formed in said cover, and is provided with a manipulating head or button 52. Any suitable means may be provided for holding pinion 18 in engaged and disengaged positions relative to ring gear 19, and that particularly illustrated herein comprises two vertically and laterally spaced projections 53 and 54 formed on the exterior of cover 11 and adapted to be engaged by the button 52 on lever 48.

When pinion 18 is disengaged from ring gear 19, the housing 30 and shaving heads 32 are locked against rotation by a latch arm 55 formed integrally with lever 48 and adapted to engage in a notch 56 formed partly in cover 11 and partly in housing 30. When it is desired to discontinue rotation of shaving heads 32, motor 12 is disconnected from its source of electric current, and housing 30 is rotated manually until the portion of notch 56 in said housing registers with the portion of said notch in cover 11. Thereupon lever 48 is moved upwardly (Fig. 1) simultaneously disengaging pinion 18 from ring gear 19 and moving latch arm 55 into notch 56.

There is thus provided a novel electric dry shaver which, through the provision of rotating and simultaneously reciprocating hair severing means, will enable the user to obtain a cleaner shave, particularly on the neck and other soft flesh portions, and more expeditiously than heretofore possible with dry shavers of this type. Additionally, the mechanism for rotating the hair severing means may, at the will of the user, be thrown out of operation without affecting the reciprocating or severing action of said means, thereby facilitating shaving of the temples and lip portions.

Although a single embodiment of the invention has been illustrated and described in the foregoing specification, it is to be expressly understood that changes may be made therein without departing from the spirit and scope of the invention, as will now be clear to those skilled in the art. For example, the cutter housing may be constructed to receive and support one or two cutting heads only, instead of three cutting heads as illustrated, and the U-shaped member for reciprocating said heads modified accordingly. For a definition of the limits of the invention, reference is had primarily to the appended claims.

What is claimed is:

1. In a dry shaver, cutting means comprising an outer cutter member and a reciprocable inner cutter member, rotatable means supporting said outer and inner cutter members, and means for reciprocating said inner cutter member relative to said outer cutter member and for simultaneously rotating said rotatable means and said cutter members as a unit.

2. In a shaver of the class described, cutting means comprising an outer cutter member and a relatively reciprocable inner cutter member, rotatable means supporting said outer and inner cutter members, means for rapidly reciprocating said inner cutter member, and means for rotating said rotatable means and said cutter members as a unit during reciprocation of said inner cutter member.

3. In a dry shaver, cutting means comprising an outer cutter member and a relatively reciprocable inner cutter member, rotatable means sup-

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porting said outer and inner cutter members, means for reciprocating said inner cutter member, means for rotating said rotatable means whereby a rotary motion is imparted to both said cutter members during reciprocation of said inner cutter member, and means for rendering said last named means ineffective to rotate said rotatable means.

4. In a dry shaver, the combination of a shaver head comprising an outer cutter member and a reciprocable inner cutter member, a rotatable support for said cutter members, mechanism for reciprocating said inner cutter member relative to said outer cutter member, mechanism for rotating said support and both said cutter members as a unit during reciprocation of said inner cutter member, and a common source of power for operating said mechanisms.

5. A shaving device of the type described comprising a casing, a housing rotatably mounted on said casing, a shaver head mounted on said housing and comprising an outer cutter member and a reciprocable inner cutter member, means for reciprocating said inner cutter member relative to said outer cutter member, and means for rotating said housing and both said cutter members as a unit during reciprocation of said inner cutter member.

6. In a dry shaver, the combination of a casing, a motor mounted in said casing, a housing rotatably mounted on said casing, a shaver head mounted on said housing and comprising a stationary outer cutter member and a reciprocable inner cutter member, means actuated by said motor for reciprocating said inner cutter member, mechanism actuated by said motor for rotating said housing and both said cutter members as a unit during reciprocation of said inner cutter member, and means for throwing said mechanism into and out of operation.

7. A shaving device of the type described comprising a casing, a motor mounted in said casing, a housing rotatably mounted on said casing, a shaver head mounted on said housing and comprising a stationary outer cutter member and a reciprocable inner cutter member, means actuated by said motor for reciprocating said inner cutter member, mechanism actuated by said motor for rotating said housing and both said cutter members as a unit during reciprocation of said inner cutter member, means for throwing said mechanism into and out of operation, and means for locking said housing against rotation when said mechanism is thrown out of operation.

8. In a dry shaver, the combination of a casing, a motor mounted in said casing, a housing rotatably mounted on said casing, a shaver head mounted on said housing and comprising a stationary outer cutter member and a coacting reciprocable inner cutter member, cam means actuated by said motor for reciprocating said inner cutter member, and gear means driven by said motor for rotating said housing and both said cutter members as a unit during reciprocation of said inner cutter member.

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9. A shaving device of the type described, comprising a casing, a motor mounted in said casing, a housing rotatably mounted on said casing, a shaver head mounted on said housing and comprising a stationary outer cutter member and a coacting reciprocable inner cutter member, cam means actuated by said motor for reciprocating said inner cutter member, gear means driven by said motor for rotating said housing and both said cutter members as a unit during reciprocation of said inner cutter member, and means for throwing said gear means out of operation and for simultaneously locking said housing against rotation.

10. In a dry shaver, the combination of a casing, a housing rotatably mounted on said casing, a plurality of shaver heads mounted on said housing, each comprising a stationary outer cutter member and a coacting reciprocable inner cutter member, means for simultaneously reciprocating all said inner cutter members, and means for rotating said housing and all said shaver heads as a unit during reciprocation of said inner cutter members.

11. In a dry shaver, the combination of a casing, a housing rotatably mounted on said casing, a plurality of shaver heads mounted on said housing, each comprising a stationary outer cutter member and a coacting reciprocable inner cutter member, means for simultaneously reciprocating all said inner cutter members, means for rotating said housing and all said shaver heads as a unit during reciprocation of said inner cutter members, and means for rendering said last-named means effective and ineffective to rotate said housing and said shaver heads.

12. In a shaver of the class described, cutting means comprising an outer cutter member and a relatively reciprocable inner cutter member, rotatable means supporting said outer and inner cutter members, power means for reciprocating said inner cutter member, and means actuated by said power means for rotating said rotatable means during reciprocation of said inner cutter member whereby a rotary motion is simultaneously imparted to both said cutter members.

13. In a dry shaver, cutting means comprise an outer cutter member and a relatively reciprocable inner cutter member, a support for said cutter members mounted for movement about an axis disposed perpendicular to the plane of movement of said inner cutter member, means for reciprocating said inner cutter member, and means for moving said support and therewith said cutter members about said axis during reciprocation of said inner cutter member.

ALLAN R. WURTELE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
65 2,331,453	Carissimi	Oct. 12, 1943