F. M. NOONAN.

HAIR CLIPPER.

APPLICATION FILED AUG. 5, 1918.

1,302,836.

Patented May 6, 1919.

Fig. 1.

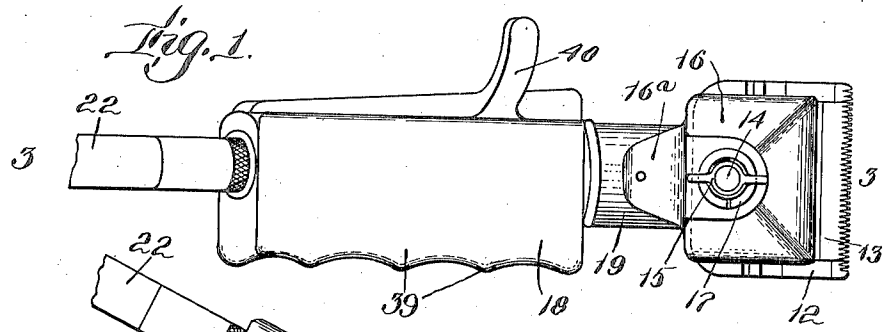


Fig. 2.

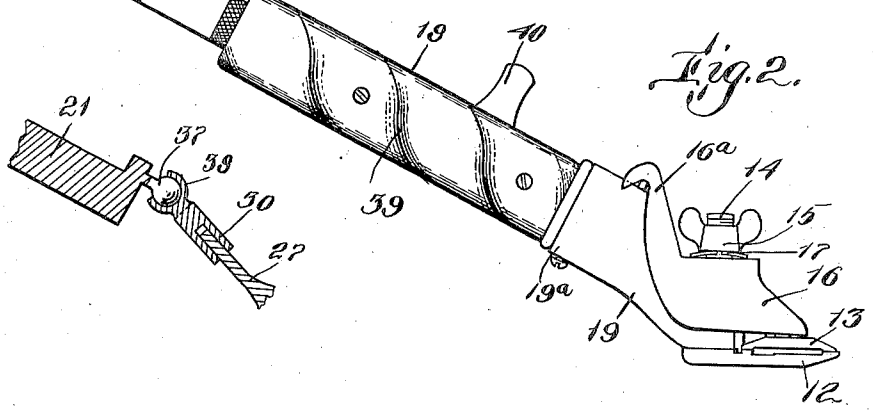


Fig. 7.

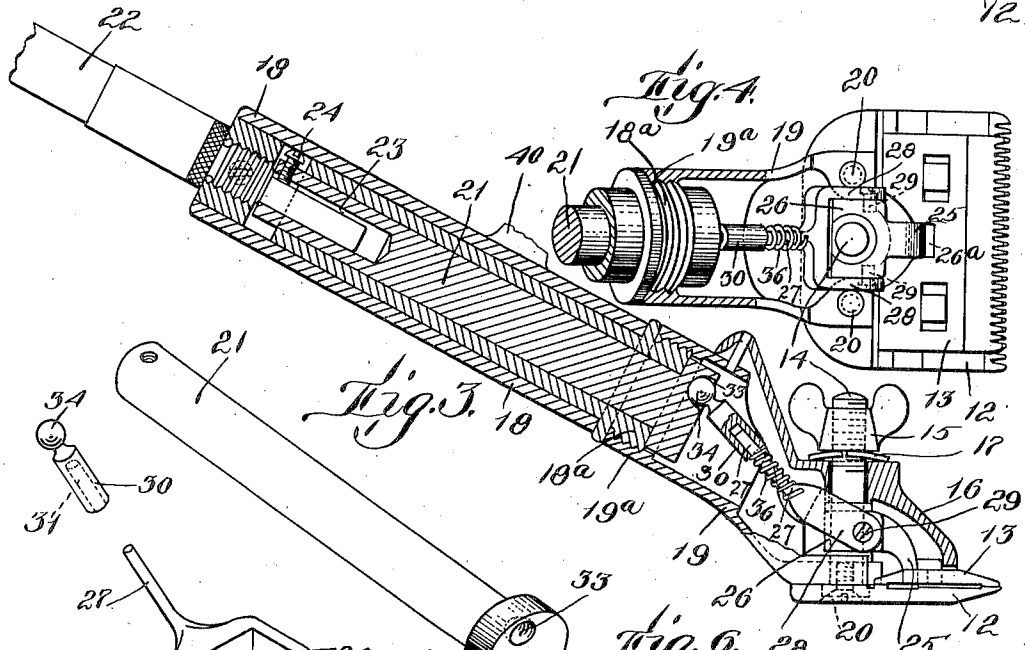


Fig. 4.

Fig. 3.

Fig. 6.

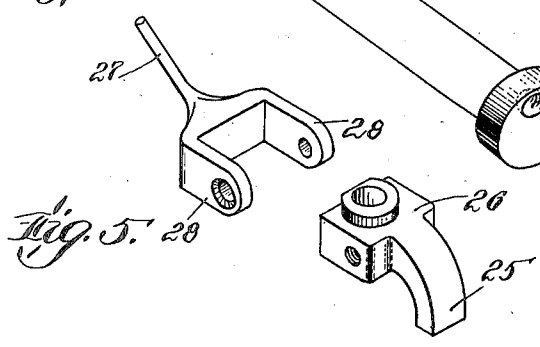


Fig. 5.

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UNITED STATES PATENT OFFICE.

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HAIR-CLIPPER.

1,302,836. Specification of Letters Patent. Patented May 6, 1919.

Application filed August 5, 1918. Serial No. 248,296.

To all whom it may concern:

Be it known that I, FRANK M. NOONAN, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Hair-Clippers, of which the following is a specification.

This invention relates to a hair clipper which includes the usual serrated base or lower cutter and a serrated upper cutter in sliding contact with the lower cutter, means being provided for reciprocating the upper cutter.

The invention is embodied in the improved cutter reciprocating means hereinafter described and claimed, the object of the invention being to enable the upper cutter to be reciprocated by power transmitted preferably through a flexible driving shaft.

Of the accompanying drawings forming a part of this specification,—

Figure 1 is a top plan view of a hair clipper embodying the invention.

Fig. 2 is a side view of the same.

Fig. 3 is a section on line 3—3 of Fig. 1.

Fig. 4 is a view similar to a portion of Fig. 1, the member which holds down the upper cutter being removed, and the shank hereinafter referred to being shown in section.

Fig. 5 is a perspective view of the flexible lever hereinafter described, the members of said lever being disconnected.

Fig. 6 is a perspective view of the journaled portion of the driving shaft shown by Fig. 3.

Fig. 7 is a fragmentary sectional view showing a modification.

The same reference characters indicate the same parts in all of the figures.

In the drawings, 12 represents the serrated base or lower cutter, having a straight row of teeth, and 13 the serrated upper cutter which also has a straight row of teeth and is in sliding contact with the lower cutter and is reciprocated by the means hereinafter described. The upper cutter is guided in a rectilinear path by means embodied in studs 12^a fixed to the lower cutter, and slots 13^a in the upper cutter.

To the rear portion of the lower cutter 12 is attached the usual upstanding stud 14 which is threaded at its upper end to engage the usual clamping nut 15, which confines the holding-down member or cover 16, whereby the upper cutter is held in contact with the lower cutter, the usual annular spring 17 being interposed between the nut 15 and member 16.

18 represents a handle fixed to the lower cutter 12, preferably by means of a shank 19 rigidly attached as by screws 20 to the lower cutter and offset therefrom, the shank being provided with a tubular terminal portion 19^a internally threaded to form a coupling part engageable with a complemental coupling part 18^a on the handle 18. The shank 19 is inclined relatively to the plane of the lower cutter, and holds the handle 18 similarly inclined.

The handle 18 is longitudinally bored to form a bearing in which is journaled a driving shaft 21. Said shaft may be rotated by any suitable means, and is preferably rotated by a flexible driving shaft extension 22, of well known construction, the shaft 21 being provided at its outer end with means embodied as here shown in a socket 23 and a set screw 24, whereby it may be coupled to the flexible extension 22.

The upper cutter 13 is reciprocated by power transmitted from the rotary driving shaft 21 through a flexible or jointed two-armed lever constructed as next described.

Said lever includes an inner arm 25 formed to enter a slot 26^a in the upper cutter 13, and thus loosely engage said cutter to reciprocate it, the arm 25 moving in an arcuate path, while the upper cutter moves, as above stated, in a rectilinear path. The arm 25 is fixed to a hub 26, which is mounted to oscillate on the smooth lower portion of the stud 14.

The said lever also includes a two-part telescopic outer arm, one part 27 of which is hinged to the hub 26 to oscillated on an axis substantially at right angles to the axis of the hub, the hinged connection being preferably provided by ears 28, formed on the part 27, and pivot screws 29, connecting said ears

with opposite sides of the hub 26. The other part 30 of said telescopic outer arm is slidable on the part 27, the part 30 being provided with a longitudinal socket 31 which receives a portion of the part 27.

The part 30 of the outer arm is eccentrically connected with the inner end of the driving shaft 21, said shaft being inclined relatively to the plane of the cutters, and the arrangement being such that when the shaft is rotated, the two-part telescopic lever arm is gyrated, and alternately lengthened and shortened, and oscillates the lever arm 25 in the directions required to reciprocate the upper cutter 13.

In the embodiment of the invention shown by Figs. 3, 4, 5 and 6, the shaft 21 is provided at its inner end with a concave socket 33 which constitutes a ball-and-socket joint member and receives a rounded, or substantially spherical head 34 formed on the inner end of the part 30 of the telescopic lever arm, said head constituting a complemental ball-and-socket joint member.

To maintain the said joint members operatively interengaged, I interpose between the sliding part 30 and portions of the part 27, a helical spring 36, which alternately elongates the telescopic arm and permits it to be shortened.

Fig. 7 illustrates a modification, in which the inner end of the shaft 21 is provided with an eccentric wrist-pin 37 having a rounded outer end portion constituting one of the ball-and-socket joint members and engaging the partly spherical socket 38 formed on the outer end of the lever part 30, the socket 38 constituting a complemental ball-and-socket joint member and being closed upon the head of the wrist-pin 37, so that it is not separable therefrom. The spring 36 is, therefore, not required.

The telescopic arm and the ball-and-socket joint connection between said arm and the shaft 21 are adapted to transmit power from the shaft to the arm 25, which reciprocates the upper cutter, without objectionable frictional resistance.

One edge portion of the handle 18 may be corrugated, as shown at 39 by Figs. 1 and 2, to engage the fingers of a hand grasping the handle, the opposite edge portion of the handle being provided with a projecting thumb rest 40.

The holding-down member 16 is preferably provided with an arm 16^a, seated on the upper side of the shank portion 19^a.

It is obvious that any other suitable universal joint may be substituted for the universal joint formed by the members 33 and 34, or by the members 37 and 38.

I claim:

1. A hair clipper comprising a fixed serrated lower cutter provided with a straight row of teeth and with an upwardly projecting stud, a movable serrated upper cutter in sliding contact with the lower cutter and provided with a straight row of teeth, means for guiding the upper cutter in a rectilinear path, a flexible two-armed lever including an inner arm loosely engaged with the upper cutter and having a hub oscillatable on said stud, and a two-part telescopic outer arm, one part of which is hinged to said hub to oscillate on an axis substantially at right angles to the hub axis, the other part being slidable to vary the length of the said outer lever arm, a handle fixed to the lower cutter and provided with a bearing, a driving shaft journaled in said bearing, and universal joint members, one mounted eccentrically on said shaft and the other on the slidable part of the outer lever arm, means being provided for maintaining said members operatively interengaged.

2. A hair clipper comprising a fixed serrated lower cutter provided with a straight row of teeth and with an upwardly projecting stud, a movable serrated upper cutter in sliding contact with the lower cutter and provided with a straight row of teeth, means for guiding the upper cutter in a rectilinear path, a flexible two-armed lever including an inner arm loosely engaged with the upper cutter and having a hub oscillatable on said stud, and a two-part telescopic outer arm, one part of which is hinged to said hub to oscillate on an axis substantially at right angles to the hub axis, the other part being slidable to vary the length of the said outer lever arm and provided with a rounded terminal constituting a ball-and-socket joint member, a handle fixed to the lower cutter and provided with a bearing, and a driving shaft journaled in said bearing and provided with an eccentric socket forming a complemental ball-and-socket joint member receiving said rounded terminal, and a spring for maintaining the said terminal in engagement with said socket.

3. A hair clipper comprising a fixed serrated lower cutter provided with a straight row of teeth and with an upwardly projecting stud, and with an offset tubular shank, the axis of which is inclined relatively to the plane of the lower cutter, said shank having a coupling part, a movable serrated upper cutter in sliding contact with the lower cutter and provided with a straight row of teeth, means for guiding the upper cutter in a rectilinear path, a flexible two-armed lever including an inner arm loosely engaged with the upper cutter and having a hub oscillatable on said stud, and a two-part telescopic outer arm, one part of which is hinged to said hub to oscillate on an axis substantially at right angles to the hub axis, the other part being slidable to vary the

length of the said outer lever arm, a handle having a longitudinal bearing and a complemental coupling part engaging the coupling part on the shank, and held by the latter inclined relatively to the plane of the lower cutter, a driving shaft journaled in said bearing, and universal joint members, one mounted eccentrically on said shaft and the other on the slidable part of the outer lever arm, means being provided for maintaining said members operatively interengaged.

In testimony whereof I have affixed my signature.

FRANK M. NOONAN.