

May 22, 1962

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3,035,346

TOOL FOR HAIR-CUTTING AND OTHER PURPOSES

Filed Oct. 2, 1959

3 Sheets-Sheet 1

FIG. 1

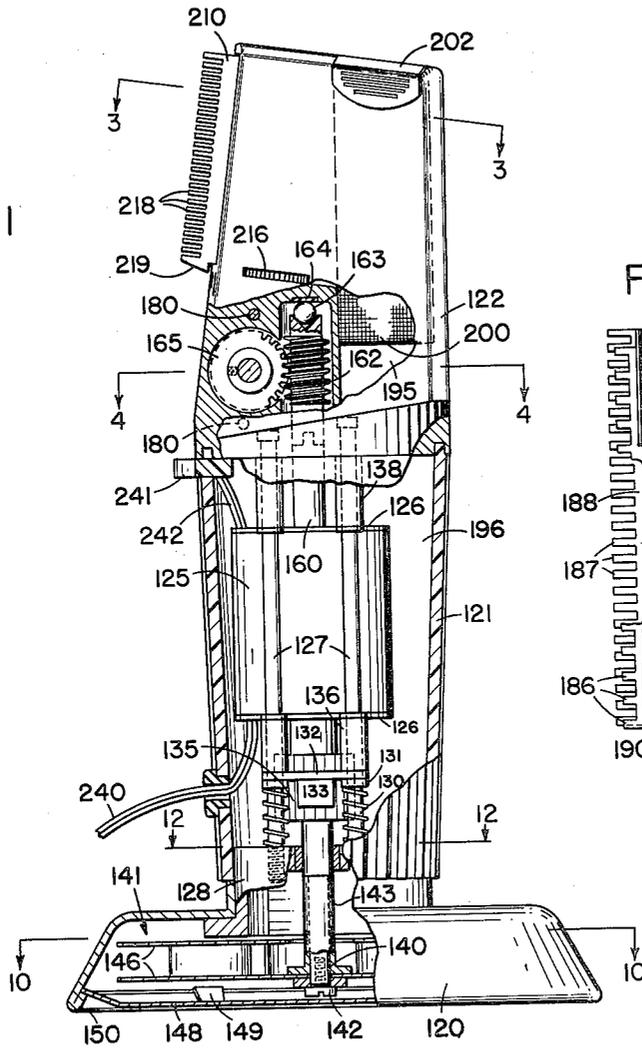


FIG. 7

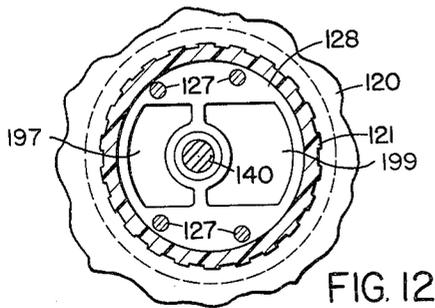
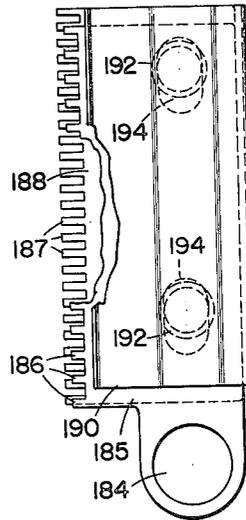


FIG. 12

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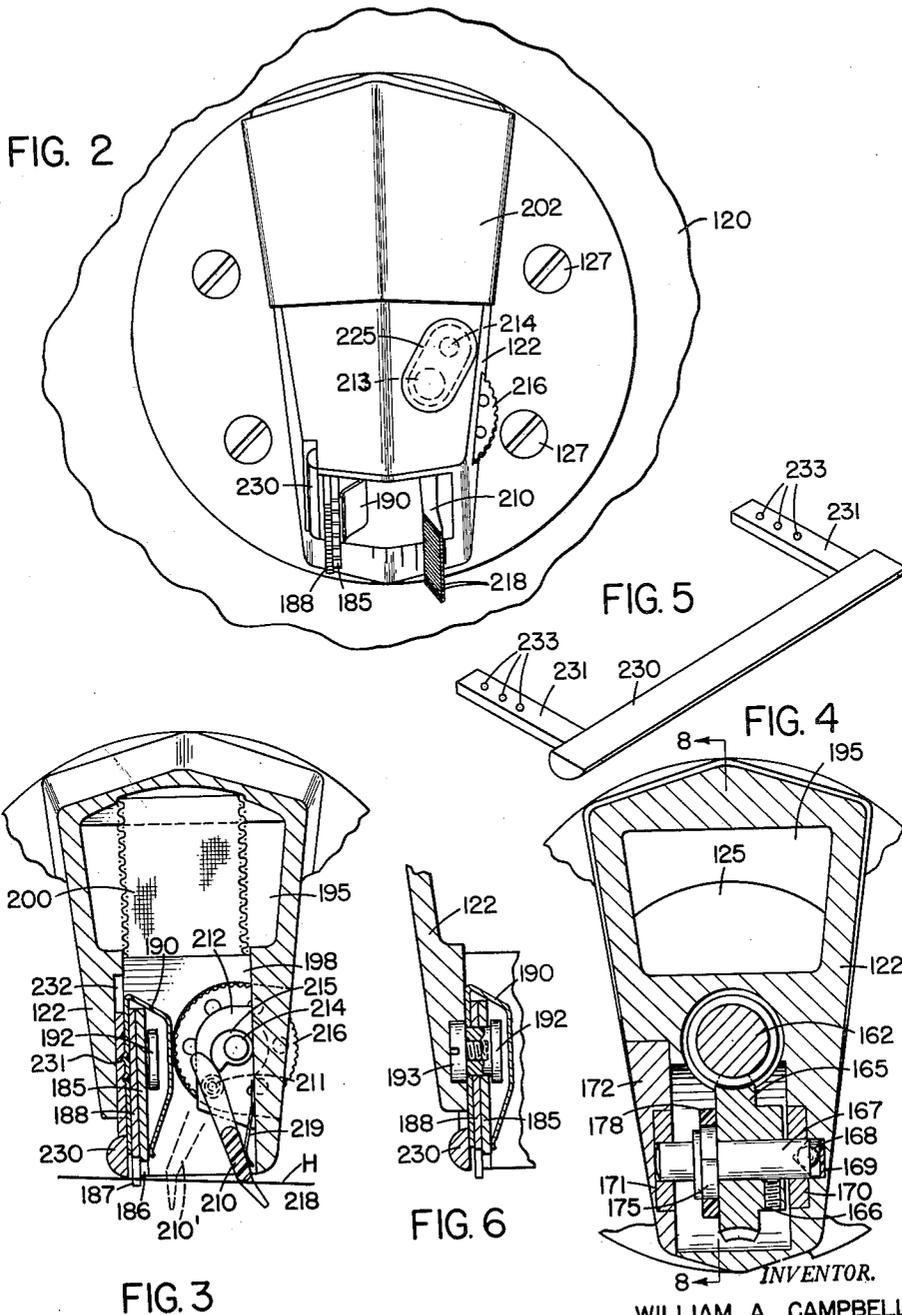
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3 Sheets-Sheet 2



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TOOL FOR HAIR-CUTTING AND OTHER PURPOSES

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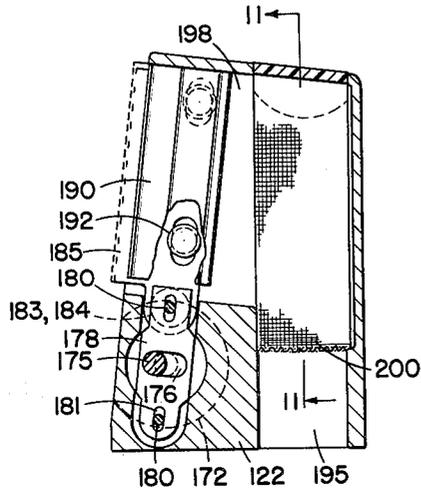


FIG. 8

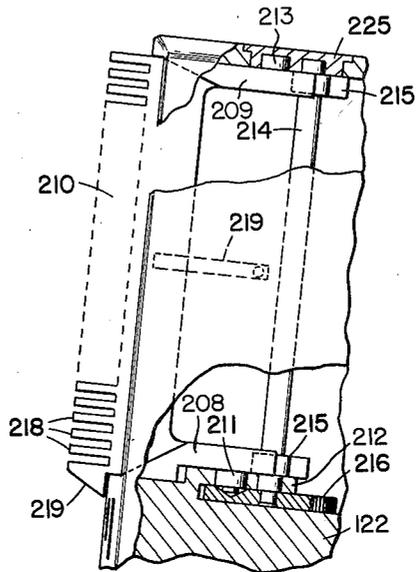


FIG. 9

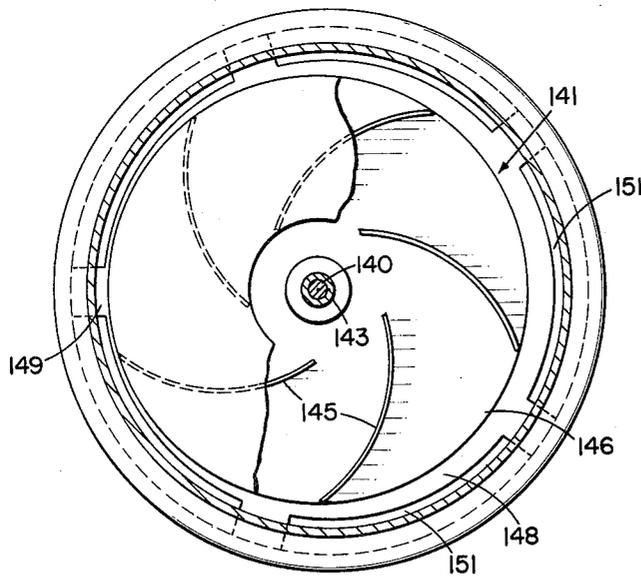


FIG. 10

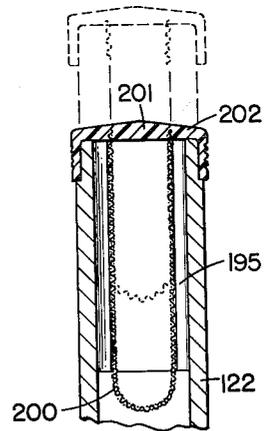


FIG. 11

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**3,035,346**  
**TOOL FOR HAIR-CUTTING AND OTHER**  
**PURPOSES**

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2 Claims. (Cl. 30-133)

The present invention relates to a tool for cutting hair.

A primary object of the invention is to provide a hair cutter which can be used by a householder for cutting his own hair or the hair of members of his family, and which will be efficient in operation and produce a good looking haircut.

Another object of the invention is to provide a hair cutter having pneumatic feed of the hair to the cutting blades. To this end, the cutter is equipped with suction means for raising the ends of the hair and sucking them into position to be cut off by the blades of the cutter.

Another object of the invention is to provide such a hair cutting device in which the suction means operates to collect the hair clippings after they have been severed from the hair.

Another object of the invention is to provide a hair-cutter having suction means for raising and sucking hairs into cutting position and for collecting the severed hairs and having a removable, reusable filter separating the hair clippings from the air stream and gathering them.

Another object of the invention is to provide a hair-cutter embodying air-flow principles of correct interior design so as to provide uniform air-flow over the entire cutting area regardless of loading of the filter and to provide uniform loading of the filter as well.

Another object of the invention is to provide a hair-cutter having adjustable controls which enable the operator to regulate the length and quantity of hair to be severed.

Another object of the invention is to provide a hair-cutter with conveniently located controls. To this end it is a further purpose of the invention to provide a hair-cutter with an on-and-off switch, for instance, so placed as to be operable by the thumb of the hand in which the operator is holding the cutter.

Another object of the invention is to provide a hair-cutter which can quickly be disassembled for cleaning and be readily assembled again. To this end, one purpose of the invention is to provide a hair-cutter in which the cutting parts can be installed in or removed from the hair-cutter as a single unit.

Other objects of the invention are to provide a hair-cutter which will be simple and efficient in construction and operation, which will be relatively inexpensive, and which will lend itself readily to home use.

Other objects of the invention will be apparent hereinafter from the specification and from the recital of the appended claims.

In the drawings:

FIG. 1 is a side elevation, with parts broken away, of a hair cutter made according to one embodiment of this invention;

FIG. 2 is a fragmentary plan view of this hair cutter;

FIG. 3 is a section through this hair cutter taken on the line 3-3 of FIG. 1 and looking in the direction of the arrows;

FIG. 4 is a section on the line 4-4 of FIG. 1 and looking in the direction of the arrows;

FIG. 5 is an isometric view of the hold-down bar of this hair cutter;

FIG. 6 is a fragmentary section taken in a plane parallel to the plane of FIG. 3 and showing particularly the mounting of the cutter blades in the housing;

FIG. 7 is a detail view showing more specifically the

structure of the cutting blades and of the spring which maintains the reciprocating cutting blade in operative relation with the stationary cutting blade;

FIG. 8 is a section on the line 8-8 of FIG. 4 and looking in the direction of the arrows;

FIG. 9 is a fragmentary side elevation of the modified hair cutter, parts being broken away to show the means for adjusting the comb to control the length of the hair being cut;

FIG. 10 is a section on the line 10-10 of FIG. 1 and looking in the direction of the arrows;

FIG. 11 is a section on the line 11-11 of FIG. 8 and looking in the direction of the arrows and showing in dotted lines also, the filter partially removed from the cutter housing; and

FIG. 12 is a section on the line 12-12 of FIG. 1 looking in the direction of the arrows.

Referring now to the drawings by numerals of reference, the cutter shown comprises a base 120, a preferably plastic housing 121 mounted on the base, and a housing 122 mounted on housing 121. Mounted within the housing 121 is a conventional electric motor 125 (FIG. 1), which is held between two plates 126 that are formed with aligned ears to receive rods 127. There are four of these rods around the motor; and each rod threads into a block 128 that forms part of the base 120. The motor is supported from the base by coil springs 130, which surround the rods 127, and which are interposed between the block 128 and washers 131. A plate 132, which carries the brushes 133 that engage the commutator 135 of the motor, rests on the washers 131. Tubular spacers 136 are interposed between the plate 132 and the lower of the two plates 126. Tubular spacers 138 are mounted on the rods 127 above the upper plate 126 to act as stops limiting the upward movement of the motor by engagement with the enlarged heads of the rods 127.

The motor has a double-ended armature shaft. The lower end 140 of this shaft has a fan 141 (FIGS. 1 and 10) secured to it by a screw-washer set 142. A tubular nipple 143, which may be welded to the fan slips over the reduced diameter lower end of the shaft 140, and seats against a shoulder formed at the juncture of the reduced diameter portion of the shaft and an adjoining enlarged diameter portion of the shaft.

This fan has spirally arranged blades 145 disposed between two parallel plates 146. The bottom of the base 120 is closed by a plate 148 which is provided with a plurality of angularly-spaced peripheral tabs 149 that are adapted to hold the plate in place by snapping over the inturned portion 150 of the base. Between adjacent tabs 149, the periphery of the plate 148 is spaced from the inturned portion 150 of the base 120, thereby providing space through which air can exhaust from the base under impulse of the rotating fan.

The upper end 160 of the armature shaft of the motor is keyed to a worm 162 (FIGS. 1 and 4). A ball thrust bearing 163, which is interposed between the upper end of the worm shaft and a hardened plate 164 that is secured in the housing 122, takes the thrust of the worm.

The worm meshes with a wormwheel 165 which is secured by a set-screw 166 to a shaft 167. The axial thrust of this shaft is taken by a ball bearing 168, which is interposed between one end of the shaft and a hardened plate 169 that is fastened in the housing 121. The shaft 167 is journaled at opposite ends in bearing plates 170 and 171. Plate 170 is secured in the housing 121; and plate 171 is secured in a plate 172 that is removably fastened to the housing 121.

Intermediate its ends, the shaft 167 is formed with a crank pin or throw 175 (FIGS. 4 and 8) which engages in a transverse slot 176 that is formed in a connecting

member 178. The connecting member 178 is guided by means of pins 180 (FIGS. 1 and 8) which engage in longitudinal slots 181 in the connecting member, and which serve to guide the connecting member for rectilinear reciprocation as the crank pin 175 rotates with the shaft 167. The pins 180 serve to secure the part 172 to the housing 121.

The connecting member 178, which is preferably made of nylon, has a cylindrical boss 183 (FIG. 8) integral with it, which engages in a cylindrical bore 184 (FIG. 7) in the reciprocating cutter 185 to transmit the reciprocatory motion of member 178 to the reciprocating cutter 185. This cutter has a plurality of cutting blades or teeth 186 which project laterally from one of its sides. The blades or teeth of the cutter 185 cooperate with similar, but somewhat deeper blades or teeth 187 formed on a fixed cutter 188. The reciprocating cutter 185 is resiliently pressed toward the stationary cutter 188 by a channel-shaped spring member 190 (FIGS. 3 and 6). One arm of this spring member is interposed between the stationary cutter 188 and the adjacent wall of the housing 122. The other arm of this channel-shaped spring member bears resiliently against the reciprocating cutter 185 to constantly press that cutter against the stationary cutter as the reciprocating cutter moves back and forth, thereby to achieve proper cutting action.

The reciprocating cutter 185 is guided relative to the stationary cutter by a pair of headed guide members 192 which are threaded onto studs 193 that are pressed into recesses in the housing 122.

As the reciprocating blade 185 moves back and forth relative to the stationary blade 188, the hair, which is to be cut is drawn by the suction of the fan 141 into the cutting teeth, to be cut off. The casing 122 is cored out from top to bottom at its rear, as denoted at 195 (FIGS. 3 and 4); and this cored-out portion communicates at its bottom with the hollow interior 196 of the housing 121, which in turn communicates through openings 197 and 199 (FIG. 12) in the block 128 with the fan 141. The cutting blades 185 and 188 and the spring 190 are mounted at one side of an opening 198 (FIG. 3) in the housing 122. This opening 198 is closed at its rear by a U-shaped screen 200 (FIGS. 3, 8 and 11) which extends into the cored-out opening or duct 195. The air drawn in through the opening or duct 198, past the blades 186 and 188 and the spring member 190, must pass through this screen 200 on its passage to the fan 141. The hair clippings, therefore, are carried into the screen, and are caught thereby. The cored duct 195 is wider than the screen so that the air can flow through the screen down through the cored duct 195 into the chamber 196 of the housing 121, and into the base 120, whence it is expelled through the ports or openings 151 (FIG. 10). The motor 125 is offset to one side of the chamber 196, and the armature shaft 140 is correspondingly offset to one side of the block 128, so that there is a minimum of interference with free flow of the air stream to the fan.

The screen 200 has its ends embedded in a plastic cap member 202 (FIGS. 11, 2 and 1) which is resiliently secured over the top of the duct 195. The sides of the cap 202 may be knurled so that it can readily be gripped to lift the screen 200 out of the duct 195, as shown in dotted lines in FIG. 11, in order to remove the screen from the housing for cleaning.

The length of the hairs being cut is determined by the position of an adjustable comb 210 (FIGS. 2 and 3), which may be made of plastic. This comb has spaced parallel arms 208 and 209 (FIG. 9) extending rearwardly from it at its opposite ends. Integral with arm 208 is a pin 211 which is journaled in a lug 212 that is integral with the housing 122. Integral with arm 209 is a pin 213 which is journaled in a cap 225 (FIGS. 2 and 9) that is secured in a recess in the top of casing 122. Rotatably journaled at opposite ends in lug 212 and in cap

225 is a shaft 214 to which is secured a cam 215. This cam is adapted to engage the rear or tail end of arm 208 of the comb. The shaft is manually rotatable by means of a knurled disc 216 which is secured to the shaft, and which projects out through a slot in one side of the casing 122. This disc has angularly spaced recesses formed in one face and pin 211 is adapted to engage in these recesses to act as a detent to hold the disc, and the comb, in any adjusted position.

The comb 210 is made of plastic or hard rubber, and is provided with spaced teeth 218. The hairs, which are to be cut, are drawn by the suction of the fan 141 toward the cutting blades 186, 187 (FIG. 7) to bridge the teeth 187 of the stationary cutter and the bottoms of the teeth 218 of the comb 210. In FIG. 3 a hair H is shown in bridging position. In this figure the comb 210 is shown in full lines adjusted to its widest open position to cut the maximum length of hair, which can be cut by the cutter. A leaf spring 219, which is riveted to the casing on the inside of the duct 198, limits the opening adjustment of the comb. In FIG. 3 there is shown fragmentarily in dotted lines another position 210' to which the comb can be adjusted. Obviously, in the dotted line position of the comb the cutter will cut considerably shorter lengths of hair from a person's head as the cutter is moved over the person's head.

As a further control means for the length of hair to be cut, there is mounted between the inside arm of the spring clip 190 and the adjoining wall of the housing 122 a hold-down member which comprises a bar 230 (FIG. 5) that is secured on two parallel arms 231 which slide in recesses 232 (FIG. 3) in the housing 122. The two arms 231 are dimpled, as denoted at 233; and the inside arm of the spring clip 190 is formed with spaced bosses which engage in these dimples to hold the hold-down member resiliently in any adjusted position. The bar 230 is rounded on its outside, and may be pulled out of the recesses 232, or pushed into them.

With the hold-down bar in the extended position shown in FIGS. 3 and 6, and the comb 210 moved angularly away from the reciprocating cutter 185 to the position shown in full lines in FIG. 3, the maximum length of hair will be clipped. The length of hair, that will be cut, will always equal the distance from the line of shear of the cutters to the base of the comb teeth. By adjusting the comb 210 toward the cutters, as shown in dotted lines in FIG. 3, a shorter length of hair will be cut. With the hold-down bar 230 fully extended and the comb closed against the cutters no hair will be cut even though the hair is drawn into position.

The knurled disc 216 is so positioned that it can readily be rotated by the operator's thumb as he holds the cutter in one hand. Thus, as he cuts a person's hair, whether it be another person's or his own, he can adjust the comb 210 readily to control the length of hair being cut at a particular time.

Electricity is supplied to the motor 125 through the line 240 (FIG. 1); and the operation of the motor is controlled by a switch 241 which is oscillatably mounted on the housing 121, and which is connected with the motor by the electric lines 242.

In the embodiment of the invention disclosed, the motor 125 effects reciprocation of the cutting blade 185 through the worm 162, wormwheel 165, crank pin 175 and connecting member 178. Simultaneously the motor drives the fan 141, which sucks the hair into the blades to bridge the distance from the bottoms of the tooth spaces of the fixed blades to the bottoms of the tooth spaces of the comb; and as the cutter 185 reciprocates back and forth its teeth 186 will sever the ends of the hairs to a length determined by the distance of the comb away from the reciprocating cutter 186. The hold-down bar provides a fulcrum on which the hairs bend to be sucked into the cutting teeth. The arrangement of the hold-down bar, cutters and adjustable comb with respect

to one another, and the drawing of the hairs into the cutters and comb so that they bridge the distance between the hold-down bar and the comb make it possible to control very precisely the length and the quantity of the hair to be severed from the ends of the strands of hair. Thus, with the cutter of the present invention it is possible to trim hair very readily to the proper length from the neck to the crown of the head, and from the ears and along the temples over onto the crown of the head so as to get a haircut which will compare favorably with that which can be produced by the best professional barber. The cutter of the present invention, therefore, makes it possible for the householder to cut his own or his children's hair very inexpensively and very precisely, and in a manner to provide a clean, neat appearance.

While the invention has been described in connection with different embodiments thereof, it will be understood that it is capable of further modification, and this application is intended to cover any variations, uses, or adaptations of the invention following, in general, the principles of the invention and including such departures from the present disclosure as come within known or customary practice in the art to which the invention pertains and as may be applied to the essential features hereinbefore set forth and as fall within the scope of the invention or the limits of the appended claims.

Having thus described my invention what I claim is:

1. A hair-cutting device comprising a casing having an opening at one side, a stationary cutter mounted in said casing and having a plurality of longitudinally-spaced teeth which project outwardly through said opening, a second cutter mounted in said casing alongside one side of said stationary cutter to reciprocate in said opening longitudinally and in a plane parallel to the plane of said stationary cutter and having a plurality of longitudinally-spaced teeth, a comb mounted adjustably in said casing and having a plurality of longitudinally-spaced teeth which project outwardly through said opening, said comb being disposed at the opposite side of said reciprocable cutter from said stationary cutter, a hold-down member adjustably mounted in said casing alongside the opposite side of said stationary cutter from said reciprocable cutter and movable manually in and out of said casing, suction means in said casing for drawing strands of hair toward said casing so that they fulcrum on said hold-down member, when extended, and bridge the space between the bottoms of the tooth spaces of said stationary cutter and the bottoms of the tooth spaces of said comb, and means for reciprocating said reciprocable cutter.

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2. A hair-cutting device comprising a casing having an opening at one side, a stationary cutter mounted in said casing at one side of said opening and having a plurality of longitudinally-spaced teeth which project outwardly through said opening, a second cutter mounted in said opening alongside said stationary cutter at one side of said stationary cutter, said second cutter having a plurality of longitudinally-spaced cutter teeth which project outwardly through said opening and being reciprocable longitudinally in a plane parallel to the plane of said stationary cutter, means for resiliently pressing the two cutters transversely toward one another, a comb pivotally mounted in said opening at the opposite side of said reciprocable cutter from said stationary cutter and having a plurality of longitudinally spaced teeth which project outwardly through said opening, manually operable means for pivotally adjusting said comb toward and away from said reciprocable cutter, a hold-down member mounted in said casing alongside said stationary cutter at the opposite side of said stationary cutter from said reciprocable cutter, said hold-down member comprising a bar which extends longitudinally of said stationary cutter and which has two arms adjacent its opposite ends which extend at right angles to said bar and which slide in slots in said casing, and suction means for drawing strands of hair into said opening to fulcrum on said bar, when extended, and to bridge the spaces between the teeth of said stationary cutter and the teeth of said comb comprising a fan mounted in said casing, an electric motor mounted in said casing for driving said fan, and a duct connecting said opening with said fan, a filter removably mounted in said duct to collect severed strands of hair, means operatively connecting said motor to said reciprocable cutter to reciprocate said reciprocable cutter upon operation of said motor, a switch mounted on said casing and operable to start and stop said motor, said switch and said manually operable means for adjusting said comb being so disposed as to be readily operable manually by an operator while holding said casing in hair cutting position.

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