HAIR CLIPPER BASE PLATE

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This invention relates to motor-driven hair clippers, and particularly to the formation of the base plate, or comb member as it is also called, wherein reciprocates the shear blade or cutting member.

In the modern, electric-motor-driven hair clipper the very rapid reciprocation of the shear blade on the base plate makes it highly imperative that close tolerances be attained in manufacture and that the contact surfaces of the blade and plate be such as to maintain a nearly perfectly aligned relationship and reduce friction to the very minimum in order to make the clipper function effectively with uniform distribution of work load when the shear blade is operated by a very small, fractional, horse-power motor and create the least possible temperature in the fast, relatively-moving shear blade and base plate.

The main objects of this invention, therefore, are to provide a base plate or comb member of such improved formation that the shear blade reciprocating thereon will be so nearly perfectly aligned in its contact with the plate as to preclude all possibility of the shear blade either rocking on or being distorted with respect to the base plate; to provide such an improved base plate of this kind that friction will be reduced beyond anything heretofore achieved with hair clippers; to provide an improved base plate of this kind which also materially lessens the wear on itself and on the reciprocating shear blade; and to provide an improved base plate of manufacture of which is attained with a material reduction in time and labor required in the sequence of operations from forming the blank to the final lapping of the bearing lands for the reciprocating blade.

In the accompanying drawings:

Fig. 1 is a side elevation of the nose or working-end of a conventional hair clipper having an improved base plate, constructed in accordance with this invention, secured thereto in association with a reciprocable shear blade;

Fig. 2 is a twice-enlarged, inside face view of a base plate constructed in accordance with this invention, the view being taken on the plane of the line 2—2 of Fig. 1; and

Fig. 3 is an opposing face view of a shear blade designed for reciprocal movement on this improved base plate for effecting the hair cutting operation, the view being taken on the plane of line 3—3 of Fig. 1.

The essential concept of this invention involves the formation of a base plate with a pair of carefully-lapped, parallel bearing-lands extending its full width rearwardly from a lapped front land coextensive with the shear teeth along the front edge of the plate, the rearwardly-extending parallel lands being spaced equi-distance on opposite sides of the front-to-rear median line of the plate.

A hair clipper, wherewith this improved base plate 5 is designed for use, comprises a body or housing 6 on which the base plate 5 is removably mounted and positioned on the nose end and support a shear blade 7 which is reciprocated by an electric motor (not shown) enclosed within the body 6.

The body 6, only a portion of which is shown in Fig. 1 of the drawings, may be made of any suitable material, such as, for example, a molded plastic shell. Preferably the body 6 is of elongated, substantially-rectangular, cross-sectional form, being larger in the middle part and tapering toward the ends and so proportioned as to permit a firm grip of the hand for the easy maneuvering required in the cutting of hair.

The improved formation of the base plate 5, which is so clearly indicated in Fig. 2, comprises two parallel bearing lands 8 and 9 extending rearwardly of the plate from a transverse bearing land 10 coextensive with a series of teeth 11 along the front or comb edge of the plate 5. As viewed in Fig. 1, the plate 5 is of rectangular form, with rounded corners, and tapered along the front edge, as shown at 12 in Fig. 1. A pair of holes 13 are drilled near the rear of the respective lands 8 and 9 for the reception of screws 14 by which the plate 5 is secured in working position on the nose end of the body 6, as shown in Fig. 1.

Beginning with a rectangular blank of untempered steel the sequence of operations, requisite to the production of a base plate 5 embodying this invention, are preferably as follows:

First, the two holes 13, for the mounting screws 14, are drilled in the plate and countersunk on the outer face in the conventional manner.

The blank then is ready for the milling operation which cuts out the central and two side portions 15, 16 and 17, to constitute reliefs defining the lands 8, 9 and 10, respectively. For this operation, it is important to note that because of the relationship of these lands, their formation is effected in one milling operation. This results in a material saving in time and labor over the multiple, separate, milling operations required for these more conventional plates which employ cross and/or shorter land formations. Also, the extension of the reliefs of metal to form these full width lands from front to back of the plate increases its strength against warping or flexing over plates that have a cross cut to form a land inwardly parallel to that coextensive with the row of teeth 11.

The next two milling operations as located with close tolerances by the tripod land formation produce first the taper 12 along the front or advancing edge of the plate 5 and subsequently the formation of serrations or alternating ridges and grooves such as may be desired on the exposed face of the plate 5. No such serrations or ridges and grooves are shown here in the drawings, but various designs and arrangements are well known in the conventional hair clippers, any of which could be employed for this plate 5.

The final milling operation is that of slotting the forward tapered edge 12 to form the series of teeth 11. The milled plate is then ready to be hardened, after which it is sanded, buffed and plated. Each of these operations are so well known in shop practice as to require no further explanation.

The final operation is the lapping of the lands 8, 9 and 10. It is for this operation that the particular arrangement of these lands possesses a very strategic advantage. This relative arrangement of the lands 8, 9 and 10 permits a uniform application of pressure to be exerted on all areas being lapped on the plate during the lapping operation thereby avoiding practically all likelihood of unevenness or distortion being created in these bearing surfaces.

In other forms of base plates presently being used, especially where an inner land is disposed parallel to the one coextensive with the teeth 11, it is extremely difficult to lap both of these lands at the same time without risking the uneven and excessive removal of the metal from these lands and especially at one or both ends of either or both of these lands and particularly if additional lands
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perpendicular to these two are present as with conventional construction. Such an unevenness and excessive removal, where it does occur, is likely to result in a rocking or distortion of the shear blade during its reciprocating movement and might permit hair to be caught between the relatively moving plate and blade.

A preferred form of shear blade, shown in Fig. 3, has a series of teeth 18 formed along the front edge. The blade is recessed, as shown at 19, intermediate a point inwardly of the root line of the toothed edge and a point inwardly of the opposite edge. This provides longitudinally parallel stretches of metal for formation of bearing surfaces 20 and 21 between the pairs of parallel lines a and b respectively (Fig. 3) to reciprocate on the lands 10 and 8 and 9 along the areas between the pairs of lines a’ and b’ respectively (Fig. 2).

A pair of holes 22 are drilled in the blade 7 to receive projections on spring prongs (not shown) actuated by a motor (not shown) within the body 6 to effect the reciprocation of the blade during the cutting operation of the clipper.

It will be apparent from Fig. 1 that the areas between the parallel lines a, b and a’ and b’ afford the blade 7, in its operating relationship with the plate 5, as shown in Fig. 1, the required bearing contact with the plate 5.

It will be obvious from Figs. 2 and 3 that, while there is a full contact of the entire bearing surfaces 20 of the blade 7 on the land 10 of the plate 5 within the area between the lines a and a’ respectively during the reciprocation of the blade, the contact width of the bearing surface 21 of the blade on the lands 8 and 9 of the plate 5, during their relative reciprocation, is limited to approximately one third of the width of each of the lands 8 and 9.

Several advantages accrue from the relationship and extent of these contact areas between the blade 7 and the plate 5. First, it provides for a three-point type bearing support of the blade on the plate for lapping, when pressure is applied on the back in back of the central relief portion, as well as for operation. One of these bearing areas extends the full length of the teeth 11 on the plate 5 whereas the other two areas are of a very limited character and are so disposed as to be equally spaced on opposite sides of the front-to-rear median line of the plate 5.

Secondly, this limited and single plane three-point area contact of these rapidly-reciprocating parts creates the minimum of friction, with these three benefits, (1) the use of a “lea-power” motor, (2) the reduction of wear on the reciprocating parts, and (3) a limitation in the generation of heat in either the assembly of moving parts or in the motor.

Thirdly, this uniformly-spaced, three-point contact area of these relatively-reciprocating parts precludes all possibility of any relative rocking or distortion of the plate 7 and blade 5. Being thus free of such a possible defect, this blade-plate relationship there is little likelihood of hair being caught or wedged between the plate 5 and the blade 7. If any hair does get into the spaces 15, 16, 17 and 19 it is free to shift out at the rear of the spaces 15, 16 and 17 and/or the ends of the space 19 without danger of “rolling” between sliding surfaces.

In fact, the arrangement is such that the bearing surfaces mutually edge-wipe themselves cleanly to prevent hairs catching between them.

While in the foregoing specification an embodiment of the invention has been set out in considerable detail for purposes of illustration, it will be apparent to those skilled in the art that numerous changes may be made in the details without departing from the spirit and principles of the invention.

I claim:

1. A hair clipper base plate comprising a front bearing land provided with a series of teeth along the front edge thereof substantially-coextensive therewith, and a pair of transversely extending bearing-lands of substantially the same width as the front land spaced from each other and extending to the back edge of the front land, each land being spaced from its respective side of the plate to a distance substantially less than the distance between them to form a tripod type of support with said front land of uniform level when lapping pressure is uniformly applied to said lands.

2. A hair clipper base plate having a series of teeth along one edge thereof, a front bearing-land substantially coextensive with the teeth, and a pair of parallel bearing-lands extending transversely rearward from the front land and defining between them a relief extending to the front bearing land to form a three-point type of support with said front land of uniform level when lapping pressure is uniformly applied to said lands, each of the parallel lands being of a combined width less than one-half of the width of the plate and substantially evenly spaced between the respective lateral edges of the plate and the parallel median line.

3. A hair clipper base plate comprising a land along the front edge of the plate provided with a series of teeth substantially coextensive therewith, a pair of bearing-lands contiguous with the front land and extending transversely rearward from the front land to the opposite parallel edge of the plate with a central relief therebetween wider than their combined width extending to the front land, said front land and pair of lands providing a three-point type of support of uniform level when lapping pressure is uniformly applied to said lands.

4. A hair clipper base plate having a series of teeth along one edge thereof, a front bearing-land substantially coextensive with the teeth, along the toothed edge of the plate and a pair of bearing-lands contiguous with the front land and extending transversely rearward from the front land to the opposite parallel edge of the plate with a central relief therebetween for widening beyond its width wider than one-half the width of said lands and uniformly spaced from the lateral edges of the plate, said pair of lands being spaced from each other a distance greater than either of their widths to define a said front land a tripod support of uniform level when lapping pressure is uniformly applied to said lands.

5. A base plate for hair clipppers having a series of teeth along one edge thereof, one face of the plate being relieved along two lateral and one middle area from a point inwardly adjacent the teeth to the opposite edge to constitute one bearing-land immediately behind the teeth and coextensive with the teeth and the two parallel bearing-lands contiguous to and extending transversely from the one land to the opposite edge of the plate, the parallel lands being evenly spaced on opposite sides of the front-to-back median line of the plate a distance substantially greater than the width of one of them to define a support for lapping operations having resistance to rocking in three directions when pressure is applied in back of said middle area to provide uniform lapping operations thereup.

6. The combination called for in claim 5 including a complementary shear blade having spaced parallel bearing lands formed longitudinally thereupon disposed perpendicularly to said pair of lands and extending therebeyond at said sides, one of said parallel lands riding on said front bearing land and the other of said parallel lands riding in continuous contact on said pair of lands for reciprocation in a direction crosswise of said pair of lands.

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