Jan. 6, 1970 S. J. POPEIL 3,488,673

HAIRCUTTER AND SHAVER

Filed Aug. 8, 1968 3 Sheets-Sheet 1

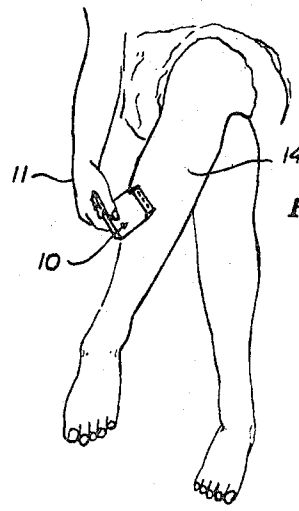


FIG. 2

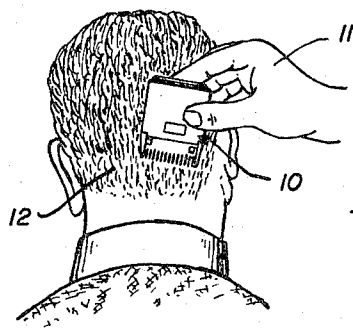


FIG. 1

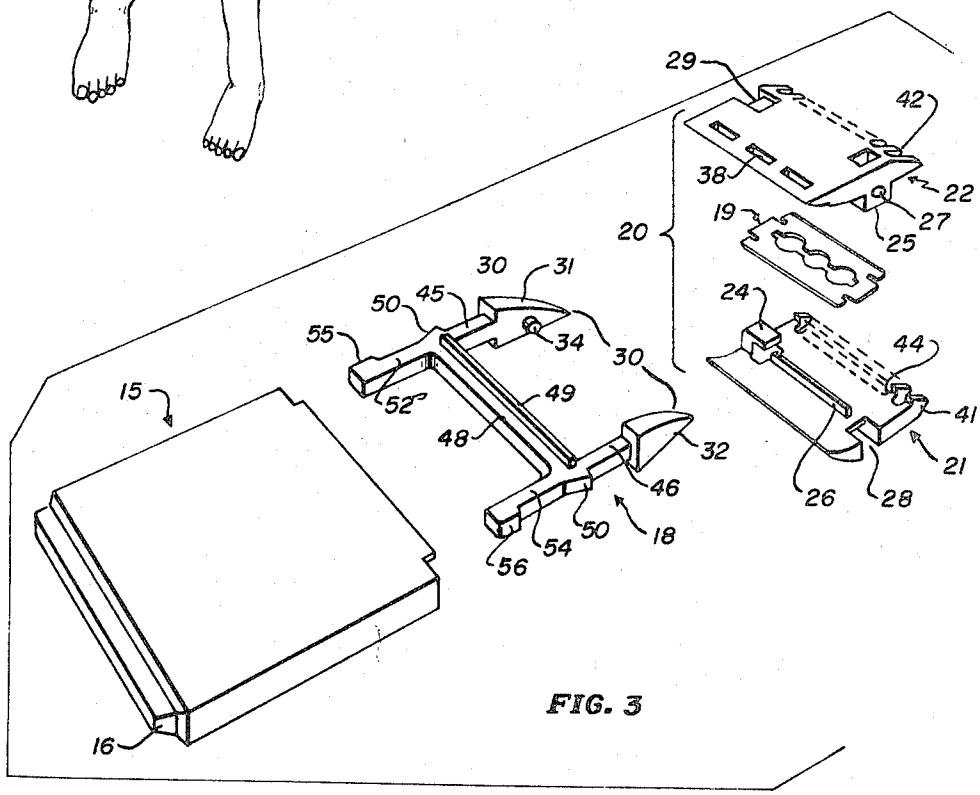


FIG. 3

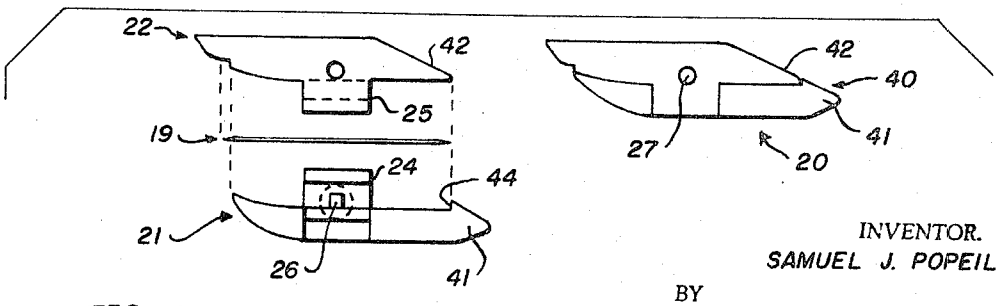


FIG. 4

INVENTOR.
SAMUEL J. POPEIL

BY
Dominick, Knechtel & Godula

ATTYS.

Jan. 6, 1970 S. J. POPEIL 3,488,673

HAIRCUTTER AND SHAVER

Filed Aug. 8, 1968 3 Sheets-Sheet 2

FIG. 5

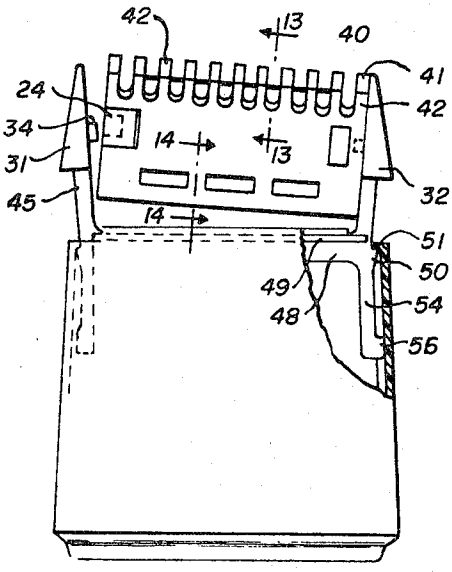


FIG. 8



FIG. 9

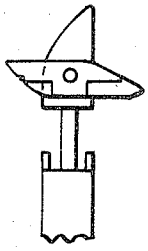


FIG. 10



FIG. 11



FIG. 6

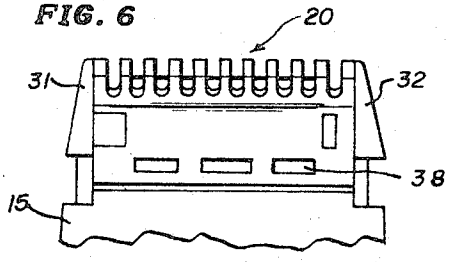
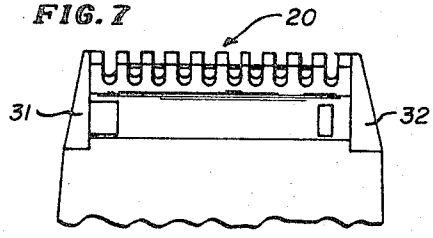


FIG. 7



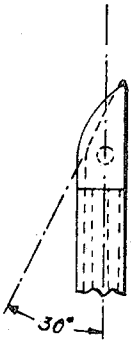


FIG. 12

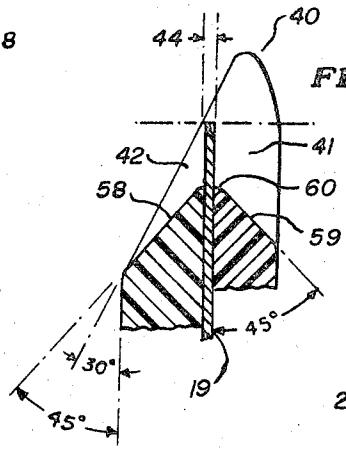


FIG. 13

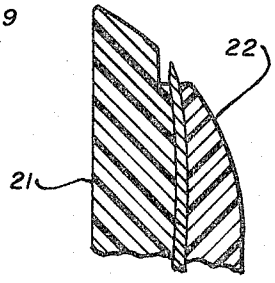


FIG. 14

INVENTOR.
SAMUEL J. POPEIL

BY
Dominik, Knechtel & Godula

ATTYS.

Jan. 6, 1970 S. J. POPEIL 3,488,673

HAIRCUTTER AND SHAVER

Filed Aug. 8, 1968 3 Sheets-Sheet 3

FIG. 15

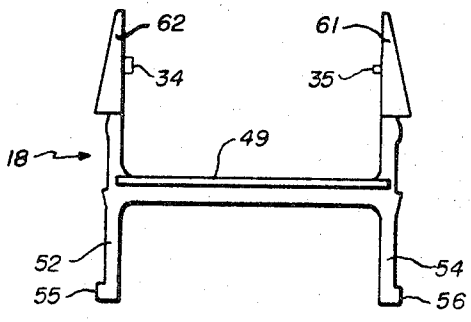


FIG. 16

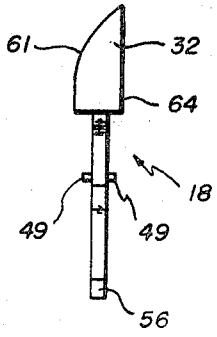


FIG. 17

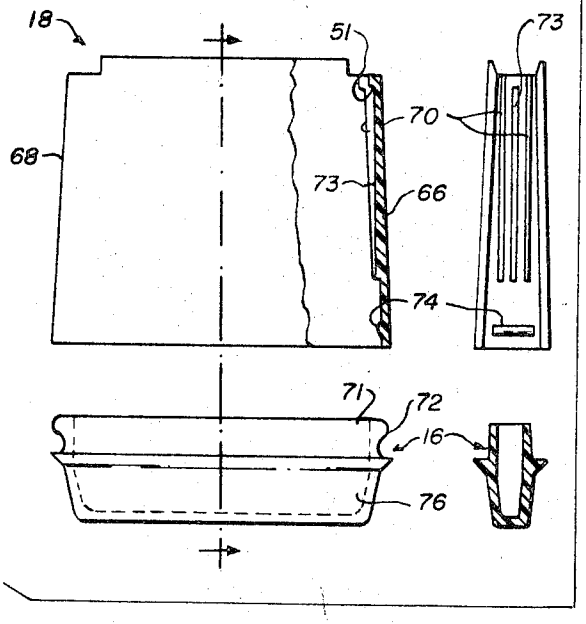


FIG. 18

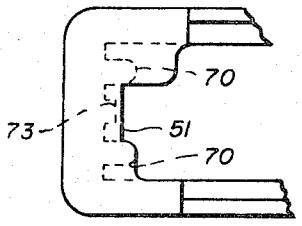


FIG. 19

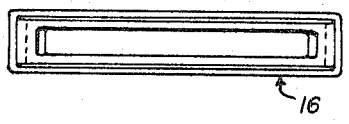
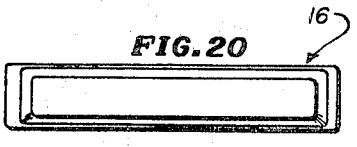


FIG. 20



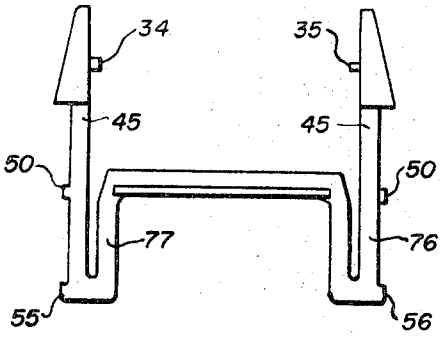


FIG. 21

INVENTOR.
SAMUEL J. POPEIL

BY
Dominik, Knechtel & Godula

ATTYS.

United States Patent Office

3,488,673

Patented Jan. 6, 1970

3,488,673

HAIRCUTTER AND SHAVER

Samuel J. Popeil, 2920 N. Commonwealth Ave., Chicago, Ill. 60657

Filed Aug. 8, 1968, Ser. No. 751,300
Int. Cl. B26b *21/18, 21/42*
U.S. Cl. 30—31 9 Claims

ABSTRACT OF THE DISCLOSURE

A haircutter and shaver having three members comprising a case, a blade carrier member proportioned to retractably nest within the case, and a blade head swivelably held in place by jaws extending from the blade retaining member, the blade head having a single comb and cutting edge at one edge, and a shaving edge at the other; each of the edges being oppositely retractable into a safely secured position within the case.

The present invention relates to a haircutter and shaver which can be used for the cutting, thinning and blending, as well as shaping, of ladies' and men's hair. Additionally, by simple manipulation, the device can be employed for personal shaving including leg, arm, and facial hair.

Various devices have been proposed in the art for hair cutting and shaving as exemplified by United States Patents 3,183,589 and 3,238,616. Invariably the structures disclosed are single purpose, and have numerous limitations from a standpoint of extensive and varied usage. Both of the devices shown in the aforementioned patents have opposed combs or cutting edges which prevent either being used as a razor for shaving without exposing a dangerous cutting edge. Furthermore, either elongate handles are required which reduce the controllability in hair cutting operations, or the user must expose his hand to the opposed cutting edge. The compound disadvantages are reduced effectiveness, and limited usage.

In view of the foregoing, it is a principal object of the present invention to provide a hair cutter and shaver which admits of accurate control in cutting, blending, shaping, trimming, and shaving the hair. A related object, of course, is to provide a hair cutting device which can also be used as a shaver thereby eliminating the necessity of carrying two items when traveling.

Still another object of the present invention is to provide a hair cutter and shaver which are equally useful to the male and female members of a family, thus further reducing the inventory of hair dressing and shaving devices required in the household.

A more detailed but significant object of the present invention is to provide a hair cutter and shaver which uses standard blades, high quality stainless steel blades being most effective and, of course, readily available through most outlets in any neighborhood.

A further and also significant object of the present invention is contained in a haircutter and shaver which is rendered safe by retracting the razor edge portion within the handle while the haircutting portion with comb guards around the teeth is exposed. This object further assists the user in haircutting operations since care is not required to protect the hand holding the handle of the product.

As will be observed from the detailed description of the drawings which follows, the invention includes a case having a hollow interior, a blade head carrier member which retracts and extends into the case, and a blade head with a blade to provide a comb and cutting edge along one side, and a razor edge on the other side. Reference herein to "shaving" or "cutting" portions, edges, or the like, implies reference to a razor blade which performs these functions. The blade head is comprised of two plates

which prestressingly engage a standard razor blade for use. According to one aspect of the invention, one edge of the head serves for shaving and one for hair cutting. The carrier means safely lock the blade plates together in operative position, while separately providing for retraction of the shaving edge into the case rendering the cutter safe in use. Another aspect of the invention relates to the positioning of the blade, teeth, proportioning and angling of the teeth, and support in the carrier to achieve easy control of both the trim and thin, and shape and blend tooth-blade-hair relationships.

Further objects and advantages as well as a fuller understanding of the invention as summarized above will become apparent as the following description of an illustrative embodiment proceeds, taken in conjunction with the accompanying drawings in which:

FIG. 1 is a rear view of a man's head with the hair being cut above the collar level illustrating diagrammatically the hand of the operator.

FIG. 2 is a perspective view illustrating how the reversed portion of the blade head may be employed for shaving the legs.

FIG. 3 is an enlarged exploded perspective view of the principal elements of the cutter and shaver.

FIG. 4 is a composite view taken from the end of the blade head showing the same in its exploded and assembled relationship reading respectively from left to right.

FIG. 5 is a plan view in partially broken perspective illustrating how the blade head is removed from the carrier.

FIG. 6 is a sequential view following FIG. 5 from the same elevation illustrating how the shaving portion is moved toward a recessed safely secured relationship within the case.

FIG. 7 is a further sequential view of the series shown in FIGS. 5 and 6 showing the shaving portion of the blade head completely ensheathed within the case.

FIGS. 8 through 11 are partially diagrammatic views taken at a transverse position to the blade head showing how the same may be reversed between the hair cutting edge and the shaving edge of the blade head.

FIG. 12 is an end view of the upper portion of the cutter and shaver illustrating the position of the blade head when retracted taken from the right end of the blade head as shown in FIG. 7.

FIG. 13 is an enlarged transverse view of the comb combination with the blade taken along section line **13—13** of FIG. 5.

FIG. 14 is an enlarged transverse broken view of the opposite end of the blade head shown in FIG. 13 taken along section line **14—14** of FIG. 5.

FIG. 15 is a plan view of the preferred embodiment of the blade carrier.

FIG. 16 is an end view of the carrier shown in FIG. 15.

FIG. 17 is a partially exploded, partially sectioned view of the carrier and bottom.

FIG. 18 is an enlarged top view of the carrier corner taken from the position shown in FIG. 17 with the arrow **18**.

FIG. 19 is a top view of the bottom member, the latter being shown in front elevation in FIG. 17.

FIG. 20 is a bottom view of the bottom member in the same scale as FIG. 19.

FIG. 21 is a plan view of an alternative form carrier.

The shaver and cutter **10** illustrative of the present invention is shown in its two most common usages in FIGS. 1 and 2. In FIG. 1 it will be noted that the hand **11** of the operator is holding the cutter **10** in position to shape and blend the lower portion of the neck hair of the male head **12**. While it is anticipated that some persons will

gain sufficient dexterity to operate the hair trimming devices on themselves, the complexity of mirror systems and the like required are such that it is anticipated the principal use of the cutter **10** will be by a person other than the party whose hair is being styled. It is for this reason that the teeth are so shaped and coordinated with the comb portion of the blade head to retard rather than accelerate the shaping and blending function. In using many of the haircutters of the prior art, a slight slip of the operator's hand results in removing a large piece of haid creating an unsightly spot which will not recover by natural growth for one to two weeks. With the coordinated relationship of the blade head, teeth, and blade as well as the case, the cutter **10** conservatively cuts the hair oftentimes dictating to the user that a few more strokes will be required to carefully blend the back of the neck in barber shop style.

When the cutter **10** has had the blade head reversed, it presents a shaving edge which, as illustrated in FIG. 2, may be used by an individual to shave the legs **14**, or other portions of the body where hair is to be removed. In addition, of course, the hair beneath the collar line of a male may also be shaved by reversing the head.

As illustrated in FIG. 3, the cutter **10** comprises three principal elements, the case **15** enclosed at one end by the case bottom **16** and open at its other end; a blade head assembly **20** including a blade holder plate **21** and a blade keeper plate **22**. The case **15** is coupled to the blade head assembly **20** by means of the carrier **18** which is an H-shaped assembly that snap-fittingly retracts within the case **15**.

As seen at the right hand portion of FIG. 3, the blade head assembly **20** flankingly engages a standard double edged razor blade **19** which is secured to the blade holder plate **21** in proper alignment by the blade bar **26**. A holder lock **24** is provided in axial alignment with the blade bar **26** and mates with the keeper lock slot **29** when the two blade plates are assembled. The holder lock slot **28** is engaged by the keeper lock **25**. The opposed inner faces of the blade holder plate **21** and the blade keeper plate **22** are proportioned for a snug fit against the blade **19**. As will be seen particularly in FIG. 3, the upper face of the blade holder plate **21** is curved in part at the shaving edge, presenting a concave upwardly face, and correspondingly the blade keeper **22** is curved at the opposed portion presenting a convex downwardly face. The interaction of these two curved faces prestresses the blade to assure its alignment in yieldable relationship not only with the blade bar **26**, but with the entire face of the blade holder plate **21**. As observed in FIG. 3, and will be explained in substantial detail hereinafter, the trim and thin teeth **41** are at one edge of the blade holder plate **21**. The shape and blend teeth **42** being shorter are at one edge of the blade keeper plate **22** and abut the blade edge shoulder **44** of the trim and thin teeth **41**.

Before proceeding in specific detail to describe the trim and thin and shape and blend teeth in their coordinated relationship with the blade, the other aspect of the invention relating to the reversible head will help in understanding the coordinated effect of all structural elements. Referring now to FIG. 5, it will be seen that the H-shaped carrier **18** has a jaw assembly **30** at one end. A holder jaw **31** and keeper jaw **32** comprise the two jaws. The holder jaw **31** has a holder jaw pin **34** which fits within a recess provided in the holder lock **24**. Correspondingly the keeper jaw **32** has a keeper pin **35** extending therefrom which is received by a hole **27** (see FIGS. 3 and 4) and thereby the blade head assembly **20** is swivelably mounted between the jaw assembly **30**. As illustrated the holder pin **34** is larged than the keper pin **35** which prevents reversing the blade head assembly **20** from saide to side in the jaw assembly **30** and consequently positively dictates the orientation of the shaving edge and the comb and blade edge of the blade head assembly **30** in the carrier **15**.

As will be seen further in FIG. 5, the holder jaw **31** and keeper jaw **32** are each supported on holder jaw leg **45** and keeper jaw leg **46** of the H-shaped carrier **18**. The cross-bar **48** has an opposed cross-bar rib **49**. The purpose of the cross-bar **48** is to yieldably support and spacingly separate the holder jaw leg **45** and keeper jaw leg **46** in their coordinated relationship with the jaw assembly **30**. The purpose of the cross-bar rib **49** is to provide smooth sliding support within the carrier **15**.

As will also be observed by reference to FIGS. 3 and 5, the cross-bar **48** terminates in cross-bar lock stops **50** which abut the cross-bar lock stop carrier shoulder **51** (the latter also shown in FIGS. 17 and 18). A holder runner leg **52** extends downwardly from the cross-bar **48** and terminates in a holder runner **55**, and correspondingly a keeper runner leg **54** extends downwardly from the cross-bar **48** and terminates in a keeper runner **56**. As observed in FIG. 5, the blade head assembly **20** may be moved upwardly out of its ensheathed or secured relationship with the case **15**, and then the flexibility of the carrier **18** permits the holder jaw **31** (or alternatively the keeper jaw **32**) to be spread outwardly and away from the blade head **20**. When the swivel pins **34**, **35** have been removed from their respective holes, the blade head **20** may be removed for cleaning, or changing blades. To reinsert the blade head **20** within the carrier **15**, the swivel pins **34**, **35** are reinserted in their respective holes, and being of different sizes, the proper orientation is achieved. There after the carrier **18** and the jaw assembly **30** is moved downwardly as shown in FIG. 6, and finally pushed home into position within the case **15** as shown in FIG. 7. In this position the cutter and shaver **10** is in the hair cutting position, the cutting portion shown on FIGS. 5 through 7 inclusive being the trim and thin portion.

In the event the cutter and shaver **10** is to be used for shaving as illustrated in FIG. 2, the sequential FIGS. 8 through 11 inclusive show how the blade head assembly **20** when extended to the position shown in FIG. 6 permits 180° reversal of the edges of the blade **19** and, as shown in FIG. 11, the unit is readied for shaving, whereas FIG. 7 shows the same ready for cutting the hair.

As will be observed by comparing FIGS. 11 and 12, in the shaving configuration the orientation of the blade head assembly **20** is at an angle approximating 15° with the plane of the carrier **15**. On the other hand, as shown in FIG. 12, when the blade assembly **20** is in the configuration for hair trimming such as shown in front elevation in FIG. 7, the axis of the blade is coincidental with the plane of the carrier, the angle of the face of the shape and blend teeth approximating 30° with the plane of the carrier.

By reference to FIG. 13, the further coordinated relationship between the angles involved will be observed. There it will be seen that the angle between the blade **19** and the shape and blend tooth recess **58** is 45°. Thus for shaping and blending a 15° pocket is provided for the grouping of the hairs to be presented to the edge of the blade **19**. Furthermore, to reduce the possibility of "overcut" the distance between the blade edge and face of the shape and blend teeth **42** is held to approximately .020". If this blade edge-tooth face spacing is less than .015", the effect of the pocket in grouping strands of hair for shaping and blending is minimized. On the other hand, if the blade edge-tooth face spacing is extended beyond .025", the cutting becomes more severe and the possibility of "overcutting" and gouging is increased.

The trim and thin teeth **41**, however, have a trim and thin tooth recess **59** which is substantially double the depth of the shape and blend recess **58**, and the angularity with the blade **19** approximates 45°. The depth of the trim and thin teeth **41** approximates .125", this total dimension being available for the trim and thin tooth recess **59**. Thus when the hair is being styled with the trim and thin teeth **41** against the scalp, considerably more hair can be accommodated in the pockets defined between the trim and thin teeth **41**, and the density of the hair strand presented to the edge of the blade **19** is

such that more rapid and complete cutting of the hair may be achieved than when the shape and blend teeth **42** are presented to the scalp and their related blade edge to the hair. Critical to best operation is the distance of the blade edge to the tooth face of the shape and blend teeth **42**, and the positioning of the blade edge shoulder **44** approximately midway between the end of the trim and thin teeth **41** and the tooth pocket base **60** defined by the terminus of the trim and thin tooth recess **59** and the shape and blend tooth recess **58**.

It will also be observed that the distance between the edge of the blade **19** (see FIG. 13) and the end of the trim and thin teeth **41** is approximately the same as the distance from the edge of the blade to the tooth pocket base **60**. This distance optimizes at approximately .125. Furthermore, the thickness of the opposed plates which in turn defines the depth of the shape and blend tooth recess **58** and the trim and thin tooth recess **59** also optimizes at .125. This relatively squared relationship coupled with the angularity of the recesses and tooth edges as above defined, and the critical limits of the blade edge to shape and blend tooth face between .015" and .025" produce a comb combination **40** for hair cutting which accomplishes the four functions of trimming and thinning of the longer hair, and shaping and blending of the shorter hair to a professional-like appearance.

Referring now to FIG. 14, it will be seen that the razor edge for shaving is defined at one edge of the blade holder plate **21** and blade keeper plate **22**. The blade is curved as above defined to present a better cutting edge for shaving, and also to prestressingly lock the blade between the two opposed plates **21, 22**.

The specific details of the H-shaped carrier **18** are shown in FIGS. 15 and 16, and particularly in FIG. 16 it will be seen that the keeper jaw **32** has a keeper jaw radiused face **61** and a keeper jaw flat face **64**. The corresponding configuration exists on the holder jaw **31**. As discussed above, and particularly shown in FIG. 12, the flat face of the keeper jaw **32** aligns itself with the plane of the trim and thin teeth **41**, and the radiused face **61, 62** aligns itself approximately with the shape and blend teeth **42**.

The details of the interior of the case **15** are shown in FIGS. 17 and 18. There it will be seen that the case **15** is hollow. Each of the opposed edges **66, 68** has longitudinal parallel runners **70**. The parallel runners flankingly engage the cross-bar lock stop **50** and holder runner **55** and keeper runner **56** to provide for smooth sliding operation of the carrier upwardly and downwardly within the case **15**. Shown to the right of FIG. 17 is a transverse sectional view of the case looking at the end **66** showing the relationship of the parallel runners **70**, and base rail **73**.

It will be further observed that the case bottom **16** is proportioned with a snap-acting upper peripheral radius **71**. A peripheral bead terminates at a shouldered recess **72** therebeneath to snap-fittingly engage the base lock knobs **74** at the lower portion of the edges **66, 68** of the carrier **15**.

Referring now to FIG. 21, an alternative configuration of a carrier **75** is disclosed. With the exception of the reversely bent legs **76, 77** the balance of the structural elements are substantially the same as those shown in the preferred embodiment carrier **18**. For convenience in referencing the same, comparable reference numerals have been designated to identify the upper legs **45, 46** and the runners **55, 56** as well as the stops **50**. The alternative embodiment carrier **75** has one advantage in that it can be removed from the case **15** more easily by squeezing the entire leg assembly together and the cross-bar **48** being shorter than the cross-bar of the carrier **18**, permits the same to be removed by pulling the stops **50** beyond the carrier stop **51**. Alternatively, however, the carrier **18** is desirable as it prevents easy removal from the case, thereby eliminating a loose part which can be lost. Also the preferred carrier **18** is of a more rugged construction inasmuch as it eliminates the reversely bent leg portions **76, 77** and substitutes a less critical construction to provide the yieldability necessary for reversing the blade assembly **20**.

In review it will be seen that the shaver cutter **10** has a blade head **20** which is swivelable, selectively positionable, and removable. The carrier serves as a guide for the hand to hold the unit, and also to recessingly engage the carrier **18**. The angularity and specific positioning and proportioning of the teeth with reference to the blade on the trim and thin faces and the shape and blend faces is such as to provide a safe conservative approach to shape and blend at the hair line, and yet to trim and thin the longer hairs rapidly. The entire device is susceptible of molding from plastic and accordingly the cost is low. Furthermore, the hand assembly operations are minimal and simple jigs and fixtures for press-fitting engagement will suffice to produce the product.

While the invention has been described in connection with specific embodiments and applications, it is not applicant's intention to restrict himself thereto, but to include within the invention all of the subject matter defined by the spirit as well as the latter of the annexed claims.

I claim:

1. A haircutter and shaver comprising, in combination, a case having a hollow interior, a blade head having two opposite edges, a comb portion on at least one edge, a blade head carrier member having extension means proportioned to snap-fittingly retractably recess within the case, yieldable jaw means swivelably engaging the blade head extending from the blade head carrier, the blade head and carrier oriented and proportioned so that upon extension of the carrier member from the case, the blade head may be reversed, thereby upon retraction nesting the previously exposed edge in the hollow case and exposing the opposite edge which previously nested in the hollow case.

2. In the haircutter and shaver of claim **1**, said blade head comprising opposed plates for engaging a single razor blade, upstanding interlocking means at one end of each plate, opposed slot means on each plate for engaging the interlocking means of the opposite plate, and swivel coupling means between each upstanding lock menas and the yieldable jaw means on the blade head carrier, said swivel coupling means thereby providing for swiveling the blade head and said slot and interlocking means securing the blade locking relationship of the opposed plates.

3. A haircutter and shaver comprising, in combination, a case having a hollow interior, a blade head having a comb portion on at least one of two opposite edges, a blade head carrier member having legs proportioned to snap-fittingly retractably recess within the carrier, yieldable means swivelably engaging the blade head extending from the blade head carrier member, the blade head and carrier oriented and proportioned so that upon extension of the yieldable carrier member from the hollow case the blade head may be reversed, thereby upon retraction replacing the comb portion with the blade head opposite edge, the comb portion nesting in safely secured retraction within the hollow case.

4. In the haircutter and shaver of claim **3**, said blade head comprising opposed plates for engaging the single razor blade, upstanding interlocking means at one end of each plate, opposed slot means on each plate for engaging the interlocking means of the opposite plate, and swivel coupling means between each upstanding lock means and the yieldable jaw means on the blade head carrier, said swivel coupling means thereby providing for swiveling the blade head and said slot and interlocking means securing the blade locking relationship of the opposed plates.

5. In the haircutter and shaver of claim **4**, wherein

said blade head has two blade plates and a double edge razor blade positioned therebetween, and each plate having a curved surface thereby prestressing the blade therebetween.

6. A haircutter and shaver comprising, in combination, a case having a hollow interior closed at one end and open at the other end, a blade head having two opposite edges, a comb portion on at least one edge, said blade head including a blade holder plate and a blade keeper plate for holding a razor blade therebetween, said comb portion including teeth extending from one end of the blade keeper and teeth extending from one end of the blade holder plate, means at least partly within the open end of said hollow interior case to engage and position said blade head so that one edge of the blade head nests within the hollow interior of said case in secured relationship and the opposite edge extends out of the case in working position, and said blade head being removable from said hellow interior of said case so that said head may be reversed and repositioned in the open end by said engaging and positioning means, whereby each of the opposite edges are retractable within the case while the opposite edge becomes exposed and fixed into working position.

7. In the haircutter and shaver of claim 6, wherein

said blade holder teeth are longer than said blade keeper teeth, said long teeth having a blade edge shoulder spaced from the ends of said teeth, and the ends of said short teeth being in substantial abutting engagement with said blade edge shoulder.

8. In the haircutter and shaver of claim 6, releasable locking means to hold said blade keeper and holder in a locking position, including a lock slot on one of said keeper and holder plates, and a keeper lock on the other of said keeper and holder plates, said lock slot and keeper lock being engageable and disengageable upon relative sliding action of said keeper and holder plates.

9. In the haircutter and shaver as in claim 6, wherein said opposite edge portion is straight and is formed by a curved end of said keeper plate and an angular end of said holder plate.

References Cited

UNITED STATES PATENTS

2,670,533	3/1954	Kearney	30—31
3,183,589	5/1965	Szabo	30—30

OTHELL M. SIMPSON, Primary Examiner

GARY F. GRAFEL, Assistant Examiner