

March 15, 1949.

M. E. BECKER

2,464,206

MULTIPLE KNIFE

Filed May 16, 1944

3 Sheets-Sheet 1

Fig. 1.

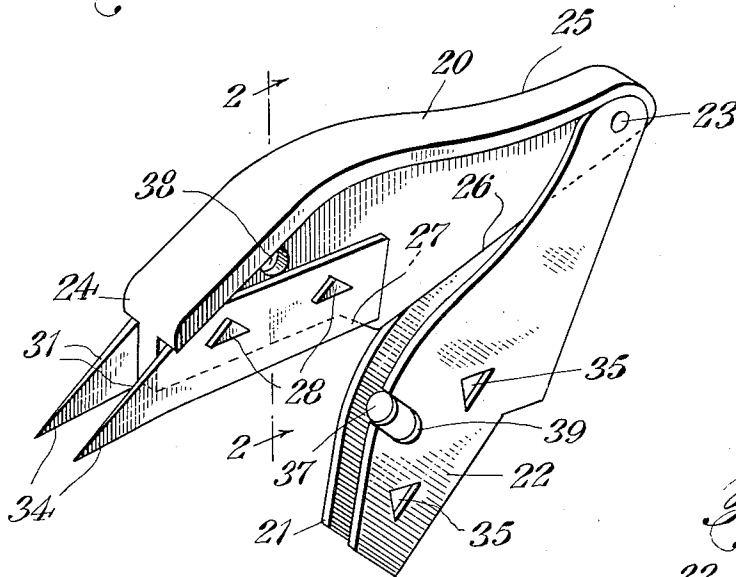


Fig. 2.

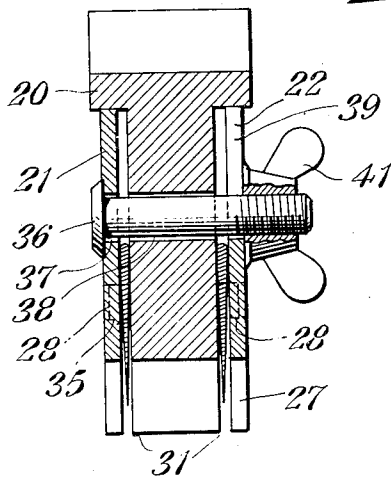


Fig. 8.

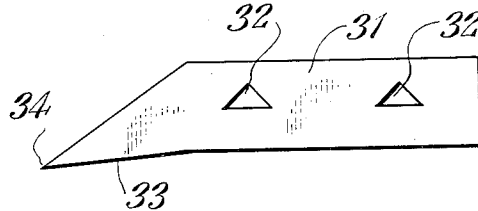
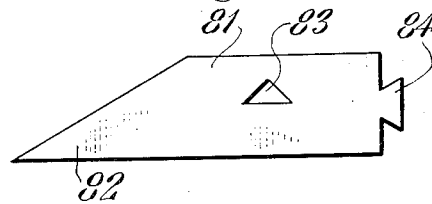


Fig. 11.



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Fig. 3.

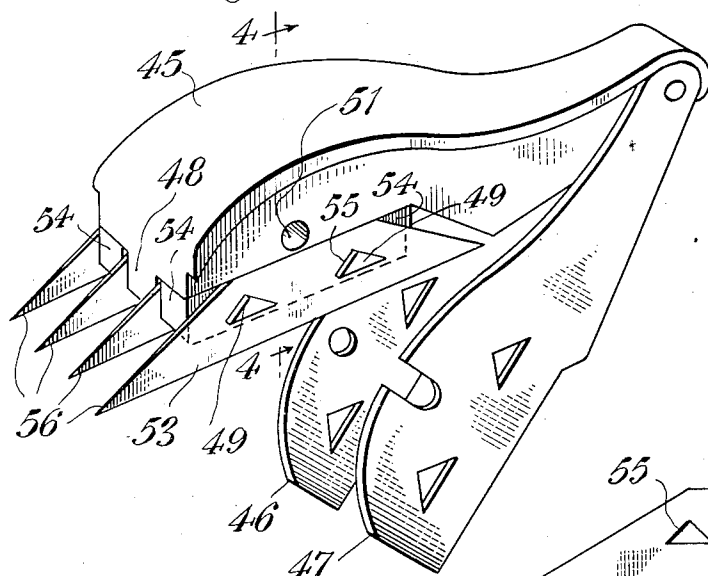


Fig. 9.

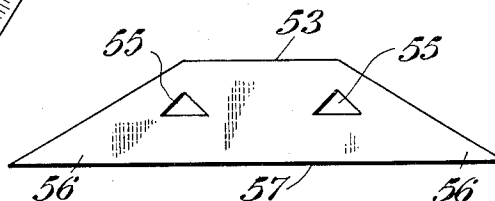


Fig. 4.

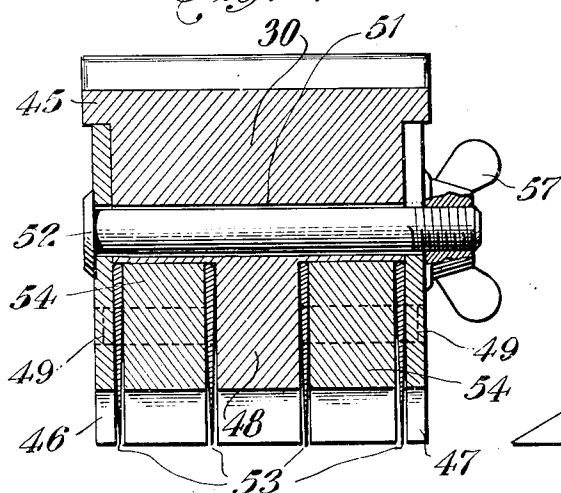
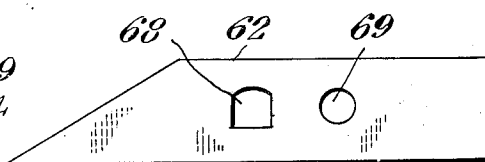


Fig. 10.



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Fig. 5.

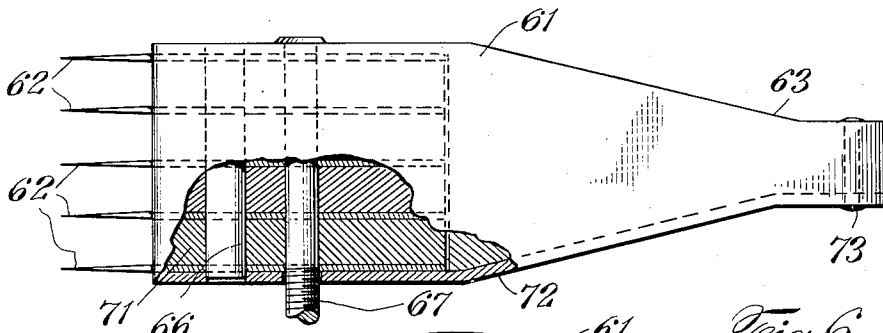
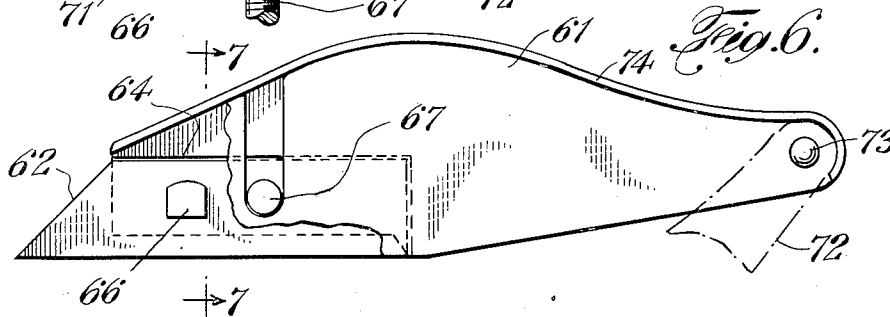
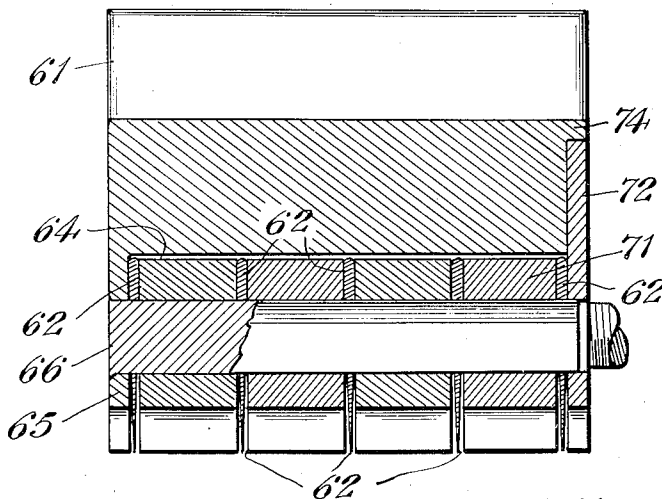


Fig. 7.



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MULTIPLE KNIFE

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Application May 16, 1944, Serial No. 535,885

15 Claims. (Cl. 30—304)

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The present invention relates to multiple bladed knives, and more particularly to a knife especially suitable for making simultaneously a plurality of cuts in materials wherein the coating or the like on one side of the material must not be damaged while making the cuts.

The invention is described in connection with a knife adapted for use in the fur trades where skins are prepared for use in coats and other garments, and for other purposes, by cutting the same into a considerable number of narrow strips. These strips are afterwards re-arranged and sewn together to obtain particular patterns and effects.

Different furs are treated differently in that the width of the cut strips will vary as between a mink or sable on the one hand (in which the strips are narrow) and foxes on the other hand (in which the strips are normally several times wider). Narrow strips are of the order of one-fourth of an inch and the wider strips are of the order of three-fourths of an inch in width.

Such work is done by hand and must necessarily be done very skillfully so as not to damage the fur. Therefore, these cuts are made from the inside of the skin, care being exercised that the knife does not penetrate into the hair so as to damage the fur.

It is one object of this invention to provide a knife of the above indicated character which will enable an operator to make two or more cuts or slits simultaneously, and the cuts will be of uniform width.

It is another object of this invention to provide a multiple bladed knife in which the blades are readily assembled upon and removed from a holder, and yet the blades are firmly held in spaced relation with freedom from chattering or lateral vibrations which would disturb the regularity of the cuts or slits.

It is another object of this invention to provide a novel construction of holder of a convenient size and shape to conform to the hand when the holder is held between the thumb and second finger with the fore-finger resting on top of the holder, and yet capable of holding a plurality of blades with spacers therebetween which are locked together and firmly held so as to maintain the proper relationship of the spaced blades while simultaneously making the cuts or slits.

It is a further object of this invention to provide an improved mounting for the cutting blades of a multiple-bladed knife.

It is a still further object of this invention to provide improved forms of cutting knives.

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Other and further objects of this invention will be apparent from this specification, taken in conjunction with the accompanying drawings, in which—

Figure 1 is a perspective view of one embodiment of the improved fur cutting knife herein disclosed, showing the use of two cutting blades;

Fig. 2 is a sectional view on the line 2—2 of Fig. 1, considerably enlarged to bring out details of construction;

Fig. 3 is a perspective view of another embodiment of this invention showing the use of four blades and demountable spacers.

Fig. 4 is a sectional view on the line 4—4 of Fig. 3, also in enlarged detail;

Fig. 5 is a plan view of another embodiment of my improved knife especially adapted for ready variable spacing of cutting blades, parts being broken away and sectioned to facilitate illustration;

Fig. 6 is a side elevation of the knife of Fig. 5, parts being broken away;

Fig. 7 is a sectional view on the line 7—7 of Fig. 6; and

Figs. 8 to 11 are perspective views of different forms of demountable cutting blades for use in holders, such as shown in these drawings, or that of my copending application, now Patent No. 2,364,339, issued December 5, 1944.

Referring to Figs. 1 and 2 of the drawings, the tool comprises a central holder 20, generally T-shaped in cross section, and two outer clamping plates 21 and 22, respectively located on opposite sides of the T-shaped holder 20, and pivoted thereto as indicated at 23. As seen in Fig. 2, and as will be further described, the clamping plates 21 and 22, when in assembled positions, are located beneath the respective horizontal portions of the T-shaped center member 20. The holder is relatively narrow from side to side, has its greatest height forwardly of the vertical center line of the holder, tapers downwardly and forwardly rather sharply to the front edge 24, and tapers rearwardly and downwardly in a more general curve, as indicated at 25 to the extended rear end of the holder. The bottom edge 26 tapers downwardly from the rear point to substantially the vertical center line and then the height of the holder is reduced by a step 27 in the portion occupied by the cutting blades, as will be described.

The central T-shaped holder 20 has, extending outwardly from its vertical portion, blade positioning and supporting posts 28 which are located forwardly of the step 27 and on both sides of the

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T-shaped member 20. The posts or keys 28 are triangular in cross section and extend outwardly a less distance than the horizontal portions of the T-shaped member, for reasons which will appear as the description proceeds. The posts 28 are arranged with the bottom edges thereof substantially parallel with the bottom edges of the knife blades.

The cutting knives may be of various shapes, several of which are illustrated in these drawings. In Figs. 1, 2, and 8, the cutting blades 31 are wedge-shaped in cross section tapering downwardly from the wide top edge to the sharpened bottom cutting edge. The blades are provided with a pair of triangular shaped apertures 32 of a size to fit upon the posts 28, and the forward portions of the blades are tapered forwardly and downwardly, as indicated at 33, terminating in a sharpened point 34, which is the portion with which the cutting of the fur skin is done.

A pair of the blades 31 are assembled upon the central member 20 of the holder, as seen in Fig. 1, the following procedure being suggested: After the first blade 31 is placed upon its pair of posts 28, the side plate 21 is moved into position, shown in Fig. 2, for which purpose each of the side plates is provided with a pair of triangular shaped openings 35 to also fit upon the posts 28. The posts are purposely shortened so that the side plate can be sprung slightly to clear the posts. Next, the clamping screw 36 is passed through registered openings 37 and 38 in the side plate 21 and the T-shaped central member 20, respectively. It will be noted that the openings are as near the vertical center line of the blades as possible, and also occur just above the blades, although the screw could be arranged to pass through the blades, if desired.

After the first blade is located as described, the second blade 31 is placed upon its pair of posts 28 and the clamping plate 22 is brought into position as shown in Fig. 2. The side plate 22 may be provided with a slot 39 for the screw 36, in addition to the openings 35 for the posts 28, as already described. Finally, a wing nut 41 is applied to the bolt 36 and is tightened up to securely lock all the parts in the assembled positions. It will also be understood that the bolt and nut arrangement are merely indicative of a clamping means, any suitable arrangement being contemplated that will fasten the blades in place.

It will be observed from Figs. 1 and 2 that substantially all of the side areas of the blades are covered so that the protruding cutting points will be protected from lateral vibrations as would be caused if the blades were not so sustained; and further that the complementary triangular shaped posts and blade openings perform several functions, such as properly locating the blades to align the same, taking up all thrusts and stresses on the blades when in use, and preventing turning of the blade should it accidentally come loose from one of the keys.

Figs. 3 and 4 show a multiple bladed knife similar in general construction to that shown and described in connection with Figs. 1 and 2, except that the form of Figs. 3 and 4 is arranged for use with three or four blades. A T-shaped holder 45 has a pair of side clamping plates 46 and 47 pivoted thereto, and the rear portion of the holder is desirably narrower than the forward portion, for convenience in holding and handling the instrument. The vertical portion 48 of the holder 45 has pairs of triangular shaped posts 49 projecting from the opposite sides thereof, and

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an opening 51 for the reception of the clamping bolt 52. In the area of the bolt opening 51, the vertical portion 48 is widened, as indicated at 50 (Fig. 4), to cooperate with the side plates 46 and 47.

The width of the vertical portion 48 determines the spacing of the cutting blades 53, and spacer blocks 54 of corresponding widths are provided whereby more than two blades can be mounted for simultaneous use. These blocks are provided with triangular shaped openings (not shown) of a size and location to enable the blocks to be mounted upon the posts 49.

The cutting blades 53 are wedge shaped from top to bottom, as shown in Fig. 4, and each blade has a pair of triangular shaped openings 55 (Fig. 9) also of a size and location to fit upon the posts 49. In this form of blade, the top of the blade is tapered toward each end so as to provide a cutting point 56 at each end of the blade, and the whole bottom edge 57 of the blade is sharpened. Thus, when one set of cutting points becomes dull, the blade can be turned around to use the other set of points 56 before re-sharpening or replacement.

The assembly of the instrument of Figs. 3 and 4 will be apparent from a consideration of Fig. 4, and the preceding description of Figs. 1 and 2. A blade 53, followed by a spacer 54, followed by another blade 53, are applied to one set of posts 49, and the associated side clamping plate is also positioned upon the posts. This assembly is repeated for the opposite side of the holder 45, whereupon the bolt 52 is inserted through the opening and clamping nut 57 is applied to clamp the blades and spacers in operative position with the blades all equi-spaced. Thus, the operator is able to make four cuts with one downward motion of the instrument. If he desires to make only three cuts at one time, one of the end blades 53 is omitted in the assembly; and the side plates are sufficiently thin and flexible that this can be done without damage.

Figs. 5, 6 and 7 show a construction in which the same holder may be used with different spacings of the cutting blades, and different numbers of blades, entirely at the discretion of the user. For purposes of illustration it is shown with five blades. In this embodiment, the holder 61 may be a block having a wide front portion for holding the cutting blades 62 and a narrowed rear portion 63. The underside of the wide front portion is cut out or recessed, as indicated at 64, leaving a thin side wall 65 along one side of the holder.

A positioning post 66 is inset in the wall 65 and extends entirely across the cut out portion 64. As seen in Fig. 6, this post has a square bottom side and a rounded top side, which construction is shown to illustrate another form of angular positioning post suitable for properly positioning the cutting blades in the holder and also maintaining them in position during use.

Also inset in the wall 65 to extend across the cut-out portion 64 is the clamping bolt 67. The cutting blades 62 are provided with openings 68 and 69 (Fig. 10) of sizes and shapes to fit upon the post 66 and bolt 67 respectively. The cutting blades are spaced apart by means of spacer blocks 71 which also have openings therein of a size and shape to fit upon the post 66 and bolt 67. These spacers will be of whatever width the user desires for the spacing of the cutting blades. It also will be noted that the spacers are substantially the same height as the blades, and that

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the cut-out portion 64 is of a depth to fit the same, to further insure the maintenance of a fixed position for the blades in use.

In the assembly of the instrument of Figs. 5, 6 and 7, the blades and the spacers will be alternately threaded upon the positioning post and clamping bolt, and for whatever number of blades and spacing the user may wish, after which the side clamping plate 72, which is pivoted at 73, is moved into clamping position. In order to further insure that the side plate 72 may be properly positioned, the holder 61 may be provided with a projecting flange 74 beneath which the clamping plate will fit. After the clamping plate is in position, a nut (not shown) will be applied to the bolt 67 to clamp and hold the parts in assembled relation, as will be understood.

Various shapes and constructions of cutting blades have been shown and described in connection with Figs. 8, 9, and 10. In Fig. 11 is illustrated a further modified form in which the cutting blade 81 has a sharpened cutting point 82 and an angular positioning aperture 83. This blade also is provided with an additional holding and positioning means on the rear edge thereof which in this embodiment comprises a dovetail 84. The holder for use with a blade with the construction of Fig. 11 will have a dovetail mortise receiving the dovetail 84, as shown, for example, in my copending application Serial No. 488,705, filed May 27, 1943, now Patent No. 2,364,339, issued December 5, 1944.

It should be noted that the common denominations for all cutting blades illustrated herein are that each has at least one key engaging or receiving aperture which is at least partly angular, and all have two spaced key or indexing portions to position the blade.

Various combinations of the elements illustrated and described herein may be made, and modifications may be made in the constructions illustrated without departing from the spirit and scope of my invention.

I claim:

1. A fur cutting knife comprising a holder for a plurality of demountable blades and having a blade carrying portion integral therewith and arranged to space apart a pair of blades a fixed distance, at least two blade engaging keys projecting from opposite sides of said carrying portion, cutting blades mounted thereon and having means complementary with said keys, and means to clamp said blades in fixed operative position.

2. In a fur cutting knife, a holder for a plurality of spaced, demountable blades, and adapted to be held in the fingers of the hand, said holder comprising a forwardly projecting, centrally disposed, blade carrying member integral therewith, an upper portion of said holder overhanging both sides of said blade carrying member, two complementary angular-shaped blade engaging keys projecting from each side of said blade carrying member, a pair of blades mounted on said keys, a pair of blade clamping side pieces pivoted to the rear portion of said holder and adapted to engage said keys, and means to clamp said side pieces and blades to said holder.

3. In a fur cutting knife, a holder for a plurality of spaced, demountable blades, and adapted to be held in the fingers of the hand, said holder comprising a forwardly projecting, laterally disposed, blade carrying member integral therewith, an upper portion of said holder overhanging said blade carrying member, two complementary blade engaging keys cooperating with said blade

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carrying member, one of said keys being angular shaped in transverse cross-section and projecting laterally from said blade carrying member, at least a pair of blades and a pair of spacers carried by said member and having means cooperating with said keys, a blade and spacer clamping side piece pivoted to the rear portion of said holder, and adapted to prevent lateral displacement of the blades carried by said blade carrying member, and means to clamp said side piece and blades to said holder.

4. In a fur cutting knife, a holder for a plurality of spaced, demountable blades and adapted to be held in the hand in the manner of a writing implement, the holder having a pair of end clamping plates, at least one of which is movable, at least one angular shaped blade supporting and positioning key between said plates, a pair of demountable blades having means complementary with said key, means for spacing the blades apart a predetermined distance, and means for clamping said blades and spacing means between said plates.

5. In a fur cutting knife, a holder comprising a T-shaped center member and a pair of outer clamping plates pivoted thereto, angular shaped keys projecting from opposite sides of the vertical portion of said T-shaped member, a pair of cutting blades having angular shaped openings fitting said keys and also having cutting points projecting forwardly from said holder, the clamping plates being positioned beneath the horizontal portions of said T-shaped member, and means for clamping said blades and plates to said holder.

6. In a fur cutting knife, a holder comprising a T-shaped center member and a pair of outer clamping plates pivoted thereto, angular shaped keys projecting from opposite sides of the vertical portion of said T-shaped member, a plurality of cutting blades having angular shaped openings fitting said keys and also having cutting points projecting forwardly from said holder, spacers cooperating with the vertical portion of said T-shaped member to maintain said blades spaced apart predetermined distances and having angular shaped openings fitting said keys, the clamping plates being positioned beneath the horizontal portions of said T-shaped member, and means for clamping said blades, spacers and plates to said holder.

7. In a fur cutting knife, a holder having a wider front portion and a narrowed rear portion integral therewith, said holder being arranged to be held in the fingers of the hand, the wide portion being recessed, a pair of keys extending across said recess, at least one of which is angular shaped, a plurality of cutting blades fitting in said recess and each having a sharpened point, the blades having openings interfitting with said keys and so located as to position said blades with the sharpened points aligned and projecting outside said recess, a plurality of spacers also having openings for said keys and arranged to space said blades apart, and means for clamping the blades and spacers in said recess.

8. In a fur cutting knife, a holder arranged to be held in the fingers of the hand, said holder having a recessed front portion defined by a side wall and a top wall joined together, a pair of keys extending across said recess, at least one of which is angularly shaped, a cutting blade fitting within said recess and having a sharpened point projecting forwardly thereof, the blade also

having openings interfitting with said keys, and means on the opposite side of said recess for clamping the blade in said recess.

9. A demountable blade for assembly in a fur cutting knife, said blade having a top edge, a bottom sharpened edge, and side edges at least one of which is inclined to form an acute angle with the bottom cutting edge and also forming a sharpened cutting point, said blade also having a pair of spaced apart key engaging portions, at least one of which is shaped to conform to and receive a positioning key which is polygonal in transverse cross-section.

10. A demountable blade for assembly in a fur cutting knife, said blade having a top edge, a bottom sharpened edge, and side edges at least one of which is inclined to form an acute angle with the bottom cutting edge and also forming a sharpened cutting point, a pair of spaced apart apertures in said blade shaped to conform to and receive a positioning key which is polygonal in transverse cross section.

11. A demountable blade for assembly in a fur cutting knife, said blade having a top edge, a bottom sharpened edge, and side edges at least one of which is inclined to form an acute angle with the bottom cutting edge and also forming a sharpened cutting point, two spaced index portions positioning the blade, one of said portions comprising an intermediate angular shaped key receiving aperture, and the other of said portions comprising a projecting marginal member.

12. A demountable blade for assembly in a fur cutting knife, said blade having a top edge, a bottom sharpened edge, and side edges at least one of which is inclined to form an acute angle with the bottom cutting edge and also forming a sharpened cutting point, the portion of the cutting edge terminating in the cutting point being inclined downwardly with respect to its side edge and extending below the remainder of said bottom cutting edge, and at least one positioning key receiving means in said blade.

13. A demountable blade for assembling in a fur cutting knife, said blade having a top edge, a bottom sharpened edge, and connecting side edges each of which forms an acute angle with said cutting edge and also sharpened cutting points, a pair of spaced apart apertures in said

blade at least one of which is shaped to conform to and receive a positioning key which is polygonal in transverse cross-section.

14. A fur cutting knife constructed and arranged to be held in the fingers of the hand and comprising a holder for a plurality of demountable blades and having a blade carrying portion integral therewith, at least two blade engaging keys projecting from said blade carrying portion, cutting blades mounted on said blade carrying portion so as to be substantially co-extensive therewith, each of said blades having a sharpened point at one side thereof projecting beyond said portion and also having means complementary with said keys to align said blade points in operative position, and means to clamp said blades in fixed operative position.

15. In a fur cutting knife, a holder comprising a T-shaped center member and a pair of outer clamping plates pivoted thereto, angular shaped keys projecting from opposite sides of the vertical portion of said T-shaped member, a plurality of cutting blades having angular shaped openings fitting said keys and also having cutting points projecting forwardly from said holder, spacers cooperating with the vertical portion of said T-shaped member to maintain said blades spaced apart predetermined distances and having angular shaped openings fitting said keys, and means for clamping said blades, spacers and plates to said holder.

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