July 29, 1941. D. J. LO PICCOLO 2,250,589

CUTTING DEVICE

Filed Oct. 16, 1939

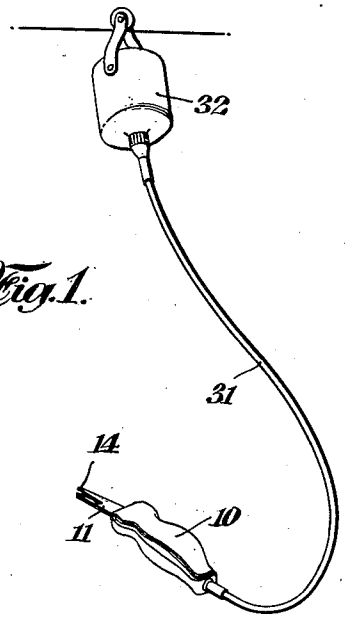


Fig. 1.

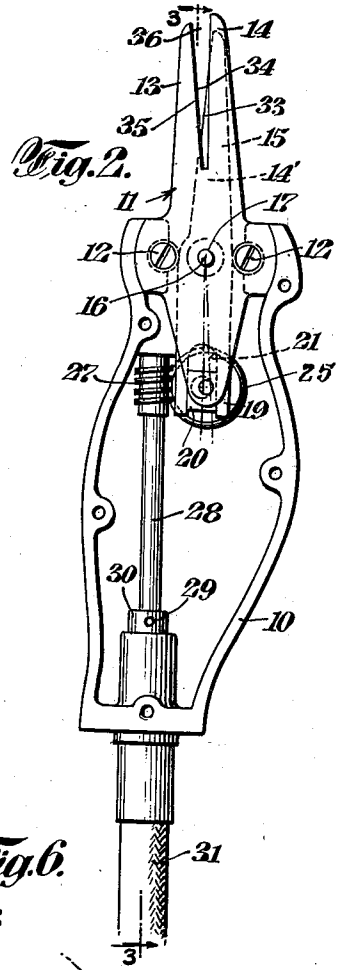


Fig. 2.

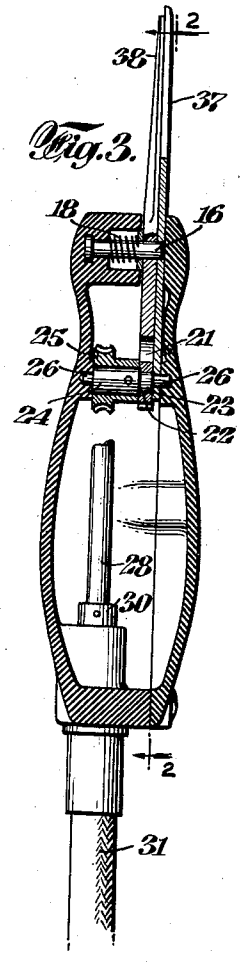


Fig. 3.



Fig. 4.

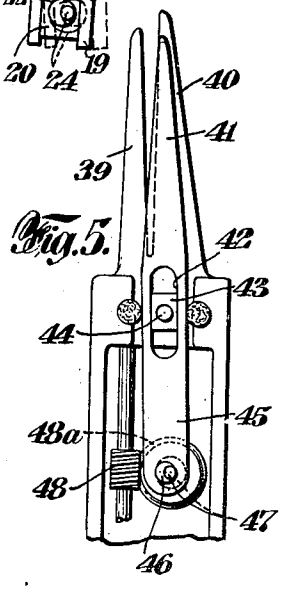


Fig. 5.



Fig. 6.

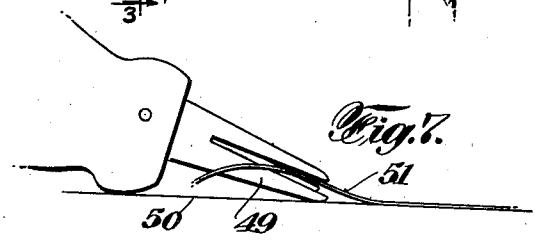


Fig. 7.

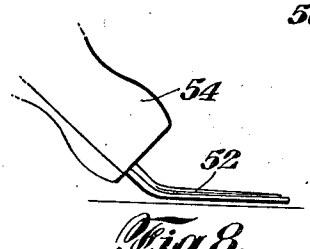


Fig. 8.

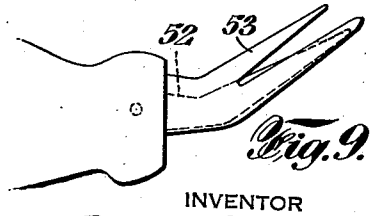


Fig. 9.

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2,250,589

CUTTING DEVICE

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2 Claims. (Cl. 30—247)

This invention relates to cutting devices, and has particular although not exclusive applicability to electrically operated devices for cutting and trimming loose threads on seams of a garment during the finishing process thereof.

In the manufacture of various types of garments, certain trimming and finishing operations are very frequently left to special operators who remove all loose hanging threads and straighten out seamed edges by the use of conventional shears; and due to the fact that considerable caution must be exercised not to damage the garment during this process, this operation is often both time-consuming and expensive. It is hence one of the objects of my invention to facilitate this operation by providing an electrically operated device, readily controlled by hand, for quickly and cleanly performing the necessary finishing steps without the danger of damage to the garment.

It is also within the contemplation of my invention to enable the above-referred-to operations to be performed without danger of injury to the operator.

And it is further within the contemplation of my invention to enable certain forms and modifications thereof to be conveniently employed, not only as a finishing implement as aforesaid, but also for the cutting of patterns out of paper or cloth, the trimming of sections of fur, for hair cutting and other cutting functions.

Other objects, features and advantages will appear from the drawing and the description hereinafter given.

Referring to the drawing,

Figure 1 is a perspective view of the cutting device constituting my invention, shown connected by a flexible cable to a suitably suspended motor.

Figure 2 is a longitudinal section of my invention showing a portion of the actuating means in relation to the movable blade member, this section being taken substantially along line 2—2 of Figure 3.

Figure 3 is a section of Figure 2 taken substantially along line 3—3 of Figure 2.

Figure 4 is a fragmentary plan view of the movable blade member and eccentric actuating means therefor.

Figure 5 is a fragmentary longitudinal section substantially similar to that of Figure 2, showing a modification of my invention.

Figure 6 is an enlarged fragmentary plan view of the movable blade member and eccentric actuating means of the structure of Figure 5.

Figure 7 is a fragmentary elevation showing a method of employing the device of either Figures 2 or 5 for cutting a pattern.

Figure 8 is a fragmentary elevation of another modification of my invention showing bent cutting elements such as are adapted for cutting hair and fur, and

Figure 9 is a fragmentary plan view of the device of Figure 8.

In the drawing, the body portion 10 comprises a hollow casing shaped to render it convenient for manual grasping, the interior of said casing containing portions of the actuating mechanism to be hereinafter described. Immovably attached to the forward portion of casing 10 is the combination guide and blade member 11, the attachment being preferably effected through the medium of screw means 12 extending through member 11 and the casing 10. Member 11 consists of a stationary blade member 13 and a guard member 14 in spaced relation thereto, said guard and blade members having a common juncture at 14'.

The apparatus is provided with a movable blade member 15, preferably pivotally mounted upon the casing 10 by means of pin 16 extending through the hole at 17 in member 11. Mounted over said pin 16 is the helical spring 18 normally urging the movable cutting member 15 into abutment with member 11.

In the form illustrated in Figures 2 and 3, the innermost terminal portion 19 of said movable member 15 is bifurcated, a block 20 being slidably positioned within the slot 21 thereof. Rotatively positioned within the hole 22 in the block is the eccentric 23 forming part of the eccentric shaft 24 upon which the gear 25 is mounted and immovably affixed. The pins 26 extending from opposite sides of shaft 24 are rotatively mounted within the body of the casing as indicated. In operative engagement with gear 25 is the worm 27 mounted on the worm shaft 28 connected by suitable coupling means at 29 to a flexible shaft 30 shown in the preformed form illustrated as being contained within the flexible tubing 31. The said flexible shaft 30 is operatively connected to the motor 32.

In the preferred form of this invention, the edges 33 and 34 of the movable and stationary blade members, respectively, are in intersecting relation, leaving the forward portions of said edges diverging outwardly. The cutting portions of the coacting blade members 13 and 15 do not extend to the foremost tips of their respective members, but begin at a point short of the forward terminals of said members, such as a point at 35, and extend rearwardly therefrom. The proportions of the blade members and the relative movement of the movable blade member 15 over stationary member 13 are such that the coacting cutting portions of members 13 and 15 never extend forwardly beyond said point 35, thereby always leaving a gap 36 for receiving and supporting threads and other materials to be cut, as will clearly hereinafter appear. It will

be further noted that the guard member 14 extends further forwardly than movable member 15 and is in underlying relation with respect thereto,—thereby providing a protective means therefor.

In the operation of this device, the operative rotation of the worm shaft 28 is transmitted through worm 27 and gear 25 to eccentric shaft 24. The resultant rotation of the eccentric 23 within the block 20 causes a reciprocating movement of said block and a consequent rocking movement of the movable blade member 15 about its pivot 17. It is of course understood that in the practical application of this apparatus the speed of rotation of shaft 28, through the medium of flexible shaft 30 and motor 32, will cause rapid pivotal oscillations of the movable blade member 15 across the coacting stationary blade member 13. In this manner any thread or other material positioned between said cutting portions of the blade members will be subjected to the cutting action thereof.

As previously indicated, the cutting portions of the said blade members extend rearwardly from point 35, at all times leaving a space 36 in advance thereof. This will permit a thread or material which is to be cut to be operatively received and held between the stationary blade 13 and the guard member 14 and movable blade 15, thereby facilitating the cutting action. This completely eliminates the danger of repelling the material to be cut before it reaches the cutting portion. Such a danger would be particularly present if the cutting portions extended to the very terminals of the blade members, especially where fine and light material such as fibres, threads and hair are to be cut.

If upstanding threads or hairs are to be cut, the lowermost surfaces 37 of members 13 and 14 may be placed flush upon the material from which such threads or hairs extend—the guard member and the position of the cutting edges rendering the material safe against accidental mutilation. Should it be desired to obtain a closer cutting action, the upper surfaces 38 of the blade members 13 and 15 can be placed contiguous to the material from which the threads or hairs extend.

In Figure 5 is shown a modification of my invention in which the stationary blade member 39 and guard member 40 are substantially in one plane, the pivotally mounted movable member 41 being coactively disposed with respect to stationary blade member 39, substantially similar to the structure hereinabove set forth. However, the said movable member 41 contains a slotted portion 42 in slidable engagement with the block 43 rotatively mounted over the pivotal mounting 44. The rearmost extremity 45 of the movable member 41 contains a hole into which the eccentric 46 mounted on eccentric shaft 47 extends. Affixed upon said eccentric shaft 46 is the gear 48a in operative engagement with worm 48, substantially in the manner above described.

In the operation of the last-mentioned form of my invention, the operative rotation of eccentric 46 will not only cause a pivotal oscillation of the movable blade member 41, but also a slight longitudinal movement rearwardly during the cutting movement of member 41. This is obviously due to the lateral and rearward thrust of eccentric 46. The block 43 permits the said pivotal and longitudinal movements inasmuch as it is, as aforesaid, rotatively mounted on pin 44 and in slidable engagement with the walls of slot 42.

Due to the simultaneous cutting and rearward movement of the blade member 41 the material will be drawn slightly rearwardly, preventing the usual folding or gathering of material as it is being cut.

Figure 7 illustrates an application of my invention in the cutting of material, and shows its adaptability in the cutting of patterns. In this case the guard member 49 is supported upon the table 50 in the manner indicated, the material 51 extending between the blade members. Although both forms of my apparatus above described are adaptable for this use, the modification illustrated in Figure 5 is preferred therefor.

Figures 8 and 9 show the movable blade member 52 and the combination blade and guard member 53 bent out of the plane of the longitudinal axis of the casing 54, the arrangement being adapted to facilitate the cutting of threads, hairs, fibres and the like.

It is of course understood that the various embodiments above-described and shown in the drawing are illustrative of my invention and not employed by way of limitation, inasmuch as numerous changes and modifications may be made within the scope of the appended claims without departing from the spirit of this invention.

What I claim is:

1. A cutting device of the class described comprising a hollow casing adapted for manual grasping, a stationary blade member affixed to the casing, a cooperable movable blade member, a pivotal mounting for the movable member associated with the casing, said movable member containing a slotted portion adjacent said mounting, a guiding block rotatably mounted over said pivotal mounting and in slidable engagement with said slotted portion, an eccentric shaft extending transversely with respect to said movable blade and rotatably mounted upon the walls of said casing, an eccentric on said shaft rotatably engageable with said movable member for imparting thereto a rocking movement and a longitudinal sliding movement with respect to said block, and driving means operatively associated with said eccentric shaft.

2. A cutting device of the class described comprising a hollow casing adapted for manual grasping, a stationary blade member affixed to the casing, a cooperable movable blade member, a pivotal mounting for the movable member associated with the casing, said movable member containing a laterally enclosed slotted portion intermediate the ends of the member, a guiding block within said slotted portion and rotatably mounted over said pivotal mounting, said block being in slidable engagement with said slotted portion, an eccentric shaft extending transversely with respect to said movable blade and rotatably mounted upon the walls of said casing, an eccentric on said shaft rotatably engageable with the rear portion of said movable member for imparting thereto a rocking movement and a longitudinal sliding movement with respect to said block, and driving means operatively associated with said eccentric shaft.

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