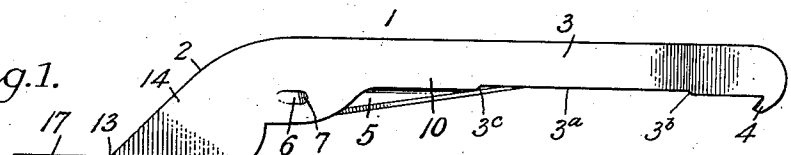
Aug. 17, 1937. H. H. BAYNTON ET AL 2,090,021

PILE CUTTER

Filed June 18, 1935

Fig.1.



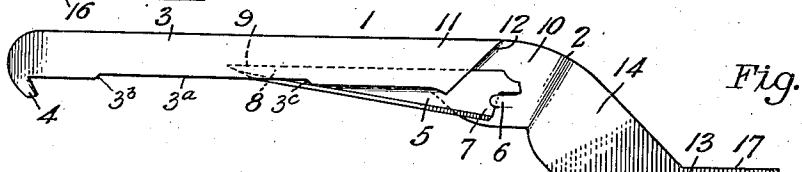


Fig.2.

Fig.3.

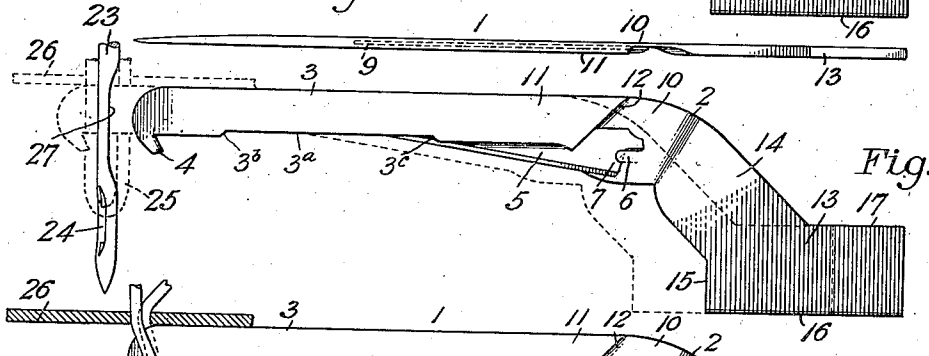


Fig.4.

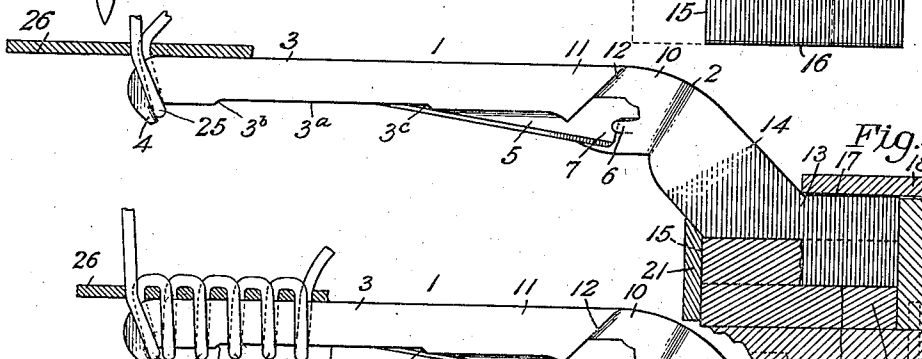


Fig.5.

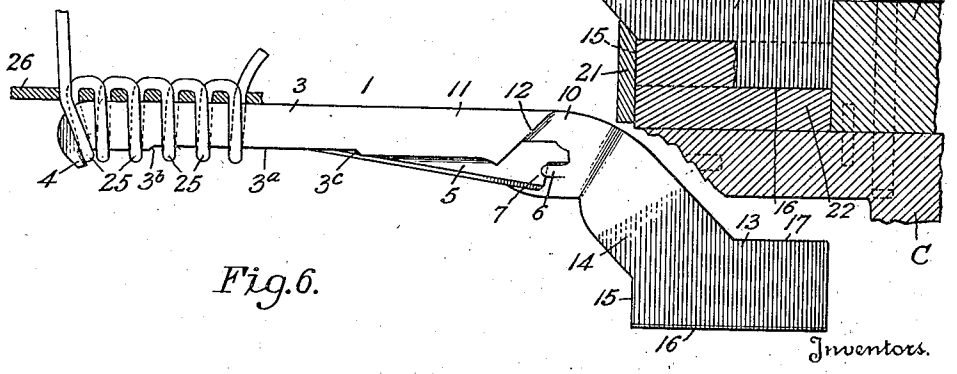


Fig.6.

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PILE CUTTER

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Application June 18, 1935, Serial No. 27,243

6 Claims. (Cl. 112—79)

Our invention relates to new and useful improvements in pile cutters, and has for an object to produce a pile cutter that is radically different from those now in use.

As is well known to those skilled in the art, the conventional form of pile cutter consists of what might be termed the spoon with its rearwardly extending finger, to which is welded the pile wire, the forward end of this spoon being slightly bent from the longitudinal axial plane. In the spoon holder there is removably held a blade of a desired shape, the blade as a rule being held on the upper edge of the spoon.

The present invention contemplates a pile cutter that is especially adapted to be used in a novel rug or carpet making machine, this machine forming the subject-matter of a separate application for U. S. Letters Patent, Serial Number 32,098, filed July 18, 1935, for Machine for manufacturing pile fabric. One of the objects of this invention, therefore, is to provide a pile cutter including what might be termed a forwardly extending finger having a hook on its under surface at its forward end, the knife blade, in turn, being secured in the rear of the finger and inserted in the under edge of the pile cutter. Near the rear edge of the finger, the same widens out to receive the heel of the blade, and from the rear of the widened portion, which we term the body portion, there is welded an offset heel plate for supporting the pile cutter in position in the cutter bar of the rug making machine.

Still another object of the invention is to provide a pile cutter having a hook at its forward end and on its under surface, a knife blade at the rear of the same, and an offset heel plate, so that the pile cutter may reciprocate and catch and hold the loop from its cooperating needle.

Still another object of the invention is to provide a pile cutter so that when a number of these cutters are mounted in the machine, they form a support for the fabric which is being tufted, the loops being cut to form the pile as the material moves along on the top of these pile cutters.

Still another object of the invention is to provide a pile cutter, wherein the forward end of the same is provided with a hook or nose so that after the cutter passes through the loop, it will retain the same on the pile cutter, and as these loops advance toward the rear of the finger and the cutter advances, that is, moves in a direction opposite to the advance of the fabric, they will be cut by the blade mounted in the pile cutter.

Still another object of the invention is to provide a pile cutter that is slightly under-cut at a predetermined distance from the nose, whereby the height of the pile is governed and, at the same time, the strain will be relieved on the fabric during the forward motion of the pile cutter, which strain would otherwise tend to distort the loops and fabric.

Still another object of the invention is to provide a pile cutter having an undercut portion extending from a point near the nose of the pile cutter back to the blade, so that after the loop is engaged by the forward portion of the pile wire and its height determined, the loops building up on the reduced portion of the finger will be relieved of any friction or strain previous to their being severed, which might otherwise tend to distort the fabric.

With these and other objects in view, the invention consists in certain new and novel features and combination of parts, as will be hereinafter more fully explained and pointed out in the claims.

Referring now to the drawing showing a preferred embodiment,

Fig. 1 is a side elevation of our new pile cutter;

Fig. 2 is a similar view but taken from the opposite side and the cutter being in a transposed position;

Fig. 3 is a top plan view of a pile cutter;

Fig. 4 is a view similar to Fig. 2, the dotted lines showing the advanced movement of the cutter and also showing the needle forming a loop;

Fig. 5 is a view similar to Fig. 2 and showing the pile cutter as having engaged a loop and also showing the manner in which the cutter may be mounted;

Fig. 6 is a view similar to Fig. 5 and showing the loops building up on the cutter preparatory to being cut.

Referring now more particularly to Figs. 1 and 2, there is shown our new and improved pile cutter 1, including what we term the body 2, and the outwardly extending finger 3, which has a downwardly extending hook or nose 4 formed on its under surface and at its outer extremity. The specific manner in which the blade 5 is held in the pile cutter is not essential, and we have shown one embodiment wherein on the body portion 2 there is shown a tongue 6 behind which the heel 7 of the blade 5 fits, the forward end 8 of the blade 5 fitting within the recess 9, which is, in turn, formed in the finger of the pile cutter.

As will be noticed in the several figures, the finger is undercut, as at 3a, the start of the under-

cut beginning at the point 3b and extending rearwardly to the point 3c. From the nose 4, therefore, to the point 3b, it will be seen that the finger is of full or normal height, this portion of the pile cutter, of course, governing the height of the pile.

After the loops have been engaged by the normal portion of the finger and the height of the pile determined, they will then build up on the reduced portion of the finger (Fig. 6), and as the portion of the finger now engaged by the built-up loops is of less height, there will be no binding of the loops on the finger but, on the other hand, the finger will be free to slide through the loops until they engage the blade, where they will be clearly and sharply cut. Thus, by undercutting the finger, there is a freedom of movement of the cutter through the loops, which would not otherwise be possible and any distortion of the loops or fabric is entirely prevented.

As is well known, pile cutters may have the recess 9 either milled or the pile cutter may be stamped out in a flat condition along a central median line (not shown) and then folded over to form the channel or recess for the blade 5. In the present instance, we have shown the pile cutter as having one side 10 and the other folded side 11, this side 11 being also cut away, as shown at 12, so that the blade may be conveniently slipped in place. The forward end of the finger beyond the recess 9 if made in this manner may be spot-welded to hold the two side walls together.

As heretofore mentioned, the specific manner in which the blade is held in place is not essential, as any other means of holding the blade in position might be employed.

Now to the rear of the body portion 2, there is welded, electrically or otherwise, what we term the heel plate 13, this plate having the upwardly extending portion 14 that merges with the rear edge of the body portion of the finger, the plate 13 then extending in a vertical manner at its forward edge, as at 15, and in a horizontal manner on its bottom, as at 16, and has an upper edge, as at 17.

In Fig. 5, we have shown, sectionally, how the pile cutter is held in a cutter bar, the cutter bar being shown in detail in the separate application aforementioned to wit: Serial Number 32,098, filed July 18, 1935, for Machine for manufacturing pile fabric. It will be understood that there are a number of slots formed in the bar 22, while over the horizontal portion 17 of the heel of the pile cutter will extend a plate 18, which, in turn, is held to the back bar 19 by screws 20. In a like manner, there is a similar plate 21 engaging the forward edge 15 of the heel plate, the under surface 16 of the heel plate resting on the bottom of grooves in the bar 22, which is a part of the assembly of the cutter bar C. It will be understood that this cutter bar C reciprocates in timed relation with the loop-forming needles.

In Fig. 4, there is fragmentarily shown a needle 23 with its eye 24, and in dotted lines is shown the loop 25 in the fabric 26. Also in dotted lines in Fig. 4 is shown the forward extremity of movement of the pile cutter (rearwardly with regard to the advancing fabric), the pile cutter having passed through the loop 25.

In Fig. 5, there is shown the loop 25 as having been engaged by the pile cutter and held from removal by the hook 4 (the needle not being shown). Now in Fig. 6, there is shown the fabric 26 as having advanced and a number of loops 25 having built up on the finger portion 3 of the pile cutter, and it will be understood that as the stitching proceeds and the fabric moves forwardly, these loops will eventually build up until they ccntact with the sharp edge of the blade 5, where they will be severed. It is to be remembered that the blade inclines from its nose to its heel, and that due to the position of this blade and the building up of the loops on the finger and the forward movement of the finger, the loops will be severed in a clean sharp manner.

It will be noted that the needle 23 is cut out slightly, as at 27, while the resultant rear wall of the cut-out portion is slightly angular with relation to the horizontal axis of the pile cutter. However, the position of the needle and its formation are the subject-matter of the aforementioned separate application.

From the foregoing, it will readily be seen that the pile cutter is designed to pass into the loop formed by the needle, and as the needle rises, the hook on the forward end of the pile cutter will engage each newly formed loop and cause the loops to build up on the pile cutter until they are engaged by the blade, where they will then be neatly and sharply severed to form the pile on the under surface of the fabric.

Also, by providing an undercut portion of the finger inwardly of the nose, the height of the pile can be properly governed by the forward part of the finger, while the reduced part of the finger permits it to properly slide through the loops, thus preventing any distortion or strain on the loops or fabric.

As heretofore mentioned, the specific manner of holding the blade in the pile cutter is not important, and any other desired means may be utilized. However, the provision of the finger with the hook on the forward end and the arrangement of the blade on the under edge of the finger and the associated heel plate are of great importance.

It will also be noticed that the collective pile cutters will form a table or support for the fabric, in which there is being placed the loops, doing away with the ordinary form of table or support and making it possible to more easily blow away the lint.

Finally, it will be seen that there is no chance of the loops being disengaged after they are once hooked by the pile cutter and they, in turn, as they build up on the moving finger will be cut cleanly and sharply.

Many slight changes might be made without in any manner departing from the spirit and scope of the invention.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A pile cutter including a heel plate having a plane under surface, a vertical upwardly extending wall at its forward end and a horizontal wall parallel with the under surface, an upwardly extending portion, a finger welded to said portion, said finger presenting a plane surface along its upper edge to form a support, a hook on the under surface of the nose of the finger, the under edge of the finger being reduced intermediate its opposite ends, and means for mounting a blade in the under edge of the finger.

2. A pile cutter including a finger, a blade on its under edge, a hook at the forward end of the finger, the finger being undercut at a point slightly remote from the nose and back to the forward portion of the blade, and a heel plate at the rear of the finger.

3. A pile cutter including a finger, a blade on its under edge mounted near the rear of the finger, a hook at the forward end of the finger and the finger being undercut at a point remote from the nose and extending rearwardly beyond the forward edge of the blade.

4. A pile cutter including a finger, a blade mounted on its under edge and near the rear end thereof, a hook at the forward end of the finger, a portion of the finger spaced from the hook being undercut, and means for holding the blade in position.

5. A pile cutter including a body portion, a finger extending forwardly of the body portion and means extending rearwardly from the body portion, a knife blade mounted along the under surface of the body portion and extending into the finger, the finger being undercut from a point to the rear of the forward end of the blade and extending to a point rearwardly of the nose.

6. A pile cutter including a finger, a blade mounted on the under surface of the finger and at a point to the rear of the nose, a hook provided on the under surface of the nose and the finger reduced on its under surface at a point to the rear of the nose and back beyond the forward edge of the blade.

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