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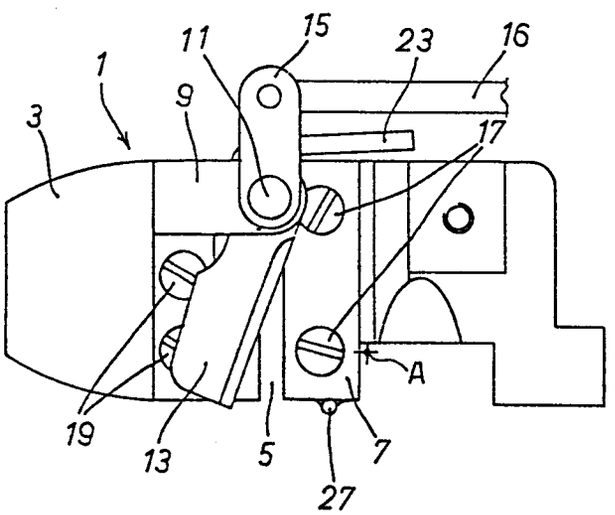
(54) **Pressure shoe for a sewing machine with a cutting device for an inserted band or the like.**

(57) To a normal sewing machine pressure shoe (1) there is associated a cutting device comprising a transverse slot (5) provided on the pressure pad (3) wherein an elastic band, or a tape or a stiff lace is inserted, on the edges of said slot (5) there is provided mounted on one side a stationary cutting block (7) while on the other side provision is made for a generally pivotally movable knife (11), (13), which is accommodated in a suitable support (9) which is in turn fastened to said part of slot (5). Therefore, the cutting device (11), (13) is extremely close to the sewing needle, so that the free stretch of the elastic band and of the tape, or of the stiff lace, getting cut at the end of operations is a minimum, with a satisfactory overlap for stress resistance, but in the meantime non significant concerning the quality of operations.



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TITLE MODIFIED
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"IMPROVEMENTS IN OR RELATING TO PRESSURE SHOES FOR SEWING MACHINES"

This invention concerns an improvement in or relating to pressure shoes for sewing machines, and in particular to a pressure shoe provided with a built-in cutting device.

Reference is made herein in particular to sewing machines and relating devices, used nowadays in connection with fastening and elastic band to a hem, with the associated problem of curling thereof while said elastic band is being fastened thereto.

The pressure shoes presently used for said operation are pressure shoes designed for the passage of the elastic band only, which is tensioned by means of a special device, and cutting of the band at the end of operations is performed by means of a separate cutting device, close to the pressure shoe, nevertheless separate therefrom.

By means of said device, cutting of the elastic band takes place above the throat of the pressure shoe, whereby the distance between the sewing needle and the free edge of the elastic band after the cut remains quite high. In fact, since the elastic band is under tension to curl the fabric where it is being applied, once the cut has been made few centimeters of free elastic band will be left (i.e. not tensioned) and therefore plain stitches will be applied thereon.

Since it is required that at the beginning and

at the end of operations the two ends of the elastic band are overlapped while curling the fabric, it will be compulsory to extend the seam for at least the exceeding part of the free elastic band overlaying the garment, which causes excessive thickness and stiffening of the garment, whereby a worse workmanship results, and quality is impaired.

An object of this invention resides in obviating the aforesaid drawbacks and providing a simple and practical device whereby the elastic band can be cut at a really minimum distance away from the needle, so that a suitable ovelap can be provided together with adequate strength of the seam, also when the latter is tensioned, while the junction that had to be provided is disguised in an optimized way.

Obviously, obtaining a short free stretch of elastic band is convenient also in case the latter needs not to be overlapped.

The improvement in or relating to pressure shoes for sewing machines according to this invention resides in that the subject pressure shoe has incorporated therein an elastic band cutting device, said device being located a short distance away from the sewing needle, which is a minimum distance if compared with the distances currently achievable with the pressure shoes presently used.

More particularly, the subject pressure shoe is a normal sewing machine pressure shoe where provision is made on the pressure pad thereof for a slot machined in a direction at right angle to the elastic band feeding direction, and through said slot the elastic

band is passed (from the top, above the pressure pad), on the downstream edge of said slot a small stationary cutting block, or counter-knife being provided, while on the upstream edge a movable knife is provided, mounted on a special stationary member, and actuated by suitable means (mechanical, pneumatic and/or the like means); the action of said movable knife against the counterknife stationary cutting edge causing the elastic band to be cut; resilient means being provided to ensure that the necessary pressure is exerted upon said pivoting knife.

A further feature of the subject pressure shoe resides in that said pressure shoe is provided, at the design stage, with a small tube or duct wherethrough an air stream is injected to act behind the elastic band when the same is inserted through the feeding and cutting slot, to ease the elastic band through the slot and to position the same against the counter-knife; and with a transverse positioning member for said elastic band, comprising a steel wire member fastened sideways on the counter-knife and projecting downwards therefrom in order to provide a side abutment for said elastic band when passing through and sliding underneath said pressure shoe.

A further feature of the subject pressure shoe resides in that the cutting of the elastic band by means of the subject device is carried out at a distance of 0.5 to 1.5 cm away from the sewing needle, preferably around about 1 cm.

The pressure shoe according to this invention is further characterized in that, according to an embodi-

ment of the invention, the movable knife is designed in the form of a pivoting knife, i.e. comprising a substantially vertical shaft rotatably mounted within a suitable bearing provided on the pressure shoe, and pivotable within said bearing; the base of said pivot shaft being provided with a cutting blade, at right angle to said pivot shaft, then substantially horizontal, which acts as a scissor blade upon the elastic band to be cut, the latter being inserted at that time between said blade and the stationary counter-knife cutter; at the upper end of said pivot shaft there being fastened an essentially horizontal square actuating member at right angles to said pivot shaft, which is connected at the free end thereof to the actuating means (mechanical, pneumatic and/or the like) provided for actuating said pivoting knife; the resilient means provided to ensure the necessary pressure on the pivoting knife being a coil spring installed between the support member and the blade, concentric to the pivot shaft of the pivoting knife.

The invention is now discussed in detail referring in particular to the attached drawings wherein an exemplary and non limiting embodiment of the invention is shown, in which:

- fig. 1 is a side elevational view of the subject pressure shoe;

- fig. 2 is a top partial view of fig. 1;

- fig. 3 is a top view of the lower portion of the pressure shoe, or pressure pad.

As it is apparent from the drawing, the subject sewing machine pressure shoe is a substantially conven-

tional pressure shoe 1, wherein a slot 5 is designed to be provided on the pressure pad 3 thereof, in a direction at right angle to the moving direction of elastic band 5' (fig. 1); a stationary cutting block or counterknife 7 being provided on the downstream edge of said slot, while on the upstream edge there is mounted a pivoting knife connected to a suitable stationary support 9 wherein said pivoting knife can rotate with the desired angle.

Said pivoting knife essentially comprises an upward pivot shaft 11, adapted to rotate, as already said, within the suitable cylindrical seat of stationary support member 9, and at the lower end of said pivot shaft a cutting blade 13 is fastened, at right angle to pivot shaft 11, while at the top end an actuating member 15 is fastened, also at right angle to pivot shaft 11.

To said actuating member 15 there is connected the actuating means which can be mechanical, pneumatic, and/or the like, according to what the user desires.

In the subject embodiment said means are mechanical means (member 16 connected to actuating member 15).

The stationary cutter 7 is fastened to the pressure pad 3 through suitable fastening means 17, which are shown as screws in the drawing.

The stationary support member 9 as well is fastened to pressure pad 3 through suitable fastening means, for instance the screws 19.

On pivot shaft 11 of the pivoting knife a coil spring 21 is provided, which acts upon cutting blade

13, in order to subject said blade to the desired pressure, which is required to cut the elastic band in a proper manner.

Moreover, the pressure shoe is provided with a small air injection tube 23, which opens at 25 in slot 5; said air stream provides an easing function for passage of elastic band 5' through said slot, and it provides for positioning the same against cutting block 7.

For transverse positioning of the elastic band, on pressure shoe 1 there is provided steel wire 27, which projects sideways from cutting block 7 and underneath pressure pad 3; said steel wire pin 27 providing an abutment member for the elastic band, in order to avoid drifting thereof from the correct position.

A short description of the operation of the subject pressure shoe is deemed useful for a better understanding of the invention.

The elastic band 5' is inserted from above through slot 5 and therefrom it is eased to pass underneath pressured pad 3 according to the normal feed direction thereof (fig. 1).

During sewing on the garment the elastic band is tensioned in order to provide for curling of the hem of the garment where the band is being applied.

When the sewing operation is finished, the elastic band has to be cut in order to perform the overlap possibly necessary to complete the ring-like fastening thereof.

Due to the position of slot 5, and of counter-knife 7 cooperating with blade 13 of the pivoting knife,

said stretch of elastic band free of tension, included between the cut and the intersection point of sewing needle path A with the elastic band (fig. 1) is extremely small, of the order ot about 1 cm, whereby the overlap performed over such a length is absolutely unobtrusive and does not impair quality of the garment.

Obviously, the subject pressure shoe, besides the application of an elastic band, can be used for sewing a tape of a stiff lace.

CLAIMS

1. A sewing machine pressure shoe adapted for sewing an elastic band, a tape, or a stiff lace, upon the hems of garments and/or linen, characterized in that within said pressure shoe there is incorporated a cutting device (7) (11) (13) for the elastic band, the tape or the stiff lace, said device being positioned a short distance away from the sewing needle, said distance being a minimum if compared with the distances that can be currently obtained with the pressure shoes presently used.

2. A sewing machine pressure shoe according to claim 1, characterized in that on pressure pad (3) of said pressure shoe (1) there is provided a slot (5) at right angle to the moving direction of the elastic band, tape or stiff lace, said elastic band, tape or stiff lace being passed through said slot (from the top down to underneath the pressure pad) having fastened to the downstream edge thereof a stationary cutting block or counter-knife (7) while on the upstream edge thereof there is mounted a pivoting knife (11) (13), fastened on a special stationary member (9) and actuated through suitable means (mechanical, pneumatic and/or the like); the action of said pivoting knife (13) against said stationary cutter (7) of the counter-knife causing the elastic band, tape or stiff lace to be cut; resilient means being provided to ensure due pressure on said pivoting knife.

3. A sewing machine pressure shoe according to claims 1 and 2, characterized in that said pressure

shoe (1) is provided with a small tube or duct (23) for through passage of an air flow, acting behind said elastic band, tape or stiff lace, at (25), when said elastic band, tape or stiff lace, is inserted through said feeding and cutting slot, in order to ease through passage and positioning thereof against counter-knife (7), and with a side positioning member (27) for said elastic band, tape or stiff lace, comprising a steel wire member fastened sideways to the counter-knife and protruding downwards therefrom in order to provide a side abutment for said elastic band, tape or stiff lace being fed through and underneath said pressure shoe.

4. A sewing machine pressur shoe according to any of the above claims, characterized in that cutting of said elastic band, tape or stiff lace by means of the subject device is performed at a distance of 0.5 to 1.5 cm away from the sewing needle, preferably of about 1 cm.

5. A sewing machine pressure according to any of the above claims, characterized in that, according to an embodiment thereof, movable knife (11) (13) is provided as a pivoting knife, i.e. it comprises a substantially vertical pivot shaft (11) movably inserted within said special bearing support (9) provided on pressure shoe (3), being pivotable therewithin; cutting blade (13) being provided in a substantially horizontal position at the base of said pivot shaft (11) and at right angles to said pivot shaft (11), for a scissor-like action on said elastic band, tape or stiff lace inserted at said particular time between

said blade (13) and the stationary counter-knife cutter (7); at the upper end of said pivot shaft (11) there being provided a substantially horizontal square member (15) at right angles to said pivot shaft (11), the free end thereof being connected to actuating means (16) (mechanical, penumatic and/or the like) for said pivoting knife actuation; said resilient means provided to ensure the necessary pressure upon said movable knife (13) comprising a coil spring (21) inserted between support 9 and blade (13), concentric to pivot shaft (11) of the movable knife.

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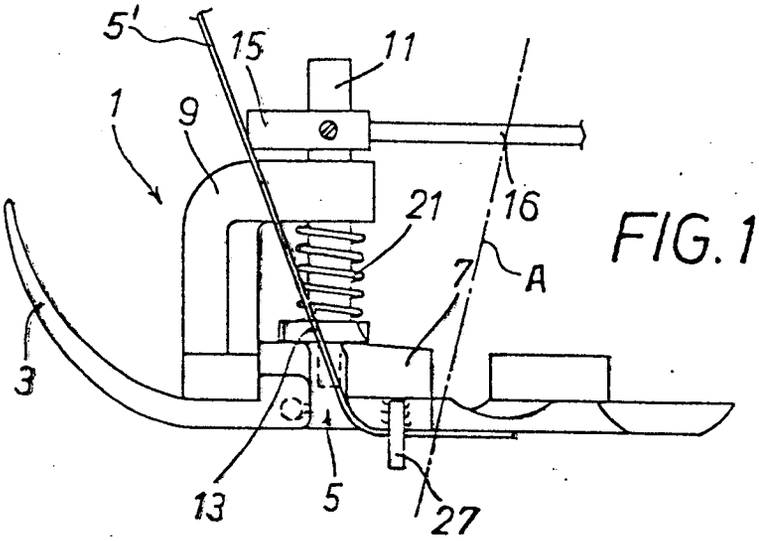

FIG.1

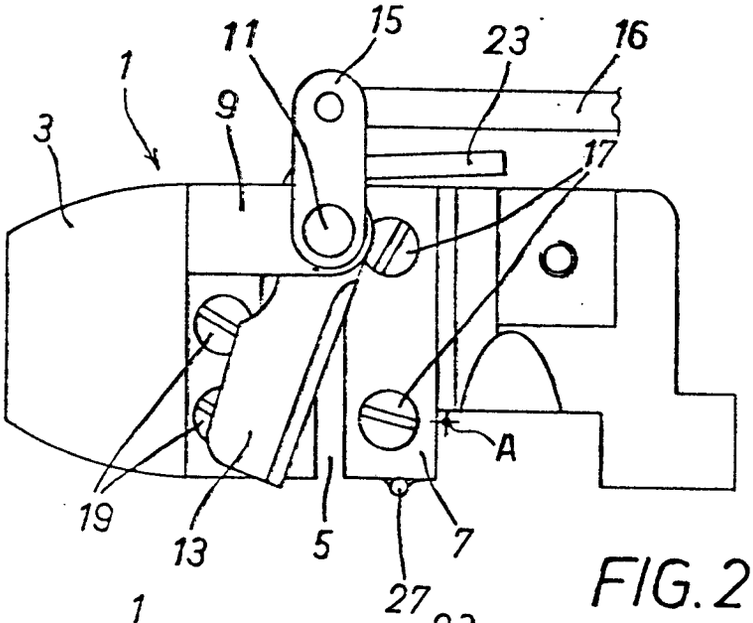

FIG.2

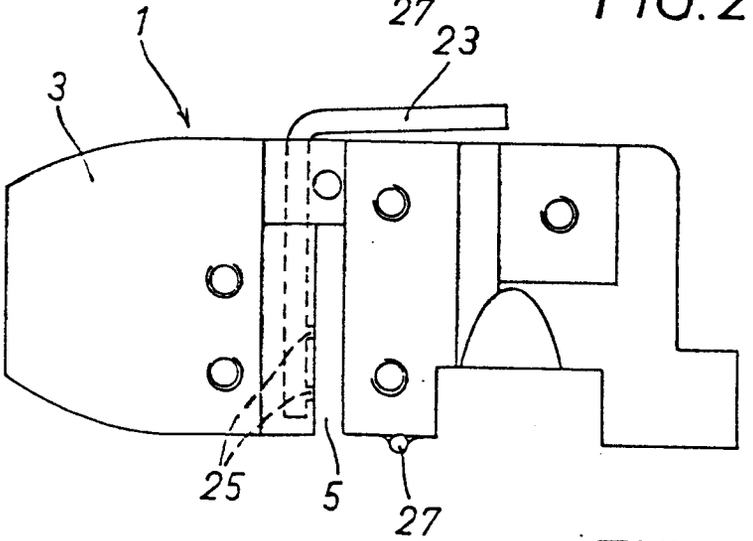

FIG.3

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EUROPEAN SEARCH REPORT

0213084
Application number

DOCUMENTS CONSIDERED TO BE RELEVANT

EP 86830121.9

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	US - A - 3 468 269 (ORMEAUX et al.) * Totality *	1	D 05 B 37/04 D 05 B 35/06 D 05 B 29/06
A		2-5	
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A	US - A - 3 648 632 (S.E.MILLER) * Column 6, lines 36-65; fig. 4,8,9 *	1,2,5	
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A	GB - A - 1 464 147 (ROCKWELL) * Claims 1-6 *	1,2,5	
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A	GB - A - 2 060 722 (ROCKWELL) * Fig. 2; claim 1 *	1,3,5	
	--		TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	DE - C - 23 750 (JUNKER) * Fig. 2,3 *	1,2	D 05 B 3/00 D 05 B 29/00 D 05 B 35/00 D 05 B 37/00 D 05 B 53/00

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
VIENNA	27-08-1986	ERNST

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
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