

[54] **TEMPLATE FOLLOWER MECHANISM**

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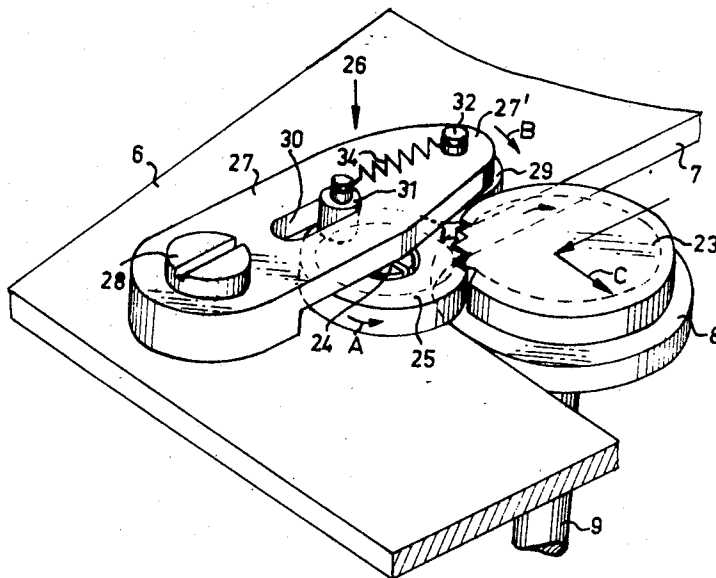
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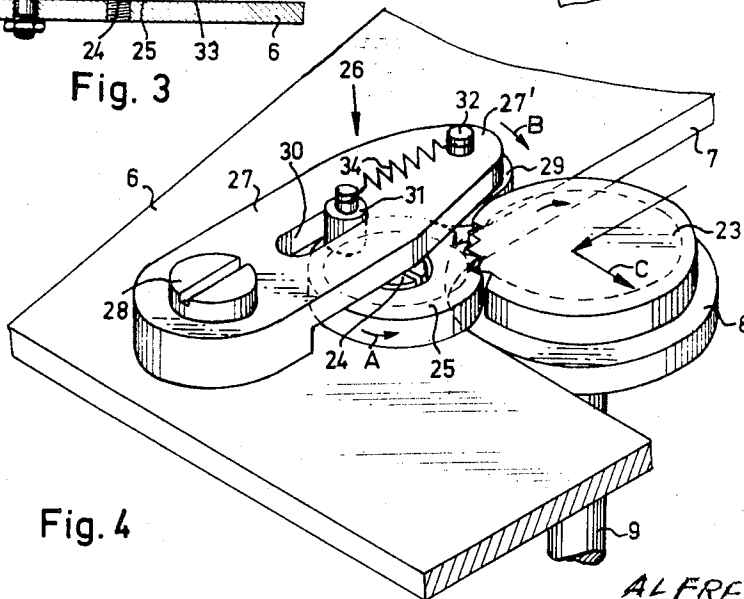
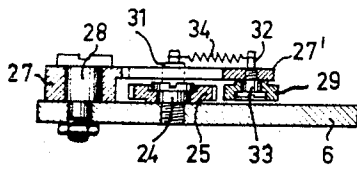
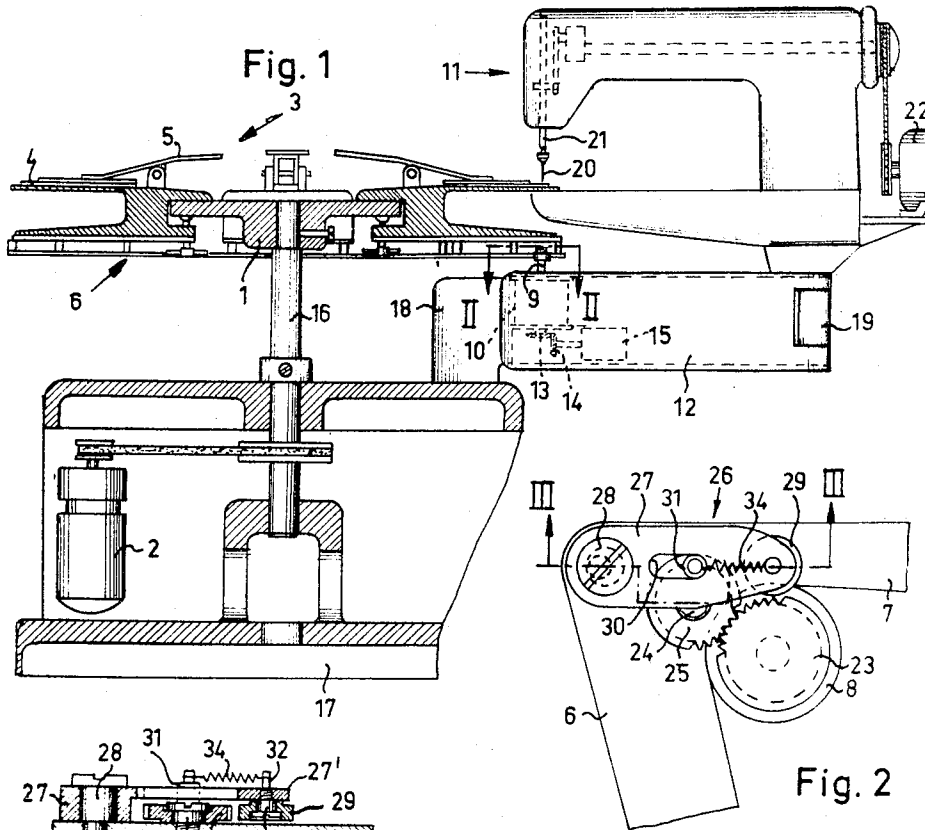
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[57] **ABSTRACT**

A mechanism for use in automatic and template-controlled machine tools and especially in automatic sewing machines in which a magnetic roller rolls along the peripheral edge of the template, for causing an automatic and safe driving of the roller out of the internal corner. This mechanism includes a gear pinion coaxial with the magnetic roller, a gear wheel mounted adjacent to the internal corner, and having a crank pin, an one armed lever pivoted on the template and having an oblong hole in which the crank pin engages, and a roller pivoted on the lever and bearing against the gear pinion, for driving the magnetic roller out of the corner.

2 Claims, 4 Drawing Figures





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TEMPLATE FOLLOWER MECHANISM

BACKGROUND OF THE INVENTION

In the manufacture of collars, cuffs or generally seams in garment pieces, seams with stitches of uniform length are usually desired. Auxiliary devices are necessary for producing an uniform feed and thus an uniform stitch spacing at the corners of a workpiece by using template-controlled sewing devices provided with a driven magnetic roller for rolling along the contour of the template.

A device is already known in which the magnetic power generator independent of the motor driven roller is pivoted about the axis of the driven roller in such a manner that the direction of the initial power lies in a plane which is in the connecting line between the axis of the roller and the point of contact between the roller and the template, while a small air gap is preserved in front of the template.

Such a device is disclosed in the German Patent No. 896,901. However, this known device is disadvantageous because the bearing surface of the template must have a proportionally high profile, since the guide roller rests against it and the pole of the magnetic power generator has to act upon it.

Furthermore, it is known to arrange additional toothed auxiliary templates in the range of the internal corners which are formed corresponding to the course of curve and in which engages a gear pinion connected with the magnet roller, for safely driving the roller out of the internal corners. However, the production of such toothed auxiliary templates is very expensive.

Finally, it is known to prevent a sudden feeding of the magnetic roller into the corner of a template and to delay it in the internal corner by means of a flat spring which is arranged on the template diagonal to the angle of the corner, and where the roller rests a short time before the roller reaches the corner in order to prevent a premature impact upon the diverging arm of the template.

Such a mechanism is described in the British Patent No. 1,108,141.

It is a primary object of the invention to provide a template-controlled sewing device with a mechanism which causes an uniform feed speed of the magnetic roller when entering an internal corner of the template.

A further object of the invention is to avoid an interruption of the feed of the magnetic roller after it arrives at an internal corner of the template.

It is also an object of this invention to create a mechanism which will prevent the abrupt departure of the magnetic roller out of the internal corner and its additional acceleration.

SUMMARY OF THE INVENTION

According to the invention, the above problems are solved by means of a mechanism having a rotatably driven gear pinion which is coaxially arranged and driven with a magnetic roller born against the template, a gear wheel rotatably arranged on the template for meshing with the gear pinion when entering the internal corner, a one-armed lever pivoted on the template and provided with an oblong hole, a loose roller carried on the free end of the lever and abutting against the gear pinion when the magnetic roller enters the internal corner of the template, a crank pin secured to the gear

wheel and engaging the oblong hole of the lever, and a spring for retracting the gear wheel into the normal position after actuation.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front view, partially in section, of a template-controlled automatic sewing device for stitching cuffs or other small parts in a continuous sequence;

FIG. 2 is a sectional top plan view on the mechanism according to the invention, taken along line II—II of FIG. 1;

FIG. 3 is a section taken along line III—III of FIG. 2 and FIG. 4 is a perspective view of the mechanism in an enlarged scale.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Clamped to a turntable 1, driven by a motor 2, are interchangeable workpiece clamping means 3 for holding the workpieces 4 by means of clamps 5. Templates 6 are secured to the bottom surface of the workpiece clamping means.

A magnetic roller 8 (FIGS. 2,4) secured to a driven shaft 9 bears upon the peripheral edge 7 of the template 6. The shaft 9 is surrounded by a solenoid 10 which is received in a supporting arm 12 carrying the sewing machine 11. The shaft 9 is driven by a motor 15 (FIG. 1) by means of bevel wheels 13, 14.

The turntable 1 is carried by a shaft 16 which is pivoted on a frame 17 provided with a jib 18, on which a swingable link arm 19 is swingably supported. The free end of the latter is connected with the supporting arm 12.

A motor 22 drives the needle bar 21 of the sewing machine 11. The needle bar 21 carries a needle 20 and is coaxially disposed with the shaft 9. Furthermore, secured to the shaft 9 is a gear pinion 23 for meshing with a gear wheel 25, which is rotatably arranged on the template 6 by means of a bolt 24.

The mechanism 26 is in driving connection with the gear wheel 25, and consists of an one-armed lever 27, which is pivoted about an eccentric bolt 28 secured to the template 6. The one-armed lever 27 carries on its free end 27' a loose roller 29 and is provided with an oblong hole 30 for engaging with a crank pin 31 secured to the gear wheel 25. Between the crank pin 31 and an extension 32 of a bolt 33 carrying the loose roller 29, is a tension spring 34.

The operation of the mechanism is as follows:

When the magnetic roller 8 enters an internal corner of the template 6, the gear pinion 23 meshes with the gear wheel 25 and the loose roller 29 abuts against the gear pinion 23. The now following rotation of the gear wheel 25 in the direction of the arrow "A" causes the movement of the lever 27 into the direction of the arrow "B" by means of the crank pin 31, at which the gear pinion 23 and thus also the magnetic roller 8 are driven out of the internal corner by means of the loose roller 29, for rolling without significant delay along the template in the direction of the arrow "C."

The clearance between the loose roller 29 and the gear pinion 23 can be eliminated by means of the eccentric bolt 28, so that the traversing motion of the lever 27 begins immediately after meshing of the gear wheels 23, 25.

What I claim is:

1. A template follower mechanism including a template having internal corners, a magnetic roller driven by a motor and bearing against said template, a rotatably driven gear pinion mounted coaxially with said roller, a gear wheel, means pivotally attaching said gear wheel to said template adjacent one of said internal corners for cooperating with said gear pinion when said roller enters said internal corners, and means in driving connection with said gear wheel for moving said roller and said gear pinion out of said internal corners into a new path after entering said corners, said means comprising an one-armed lever provided with an elongated hole and means pivotally attaching said one-armed lever on said template, a loose roller carried by the free end of said one-armed lever and abutting against said gear pinion upon its arrival in said internal corner, and a crankpin mounted in said gear wheel and engaging in said elongated hole of said one-armed lever.

2. In a sewing device with guided control of a sewing cycle, in combination, a support means, a turntable, means pivotally securing said turntable on said support means, a template having internal corners, means attaching said template below said turntable, workpiece

clamping means above said turntable, a link arm, means swingably attaching said link arm to said support means, a supporting arm pivoted on said link arm, a driven magnetic roller engaged with the peripheral edge of said template, means attaching said magnetic roller on said supporting arm, a sewing machine carried by said supporting arm and having a vertically reciprocating needle, a gear pinion coaxially mounted on said driven magnetic roller, a gear wheel, means pivotally attaching said gear wheel to said template adjacent of said internal corners for cooperating with said gear pinion when said roller enters said internal corners, an one-armed lever provided with an oblong hole and means pivotally securing said one-armed lever on said template, a loose roller carried by the free end of said one-armed lever and abutting against said gear pinion upon its arrival in said internal corner, a crankpin mounted in said gear wheel and engaging in said oblong hole of said one-armed lever, a spring urging said crankpin into a start position, and an eccentric bolt pivotally receiving said one-armed lever in order to eliminate and adjust the clearance between said loose roller and said gear pinion.

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