July 1, 1958 A. BACHER 2,841,105

SEWING MACHINES

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FIG. 1

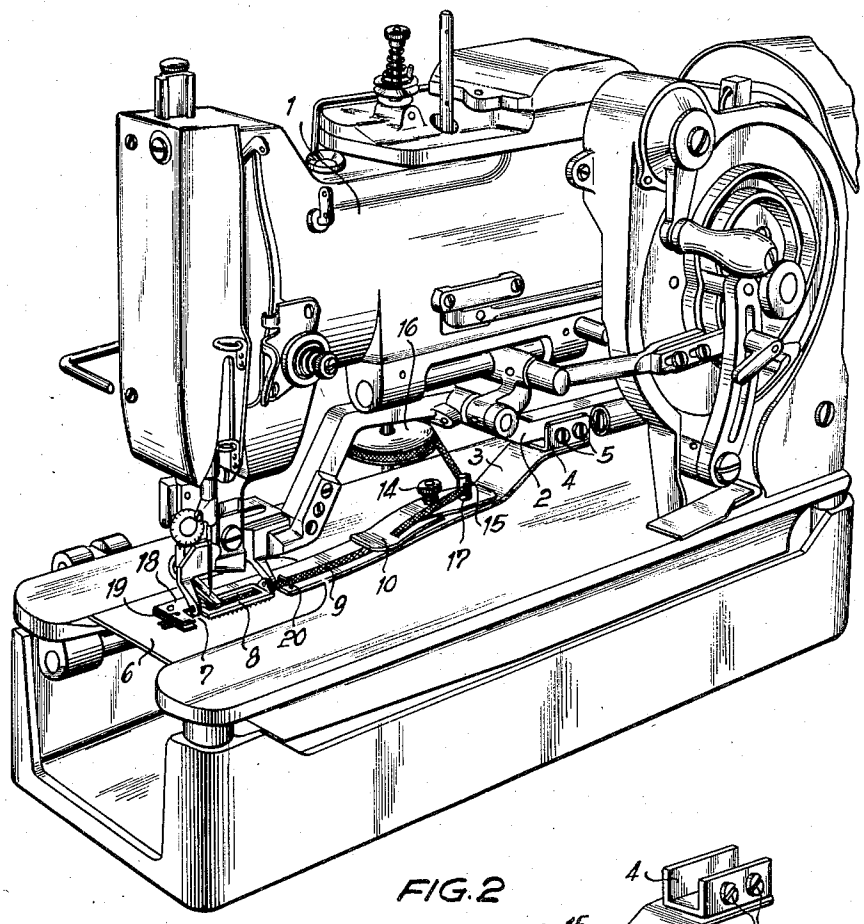
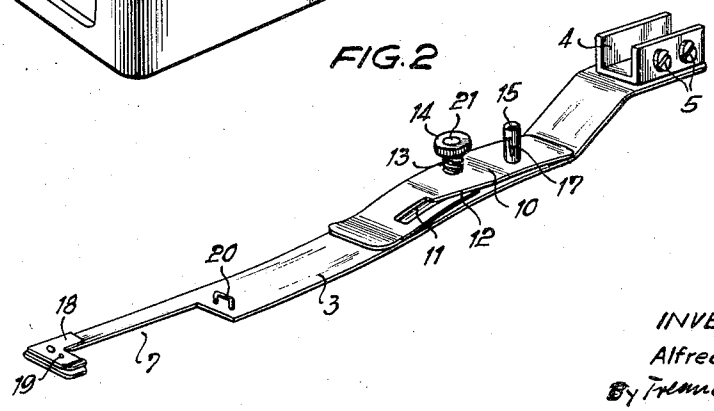


FIG. 2



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2,841,105

SEWING MACHINES

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5 Claims. (Cl. 112—77)

The invention relates to sewing machines for the production of tape-reinforced button-holes.

In order to make durable button-holes with smooth bindings it is necessary in many cases to sew a reinforcing tape either on to the lower or upper side of the material to be sewn. To this end a sewing machine may be provided with a tape guide arranged to supply reinforcing tape from the front, i. e. in the direction of the work which is inserted in the machine. Such a tape guide may comprise a spring-loaded tape holder arranged at the front end of the bed plate and a spring-loaded tape holder arranged at the back of the needle plate. However, use of a machine of this kind involves considerable wastage of tape, since the rear tape holder must be arranged comparatively far back on the needle plate to allow room for the movement of the material feeding frame. Furthermore, owing to the construction of the tape guide, it is only possible to lay the work onto the tape and therefore it is only possible to sew the tape onto the lower side of the material.

The object of the invention is to provide a sewing machine for the production of tape-reinforced button holes in which it is possible to sew the reinforcing tape to the buttonhole either on the lower or the upper side of the material with the least possible tape wastage and in a simple manner.

The invention consists in a sewing machine for the production of tape-reinforced button holes, including a presser lever and a tape guide arm, wherein the arm is fixed to the presser lever, extends from the said lever to beyond the needle, extends parallel to the needle plate in the region of the said plate, and is provided with a recess surrounding the material feeding frame.

It is thus possible either, by inserting the material between the needle plate and the tape guide arm, to sew the tape to the upper side of the material, or, by laying the work onto the tape guide arm, to sew the tape to the lower side of the material.

The reinforcing tape may be held by a curved spring plate which is provided with a recess of substantially the same width as the tape and with a slot which opens obliquely into the said recess, the said spring plate being pressed by an adjustable spring against the tape guide arm.

To facilitate feeding the tape and at the same time to prevent turning of the spring plate, a pin, which is provided with a slot extending obliquely to the longitudinal axis of the tape guide arm, may be fixed to the said arm. Further a tape holder clip may be arranged on the free end of the guide arm through which there extends a pin which serves as an abutment for the tape. Finally a tape-guiding hoop may be fixed to the guide arm between the tape holder clip and the spring plate.

Further features of the invention and details of the advantages achieved thereby will become apparent from the following description of the embodiment of the invention illustrated in the accompanying drawings.

Figure 1 is a perspective view of a sewing machine in accordance with the invention,

Figure 2 is a large scale perspective view showing the tape guide from the machine illustrated in Figure 1.

The sewing machine which is designated generally by the reference numeral 1 has a presser lever 2 to the rear part of which is fixed a tape guide arm 3 for the tape 9. One end of the arm 3 is bent up and provided with a U-shaped clamping element 4 by means of which it is fixed to the presser lever 2 by screws 5. At the other end of the guide arm 3 there is provided a recess 7 situated above the needle plate 6 and which encloses, expediently on three sides, the material feeding frame 8 which is fixed to the front end of the presser lever 2.

Arranged on the rear end of the guide arm 3 is a curved spring plate 10 which is pressed elastically against the arm 3 by means of a threaded pin 21 riveted to the arm 3 and by means of a spring 13 the pressure of which can be adjusted by a milled nut 14. The spring plate 10 is provided with a recess 11 corresponding to the width of the tape 9 and with a slot 12 which extends in an oblique direction.

A pin 15, which is riveted to the guide arm 3 in the region of the spring plate 10 and extends through a hole in the spring plate 10, is provided with a passage or slot 17 which extends obliquely to the longitudinal axis of the guide arm 3 and through which the tape 9 coming from a roll of tape 16 is guided. The pin 15 and the spring plate 10 form yielding tape holding means. Connected to the front end of the guide arm 3 is a holder clip 18 through which there extends a pin 19 which is riveted to the arm 3. A hoop 20 for guiding the tape 9 is arranged between the holder clip 18 and the spring plate 10 in the direct vicinity of the rear edge of the recess 7 in the arm 3.

The machine described above operates as follows:

The tape 9 running off from the roll 16 is first of all drawn through the slot 17 in the pin 15, held between the front bearing surface of the curved spring plate 10 and the tape guide arm 3, whilst at the same time it is guided into the recess 11 through the slit 12, and then it is drawn through the hoop 20 and is so introduced into the holder clip 18, with the material feeding frame 8 in the raised position, that the end of the tape finishes approximately flush with the front end of the guide arm 3 and the tape 9 lies smoothly. The hoop 20 and the clip 18 form clamping means that suspend a length of tape across the recess 7.

If it is desired to sew the tape 9 to the button hole on the lower side of the material, the material is laid on to the tape 9 in the guide arm 3, with the feeding frame 8 in the raised position. When the buttonholing sewing machine commences operation, the guide arm 3 is constrained to carry out the same movement as the material feeding frame 8, as the frame 8 as well as the arm 3 are both connected to the presser lever 2. Irrespective of whether the tape is disposed below or above the material, the material and the tape will both be pressed towards the needle plate 6 and be guided by the movements of the presser lever 2 below the needle so that there will be formed the stitches that surround the buttonhole. The presser lever movements are controlled by cam and cam follower action as illustrated in Fig. 1.

After the sewing operation is completed and the material feeding frame 8 has been raised, the work is withdrawn together with the tape 9 out of the recess 7. The tape 9 which is drawn out of the tape guide along with the work is cut off directly at the button hole itself without any tape being wasted, and the leading end of the tape is again inserted into the tape holder clip 18.

In order to sew the tape to the upper side of the work,

the latter is inserted between the sewing plate 6 and the guide arm 3, with the material feeding frame 8 in the raised position.

What I claim as my invention and desire to secure by Letters Patent of the United States is:

1. A tape guide, for use in connection with a sewing machine for the production of reinforced button holes and having a needle and a needle plate and a movable presser lever extending from a point above said needle plate, said tape guide comprising in combination, an elongated arm including one end portion connected to said presser lever at a point spaced from said needle plate for movement with said presser lever, and an opposite end portion extending to and being parallel with the needle plate, said arm having formed in said opposite end portion a recess surrounding the needle path, clamping means for the tape mounted on two opposite sides of said recess to suspend a length of tape across said recess for engagement by the needle, and tape holding means connected to said arm gripping said tape yieldingly at a point spaced from said clamping means, said clamping means including a hoop mounted on said arm, adjacent one side of said recess, said tape being engaged between said hoop and the top surface of the arm, and a clip connected to said arm near the other side of said recess and operable to engage said tape.

2. A tape guide, for use in connection with a sewing macine for the production of reinforced button holes and having a needle and a needle plate and a movable presser lever extending from a point above said needle plate, said tape guide comprising in combination, an elongated arm including one end portion connected to said presser lever at a point spaced from said needle plate for movement with said presser lever, and an opposite end portion extending to and being parallel with the needle plate, said arm having formed in said opposite end portion a recess surrounding the needle path, clamping means for the tape mounted on two opposite sides of said recess to suspend a length of tape across said recess for engagement by the needle, and tape holding means connected to said arm gripping said tape yieldingly at a point spaced from said clamping means, said holding means including a pin secured to said arm and

having a passage disposed at an angle to the longitudinal extension of said arm, the tape extending through said passage.

3. A tape guide, for use in connection with a sewing machine for the production of reinforced button holes and having a needle and a needle plate and a movable presser lever extending from a point above said needle plate, said tape guide comprising in combination, an elongated arm including one end portion connected to said presser lever at a point spaced from said needle plate for movement with said presser lever, and an opposite end portion extending to and being parallel with the needle plate, said arm having formed in said opposite end portion a recess surrounding the needle path, clamping means for the tape mounted on two opposite sides of said recess to suspend a length of tape across said recess for engagement by the needle, and tape holding means connected to said arm gripping said tape yieldingly at a point spaced from said clamping means, said holding means comprising a spring plate mounted atop said arm between the end portions thereof and having a recess, the tape extending into said recess and projecting between said spring plate and the top surface of said arm.

4. A tape guide, as claimed in claim 3, the recess of said spring plate extending to a lateral edge thereof for insertion into said recess of said tape.

5. A tape guide, as claimed in claim 3, together with, means adjustably reinforcing the spring action of said spring plate for adjusting the gripping pressure exerted onto the tape between the top surface of the arm and the spring plate.

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