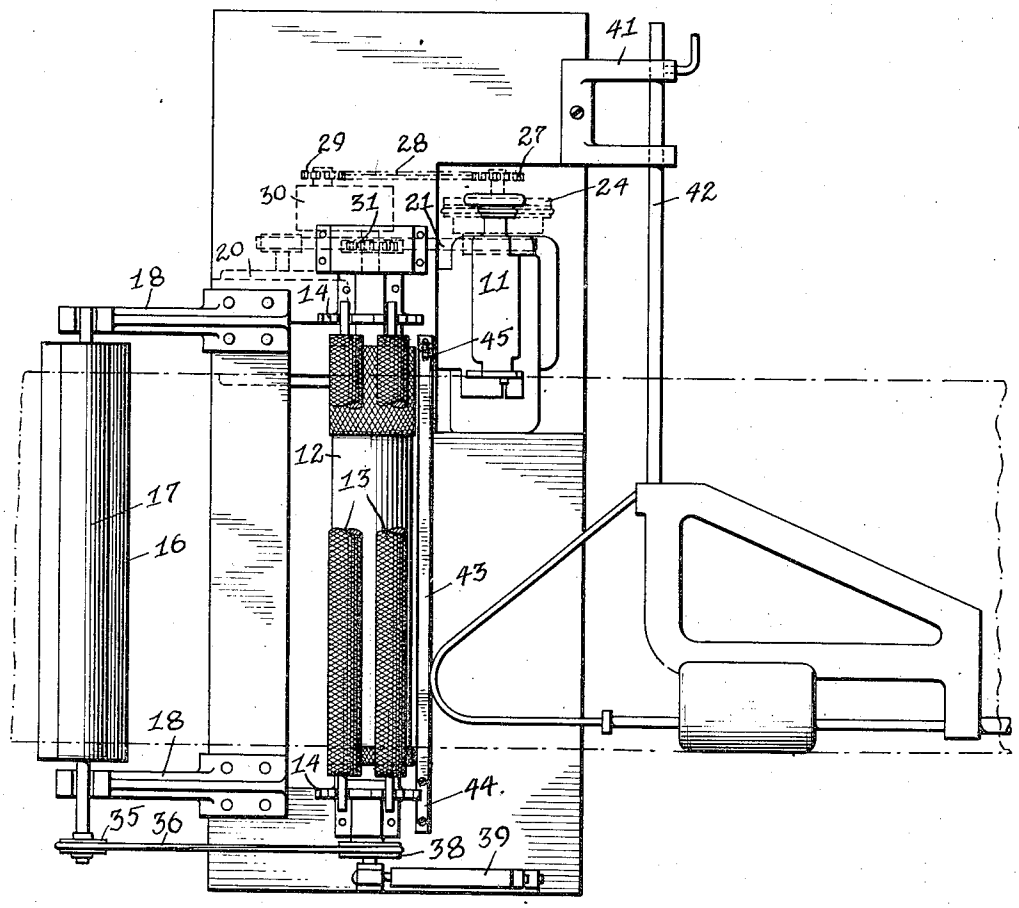
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SEWING APPARATUS

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Fig. 1.



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Fig. 2.

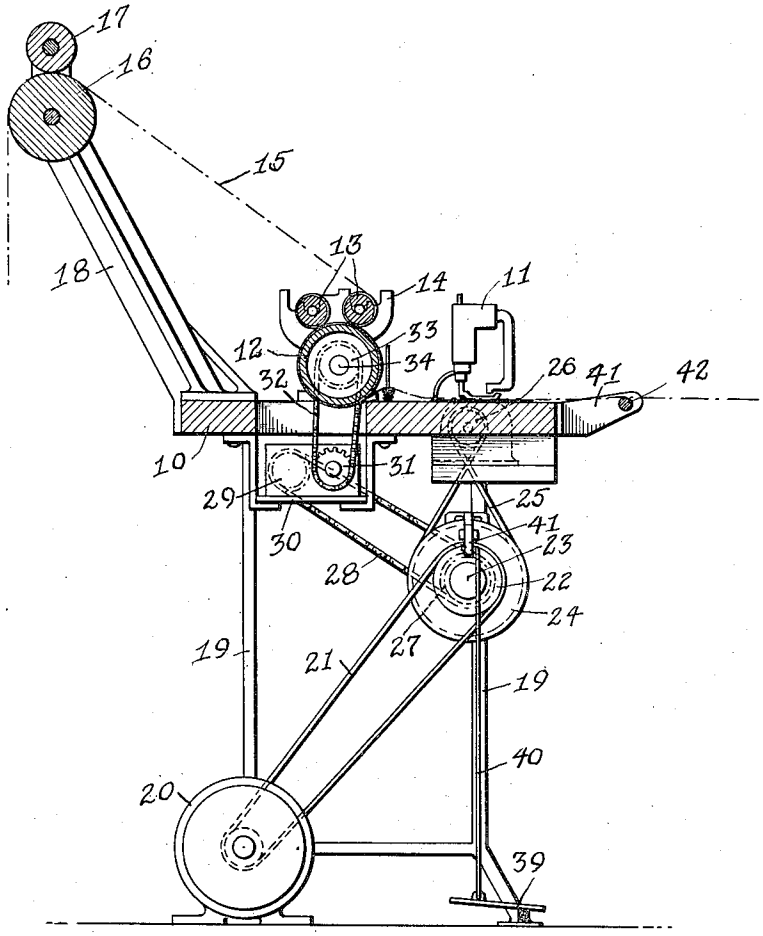
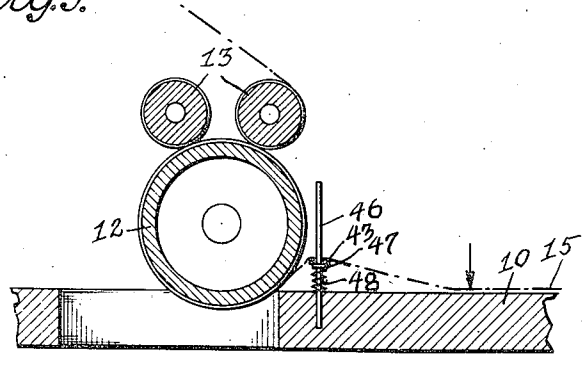


Fig. 3.



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SEWING APPARATUS

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Application September 1, 1938, Serial No. 227,950

3 Claims. (Cl. 112—214)

This invention relates to sewing devices and has particular reference to apparatus in which fabric is folded and sewed into tubes to be later cut up into bias fabric.

An object of this invention is to provide simple and efficient apparatus which will transform folded fabric into tubular form at high rates of production while producing strong and durable seams.

A further object is to reduce the complexity of the usual apparatus and enable one operator to achieve the desired results on one unit with maximum output.

Further and more specific objects, features, and advantages will more clearly appear from a consideration of the specification hereinafter when taken in connection with the accompanying drawings which form part of the specification and which illustrate a present preferred form of the invention.

The invention briefly and in general terms comprises folding a sheet of fabric and running the folded edges through a sewing machine without a feed dog and through the pull off rolls which are driven in synchronous speed with the speed of operation of the sewing machine so that the rolls pull the fabric through the apparatus and constitutes the only means for moving the fabric. In order that the seam formed by the sewing machine will not tear or rip it is found desirable to provide a tension device between the pull rolls and the sewing machine which will compensate for the continuous pull between the rollers and the sewing machine and will press against the fabric and keep it under constant tension while it is in movement between the sewing machine and the pull off rolls.

In the operation of the device therefore the sewing machine does nothing except to sew the seam and does not in any way feed the fabric. This pull is achieved by the pull off roll which exerts a steady synchronized pull on the fabric in accordance with the speed of the needle of the machine and the fabric between the two devices is kept under an even and constant predetermined tension as in this way it has been found that the fabric does not rip and tear along the seam as it is being sewn.

A present preferred form which the invention may assume is shown in the drawings of which

Fig. 1 is a plan view, with parts broken away, of the apparatus;

Fig. 2 is a side elevation of the apparatus, with parts broken away; and,

Fig. 3 is an enlarged vertical transverse section through the pull off device.

As illustrated in the drawings there is a table or platform 10 on which is mounted a sewing machine 11 and a take off or pull off roll 12. As shown in Fig. 1 the end of the pull off roll 12 adjacent the seam line of the fabric is knurled and is of larger diameter than the remainder of the roll. This permits a more firm grip to be had on the fabric at this point which is the point where absolute physical cooperation between the needle, the pull roll and the tension device must be assured to achieve the advantageous results set forth.

Resting on the top of the pull off roll 12 are a pair of pressure idler rolls 13 which rest in slots in the top of side brackets 14 mounted on the table 10. These idlers 13 produce the required pressure between the pull roll 12 and the fabric so as to pull the fabric firmly through the apparatus. The fabric 15 passes through the sewing machine which in this case operates without the usual feed dog and then is engaged by the pull off roll and then passes between rolls 16 and 17 disposed at the back of the device whereafter it drops into a suitable box or container disposed on the floor back of the device. The rolls 16 and 17 are mounted on a bracket 18 fastened to the table 10.

The platform 10 is preferably mounted on legs 19 clamped to the floor and these legs or frame members may support a motor 20 connected by belt 21 to a pulley 22 connected by a clutch (not shown) to shaft 23. Another pulley 24 on shaft 23 is connected by belt 25 with the drive gear 26 on the sewing machine 11. Another gear 27 on the back of shaft 23 is connected by chain 28 to a gear 29 disposed in a gear reduction box 30 supported beneath the table 10. A gear 31 extending from this reduction box connects by chain 32 to a gear 33 on the shaft 34 of the pull off roll 12. A pulley 35 on the end of the roll 16 connects with a belt 36 leading to a pulley 38 on the other end of shaft 34 of the pull off roll 12. A pedal 39 on the floor is connected by a rod 40 with the above mentioned clutch mechanism so that the power of the motor may be connected to the apparatus by depression of the operator's foot.

A bracket 41 supports a fabric guide rod 42 which supports any suitable elements to guide the fabric properly to the needle point. Disposed between the pull off roll 12 and the sewing machine 11 is a flat spring bar 43 which is clamped at one end 44 to the table 10 and is free at the

other end near the line of sewing to press up against the fabric which rides over it. The free end of this spring bar is provided with a slot 45 through which extends a rod 46 fastened at its bottom to the table 10. A spring 48 is wrapped around the rod 46 and extends between the table 10 and bears up against a cap 47 disposed beneath the end of the spring bar 43 thus tending to press the bar 43 upward at all times with a specified degree of pressure and thus keeping the fabric under a specified tension.

When the sewing machine operates at a definite speed producing a certain number of stitches per inch of fabric it is only necessary to place in the gear box the gear 31 of the right number of teeth to properly synchronize the speed of the pull off roll with the speed of operation of the sewing machine. If the number of stitches per inch are to be changed then it merely requires that the size of the gear 31 be made to conform. The sewing machine is without the usual feed dog which feeds the material forward after each stitch. In this case the pull off roll is the only device for moving the fabric and the dog which ordinarily used to feed the fabric is used and constructed in this machine merely to clamp the fabric momentarily while the actual stitch is being made.

In the operation of the device therefore the operator merely leads the fabric over the proper guide elements and introduces it beneath the needle point sewing a few feet by hand until it has been led forward over the tensioning device and can be gripped between the pull off roll 12 and the idlers 13. Thereafter the material is automatically fed and pulled through the device and all the operator has to do is to see that the two edges of the folded fabric are fed properly beneath the needle. The fabric after passing the roll 12 extends up between the rolls 16 and 17 and then drops by gravity into a box where it is folded up natural in loose free folds to be taken to a machine for cutting the tubular material on the bias.

While the invention has been described in detail and with respect to a present preferred form thereof it is not to be limited to such details and forms since many changes and modifications may be made in the invention without departing from the spirit and scope of the invention in its broadest aspects. Hence it is desired to cover any and all forms and modifications of the invention which may come within the language or scope of any one or more of the appended claims.

What we claim, is:

1. In combination a sewing machine without a feed dog, a pull off roll engaging fabric after it has passed through the sewing machine, the diameter of the roll along the sewing line being larger than the diameter of the remainder of the roll, and a spring plate with a free end bearing against the sewing edge of the fabric and disposed between the sewing machine and the pull off roll to tension the fabric.

2. In combination a sewing machine without a feed dog, a pull off roll engaging fabric after it has passed through the sewing machine, the diameter of the roll along the sewing line being larger than the diameter of the remainder of the roll, a spring plate with a free end bearing against the sewed edge of the fabric and disposed between the sewing machine and the pull off roll to tension the fabric between the sewing machine and the pull off roll and means to synchronize the speeds of the pull off roll and the sewing machine.

3. An apparatus for forming tubular material out of folded fabric, which comprises a sewing machine without a feed dog adapted to join the folded edges of the fabric, a pull-off device separate from the sewing machine and engaging the fabric after it has passed through the sewing machine along the seam line, said pull-off device being the only means for advancing the fabric through the apparatus, a spring plate having a free end bearing against the sewing edge of the fabric and disposed between the sewing machine and the pull-off device to tension the fabric, and means for synchronizing the speed of the sewing machine and the pull-off device.

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