May 12, 1959 F. I. PERKINS 2,885,979

MEANS FOR SECURING A BAND LOOP TO AN ARTICLE

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Fig. 1

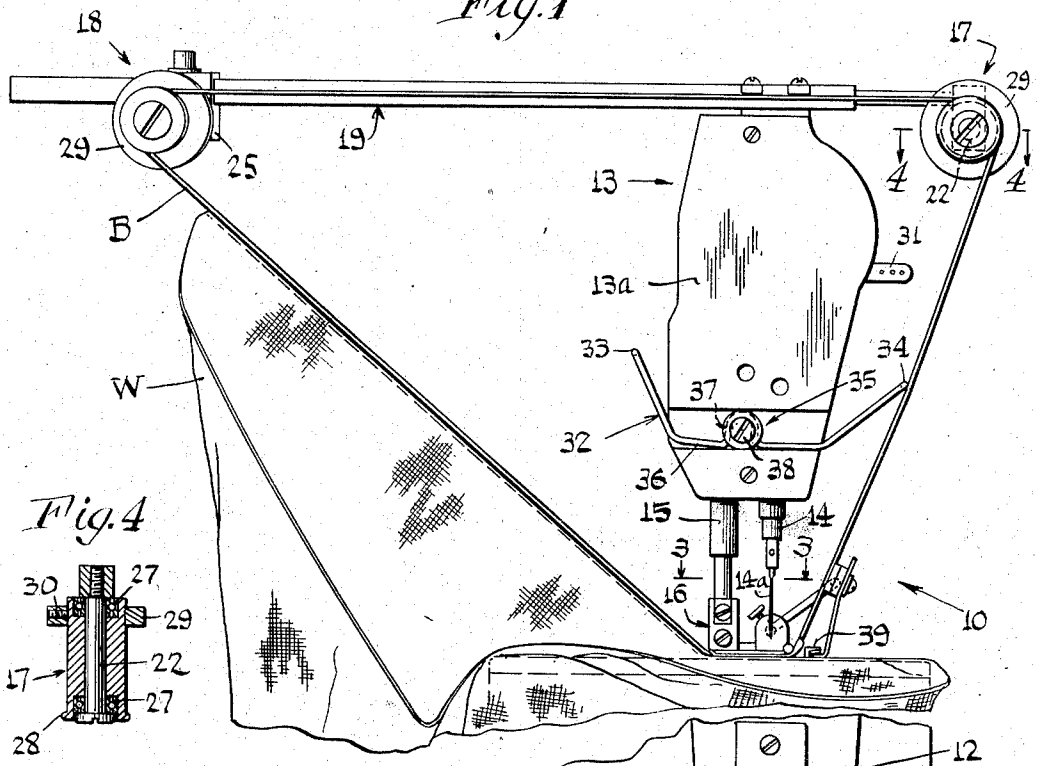


Fig. 4

Fig. 2

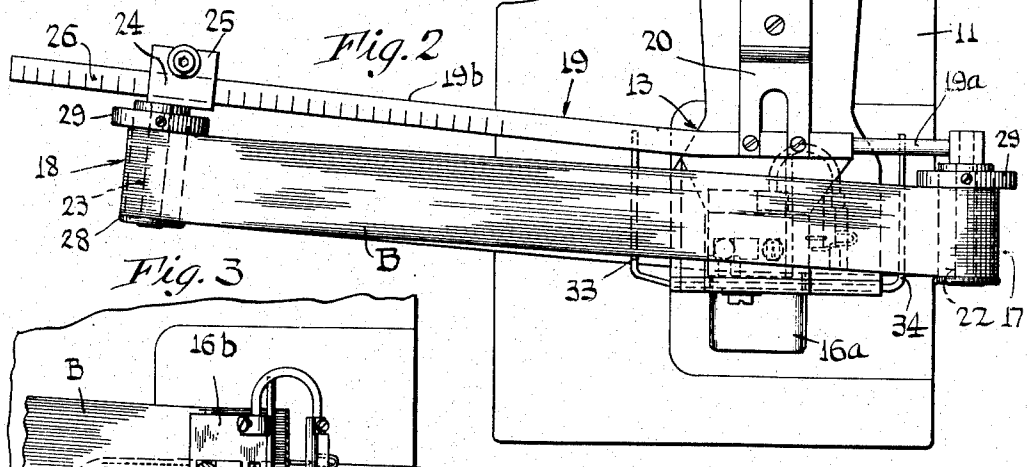
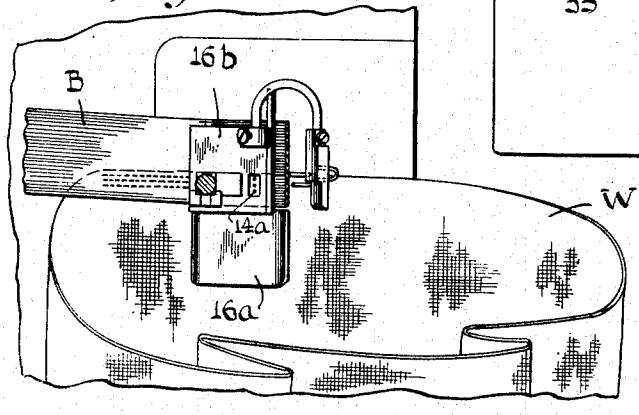


Fig. 3



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MEANS FOR SECURING A BAND LOOP TO AN ARTICLE

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5 Claims. (Cl. 112—2)

This invention relates to a means for facilitating the securing of an annular elastic band of predetermined size to the edge of a fabric, preferably a tubular fabric.

Heretofore, in securing bands, such as waistbands, to tubular fabrics, it has been the practice to sew a continuous length of elastic to the fabric and to prestretch it by hand as it is sewn and to join the ends of the elastic after it has been secured to the fabric. Since the accuracy of the size depended upon the skill of the individual operator, it resulted in waistbands of different sizes.

In an effort to overcome this difficulty, attempts were made to preform the bands to the exact size and secure the same to the tubular garments, but this proved ineffective since it was difficult with existing equipment to manipulate and prestretch the loop as it was secured to the tubular garment and produced undue delays which rendered it unacceptable to the operators who usually work on piecework.

The present invention overcomes these difficulties by providing a device for supporting the loop of elastic band material in a predetermined, prestretched condition and in such a manner and position as to facilitate its securement to the garment.

This is accomplished by providing supporting elements, preferably in the form of freely rotatable rollers, in spaced relation above the bed of the machine for securing the band to the fabric so that together with the presser foot at the securing station they readily support the loop in predetermined expanded and extended relation.

A feature of the invention resides in the versatility of the device whereby it can be readily adjusted to accommodate loops of various sizes and also elastic bands of various widths.

Another feature of the invention resides in the fact that the supporting members of the device have free ends over which the band can be readily slipped on by the operator, thus facilitating the handling of the band in locating it in extended position. Furthermore, the expanded loop being disposed entirely above the bed of the machine enables the operator to move the tubular fabric into proper stitching position with respect to the band and have better visibility of the operation as it is secured to the band. If desired, guard means can be provided within the loop to prevent the loop, especially small loops, from contacting the machine as the work is fed during the securing operation.

Another feature of the invention resides in the fact that the bar for the support members is provided with an inclined or offset portion such that the band will be maintained against a rear flange of the roller to hold it in position on the roller and also accurately guide the band and prevent it from pulling off as the tubular member is secured thereto. If desired, a trimmer may be provided for trimming the edge of the tubular member as it passes into securing position.

The device of the present invention can be built into the sewing machine as an integral part thereof or can

be formed as an attachment to be secured to existing sewing machines.

Other features and advantages of the invention will be apparent from the specification and claims when considered in connection with the drawings in which:

Figure 1 shows an end view of the machine with the expanded loop in position and the tubular fabric partially secured thereto.

Fig. 2 is a top view of the device with the loop in position.

Fig. 3 is a detailed view taken along line 3—3 of Fig. 1.

Fig. 4 is a detailed sectional view taken along line 4—4 of Fig. 1.

While it is to be appreciated that the fabric may be secured to the extended band by being adhered or bonded thereto, in the preferred form of the invention herein illustrated the securing of the band to the fabric is accomplished by a sewing machine **10** having the usual bed plate **11**, arm **12** and sewing head **13** positioned at the end of the arm. The sewing head is provided with the usual securing or sewing station having a needle bar **14** having sewing needles **14***a* therein and a presser foot **16** carried for the usual lifting and lowering movement by a presser foot support **15**.

In carrying out the invention, band-supporting means are provided in spaced relation above the base. These supporting means may be formed as a part of the machine but in the herein illustrated form of the invention they are formed as an attachment and comprise freely rotatable rollers **17, 18**. The rollers are preferably mounted on a transversely extending elongate bar **19** which is secured to the arm **12** by a bracket **20** fastened to the arm. The bracket carries transverse bar **19** at one end thereof so as to be located over the sewing head to project forwardly and rearwardly of the sewing head. As shown, the rollers **17, 18** project laterally from the bar in the direction of the end face **13***a* of the head and are mounted for rotation on shafts **22, 23** carried by the bar.

While either or both of the rollers may be adjustably mounted, in the illustrated form of the invention the shaft **22** for the front roller **17** is fixedly carried by the bar on an extension post **19***a* of the bar while the shaft **23** for the rear roller **18** is mounted on a carrier **24** adapted to be clamped by clamp **25** in adjusted position along the rear portion of the bar so as to facilitate the adjustment of the loop for various sizes of waistbands B. To aid in this adjustment the band is provided with indicia **26** whereby the rear roller can be set to the required size.

Both of the rollers are freely rotatable on their shafts by suitable antifriction bearings **27** so as not to retard movement of the band during the sewing operation and have at their free end an annular rib **28** which does not interfere with the placing of the band in position but does act to prevent the band from slipping off the front ends and are provided at the rear end with a flange **29**. In the preferred form of the invention, the flange is adjustable along the roller and is locked in adjusted position by a set screw **30** to permit variations in the width of the band which can be accommodated between the rib and flange.

As shown in Figs. 1 and 2, the front roller **17** carried by the transverse bar is located forwardly of and vertically above the sewing station so that the band feeding from the front roller to the sewing station will be properly located under the presser foot so as to overlie the edge of the tubular garment inserted under the presser foot. It will be noted in Fig. 3 that the presser foot has extensions **16***a*, **16***b* adapted to overlie both the garment W and the band B for a substantial extent to accurately control the sewing operation.

In order to maintain the edge of the band against the flange **29** of the front roller so as to properly locate the

band and prevent the band from creeping forwardly and coming off the free end of the roller, particularly with the weight of the garment attached thereto, the present invention provides the rear portion **19***b* of the bar with an offset which, as shown in Fig. 2, extends in the direction away from the flange of the roller. This causes the axis of the rear roller to be displaced and inclined slightly away from the axis of the front roller as shown in Fig. 2 so that the top pass of the band extending between the rollers is inclined slightly to the axis of the front roller, thus causing it to hug the flange.

It will be appreciated that, if the waistband is extremely small and the rollers are adjusted accordingly, there will be danger of the supported loop contacting with the head of the sewing machine and/or the usual take-up **31** of the sewing machine. Accordingly, a guard **32** is provided comprising a substantially U-shaped member having the legs of the U **33, 34** positioned in front and back of the head and extending along the head from the end thereof and having means **35** in the bow **36** to secure to the end face. This means is illustrated as a loop **37** in the bow adapted to be positioned under the head of a fastening screw **38.**

If desired, the usual trimmer mechanism **39,** such as shown in Weis Patent No. 1,155,533, may be provided in advance of the sewing station to trim the edge of the tubular fabric as it passes into the sewing station.

In securing a band to a tubular fabric or garment the operator first adjusts the position of the supporting rollers to the desired size of the loop. The loop is inserted under the raised presser foot, then stretched and slipped over the free ends of the rollers into supported position with the loop support arranged as herein indicated. This can be done with a minimum of effort and time on the part of the operator. The loop will hug the presser foot because of the elasticity of the material. The edge of the garment then is inserted under the loop and as soon as it is in position, the presser foot is lowered and the sewing operation can begin. Due to the positioning of the loop above the bed in expanded relation, the secured-together fabric will move upwardly, as shown in Fig. 1, without interfering with the visibility of the operator who, it will be apparent, can watch the sewing operation until the fabric has moved around to a position beyond the front roller. Thereafter, it is unnecessary to watch the operation since the fabric between the presser foot and the fabric-secured portion of the loop will take the normal position over the band due to the stretch in the band.

It will be seen, therefore, that the present invention greatly facilitates the handling of the band and the sewing of the same to a tubular fabric or garment.

Variations and modifications may be made within the scope of the claims and portions of the improvements may be used without others.

I claim:

1. In a device for attaching a band of elastic material to a tubular article, the combination with a sewing machine having a bed plate, an overhanging arm and head portion carried by the arm, said head having stitching means and a presser foot, of an attachment comprising a transverse bar mounted on the arm adjacent the head and projecting to the front and back thereof and extending substantially parallel to the bed plate, rollers mounted on said bar and spaced therealong for supporting the band of predetermined size in an annular loop extending thereover and under said presser foot and stitching means to be secured to said tubular article and for supporting the secured-together band and article in an annular loop, said rollers being mounted for adjustment relative to each other along said bar to accommodate loops of various sizes.

2. In a device for attaching a band of elastic material to a tubular article, the combination with a sewing machine having a bed plate, an overhanging arm and head portion carried by the arm, said head having stitching means and a presser foot, of an attachment comprising a transverse bar mounted on the arm adjacent the head and projecting to the front and back thereof and extending substantially parallel to the bed plate, rollers mounted on said bar and spaced therealong for supporting the band of predetermined size in an annular loop extending theerover and under said presser foot and stitching means to be secured to said tubular article and for supporting the secured-together band and article in an annular loop, each of said rollers being mounted at one end to said bar to project therefrom with the axis of the roller substantially parallel to the bed plate and with the other end of the roller free and unobstructed to facilitate the positioning of said band thereon.

3. The invention as defined in claim 2 wherein each roller is provided on the end thereof adjacent the bar with an adjustable flange whereby said rollers can accommodate bands of varying widths.

4. The invention as defined in claim 2 wherein each roller has a flange thereon adjacent the bar and wherein the transverse bar in back of the arm is deflected rearwardly away from the head whereby the roller carried thereby causes the band to be positioned against the flange on the roller carried by the bar in front of the arm.

5. The invention as defined in claim 2 wherein said head is provided with a projecting thread take-up and wherein a guide means is carried by the head for engaging the band supported by the rollers and preventing contact of the band by the take-up.

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