Nov. 19, 1968 P. L. LE ROUX ET AL 3,411,160

SECURING MEANS

Filed Oct. 22, 1965 3 Sheets-Sheet 1

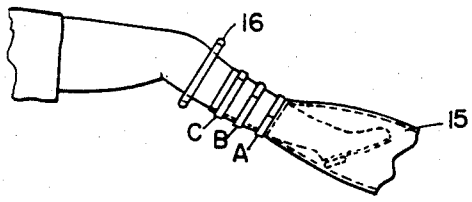


FIG. 2

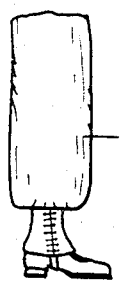


FIG. 1

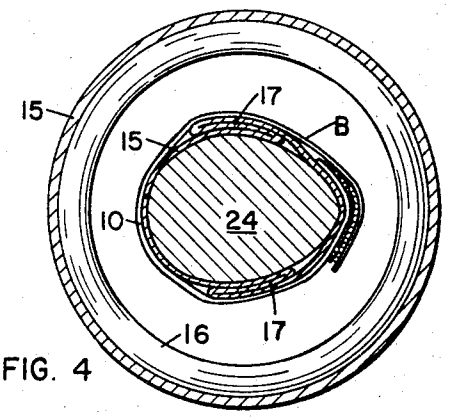


FIG. 4

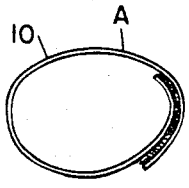


FIG. 9

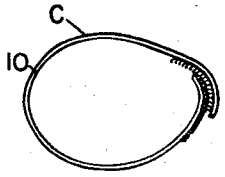


FIG. 10

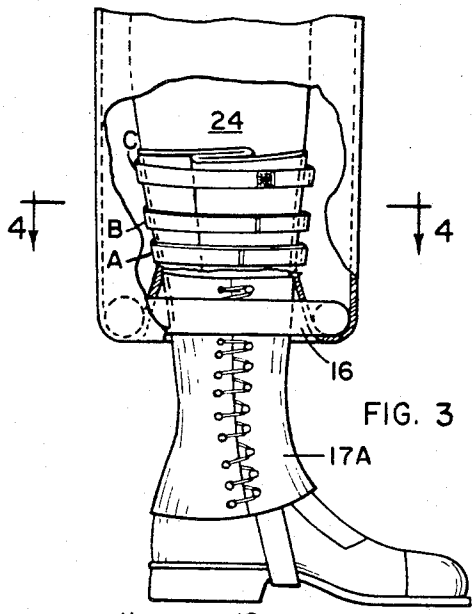


FIG. 3

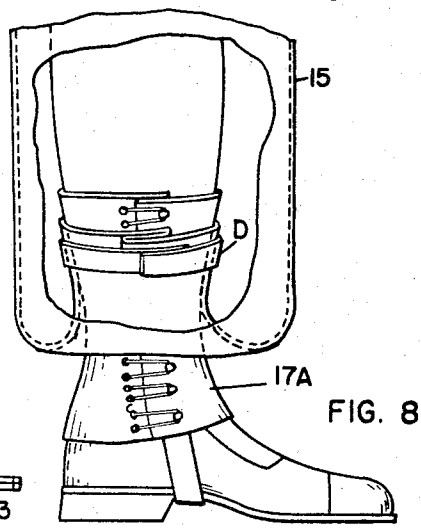


FIG. 8

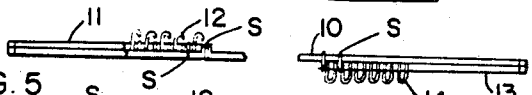


FIG. 5

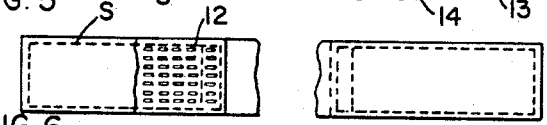


FIG. 6

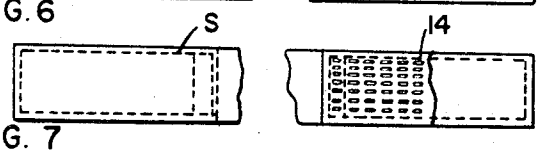


FIG. 7

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Nov. 19, 1968 P. L. LE ROUX ET AL 3,411,160

SECURING MEANS

Filed Oct. 22, 1965 3 Sheets-Sheet 2

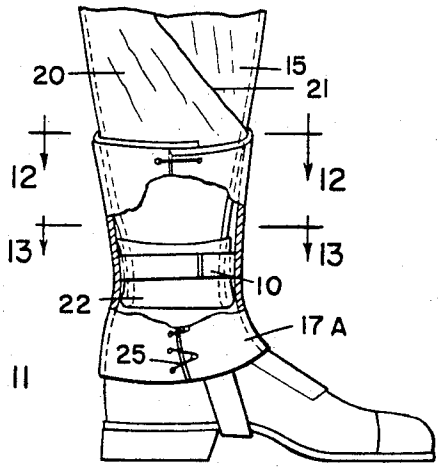


FIG. 11

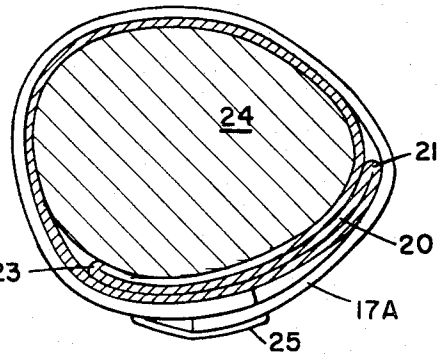


FIG. 12

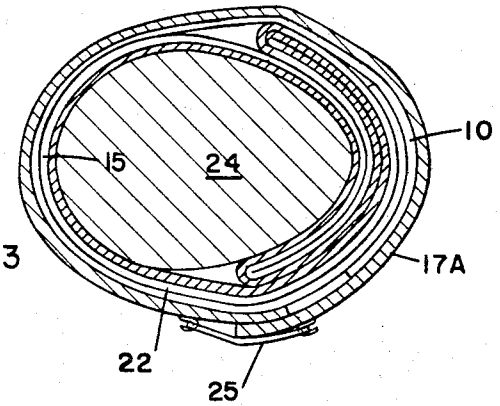


FIG. 13

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Nov. 19, 1968 P. L. LE ROUX ET AL 3,411,160

SECURING MEANS

Filed Oct. 22, 1965 3 Sheets-Sheet 3

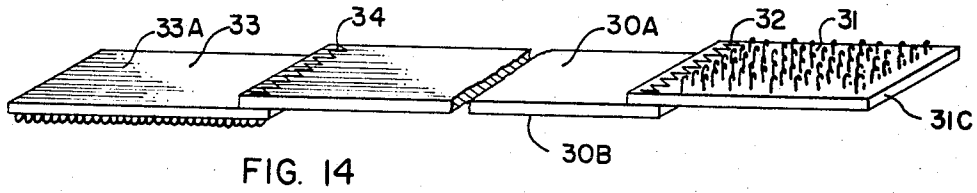


FIG. 14

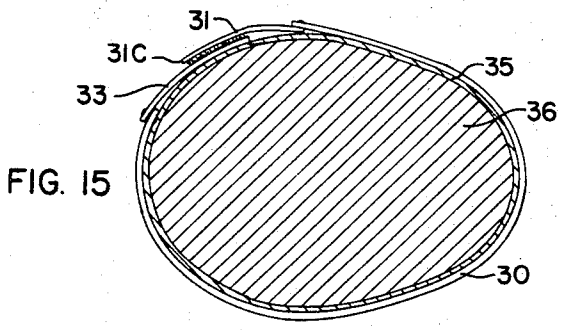


FIG. 15

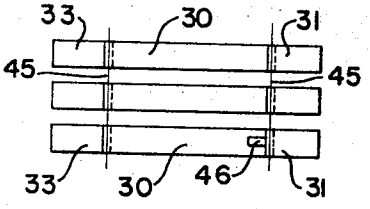


FIG. 21

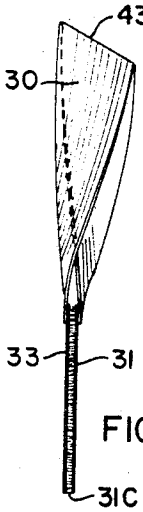


FIG. 18

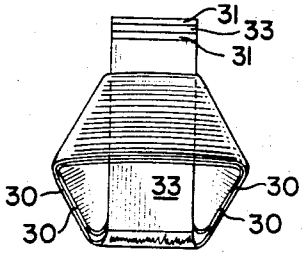


FIG. 19

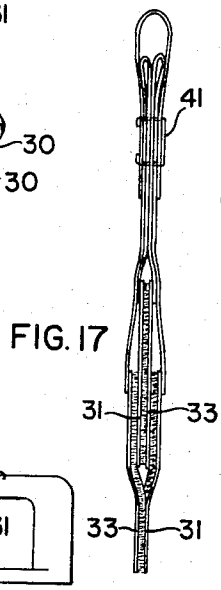


FIG. 17

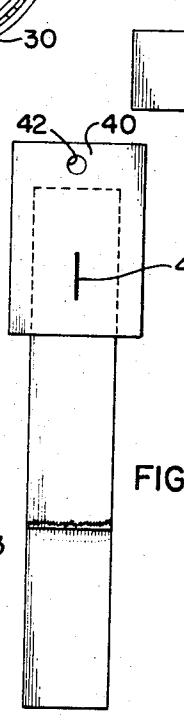


FIG. 16A

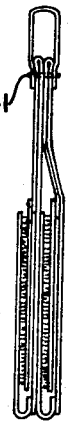


FIG. 17A

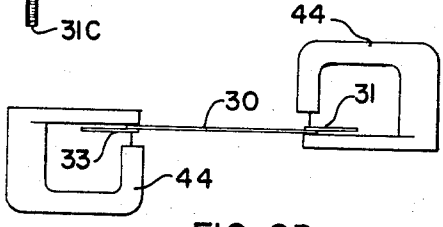


FIG. 20

FIG. 16

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United States Patent Office 3,411,160 Patented Nov. 19, 1968

3,411,160

SECURING MEANS

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Continuation-in-part of application Ser. No. 381,717, July 10, 1964. This application Oct. 22, 1965, Ser. No. 502,255

1 Claim. (Cl. 2—232)

The present invention is a continuation-in-part of prior application Ser. No. 381,717, filed July 10, 1964, now abandoned, and relates to wearing of military trousers and more particularly to securing the free end of the trousers legs to the lower portion of the legs of the wearer to obtain a neat and uniform tucked appearance and particularly relates to means for obtaining this uniform neat appearance without discomfort to the wearer.

Heretofore it has been customary in military parades to obtain a uniform appearance of the lower portions of the trousers legs adjacent the tops of the leggings or boots. To apply leggings in the usual fashion over the trousers, the bottoms of the trousers have been folded up to shorten the effective length and a single pleat formed on one side of the leg, usually the outside of the leg and the pleat was retained in position by one hand while the legging was applied with the other hand. It would take over five minutes, even for experienced troops to apply a pair of leggings.

Even more time was required to produce a bloused effect in trousers and individual troops have used various means including tin cans to obtain a uniform circular bloused appearance.

The free ends of the trousers legs have been held in place by extending into the top of the boot or the legging and in some cases the trousers legs have been secured to the shin bone portion of the wearer's legs by means of non-elastic cords called "clothes stops" in the Navy and such pieces of cord were adjusted to make sure that the trousers legs would stay in position. To avoid embarrassment from any possibility of the trousers being pulled loose, the individual troops made these non-elastic stops very tight which unfortunately resulted in interference with circulation of the blood below the stops, particularly after the troops had marched an appreciable distance. Also, these non-elastic stops produced discomfort in the form of numbness to the legs.

An object of the present invention is to provide means and a method to obtain a neat trousers appearance in the usual method of wearing leggings or boots as well as in the ornamental wearing of leggings or boots to produce a bloused effect in each trousers legs.

Another object of the present invention is to provide an elastic band to take the place of the tape or pieces of cord to obtain the desired blousing effect.

Another object is to provide a method of blousing trousers to obtain a uniform appearance for the entire group or company without discomfort to any of the individuals and without excessive period of training and without requiring extended periods of preparation.

A further object is to provide an elastic band of the proper characteristics to obtain the desired tension and in which the elastic band will be of adjustable length to fit practically all troops in all arms of the services.

A still further object of the invention is to provide an elastic band having cooperating securing means on the free end thereof for adjustable securement over portions of garments to retain the garments in desired condition,

Other and further objects will be apparent as the description proceeds and upon reference to the accompanying drawings wherein:

FIG. 1 shows the bloused trousers resulting from the present invention.

FIG. 2 illustrates how the trousers are applied in an inside-out condition with a blousing grommet shown adjacent the shin bone and with adjustable elastic web bands of the present invention retaining the turned up portion of the free ends or bottoms of the trousers.

FIG. 3 illustrates on an enlarged scale, with part broken away, the position of the grommet with relation to the leggings and the positions of the elastic web bands which retain the trousers bottom in pleated condition against the calf portion of the wearer's leg.

FIG. 4 is a section taken on line 4—4 of FIG. 3 showing the pleating of both sides of the trouser bottom and showing the center elastic web band in an intermediate adjusted condition.

FIGS. 5, 6 and 7 show fragmentary portions of the elastic web band with the Velcro hook portion on one end at one side and the Velcro loop portion on the other end at the other side in plan view and in opposite side elevations, respectively.

FIG. 8 illustrates another way of using the elastic web bands of the present invention without the grommet and showing the bottom elastic band holding the trousers in pleated condition surrounding the upper edge of the leggings and maintained in overlapping relation.

FIG. 9 illustrates the adjustment of the elastic web band where the circumference of the leg is small so the band ends overlap a greater distance than the length of the Velcro web portions that secure the ends together.

FIG. 10 illustrates the elastic web band where the ends of the band overlap a less length than the length of the Velcro web portions.

FIG. 11 shows the invention applied to trousers leg to retain a single pleat in a trousers leg to retain the pleat and thereby assist in obtaining a uniform neat appearance in the usual way of wearing a leg covering such as leggings or boots over the trousers.

FIGS. 12 and 13 are enlarged sections taken on line 12—12 and 13—13, respectively, of FIG. 11.

FIG. 14 is a perspective of a modification of the elastic band with extensions of the elastic made of the hook and loop fastening material sold under the trademark Velcro with the elastic connected to the Velcro by zigzag stitching of substantial width and of very short length in the direction of stitch formation whereby the Velcro is securely bound to the end of the elastic producing a strut-like section with the elastic by the interaction of the abutting portions of the elastic and the Velcro with the closely positioned short but wide zigzag stitching.

FIG. 15 shows the preferred arrangement of the strip of loop Velcro facing the inside of the ring formed by the elastic and the Velcro, taking advantage of the natural curvature of the looped Velcro to curve toward the smooth surface and the natural tendency of the hooked Velcro to curve toward the hooks.

FIGS. 16 and 16A are plan views of two forms of packages of a pair of bands made according to the present invention using Velcro to secure the bands together at the ends.

FIGS. 17 and 17A are side elevations of the packages of FIGS. 16 and 16A respectively showing the hook Velcro engaging the loop Velcro with FIG. 17A showing the Velcro connected in the way it is used.

FIG. 18 is an edge elevation of the band with the Velcro strips in cooperative relation forming a conical recess in the bight portion preliminary to packaging a pair of bands without any additional package structure.

FIG. 19 shows a package of a pair of bands with the free ends of the Velcro received within the conical recess of the inner band in the completed package.

FIG. 20 illustrates a plan view of a pair of identical sewing machines arranged to produce the bands by a single operator using an independent foot control for each machine.

FIG. 21 shows a ladder assembly of bands produced by the sewing machines of FIG. 20 permitting packaging in a large roll or in an accordian pleated arrangement.

Briefly, the invention provides a band of approximately 11½ to 13 inches in length and 1 inch in width with a major portion being elastic web having an initial stress upon being tensed of 1 to 2 pounds with a hooked portion of Velcro web material on one end of the elastic at one side and a loop portion of Velcro web material on the other end of the elastic at the other side and such band is adapted to hold a garment such as the bottom portion of the trousers in turned up bloused condition smoothly against the calf portion of the leg to obtain a desired bloused condition of the trousers. For one use an annular ring or grommet of a size to engage the inner periphery of the bottom portions of the trousers is positioned in the bottom of the bloused portion of the turned up trousers to maintain a smooth bottom bloused edge. The weight of the grommet also helps achieve the blousing effect. Two or three bands with a major portion of elastic may be used and each is adjusted to retain the trousers in position with sufficient force to prevent displacement while avoiding discomfort of the wearer. The Velcro web material is that described in U.S. Patents 3,086,529; 3,009,235; and 2,717,437.

Referring more particularly to the drawings, a strip of elastic **10** of approximately 1 inch in width made of a number of lengthwise extending rubber bands woven into a fabric with textiles in a conventional manner and having an initial tension of approximately one or two pounds in a one inch width is cut to a length of approximately 13 inches to extend completely around the calf portion of the leg and overlap from one to four inches. A strip **11** of a commercially available product Velcro having hooked portions **12** thereon is sewed onto one surface of the elastic **10** by conventional sewing machine stitches S around the periphery with preferably two lines of stitching adjacent the inner end of the hooked portion **11**. A looped portion of Velcro **13** shown as substantially the same dimensions as the hooked portion of Velcro **11** and having loops **14** is sewed onto the opposite surface of the elastic band **10** adjacent the other end with stitching S extending around the periphery and preferably two lines of stitches on the inner end.

A soldier, seaman, marine or other person using the invention for one use to obtain a neat appearance for parades and ceremonies first applies an annular grommet **16** over the leg to a location adjacent the knee and then turns the bottom or free end of the leg portion **15** of the trousers inside out as shown in FIGURE 2 and applies the free end of the inside out trousers leg portion **15** over the calf of his leg. The trousers leg portion **15** is pleated by the wearer to make a triple thickness pleat **17** at each side of the leg so the trousers leg portion snugly engages the leg as shown. Thereafter one or more of the elastic bands A, B, or C is applied around each leg with the midportion of each band in contact with the back of the leg and the free ends of the band portions having the Velcro overlapping the proper degree to obtain the desired tension in the elastic band and the Velcro pressed into retaining contact. The elastic band A is over a portion of the leg of smaller circumference than the elastic band B so the extent of overlap of the Velcro webs **11** and **13** is greater for band A than it is for bands B or C so the desired tension can be obtained in each band without any one band being excessively tight.

After the elastic bands A, B and C are properly adjusted, the grommet is moved to below the band A and the unattached portion of the trousers leg **15** is turned right side out bringing the waist portion of the trousers into wearing position and the trousers are held in place by the usual belt resulting in the neat appearance shown in FIG. 1.

FIG. 8 illustrates how the blousing effect of the trousers leg **15** can be accomplished without using the grommet, and paratroopers, marines, foot soldiers, etc. wear their leggings in this manner when wearing paratrooper type boots. The legging **17** is worn in the usual manner but the single band D is applied to the inside out portion of the trousers slightly below the upper edge of the leggings or adjacent the top of the paratrooper type boots and is adjusted to give the proper tension in the overlapping portion **15** of the trousers leg and the legging **17**. When the grommet **16** is not used the band D being applied over the upper edge portion of the legging assures that flesh will not be visible to mar the neat appearance of the marching troops.

Upon reference to FIGS. 11 to 13, a trousers leg portion or pant leg **15** is pleated with a single pleat **20** which begins at the back of the leg adjacent the crotch with a first or exposed pleat crease **21** extending to the front of the leg on the shinbone adjacent the top of the legging **17A**. This arrangement is obtained for the right leg by first turning up the bottom of the trousers leg providing the turned up portion **22**, pulling the trousers leg to the rear with the right hand and forming the pleat **20** using the left hand to form the second or hidden pleat crease **23** and then carefully forming the pleat so the trousers leg portion **15** snugly engages the leg **24** and working toward the foot end of the folded up trousers leg until the fold line **21** lies directly at the front of the leg on the shinbone at the location of the top of the legging. The flexible elastic band **10** with the cooperating strips of Velcro **11** and **13** at opposite ends on opposite surfaces is then applied with the proper degree of tension over the turned up pleated portion **22** maintaining the pleat in place. The legging **17A** is secured in place by the usual lacings **25** whereby the leggings and the trousers are kept in proper relation permitting the troops to get ready for service in a minimum of time.

In FIGS. 14 and 15 a modification of the band of the present invention includes a strip of elastic **30** shown as approximately seven inches long, which is of substantially less length than the portion of the leg to be encircled when the elastic is under the desired tension. A strip of hook Velcro **31** is attached at one end to one end of the elastic **30** with the hooks extending outwardly away from one surface of the elastic strip with the strip of hook Velcro overlapping the one end of the elastic and having its smooth surface in contact with the one surface **30A** of the elastic strip. Zigzag stitching **32** secures the narrow sections of the overlapping ends of the hook Velcro and the elastic in substantially non-stretchable condition in the overlapping portions with the stitches of the zigzag stitching being closely positioned and having a short length in the direction of stitch formation while the zigzag stitching is of appreciable width preferably covering the narrow sections of the said one end of the strip of hook Velcro and the said one end of the elastic band with the stitches being closely positioned to produce a strut-like effect across the width of the adjacent one ends of the elastic and hook Velcro whereby the stitching transfers the stress of the elastic band to the hook Velcro without objectionable displacement of the position of the stitch holes in the elastic and hook Velcro receiving the thread of the zigzag stitching.

The stitching thereby permanently secures the elastic and hook Velcro together.

A cooperating strip **33** of loop Velcro has one end overlapping the other end of the elastic strip with the loops extending away from the other surface **30B** of the elastic band with the smooth surface of the Velcro in contact with the surface **30B** of the elastic band. Zigzag stitching **34** with its closely positioned stitches secures the narrow sections of the overlapping portions of the elastic

band and the loop Velcro together in substantially non-stretchable condition in the overlap whereby the stitching **34** transfers the stress of the elastic band to the other end of the loop Velcro without objectionable displacement of the position of the adjacent stitch holes in the elastic and loop Velcro receiving the threads of the zigzag stitching **34** so that the stitching **34** remains permanently effective producing a strut-like effect by the interaction of the overlapping portions of the strip of elastic **30** and of the loop Velcro **33** with the short closely positioned zigzag stitching which is wide in the longitudinal direction of the elastic band.

It has been found that the Velcro has a limited stretchability and when the Velcro is under stress, the loop portion of the Velcro tends to curve to provide a concave surface on the smooth side, whereas the hook Velcro when under stress appears to produce a convex surface on its smooth side.

This feature is advantageously employed as shown in FIG. 15 where the smooth side **33A** of the loop Velcro is shown in contact with a garment such as a trousers leg **35** on the leg **36** of the wearer.

By the construction of this modification of the invention, the bulk of the material is substantially reduced and the stiffening effect of double plies over the Velcro is avoided and therefore the free end **31C** of the hook Velcro remains in cooperative relation with the loops on the strip of loop Velcro. The elongation of the Velcro strips due to the stress produces a slight stretching in the Velcro strips where the free ends of the Velcro strips overlap thereby causing substantially all of the hooks and loops of the overlapping free end portions of the Velcro strips to interengage whereby a relatively short length of overlap of the Velcro strips securely maintains the encircling band in operative position with the proper tension in the elastic.

It has been found that a seven inch strip of elastic **30** with a two and a half inch piece of hook Velcro **31** secured by zigzag stitching to one end and a two and a half inch piece of loop Velcro **33** secured by zigzag stitching to the other end is satisfactory for substantially all persons, and the band made according to these dimensions of one inch wide material is most suitable for use on fatigue clothes to hold the bottoms of the trousers tightly around the ankle to protect the wearer from insects, snakes and the like. The band is also particularly useful for bicycle riders to prevent contact of the trousers with the chain and frame of the bicycle.

FIG. 16 and FIG. 17 show a package made of two bands with the hooks of one band in engagement with the loops of the other by folding the bands spaced from the mid length thereof approximately one inch as shown with a header card **40** secured by one or more staples **41**.

FIGS. 16A and 17A show another form of package with the Velcro engaged in the manner used. The loop Velcro is folded adjacent the stitching and the elastic folded diametrically opposite with one folded band superimposed on the other. A header card **40A** is secured by one or more staples **41** to encompass the folded portions of the elastic to securely retain the two bands in a connected package for inspection by a purchaser, and suitable instructions can be provided on the header for the use of the bands, the parts being identified by the same reference numerals as used in FIGURES 14 and 15 for the purpose of illustration and showing a hole **42** by means of which the bands may be supported on a rack.

Another form of package shown in FIGS. 18 and 19 is made directly from the band by taking advantage of the natural construction thereof. In FIG. 18 a single band including the center elastic web **30**, the hook Velcro portion **31** and the Velcro loop portion **33** is arranged so the hook surface engages the loop surface with a half twist formed in the elastic band **30** thereby producing a generally conical bight portion **43**. When the loop Velcro and hook Velcro are in operative relation the resulting two ply structure is a relatively stiff strut and by taking the free ends of the cooperating Velcro strips **31, 33** and bending the elastic and/or the Velcro adjacent the overlaps **32** and **34** the free end **31***c* is inserted into the conical recess formed by the bight portion **43** thereby making a small package. The conical portion can then be flattened making a neat flat package of small dimension.

A pair of bands made according to the present invention are shown in assembled packaged condition in FIG. 19 which provides a convenient way of storing the bands and also provides a convenient package for the user to carry in his pocket and have the bands available.

FIG. 20 illustrates two identical sewing machines **44** arranged in opposed relation permitting simultaneous sewing of the hook Velcro **31** and the loop Velcro **33** to the elastic band **30** by zigzag lock stitching. The sewing machines are shown in a horizontal position supported on a table with sufficient clearance to permit the completed bands to pass downwardly onto the table in the form of a connected ladder as shown in FIG. 21 with stitching **45** extending between adjacent bands thereby providing a convenient way of handling the product and packaging the product in packages of any desired number for shipment and sale since the seller may merely cut the stitching **45** between the bands and sell any desired number to the customer. The ladder of connected bands is rolled up with the axis of the roll parallel to the length of the bands to provide for a package of large numbers of bands.

The bands can also be arranged with one band superimposed on another with the connecting stitches **45** forming an accordion pleated arrangement of any desired size.

An identifying label may be simultaneously sewed onto the bands as shown at **46**.

The operator of the sewing machines **44** can operate both sewing machines simultaneously by the separate foot controls or can operate one at a time to sew the hook Velcro, for example, on one end of the elastic **30** and then sew the loop Velcro **33** on the other end using suitable foot controls to control each sewing machine.

The stitching has been made with a lock stitch zigzag machine in which the rotary hook has its axis extending in the line of stitch formation with the needle zigzagging transverse to the direction of feed.

From the above description it will be apparent that applicants have provided a simple and efficient method of blousing trousers while obtaining a comfortable wearing condition of the trousers and assuring continued neat apearance of the wearer over extended periods of time without unnecessary fatigue.

It will be apparent that changes may be made within the spirit and scope of the invention as defined by the valid scope of the claim.

What is claimed is:

1. An accurately adjustable band for encircling a leg to yieldably and permanently retain a pant leg in neatly pleated condition with a minimum of tension to avoid discomfort to the user, comprising a strip of elastic of less length than the portion of the leg to be encircled when the elastic is under the desired tension, said strip of elastic having a number of rubber bands woven into a fabric, a strip of hook fastening means attached by a narrow section at one end to a narrow section at one end of the strip of elastic with the hooks extending outwardly from one surface of the strip of elastic, closely positioned wide zig-zag stitching confining the said narrow section at one end of the strip of elastic and the said narrow section at one end of the strip of hook fastening means in substantially non-stretchable condition whereby the stitching transfers the stress of the strip of elastic to the hook fastening means without objectionable displacement of the position of the adjacent stitch holes in the strip of elastic and the strip of hook fastening means receiving the threads of the zig-zag stitching whereby the closely positioned zig-zag stitching remains permanently

effective securing the strip of elastic and the strip of hook fastening means permanently together, a cooperating strip of loop fastening means having a narrow section at one end secured to a narrow section at the other end of the strip of elastic with the loops extending away from the other surface of the strip of elastic, closely positioned wide zig-zag stitching confining the narrow section at the other end of the elastic and the narrow section at the one end of the strip of loop fastening means securely together in substantially non-stretchable condition whereby the closely positioned wide zig-zag stitching transfers the stress of the strip of elastic to the loop fastening means without objectionable displacement of the position of the adjacent stitch holes in the strip of elastic and in the strip of loop fastening means receiving the thread of the closely positioned wdie zig-zag stitching whereby the stitching remains permanently effective securing the elastic and loop fastening means permanently together, said band when in use having no portion of greater thickness than

the cooperating strips of hook and loop fastening means whereby a legging or boot worn over the pleated pant leg can be applied over the leg on which the band is used without producing local pressure points and without interfering with the flow of blood to the leg.

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