Dec. 15, 1936. F. EBERT 2,064,249

GARMENT SUCH AS KNICKERS AND THE LIKE

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Fig.1.

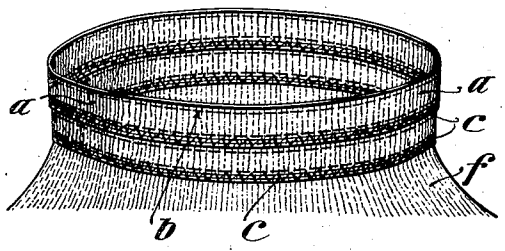


Fig.2.

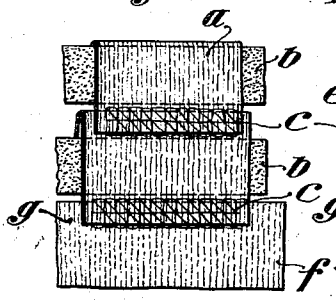


Fig.4.

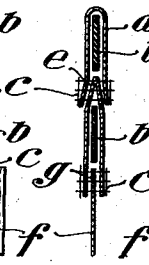


Fig.3.

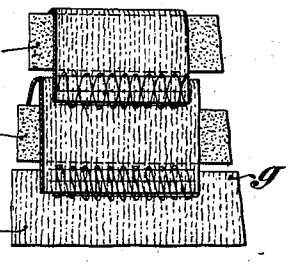


Fig.5.

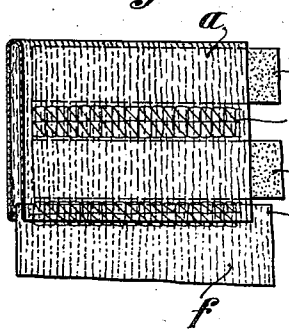


Fig.6.



Fig.7.

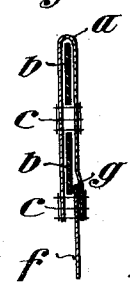


Fig.8.

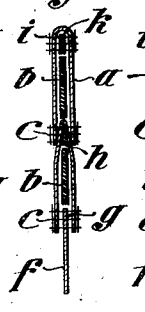
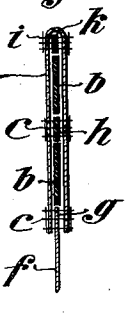


Fig.9.



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GARMENT SUCH AS KNICKERS AND THE LIKE

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Fig.10.

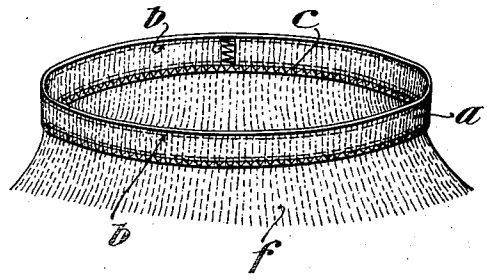


Fig.11.

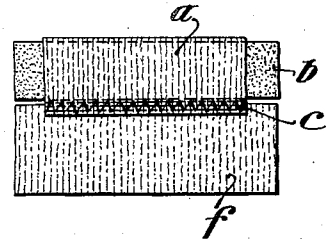


Fig.12.

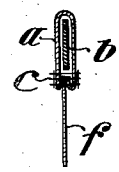


Fig.13.

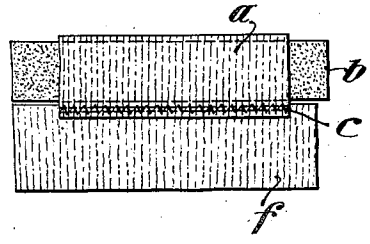
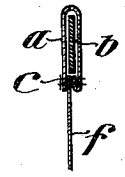


Fig.14.



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Patented Dec. 15, 1936 2,064,249

UNITED STATES PATENT OFFICE

2,064,249

GARMENT SUCH AS KNICKERS AND THE LIKE

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Application May 22, 1933, Serial No. 672,300
In Germany June 29, 1932

6 Claims. (Cl. 2—237)

The present invention relates to improvements in undergarments and the like, in which a rubber band is held in a fold (hem) of the waist band by means of elastic stitches. With the methods hitherto practised where a thin raw rubber band is used, these stitches pass, for purposes of reinforcement and limitation of extensibility, through the hem of the waist band as well as through the corresponding part of the rubber band, whereby as a result of the thin rubber band or strip being pierced in many places, whether the stitches run along the edge or are only arranged transversely in places, the said rubber strip is injured and thus becomes more or less weakened or damaged. This is particularly noticeable when several such longitudinal stitches, or a greater number of individual cross stitches, transverse to the longitudinal direction, are made in order to connect the rubber securely with the hem of the fabric. In addition, this fixed stitching of the fabric hem to the rubber band makes it difficult not only to change the rubber when it is worn out, but also to remove the same for any necessary mending of the hem, in which latter case it is always necessary to take out the existing fastening stitches and to make new stitches which, owing to the new places in which they occur, result in a further weakening of the rubber.

The chief object of the present invention is to avoid these disadvantages, particularly the piercing of the rubber band in many places by stitches which, on account of the injury to the rubber, can in no way be regarded as a real strengthening of the waistband and, in addition, more or less limit the full extensibility of the rubber band. Accordingly the invention proposes to produce a waist band in which the rubber, even when securely held in an extensible hem so as to be unable to be rolled up in the hem is not pierced, and thereby remains uninjured, thus not having its structure damaged at any point while, at the same time, it is able freely to follow the greatest extensions of the waist band and to be withdrawn with comparative ease. This result is obtained, while omitting the securing or strengthening stitches, by the rubber band, preferably consisting of raw rubber, being loosely (unconnected) carried in its hem, but prevented from rolling up by elastic stitches placed outside the interior part of the hem which contains the rubber band and preferably as close as possible to the edge of the rubber band. The elasticity of these stitches is preferably approached as far as possible to the elasticity of the extensible hem of the waist band, so that the rubber strip can be sufficiently stretched to adapt or fit the band to the human body.

In a preferred method of carrying out the invention the elastic band is sub-divided two or more times, so that in the case of a two-fold sub-division, for example, instead of a single relatively broad rubber band it has two relatively narrower ones, which are so arranged in relation to one another as to leave a free space between them, in which is carried an elastic intermediate stitching. With such a sub-division of the band the danger of rolling up is reduced still more, as naturally a narrow rubber band is more easily held than a broader one. At the same time the two rubber bands give exactly the same close fitting to the body as a single broad rubber band so that, in addition, a saving in rubber is made as compared with bands in which the rubber band is stitched to the hem by two rows of longitudinal stitches arranged at a certain distance from the edges of the rubber, and which, owing to these stitches and their distance from the edges must be made broader.

With the preferred form of a construction of a two-fold divided band the two rubber bands can be carried loosely either each one by itself in a special fold or hem, or both together in a common fold, one above the other. In the first case the lower fold can be stitched elastically with a folded edge into the upper fold, whereby the elastic stitching concerned (intermediate stitching) runs as closely as possible to the lower edge of the upper rubber band and to the upper edge of the lower rubber band. In this way the upper rubber band is held securely against rolling up by the upper edge of the upper fold and the elastic intermediate stitching, while the lower rubber band is held by the upper edge of the lower fold and the intermediate stitching as well as by the lower elastic stitching which, at the same time, effects the connection of the waist band with the edge of the fabric of the knickers, etc.

When the rubber bands are carried in a common fold in which they lie one above the other, separated by the elastic intermediate stitching, the upper band is held safely by the upper edge of the common fold and the intermediate stitching, and the lower band by the intermediate stitching and the stitching, for fixing or interconnecting the hem and the edge of the fabric.

The elastic stitches, namely the fixing or connecting stitches, together with the intermediate stitches, preferably consist, according to the invention, of multiple needle covering stitching

(three-needle stitching or two-needle stitching). These stitches afford the advantage of a greater extensibility as compared with the single-needle stitching hitherto commonly used for stitching through the rubber band, in which the extensibility is obtained merely by the zig-zag courses or the diagonal direction of the stitches. Such multi-needle covering stitching is in itself known in the art of sewing together materials, but on account of its great extensibility it is particularly advantageous in its application to the present new type of waist band having loosely inserted rubber strips. It is equally new and advantageous to equalise at the stitching places, in accordance with the invention, the strength (thickness) of these places with the strength (thickness) of the waist band, namely by sewing in a special elastic strip of corresponding thickness. In the same way an elastic stitching, with or without insert, can be made at the upper edge of the waist band for the purpose of stiffening it, running as closely as possible to the upper edge of the rubber band.

Various possible methods of carrying out the invention are shown by way of example in the accompanying drawings, in connection with Figures 1 to 9 for sub-divided (joined together) waist band, and in connection with Figures 10 to 14 for a simple (not sub-divided) waist band.

In the drawings:

Figure 1 is a perspective view of an elastic waist band and a portion of an under-garment,

Fig. 2 is a front view of a portion of the waist band,

Fig. 3 is a front view of a portion of the waist band showing a modified form of stitching,

Fig. 4 is a cross-sectional view of the waist band,

Fig. 5 is a front view of a portion of the waist band showing a modified form of fold,

Fig. 6 is a cross-sectional view of the form of construction shown in Fig. 5,

Fig. 7 is a cross-sectional view of the waist band showing a modified form of attachment of the waist band to the remaining portion of the garment,

Fig. 8 is a cross-sectional view of a further modified form of waist band,

Fig. 9 is a cross-sectional view of a still further modified form of waist band,

Fig. 10 is a perspective view of a modified form of waist band and a portion of the garment,

Fig. 11 is a side view of a portion of the waist band and garment of Fig. 10,

Fig. 12 is a cross-sectional view of the form of construction shown in Figs. 10 and 11,

Fig. 13 is a front view of a portion of the waist band and garment of the modified construction, and

Fig. 14 is a cross-sectional view of the waist band shown in Fig. 13.

As regards the forms of construction of a sub-divided waist band, the U-shaped folded hems or folds consist of easily extensible material, preferably tricot, in which the rubber bands are held loosely without the rubber being sewn through. As a two-fold sub-division is here being dealt with, two relatively narrow and flat rubber bands *b* are correspondingly arranged, and for holding them securely the extensible stitchings *c* (intermediate stitching and lower fixing or connecting stitching), running outside the rubber strips, are provided. In the case shown these elastic stitches consist of three-needle covering stitching with two or even only one laythread but the stitch can even be made without any laythread, according to the requirements respecting extensibility (strength) and appearance of the stitching.

In the arrangement shown in Figures 1 to 4 and 8 each rubber band *b* lies in a special fold *a*. The lower fold is stitched with its folded edge *e* into the upper fold *a* by means of the extensible intermediate stitching; during the sewing the corresponding rubber band *b* is simultaneously inserted. The material *f* of the undergarment or the like is also sewn in with its border *g* to the lower fold by means of the elastic fixing stitching; here again, during the course of this stitching, the corresponding rubber band *b* is simultaneously inserted.

In both sewing processes the application of the intermediate stitching and the application of the fixing stitching, can be simultaneously carried out by two sewing machines, that is in the same working process, or on the other hand a machine operating with several groups of needles can be used, so that the entire work can be accomplished on the same machine.

In Figures 5 to 7 and 9 a construction is shown in which both rubber bands *b* are arranged in a common fold *a*. They lie at such a distance from one another as to leave room for the elastic intermediate stitching *c*. The material *f* is sewn in as in the first described construction. In order to prevent fraying of the material *f* while being stitched in, the edge of the material can, as shown in Figure 7, be stitched in so as to extend beyond the stitching and the lower edge of the rubber strip.

In the construction shown in Figures 8 and 9 an elastic intermediate layer *h* is sewn in between the two rubber bands *b*, and its thickness is such that the waist band has approximately the same strength at the position of the intermediate stitching as where the rubber strips are inserted. The insertion *h* is formed as a strip or cord and can consist, for example, of rubber or some other elastic material. The upper border of the waist band can also be provided with an elastic stitching *i* with or without insertion *k*, as can be seen in Figures 8 and 9.

While the forms of construction hereinbefore explained and shown, by way of example, in the previous figures have several rubber bands, Figures 10 to 14 refer to a simple waist band, not sub-divided, having only one rubber band which, according to the invention, is inserted loosely in the extensible band hem (the fold), and is secured in this, without being pierced, and prevented from rolling up by the elastic stitching which, at the same time, serves to attach the edge of the material to the fold.

Figures 10 to 12 show a constructional form having (elastic) three-needle stitching respectively, while Figures 13 and 14 show the form of construction having (elastic) two-needle stitching.

It is provided in the present case that the material *f* of the garment (knickers or the like) is also extensible, and that the hem *a* for the loosely inserted rubber band *b* consists of the same material as the garment. The hem or the fold *a* is, in the construction shown, again a piece which can be made separately from the garment; the fold could, however, be equally well made from the garment itself, for example, by a suitable folding or turning over of the upper border of the material *f*. The elastic stitching *c* connecting the border of the material and the hem

thus again effects a secure holding of the rubber band in the hem rolling up, in that without penetrating the rubber it runs as closely as possible to the edge thereof. Apart from this, the elastic stitching may be of any kind desired, although a multi-needle covering stitching is preferable, for example, a three-needle covering stitching as in Figures 11 and 12, or a two-needle covering stitching as in Figures 13 and 14. Moreover, in connection with this constructional form with a simple, not sub-divided waist band an elastic stitching with or without an insert may additionally be provided at the upper edge or border of the waist band in order to increase security.

This simple form of carrying out the invention according to Figures 10 to 14, has the advantage that, as mentioned, the same material can be used for the fold or hem in which the rubber band lies as that of which the garment itself consists, particularly when this is woven instead of knitted. With the method hitherto employed for fixing the rubber band in the fold (hem) by sewing the corresponding parts of both, the rubber band thus being pierced, it is well known that the material of the garment, if this is woven, cannot be used for the waist band owing to the lack of elasticity of the woven material. Instead, in such a case, a special knitted material must be provided to form the hem. The disadvantage of having necessarily to use two different materials in such cases is particularly troublesome with colored garments, as it is hardly possible in dyeing to give exactly the same shade to the two different and separated materials which have to be dyed.

What I claim is:—

1. An elastic waist band particularly for undergarments, comprising a fold of extensible material, at least one loosely mounted flat elastic band provided in the fold, said fold also when the waist band is contracted lying flat against the elastic band, and guide means provided adjacent the elastic band and close along the edges thereof, the guide means adjacent the lower edge of the elastic band comprising an extensible line of stitching extensible together with the fold of the material.

2. An elastic waist band for undergargments comprising a fold of extensible material, upper and lower flat elastic bands provided in said fold, a relatively small insertion strip of elastic material between the uppermost elastic band and the upper edge of the fold, a relatively small insertion strip of elastic material between the elastic bands, and separate elastic stitchings each passing through the material of the fold and also through the said insertion strips, the elastic stitching formed as a multi-needle covering stitch on the lower edge of the fold passing partly through the material of the fold and the garment, and the said elastic bands being provided in the fold relatively snug against the said insertion strips and the lower band being relatively snug against the elastic stitching on the lower edge of the fold, to prevent the elastic bands from rolling up or folding over and to provide the waist band flat against the body of the wearer.

3. An elastic waist band particularly for under-garments, comprising a pair of superposed folds of extensible material, an elastic flat band provided in each fold, and a pair of elastic stitchings, one of which is provided entirely through the lower part of the upper fold and the upper part of the lower fold and the other is provided entirely through the lower part of the lower fold and the garment without any of the sitchings passing through the elastic band, said elastic bands being provided in the folds in a relatively snug manner to prevent the bands from rolling up or folding over.

4. An elastic waist band according to claim 3, in which a relatively small elastic insertion strip is provided adjacent the folded portion of each fold.

5. An elastic waist band for under-garments, comprising a fold of extensible material, upper and lower elastic bands provided in said fold and an elastic stitching between and close along the adjacent edges of the two elastic bands and separating the said bands, the upper band being provided immediately against the upper edge of the fold, and said fold being contracted and lying flat against the elastic bands.

6. An elastic waist band according to claim 5, in which a further set of elastic stitching is provided adjacent the lower edge of the lower elastic band.

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