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SURFACE-TYPE FASTENER

The present invention relates to a surface-type fastener such as a hook-and-loop fastener including a pair of interengaging textile fabric fastener strips, one fastener strip having on one surface thereof a number of hook-shaped or mushroom-shaped engaging elements engageable with a number of loop-shaped engaging elements projecting from one surface of the other fastener strip.

A common problem with known surface-type fasteners was that engaging elements in the form of hooks or loops would tend to come off the individual fabric fastener strip or to become objectionably loose as the two fabric fastener strips were interengaged and disengaged repeatedly.

To this end, it is known to apply synthetic resin over the element-free rear surface of the individual fastener strip in order to fix or stabilize the engaging elements so that they retain their shape and position, thus preventing the engaging elements from being removed or otherwise impaired. However, this backing with synthetic resin would make the fastener strips less flexible so that a sewing needle is not able smoothly pierce the individual fastener strip when the latter is sewn to a garment. For example. U. S. Patent 3,009,235 is believed to

exemplify the prior art.

Japanese Utility Model Post-Examination Publication (Kokoku) 57-156684 discloses a hooked fastener strip having a plurality of rows of uniformly spaced openings for the passage of a sewing needle. This prior fastener can be sewn at only a fixed pitch of stitching which pitch corresponds to the inter-opening distance.

Another attempt has been proposed by Japanese Utility Model Post-Examination Publication (Kokoku) 57-27289 in which the individual fastener strip is made of a woven or knit fabric having non-woven or non-knitted areas in an effort to facilitate the penetration of a sewing needle. However, because of this non-uniform fabric structure, uniformly shaped engaging elements are difficult to achieve. Further, the engaging elements at the non-woven or non-knitted areas are weak, thus causing non-stable interengagement of the opposed fastener strips.

According to the present invention, there is provided a surface-type fastener comprising at least a pair of interengageable textile fabric fastener strips, each having on one surface thereof a number of engaging elements, the other surface of each fabric fastener strip being covered with synthetic resin, characterized in THAT said one surface of each said fabric fastener strip has a first region in which said engaging

elements are disposed, and a second region, devoid of engaging elements, and THAT the other surface of each said fabric fastener strip has, in registry with said first region, a first area covered with synthetic resin and, in registry with said second region, a second area not covered with synthetic resin.

It is believed possible by means of the present invention to provide a surface-type fastener in which engaging elements on each fabric fastener strip are free from coming off or becoming objectionally loose, thus guaranteeing an improved durability.

It is further believed possible by means of the present invention to provide a surface-type fastener which enables smooth penetrating of a sewing needle through the fabric fastener strip as the latter is sewn to an article, e.g a garment.

The invention will be described by way of example with reference to the accompanying drawings, wherein like references refer to like parts unless stated otherwise, and wherein:-

Figure 1 is a fragmentary perspective view of a looped and a hooked fabric fastener strip of a surface-type fastener embodying the present invention;

Figure 2 is a fragmentary, enlarged transverse cross-sectional view taken along line II-II of Figure 1;

Figure 3 is a detail view showing the manner in

(B)

which a sewing needle penetrates the fabric fastener strip during the sewing; and

Figure 4 is a fragmentary perspective view of a modified fabric fastener strip.

5 Figure 1 shows a surface-type fastener comprising a pair of interengaging first and second fastener strips 1, 2 each in the form of a woven fabric. The first fabric fastener strip 1 has on one surface, its front surface, a number of loop-shaped engaging elements 3, whilst the second fabric fastener strip 10 2 has on its one or front surface a number of hook-shaped engaging elements 4. The loop-shaped engaging elements 3 of the first fastener strip 1 are engageable with the hook-shaped engaging elements 4 of the second fastener strip 2 when the front surfaces of the first and second fastener strips 1, 2 are pressed against 15 each other.

Each of the first and second fastener strips 1, 2 includes a central region 5 in which the respective engaging elements 3, 4 are disposed, and a pair of marginal regions 6, 6 extending along opposed longitudinal edges of the individual fastener 20 strip 1, 2 and devoid of engaging elements. As better shown in Figure 2, the other or rear surface of each fastener strip 1, 2 is covered with synthetic resin 7, such as polyvinyl chloride or polyester, at only the area which is in registry with the central region 5.

25 At the central region 5, because of this backing

with the synthetic resin 7, the engaging elements 3, 4 are prevented from coming off the fastener strip 1, 2 and from becoming objectionably loose, thus not only causing reliable interengagement of the fastener strips 5 1, 2, but guaranteeing an improved durability.

Further, since the remaining areas in the rear surface of each fastener strip 1, 2 which are in registry with the marginal regions 6, 6 are not covered with the synthetic resin, these marginal regions 6, 6 of the 10 individual fastener strip 1, 2 are sufficiently flexible so that a sewing needle 7 (Figure 3) can smoothly penetrate therethrough when the fastener is sewn to a garment, for example. As the sewing needle 7 advances in the individual marginal region 6, warp and 15 weft threads 8 (Figures 2 and 3) around the sewing needle 7 are deformed or moved sideways, as shown in Figure 3. With such flexible marginal regions 6, 6, it is possible to sew the fastener onto a garment at a desired pitch of stitching.

20 In production, an amount of synthetic resin dissolved in a suitable solution was coated over the area in the rear surface of the individual fastener strip 1, 2 which are in registry with the central region 5, and was then dried. Alternatively, a film of 25 synthetic resin may be attached to that area with an adhesive. In another alternative way, an amount of molten or soften synthetic resin may be applied over

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the same area by extrusion.

Figure 4 shows a modified fabric fastener strip 1' which is similar to the fastener strip 1 of Figure 1, except that the central region 5' is divided into sections by a plurality of stripes 10 devoid of engaging elements. The stripes 10 are spaced at intervals along the fastener strip 1', and each strip 10 extends between the opposite marginal regions 6', 6' transversely of the fastener strip 1'. On the rear surface of the fastener strip 11, in addition to the areas that are in registry with the marginal regions 6', 6', the areas that are in registry with the stripes 10 are not covered with the synthetic resin. With this arrangement, it is possible to sew the fastener strip 1' not only along the marginal regions 6', 6', but along the stripes 10, thus causing easy and stable attachment of the fastener.

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CLAIMS:-

1. A surface-type fastener comprising at least a pair of interengageable textile fabric fastener strips, each having on one surface thereof a number of engaging elements; said one surface of each said fabric fastener strip having a first region in which said
5 engaging elements are disposed, and a second region devoid of engaging elements, the other surface of each said fabric fastener strip having, in registry with said first region, a first area covered with synthetic resin and, in registry with said second region, a second area not covered with synthetic
10 resin.
 2. A surface-type fastener according to claim 1, said second region extending along a marginal portion of each said fabric fastener strip.
 3. A surface-type fastener substantially as described with
15 reference to and as illustrated in Figures 1 to 3 of the accompanying drawings.
 4. A surface-type fastener substantially as described with reference to and as illustrated in Figures 1 to 3 modified as in Figure 4 of the accompanying drawings.
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