SURFACE-TYPE FASTENER COMPONENT AND METHOD OF MAKING THE SAME

Description:-

The present invention relates to a surface-type fastener component having a multiplicity of fastening elements such as hooks or loops formed on one surface of a base strip and a method of making such a surface-type fastener component, and more particularly to a surface-type fastener component with a pattern or marking printed on the opposite surface of the base strip and a method of making such a surface-type fastener component.

There are known surface-type fasteners comprising a pair of matable fastener members each composed of multiple fastening elements such as hooks, loops, mushroom-like projections, arrowhead projections, and other locking formations formed on one surface or face of a base strip or web, and a reinforcing layer attached to the opposite surface or back of the base strip for keeping the fastening elements in desired posture and firmly anchoring the fastening elements to the base strip. The fastener member is attached to an article such as a bag by welding or an adhesive.

The conventional surface-type fasteners have generally been poor from an aesthetic viewpoint. Where the article to which a surface-type fastener is

attached is made of transparent synthetic resin, the appearance is particularly unattractive since the back of the base strip is visible through the transparent article.

One solution would be to print a pattern on the back of the base strip to make it more attractive. However, the printed pattern remains exposed before the fastener component is attached to a desired article, and hence tends to be peeled off or otherwise damaged by contact with an object, or degraded by ambient air when left exposed for a long time.

It is believed possible by means of the present invention to provide a surface-type fastener having a pattern or marking printed on the back of a base strip and protected from being removed or damaged by contact with an object.

It is further believed possible by means of the present invention to provide a surface-type fastener which can be manufactured with ease.

It is still further believed possible by means of the present invention to provide a method of making such a surface-type fastener.

According to a first aspect of the present invention, there is provided a surface-type fastener component comprising: a base strip; a multiplicity of fastening elements fixedly mounted on one surface of said base strip; a reinforcing layer of synthetic resin disposed on an opposite surface of said base strip; at

least one marking printed on said reinforcing layer; and a light-transmissive layer disposed on said reinforcing layer over said marking for making the marking visible through said light-transmissive layer.

According to a second aspect of the present invention, there is provided a surface-type fastener component comprising: an elongate sheet of paper; and a multiplicity of fastener component pieces attached at spaced intervals to said elongate sheet, each of said fastener component pieces comprising: a base strip; a multiplicity of fastening elements fixedly mounted on one surface of said base strip; a reinforcing layer of synthetic resin disposed on an opposite surface of said base strip; at least one marking printed on said reinforcing layer; and a light-transmissive layer disposed on said reinforcing layer over said marking for making the marking visible through said light-transmissive layer.

According to a third aspect of the present invention, there is provided a surface-type fastener component comprising: a fastener component piece composed of: a base strip; a multiplicity of fastening elements fixedly mounted on one surface of said base strip; a reinforcing layer of synthetic resin disposed on an opposite surface of said base strip; at least one marking printed on said reinforcing layer; and a light-transmissive pressure-sensitive adhesive layer

disposed on said reinforcing layer over said marking for making the marking visible through said light-transmissive pressure-sensitive adhesive layer; and a sheet of synthetic resin to which said fastener component piece is attached through said pressure-sensitive adhesive layer.

According to a fourth aspect of the present invention, there is provided a method of making a surface-type fastener component, comprising the steps of: intermittently feeding a fastener component blank composed of a base strip, a multiplicity of fastening elements fixedly mounted on one surface of said base strip, and a reinforcing layer of synthetic resin disposed on an opposite surface of said base strip; printing a marking on said reinforcing layer; fixing the printed marking on said reinforcing layer; and coating said reinforcing layer with a light-transmissive layer to make said printed marking through said light-transmissive layer.

The invention will be described by way of example with reference to the accompanying drawings, wherein:-

Figure 1 is a fragmentary perspective view,

partlv cut away, of a surface-type fastener component embodying the present invention;

Figure 2 is a cross-sectional view taken along line II - II of Figure 1;

Figure 3 is a perspective view of a bag to which the surface-type fastener component shown in Figure 1 is attached;

Figure 3A is a fragmentary perspective view of a cover flap to which the surface-type fastener component of Figure 1 is attached;

Figure 4 is a fragmentary perspective view, partly cut away, of a surface-type fastener component forming another embodiment of the present invention;

Figure 4A is a fragmentary side elevational view of a modified surface-type fastener component;

Figure 5 is a perspective view of a bag to which the surface-type fastener component shown in Figure 4 is attached;

Figure 6 is fragmentary perspective view, partly cut away, of a surface-type fastener component forming still another embodiment of the present invention; and

Figure 7 is a schematic view of an apparatus for carrying out a method of making a surface-type fastener in accordance with the present invention.

The present invention is

particularly useful when embodied in a surface-type fastener component, generally indicated by the reference numeral 10 in Figures 1 and 2.

The surface-type fastener component 10 generally comprises a base strip or web 11 made of a suitable fabric material, for example, woven or knit cloth, a multiplicity of fastening elements 12 having ends embedded in or otherwise firmly anchored to one surface or face of the base strip 11, the fastening elements 12 being in the form of loops by way of example in the illustrated embodiment, and a reinforcing or backing layer 13 of synthetic resin coated on the opposite surface or back of the base strip 1 for keeping the fastening elements 12 in a desired posture and firmly anchoring the fastening elements 12 to the base strip 11 for reliable interengagement with the fastening elements on a companion fastener component (not shown). The base strip 11, the fastening elements 12, and the reinforcing layer 13 jointly constitute an elongate surface-type fastener component blank 14. The fastening elements 12 may comprise barbed hooks, arrowhead-shaped projections, mushroom-shaped projections, or other formations.

Ornamental patterns or markings 15 are printed at spaced intervals on the surface of the reinforcing layer 13 remote from the base strip 11. The printed markings 15 are covered with a coated layer 16 of

transparent or semitransparent thermoplastic synthetic resin such as vinyl chloride. The coated layer 16 may be colored.

The printed markings 15 are visible through the transparent coated layer 16 to make the surface-type fastener 10 attractive or appealing in design from an aesthetic viewpoint. Since the markings 15 are sandwiched between the reinforcing layer 13 and the coated layer 16 and hence isolated by the coated layer 16 from ambient air, the markings 15 are protected from being peeled off or otherwise damaged by contact with an object or being degraded due to contact with ambient air. The reinforcing layer 13 may be transparent or semitransparent to allow the markings 15 from being visible therethrough from the side of the fastening elements 12.

For use, the elongate fastener component 10 is cut off to a square-shaped piece 17 (Figure 3) containing at least one of the printed markings 15, and then ultrasonically welded to an article 18 such as a bag. In the embodiment of Figure 3, the article 18 comprises a tissue-paper bag composed of a bag body 19 and a cover flap 20. The fastener component piece 17 is welded along its peripheral sides to the cover flap 20. A companion fastener component piece 21 which is similar to the fastener component piece 17 but has fastening elements 22 interengageable with the

fastening elements of the fastener component piece 17, is welded along its peripheral sides to the bag body 19. The fastener component piece 21 is positioned on the bag body 19 so that it will be joined in face-to-face relation to the fastener component piece 17 when the cover flap 20 is folded on itself over the bag body 19. Where the article 18 is made of a transparent or semitransparent material, the pattern 15 on the fastener component piece 17 is visible through the cover flap 20, and the marking (not shown) on the fastener component piece 21 is visible through the bag body 19. Where a cover flap 23 (Figure 3A) is made of an opaque material, it has a square hole 24 defined therein and having a size slightly smaller than the fastener component piece 17, and the fastener component piece 17 is welded along its peripheral sides to the cover flap 23 around the square hole 24.

Figure 4 shows a surface-type fastener component 30 forming another embodiment of the present invention. The surface-type fastener component 30 is similar to the surface-type fastener component 10 of Figure 1 in that it also includes the elongate surface-type fastener component blank 14 and the printed markings 15 on the reinforcing layer 13. However, the surface-type fastener component 30 has a thin transparent or semitransparent pressure-sensitive adhesive layer 31 coated on the reinforcing layer 13

over the printed markings 15. The pressure-sensitive adhesive layer 31 which may be colored is attached to a peelable sheet 32 of paper having a width larger than that of the surface-type fastener component blank 14. When the peelable sheet 32 of paper is peeled off, the marking 15 is visible through the transparent or semitransparent pressure-sensitive adhesive layer 31. Since the marking 15 is sandwiched between the reinforcing layer 13 and the adhesive layer 31, the marking 15 is prevented from being peeled off or otherwise damaged by contact with an object and also from deterioration due to ambient air.

When the surface-type fastener component 30 is to be used on the transparent or semitransparent article 18, it is cut off into a square-shaped piece 33 (Figure 5) containing at least one of the printed markings 15, and then the sheet 32 of paper is peeled off the adhesive layer 31. Then, the fastener component piece 33 is attached to the cover flap 20 through the pressure-sensitive adhesive layer 31. A companion fastener component piece 34 which is similar to the fastener component piece 33 but has fastening elements 35 interengageable with the fastening elements of the fastener component piece 33, is applied to the bag body 19 through the pressure-sensitive adhesive layer. Since the article 18 and the adhesive layer 31 are transparent or semitransparent, the marking 15 on

the fastener component piece 33 is visible through the cover flap 20, and the marking (not shown) on the fastener component piece 34 is visible through the bag body 19.

According to a modification shown in Figure 4A, a plurality of precut fastener component pieces 36 are attached at spaced intervals to an elongate peelable sheet 37 of paper. Each of the precut fastener component pieces 36 is composed of the fastener component blank 14, at least one of the printed markings 15, and the pressure-sensitive adhesive layer 31, as illustrated in Figure 4.

Figure 6 shows a surface-type fastener component 40 forming still another embodiment of the present invention. The surface-type fastener component 40 includes a fastener component piece identical in construction to the fastener component piece 36 shown in Figure 4A, and a transparent or semitransparent sheet 41 of synthetic resin which is substantially larger in size than the fastener component piece. The fastener component 40 is attached to the sheet 41 through the pressure-sensitive adhesive layer 31. The transparent or semitransparent sheet 41 can be utilized to form an article such as a tissue-paper bag as shown in Figure 3 or 5.

Figure 7 illustrates an apparatus for carrying out a method of manufacturing the elongate surface-type

fastener component 10 shown in Figures 1 and 2.

The apparatus, generally designated by the reference numeral 42, includes a supply reel 43 on which the elongate surface-type fastener component blank 14 is wound and a takeup reel 44 for winding therearound the manufactured surface-type fastener component 10. The apparatus 42 also includes a printing machine 45, a fixing machine 46, and a coating machine 47, all positioned between the supply and takeup reels 43, 44. The elongate surface-type fastener component blank 14 is intermittently fed, with the reinforcing layer 13 facing upwardly, from the supply reel 43 via guide rollers 48, 49 by feed roller pairs 50, 51, 52 and an intermittent feeder mechanism 53 succesively through the printing machine 45, the fixing machine 46, and the coating machine 47.

The printing machine 45 comprises a known pad-applying printing mechanism for printing various rubber products such as balloons and synthetic-resin products such as vinyl bags. When the fastener component blank 14 is stopped, the printing machine 45 operates to stamp a desired marking or marking on the reinforcing layer 13.

The fixing machine 46 is of a known arrangement for heating and drying the printed marking to fix the same to the reinforcing layer 13.

The coating machine 47 is also of a known

construction for coating the reinforcing layer 13 with a layer of thermoplastic synthetic resin such as vinyl chloride.

In operation, the fastener component blank 14 is intermittently fed prescribed intervals successively through the printing machine 45, the fixing machine 46, and the coating machine 47. The printing machine 45 prints a marking on the reinforcing layer 13. The printed marking is then fixed to the reinforcing layer 13 by the fixing machine 46. The reinforcing layer 13 with the printed marking thereon is thereafter coated with the layer 16 of thermoplastic synthetic resin by the coating machine 47. Therefore, the surface-type fastener component can continuously be manufactured through a succession of printing, fixing, and coating steps.

For manufacturing the surface-type fastener component 30 shown in Figure 4, the pressure-sensitive adhesive layer 31 is coated on the reinforcing layer 13 by the coating machine 47, followed by application of the peelable sheet 32 of paper to the coated adhesive layer 31. When the surface-type fastener component 40 shown in Figure 6 is to be manufactured, an elongate pressure-sensitive adhesive layer is coated on the reinforcing layer 13 of the elongate fastener component blank 14 by the coating machine 47, and the elongate fastener blank 14 with the adhesive layer is cut off

into fastener component pieces each containing at least one printed marking. The fastener component pieces are then applied to the transparent or semitransparent sheet 41 of synthetic resin.

CLAIMS:-

1. A surface-type fastener component comprising:

(a) a base strip;

(b) a multiplicity of fastening elements fixedly mounted on one surface of said base strip;

(c) a reinforcing layer of synthetic resin disposed on an opposite surface of said base strip;

(d) at least one marking printed on said reinforcing layer; and

(e) a light-transmissive layer disposed on said reinforcing layer over said marking for making the marking visible through said light-transmissive layer.

2. A surface-type fastener component according to claim 1, said light-transmissive layer being made of transparent synthetic resin.

3. A surface-type fastener component according to claim 1, said light-transmissive layer being made of semitransparent synthetic resin.

4. A surface-type fastener component according to claim 1, said light-transmissive layer comprising a transparent pressure-sensitive adhesive layer.

5. A surface-type fastener component according to claim 4, further including a peelable sheet applied to said pressure-sensitive adhesive layer.

6. A surface-type fastener component according to claim 5, said peelable sheet being made of paper.

7. A surface-type fastener component according

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to claim 1, said light-transmissive layer comprising a semitransparent pressure-sensitive adhesive layer.

8. A surface-type fastener component according to claim 7, further including a peelable sheet applied to said pressure-sensitive adhesive layer.

9. A surface-type fastener component according to claim 8, said peelable sheet being made of paper.

10. A surface-type fastener component comprising:

(a) an elongate sheet of paper; and

(b) a multiplicity of fastener component pieces attached at spaced intervals to said elongate sheet, each of said fastener component pieces comprising:

(i) a base strip;

(ii) a multiplicity of fastening elements fixedly mounted on one surface of said base strip;

(iii) a reinforcing layer of synthetic resin disposed on an opposite surface of said base strip;

(iv) at least one marking printed on said reinforcing layer; and

(v) a light-transmissive layer disposed on said reinforcing layer over said marking for making the marking visible through said light-transmissive layer.

11. A surface-type fastener component according to claim 10, wherein said light-transmissive layer comprises a transparent pressure-sensitive adhesive layer.

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12. A surface-type fastener component according to claim 10, said light-transmissive layer comprising a semitransparent pressure-sensitive adhesive layer.

13. A surface-type fastener component comprising:

(a) a fastener component piece composed of:

(i) a base strip;

(ii) a multiplicity of fastening elements fixedly mounted on one surface of said base strip;

(iii) a reinforcing layer of synthetic resin disposed on an opposite surface of said base strip;

(iv) at least one marking printed on said reinforcing layer; and

(v) a light-transmissive pressure-sensitive adhesive layer disposed on said reinforcing layer over said marking for making the marking visible through said light-transmissive pressure-sensitive adhesive layer; and

(b) a sheet of synthetic resin to which said fastener component piece is attached through said pressure-sensitive adhesive layer.

14. A surface-type fastener component according to claim 13, said light-transmissive pressure-sensitive adhesive layer being made of transparent synthetic resin.

15. A surface-type fastener component according to claim 13, said light-transmissive pressure-sensitive

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adhesive layer being made of semitransparent synthetic resin.

16. A method of making a surface-type fastener component, comprising the steps of:

(a) intermittently feeding a fastener component blank composed of a base strip, a multiplicity of fastening elements fixedly mounted on one surface of said base strip, and a reinforcing layer of synthetic resin disposed on an opposite surface of said base strip;

(b) printing a marking on said reinforcing layer;

(c) fixing the printed marking on said reinforcing layer; and

(d) coating said reinforcing layer with a light-transmissive layer to make said printed marking through said light-transmissive layer.

17. A method according to claim 16, said light-transmissive layer comprising a pressure-sensitive adhesive layer, further including the step of attaching a peelable sheet of paper to said pressure-sensitive adhesive layer.

18. A method according to claim 16, said light-transmissive layer comprising a pressure-sensitive adhesive layer, further including the steps of cutting said fastener component blank off into fastener component pieces each containing at least one of said

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printed markings, and attaching each of said fastener component pieces to a sheet.

19. A method according to claim 18, said sheet comprising an elongate peelable sheet of paper, said fastener component pieces being attached at spaced intervals to said alongate peelable sheet of paper.

20. A method according to claim 18, said sheet comprising a light-transmissive sheet of synthetic resin which is substantially larger than said fastener component piece.

21. A surface-type fastener component substantially as described with reference to and as illustrated in Figures 1 and 2 of the accompanying drawings.

22. A surface-type fastener component substantially as described with reference to and as illustrated in Figure 4 of the accompanying drawings.

23. A surface-type fastener component substantially as described with reference to and as illustrated in Figure 4A of the accompanying drawings.

24. A surface-type fastener component substantially as described with reference to and as illustrated in Figure 6 of the accompanying drawings.

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