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Thaeler

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[54] **ADHESIVELY SECURABLE SLIDE FASTENER**

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[73] Assignee: **Textron Inc.,** Providence, R.I.

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[52] **U.S. Cl.**..... **24/205.16 D;** 24/DIG. 11; 156/66; 161/167

[51] **Int. Cl.**[2]..... **A44B 19/34**

[58] **Field of Search**.....24/DIG. 11, 205.11 R, 24/205.11 F, 205.1 R, 205 B, 215.16 R, 24/205 R, 73 VA, 205.16 D; 112/265; 46/DIG. 1, 158; 128/335; 229/62; 156/66; 161/167

[56] **References Cited**

UNITED STATES PATENTS

1,322,257	11/1919	Miller	24/DIG. 11
2,039,284	5/1936	Hartzell	161/167
2,042,692	6/1936	Wurzburg	24/DIG. 11
2,145,552	1/1939	Marinsky	24/205 B
2,269,419	1/1942	Adler	24/205.16 R
2,555,983	6/1951	Matthiesen	24/DIG. 11
2,753,284	7/1956	Pahl	161/167
2,768,922	10/1956	Klein	24/205.16 R
2,931,747	4/1960	Dexter	161/167
3,002,478	10/1961	Duchan	2/265
3,456,305	7/1969	Voit	112/265
3,540,975	11/1970	Wright	161/167
3,561,073	2/1971	Rosser	24/205.16 R
3,598,689	8/1971	Feffer	161/167
3,685,103	8/1972	Severino	24/205.16 R
3,730,825	5/1973	Nakane	161/167
3,785,014	1/1974	Canepa	24/205.16 R
3,823,445	7/1974	Rivers	24/205.16 R

FOREIGN PATENTS OR APPLICATIONS

578,900	7/1946	United Kingdom	24/205.16 R
7,008,240	12/1970	Netherlands	24/205.16 R

Primary Examiner—Bernard A. Gelak

[57] **ABSTRACT**

A slide fastener for installation on a garment wherein the carrier tapes carry layers of liquid activated adhesive such that the slide fastener can be temporarily held in place by moistening the layers of liquid activated adhesive prior to permanent installation of the slide fastener on the garment by sewing or by applying heat to layers of heat bondable adhesive carried on the carrier tapes.

6 Claims, 6 Drawing Figures

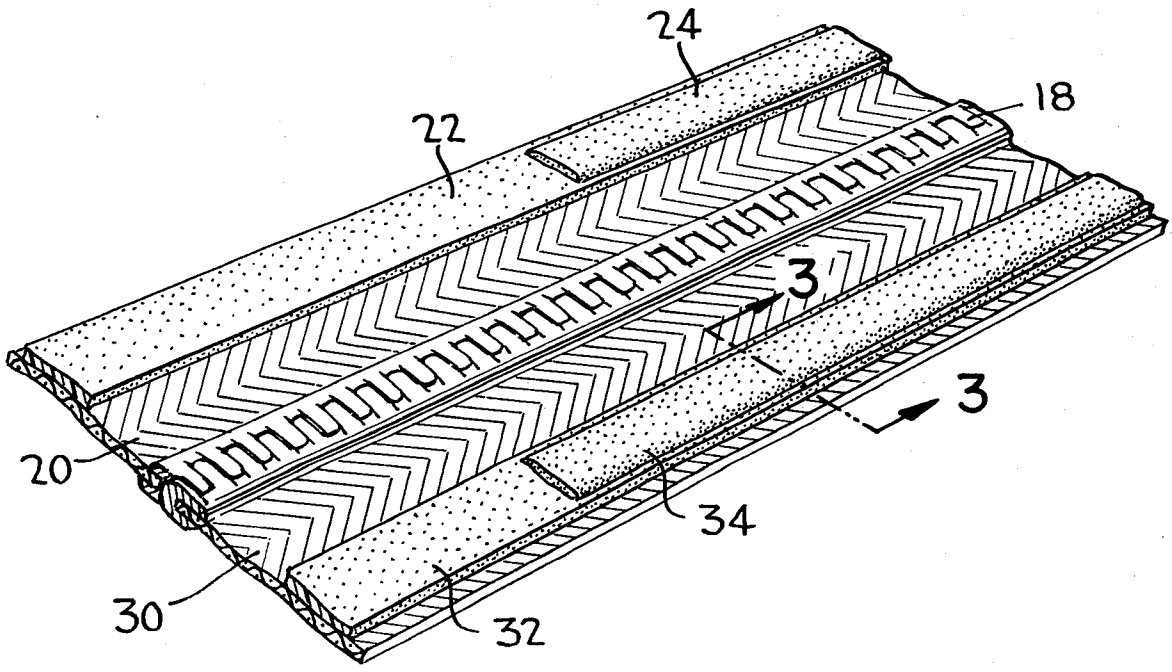


FIG. 1

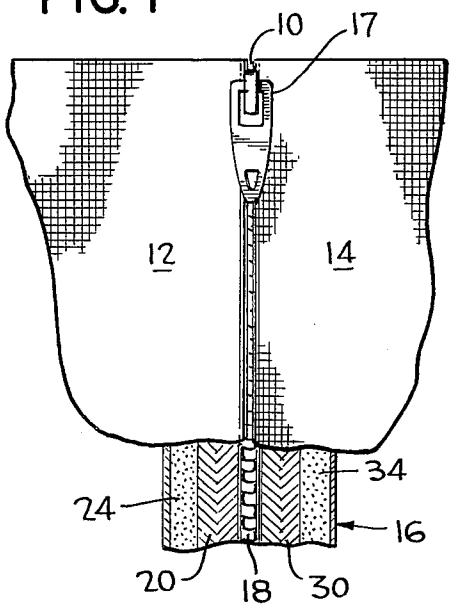


FIG. 3

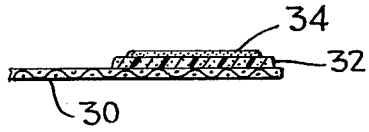


FIG. 4

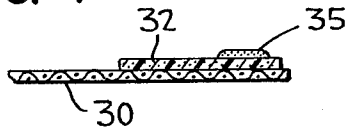


FIG. 5

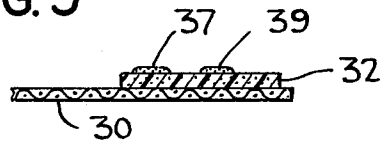


FIG. 2

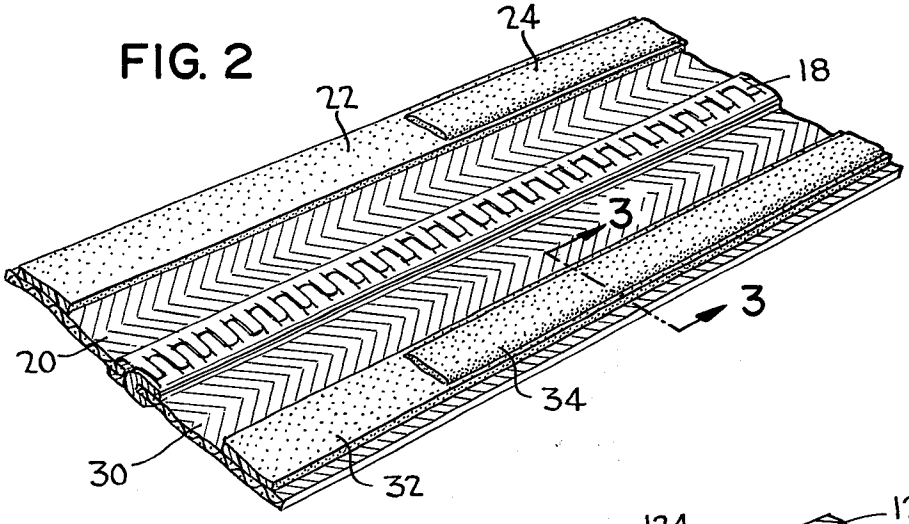
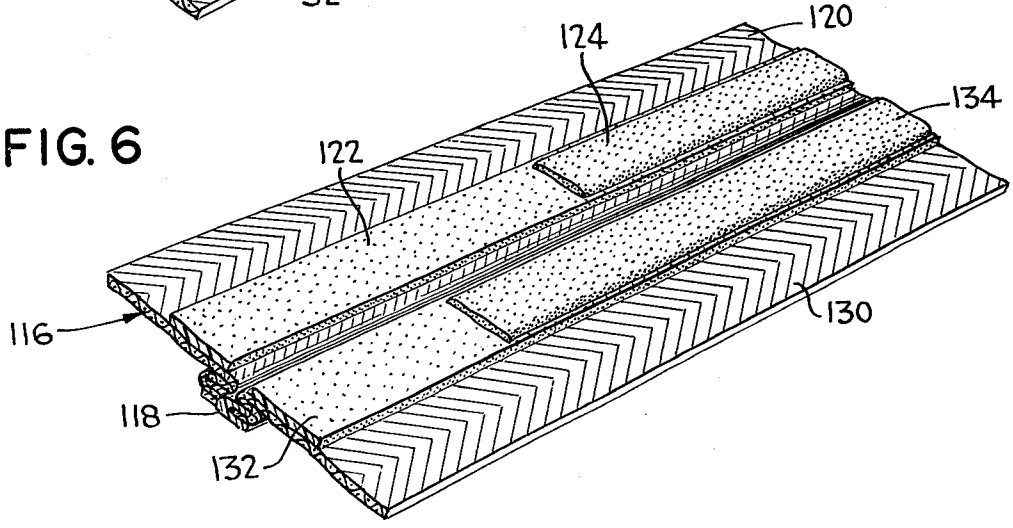


FIG. 6



ADHESIVELY SECURABLE SLIDE FASTENER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention pertains to slide fasteners and, more particularly, to slide fasteners for adhesive installation on articles and a method of installing such slide fasteners.

2. Description of the Prior Art

In installing a slide fastener as a closure for an opening in an article, such as a garment, it has been the general practice to sew the slide fastener to the article utilizing a sewing machine with a special presser foot designed for use with the particular type of slide fastener to be installed. The sewing or stitching of slide fasteners to articles has the disadvantages of requiring a special presser foot as noted above, of necessitating matching thread color with fabric and of requiring the necessarily complex steps concomitant with sewing, such as initial positioning of the slide fastener on the article by stitch basting or pinning. These disadvantages are compounded in the mass production of garments and other articles having slide fastener closures in that the steps required for sewing are difficult to perform automatically and are time consuming.

While the prior art, as exemplified by U.S. Pat. Nos. 2,768,922; 3,561,073; and 3,685,103, is generally cognizant of adhesively bonded slide fastener installations which avoid the need for sewing or stitching slide fasteners to garments, prior art efforts to utilize fabric bonding adhesives to eliminate sewing in slide fastener installations, in general, have not been found to be fully satisfactory. One of the problems with prior art methods of adhesively installing slide fasteners is that fabric flaps are required to have specific configurations and sizes to facilitate initial positioning of the slide fastener. While it has been proposed to obviate stitch basting and pinning by utilizing an adhesive to temporarily position the slide fastener, this has required the application of a separate strip of adhesive tape from a roll on the slide fastener and, thus, has the disadvantage of requiring proper positioning of the tape on the slide fastener by an installer prior to initial positioning of the slide fastener relative to the garment, which is a difficult task. Additionally, the adhesive tape is the pressure sensitive type which after prolonged storage may lose enough tackiness to allow good adherence; and, further if, during a sewing operation, the needle hits the adhesive tape, the pressure sensitive nature of the adhesive will cause the needle to gum up and the thread to break.

SUMMARY OF THE INVENTION

The present invention is summarized in a slide fastener for installation in an article including a pair of carrier tapes, and a layer of liquid activated adhesive on each of the carrier tapes whereby the slide fastener can be temporarily held in place by moistening the layers of liquid activated adhesive prior to permanent installation of the slide fastener or the article.

The present invention is further summarized in a method of installing a slide fastener on an article having main fabric sections with an opening therebetween including the steps of moistening layers of liquid activated adhesive carried on the carrier tapes of the slide fastener, positioning the carrier tapes of the slide fastener in contact with the main fabric sections, the carrier tapes being adhesively held in place on the main fabric sections by the layers of liquid activated adhesive, and permanently securing the carrier tapes of the slide fastener to the main fabric sections.

Accordingly, it is a primary object of the present invention to overcome the above described disadvantages of the prior art by providing a slide fastener that can be temporarily adhered to a garment and a method of installing a slide fastener on a garment wherein the slide fastener is temporarily held in place by liquid activated adhesive.

Another object of the present invention is to provide the carrier tapes of a slide fastener with a layer of liquid activated adhesive to facilitate positioning of the slide fastener prior to permanent securing to a garment.

A further object of the present invention is to dispose a strip of liquid activated adhesive on or near a strip of heat bondable adhesive on the carrier tapes of a slide fastener such that moistening of the liquid activated adhesive produces a tacky surface to hold the slide fastener in place while heat is applied to provide a permanent bond with the heat bondable adhesive.

The present invention has an additional object in that an adhesive is applied directly to the carrier tapes of a slide fastener, the adhesive being dry to the touch and being reactivated by wiping or moistening with a wet sponge or licking to provide a tacky surface for temporary positioning of the slide fastener.

Some of the advantages of the present invention over the prior art are that adhesive does not have to be applied by the installer and thus is always properly positioned for installation, sewing through the adhesive will not damage the thread, shelf life of the slide fastener is increased since the liquid activated adhesive is dry prior to reactivation, the liquid activated adhesive is water soluble and will completely dissolve during laundering leaving no residue, the slide fastener can be easily positioned for installation on a garment while eliminating curves or wrinkles in the slide fastener, and the slide fastener can easily be aligned and/or realigned prior to permanent bonding to a garment.

Other objects and advantages of the present invention will become apparent from the following description of the preferred embodiments taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view, partially broken away, of a slide fastener embodying the present invention;

FIG. 2 is a partial isometric view of another embodiment of a slide fastener embodying the present invention prior to installation;

FIG. 3 is a cross-sectional view taken along line 3—3 of FIG. 2;

FIGS. 4 and 5 are cross-sectional views of modifications of the slide fastener of FIG. 2; and

FIG. 6 is a partial isometric view of a further embodiment of a slide fastener embodying the present invention prior to installation.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

A portion of a garment or other suitable article having a slide fastener closure according to the present invention is shown in FIG. 1, the garment having an elongate opening 10 between main fabric sections 12 and 14. As is conventional, the main fabric sections 12 and 14 are folded upon themselves to form folded edges de-

fining opening **10** where a slide fastener **16** is to be installed in order to provide smooth and uniform fabric edges not subject to fraying. While separate sections **12** and **14** of the garment are illustrated, the sections can be parts of an integral fabric of a garment or parts of separate fabrics joined together, such as to a seam, to form the garment.

The slide fastener **16** has interengaging elements **18** aligned with opening **10** carried on the inner edge of a carrier tape **20** having laminated strip-like layers of adhesive **22** and **24** disposed along its outer edge, and a carrier tape **30** also carries interengaging elements **18** on its inner edge and laminated, strip-like layers of adhesive **32** and **34** along its outer edge as illustrated in FIGS. **2** and **3.** The layers of adhesive **22** and **32** are heat bondable adhesives responsive to the application of heat to form a permanent bond between the carrier tapes and the fabric sections, and the layers of adhesive **24** and **34** are water soluble and liquid activated such that moistening thereof will produce a tacky surface for temporarily holding the slide fastener in place while it is permanently secured to the garment.

In the embodiment of FIG. **1,** a method of installing a slide fastener according to the present invention utilizes a slide fastener **16** having only the strips of liquid activated adhesive **24** and **34** carried along the outer edges of carrier tapes **20** and **30,** the adhesive strips **24** and **34** being initially moistened to make the surfaces thereof tacky. With the adhesive strips **24** and **34** providing a temporary bond, the slide fastener is positioned on the garment in proper alignment, and the slide fastener is then permanently secured to the garment such as by sewing or, in the case of the slide fastener of FIGS. **2** and **3,** by heating the adhesive strips **22** and **32** while compressing the slide fastener and the garment to form a permanent heat bond. Since the liquid activated adhesive strips **24** and **34** are water soluble, the adhesive strips **24** and **34** will completely dissolve during the first laundering of the garment leaving no residue.

Modifications of the embodiment of FIGS. **2** and **3** are shown in FIGS. **4** and **5** with the primary differences between the modifications of FIGS. **4** and **5** and the embodiment of FIGS. **2** and **3** being that, while the liquid activated adhesive strips **24** and **34** are almost as wide as the heat bondable adhesive strips **22** and **32** in FIGS. **2** and **3,** a narrower strip **35** of liquid activated adhesive is laminated on adhesive strip **32** in FIG. **4** and a pair of very narrow strips **37** and **39** of liquid activated adhesive are laminated on adhesive strip **32** in FIG. **5** in parallel relation. The method of installing the slide fastener modifications of FIGS. **4** and **5** is the same as that described above with respect to FIGS. **2** and **3.**

A slide fastener **116** according to a further embodiment of the present invention is illustrated in FIG. **6** with parts similar to parts of the embodiment of FIG. **2** given the same reference numbers with 100 added. The primary difference between the embodiments of FIGS. **2** and **6** is that slide fastener **116** is of the type presenting a seam-like appearance, commonly referred to as invisible or hidden slide fasteners, the carrier tapes **120** and **130** being folded upon themselves such that the folded edges meet with the interengaging elements **118** out of view from the exterior of the garment. Strips of heat bondable adhesive **122** and **132** are carried on carrier tapes **120** and **130** adjacent the inner folded edges thereof and strip-like layers of liquid activated adhesive **124** and **134** are carried on strips **122** and **132,** respectively. The method of installing the slide fastener **116** is the same as that described above with respect to FIG. **2.**

Any suitable heat bondable and liquid activated adhesives may be used with the present invention such as those described in B. F. Goodrich Chemical Company Bulletin No. TC-3-A-1, November, 1959. Preferably, the heat bondable adhesives are of the thermoplastic type which will soften in response to the application of heat, such as from a conventional iron, and upon cooling will provide a lasting bond which is flexible and capable of withstanding normal machine washing and dry cleaning processes.

While the liquid activated layers of adhesive have been shown and described in the preferred embodiments as laminated on the layers of heat bondable adhesive, the liquid activated layers can be disposed at any position on the carrier tapes near the heat bondable adhesive to provide temporary positioning of the slide fastener. Similarly, while the liquid activated and heat bondable adhesives are preferably provided in continuous strip form, such adhesives can be provided in discontinuous form with various configurations.

Inasmuch as the present invention is subject to many variations, modifications and changes in detail, it is intended that all matter contained in the foregoing description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A slide fastener installation, the combination comprising

a pair of carrier tapes having outer edges and having inner edges adjacent each other,

a plurality of interlocking elements on each inner edge and being adapted for movement by a slider member which causes opening and closing of interlocking elements on one edge relative to the interlocking elements on the other edge,

a layer of heat bondable adhesive on each of said tapes,

a layer of water soluble, liquid activated adhesive on each of said layers of heat bondable adhesive whereby said slide fastener can be temporarily held in place on an article by moistening the layers of liquid activated adhesive on said tapes prior to permanent installation as by heating the heat bondable adhesive.

2. A slide fastener as recited in claim **1** wherein said layers of liquid activated adhesive and said layers of heat bondable adhesive are each formed of strips of adhesive narrower than said carrier tapes.

3. A slide fastener as recited in claim **2** wherein said strips of adhesive are disposed adjacent the outer edges of said carrier tapes.

4. A slide fastener as recited in claim **2** wherein said strips of adhesive are disposed adjacent the inner edges of said carrier tapes.

5. A slide fastener as recited in claim **2** wherein said strips of liquid activated adhesive are narrower than said strips of heat bondable adhesive.

6. A slide fastener as recited in claim **5** wherein each of said strips of heat bondable adhesive carries a pair of said strips of liquid activated adhesive in parallel relation.

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