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G. WALDES

3,208,420

GARMENT FASTENERS

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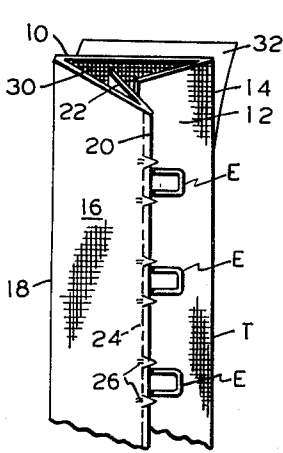


FIG. 1

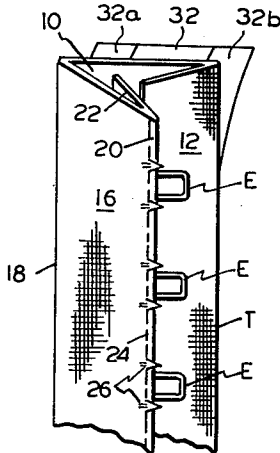


FIG. 2

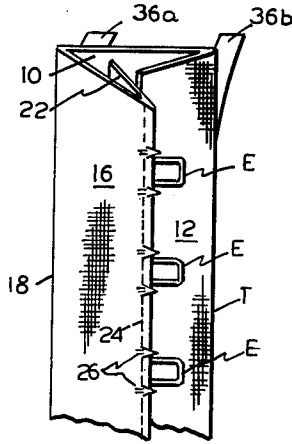


FIG. 3

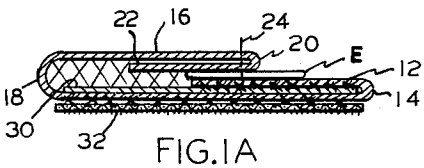


FIG. 1A

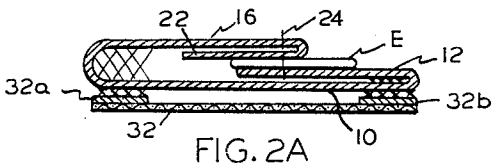


FIG. 2A

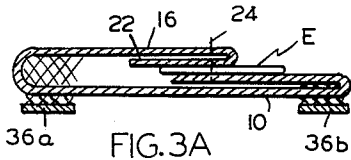


FIG. 3A

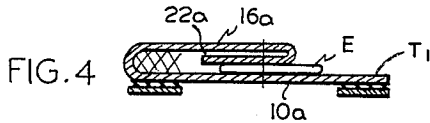


FIG. 4

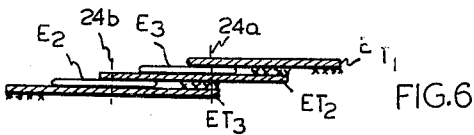


FIG. 6

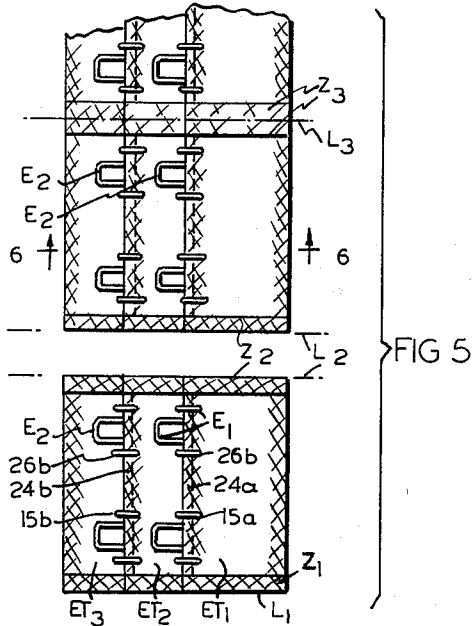


FIG. 5

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GARMENT FASTENERS

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1 Claim. (Cl. 112-407)

This invention relates to improvements in garment fasteners, and more particularly in hook-and-eye tape fasteners for use in providing closures for the opening of garments, such as ladies' undergarments.

It is now standard practice to provide hook-and-eye tapes for use as garment-opening fasteners in the form of two companion tapes initially having predetermined fastener length or alternatively in the form of so-called continuous tapes from which the predetermined fastener lengths are subsequently cut, which tapes carry oppositely disposed hook-and-eye fastener elements at regularly spaced intervals along their respective lengths which are adapted to be engaged and disengaged as desired. As is well known, these tapes are adapted to be sewn to the opposite edges of the garment opening or placket in position such that the hooks and eyes of the tapes register and thus may freely engage with and disengage from one another. Obviously, the use of hook-and-eye fastener tapes as aforesaid is more advantageous than the older practice of providing the garment opening edges with individual hook-and-eye fastener elements, not only in terms of simple and speedy application but, more importantly, in insuring correct spacing of the hooks and eyes, as in turn insures their registry necessary to regular and pleasing appearance of the closure.

However, in the manufacture of such fastener tapes to the form in which they are acceptable to the trade and fully usable for their intended purpose, certain requirements must be satisfied. For example, care must be taken that the fastener elements, i.e., the individual hooks and eyes, are attached to their tapes with a security sufficient to prevent them from being torn therefrom or loosened under the varied and sometimes relatively high forces which they are called upon to withstand in some uses of such a fastener. Secondly, the ever-increasing demand for neatness and good appearance requires that the hooks and eyes be masked from view in so far as is possible. For this reason, and also because the strength and security of the fastener is increased thereby, it has become customary to dispose and thereby hide the attaching end portions of the fastener elements in pockets or folds formed in their carrying tapes, so that only the operative or interengaging portions of said elements are visible and accessible to one another.

Furthermore, care must be taken to prevent fraying and unraveling of the tapes along their edges because such can impart an unsightly appearance thereto. Previously, this requirement was attempted to be satisfied by folding the longitudinal edges of the fastener tape towards one another to an edge overlapping relationship so as to form the eye pocket, then unfolding the overlapping edge of the folded-over edge disposed in said overlapping relationship, and thereupon stitching said folded-over and under edge portions in place. However, such was only partially effective in preventing unraveling of the tape edge portions, and the aforesaid double-edge-folding increased the thickness of the tape and further not only involved a stitching operation to secure the folded-under raw edge which was over and above that required to secure the fastener elements in place, but also one that usually had to be performed by a special stitching machine.

The aforesaid difficulties in manufacturing even the conventional hook-and-eye tapes meeting the present-day trade requirements are compounded in the special case where a plurality of short-length sections of such fastener

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tapes (and their fastener elements) are secured together in laterally offset or cascaded relation so as to form an adjustable eye-tape fastener for use in securing the ends of ladies' undergarments such as brassieres. In explanation, the plurality of short-length tape sections disposed in laterally offset or cascaded relation are suitably connected to one another so as to form a unitized eye-tape fastener adapted to be secured to a "bra" end via a piece of elastic webbing, for example, thereupon to cooperate with a corresponding short-length of hook tape adapted to be secured to the other end of the "bra" in providing a fastener which permits adjustment of the girth of the "bra." In such a cascaded eye-tape fastener arrangement, not only the edges of the longitudinal folds of the individual connected tapes but also the transverse edges resulting from the severance of the short-length sections making up the same from a longer or continuous fastener tape must also be prevented from unraveling.

A further consideration is that hook-and-eye fastener tapes are often provided with a lining and may also be faced on their inner or body-engaging sides with a usually textile material which is soft and pleasant to the touch, the lining giving so-called body to the tape, and the facing of the soft textile material adding to the pleasant feel of the fastener to the wearer. But even a so internally lined tape may take on an unsightly, crumpled appearance in use or through careless laundering, and in an attempt to avoid such a possibility, it was not uncommon to place between the folded-over edges of the tape or between the tape proper and the aforesaid lining a special stiffener, i.e. a thin strip-form insert of a material that stiffens the fastener as a whole and thus improves its appearance by overcoming the likelihood of the tape to crumple and becoming unsightly in use.

Stated broadly, an object of the present invention is not only to simplify the manufacture of fastener tapes of the character under discussion but also to improve the appearance, usability and life thereof, thereby making the fastener more acceptable to the trade.

A more particular object of the invention is the provision of a fastener tape which, through the judicious incorporation of a hardenable material, such as a plastic-type adhesive or one of the thermoplastic or thermosetting plastics, is effectively stiffened, is further protected against the possibility of taking on a worn or unsightly appearance caused by frayed raw edges of the tapes, is characterized by a neater and less bulky appearance, and is more comfortable to wear than fastener tapes of the hook-and-eye type made by the conventional manufacturing processes.

A more particular object of the invention is the provision of a fastener tape for use in hook-and-eye type fasteners particularly, in which the attaching portions of the fastener elements are adequately secured and are furthermore masked from view, without the necessity of double folding and sewing of the longitudinal edge of the tape portion forming one side of the pocket in which said attaching fastening portions of the fastener elements are enclosed.

Yet another object of the invention is the provision of a hook-and-eye fastener tape incorporating a hardenable material, such as a suitable plastic, which serves the manifold purposes of preventing unraveling of the raw tape edges, of eliminating the over-folding of one edge of the tape previously considered necessary, of eliminating one stitching operation required in the manufacture of the prior fastener tapes, and, finally, of stiffening the fastener to a degree that substantially improves its appearance.

Still another object of the invention is the provision of a simplified construction of eye tape for use in adjustably fastening the ends of a ladies' garment such as a brassiere.

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The above and other objects and features of advantage of the improved fastener tape for use in garment-type closure fasteners according to the invention will appear from the following detailed description thereof, in which reference is had to the accompanying illustrative drawings, wherein:

FIG. 1 is a fragmentary perspective view of one form of eye tape according to the invention, which incorporates both an internal lining and a separate under-facing or padding, prior to final assembly and bonding together of said parts;

FIG. 1A is a transverse section taken through the finally assembled and bonded eye-tape structure according to FIG. 1, with bonded areas being indicated by the legend —xxxx—;

FIG. 2 is a view similar to FIG. 1 but illustrating a modified tape bonding arrangement;

FIG. 2A is a transverse section taken through the finally assembled and bonded tape according to FIG. 2;

FIG. 3 is a view similar to FIG. 2 but illustrating a further tape bonding arrangement;

FIG. 3A is an enlarged section taken transversely through a fully assembled and bonded tape according to FIG. 3;

FIG. 4 is a section taken through another, more simplified basic tape structure illustrating a further embodiment of the invention;

FIG. 5 is a fragmentary view illustrating a stage of manufacture of an eye-tape for use as a "bra" end fastener incorporating the principles of the invention, and showing one complete eye-tape fastener severed from an indeterminate length of the plural tapes constituting the starting material therefor; and

FIG. 6 is a transverse section taken along line 6—6 of FIG. 5.

In the drawings, wherein the fastener tapes shown each comprises the so-called eye tape of a hook-and-eye tape fastener, reference character T generally designates the fabric tape component thereof, and reference character E the plurality of metallic fastener eyes carried thereby at regularly spaced intervals along the length of said tape. It will be understood that such an eye tape is adapted to be sewn to one edge of a garment opening or placket for cooperation with the corresponding hook tape (not shown) sewn to the opposite edge of said garment opening.

The aforesaid tape component T comprises a full-width, longitudinally extending body layer 10 having a first, approximately half-width, folded-over portion 12 integrally connected therewith along a longitudinal line of fold 14 which defines one, i.e. the forward or outer, longitudinal edge line of the tape proper, and a second folded-over portion 16 having initially width corresponding approximately to that of the body layer 10 and connected thereto along a longitudinal line of fold 18 defining the other longitudinal edge line of the tape proper. As best seen in FIG. 1, illustrating the tape prior to its final assembly (as in FIG. 1A), the longitudinal free edge portion of said second folded-over tape portion 16 is double-folded under with respect to itself along a longitudinal line of fold 20, thus to form a third folded-over portion 22. It will be noted that said line of fold 20 is so located laterally of the tape as to provide the second folded-over portion 16 thereof with width such that it laps over and thus covers the free edge of said first folded-over tape portion 12 and also to insure that the free edge of said third folded-over portion 22 terminates short of the line of fold 18, all as clearly shown in FIG. 1A. The aforesaid arrangement of the overall tape provides therein a longitudinally extending pocket whose mouth is defined by the rearwardly disposed, free edge zone of said first folded-over tape portion 12 and the overlying adjacent zone of the third (folded under) tape portion 22. Into this pocket the attaching end portions of the fastener elements (eyes) E are inserted to a depth such that only their inter-engaging bight portions are visible, and thereupon said eyes are secured by a longitudinal line

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of stitching 24, and preferably also by short-length transverse stitches 26 (FIG. 1) which pass completely through the folded-over tape portions, as indicated in FIG. 1A, it being noted that the longitudinal line of stitching 24 is offset at but a short distance rearwardly from the fold line 20 so that it has no effect of securing, stiffening and/or providing any protection for the edges of the tape body portion.

The tape fastener shown in FIGS. 1 and 1A is of the type that is provided with a lining strip 30 which is conventional per se. However, where such a lining strip is employed, it is a feature of the invention that said strip 30 is surfaced as by coating or spraying with a layer of, or is impregnated or otherwise suitably wetted with, a bonding material which preferably also is hardenable to a substantial degree, thus to serve the dual purpose of bonding the folded-under tape portions 12, 16 and 22 to the body portion of the tape in manner as to prevent fraying of any and all edges thereof and also to impart sufficient stiffness to the fastener tape as a whole as to impart thereto a neat, smooth and uncrumpled appearance.

The form of fastener tape shown in FIGS. 1 and 1A also incorporates on its under or body-engaging face a padding strip 32 of soft material pleasant to the touch, and it is a feature of the invention that this padding, rather than being secured by stitching, is also bonded to the base layer 10 of the tape by the aforesaid bonding material applied to the lining strip 30.

By the term "bonding material," as used in the foregoing description and in the appended claim, is meant any of the usual commercial hardenable adhesives suitable to the purposes and objects of the invention, including the plastic cements sold in liquid form or adapted to be rendered liquid by a suitable solvent, and also the plastics of the so-called thermosetting and thermoplastic type which, when applied as a surface film or coating, are capable of serving as textile-to-textile bonding agents. As indicated above, the bonding materials employed will be of a type that can be applied by spraying or other coating procedures, or by impregnation, or simply by contacting the strip or area which is intended to carry the bonding material with a pad or roller immersed therein.

When bonding of the folded-over tape portions to the base layer portion 10 of the tape is effected as aforesaid, not only does firm and secure attaching of said tape portions result, but also such is achieved without the necessity of the usual underfolding and added stitching operations previously considered necessary to prevent or guard against the edge portions of the tape from fraying or unraveling. Thus, a fastener tape constructed according to the invention is featured not only by a much simpler manufacture but also by a neater and less bulky appearance than corresponding fastener eye tapes made by the known procedures.

Referring to FIGS. 2 and 2A, such illustrate a modified form of eye tape incorporating the basic tape body and eye structure and arrangement as previously described for the FIGS. 1 and 1A form but differing therefrom in the omission of the lining strip 30 and further in that the bonding material is applied to the face of the base layer of the soft-material padding 32 which engages the full-width body portion 10 of the tape. Preferably also, said bonding material is applied only to relatively narrow, longitudinal edge zones of the padding under-face as designated at 32a, 32b, but nevertheless for a width thereof which is sufficient to effectively bond the longitudinal side-edge portions of the folded-over tape portions 12 and 16 to the corresponding side edge portions of the tape body portion 10 to a degree preventing fraying or unraveling of the said bonded edge portions.

According to the illustrated FIGS. 3 and 3A modification, the bonding material, initially in the form of thin longitudinal edge strips 36a, 36b of thermo-setting plastic bonding material in a tacky state, for example, is applied

to the under or body-side face of the tape portion 10, thus ultimately to effect bonding together of the overlying-underlying of areas or interfaces of the tape capable of being affected by the bonding material, as is indicated in FIG. 3A.

It will of course be understood that, rather than omitting the lining strip 30 completely, as suggested for the FIGS. 2 and 3 embodiments, it may instead be retained and have the bonding material applied thereto along its longitudinal edge zones (corresponding to those designated 32a, 32b in FIG. 2), in which case it would still act to bond the longitudinal side edge portions of the folded-over tape portions 12 and 16 to the corresponding edges of the main or body portion 10 of the tape to about the same extent as indicated in FIGS. 2A and 3A.

Referring to FIG. 4, it is also possible, through the use of the bonding material principle of the invention, to simplify the basic tape structure as by eliminating the aforesaid folded-over tape portion 12, for example, in conjunction with applying the bonding material both to the now single-ply edge portion extending along the forward edge of the tape proper and to the opposite but still folded-over rearward edge. More particularly, FIG. 4 depicts in transverse section such a simplified tape T₁ to comprise a body portion 10a, a rear-edge folded-over portion 16a and an under- or back-folded portion 22a, the two latter tape portions corresponding to the tape portions 16 and 22 of the prior-described tape forms. Thereupon, according to the invention, bonding material is applied to the entire area of the tape, or simply to its longitudinal edge portions, it being understood that the material applied to the now unfolded tape edge portion is employed primarily for its hardening properties which serve to stiffen the tape material and hence prevent fraying and/or unraveling. For certain uses, it is also possible to further simplify the basic tape structure, particularly for use as an eye tape, by also eliminating the aforesaid third or under-folded tape portion 22 and insure against fraying or unraveling of the free edge of the remaining folded-over portion 16 by applying the bonding material thereto as well as to both edge portions of the tape proper as aforesaid.

As forecast above, the invention is also concerned with the simplification in manufacture of the short-length eye-tape end fasteners used, in conjunction with a suitable hook tape, for fastening of the ends and providing for size adjustment of a garment such as a ladies' brassiere. As is well known, such an eye-tape end fastener is one providing two or more series of say two fastener eyes arranged in offset relation, that is, said series of eyes are set back from one another in transverse direction as respects the length of their tapes. In the manufacture of such eye-tape end fasteners, it is usual to assemble plural eye tapes in long lengths and then sever same to the short length required for a "bra"-end fastener, thus creating the problem of finishing the raw-cut end edges of the tapes as well as any and all other edges likely to fray and ravel as above. The present invention solves this problem in simple yet effective manner by applying bonding material across transverse zones of the tapes designated Z₁, Z₂, Z₃, etc. medially through which the lines of cut L₁, L₂, L₃, etc. are to be made. The so-applied bonding material serves the dual function of bonding the superposed tapes ET₁ and ET₂ to their respective underlying tapes ET₂ and ET₃ throughout the transverse end zones treated therewith and also of preventing fraying of the cut end edges resulting from the lines of transverse cut L₁, L₂, L₃, etc., so that no further finishing or binding of said edges is required.

While it is possible to make up the individual eye tapes from which the just described eye-tape end fasteners are fashioned (as in FIG. 5) in various ways and forms, FIG. 6 illustrates an extremely simple form thereof made possible by the present invention. More particularly, the aforesaid tapes ET₁, ET₂ and ET₃ are each

single thickness, unfolded tapes arranged in laterally offset relation, thus to form two laterally offset fastener-eye receiving pockets into which the attaching end portions of two laterally offset series of fastener eyes E₁ and E₂ are inserted and secured by lines of stitching 24a, 24b and transverse stitches 26a, 26b. To prevent fraying of the longitudinal i.e. vertical side, edges of the superposed tapes, the aforesaid bonding material is applied to at least both longitudinal edge portions of the several tapes, as indicated by the "xxx" lines in FIG. 5. Of course, rather than applying the bonding material to only the edge portions of the tapes, they may be surfaced or impregnated with same throughout. Thus the application of the bonding material is designed and intended to prevent fraying and unraveling of all edges, whether cut or uncut, of the tape or tapes making up the "bra"-end fastener, and also to stiffen the same to the degree considered necessary or desirable.

While the foregoing description has centered around the fastener tapes of the invention being hook-and-eye tapes and the interengaging fastener elements being hook-and-eye type fastener elements, it will be understood that the principles of the invention are applicable to other forms of tape fasteners, such as those employing stud and socket-type snap fasteners, for example, as the fastener elements. Therefore, as many changes could be made in carrying out the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

In a fastener for adjustably securing the ends of a ladies' brassiere to one another, eye-tape fastener means affixed to one end of said garment for cooperation with hook-tape fastener means affixed to the other end of the garment and comprising a tape component and a plurality of fastener eyes carried by said tape component, said tape component comprising a plurality of short-length tapes arranged in overlying-underlying relationship and with the overlying tapes being set back from the underlying tapes, whereby said tapes define forwardly opening and laterally offset pockets between the pairs of overlying and underlying tapes, the attaching portions of said eye fasteners extending into said pockets and being secured in place therein by stitches whereby said fasteners are also arranged in laterally offset relation, said tapes being of single ply, unfolded construction throughout, the end edge portions of said tapes incorporating a hardened plastic substance which bonds the overlying-underlying end edges of the tapes together and also prevents said end edges from fraying, and both side edges of said tapes also incorporating said hardened plastic substance which prevents same from fraying.

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