Dec. 14, 1943. D. C. LIPPMANN 2,336,554

CLOSURE FASTENER

Filed Aug. 21, 1941

Fig. 1.

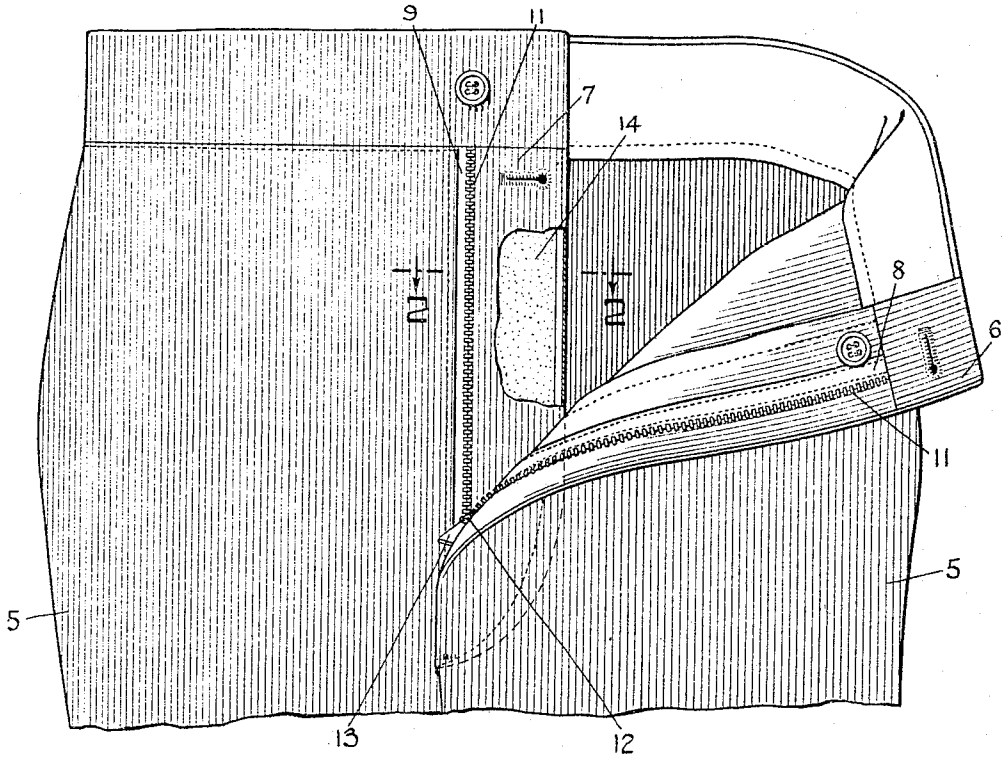


Fig. 2.

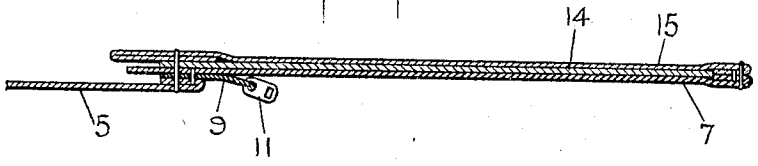
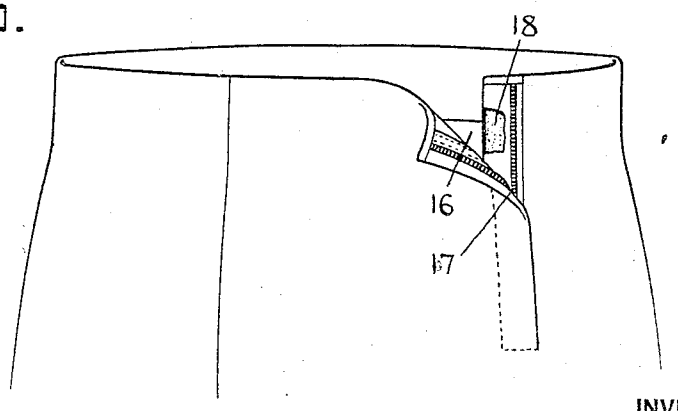


Fig. 3.



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CLOSURE FASTENER

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6 Claims. (Cl. 2—234)

This invention relates to improvements in closures, and relates more particularly to improvements in the construction of closures wherein a separable or slide fastener is employed as the closure member, whereby the opening and closing of the separable or slide fastener is facilitated and other advantages obtained.

Separable or slide fasteners are now quite commonly employed as closure members for articles of wearing apparel including women's and men's clothing, shoes, slippers, and overshoes, for luggage, for shaving kits, for pocketbooks and hand bags, and for many other articles. These separable or slide fasteners are applied to the closure by attaching to the material of the article on each edge of said closure a stringer carrying locking members. These locking members are caused to engage and disengage by means of a slider, as is well understood in the art. However, the use of such separable or slide fasteners is not always satisfactory, particularly where the fastener is employed as the closure member on articles of flexible material. This is due to the fact that upon opening or closing the fastener, the pull on the slider, which operates the locking members on the stringers, causes the material of the article, and thereby the stringers affixed thereto, to buckle or pucker which results in a binding action between the locking members and the slider. In most cases it is necessary to hold the stringers of the fastener taut manually during the opening and closing operation to permit of the free movement of the slider and to prevent this binding action. Moreover, the buckling or puckering of the material and the stringers of the fastener often prevents the proper interlocking or engaging of the locking members or causes an improper interlocking thereof, thus destroying the utility of the fastener.

It is accordingly an important object of this invention to provide an improved closure construction for closures employing separable or slide fasteners whereby the buckling or puckering of the material of the closure, and thereby that of the stringers, is prevented and binding between the locking members and the slider is obviated.

Another object of this invention is the provision in closure fasteners of separable type of stiffened area adjacent to and coextensive with the locking members whereby binding between the locking members and the slider is substantially eliminated.

A further object of this invention is the provision of improved closure fasteners of the separable type of articles of wearing apparel wherein at least a portion of the closure in said article is stiffened along the length of the closure fastener so as to prevent the buckling or puckering of the material along the closure and to permit of the opening and closing of the separable fastener without binding between the locking members and the slider.

Other objects and advantages of this invention will appear from the following detailed description.

According to this invention a closure employing a separable or slide fastener, wherein two stringers carrying locking members and a slider for engaging and disengaging said locking members are employed, is provided along at least one set of locking members with means for preventing buckling or puckering of the material of the closure and for eliminating binding of the separable or slide fastener during the opening or closing thereof. This means, in accordance with this invention, may comprise the use of fabric stringers at least one of which is made of, contains or is coated with a thermoplastic material to stiffen the same. Preferably, however, the material of the articles adjacent to and coextensive with at least one of the stringers is stiffened in any suitable manner.

Where it is desired to employ stiffened stringers in order to prevent buckling or puckering thereof and binding of the slider action, the stringer is preferably a strip of fabric made of or containing thermoplastic filaments or yarns which may be treated in any suitable manner, before or after the locking members are attached thereto, in order to stiffen the same. For example, the stringer material may be treated with a solvent or plasticizer for the thermoplastic material and then subjected to the action of heat and pressure, in the presence or absence of moisture, so as to cause the stiffening of the stringer material. Where the stringer material is non-thermoplastic in character the material may be stiffened by treating the same with a solution of a thermoplastic derivative of cellulose and plasticizer therefor and then subjecting the same to the action of heat and pressure.

In the preferred embodiment of my invention, the material of the article immediately adjacent to and coextensive with at least one of the stringers is stiffened in any suitable manner such as by the use of a thermoplastic material which may be employed with or without a plasticizer or solvent therefor and may be in the form of a solution thereof in a volatile solvent, a powder, a slurry of the powder or a film or foil. Or, the

thermoplastic material may comprise the yarns, filaments or fibers of a fabric.

Any suitable thermoplastic material may be employed in accordance with my invention. For example, I may employ natural resins such as sandarak, synthetic resins such as polymerized vinyl acetate resin, or phenol-formaldehyde or similar resins or polymerized acrylic and methacrylic ester resins. However, it is preferred to use cellulose derivatives and particularly organic derivatives of cellulose such as cellulose esters and cellulose ethers. Examples of cellulose esters are cellulose acetate, cellulose propionate and cellulose butyrate while examples of cellulose ethers are ethyl and benzyl cellulose. Since highly satisfactory results are obtained by employing a strip or tape of fabric made of or containing cellulose acetate and a plasticizer therefor the invention will be described with particular reference to the use of this fabric.

According to one method of carrying out this invention the strip of fabric made of or containing cellulose acetate yarns, fibers or filaments is placed adjacent to and coextensive with at least one stringer of the separable fastener forming the closure member and the strip is then laminated to the material of the article in any suitable manner. The lamination may be effected in any one of a large number of ways, taking into consideration the nature of the material of the article. A convenient method of effecting the lamination of the material of the article with the strip of cellulose acetate material containing a plasticizer for the cellulose acetate is to subject the layers to the action of heat and pressure in the presence of water or aqueous liquid which may be applied to the assembly by dipping, spraying or brushing. By the use of this laminating method not only is the non-thermoplastic layer of material unaffected in appearance but also in the resulting product there obtain good stiffening effects and firm adhesion.

Any suitable plasticizer for the cellulose acetate may be employed, which plasticizer may or may not be soluble in water. Examples of suitable relatively water-insoluble plasticizers for cellulose acetate are dimethyl phthalate, diethyl phthalate and di-methoxyethyl phthalate, while examples of relatively water-soluble plasticizers are diethyl tartrate, dimethyl tartrate, monoacetin diacetin and triacetin. A mixture of two or more of these plasticizers may be employed. In some cases, particularly where the laminated product may be subjected to many launderings, it is advantageous to employ a mixture of water-soluble and water-insoluble plasticizers, so that upon subsequent laundering the whole or part of the water-soluble plasticizer is removed. The amount of plasticizer employed is preferably substantial i. e. on the order of from about 25% to 150%, based on the weight of the cellulose acetate present.

To further illustrate my invention but without being limited thereto, reference is had to the accompanying sheet of drawings wherein

Figure 1 is a view of a portion of a pair of trousers, the fly of which is adapted to be closed by a separable or slide fastener, a portion of said fly being broken away to show the intermediate or adhesive layer or strip,

Figure 2 is a cross-sectional view taken on line 2—2 in Figure 1 in the direction of the arrows, and

Figure 3 is a view showing my invention as applied to a placket of a skirt.

Like reference numerals indicate like parts throughout the several views of the drawing.

Referring now to the Figures 1 and 2 of the drawing reference numeral 5 indicates generally a pair of men's trousers having a fly portion formed by flaps 6 and 7. These flaps are adapted to be closed by a separable fastener the stringers 8 and 9 of which are sewn to the flaps 6 and 7, respectively, in any suitable manner. These stringers carry locking members 11 which are engaged or disengaged by movement of slider member 12 by means of pull 13. In the modification shown in Figures 1 and 2 only one flap of the fly, namely flap 7, is shown stiffened adjacent to and coextensive with the stringer, it being understood, however, that both flaps may be stiffened. The flap may be stiffened either before or after it is made an integral part of the trousers, since in the manufacture of a pair of men's trousers this flap is seldom an integral part of the remainder of the trousers material but is usually formed as a separate portion and then sewn into position in the trousers. The stiffening of flap 7 is effected by applying to the fabric of the fly, as by sewing, a strip of plasticized cellulose acetate adhesive fabric 14 together with an outer piece of lining fabric 15 and the three layers are subjected to the action of heat and pressure in the presence of moisture in order to form a firmly adherent stiffened flap. The strip of fabric 14 may consist wholly of cellulose acetate filamentary materials or it may comprise a base of a non-thermoplastic material in which cellulose acetate material is incorporated.

In Figure 3 my invention is shown applied to a woman's skirt where a placket 16 is closed by means of a separable fastener generally indicated by reference numeral 17, one flap of the placket containing an adhesive material 18 to stiffen the same.

It is to be understood that the foregoing detailed description and drawing are given merely by way of illustration and that many variations may be made therein without departing from the spirit of my invention.

Having described my invention, what I desire to secure by Letters Patent is:

1. A closure fastener comprising a separable or slide fastener having a plurality of stringers carrying locking members thereon and a slider for engaging and disengaging said locking members, at least one of said stringers being formed of a stiffened thermoplastic material.

2. A closure fastener comprising a separable or slide fastener having a plurality of stringers carrying locking members thereon and a slider for engaging and disengaging said locking members, at least one of said stringers comprising a stiffened fabric having a basis of an organic derivative of cellulose and containing a plasticizer therefor.

3. A closure fastener comprising a separable or slide fastener having a plurality of stringers carrying locking members thereon and a slider for engaging and disengaging said locking members, at least one of said stringers comprising a stiffened fabric having a basis of cellulose acetate and containing a plasticizer therefor.

4. A pair of men's trousers having a fly therein and a closure member for said fly, said closure member comprising a separable or slide fastener having a plurality of stringers carrying locking members and a slider for engaging and disen-

gaging said locking members, at least one of said stringers comprising a strip of fabric comprising a thermoplastic material, the construction and arrangement being such that buckling and puckering of the material is prevented and binding of the locking members with the slider is eliminated.

5. A pair of men's trousers having a fly therein and a closure member for said fly, said closure member comprising a separable or slide fastener having a plurality of stringers carrying locking members and a slider for engaging and disengaging said locking members, at least one of said stringers comprising a strip of fabric comprising a plasticized organic derivative of cellulose, the construction and arrangement being such that buckling and puckering of the material is prevented and binding of the locking members with the slider is eliminated.

6. A pair of men's trousers having a fly therein and a closure member for said fly, said closure member comprising a separable or slide fastener having a plurality of stringers carrying locking members and a slider for engaging and disengaging said locking members, at least one of said stringers comprising a strip of fabric comprising plasticized cellulose acetate, the construction and arrangement being such that buckling and puckering of the material is prevented and binding of the locking members with the slider is eliminated.

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