

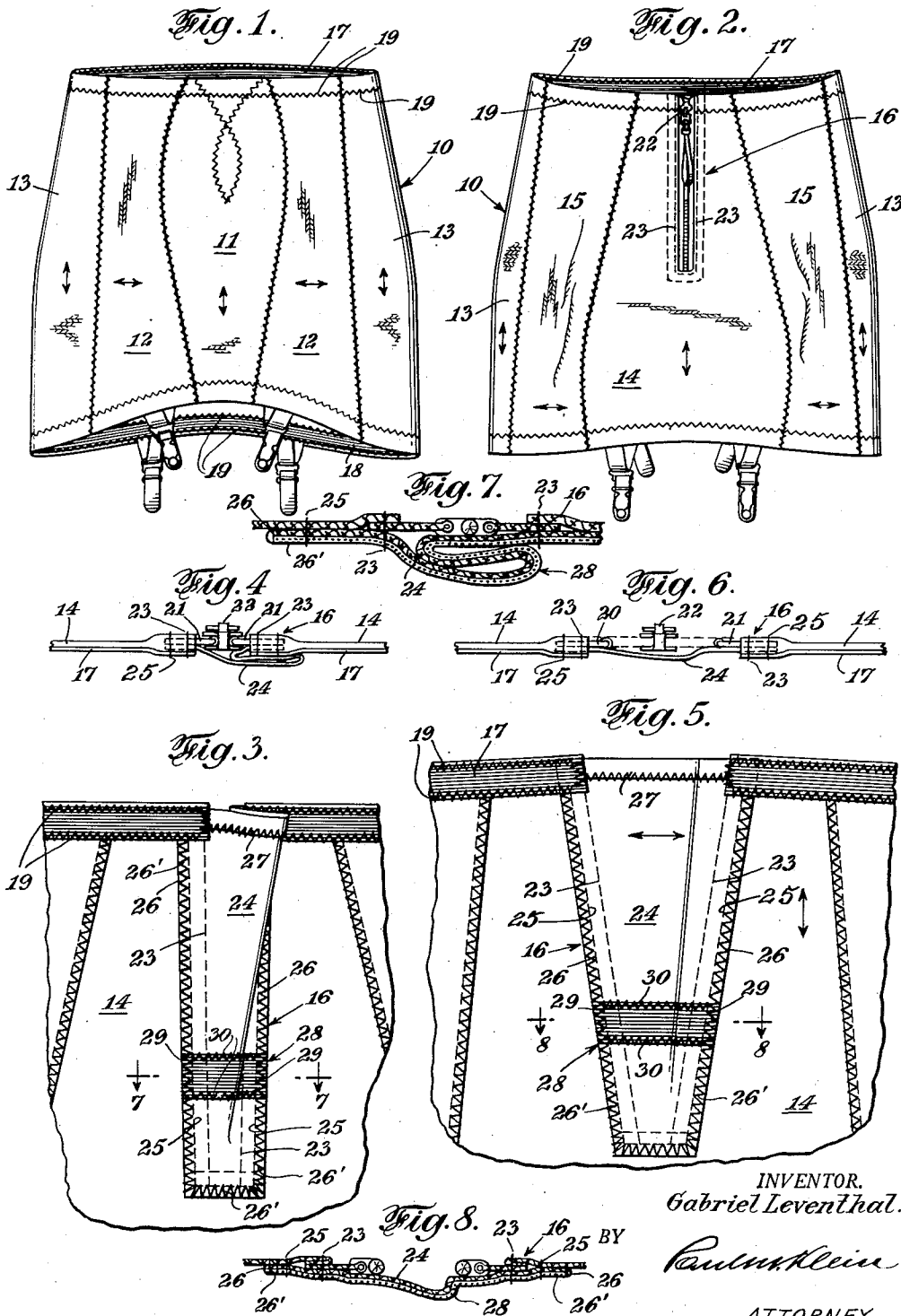
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CLOSURE APPLIANCE

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CLOSURE APPLIANCE

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1 Claim. (Cl. 2—38)

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This invention relates generally to closure constructions for various commodities made of flexible material, including fabrics used in garments, and finding advantageous application in connection with corsets, girdles, foundation and combination garments, the present disclosure particularly concerning slide fastener structures having a self-folding interior backing or shield in rear of the fastener, and to the method of producing such self-folding shield.

The application of slide fastener closures provided with backings or shields to garments and many other articles is well known. However, when such slide fastener closures are applied to the type of undergarments indicated, these closures often become a source of great annoyance and discomfort to the wearer, both during the closing and opening operations, as well as when worn in closed position, since they are known to have the propensity of catching and thus preventing smooth functioning. Moreover, it is highly desirable that the fastener elements of a closed fastener be separated from the body. For that reason a backing or shield is preferably provided in rear of the slide fastener by attaching the edges of such shield to the edges of the garment material and to the stringers of the fastener, whereby the shield forms so-to-speak a bridging element in rear of the fastener structure.

In undergarments it has been found convenient to make these shields from either thin fabrics or from light, easily stretchable resilient material, preferably expansible in one direction only, such as horizontally, in order to render them unobtrusive and comfortable to the wearer. Nevertheless, even by making these shields from relatively light elastic material, they become bulky and uncomfortable due to irregular folding, and leave visible impressions upon the body. In order to overcome the above-outlined shortcomings of heretofore used backings of shields, the present invention contemplates the provision of a shield structure which will automatically fold itself in an orderly flat manner, thereby preventing a haphazard, bulky accumulation of shield material, and at the same time causing the shield to apply itself to the body of the wearer.

In addition to the above outlined features of the present invention, it is further contemplated to restrict excessive expansion of the shield material, especially at the lower end of the shield structure which usually is subject to excessive stresses, often resulting into undue damage to not only the shield material, but also to the fastener structure, thereby rendering the latter useless.

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Having thus briefly outlined the salient features of the present invention, its principal objects are the provision of a fastener structure with an automatically folding and self-flattening shield, and the method of producing such shield.

A more specific object of this invention is the provision, in combination with a slide fastener, of an automatically folding and self-flattening shield made from relatively light and easily expandible elastic material in conjunction with an elastic band made from relatively strong resilient material which will resist expansion to a much greater degree than the shield material, and wherein the band is most firmly attached along its entire body to the body of the shield material, such as by zigzag stitching, and wherein the ends of the band are similarly secured to the edges of the shield, and wherein the band is located at a certain distance from the normally joined ends of the slide fastener stringers, and wherein the shield edges are reinforced and are rendered relatively free when their edge areas are united not only with the edges of an opening to be closed by the slide fastener, but also with the stringers of the latter.

Another object of this invention is the method of producing an automatically folding and self-flattening shield for closures when the latter are brought to their closing position, and which method comprises the firm, bodily attachment to and across the body of a relatively light shield material, of a relatively strong, pull-resisting elastic element, while the shield material is in its normal, unstretched state and while the element is subjected to tension.

A still further object of the present invention is the provision and the method of producing an automatically folding and self-flattening instrumentality by applying to a relatively light and pliable sheet of material an elastic element of relatively strong resistance to pull so that the body of the element becomes firmly united along its entire length with the body of the sheet material and extends from edge to edge of the latter.

These objects and various additional features and advantages of the present invention will become more fully apparent from the ensuing description, in conjunction with the accompanying drawings, which latter are designed to serve merely for explanatory purposes and are by no means intended in a restrictive sense, and in which drawings:

Fig. 1 is a front elevation of a girdle;

Fig. 2 is a rear view thereof disclosing a fastener structure in accordance with the present invention;

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Fig. 3 is an enlarged detail view of the fastener structure shown from within the garment and with the slide fastener in closed position;

Fig. 4 is a top view of Fig. 3;

Fig. 5 is a similar view to that of Fig. 4 with the slide fastener structure open;

Fig. 6 is a top view thereof;

Fig. 7 is a section taken on line 7—7 of Fig. 3; and

Fig. 8 is a section taken on line 8—8 of Fig. 5. In the drawings, numeral 10 denotes a girdle structure having, as seen in Fig. 1, a front panel 11, preferably made of elastic material expandible in vertical directions, and which panel is joined by means of two adjacent elastic panels 12 with elastic side or hip panels 13. The latter are also preferably expandible in vertical directions, while the joining panels 12 are expandible laterally or in horizontal directions.

Corresponding to front panel 11 there is a rear panel 14, shown in Fig. 2. Panel 14 is also made of elastic material expandible in vertical directions and is joined with panels 13 by means of connecting panels 15 expandible in lateral or horizontal directions. Rear panel 14 is provided with an opening at substantially its upper half controlled by a slide fastener structure generally indicated at 16, the construction of which will be explained presently.

All panels of the garment have at their interior top and bottom edges elastic band reinforcements 17 and 18, respectively, which bands are expandible longitudinally. However, their expandibility is restricted at the edges of panels 11, 13 and 14 since these panels prevent lateral expansion. As will be observed, the elastic bands 17 and 18 are attached to the edges of the garment by what is known as zigzag stitching 19.

Slide fastener closure

The construction of the slide fastener closure in accordance with the present invention is illustrated in greater details in Figs. 3 to 8 and comprises the usual slide fastener arrangement composed of two stringers 20 and 21, at the free edges of which are provided cooperating slide fastener elements. A slider 22 is intended to either bring the slide fastener elements in engagement with one another, thus drawing the stringers toward each other, or to disengage the elements and causing the separation of the stringers.

These stringers are secured by means of vertical stitches 23 to the edges of the garment material which is slit to form the opening in panel 14. At the interior face of the panel opening there is provided a shield 24; the edge areas of which latter are held in place and against the edges of the panel opening and the stringers by the same stitching 23, but in addition are attached near their margins by an exterior row of stitching 25. That row of stitching leaves substantially free the outermost edge margins 26, which are preferably reinforced and finished by a relatively coarse zigzag stitching 26'. The top edge of shield 24 is formed by folding the shield material upon itself and securing its edge to the shield proper by zigzag stitching, as at 27 in Figs. 3 and 5.

The shield body may be made from any type of flexible but relatively light or thin fabric or other material, however for undergarments of the kind indicated, the use of a resilient textile is preferred, especially the kind of elastic fabric which is expandible in one direction only, such as laterally or horizontally in respect to the verti-

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cal axis or length of the garment. Another important requirement in the material for the shield is its high flexibility, its relatively easy expansibility and its ability to be readily folded and to apply itself to the body of the wearer without causing discomfort.

As illustrated in Figs. 3 and 5, backing shield 24 comprises a substantially V-shaped or wedge-shaped panel, with its longer, top end connecting the upper ends of the edges of the opening formed in rear panel 14, while its bottom end straddles the lower end of the opening and the normally closed, lower end of the slide fastener.

Attention is now directed to instrumentality 28; which is adapted to automatically fold the shield material and to render it self-flattening, as indicated in Figs. 3, 4 and 7, when the slide fastener is being closed or is in closing position. Instrumentality 28 constitutes a tightly woven elastic band element which is designed to relatively strongly resist pulling action, and which element is bodily secured both at its ends 29 as well as along its longitudinal edges 30 to the body of the shield material by relatively close zigzag stitching, while the element is placed under slight tension and while the material of the shield remains in an unstretched, normal state. The ends 29 of element 28 are associated with the free edge margins 26 of shield 24 by the zigzag stitching 26' already mentioned. Thus the body of elastic 28 is firmly and intimately united with the body of shield 24 by the stated zigzag stitching, and when thus united, and under the conditions stated, will have the tendency of automatically folding the relatively much lighter body of shield 24, and thereby causing the shield material to automatically flatten out, when slide fastener 16 is being closed. These automatic folding and flattening features are best illustrated in Figs. 3 and 4, and also in Fig. 7, in which latter figure both the shield as well as elastic 28 are shown exaggeratedly enlarged to more clearly define the different elements of the structure. Only by following the above indicated method of uniting element 28 with the material of shield 24 will result the intended function of automatically folding the shield material when the slide fastener is being closed. In addition to the function of element 28 of folding the shield material, that element also serves as restraining means against excessive expansion of the shield material when the slide fastener is in open position and during the time the garment is being donned. Element 28 readily compensates for the strain during the donning operation and prevents not only tearing of the shield material, but also greatly minimizes the possibility of damage to the open fastener structure and to the garment material. Thus element 28 accomplishes several important and very useful and desirable effects in conjunction with a fastener closure.

Attention is invited to the location of element 28 in respect to the slit edges of panel 14. It will be noted that element 28 is positioned a substantial distance from both termini of the edges formed by the slitting of panel 14 and that the element is located approximately at the lower third of the total length of these edges, as may be observed from Figs. 3 and 5. Due to the fact that the ends 29 of the element are secured in place while the element is held under tension, and further due to the strong resistance of the element to pulling action, the lower end of shield 24 is never allowed to unfold or to assume a fully stretched position, as is clearly indicated by

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the shading shown in Fig. 5. Thus that lower end of the shield, being maintained in its folded position, serves so-to-speak as a pilot fold and initiates and propagates the automatic folding and flattening of the entire shield body in upward direction, when strain upon element 28 ceases.

While in the foregoing a closure of the slide fastener type, including a self-folding shield, is dealt with, as applied to a garment, it is quite obvious that any other closures having other means for detachably uniting the edges of an opening structure may be equipped with such self-folding shield, irrespective of whether or not the closures are parts of garments or of articles which do not constitute objects of clothing. By the same token it is equally obvious that when such closures provided with automatically folding and self-flattening shields are applied to various garments or articles other than garments, changes and improvements in the construction of the closures may be necessitated in order to render them effective for such garments or other articles, and it is to be understood that such changes and improvements are deemed to reside within the broad scope and intent of the present invention, as defined by the annexed claim.

What is claimed as new is:

In a garment, a rear panel made of elastic material expansible in vertical direction and slit centrally in vertical direction at substantially its upper half from the top edge toward the bottom edge of the panel so that a panel opening with adjacent separable and closable edges is formed at that upper panel half, a slide fas-

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tener structure secured to these edges for closing them, an automatically folding, self-flattening shield secured with its side edges directly to the fastener-equipped panel opening edges and permanently bridging the area between these edges, said shield having a single, permanent pilot fold for initiating and propagating the automatic folding and flattening of the shield body in upward direction when the edges of the panel opening are closed by said slide fastener structure, and a relatively broad resilient band, strongly resistant to pulling action, fixedly secured with its ends to the edges of the panel opening while being kept under tension, said band being located substantially below the top ends of these edges and above their lower termini and being adapted to effect that automatic folding and flattening of said shield by the band's tendency of normally urging these edges to abut with one another.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,316,151	Fleck	Sept. 16, 1919
1,602,005	Feig	Oct. 5, 1926
1,753,657	Kaplan	Apr. 8, 1930
2,084,593	Pickens	June 22, 1937
2,285,619	Scott	June 9, 1942
2,379,815	McFarlane	July 3, 1945
2,444,829	Karcher	July 6, 1948