

Sept. 17, 1957

W. J. DORSEY

2,806,221

DEPOSITED LATEX UNDERGARMENT

Filed Oct. 7, 1953

3 Sheets-Sheet 1

Fig. 1

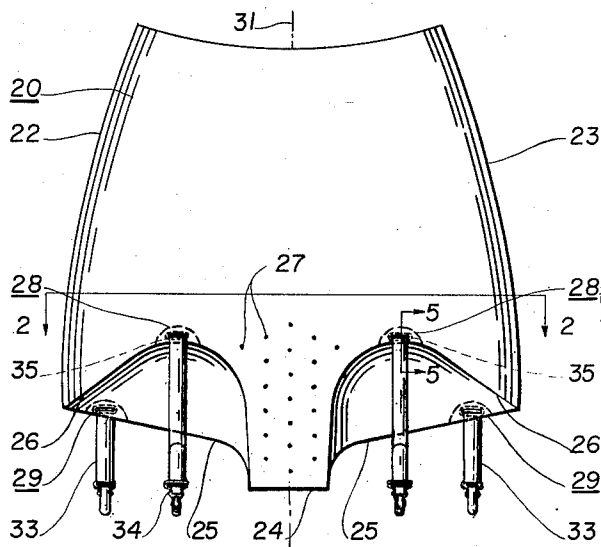


Fig. 4

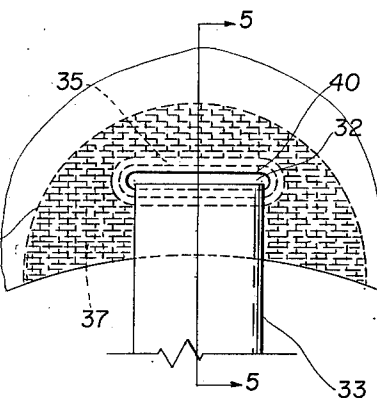


Fig. 2

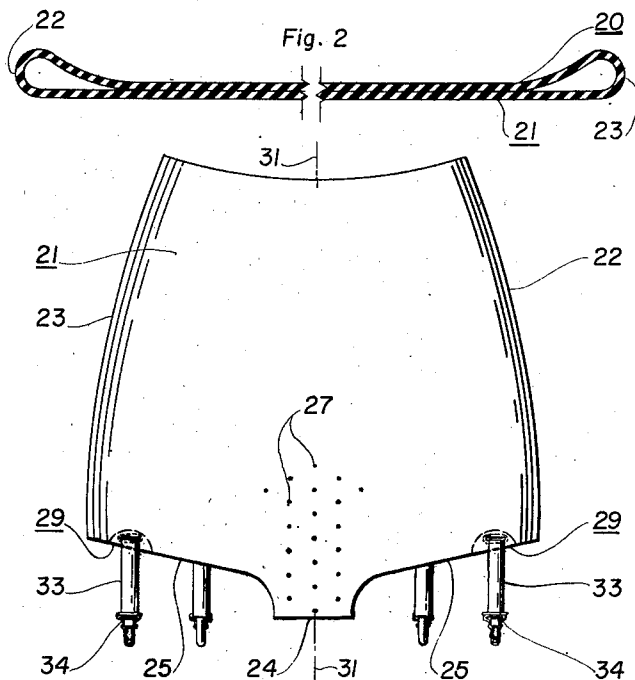


Fig. 5

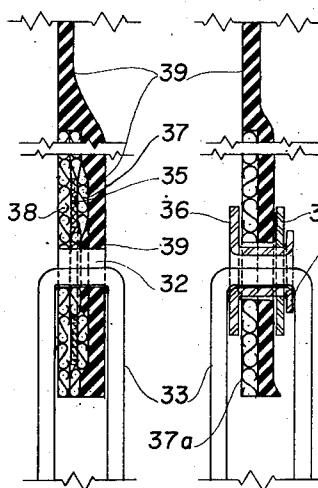


Fig. 6

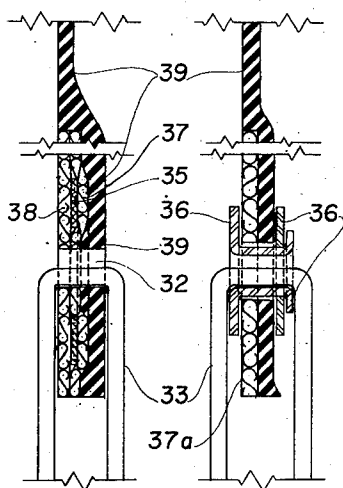


Fig. 3

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Fig. 7

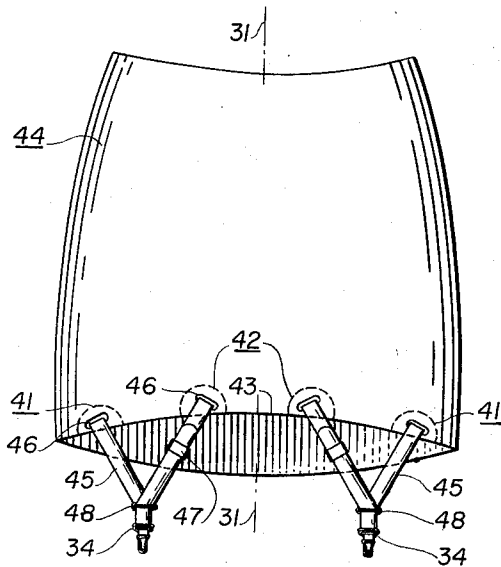


Fig. 8

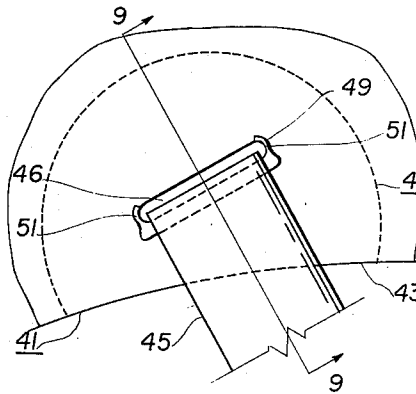


Fig. 10

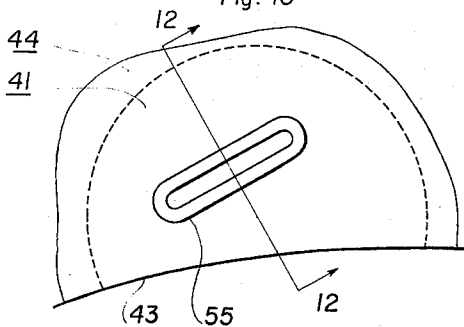


Fig. 12

Fig. 9

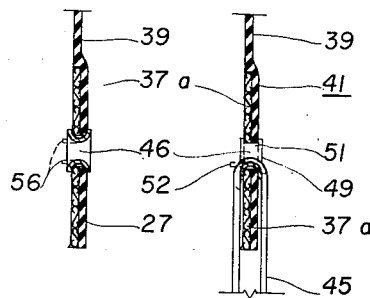


Fig. 11

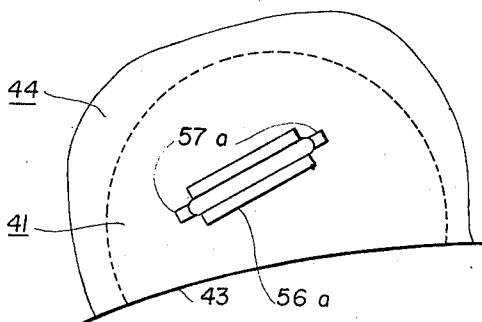


Fig. 13

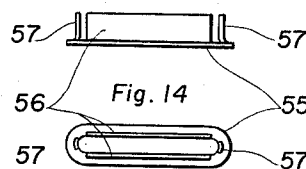


Fig. 14

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Fig. 15

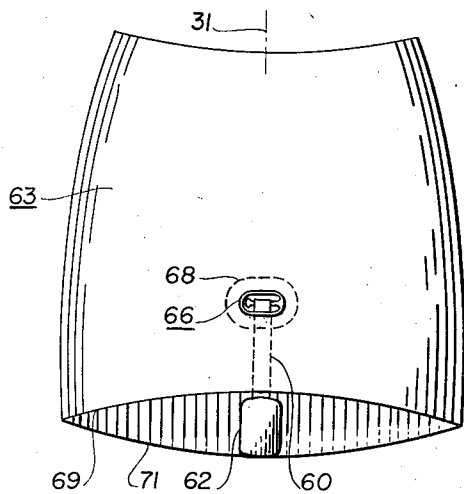


Fig. 17

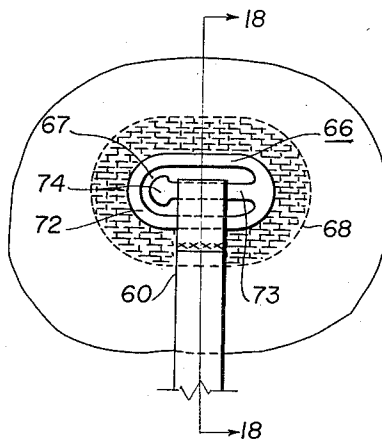


Fig. 16

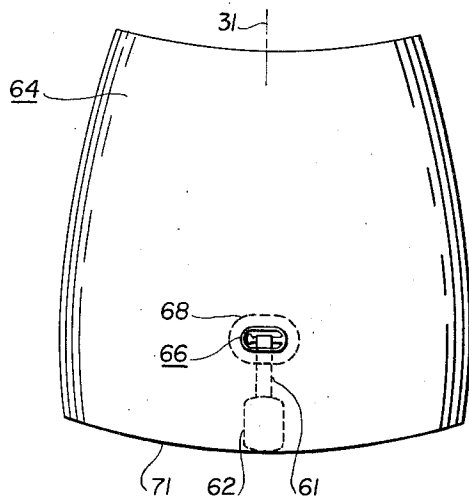
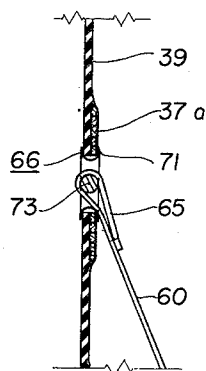


Fig. 18



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2,806,221

DEPOSITED LATEX UNDERGARMENT

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Application October 7, 1953, Serial No. 384,590

2 Claims. (Cl. 2—33)

This invention relates to improvements in rubber girdles, panties and similar undergarments, particularly of the very successful type that is economically made by repeatedly dipping a shaped form in an aqueous dispersion of rubber (latex) with the resultant production of a thin seamless article, in the manner described in U. S. Patent No. 2,015,632 issued September 4, 1935, to A. N. Spanel.

Such girdles, which are referred to herein as deposited latex girdles, are light in weight and are flexible and elastic in both transverse and longitudinal directions. In use, the girdle encircles the lower portion of the human torso as a continuous seamless band and uniformly shapes the torso, particularly the hip and stomach portion, so as to achieve a desirable slimming and molding effect on the wearer. (For a more detailed description of typical deposited latex girdles, see U. S. Patent No. 2,360,736 issued October 17, 1944, to A. N. Spanel.) The advantages of these girdles have been widely recognized by the consuming public, which has purchased a considerable number of them. However, the consuming public, in its habitual fashion, has demanded still further advantages. Consequently, many attempts have been made to improve the serviceability and versatility of these garments but such attempts have resulted in only minor modifications because of prohibitive costs or impracticality of suggested major improvements.

The present invention provides a girdle that can be used for all occasions ranging from the barelegged informality of sports to the silk-stockinged formality of evening wear; a girdle that is easily adjustable to various stocking lengths and that fits equally well the long legged and the short legged wearer and a girdle whose serviceable life is not limited by the short life of elastic fabric in continuous use or by the weakening of the elastic body of a girdle to which a garter attachment is sewed.

I achieve these and additional advantages by fabricating the girdle of the present invention with reinforced, pliable, tear-resistant areas in both the front and back portions of the girdle intermediate the side walls at positions appropriate for the uses described below, such as by making said areas of rubber stiffer than the rubber adjacent thereto or by incorporating a fabric insert therein. I provide in each of said reinforced areas an elongated aperture or slot which is adapted to receive a removable elastic strip or band for use with an accessory attachment, such as a garter or catamenial pad, each of said apertures having associated therewith rigid or substantially unyielding reinforcing means, such as a washer grommet or ferrule, which means is adapted to maintain said aperture substantially undeformed when tension is applied to said elastic band.

The invention is described in greater detail in connection with the drawings in which several embodiments of the invention, as exemplified in girdles, are illustrated, it being understood that these embodiments are shown as examples of the various forms that the invention may take and not by way of limitation.

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In the drawings:

Figure 1 is a plan view looking down on the front side of a girdle fabricated in accordance with the present invention, the girdle not being in use but lying on a horizontal surface, such as a table;

Figure 2 is a cross section on the line 2—2 of Fig. 1, on an enlarged scale;

Figure 3 is a view of the rear of the girdle of Fig. 1 in a similar position;

Figure 4 is an enlarged view of an area of the girdle of Fig. 1 to which a garter is attached;

Figure 5 is a vertical cross section of the area of the girdle shown in Fig. 4 along the line 5—5;

Figure 6 is a vertical cross section, similar to Fig. 5, of another embodiment of the invention;

Figure 7 is a plan view of a girdle illustrating another embodiment of the invention and positioned similarly to the girdle in Fig. 1, garter attachments on the rear of the girdle having been omitted for clarity;

Figure 8 is an enlarged view of an area of the girdle of Fig. 7 to which a garter is attached;

Figure 9 is a vertical cross section of the area of the girdle shown in Fig. 8, along the line 9—9;

Figures 10, 11 and 12 are front, back and cross sectional views, respectively, of the area of the girdle shown in Fig. 4 and illustrating an alternate type of grommet;

Figures 13 and 14 are side and plan views, respectively, of the grommet used in Figs. 10, 11 and 12;

Figure 15 is a plan view of a girdle illustrating the use of the invention with a catamenial pad attachment and positioned similarly to the girdle in Fig. 1;

Figure 16 is a view of the rear of the girdle of Fig. 15 in a similar position;

Figure 17 is an enlarged view of the area of the girdle of Fig. 15 to which an elastic band for a catamenial pad is attached; and

Figure 18 is a vertical cross section of the area of the girdle shown in Fig. 17 along the lines 18—18.

The improved girdle shown in Figs. 1, 2 and 3 comprises a front portion, area or panel indicated generally at 20 and a back portion, area, or panel indicated generally at 21. Front and back portions 20 and 21 are integrally interconnected at their respective lateral sides by side walls 22 and 23, as shown in Fig. 2, so as to form a continuous thin sheet-like seamless restricting wall for elastically encircling the lower portion of the human torso, particularly that of females. As shown in Fig. 2, side walls 22 and 23 are abruptly arcuate or curved in cross section and, as shown in Figs. 1 and 3, are slightly arcuate or gently curved longitudinally, the latter conforming to the general shape of the outline of female hips. The girdle shown in Figs. 1, 2 and 3 is of the panty type and is therefore provided at its lower or bottom edge with a U-shaped crotch member 24 which is integrally connected with the bottom or marginal edge 25 of the rear portion 21 and with the bottom or marginal edge 26 of the front portion 20, the latter edge having an arcuate or curvilinear shape as shown which affords freedom of movement of the front portions of the legs of the wearer. Crotch member 24 and an adjacent portion of the rear portion are provided with small holes or perforations 27 for ventilation.

In accordance with the present invention, the girdle is fabricated, as described more fully below, with two reinforced, pliable, tear-resistant areas, indicated generally at 28, positioned proximate the bottom of edge 26 of the front section 20, such as within about one quarter of an inch or preferably coincident with the edge. Two similar areas indicated generally at 29 are similarly positioned with respect to bottom edge 25 of the rear section 21. As can be seen in Figs. 1 and 3, areas 28 and 29 are generally semi-circular in shape and are placed in the

front and rear sections at locations suitable for garter attachments (i. e., each area is at a location intermediate the vertical center line 31 and one of side walls 22 and 23). In each of areas 28 and 29 is a horizontal, elongated aperture or slot 32 adapted to receive a narrow elastic band, strip or ribbon 33, which can be made of elastic fabric or rubber, such as deposited latex. Band 33 is looped through the aperture 32 and is fastened, by conventional fastening means, at its lower end to a garter attachment 34. Surrounding and reinforcing apertures 32 are washers or shims 35 (or grommets 36 in Fig. 6) which serve as rigid reinforcing means to maintain the apertures undeformed when tension is applied to band 33, such as by the attachment of a stocking to attachment 34.

The tear-resistant areas 28 and 29 can be advantageously and economically incorporated or formed during the fabrication of the girdle or can be formed by the addition of a suitable patch after the fabrication of the remainder of the girdle, all as described more fully below, but, in any event, the area is generated or formed so that it is integrally bonded to the remainder of the girdle, such as by vulcanization, and will not separate therefrom after long usage or when tension is continuously applied to bands 33. Areas 28 and 29 are also advantageously formed of material that is sufficiently pliable as to tend to follow the body contour and hence avoid causing unsightly protuberances in the outer dress or rigid areas uncomfortable to the wearer. These areas are, however, formed so that they are stretch- as well as tear-resistant; hence the forces occasioned by the natural movements of the wearer and by the tension required to hold the stockings taut are transferred from the limited peripheries of apertures 32 to the much more extensive boundaries of areas 28 and 29, thus proportionately decreasing the amount of force applied to a square inch of the deposited latex. Additionally, washers 35 or grommets 36, which may be of any suitable type formed of rigid or substantially unyielding materials such as metal, hard or semi-hard plastics, reinforce the apertures and prevent tearing at the corners thereof. Such washers or grommets are advantageously designed small and light enough that they do not cause discomfort to the wearer nor prominent protuberances in the outer dress.

In a specific aspect of the present invention, illustrated in Figs. 4 and 5, the reinforcement for tear-resistant areas 28 and 29 and the rigid reinforcement for apertures 32 are prepared as a unit, as described hereinafter, and affixed to the dipping form, as by a small amount of an adhesive, such as rubber cement, prior to the first dipping of the form in a bath of liquid latex to form a girdle as described in the patent to A. N. Spanel referred to above. Tear-resistant areas 28 become integrally bonded to the girdle per se, as explained below.

A plurality of units, each consisting of a reinforcement for a tear-resistant area 28 and a rigid reinforcement for an aperture 32, can be prepared simultaneously by placing fabric, for example, nylon tricot, on a dipping form so that the fabric remains in a fixed position, such as by slightly stretching a bag or band of the fabric over a rectangular form. The type of fabric is one which becomes stretch-resistant or has substantially reduced elasticity after impregnation with latex and curing of the deposited latex, such as a woven, knit, racked or sized fabric. The form is then dipped in a bath of latex, removed and partially dried. The fabric selected preferably has a weave such that the latex strikes through or penetrates the fabric so that a smooth surface is formed on both sides of the fabric. A number of rigid washers or apertured plates 35, such as a washer made of steel or aluminum, are placed on the surface of the latex impregnated in spaced positions so that they remain in these positions during the ensuing operations, such as by moistening the washers with a rubber solvent, for example, hexane, prior to placement. Washers 35 are

preferably thin, such as of the order of a few hundredths of an inch, and are shaped, as shown in Fig. 4, so that they have elongated apertures or slots. A second band or bag of fabric is placed over the washers and the form again dipped in a bath of latex.

Preferably, individual short particles of a fiber, such as cotton, are embedded in the moist or wet surface of the latex film shortly or immediately after removal of the form from the bath, as by blowing the fibers through a spray nozzle with air, as described in U. S. Patent 2,636,173 issued April 28, 1953. After the fibers are embedded, the deposited latex film is partially or completely dried to yield a coherent sheet or film that can be removed from the form and handled without damage. Each washer and surrounding fabric in the shape shown in Fig. 4 is then die-cut, clicked or otherwise separated as a unit from the sheet.

This process produces a unit in which the washer is interposed or sandwiched between two sheets or pieces of fabric integrally bonded together by the deposited latex, the strength of this bond increasing when the latex is subsequently cured. Additionally, one side of the unit has short ends of embedded fibers protruding therefrom, which protruding ends furnish an excellent anchorage for subsequently deposited latex. These protruding fibers are advantageously employed in the next phase of the girdle forming operation by attaching four of these units with the fiber side exposed to a girdle dipping form at the positions where garter attachments are desired and proceeding with the normal dipping, drying and curing operations by which the girdle proper is formed. The openings in the washers, which are covered by both fabric and deposited latex, are then stamped or cut out so that the sheets of fabric impregnated with deposited latex extend beyond and form a narrow margin around the inner periphery, slot or aperture of the washer. This can be seen in Fig. 5 where 37 is the first sheet of fabric, 38 the second sheet of fabric and 39 is the film of latex deposited in the girdle forming operation, the dimensions being somewhat exaggerated for greater emphasis. The short fibers which are embedded and hence anchored in the latex deposited on sheet 38 (and which are too small to be shown in the drawing) are also anchored in the film 39 thus mechanically strengthening the bond between these layers of deposited latex. Such additional strengthening of the bond insures that tear-resistant areas 28 and 29 are firmly attached to the girdle and are not pulled off by the force exerted on elastic band 33, which normally is between about 3 to 9 pounds. Also the narrow margin 40 protects the elastic band 33 from wear on the rigid washer and insures that the washer remains in place.

Reinforced localized areas 28 and 29 of the type shown in Fig. 6 can be formed during fabrication of the girdle by first preparing a latex coated or impregnated patch 37a of fabric of the desired shape, which can be elliptical or generally rectangular instead of the semi-circular shape shown in Fig. 4 and which advantageously extends from about 0.5 to 2 inches around the grommet, and thereafter affixing the patch in the desired position on the metal form on which the latex is to be deposited, either prior to the first dip or after any intermediate dip. Such a patch can be prepared by dipping the fabric of the type referred to above, either in sheet or cut form, in unvulcanized rubber latex one or more times until the fabric is completely coated. If the fabric has been dipped in sheet form, patches of the desired shape, including the aperture, can be cut or clicked from the sheet. The patch can thereafter be affixed to the form by a cement which permits easy removal of entire girdle from the form without tearing off the patch. Where the patch is apertured, the dipping form may include a boss or raised portion over which the aperture fits, thus providing easy preparation of the aperture after dipping. By such a procedure, the patch becomes integrally bonded to the remainder of the

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girdle during the subsequent curing process. The aperture is formed, after dipping, by tearing or cutting out any rubber deposited therein during dipping. Grommet 36 is thereafter attached to the edges of aperture by known methods. The use of a fabric patch or insert, as described above, results in a reinforced area which has a modulus of elasticity substantially higher, such as more than three times, than that of the rubber surrounding the area.

In another embodiment, the reinforced areas are formed of rubber stiffer and more tear-resistant than the rubber adjacent to such areas and comprising the front and back portions, which rubber is deposited prior to or during the usual dipping procedure. Such an effect can advantageously be achieved by depositing in the reinforced areas a rubber which has a higher modulus of elasticity than the rubber adjacent to such areas, such as a modulus of at least about three times the modulus of the surrounding rubber. The stiffer rubber can be preferentially deposited in the reinforced areas by depositing on the metal dipping form a coagulant, such as an acid or salt solution or a known equivalent, in the areas to be reinforced, then dipping the form one or more times in a latex of the stiffer rubber, thereby effecting preferential deposition of the stiffer rubber, and thereafter dipping the form repeatedly in latex of the type ordinarily used, which produces a less stiff rubber. Alternatively, the stiffer rubber can be applied by spraying a dispersion or solution of the stiffer rubber on the dipping form, the portions of the girdle outside the reinforced areas being masked, either before or after the usual dipping operation, or by other methods occurring to those skilled in the art. Also, a preformed patch of stiff rubber can be incorporated in the girdle such as by the methods described above for the incorporation of the impregnated fabric patch.

A composition suitable for use as a latex of stiffer rubber is as follows:

Parts by weight of dry solids

Centrifuged latex	100
"Kralac" ¹ latex	25
Potassium hydroxide	0.5
Sulfur	1.0
Zinc oxide	1.0
Tetramethyl thiuram disulfide	1.0

¹Trade name for synthetic latex comprising about 85% styrene and 15% butadiene.

When the reinforced area is formed with the aid of a coagulant, the stiffer area will normally be thicker than the surrounding area (i. e., will be from about fifty percent to four hundred percent thicker than the adjacent rubber in the main body of the girdle which is generally from about 15 to 35, preferably 20 to 30, thousandths of an inch). It is obvious that the desirable additional thickness of the reinforced area will vary with the elasticity of the rubber employed therein; very inelastic and/or tear-resistant rubber requiring little, if any, additional thickness and more elastic rubber requiring proportionately more. Reduction in additional thickness of the reinforced area while maintaining the same relatively high modulus of elasticity in the reinforced area can be effected by combining the use of a stiff rubber with a fabric insert.

Shown in Figs. 7, 8 and 9 is another embodiment of the invention in which each garter attachment 34 is supported from a plurality of points of support on the girdle proper. (In Fig. 7, the reinforced areas, elastic strips and garters on the back portion are not shown in order to avoid complicating the drawing, but are to be understood to be similar to those shown on the front portion of the girdle.) Thus, tear-resistant areas, indicated generally at 41 and 42, are fabricated, as described above, so that they are proximate the bottom edge 43 of the front portion, indicated generally by 44, of the girdle, and intermediate center line 31 and the side walls of the girdle. An elastic band or strip 45 passes through aperture 46 of each tear-

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resistant area 41 and 42 and is fastened to itself to form a closed loop of double thickness by a catch or other fastening device 47. Apertures 46 are generally horizontal but are somewhat slanted, as shown, so that the width of strips 45 is parallel to the long axis of the aperture. The loop formed by band 45 is passed through a closed rectangular link or other coupling device 48, to which garter attachment 34 is attached.

Positioned within aperture or slot 46 within area 41 is a ferrule or half-grommet, indicated generally by 49, which may be made of metal and which surrounds the material immediately adjacent the bottom of aperture 46. Grommet 49, which has rounded ends 51, is open at the top and can be inserted in the aperture with one side of the bottom portion open (i. e., one side is perpendicular to the plane of the aperture, as indicated by the dotted portion 52 in Fig. 9); the open side thereafter being pressed down to cinch or grip the material of the tear-resistant area adjacent the bottom of aperture.

Figs. 10, 11 and 12 illustrate the use of a grommet made of thermoplastic or thermosetting plastic or polymeric material in the girdle of Figs. 1, 2 and 3. The grommet is made, as shown in Figs. 13 and 14, of an elongated oval ring 55 and an elongated oval cylinder or sleeve perpendicular thereto, the oval sleeve being cut near the ends to produce sides 56 and ends 57. The grommet is placed in the aperture so that the sleeve projects therethrough, as shown by dotted lines 56 in Fig. 12, and thereafter pressed by a hot shaping tool so that the sides and ends are turned over and cinched or pressed against the material surrounding the aperture as shown in Fig. 11, both the sides and ends being flattened as shown. As will be understood by those skilled in the art of plastics, plastic grommets may be shaped by hot tools to produce partial or complete peripheral enclosure of the apertures or may be molded on the material surrounding the aperture. Various thermosetting or thermoplastic resins or polymers having sufficient rigidity to maintain the aperture undeformed, such as nylon, polystyrene, various aminoplasts, phenolic resins and the like, are suitable materials for the grommet. It is to be understood that the physical properties and amount of plastic material used should be such that the finished grommet, like metal washers 35 or grommets 36, act as means to maintain the aperture in the tear-resistant area substantially undeformed when tension is applied to the elastic strip.

Another aspect of the present invention is shown in Figs. 15, 16, 17, and 18 in which a girdle is equipped with detachable elastic bands or strips 60 and 61 to which is attached a catamenial pad 62 by conventional fastening means (not shown). Strips 60 and 61 are attached to the front and rear portions, respectively, of the girdle, these portions being indicated generally at 63 and 64. Strips 60 and 61, which have closed loops 65 at their upper ends, as shown in Fig. 18, are attached to the girdle by grommets, indicated generally by 66, surrounding apertures or slots 67 positioned centrally in tear-resistant areas 68. Tear-resistant areas 68, which are fabricated by methods hereinbefore described, are positioned on the center lines 31 of the front and rear portions 63 and 64 substantial distances, such as about 3 to 5 inches, above the bottom edges 69 and 71 so as to be in the pubic and sacral regions of the wearer of the girdle.

As shown in Figs. 17 and 18, grommet 66 consists of an oval ring 72 encompassing the periphery of the aperture 67 in tear-resistant area 68 and cinched to the material surrounding said aperture. Located centrally in the aperture of the ring 72 is a horizontal bar 73, one end of which is joined to ring 72 and the other end of which is spaced from the ring a sufficient distance to permit loop 65 of the elastic strip 60 to be slipped off the bar. Bar 73 has an enlarged end 74 to prevent loop 65 from slipping off inadvertently when in use. Grommets of this type can be used in lieu of grommets 36 and ferrules 49 in the girdles shown in Figs. 1 and 6, respectively.

Without further description, those skilled in the art will understand how to fabricate girdles equipped both with garter attachments and catamenial pad attachments, in accordance with the present invention.

As is apparent from the above description, deposited latex undergarments of the girdle type, which includes panties, garter belts, corsets and the like, made in accordance with the present invention, present numerous advantages. Thus a girdle combining both the embodiment shown in Figs. 1 through 5 and the embodiment shown in Figs. 14 through 17 is extremely versatile and is appropriate for all occasions; additionally, it is considerably cheaper than the plurality of single purpose girdles that it replaces. Edge cutting and/or trimming operations are simpler and cheaper for girdles of the present invention than for girdles which have integrally attached garter straps. Moreover, when a garter attachment breaks or becomes inelastic, it is cheaply and simply replaced in contrast to cloth girdles with integrally attached elastic which must be thrown away when the elastic or the body area to which it is sewed becomes worn out. Both long legged and short legged customers can easily use the same type of girdle merely by altering the length of the detachable elastic bands. Additionally, the girdle of the present invention can be economically manufactured by inexpensive modifications of existing procedures.

Although the present invention has been described with particularity with reference to preferred embodiments and various modifications thereof, it will be obvious to those skilled in the art, after understanding the invention, that various changes and other modifications may be made therein without departing from the spirit and scope of the invention and the appended claims should therefore be interpreted to cover such changes and modifications.

I claim as my invention:

1. An elastic undergarment adapted to encircle the lower portion of the human torso comprising, front and

back portions, side walls connecting said front and back portions, said walls being formed of deposited latex having a relatively low modulus of elasticity, localized pliable stretch resistant areas positioned in both said front and back portions approximate the pubic and sacral regions thereof, each of said localized areas having apertures therein, a rigid grommet attached to the material around each aperture, each grommet having a centrally positioned bar one end of which is attached to said grommet and the other end of which is spaced from the edge of the aperture whereby a looped end of an elastic band to be used with a catamenial attachment can be slipped off and on said bar.

2. An elastic undergarment adapted to encircle the lower portion of the human torso and formed of deposited latex of relatively low modulus of elasticity, said undergarment having apertures therein adapted to receive a removable strip, a rigid reinforcing member secured to said undergarment adjacent said aperture and coextensive with at least a portion of said aperture to prevent distortion of said portion when tension is applied thereto by said strip, and a section of pliable fabric secured to said garment around said aperture and increasing the modulus of elasticity of the undergarment for a substantial distance from said aperture.

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