

[54] **FOUNDATION GARMENTS HAVING  
RESILIENT CONTROL UNITS**

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[21] Appl. No.: **318,705**

**Related U.S. Application Data**

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3,732,870.

[52] U.S. Cl. .... **128/533**

[51] Int. Cl. .... **A41c 1/00**

[58] Field of Search .... 128/533, 576-571,  
128/428, 431, 429, 443, 577-580, 559,  
572-574; 2/255-264

[56] **References Cited**

**UNITED STATES PATENTS**

3,732,870	5/1973	Herbener .....	128/533
3,498,298	3/1970	Herbener .....	128/533

*Primary Examiner*—Geo. V. Larkin  
*Attorney*—B. P. Fishburne, Jr.

[57]

**ABSTRACT**

Foundation garments of the girdle, corselet, panty girdle and bikini types feature resilient abdominal control units and simplified pocket structures for such units, wherein the number of fabric layers is held to a minimum to reduce bulkiness. Each control unit is constructed to allow complete freedom of movement of the body so as to promote comfort while continuing to exert abdominal control and causing the garment to maintain a proper position on the body at all times. Improved means are provided to completely eliminate the possibility of the main vertical rib of the control unit from jabbing into the body during stooping or bending and the control unit possesses improved means coacting with the simplified pocket to center the unit laterally, to seat the unit properly in the pocket and to maintain the upper margin of the garment straight and taut for added neatness.

**7 Claims, 43 Drawing Figures**

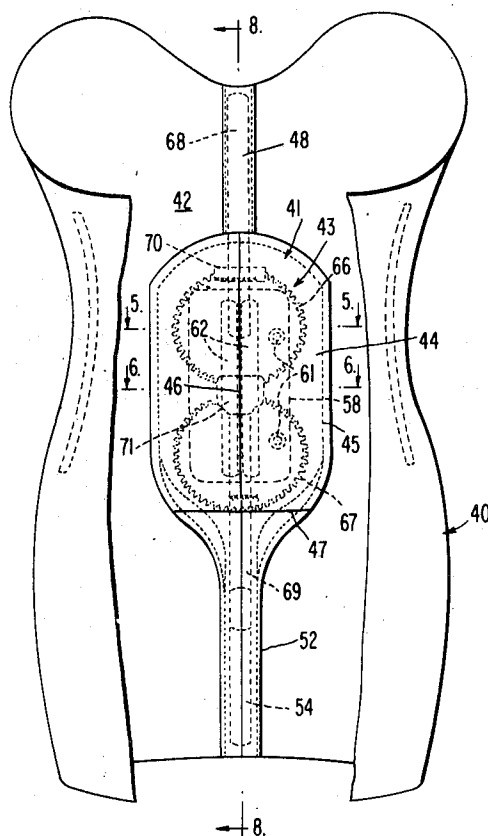


FIG. 1

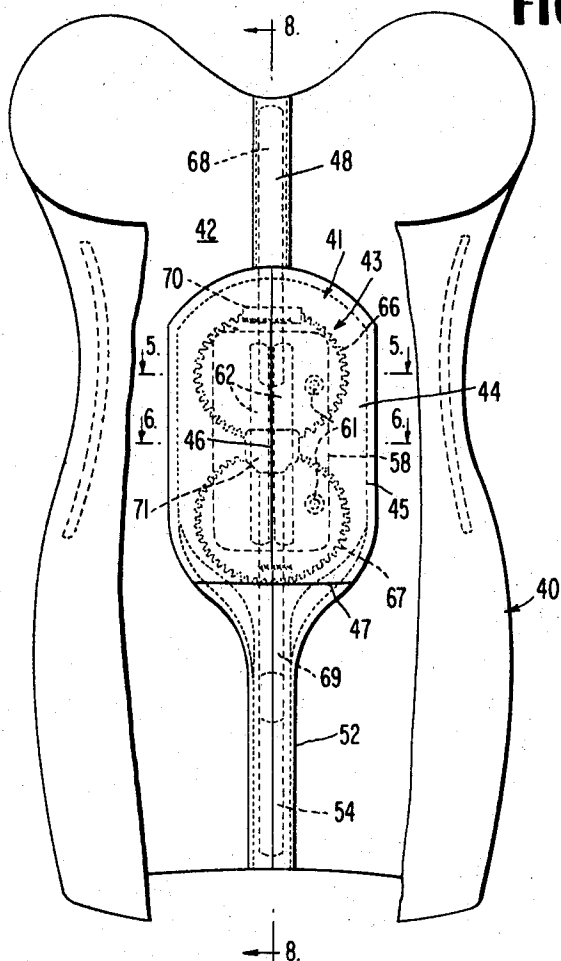


FIG. 2

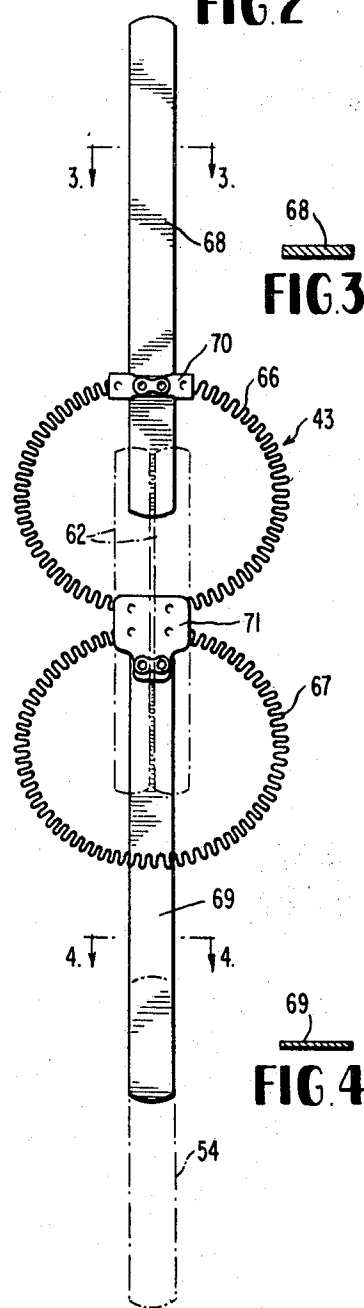


FIG. 5

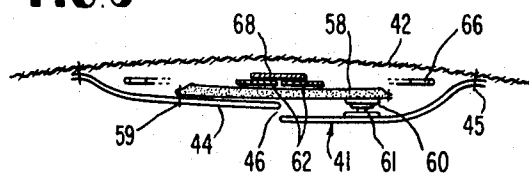
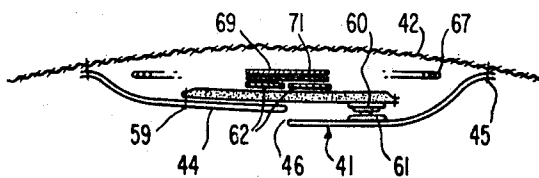
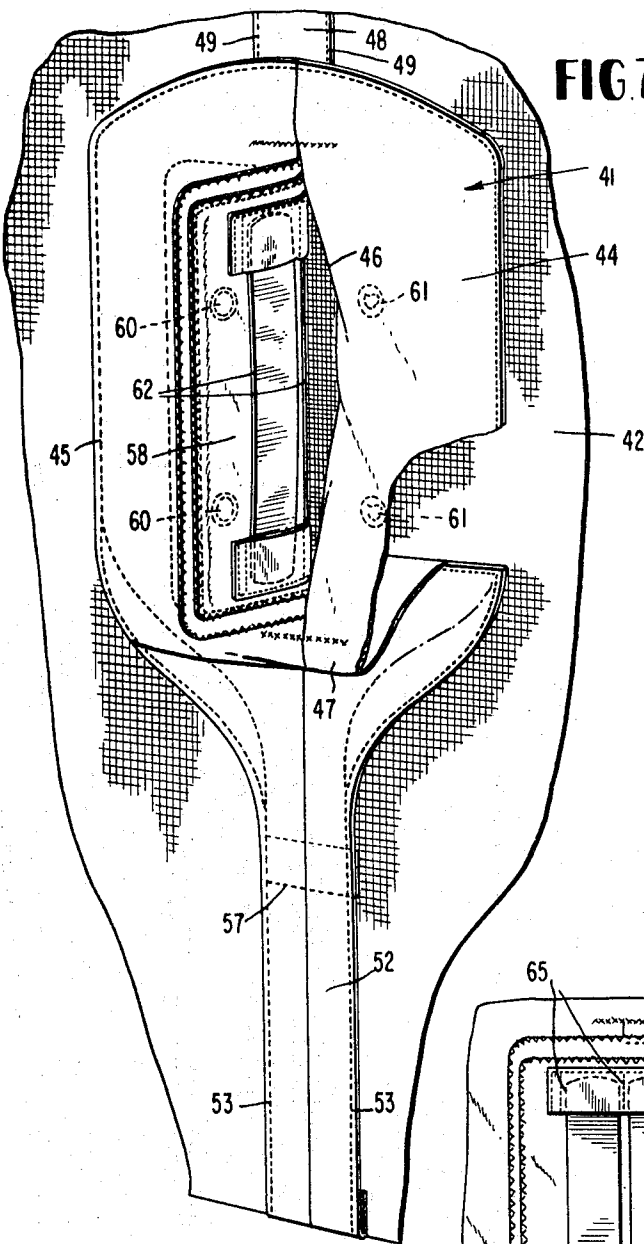
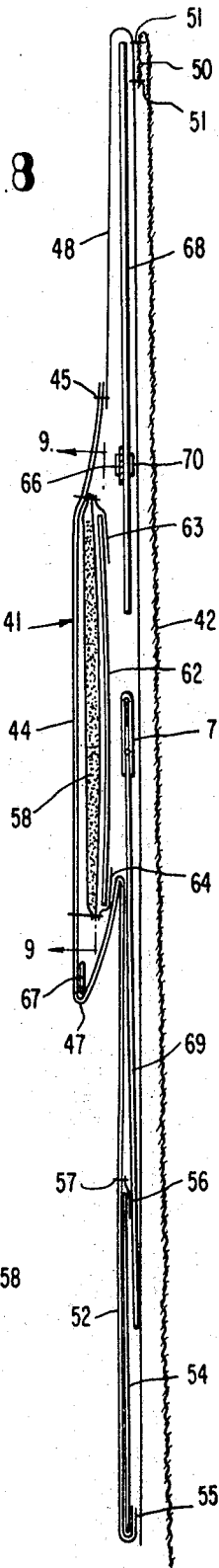


FIG. 6

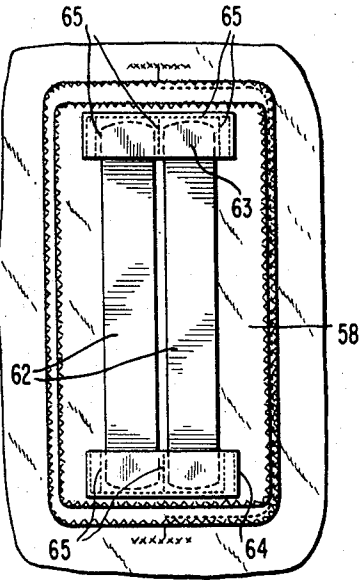




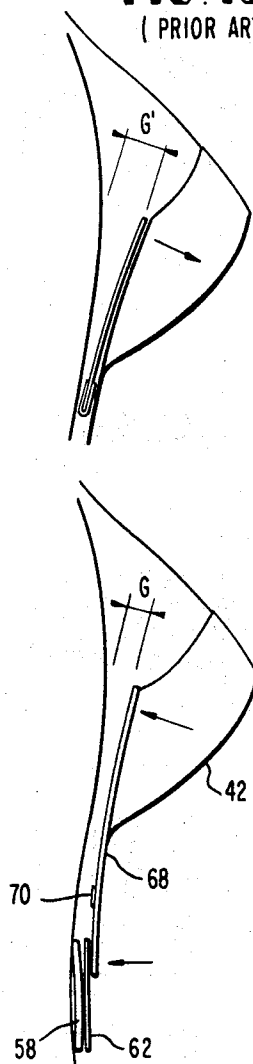
**FIG 8**



**FIG 9**

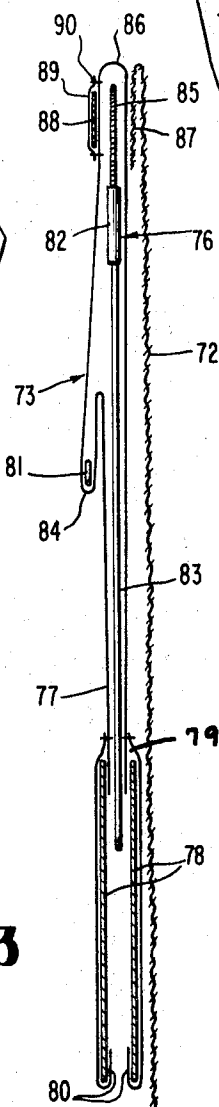


**FIG. 10**  
(PRIOR ART)

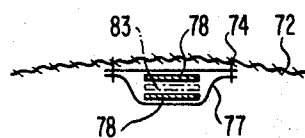
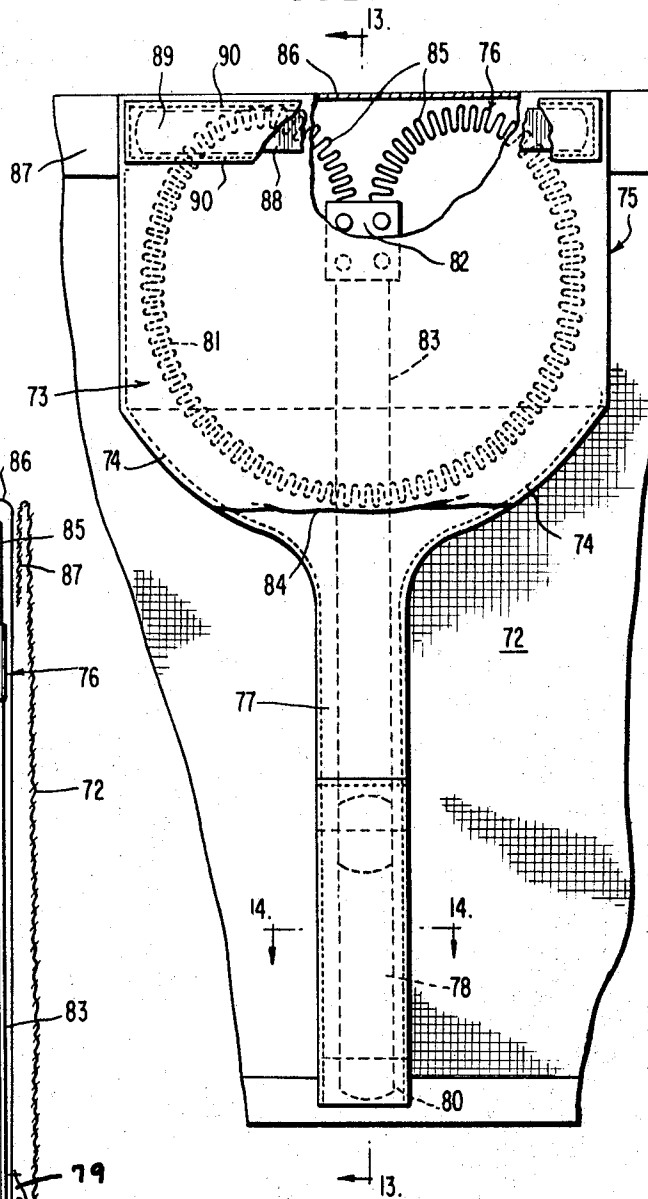


**FIG. 11**

**FIG. 13**



**FIG. 12**



**FIG. 14**

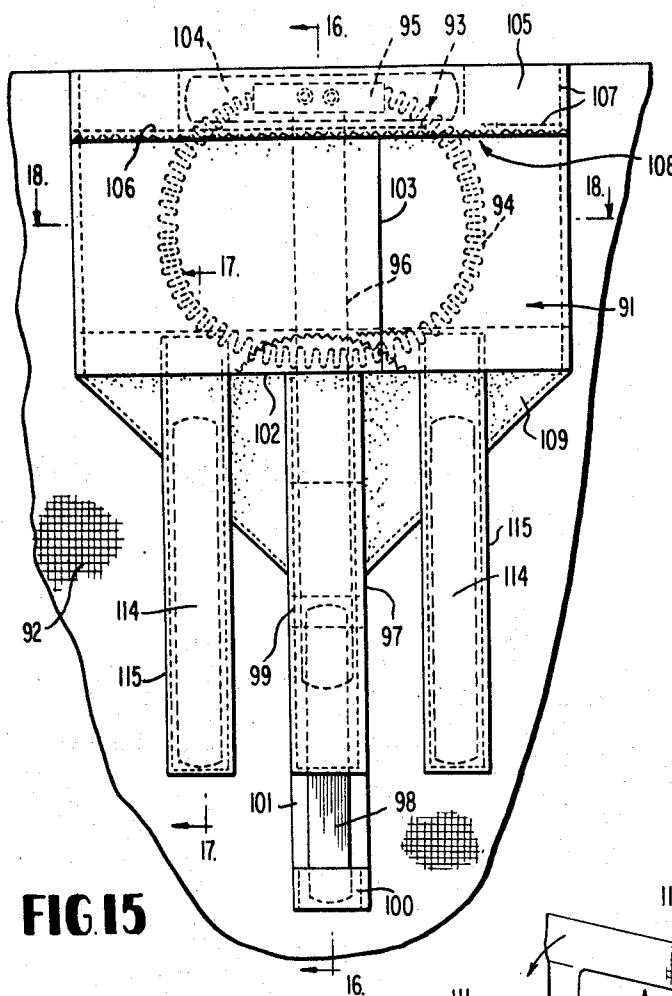


FIG. 15

FIG. 16

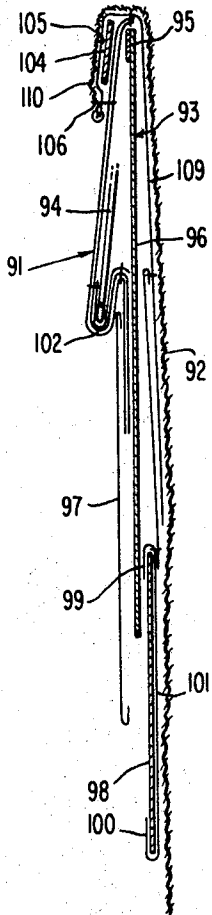


FIG. 17

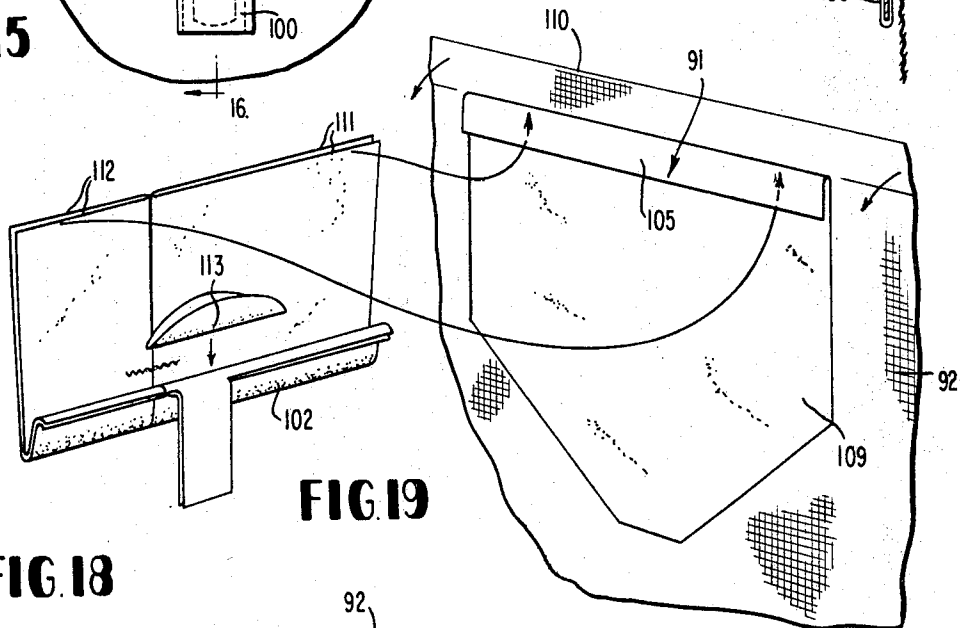
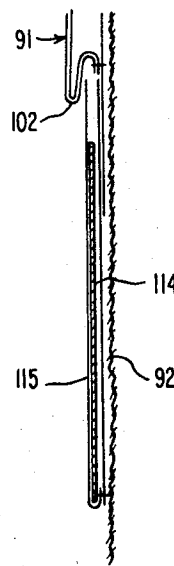
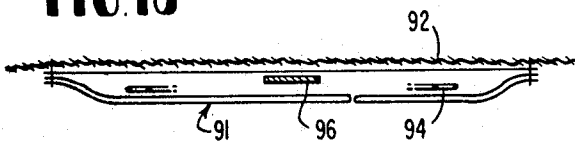


FIG. 19

FIG. 18



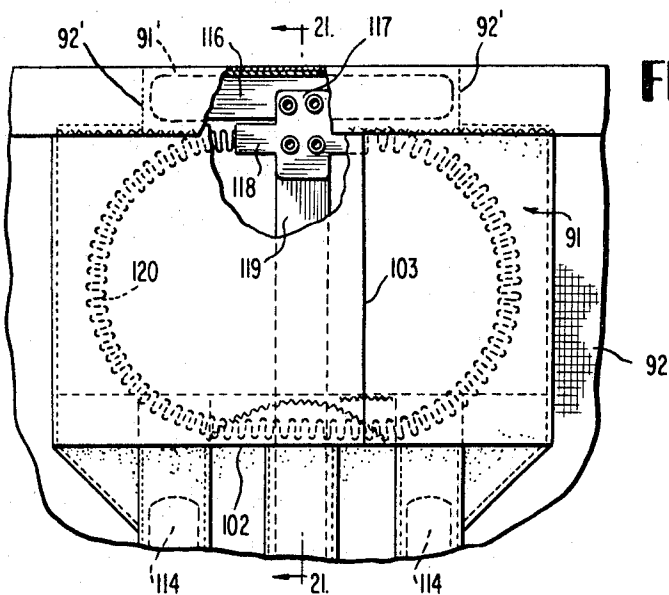


FIG. 20

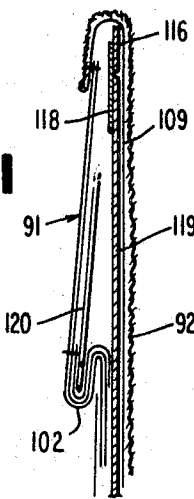


FIG. 21

FIG. 22

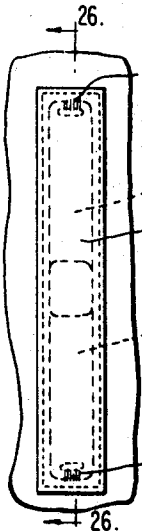
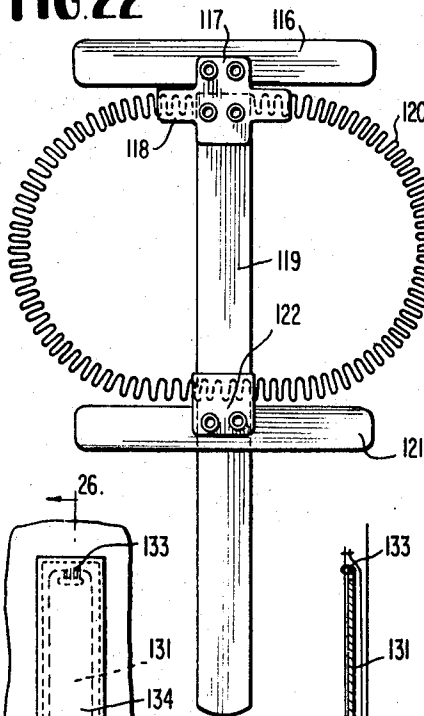


FIG. 25

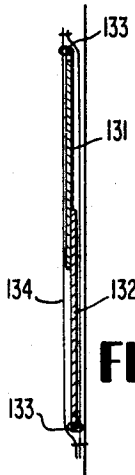


FIG. 26

FIG. 23

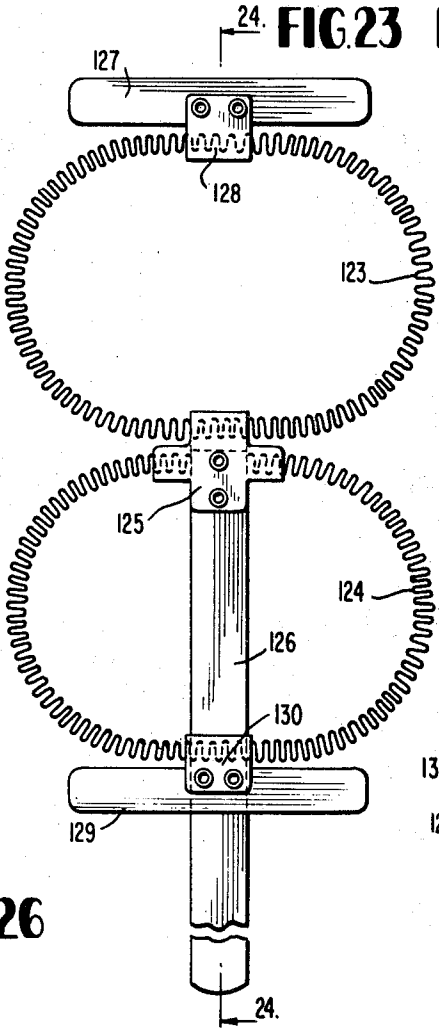
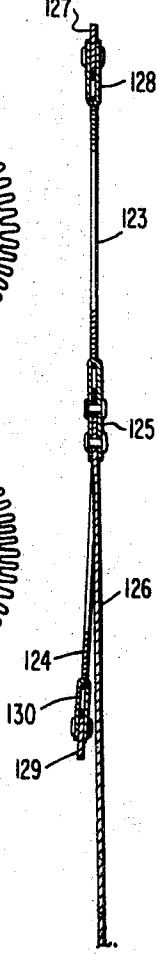


FIG. 24



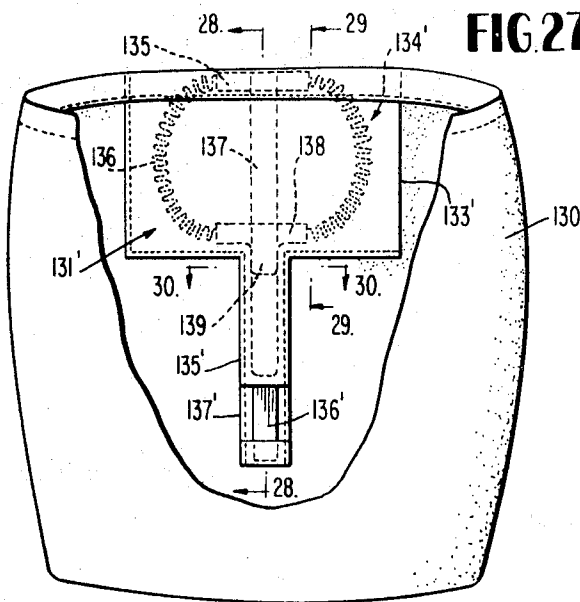


FIG. 27

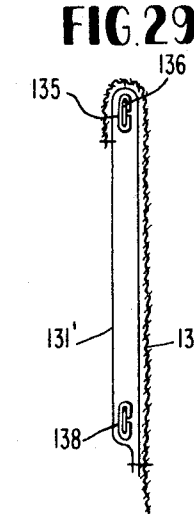


FIG. 29

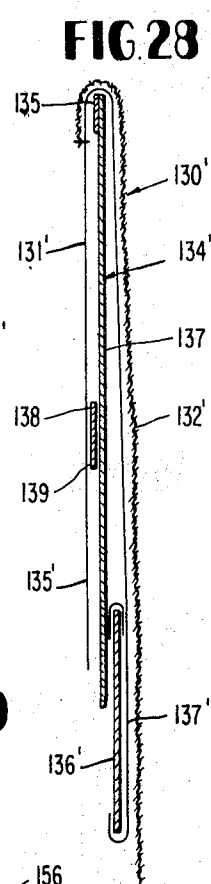


FIG. 28

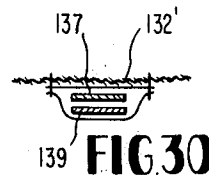


FIG. 30

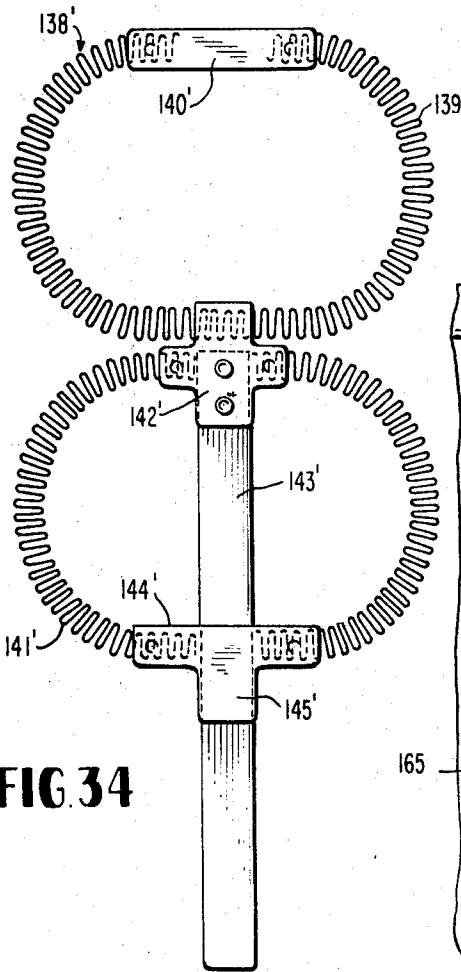
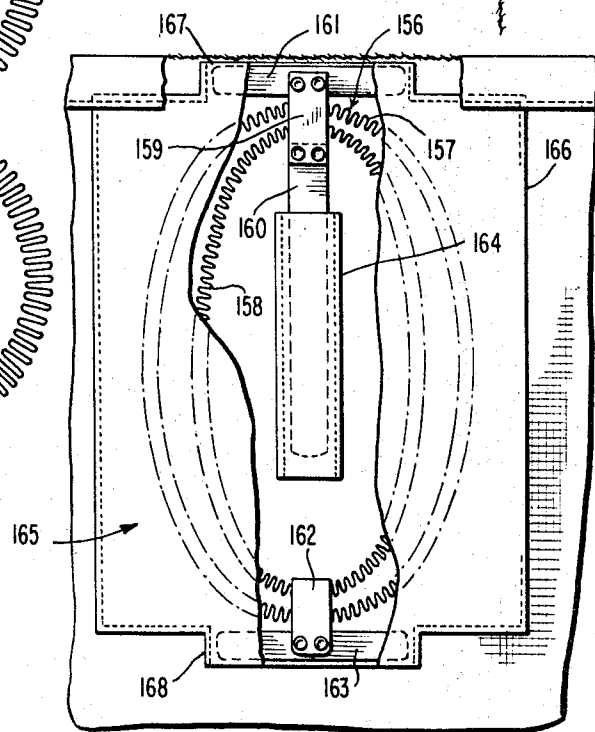
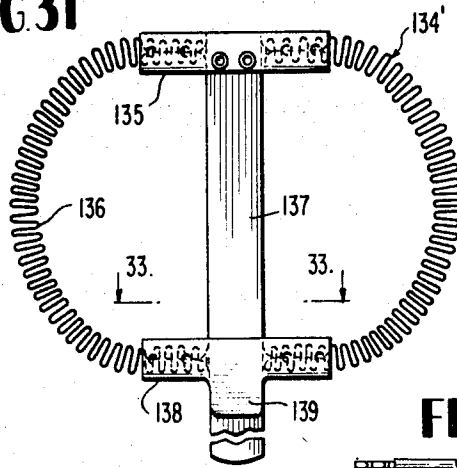


FIG. 34

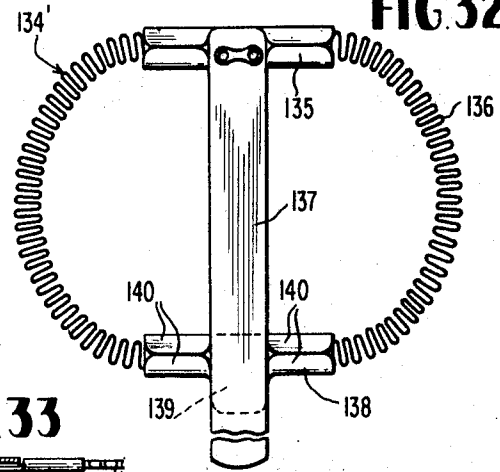
FIG. 38



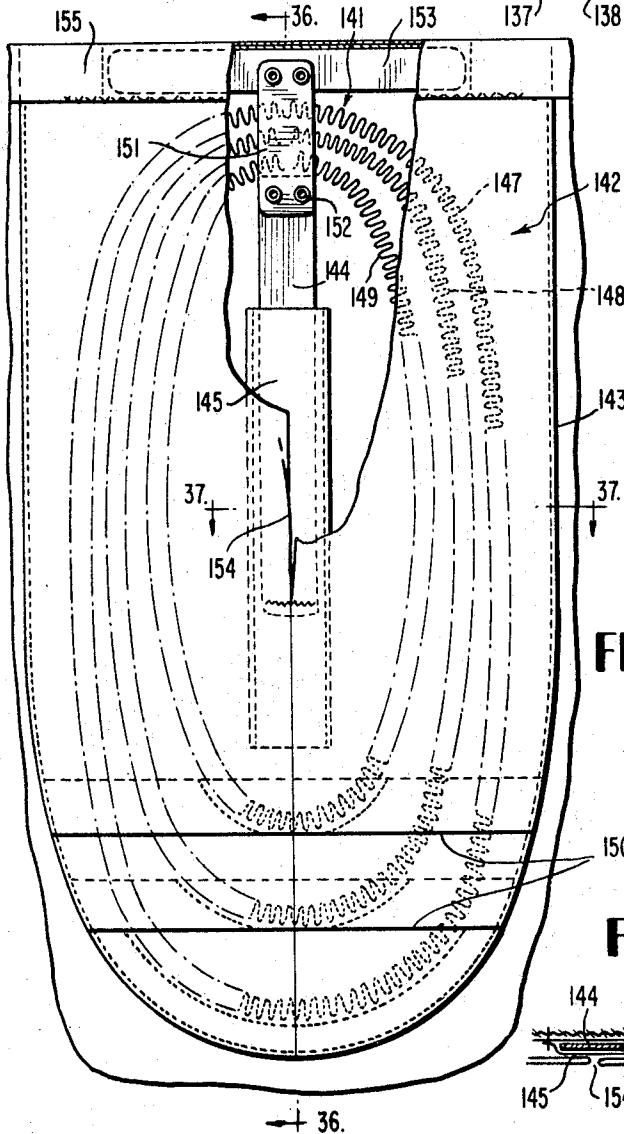
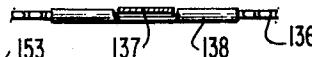
**FIG. 31**



**FIG. 32**

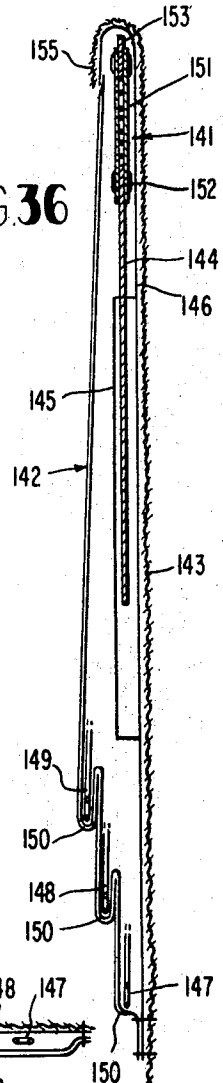


**FIG. 33**

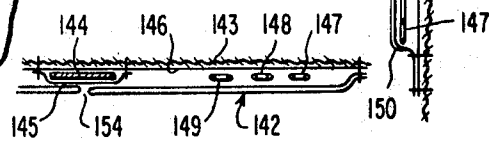


**FIG. 35**

**FIG. 36**

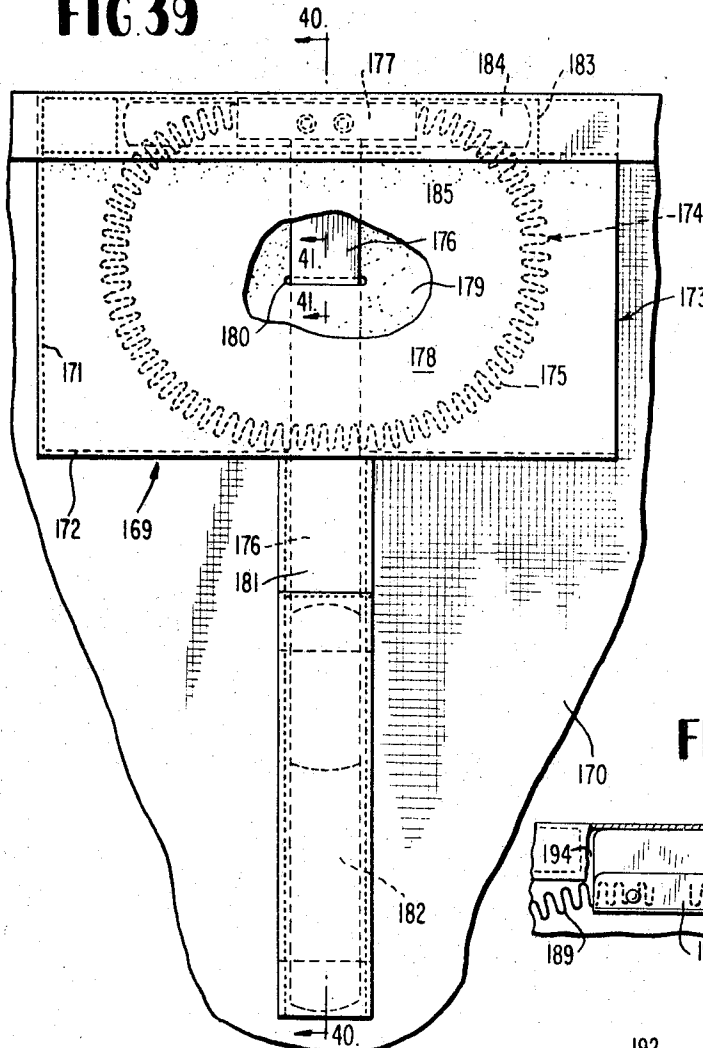


**FIG. 37**

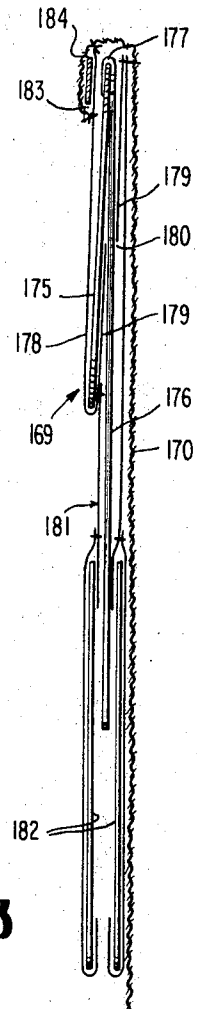




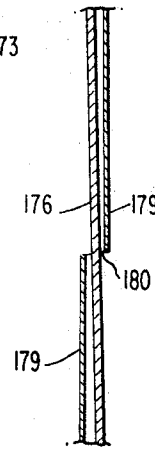
**FIG 39**



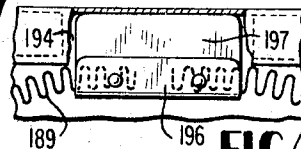
**FIG 40**



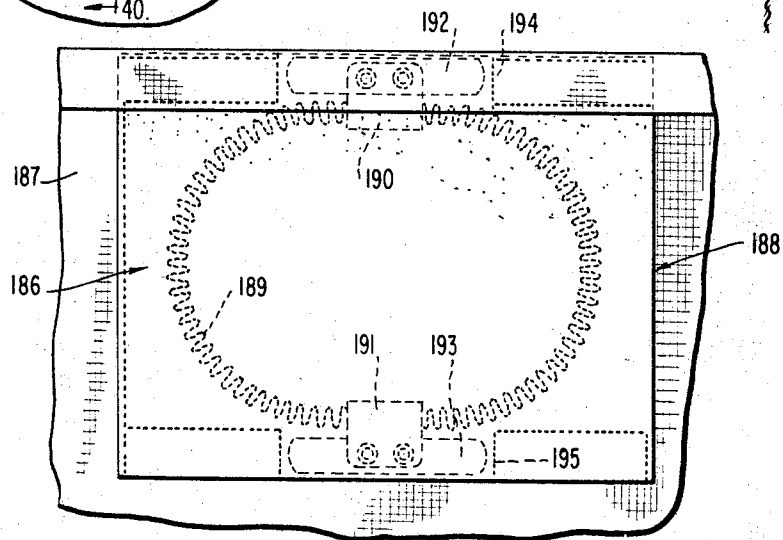
**FIG 41**



**FIG 43**



**FIG 42**



## FOUNDATION GARMENTS HAVING RESILIENT CONTROL UNITS

This is a division of application Ser. No. 195,210, filed Nov. 3, 1971, now U.S. Pat. No. 3,732,870.

The objective of the invention is to improve upon the prior art particularly as exemplified by U.S. Pat. No. 3,498,298, issued to Herbener, on Mar. 3, 1970. More specifically the objectives are to improve the construction and efficiency of operation of the metallic abdominal and garment control resilient units which are employed in foundation garments of the type featured in said prior Herbener patent and in the present application including girdles, corselets, panty girdles, bikini-type garments and the like. The resilient metallic control units of the present invention include a basic single circle or loop type having a vertical abdominal control rib which has guided free movement on the front wall of the garment to accommodate all movements of the wearer of the garment. The unit promotes comfort, controls the abdomen and positions the garment properly on the body during all movements by the wearer. The basic single circle control unit may possess straight horizontal rib elements at the top or bottom of the circle or at both locations and such rib elements may be connected directly into the wire loop or may be formed as attachments to the connectors which join the ends of the wire loop. Additionally, the horizontal rib elements at the bottoms of single circle units may carry tabs to center the unit laterally with respect to a pocket structure on the garment front wall. Generally speaking, the above-enumerated novel features are also incorporated in double circle or loop control units of the types employed on corselets or on high waisted girdles, as well as on certain garments which employ oval type control units having main vertical ribs as a part thereof.

Additionally, the invention embodies improved and simplified pocket formations for the various types of control units employed on the garments which pocket formations have a reduced number of fabric layers, thus adding to the comfort and flexibility of the garment and reducing its bulk or thickness. In general, by means of the features embodied in the invention, the garment possesses increased flexibility and comfort as well as increased control of the body of the wearer particularly in the critical abdominal area and also control of the garment itself on the body and in particular the top marginal edge thereof which is maintained straight and taut.

Additional important features of the present invention reside in the provision on the various forms of garments of thin highly flexible short rib elements positioned to have sliding contact with the main movable control rib of the resilient unit, to increase the mobility and efficiency of the unit itself and to eliminate entirely the possibility of the main rib jabbing into the body. The pocket structures which contain the control units have been improved to render them more economical and to more properly center the unit laterally on the garment front wall and guide the main control rib vertically with complete freedom of movement of the main control rib. In at least one form of the invention, a unique comfort pad is provided as a part of the pocket structure and serves as a convenient closure for the pocket and also serves as the support element for the auxiliary thin ribs against which the main control ribs have guided sliding engagement.

Since the entire resilient control unit is readily removable and replaceable in all forms of the invention, variations therein may be employed to suit the figure and the needs of a particular wearer. For example, the length of the vertical control rib may be varied to suit the circumstances. Each garment therefore becomes substantially custom-made. The invention therefore has a very high degree of versatility in connection with a variety of types of foundation garments. The invention possesses many additional features of novelty and advantages which will become apparent during the course of the following detailed description.

### BRIEF DESCRIPTION OF DRAWING FIGURES

FIG. 1 is an interior elevational view of the front wall of a corselet embodying a form of the invention, a part of the garment rear wall being broken away.

FIG. 2 is an enlarged side elevation of an abdominal and garment control unit employed in a pocket structure on the corselet.

FIG. 3 is an enlarged horizontal transverse section taken on line 3—3 of FIG. 2.

FIG. 4 is a similar section taken on line 4—4 of FIG. 2.

FIG. 5 is an enlarged fragmentary horizontal section taken on line 5—5 of FIG. 1.

FIG. 6 is a similar section taken on line 6—6 of FIG. 1.

FIG. 7 is an enlarged fragmentary perspective view of a pocket structure on the interior of the corselet front wall adapted to contain a removable abdominal and garment control unit as depicted in FIG. 2.

FIG. 8 is an enlarged central vertical section taken on line 8—8 of FIG. 1.

FIG. 9 is a fragmentary vertical section taken on line 9—9 of FIG. 8.

FIGS. 10 and 11 are diagrammatic side elevations illustrating the improved manner in which the control unit of the invention supports the top of the corselet and prevents the garment from gapping from the chest in comparison to the prior art.

FIG. 12 is an interior side elevation of the front wall of a girdle embodying a second form of the invention, parts broken away and parts in section.

FIG. 13 is a longitudinal vertical section taken on line 13—13 of FIG. 12.

FIG. 14 is a fragmentary horizontal section taken on line 14—14 of FIG. 12.

FIG. 15 is an interior side elevation similar to FIG. 12 showing a modification of the invention as applied to girdles.

FIG. 16 is a longitudinal vertical section taken on line 16—16 of FIG. 15.

FIG. 17 is a fragmentary vertical section taken on line 17—17 of FIG. 15.

FIG. 18 is a horizontal section taken on line 18—18 of FIG. 15.

FIG. 19 is an exploded perspective view of a pocket structure employed on the girdle as illustrated by FIG. 15.

FIG. 20 is a fragmentary elevational view similar to FIG. 15 showing a further modification.

FIG. 21 is a longitudinal vertical section taken on line 21—21 of FIG. 20.

FIG. 22 is a side elevation showing a modification of the control unit for a girdle of the type depicted in FIG. 20.

FIG. 23 is a view similar to FIG. 22 showing a double loop control unit for use in high waisted girdles.

FIG. 24 is a vertical section taken on line 24—24 of FIG. 23.

FIG. 25 is a fragmentary elevational view showing a modification of the construction and mounting of short ribs to be used on opposite sides of a central main rib as depicted in FIG. 15.

FIG. 26 is a vertical section taken on line 26—26 of FIG. 25.

FIG. 27 is a rear elevational view of a girdle, partly broken away, showing a further modified form of single loop control unit and simplified pocket structure on the abdominal wall, the unit possessing a novel self-centering feature.

FIG. 28 is a central vertical section on an enlarged scale taken on line 28—28 of FIG. 27.

FIG. 29 is a similar view taken on line 29—29 of FIG. 27.

FIG. 30 is an enlarged fragmentary horizontal section taken on line 30—30 of FIG. 27.

FIG. 31 is a side elevational view in detail of the control unit in FIG. 27, partly broken away.

FIG. 32 is a similar view of the opposite side of the last-named control unit.

FIG. 33 is a transverse horizontal section taken on line 33—33 of FIG. 31.

FIG. 34 is a side elevation showing a double loop self-centering control unit for high waisted girdles and the like possessing similar features to those possessed by the control unit in FIG. 27.

FIG. 35 is a fragmentary interior side elevation of the front wall of a girdle having a modified form of pocket structure for receiving an improved oval type control unit having a main vertical rib and an upper horizontal rib.

FIG. 36 is a central vertical section taken on line 36—36 of FIG. 35.

FIG. 37 is a fragmentary horizontal section taken on line 37—37 of FIG. 35.

FIG. 38 is a further view similar to FIG. 35 showing a modified pocket structure and oval control unit.

FIG. 39 is a fragmentary elevational view similar to FIG. 27 showing a further modification of the invention.

FIG. 40 is a vertical section taken on line 40—40 of FIG. 39.

FIG. 41 is a greatly enlarged fragmentary vertical section taken on line 41—41 of FIG. 39.

FIG. 42 is a fragmentary side elevation showing another embodiment of the invention.

FIG. 43 is a fragmentary elevational view showing a slight modification of the construction in FIG. 42.

#### DETAILED DESCRIPTION

Referring to the drawings in detail wherein like reference numerals designate like parts, and referring first to FIGS. 1 through 11, the numeral 40 designates a strapless corselet embodying one form of the invention. As is well known in the prior art, the body portion of the corselet may be formed of fabric which is stretchable in one direction or two directions in whole or in part, and portions of the foundation garment may be made of non-stretch material. The invention herein is concerned with an abdominal control unit for the garment and with means to mount the control unit on the front wall portion of the garment.

Continuing to refer to the drawings, a pocket structure 41, whose details will be described, is attached to the interior of the garment front wall 42 by suitable stitching and an abdominal control unit 43 shown isolated in FIG. 2 is received removably within the pocket structure 41.

The pocket structure 41 comprises a centrally located enlarged or main pocket portion 44 on the interior of the front wall 42 and attached thereto by a marginal line of stitching 45. The main portion 44 of the pocket structure contains a longitudinal vertical slit 46 at its transverse center through which the control unit 43 is inserted and removed at required times as when it is necessary to launder the garment. As depicted in FIG. 8, the main pocket portion 44 provides a pouch extension 47 at its lower end to receive and support the lower resilient loop of the control unit 43, yet to be described in detail. Extending above the top of the main pocket portion 44 and communicating therewith is a narrow central vertical pocket extension 48 or tube also joined to the front wall 42 by marginal lines of stitching 49 and extending to the extreme top of the corselet at the front and center thereof. The top of the front wall 42, FIG. 8, is folded inwardly at 50 and attached to the top of the pocket extension 48 by lines of stitching 51. This produces a secure attachment of the fabric elements with a minimum number of wall thicknesses and thus keeps the bulk of the garment to a minimum at this point.

The pocket structure 41 further embodies a dependent narrow lower vertical pocket extension 52 in alignment with the extension 48 and extending to the lower edge of the corselet and attaches thereto by marginal lines of stitching 53. The lower end portion of the pocket extension 52 receives fixedly therein a relatively short thin metal rib 54 which is held against vertical displacement by an upturned hem 55 at the bottom of the pocket extension and by an opposed hem 56 near the top thereof secured by a line of stitching 57. The forward face of the rib 54 is exposed in the tubular pocket extension 52 for sliding contact with a lower main rib of the unit 43, soon to be described. The short rib 54 assist vertical movement of the main rib and prevents the latter from jabbing into the body during stooping or bending movements.

There is also provided upon the pocket structure 41 an important feature in the form of a multi-purpose relatively thick cushioning pad 58. This pad forms an internal closure flap for the main pocket portion 44 having the slit 46, see FIGS. 5, 6 and 7. The pad is attached by suitable stitching 59 to the main pocket portion 44 on one side of the slit 46 and overlaps this slit and carries snap fastener elements 60 near its other longitudinal edge to mate with coacting snap elements 61 on the interior of the pocket and on the opposite side of the slit 46. Thus the flap 58 has for one of its purposes the formation of a closure for the main pocket portion. Another purpose of the flap or pad is to protect the abdomen of the wearer at the most critical point from any possible jabbing or discomfort due to parts of the unit 43 being deflected into the body during bending movements. The pad 58 serves a third purpose, namely, to mount two closely adjacent parallel vertical thin ribs 62 on the forward face of the pad whose upper and lower extremities are socketed by lines of stitching between the pad proper and attachment strips 63 and 64 stitched to the forward face of the pad 58 at its top and

bottom, see FIG. 9. The sockets for the opposite ends of the ribs 62 are produced by lines of stitching 65, as indicated in FIG. 9. The exposed thin ribs 62 form a barrier for the lower end of the upper main rib on the unit 43 and slidably engage such main rib and resist jabbing thereof into the body at all times.

Referring now to FIGS. 2 through 4 in particular, the control unit 43 comprises an upper generally circular highly resilient zigzag wire loop 66 of the type generally well known in the prior art, a similar lower resilient loop 67, an upper relatively thick and stiff main vertical rib 68 and a lower relatively thin and flexible main rib 69. The upper main rib 68 is suitably rigidly secured to a flattened cross connector 70 which also serves to anchor and secure the ends of the wire forming the loop 66 at the top of this loop. Another flattened connector 71 at the center of the unit 43 clampingly secures the two loops 66 and 67 in substantially tangential relationship and firmly anchors the ends of the wire forming the lower loop 67. The same connector 71 is also rigidly attached to the upper end of the lower main rib 69 which extends downwardly diametrically across the lower loop 67 and well below the same. The upper main rib 68 extends above and below the connector 70 and has its lower end terminating approximately at the center of the upper resilient loop 66. The coacting short ribs 62 and 54 fixed within the pocket structure 41 are shown schematically in FIG. 2 in their relationships to the main ribs 68 and 69.

The general mode of operation of the control unit 43 remains the same as described in Pat. No. 3,498,298. The two basic purposes of the unit 43 are to control the abdomen of the wearer of the corselet and to assist in holding up the top of the garment particularly in the most critical front center region. The resilient unit 43 is easily inserted into the pocket structure 41 through the slit 46 when the snap fasteners 60-61 are separated and the pad 58 is folded outwardly as shown in FIG. 7. The upper main control rib 68 is received in the narrow upper pocket extension 48, the top of which is closed, FIG. 8. The lower main rib 69 is received in the bottom pocket extension 52 which may remain entirely open at the bottom, FIG. 8, so that the rib 69 is free to reciprocate vertically therein. As previously mentioned, the lower end of the main rib 68 slidably engages the short ribs 62 on the front of the pad 58 during bending movements and correspondingly the lower end of the rib 69 slidably contacts the relatively stationary rib 54 during such body movements.

The power for expanding the control unit 43 lengthwise or vertically during use is derived from the two highly resilient spring loops 66 and 67 which are both received in the main portion 44 of the pocket structure. The bottom of the lower loop 67 reacts against the closed bottom of the pouch 47, FIGS. 1 and 8, and this yieldingly resists downward movement of the main lower rib 69 which is relatively thin and a good deal more flexible than the upper main rib 68. Except as resisted by the yielding loop 67, the lower rib 69 is freely longitudinally movable within and guided by the lower pocket extension 52. The short rib 54 contained therein assures that there will be no jabbing into the body of the lower end of the main rib 69. The upper resilient loop 66 supports the upper relatively stiff rib 68 and resiliently urges it upwardly against the closed top end of pocket extension 48. The power of the two coacting resilient loops 66 and 67 is additive to expand

the unit 43 lengthwise when the two loops are compressed vertically as by bending or stooping movements. The two loops 66 and 67 are free to expand laterally into elliptical shapes within the pocket portion 44 which is considerably wider than the loops 66 when the latter are relaxed, FIG. 1. As a result of the total unique coaction between the control unit 43 and the confining pocket structure 41 with pad 58 and auxiliary short ribs 62 and 54, a firm supporting and controlling force is exerted on the abdomen during all positions of use and simultaneously the expansive force of the resilient loops 66 and 67 acting through the upper rib 68 constantly supports the front top edge of the garment in the region between the breasts.

There is a further benefit derived from the use of the pad 58 and the short ribs 62 in addition to guarding against possible jabbing of the body by the bottom of the rib 68. This benefit is graphically shown in FIG. 11 which contrasts the present invention with the prior art which is shown in FIG. 10. In the prior art, the pad 58 and the ribs 62 are absent. Consequently, the weight of the breasts acting on the upper main rib produces a greater gapping of the garment at its top and center designated at G' in FIG. 10, because there is nothing to counter-react efficiently at the lower end of the upper main rib. However, with the improved arrangement, FIG. 11, the outward bending moment on the upper main rib 68 shown by the upper arrow in FIG. 11 is counteracted by the resistance of the ribs 62 as shown by the lower arrow in FIG. 11. This stabilizes the rib 68 whose thickness has also been increased as compared to the prior art with the result that the gap G is considerably lessened in comparison to the gap G'.

Another feature which should be noted is that the close spaced relationship of the ribs 62 on the pad 58, FIG. 9, does not interfere with the flexing of the pad to open the pocket as illustrated in FIG. 7. The entire structure is characterized by simplicity and minimized bulk or thickness and economy, particularly when taking into consideration the variety of functions served by the structure.

FIGS. 12 through 14 of the drawings show an embodiment of the invention applicable particularly to a girdle of regular waist length as compared to a high waisted girdle. In these figures, the girdle front wall is designated by the numeral 72 and upon the interior of this front wall is mounted a very simple pocket 73 attached to the girdle by marginal stitching 74. The stitching is interrupted along one vertical side of this pocket 73 to provide an opening 75 for the insertion and removal of a resilient control unit 76, to be described. The pocket 73 has a depending narrow tubular extension 77 at the center thereof which may be left open at the bottom, FIG. 13. Contained fixedly within the lower reaches of the pocket extension 77 are a pair of short guiding and stabilizing ribs 78 whose upper and lower ends are confined by hems or sockets 79 and 80 produced by stitching. As will be described, the main vertical rib of the control unit 76 operates between the pair of ribs 78 and the latter prevent jabbing of the body or unsightly outward bulging of the garment caused by the lower end of the main rib.

The unit 76 comprises a single approximately heart-shaped resilient loop 81 whose upper terminals are secured by a rigid connector 82 which also serves to rigidly anchor the top end of a vertical central main rib 83. The main rib 83 extends downwardly across the

bottom of the loop 81 and into the narrow pocket extension 77, as shown. When the unit 76 is relaxed, the lower end of the main rib 83 projects between the two ribs 78 for a relatively small distance, FIG. 13, and when the wearer of the garment bends at the waist, the main rib will move downwardly between the ribs 78 toward the bottom open end of the tubular pocket extension 77 without restraint. The bottom of the loop 81 rests in a pouch 84 formed on the pocket 73 and the resistance offered by this pouch coupled with the resiliency of the wire loop 81 will tend to elevate the rib 83 and cause the upper lobes 85 of the heart-shaped loop to bear against the top hem or edge 86 of the girdle and prevent the same from sagging. With reference to FIG. 13, it may be noted that the top hem 86 is formed integrally on the pocket 73 and consists of only two layers of fabric. The outer garment wall 72 is folded inwardly at 87 to form an upper finishing edge on the garment outwardly of the pocket structure. The total number of fabric layers is held to a minimum and bulkiness is reduced.

An added improvement over the prior art in the embodiment of FIGS. 12-14 resides in the provision of a horizontal resilient rib or stay 88 on the garment front wall adjacent the top edge thereof and on the interior of the pocket structure and contiguous with the latter transversely. This horizontal rib 88 is confined within a small horizontal pocket 89 formed by a strip of fabric connected to the interior of the pocket 73 by marginal lines of stitching 90. The horizontal rib 88 coacts with the lobes 85 of the heart-shaped loop 81 in maintaining the top edge of the girdle straight and relatively taut in the region of the pocket and the control unit 76 within the pocket, whose dual purpose is the comfortable control of the abdomen and the upholding of the frontal top edge of the garment, which otherwise would tend to sag and roll over. The general mode of operation without the present improvements is adequately described in the aforementioned Pat. No. 3,498,298.

FIGS. 15 through 19 show a modification of the invention also applicable to girdles. In this modification, a pocket structure 91 is stitched to the girdle front wall 92 by marginal lines of stitching as indicated in FIG. 15. Within the pocket structure 91 is a modified form of resilient control unit 93 comprising a single approximately circular wire loop 94 whose upper ends are secured by a connector 95, also rigidly connecting the upper end of a main vertical rib 96 with the top of the loop 94. The rib 96 extends downwardly entirely across and below the loop 94 and is free from attachment to the bottom of the loop. Below the loop 94 and pocket 91, the main rib 96 extends into a reduced width vertical pocket extension 97 which is essentially tubular and open at its lower end. The lower end portion of the rib 96 overlaps and lies rearwardly of a single short rib 98 whose upper and lower ends are socketed to hems 99 and 100 formed by stitching on a fabric strip 101 which constitutes an extension of the above pocket structure, FIG. 16, and which lies inwardly of the garment outer wall 92. As described in the other embodiments, the main rib 96 while moving downwardly may slidably engage the exposed face of the rib 98 and is stabilized thereby. The resilient loop 94 is contained within the main portion of pocket structure 91 and has its lower side resting in a pouch formation 102 at the bottom of the main pocket portion. The main pocket portion has an off-center entrance opening or slit 103, FIG. 15,

through which the resilient unit 93, composed of elements 94, 95 and 96, may be introduced into and removed from the pocket structure.

At the top of the pocket structure 91, a relatively short separately formed horizontal rib 104, similar to the rib 88, is disposed within a horizontal pocket or tubular formation 105, formed by stitching along lines of stitching 106 and 107. A gap is allowed to remain in the line of stitching 106 to provide an opening 108, FIG. 15, for the removal and introduction of the horizontal rib 104 into the tubular pocket 105. The pocket 105 is formed by an inward extension of the forwardmost layer 109 of the pocket structure, as shown particularly at the top of FIG. 16. The garment outer wall 92 is also folded over the top edge and downwardly on the interior side and stitched as indicated at 110 in FIG. 16. This arrangement again provides for the accommodation of a number of components with a minimum number of fabric layers to produce a sturdy but clean-looking construction.

FIG. 19 depicts the details of the pocket structure 91, including the above-mentioned forwardmost wall 109 immediately inwardly of the garment front wall 92 and the element folded over at the top to produce the horizontal pocket 105 for the rib 104. The top section of the wall 92 designated 110 in FIG. 16 is also shown in FIG. 19 prior to folding. The double thickness layers 111 and 112 forming the main body portion of pocket structure 91 and also forming the pouch 102 are shown in FIG. 19. The element 113 is a reinforcement for the bottom of the pouch 102 which strengthens the pocket at the point where the pressure from the bottom of the loop 94 is concentrated. Other forms of pocket construction may be employed for the structure 91 in some instances although the construction shown in FIG. 19 is a preferred construction and is very sturdy without adding significant bulk to the garment.

Another feature of the embodiment in FIG. 15 is the addition of a pair of relatively short auxiliary ribs 114, one on each side of the central main rib 96 in equidistantly spaced parallel relation. These auxiliary ribs are contained within narrow tubular pockets 115 attached to the fabric section 109 and to the garment front wall 92 by stitching, as indicated. The tops of the narrow pockets 115 remain open, as best shown in FIG. 17, these pockets being longer than the ribs 114 so that the latter can have some movement longitudinally therein. This arrangement provides increased self-adjusting control of the abdomen during various body movements. All of the ribs 114 and 98 are readily removable for laundering, when necessary. The rib 98 is preferably a thin very flexible rib and has for one of its purposes to prevent wrinkling of the garment, particularly near the lower end of the main rib 96. The horizontal rib 104 lies between the body of the wearer and the connector 95 and thus protects the body from undue pressure caused by the rigid connector. The rib 104 also prevents creeping of the pocket structure at the top of the garment and forms a straight edge, whereas without this rib, the pressure exerted by the top of the loop 94 would tend to cause a rounded bulge at the top and center of the garment where the pressure from the loop 94 is the greatest. This same advantageous feature is present in the embodiment of FIG. 12 where the horizontal rib 88 maintains the top edge of the garment substantially straight adjacent the pressure lobes 85.

FIGS. 20 and 21 show a modification of the construction in FIGS. 15 to 19. In the further modification, the top horizontal rib 116 serving the same function as the rib 104 is attached to an extension 117 of a connector 118 which secures the top of a main control rib 119 and the opposing ends of the wire which forms the resilient loop 120. The pocket 91 which is basically the same as depicted in FIG. 15 contains an upper bottom opening extension 91' for the horizontal rib 116. The opposite ends of the pocket extension 91' are formed by vertical lines of stitching 92'. The entire control unit may thus be slipped into the pocket 91 through the vertical slit 103 and the top rib 116 may be slipped upwardly into the pocket extension 91'. This present modification eliminates several thicknesses of metal and fabric at the top of the garment.

FIG. 22 shows a modification of the metal control unit employed in FIGS. 20 and 21. In this figure, a second horizontal rib 121 is secured to the bottom of the resilient loop 120 through a connector 122. This control unit in FIG. 22 is utilized on girdles having the simple form of pocket as depicted in FIG. 12 or FIGS. 15 and 20 to prevent the bottom of the resilient loop from causing bulging of the supporting pouch 84 or 102 where the pressure from the loop is concentrated.

FIGS. 23 and 24 show a form of control unit as would be employed on a high waisted girdle of the general type shown in FIG. 1 of Pat. No. 3,498,298. Such a control unit comprises upper and lower resilient loops 123 and 124 joined by a cruciform connector 125 which is also rigidly attached to the upper end of a main control rib 126. A top horizontal short rib 127 is attached to the top of upper loop 123 by a connector 128 and a lower short horizontal rib 129 is attached to the bottom of loop 124 by another connector 130. The rib 129, loop 124 and connector 130 are not attached to the rib 126, FIG. 24, so that the main control rib 126 is free to reciprocate vertically in a narrow guide pocket or passageway as disclosed in this application and in said prior patent. It should be mentioned also in connection with FIG. 22 that the rib 119 is not attached to the rib 121, connector 122 or the bottom of the loop 120, for the same reasons. The top horizontal rib 127 prevents the loop 123 from causing a bulge at the top edge of the garment and prevents the top of the loop from digging into the body by keeping the top edge of the garment essentially straight. The bottom horizontal rib 129 prevents the lower loop 124 from causing the bottom of the pocket to sag and also prevents the bottom of the loop 124 from entering the narrow pocket or passage which accommodates the control rib 126. The pocket structure for the unit shown in FIGS. 23 and 24 has not been illustrated for simplicity because this pocket structure can be basically the same as the structures 73 and 91 except that additional length is added to the pocket to accommodate the two loops 123 and 124 which are connected one above the other substantially tangentially.

FIGS. 25 and 26 show a modification of the auxiliary ribs 114, FIGS. 15 and 20, which are employed on opposite sides of a main rib. The auxiliary rib in FIGS. 25 and 26 comprises two short overlapping vertical rib sections 131 and 132 attached to the garment at the top of the section 131 and at the bottom of the section 132 as indicated at 133 by thread or the like. The two overlapping rib sections are placed in narrow pockets 134 on either side of a main vertical rib. When the wearer

of the garment is upright, the rib sections 131 and 132 are disposed substantially as shown in the drawings. When the wearer bends the body, the rib sections can move and slide and deflect relative to each other, the top section moving downwardly and the bottom section moving upwardly. Thus, the auxiliary rib cannot jab into the body regardless of body movements. The movement of the rib sections takes place inside of the pocket 134 and thus will cause no wrinkling or pulling of the garment fabric.

FIGS. 27 through 33 show a further and preferred form of the invention embodying a simplified and more efficient resilient control unit for a girdle, panty girdle or the like, in combination with a further simplified side opening pocket structure. The elimination of the separately formed and attached horizontal ribs 116 and 121, FIG. 22, has been achieved without loss of their valuable function.

Referring further to FIGS. 27 through 33, a girdle 130' is depicted having a simplified rectangular pocket 131' stitched directly to the abdominal wall of the girdle designated at 132'. The pocket 131' is open along one vertical edge as at 133' for the introduction and removal of a single loop type improved resilient control unit 134'. The unit 134' embodies a top connector 135 for the ends of a wire loop 136, and this top connector is made sufficiently long on opposite sides of a main control rib 137 so that the connector itself forms a horizontal rib to maintain the top edge of the garment straight and taut and free of bulges, and without the presence of narrow parts which might jab into the body at this point. The connector 135 in effect becomes a relatively rigid section in the otherwise highly resilient loop 136 which furnishes the power to hold up the top edge of the girdle or garment. The connector 135 is fixedly attached to the top ends of main control rib 137. A lower connector, preferably of the same length as the connector 135, is firmly attached to the bottom of loop 136 and becomes an integral part thereof and becomes seated in the bottom of the pocket 131', FIGS. 27 and 29. The lower connector is designated 138. The two rib-like connectors 135 and 138 under influence of the spring loop 136 will expand against the bottom of the pocket and the top edge of the girdle to hold the top edge up and to prevent bulging and wrinkling of the garment.

The lower connector 138 has a short integral depending tab or extension 139 which enters for a short distance into the top of a narrow vertical tubular guide extension 135' within which the main control rib 137 engages for guided vertical movement. The lower end of the tubular pocket extension 135' is open as shown so that the rib 137 will have unrestricted downward movement. The engagement of the tab 139 in this narrow pocket extension maintains the control unit 134' centered laterally within the pocket and on the front wall of the garment. This tab and the connector 138 interfere in no way with the action of the rib 137 since there is no connection between these elements and the main control rib. Generally as described previously in connection with FIGS. 12 and 15 a thin and highly flexible relatively short auxiliary rib 136' is fixedly and removably mounted on a dependent extension 137' of the pocket structure in position for sliding contact with the lower end of the main rib 137. As previously explained, this insures free and smooth movement of the main vertical rib at required times during bending and stooping,

and also prevents the lower end of the main rib from jabbing the body.

In FIG. 34, there is shown a resilient control unit 138' of the double loop type applicable to high waisted garments. For simplicity of description, the girdle and pocket structure have been omitted in FIG. 34 particularly in light of the teachings of the prior Herbener Pat. No. 3,498,298. The unit 138' includes an upper resilient wire loop 139', the opposite ends of which are firmly connected by elongated connector 140' at the top of the loop 139' which forms an integral horizontal rib for the purpose described in connection with the connector-rib 135. A similar lower resilient loop 141' is attached tangentially to the upper loop by a cruciform connector 142' which is also rigidly attached to the upper end of a main control rib 143' which is capable of vertical movement in a tubular guide pocket extension, not shown. A lower elongated connector 144' is attached to the bottom of the loop 141' and has an integral center dependent tab 145' for the same purpose described in connection with the tab 139, namely, to center the unit 138 laterally and prevent lateral movement. The main rib 143' is unattached to the elements 144' and 145' and is therefore freely movable relative thereto. The main rib crosses and extends well below the lower connector 144'. In use, the two connectors 140' and 144' bear against the top edge or hem of the garment and the bottom of the pocket, respectively, and the expansive power of the two loops 139' and 141' acting through these elements will maintain the top edge of the garment straight and taut at the center of the garment while maintaining the abdominal wall portion of the garment smooth and relatively free of wrinkles. At the same time a wearer of the garment has complete freedom of movement with no loss of comfort and the main control rib 143' maintains the abdomen relatively flat while moving vertically as required by bending and stooping of the wearer. The construction of the unit 138' is more compact and simpler than the two circle unit shown in FIG. 23 and additionally possesses the self-centering feature afforded by the tab 145'.

FIGS. 35 through 37 show another embodiment applicable to girdles or panty girdles, in which an oval type resilient control unit 141 is utilized within a pocket 142 on the abdominal wall 143 of the garment. The integral unit 141 includes a main vertical control rib 144 which is free to reciprocate vertically in an open ended fabric guide tube 145 stitched to the outer layer 146 of the pocket structure. The unit 141 embodies preferably three vertically elongated elliptical or oval resilient wire loops 147, 148 and 149 of successively smaller size inwardly. The curved bottoms of these three loops are supported by stepped pocket pouches 150, FIG. 36. The ends of the wires forming the three loops are securely clamped at the tops thereof by a single connector 151 which is also secured rigidly at 152 to the top of main rib 144. The lower end of this main rib extends to a point somewhat below the center of the innermost loop 149 when the unit 141 is flat or relaxed. The unit further embodies a top horizontal rib 153 secured to the top of connector 151 and extending equidistantly on opposite sides of the vertical rib 144. The horizontal rib 153 holds up the top edge of the garment, such as a girdle, and maintains the top edge straight and prevents jabbing of any narrow parts into the body. The three concentric oval loops never come

into direct contact with the upper edge of the garment. The oval loops in the arrangement shown do not require stitching to the garment wall and may be freely disposed in the pocket 142 which has a center vertical slit 154 through which the unit 141 may be inserted and removed. In some cases, a simple side opening pocket may be employed instead of a center opening pocket. The pocket 142 is sufficiently wide to permit the necessary lateral expansion of the oval loops during movement of the body by the wearer. The upper edge of the garment is formed and reinforced by folding inwardly the top extremity of the outer pocket layer 146 and the garment outer wall 143, as shown at 155 in FIG. 36. No separate pocket for the rib 153 is required.

While oval loops formed of zigzag wire are broadly known in the prior art, they have not been proposed in combination with the central main vertical control rib and a simplified pocket for the entire unit. Also, the provision of a horizontal rib, such as the rib 153, on such an oval unit is novel in the art.

FIG. 38 shows a modification of the construction in FIGS. 35 through 37, wherein the pocket pouches 150 for the support of the bottoms of the oval loops are no longer needed and are eliminated. As shown, a resilient control unit 156 for a girdle or the like comprises a pair of oval resilient loops 157 and 158 whose upper ends are firmly joined to a connector 159 which is also attached to the top of a main vertical rib 160 and a top horizontal rib 161. Another connector 162 at the bottom of the unit is clamped to the bottoms of the loops 157 and 158 and is secured to a bottom horizontal rib 163.

The main vertical rib 160 is movably guided in a fabric tubular guide 164 on the front wall of the garment. A very simple pocket 165 is employed having a side opening 166 for the entrance and removal of the unit 156. In some cases, a center opening pocket may be used if preferred. The top and bottom horizontal ribs 161 and 163 engage within and are centered by reduced width pocket extensions 167 and 168, as shown in FIG. 38. The expansive action of the loops 157 and 158 urges the ribs 161 and 163 against the top and bottom margins of the pocket to maintain the garment taut and to uphold the top edge thereof.

FIGS. 39 through 41 show another modification broadly similar to FIGS. 27 through 32 but in even simpler and more economical form, rendering it possible to eliminate entirely the lower connector 138, tab 139 and associated parts without loss of function.

In FIGS. 39 through 41, a simple side opening pocket 169 formed of a single piece of fabric is applied to the interior face of the garment front wall 170 by stitching lines 171 and 172. The open side of the pocket is indicated at 173 to receive and permit removal of the metal control unit 174. This unit in the simplified form shown comprises a single loop 175 formed of zigzag wire, having its upper side attached to the top of a main vertical control rib 176 through a connector 177 which also joins the ends of the wire constituting the loop 175.

The main vertical rib 176 has its upper end portion lying between the two side walls 178 and 179 of pocket 169, and near the vertical center of the pocket the rib 176 emerges through a buttonhole-like slit 180 in the pocket front wall 179 and from this point downwardly is outside of the main pocket. The entire loop 175, however, remains within the pocket 169 and the bottom of the loop seats upon the bottom fold of the



pocket without a horizontally elongated connector or a centering tab, such as shown in FIGS. 27 to 32. Instead of that arrangement, the simple slit 180 serves to center the rib 176 and the entire control unit 174 on the garment and prevents lateral displacement of the unit relative to the pocket 169 and garment.

Below the pocket 169 the rib 176 is received movably in a tubular pocket extension 181, the forward wall of which may extend to a point near the top of the main pocket 169 and the other wall of which extends from the bottom of the pocket 169 downwardly. As in prior forms of the invention, the bottom of the tubular pocket extension 181 remains open and preferably contains on one or both walls thereof a thin flexible auxiliary rib 182 against which the main rib 176 may slide and to prevent jabbing, as previously explained. At the top of the garment, a narrow horizontal pocket 183 for a horizontal rib 184 is provided and this pocket has a lower side opening 185 through which the rib 184 is introduced and removed, the latter being separate from the unit 174 consisting of the loop 175, main rib 176 and connector 177.

The invention in FIGS. 39 to 41 possesses substantially the same advantages discussed in connection with FIGS. 27 to 33 but is simpler. The simple buttonhole-like slit 180 takes the place of the elongated metal connector 138 with centering tab 139 and the slit centers the unit laterally, as stated. The tubular pocket extension 181 guides the rib 176 during vertical movement caused by stooping or bending. The advantages of this simplified construction should be readily apparent.

FIG. 42 shows yet another embodiment in which a simple side opening pocket 186 is attached to the garment front wall 187 by stitching, as shown, the open side of the pocket being indicated at 188. The abdominal control unit removably mounted in the pocket 186 comprises a single circular zigzag wire loop 189 having connectors 190 and 191 fixedly secured to its top and bottom sides. These connectors are also rigidly secured to top and bottom horizontal ribs 192 and 193 which are received within top and bottom shallow horizontal pocket extensions 194 and 195, these pocket extensions being open at their bottom and top sides, respectively, and communicating with the interior of the main pocket 186, so that the entire resilient unit including components 189 through 193 can be inserted and removed easily. In this embodiment, the main vertical rib may be omitted and the single loop 189 is employed instead of oval loops as indicated in FIG. 38. The construction is very simple and compact.

In FIG. 43, the construction may be identical with that shown in FIG. 42 with the following exception. Instead of the connector 190 and separately formed horizontal rib 192 at the top of the loop 189, a horizontally elongated connector 196 is secured to the top of the loop and this connector has an integral extension 197 at its top projecting into the pocket extension 194 and performing the same purpose as the rib 192 in FIG. 42. The same construction shown in FIG. 43 may be employed at the bottom of the loop 189 in lieu of the separate elements 191 and 193, namely, a connector or bar portion secured in the bottom of the loop having an integral side extension serving as a horizontal rib. The modified construction somewhat reduces the number of parts.

It is to be understood that the forms of the invention herewith shown and described are to be taken as pre-

ferred examples of the same and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of the invention or scope of the subjoined claims.

I claim:

1. A foundation garment comprising a flexible garment body portion which spans the abdominal region of a wearer, a pocket on the interior of the body portion adjacent the abdominal region and having an opening, a resilient abdominal control unit disposed removably inside of said pocket and having at least one resilient loop element which may be compressed vertically and which may expand laterally in the pocket, at least one vertically extending main abdominal control rib on said unit having a connection with said loop element and being vertically movable in said pocket and restrained from lateral movement by the pocket, a protective pad in the interior of the pocket in opposed relation to said main control rib, and at least one vertically extending auxiliary rib mounted on said pad in overlapping relationship to the main control rib and positioned to slidably contact said control rib during vertical movements of the latter.

2. A foundation garment comprising a flexible garment body portion which spans the abdomen of the wearer, a pocket on the interior of the body portion adjacent the abdominal region and having an opening, a resilient abdominal control unit removably mounted in said pocket and including a pair of resilient loops arranged one above the other substantially in tangential relationship, a connector for the tangential portions of said loops, an upper substantially vertical rib connected with the top of the upper loop and extending thereabove to the top edge of said garment body portion and having a lower end terminating inside of the upper loop, a main vertical control rib connected with the top of the lower loop and extending therefrom downwardly and across the lower loop to a point substantially below the lower loop, a protective pad on the interior of the pocket in opposed relation to said ribs, and auxiliary vertical rib means fixedly mounted on said pad in overlapping sliding contact with adjacent end portions of said ribs.

3. A foundation garment comprising a flexible garment body portion which spans the abdomen of the wearer, a pocket on the interior of the body portion in the abdominal region and having an opening, a resilient abdominal control unit removably mounted in said pocket and including a pair of resilient loops arranged one above the other substantially in tangential relationship, a connector for the tangential portions of said loops, an upper substantially vertical rib connected with the top of the upper loop and extending thereabove to the top edge of said garment body portion and having a lower end terminating inside of the upper loop, a vertical control rib connected with the top of the lower loop and extending downwardly therefrom and across the lower loop to a point substantially below the bottom of the lower loop, the bottom of the lower loop engaging said pocket and being supported thereby, a protective pad on the interior of the pocket in the region of the connector and the interior ends of said ribs, and a pair of closely spaced substantially vertical auxiliary ribs fixedly mounted on said pad and positioned for sliding contact with said connector and adjacent portions of said vertical rib and control rib.



4. A foundation garment comprising a flexible garment body portion which spans the abdomen of the wearer, a pocket on the interior of the body portion adjacent the abdominal region, a resilient abdominal control unit mounted in said pocket and including a pair of connected resilient loops arranged one above the other to produce a highly resilient unit, an upper vertical rib secured to the top of the upper loop and extending thereabove to the top edge of the garment body portion and having a lower end terminating within the upper loop, a vertical control rib secured to the top of the lower loop and depending therefrom and crossing the lower loop diametrically and extending substantially therebelow, said upper vertical rib being thicker and considerably more rigid than said vertical control rib, the latter being highly resilient, a protective pad on the interior of the pocket in the region of the connected portions of said loops, and a resilient smooth surfaced facing element on said pad in sliding contact with adjacent portions of said ribs.

5. A foundation garment comprising a flexible garment body portion which spans the abdomen of the wearer, pocket means on the interior of the body portion in the abdominal region, a resilient abdominal control unit within the pocket means including a pair of resilient loops arranged one immediately above the other and being connected substantially tangentially to produce an approximate FIG. 8 highly resilient unit, an upper vertical rib connected with the upper loop and extending thereabove to substantially the top edge of the garment body portion, a vertical control rib connected with at least the lower loop and extending diametrically across the lower loop and substantially therebelow, padding means on the interior wall of the pocket adjacent said loops to resist jabbing of the adjacent portions of said ribs into the body, a relatively stationary vertical auxiliary rib on the pocket near the lower end of said vertical control rib and overlapping the control rib and slidably engaging the same, and said pockets having a bottom narrow tubular extension for said vertical control rib and relatively stationary auxiliary rib.

6. A foundation garment comprising a flexible gar-

ment body portion which spans the abdomen of the wearer, a pocket on the interior of the body portion in the abdominal region and having a vertical slit, a resilient abdominal control unit insertable into said pocket and removable therefrom through said slit, said control unit comprising at least one resilient loop supported by a bottom portion of the pocket and at least one vertical rib having a connection with said loop, a relatively thick protective pad on the interior wall of the pocket adjacent the control unit, said pad forming a flexible closure flap for the pocket extending across the vertical slit and extending for the major portion of the length of the slit, and a pair of closely spaced vertical rib elements on the forward face of the pad positioned for sliding contact with said control unit, the narrow space between the rib elements forming a hinge region for the flexing of said closure flap for readily opening the pocket, said flap lying inside of the pocket when the pocket is closed.

7. A foundation garment comprising a flexible garment body portion which spans the abdomen of the wearer, a pocket on the interior of the body portion in the abdominal region and having a vertical slit, a resilient abdominal control unit insertable into said pocket and removable therefrom through said slit, said control unit comprising at least one resilient loop supported by a bottom portion of the pocket and at least one vertical rib having a connection with said loop, a relatively thick protective pad on the interior wall of the pocket adjacent the control unit, said pad forming a flexible closure flap for the pocket extending across the vertical slot and extending for the major portion of the length of the slit, and a pair of closely spaced vertical rib elements on the forward face of the pad positioned for sliding contact with said control unit, the pad being flexed to an open position by bending it in the region between the closely spaced rib elements, and means on the pad adjacent the top and bottom thereof forming flexible sockets for the top and bottom ends of said rib elements, whereby the rib elements are rendered readily removable from the pad.

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