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(72) Inventor: **Yoshihara, Hiroshi**
Tokyo 167-0023 (JP)

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(74) Representative: **Goddard, Heinz J., Dr.**
FORRESTER & BOEHMERT Pettenkoferstrasse
20-22
80336 München (DE)

(71) Applicant: **Yoshihara, Hiroshi**
Tokyo 167-0023 (JP)

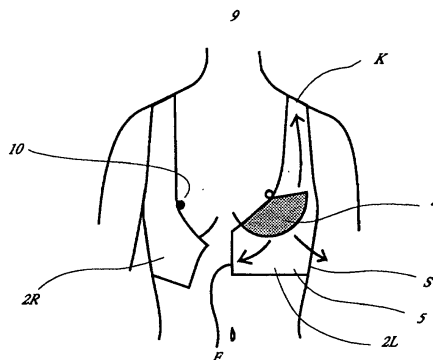
(54) **SUPPORT/SHAPE CORRECTION STRUCTURE FOR HUMAN BODY AND CLOTHING STRUCTURE PROVIDED THEREWITH**

(57) The supporting and correcting mechanism of the breasts and the clothing mechanism is made up with an expandable material, in which the front part pinches the fan-shaped areas with the nipples as the peaks, corresponding to areas covering from a region near the front center by way of the under-busts to regions near the armpit regions, which are likely to produce a suspension and a deformation of the breasts, forms planes jointly with the front center region, armpit regions, and shoulder regions that face to the fan-shaped areas, and joins the right and left parts on the front center, whereby upper areas from the nipples are made open. By wearing, tensile (tense) relations are produced over the whole mechanism, which exerts a pressure that prompts support and correction to the lower sides of the breasts and the fan-shaped parts.

The supporting and correcting mechanism of the

bottom uses the expandable material, and includes cut lines of the right and left, front and back parts in conformity with the median shape, in which the right and left parts that pinch the median form the crotch region and the neighborhood thereof in a shape that they are separated before being joined, form them in a shape to conform with the shape of the region between the crotch and the right and left thighs by being joined, provide change-over darts or cut lines or a structure capable of replacing these in regions from the buttock protrusions on the peak line buttock protrusions reaching to the lower sides of the buttocks to form the regions in shapes to conform with the shapes of the buttocks, whereby, on wearing, tensile (tense) relations are produced over the whole mechanism to bring the parts into a close contact with the bottom areas and exert a pressure that prompts correction to the abdomen and the lower sides of the buttocks.

Fig. 7



Description

Technical Field

[0001] The present invention relates to a mechanism for supporting and correcting a human body such as the breasts, the abdomen, and the buttocks, etc., and a clothing provided with the mechanism; and the invention specifically relates to a mechanism that, using an expandable material, prevents healthily a suspension or a deformation in accordance with a body form characteristics and an operational mechanism and a physiological mechanism, and supports, corrects, and reforms a human body in a stable shape, and a clothing provided with the mechanism.

[0002] Further, the invention relates to a mechanism for supporting and correcting the lower parts of the abdomen and the buttocks, and a clothing provided with the mechanism.

[0003] More concretely, any one of the mechanisms and the clothing assumes the median shape as the design reference, uses an expandable material, pinches the regions that need a support and correction, such as the lower sides of the breasts, the abdomen, and the buttocks, etc., that are likely to be hung down and deformed, forms a plane jointly with plural regions facing to the regions, adjusts the size, the shape, and the reduction rate thereof. During wearing, correlative tensile (tense) relations are produced over the whole mechanism by the original form recovering property of the expandable material, and an appropriate pressure is exerted to the lower sides of the breasts, the abdomen, and the buttocks, etc., that are likely to create a suspension and a deformation, which produces an effect of the support and correction to neatly fit to a body form. The invention relates to a mechanism for supporting, correcting, and rectifying the breasts, the abdomen, and the buttocks by means of the foregoing effect and the body form characteristics of a wearer, and a clothing provided with the same.

Background Technology

[0004] There are differences among individuals in the breasts, depending on the degree of physical growth, the size thereof and the state that the muscles and fats are put thereon, and the like. The breasts are inclined to be drawn near the armpits as shown in Fig. 13, and to be hung down as shown by the arrow Y in Fig. 14. Further, the breasts projects out from the chest, and during exercise they are apt to produce motional differences from the motion of a human body and create a harmful effect such as a swing or a deformation. If such a swing or a deformation of the breasts is left as it is, it will cause a possibility of damaging the sound and stable growth in the breast tissue, and a tendency to invite a distorted deformation, which is a problem.

[0005] Accordingly, in order to maintain the sound

growth in the breast tissues and prevent the deformation, there are various brassiere products available in the market, which claim to provide a function for correcting the breasts.

[0006] As shown in Fig. 17 and Fig. 18, more than 80 % of these brassiere products are provided with a semi-circular mold 31 made of a wire, a cup 32 made of an urethane resin or the like, and a pad 34, and around the shoulders and chest they are provided with a shoulder string 35 by a rubber material or the like and a tightening part 33.

[0007] The conventional brassiere (or clothing with a brassiere) is disclosed in, for example, the Japanese Published Unexamined Utility Model Application No. Hei 6-83712, No. Hei 6-79707, the Japanese Published Examined Utility Model Application No. Sho 58-15443, and the Japanese Published Examined Patent Application No. Hei 5-77761.

[0008] The clothing having cups to catch the breasts disclosed in the Japanese Published Unexamined Utility Model Application No. Hei 6-83712 has a structure in which wire cups and cups are sewn to the parts hollowed in a shape of the breasts on the lower sides of the breasts, on the plate tightening part surrounding the lower chest, the armpits, and the back.

[0009] This brassiere is claimed to gain the effect to push up the bust, since the wire cups and the cups push up the breasts from the lower part thereof and the shoulder strings pull up the breasts toward the shoulders.

[0010] The brassiere disclosed in the Japanese Published Unexamined Utility Model Application No. Hei 6-79707 is the so-called "push-up type brassiere", in which thick pads are installed on the curved parts under the cups. This brassiere thrusts out the breasts front toward the center by the pads, and thereby shows the chest between the breasts deeper and effects to display the breasts larger.

[0011] The brassiere disclosed in the Japanese Published Examined Utility Model Application No. Sho 58-15443 is the so-called "sport brassiere", in which a guiding ring is formed on the rear center upper edge of the rear patch, a shoulder string coupled with one cup is passed through the guiding ring, and the shoulder string is coupled with the other cup.

[0012] In the clothing structure disclosed in the Japanese Published Examined Patent Application No. Hei 5-77761, the clothing is provided with an expandable part that expands in the same direction of the muscular action of a human body on wearing, and the expandable part enhances the wearing feeling, excels motions, and exhibits the function to support and correct the human body.

[0013] However, in the clothing having cups to catch the breasts disclosed in the Japanese Published Unexamined Utility Model Application No. Hei 6-83712, the wire cups and the cups are fixed to the tightening part placed surrounding the lower sides of the breasts, and the shoulder strings coupled with the wire cups and the

cups are fixed to the foregoing tightening part by way of the shoulders and the back. Accordingly, the wire cups and the cups push up the breasts, and when pulling up by the shoulder strings, the tightening part also creeps up, which is a problem. In order to prevent this creeping-up, it is necessary to strengthen the tightening still more by the tightening part. However, to do that will make the clothing unhealthy in reverse, which will make it difficult to push up the breasts, thus creating an extremely contradictory problem.

[0014] The brassiere disclosed in the Japanese Published Unexamined Utility Model Application No. Hei 6-79707 improves an external shape during wearing; however, the breasts are pressured by the wire cups and the cups inside the brassiere, which increases unwholesomeness to the breasts and distorts the breasts in a ugly-looking shape. Further, in both the above brassieres, the tightening is heavy, and the wire cups bite the body, which presents a problem that they can only give a poor fitting feeling.

[0015] The brassiere disclosed in the Japanese Published Examined Utility Model Application No. Sho 58-15443 forms a simple covering shape, and since the expandability of the material during wearing pressures the whole bust, as shown in Fig. 16, the pressure is applied on the whole breasts including the nipples, the breasts are made flat accordingly, and a beautiful silhouette cannot be obtained, which is a problem.

[0016] These brassieres use very many components from 10 to 50, and take a great deal of time on production, which is disadvantageous.

[0017] In the clothing structure disclosed in the Japanese Published Examined Patent Application No. Hei 5-77761, the shape of the expandable core belt disposed along the direction of the muscular lines of the greater pectoral on the bust is able to display the fitting and movement performance coincident to the muscular line direction; however, it is not able to sufficiently support and correct the protruded breasts which are located overlying the greater pectoral in conformity with the size and swing thereof, which is a problem.

[0018] The bottom of a human body is structured such that the pelvis and the glenoid cavity (acetabulum) of the pelvis accept the right and left thighbones, the abdomen is equipped with the abdominal rectus and the external oblique muscles on both the sides thereof, the thighs and the buttocks are equipped on the right and left each with the femoral straight muscles, sartorius muscles, quadriceps, and great gluteal muscles, and accompanied with these, the vascular tissue, lymphatic tissue, nervous tissue, and fatty tissue are minutely connected thereto.

[0019] The bottom is a part that forms the base of a body movement, and the action characteristics is formed also independently of the right and left. Besides, the waists and the buttocks are the pivotal part of the physiological mechanism. Therefore, the supply and wearing of unreasonable and unwholesome products

must be avoided as far as possible.

[0020] The muscular tissue and the fatty tissue are likely to cause development and decrement of the tissue, in accordance with the frequency of exercises and various movements or the aging, and accordingly the shape of the bottom is inclined to vary. From these circumstances, there are many "girdle" products available in the market, which perform the shape-up function that suppresses a swelling of the abdomen, and compensate a suspension and a deformation of the buttocks.

[0021] When these products are examined, it is found in the majority of the products that the girdle body itself does not match the shapes of the crotch and buttocks and buttocks-lining part, and the design assumes a flat structure. In addition, correction members are partially attached or disposed on a part of the abdomen or on parts of the buttocks. Besides in most of the products, members disposed on the lower parts of the right and left buttocks are sutured each other on the center of the lower part thereof. Moreover, the wearing system depends on an unwholesome tightening. Therefore, the waists and the surrounding parts thereof are tightened intensely, and the swollen abdomen remains as is only to recess the back. Also, the so-called correcting members that are mutually sutured and disposed on the lower part of the right and left buttocks create such an ugly shape that the right and left buttocks are united into one as if a diaper were worn. Further, the members invite a state that the crotch and buttocks-lining part are disengaged from the bottom shape, which is out of shape. Therefore, the shape-up effect of the right and left buttocks cannot be expected. And, many of them have a tendency that the hems of the lower parts of the buttocks creep up or shift toward the buttocks-lining part, accompanied with movements.

[0022] It has been considered difficult in the girdle products to achieve a close contact with the crotch and the buttocks-lining part on wearing. In spite of that, many proposals to acquire a close contact with the crotch and the buttocks-lining part have been applied for. There are products including, for example, a proposal in which a piece of texture having the same shape as the so-called T-back shorts is provided on a part equivalent to the buttocks-lining part, and a proposal in which rubber strings are sutured on the lower part of the buttocks-lining part to contract the texture and make a slight depression.

[0023] However, in any one of the aforementioned proposals, the fitness to the parts of the bottom has not been achieved in practice.

[0024] Also in the sanitary shorts products, the design cut system is similar to that in the girdle products, and there are many products that do not fit to the crotch and the buttocks-lining part. Therefore, if a user wears such a sanitary product and makes usual movements, the sanitary product is likely to disengage from the vulva and the anus, and a displacement or a leakage will be a consequence, which is a problem.

[0025] In order to verify such imperfections of the con-

ventional products, a trial to restore the cut form of the conventional product into a cut paper and form the three-dimensional image thereof was made, and it was found that the cut form itself is completely different from the bottom shape and presents an extremely flat structure. That is, the swollen parts of the right and left buttocks as well as the depression of the buttocks-lining part, and still more the shape of the crotch were not reproduced, which confirms the reason of the conventional products not fitting to the shape of the bottom, and the irrationality thereof.

[0026] Hereunder, the concrete examples will be shown.

[0027] Fig. 31 illustrates a cut form of a girdle product that was on sale in 1998, in Japan, and a typical chart thereof, in which (1) shows cut parts and components of rubber materials, etc. (2) is a typical chart illustrating that the cut parts shown in (1) are joined and assembled, in which A is a front view and C is a back view. (3) is a typical chart illustrating that the girdle product shown in (2) is cut out on the center line, in which A is a front view and C is a back view.

[0028] In the girdle product shown in Fig. 31, the front and back bodies are formed in a completely flat plane. And, the center line part is formed longer than the right and left peak line buttock protrusions. Therefore, it is seen that the center line dividing the right and left goes greatly off from the median level, and does not fit on the buttocks-lining part to be detached therefrom. This can be confirmed more clearly by wearing.

[0029] Fig. 32 illustrates a state by a symbol 23 (colored parts), in which the fitness becomes incomplete on wearing the conventional girdle product shown in Fig. 31, so that the product is detached from the crotch and the buttocks-lining part. Most of the conventional girdle products show such a state.

[0030] Fig. 33 illustrates a core material having a high tension (power net fabric or woven and knitted fabric) which is attached to the lower buttocks of the conventional girdle product shown in Fig. 31, and an action characteristics thereof.

[0031] In Fig. 33, the part having a high tension which is provided by the core material (power net fabric or woven and knitted fabric) is allocated from the buttock furrow to the lower buttocks and to the waists by way of the buttock regions, and the right and left parts are sutured at the buttock furrow.

[0032] In this manner, when right and left expandable core materials are sutured and allocated near the buttocks-lining part, the property to recover the original form is exerted on the expandable core materials, which effects to unite the right and left buttocks into one from the lower and the side parts, and displays an ugly buttock shape as if a diaper, were worn.

[0033] And, no matter how the expandable core materials are allocated, as far as the design of the girdle lacks the fitness to the various parts of the bottom as the conventional products, it will produce a displace-

ment, a loosening, or a bite, which makes it impossible to obtain a desired correcting effect.

[0034] This applies not only to the girdle products, but to all the bottom products. Conventionally, the one-piece form swimming wear, leotard, and bodysuit, etc., lack the appropriateness of movement, and is likely to produce a tensing, loosening, tightening, and biting, and also on movement a creeping-up on the lower buttocks, since the body balance of the upper half and the lower half is of infinite variety, and besides the ratio of the size of a human body against the wearing size of a clothing is set less than 80 %, around 70 %, which is extremely on the small side. Moreover, since the products advertised as having the correcting function make use of many wires, cups, core materials, and rubber materials, etc., when a user wears any one of them and moves, the tightening gives the user a pain, makes the blood circulation and physical condition get out of shape, and makes the nude bust and hips look ugly and distorted in most cases, which is a problem.

[0035] Fig. 40 is a plan view illustrating an example of a cut form of a conventional one-piece form swimming wear, and Fig. 41 is a typical chart in which the cut form of the one-piece form swimming wear is shown three-dimensionally. A illustrates the right side of the front part, C illustrates the right side of the back part, and D illustrates a state that the front part shown in A and the back part shown in C are united.

[0036] As shown in Fig. 40, in the conventional one-piece form swimming wear, any three-dimensional considerations based on the shape of the right and left busts are not seen around the bust position on the front part, and simply the right and left breadth is set slightly larger.

[0037] Also in the lower half of the body, simply the breadth at the waist position is set slightly larger, and any three-dimensional considerations based on the shape of the right and left buttocks are not seen. The part corresponding to the median is shown by the symbol 11B, which is set by far the longer than the other parts.

[0038] And as shown in Fig. 41, in the conventional one-piece form swimming wear, the part corresponding to the median is set longer than the length at the top position of the right and left busts in parallel to the part, and longer than the length at the position of the protruded parts of the hips. On top of that, there is not any three-dimensional treatment corresponding to the swelling shapes of the right and left busts and hips. When actually wearing, the right and left busts are made flat by the expandable material, the hip part does not fit to the buttocks-lining part, and the right and left hips present such an ugly shape that the right and left hips are united into one as if a diaper were worn. Also on movement, the hems at the lower hips creep up or bite the buttocks-lining parts.

Disclosure of the Invention

[0039] The present invention considers it as the task to solve the problems that these conventional proposals and conventional products embrace and achieve a more reasonable and wholesome supporting, correcting and rectifying mechanism of a human body, and a clothing mechanism provided with the same. And, it is therefore an object of the invention to realize a product that is excellent in the adaptability to the body form characteristics, the physiological tissue, and the body movements, and in the wearing feeling.

[0040] The supporting, correcting and rectifying mechanism of a human body, and the clothing mechanism provided with the same relating to the invention regard the body form characteristics and the median shape as the design reference, and the mechanism uses an expandable material (thread), pinch the regions that need a support and a correction, such as the fan-shaped areas including the lower sides of the breasts and the armpit sides thereof, the abdomen, and the buttocks, etc., that are likely to hang down and deform, form a plane jointly with plural regions facing to the regions, adjust the size, the shape, and the reduction rate thereof. Thereby, correlative (interactive) tensile (tense) relations are produced between the body form and the mechanism and inside the mechanism, and a necessary pressure is exerted to the foregoing region by the body form characteristics and the movements of a wearer, thus achieving a healthy supporting and correcting effects.

[0041] The front part in the foregoing mechanism 1 on the upper half body pinches the fan-shaped areas that are likely to produce a suspension and a deformation of the breasts, uses an expandable material on the front center region, armpit regions, shoulder regions that face the fan-shaped areas, forms a plane by adjusting the size, shape, and reduction rate of the material to produce and effect a tensile (tense) relation, unites the right and left sides of the body on the front center, whereby the upper parts from the nipples are made open.

[0042] The front part in the foregoing mechanism 2 on the upper half body pinches the fan-shaped areas that are likely to produce a suspension and a deformation of the breasts, uses an expandable material on the front center region, armpit regions, shoulder regions that face the fan-shaped areas, forms a plane by adjusting the size, shape, and reduction rate of the material to produce and effect a tensile (tense) relation, provides change-over darts from the nipples to the front center region, forms covering parts that cover the nipples and the upper sides of the nipples reaching to the shoulders, unites the right and left sides of the body on the front center, and thereby effects a support and a correction of the breasts, and fits the front center part thereof to the recess between the breasts in conformity with the median shape.

[0043] In the front part in the foregoing mechanism 2

on the upper half body, the reduction rate relating to the shape and the size of the covering parts that cover the nipples and the upper sides of the nipples is set lower than that of the shape of the lower sides thereof.

5 **[0044]** Further, in the foregoing front part, the reduction rate relating to the shape and the size of the material from the lower sides of the breasts toward the nipples is increased so as to increase the plane supporting pressure near the lower breasts, and the reduction rate toward the nipples is decreased so as to gradually weaken the supporting pressure toward the nipples.

10 **[0045]** The foregoing mechanism 3 on the upper half body uses an expandable material, extends the material from the lower sides of the right and left breasts toward both the sides of the armpits and extends the material toward the shoulders from the lower sides of the right and left breasts by way of the fan-shaped areas that are likely to produce a suspension and a deformation of the breasts, and thereby forms a plane. The mechanism is mounted by the adhesive applied in advance on the peripheries and lower sides of the right and left breasts and on the extended regions to thereby support the lower sides of the breasts, and to support and correct the breasts.

20 **[0046]** Further, the supporting and correcting mechanism of the breasts made up with only the front part uses an expandable material, extends the material toward both the armpits continuously by way of the lower sides of the right and left breasts and extends the material toward both the shoulders from the lower sides of the right and left breasts by way of the fan-shaped areas and the armpit regions, and forms a plane. The mechanism is mounted, while stretching the material to the above extended directions, with the adhesives applied in advance on the front center region, the lower sides and peripheries of the breasts, and the extended regions, whereby a pressure is exerted to the lower sides and fan-shaped areas of the breasts to achieve a support and a correction of the breasts.

30 **[0047]** The bottom mechanism of the invention uses an expandable material (thread), has the front and back parts and/or the right and left parts, regards the body form characteristics and the median shape as the design reference, and forms a plane in close contact with various parts of the bottom. The mechanism pinches the regions that need a support and a correction, such as the abdomen and the lower buttocks, which are likely to produce a suspension and a deformation due to the decline of the muscles and the adhesion of fats and the like, and forms a plane jointly with plural regions facing to the regions. Thereby, the mechanism produces the correlative tensile (tense) relations between the body and the mechanism and inside the mechanism, and exerts a necessary pressure to the abdomen and the lower buttocks, etc., that need a support and a correction in accordance with the body form characteristics and the movements of a wearer, thus achieving a healthy support and correction without a displacement or a loosening.

ing.

[0048] This bottom mechanism is provided with cut lines of the front and back, right and left parts in conformity with the median shape, forms the crotch region and the vicinity thereof located on both sides of the median shape of the right and left parts in a concave shape that they are largely separated before being joined, forms them in a shape to conform with the shapes of the crotch region and the right and left thighs by being joined. On wearing, the bottom mechanism has a close contact with the abdomen, crotch region, lower sides of the buttocks, buttock cleft, and the whole buttocks, exerts a pressure to the abdomen and the lower sides of the buttocks, and thereby achieves a support and a correction of the abdomen and the lower sides of the buttocks.

[0049] Further, the bottom mechanism relating to the invention is provided with a cut line of the back part based on the median shape to form the right and left back parts, forms the front part in a shape to conform with the median shape, forms the front part in one plane without dividing it into right and left, unites the front and back parts individually in the crotch corresponding regions, and thereby completes the abdomen neatly, reduces a deformation, fits the parts to the buttock cleft closely, thus achieving the effect of supporting and correcting the abdomen and the lower sides of the buttocks.

[0050] The bottom mechanism including the thighs as well as the abdomen and the lower sides of the buttocks includes cut lines of the front and back, right and left parts based on the median shape, makes the cut form of the crotch region and the vicinity thereof located on both sides of the median shape of the right and left, front and back parts so as to mutually swell out both the sides near the median shape in the crotch before being joined, and forms them in a shape to conform with the shape on movements between the crotch and the right and left thighs. The mechanism does not produce a displacement or a loosening during movements, and always achieves the effect of supporting and correcting the abdomen and the lower sides of the buttocks.

[0051] Further, the bottom mechanism includes one that allocates an expandable core material having a specified breadth to the abdomen region including the front ilia and the groins of the front part, further to the regions between the crotch and the thighs of the right and left parts, and also to the buttock furrows, lower buttocks, and hip sides of the back part, and each reaches to the front center of the abdomen.

[0052] Furthermore, the bottom mechanism includes one such that the front part of the expandable core material extends from the right and left front ilia and the vicinities thereof, by way of the hips, the lower sides of the buttocks, further to the buttock furrows, and reaches to the crotch region along the right and left thighs, and on the side of the abdomen, and the whole abdomen covering from the right and left groins reaching to both the front ilia is formed in one plane.

[0053] Further, the invention may take on a construction such that the support and correction mechanism of the breasts and the support and correction mechanism of the abdomen and the lower buttocks are integrally formed in a one-piece.

[0054] The one-piece form clothing mechanism may provide cut lines of the front and back, right and left parts in conformity with the median shape.

[0055] Also, the one-piece form mechanism may have a structure, in which the cut line of the front and back parts on the upper half body is provided in conformity with the median shape, the regions from the breasts reaching to the back are formed in one plane, the front part on the lower half body is formed in one plane, the back part is divided into the right and left parts by providing a cut line in conformity with the median shape, and the parts each are joined.

[0056] Also, the one-piece form clothing mechanism may allocate the expandable core material to the places mentioned above.

[0057] The bottom mechanism including the abdomen and the buttocks may provide change-over darts in the regions from the hems of the lower buttocks reaching to the peak line buttock protrusions.

[0058] Also, the bottom mechanism including the abdomen and the buttocks may provide cut lines from the hems of the lower buttocks, by way of the peak line buttock protrusions, reaching to the waists.

[0059] The bottom mechanism including the abdomen and the buttocks may have a structure such that the right and left, front and back parts are not provided with the darts or the cut lines reaching to the peak line buttock protrusions, and the cut form is made to add the shapes of the peak line buttock protrusions and the corresponding quantities to the texture shape and size on the hip sides of the right and left parts.

[0060] In each of the foregoing mechanisms, the ratio of the size of the mechanism formed by cutting and joining against the size of the human body may be set more than 80 %, less than 100 %.

[0061] In each of the foregoing mechanisms of the upper half side, the bottom side, the one-piece form, and the clothing, the plane is formed by the expandable material. However, utilizing a weaving technique using expandable threads, the plane may be formed by adjusting a shape, tensile (tense) relation, and a pressure into a desired ones.

[0062] In each of the mechanisms provided with the bottom mechanism, a support part allowing a physiological sanitary product to be mounted may be provided at specific positions of the vulva and the anus in the crotch.

[0063] Concretely, the invention provides a supporting and correcting mechanism of the breasts, which is made up with an expandable material and is provided with the front and back parts. The front part is formed continuously in one plane with the nipples as the peaks that are likely to be hung down and deformed, which includes the fan-shaped areas covering from the front

center and the vicinity, via the under busts, reaching to the upper armpit regions, pinches the fan-shaped areas, and covers the front center region, armpit regions, and shoulder regions that face the fan-shaped areas. The mechanism is made such that the upper sides from the nipples and the front center regions are open.

[0064] The supporting and correcting mechanism of the breasts provided with this construction, when it is worn, pinches the fan-shaped areas, produces tensile (tense) relations over the whole plane mechanism joining plural regions that face the fan-shaped areas. Thus, the mechanism gives a wearer a comfortable wearing feeling, gradually weakens the pressure from the lower sides of the breasts toward the nipples, and supports the under-busts securely, whereby beautiful nude busts toward the nipples can be realized.

[0065] Further, the invention provides a supporting and correcting mechanism of the breasts, which is made up with an expandable material and is provided with the front and back parts. The front part pinches the fan-shaped areas, forms a plane jointly with the areas covering from the shoulder regions and armpit regions, reaching to front center. The front part provides change-over darts reaching to the front center region with the nipples as the peaks, and provides covering parts that cover areas including the nipples and the upper sides of the nipples, reaching to the front center. In this mechanism, the reduction rate of the size in the covering parts is set smaller than that in the plane formed areas including the fan-shaped areas, in regard to the size of a wearer. Therefore, the plane formed areas including the fan-shaped areas effect to support and correct the breasts, and the provision of the covering parts covers the nipples and fits the front center sides to the median.

[0066] The supporting and correcting mechanism of the breasts provided with this construction, when it is worn, is able to voluntarily reduce the size ratio against a wearer's size. Therefore, the original form recovering property of the material produces the tensile (tense) relation over the whole mechanism, which exerts a pressure to the lower sides of the breasts and the fan-shaped parts to securely support and correct the breasts and give a comfortable wearing feeling to the wearer. Further, since the reduction rate in the covering parts to the wearer is formed smaller than that in the plane formed areas including the fan-shaped parts, the pressure applied to the covering parts gradually weakens, which maintains the shape of the breasts naturally beautifully.

[0067] The supporting and correcting mechanism of the upper half body is formed with the reduction rate of more than 80 %, less than 100 % to the size of a wearer, and it is preferable to be closer to the body size (100 %).

[0068] The supporting and correcting mechanism of the upper half body is able to set the reduction rate to gradually decrease from the lower sides of the breasts toward the nipples. Thereby, the pressure applied to the nipples gradually weakens from the lower sides of the breasts toward the nipples, accordingly the lower sides

of the breasts and the fan-shaped parts can be supported securely, and the whole breasts can be supported and corrected in a natural beautiful manner.

[0069] In order to securely support the lower sides of the breasts, the tension in the region from the shoulder region by way of the armpit side of the fan-shaped area reaching to the front part, and the tension in the region from the armpit side by way of the lower side of the breast reaching to the front center have to be raised, and the reduction rates in these regions have to be raised in comparison to the other regions. This can be accomplished by making the shape of the front center short, forming the right and left shapes in the front center region to be recessed to each other, and joining.

[0070] The right and left front parts can be joined on the front center. This can be done by suturing or by a joint member such as a button or a hook, or it may be done by being joined in advance (being seamless).

[0071] And, the covering parts may be formed with optional darts from the nipples reaching to the front center, or they may be joined in advance (seamless).

[0072] Further, the invention provides a clothing that is provided with at least the right and left front parts at specific positions. The clothing provided with this construction is able to support and correct the bust in a natural beautiful manner, when a correction underwear such as a brassiere or a body suit is not worn separately.

[0073] Further, the invention provides a supporting and correcting mechanism of the abdomen and the buttocks, and a clothing mechanism provided with the same, in which the whole mechanism is brought to close contact with the body in conformity with the shapes of the bottom parts, and the wearing produces tensile (tense) relations over the whole mechanism. The tensile relations exert a necessary and appropriate pressure to the abdomen and the lower buttocks, and effect to support and correct the abdomen and the buttocks, whereby the mechanism is neatly fit to the crotch and the buttock cleft to remove a displacement or a loosening.

[0074] The invention provides a supporting and correcting mechanism of the bottom that uses an expandable material and includes cut lines of the right and left parts in conformity with the median shape. The right and left parts that pinch the median form the crotch region and the neighborhood thereof in a shape that they are separated each other before being joined, form them in a shape to conform with the shape between the crotch and the right and left thighs by being joined, provide change-over darts in regions from the buttock protrusions on the peak line buttock protrusions reaching to the lower sides of the buttocks to form the regions in shapes to conform with the shapes of the buttocks, whereby, on wearing, tensile (tense) relations are produced over the whole mechanism to bring the parts into a close contact with the bottom areas including the buttock cleft and exert a pressure that prompts correction to the abdomen and the lower sides of the buttocks.

[0075] The bottom mechanism provided with this con-

struction produces an interactive effect between a human body and the bottom mechanism with the median as the reference, and tensile (tense) relations inside the mechanism. Thereby, the bottom mechanism does not need any unhealthy materials and processing other than the expandable material, which achieves more comfortable wholesome supporting and correcting mechanism of the bottom by utilizing the body characteristics of a wearer.

[0076] The bottom mechanism, when it is worn, produces the tensile (tense) relations over the whole mechanism, brings a close contact with the bottom parts of a human body, exerts a pressure to the abdomen and the lower parts of the buttocks, supports and corrects the bottom parts appropriately, and neatly fits to the crotch and the buttock cleft.

[0077] The invention provides a supporting and correcting mechanism of the bottom that uses an expandable material and includes cut lines of the right and left parts in conformity with the median shape. The right and left parts that pinch the median form the crotch region and the neighborhood thereof in a shape that they are separated each other before being joined, form them in a shape to conform with the shape between the crotch and the right and left thighs by being joined, provide cut lines in the regions from the hems of the lower buttocks by way of the buttock protrusions on the peak line buttock protrusions reaching to the hips, and forms the regions in shapes to conform with the shapes of the buttocks. When it is worn, the tensile (tense) relations are produced over the whole mechanism to bring the parts into a close contact with the bottom areas and exert a pressure that prompts correction to the abdomen and the lower sides of the buttocks, thus shaping up the buttocks beautifully.

[0078] Further, in this bottom mechanism the right and left parts can be divided into the front and back parts in the crotch.

[0079] And, the invention provides a supporting and correcting mechanism of the bottom that uses an expandable material and includes cut lines of the right and left parts in conformity with the median shape. The right and left parts are divided into the front and back parts in the crotch, and the front part forms the median sides in the crotch to bulge each other. The median sides are joined to face each other, which forms a shape in conformity with the shape between the crotch and the right and left thighs. The bottom mechanism provides the darts from the buttock protrusions on the peak line buttock protrusions reaching to the hems of the lower buttocks, or the cut lines in the regions from the hems of the lower buttocks by way of the buttock protrusions on the peak line buttock protrusions reaching to the hips, thus forming the shape of the regions in conformity with the shape of the buttocks. Thereby, the whole mechanism comes in a close contact with the bottom parts, when it is worn, and produces the tensile (tense) relations, which exerts a pressure that prompts correction

to the abdomen and the lower sides of the buttocks.

[0080] The bottom mechanism provided with this mechanism, when it is worn, produces the tensile (tense) relations over the whole product, brings a close contact with the bottom parts of a human body, exerts an appropriate pressure to the abdomen and the lower buttocks, supports and corrects the bottom parts, and neatly fits to the crotch and the buttock cleft, which shapes up the right and left buttocks beautifully.

[0081] Further, this bottom mechanism is provided with a cut line of the back part based on the median shape to form the right and left parts. The front part is formed in conformity with the median shape, and is not divided right and left to form a plane. The front and back parts are joined in the crotch, so that the abdomen can be finished simply and the buttock cleft can be finished to neatly fit.

[0082] The foregoing change-over darts areas can be formed by the darts or the cut lines, or by means of a molding with heat and pressure.

[0083] Further, this bottom mechanism may be provided with an expandable core material having a specified breadth, which is disposed on the abdomen regions including the right and left front ilia and the groins of the front part, on the regions between the crotch and the thighs of the right and left parts, by way of the buttock furrows and lower buttocks of the back part, and armpit sides, and on a region reaching to the front center of the abdomen; and the right and left parts are joined on the front center.

[0084] The right and left front part in the bottom mechanism may also be formed with the expandable material such that an area on the abdomen surrounded by the right and left front ilia and the right and left groins is formed in one plane, an area close to the crotch in the front part is cut off with a specific breadth in which the front part is divided right and left, and the front part goes round by way of the right and left thighs to the right and left lower buttocks, and further by way of the right and left hips comes back to front part correspondents, where the right and the left are joined.

[0085] In the right and left, front and back parts of the aforementioned bottom mechanism, a support part that permits a physiological sanitary product to be mounted may be provided at specific regions of the vulva and the anus in the crotch.

[0086] Further, the bottom mechanism may be formed with expandable threads by means of weaving and knitting. Concretely, the expansion directions, reduction rates, and strengths that are necessary and appropriate to various parts of the bottom can be adjusted by using the expandable threads, by utilizing the weaving knitting technique, and the bottom mechanism can produce a pressure on the regions where the support and correction of the abdomen and the lower buttocks, etc., is needed, thus providing a seamless bottom mechanism that bears a high fitness and a supporting and correcting effect. In this case, however, the developed form of the

bottom mechanism is preferably provided with a shape in conformity with the developed form of the aforementioned bottom mechanisms that are formed with the expandable material.

[0087] In the bottom mechanism, the ratio of the size against the body size is preferably set to more than 80 %, less than 100 %, in view of wholesomeness on wearing.

[0088] Further, the invention provides a clothing provided with the aforementioned bottom mechanisms and the functions.

[0089] The one-piece form clothing mechanism may include the supporting and correcting mechanism of the breasts, in which the right and left parts are formed in conformity with the shape and the median of the breasts, and a pressure is applied to the fan-shaped parts on the lower sides of the right and left breasts during wearing.

[0090] Also, the supporting and correcting mechanism of the breasts may be integrally formed with the bottom mechanism into a one-piece form mechanism and clothing, or the upper and lower mechanisms may be joined by a joint mechanism.

[0091] Further, in the aforementioned one-piece form mechanisms, an opening may be provided in at least a part of the region corresponding to the back in order to reduce a tension that is produced on the back during anteflexion movements.

Brief Description of the Drawings

[0092]

Fig. 1 is a plan view illustrating a state that is likely to produce a suspension and a deformation of the breasts.

Fig. 2 is a side view illustrating the state that is likely to produce the suspension and a deformation of the breasts.

Fig. 3 is a front view illustrating fan-shaped parts (colored part) that are likely to produce the suspension and a deformation of the breasts relating to the embodiment 1 of the invention.

Fig. 4 is a chart illustrating the effect by the supporting and correcting mechanism of the breasts relating to the embodiment 1 of the invention, in which 1 shows a form before a suspension and a deformation, 2 shows a state that has produced the suspension and a deformation, 3 shows the directions to which the mechanism exerts the pressures p when the mechanism is worn, and a state of the breasts being supported and corrected.

Fig. 5 is a chart illustrating tensile (tense) states by the arrows, which are produced around the fan-shaped parts, when the supporting and correcting mechanism of the breasts relating to the embodiment 1 is worn.

Fig. 6 is a chart illustrating the front and back parts of the supporting and correcting mechanism of the

breasts relating to the embodiment 1, in which the left chart shows the front part, and the right shows the back part.

Fig. 7 is a front view illustrating the front part before completion of the supporting and correcting mechanism of the breasts relating to the embodiment 1, in which the left shows the front part before completion, and the right shows the front part after completion. The arrows show the directions to which the tensile (tense) strengths are exerted.

Fig. 8 is a side view illustrating a state that the supporting and correcting mechanism of the breasts relating to the embodiment 1 is worn. The arrows show the directions to which the tensile (tense) strengths are exerted.

Fig. 9 is a back view illustrating a state that the supporting and correcting mechanism of the breasts relating to the embodiment 1 is worn. The arrows show the directions to which the tensile (tense) strengths are exerted.

Fig. 10 is a chart illustrating the right and left front parts before completion of the supporting and correcting mechanism of the breasts relating to the embodiment 2. The colored part shows the fan-shaped part that is likely to produce a suspension and a deformation.

Fig. 11 is a front view illustrating the front part before completion of the supporting and correcting mechanism of the breasts relating to the embodiment 2, in which the left shows the front part before completion, and the right shows the front part after completion. The arrows show the directions to which the tensile (tense) strengths are exerted. The colored part shows the fan-shaped part that is likely to produce a suspension and a deformation.

Fig. 12 is a chart illustrating an example in which a clothing relating to the embodiment 1 (colored part) is worn.

Fig. 13 is a chart illustrating a state that the front and back parts for half the body are joined at S part.

Fig. 14 is a chart that compares the developed shapes of the front half and the back half body surfaces, which assume the median (front center) and the shoulder during wearing (colored part) and in a nude state as the references, when the mechanism relating to the embodiment 2 shown in Fig. 10 and Fig. 11 is actually worn.

Fig. 15 is a plan view of the supporting and correcting mechanism of the breasts relating to the embodiment 3, which forms only the front part, and a front view that wears this mechanism. The arrows and the symbols a, b, and c in Fig. 15(3) show the wearing procedure, and the arrows in Fig. 15(4) show the directions of the tensile (tense) strengths and the pressures being exerted.

Fig. 16 is a front view illustrating a conventional sport brassiere. The arrows show the directions of the texture being stretched, and the colored part

shows a region that is pressurized to be flattened. Fig. 17 is a front view illustrating a conventional brassiere that uses wires, cups, pads, and rubber materials, etc. The arrows show the stretching directions by the tightening.

Fig. 18 is a back view illustrating a conventional brassiere. The arrows show the stretching directions by the tightening.

Fig. 19 is a chart illustrating a basic lumbar region relating to the bottom mechanism of the invention, in which the colored parts show the positions that produce large variations accompanied with movements.

Fig. 20 is a chart illustrating an example of a basic cut line and dart line relating to the bottom mechanism of the invention.

Fig. 21 is a chart illustrating an example of a cut form of the short type bottom mechanism relating to the embodiment 4 of the invention.

Fig. 22 is a chart illustrating an example of a cut form of the pants type bottom mechanism relating to the embodiment 4 of the invention.

Fig. 23 is a chart in which the cut form of the short type bottom mechanism relating to the embodiment 4 of the invention is shown three-dimensionally only for the front and back half sides of the body.

Fig. 24 is a chart in which the cut form of the pants type bottom mechanism relating to the embodiment 4 of the invention is shown three-dimensionally only for the front and back half sides of the body.

Fig. 25 is a chart illustrating the fitness to the bottom parts and the supporting and correcting functions when the bottom mechanism relating to the invention is worn, in which the directions of the tensile (tense) relations that are produced when the bottom mechanism is worn are shown by the arrows in Fig. 25D, Fig. 25E, and Fig. 25F.

Fig. 26 is a chart illustrating a cut form (developed form) of an expandable core material for a half body of the bottom mechanism relating to the embodiment 5 of the invention.

Fig. 27 is a chart illustrating a cut form (developed form) of an expandable core material for another half body of the bottom mechanism relating to the embodiment 5 of the invention.

Fig. 28 is a chart illustrating a state that the expandable core materials for the half body shown in Fig. 26 and Fig. 27 are joined three-dimensionally.

Fig. 29 illustrates the positions of the expandable core materials relating to the embodiment 5 of the invention, when the short type with the expandable core materials installed inside is worn. The arrows in the drawing illustrate the circumstances in which the tensile (tense) relations are produced when it is worn, and the circumstances of the fitness and the supporting and correcting functions effected by the tensile relations. Fig. 29A is a front view, Fig. 29B is a side view, Fig. 29C is a back view. Fig. 29D il-

lustrates the crotch in the split state, and Fig. 29E and Fig. 29F illustrate postures in the split state.

Fig. 30 is a chart illustrating a split state, in which a support member that allows a sanitary product to be mounted thereon is installed in the crotch in the bottom mechanism relating to the embodiment 4 or 5 of the invention. Fig. 30D1 shows a state, in which the support member is installed in the crotch in the short type bottom mechanism relating to the embodiment 4, Fig. 30D2 shows a state, in which the support member is installed in the crotch in the bottom mechanism relating to the embodiment 5, and Fig. 30D3 shows an appearance when the bottom mechanism shown in Fig. 30D1 and Fig. 30D2 is worn.

Fig. 31(1) illustrates a girdle of Japanese make that was marketed in 1998, and Fig. 31(2) and Fig. 31(3) illustrate typical charts of the product. Fig. 31(2) A is a front view, and Fig. 31(2)C is a back view. Fig. 31(3)A illustrates a front plane form, in which the girdle shown in Fig. 31(2) is cut on the center line, and Fig. 31(3)C illustrates a back plane form in the above state.

Fig. 32 is a chart illustrating a region and a state, in which when the conventional girdle shown in Fig. 31 is worn, the fitness is lacking so that the girdle is separated from the body.

Fig. 33 is a chart illustrating a high tensile core material (or weaving knitting treatment part) accompanied with the conventional girdle product, and the function characteristics thereof by the arrows.

Fig. 34 is a chart illustrating an example of cut forms (development elevations) of the front and back parts of the one-piece form clothing mechanism relating to the embodiment 6 of the invention.

Fig. 35 is a chart illustrating an example of cut forms (development elevations) of the clothing mechanism as a modified example of the one-piece form relating to the embodiment 6 of the invention. Fig. 35A shows an example in which the upper half of the body is constructed in the right and left sides, Fig. 35B shows an example in which the front part on the lower half of the body is constructed in a united form, and Fig. 35C shows an example in which the buttocks are constructed in the right and left sides of the body.

Fig. 36 illustrates three-dimensionally a cut form for half the body in the one-piece form clothing mechanism shown in Fig. 34. Fig. 36A shows the front part on the right side of the body, Fig. 36C shows the back part on the right side of the body, and Fig. 36D is a chart illustrating a state that the front part shown in Fig. 36A and the back part shown in Fig. 36C are joined.

Fig. 37 is a chart illustrating a state, in which the one-piece form clothing mechanism shown in Fig. 35 is worn.

Fig. 38 is a chart illustrating an example of the cut

forms (development elevations) for the front and back parts of the one-piece form clothing mechanism relating to the modified example of the embodiment 6 of the invention.

Fig. 39 is a chart illustrating another example of the cut forms (development elevations) for the front and back parts of the one-piece form clothing mechanism relating to the modified example of the embodiment 6 of the invention. This example makes the outward form neat on wearing, by adding the protruded shapes and sizes of the buttocks on the peak line buttock protrusions to each of the sides V of the front and back parts, and thereby omitting the change-over darts or the cut lines required for the peak line buttock protrusions. The colored parts show the positions where the expandable core materials are disposed and the shapes thereof.

Fig. 40 is a chart illustrating an example of cut forms of the front part and the right and left back parts of a conventional one-piece form swimming wear.

Fig. 41 illustrates three-dimensionally the cut forms of the conventional one-piece form swimming wear shown in Fig. 40. Fig. 41A shows the front part on the right side of the body, Fig. 41C shows the back part on the right side of the body, and Fig. 41D is a side view illustrating a state that the front part shown in Fig. 41A and the back part shown in Fig. 41C are joined.

BEST MODES FOR CARRYING OUT THE INVENTION

[0093] Next, the embodiments relating to the invention will be described with reference to the accompanying drawings.

[EMBODIMENT 1]

[0094] As shown in Fig. 3 to Fig. 6, the supporting and correcting mechanism of the breasts relating to the embodiment 1 includes an expandable material, and the size thereof is reduced by the scale factor of more than 80 % to less than 100 % against the size of a wearer. This supporting and correcting mechanism of the breasts includes a front part 2 and a back part 3.

[0095] The front part 2 has a right front part 2R and a left front part 2L, which are joined (sutured) together on a front center F. This front part 2 as well as the right front part 2R and left front part 2L is likely to be hung and deformed, forms a fan-shaped area 4 having a nipple 10 that needs the support and correction as the peak point, which covers a region from the vicinity of the front center F via an under-bust UB reaching to the vicinity of an armpit region S, and a continuous plane that covers a region from the front center F via the under-bust UB reaching to the armpit regions and the shoulder region, so as to function to pinch the fan-shaped area 4. That is, this front part 2 is made open (exposed) on the upper side of the nipple 10 including the nipple 10 itself and

on the region of the front center F.

[0096] In the fan-shaped area 4, the foregoing scale factor is designed to gradually increase from the under-bust UB toward the nipple 10. That is, as shown in Fig. 4, the pressure P is designed to gradually decrease from the under-bust UB toward the nipple 10. Therefore, the mechanism with this pressure P prevents a deformation or a flattening around the top of the bust, and securely supports and corrects the breasts from thereunder.

[0097] Here, the distances (lengths) from the nipple 10 of the breast to the under-bust UB before a suspension and a deformation in Fig. 4(1) and after a suspension and a deformation in Fig. 4(2) are almost the same. The line N-N shown in Fig. 4 indicates the level of the nipple 10 before a suspension and a deformation and after the support and correction. The supporting and correcting mechanism of the breasts relating to the invention supports securely upward the region from the under-bust UB via the fan-shaped area 4 reaching to the nipple area, and supports and corrects the breasts so as to recover the nude bust shape before a suspension and a deformation. The mechanism achieves an idealistic bust line, because it supports and corrects the breasts in a natural shape.

[0098] Because a shoulder K and the under-bust UB, etc., are formed broadly, the front part 2 receives the pressure on areas, and prevents a load from being imposed locally.

[0099] The back part 3 has the so-called X-letter shape, as shown in Fig. 9, avoids the operational areas of the scapulae, enhances the fitness, and holds the front part 2 securely. This back part 3 is joined (sutured) to the front part 2 on both the armpit regions S.

[0100] The supporting and correcting mechanism of the breasts with this construction provided produces tensile strengths in the directions of the arrows, for example, shown in Fig. 5, Fig. 8, and Fig. 9, when it is worn, and creates the original form recovering property that avoids the tensile state because of the expandability and returns to the original state. At this moment, the foregoing decreasing formation of the scale factor in the mechanism exerts a slightly higher pressure to the under-bust UB, compared to the other parts, and weakens the pressure gradually toward the nipple 10. And, it also gives an appropriate pressure to the area corresponding to the fan-shaped area 4. Thus, even during a strong exercise, not to mention in the normal state, the mechanism can securely support and correct the breasts, prevent a rolling and pitching, etc., of the breasts, and give a pleasant wearing feeling to a wearer.

[0101] Further, the supporting and correcting mechanism of the breasts relating to the embodiment 1 includes the right and left front parts 2R, 2L and the back part 3 or the right and left back parts 3R, 3L, and has a plane without a darts. Accordingly, the mechanism can sufficiently utilize the expandability that the expandable material contains. That is, the mechanism is able to produce a tense relation actively between the body form of

a wearer and itself, to pinch the region in need of support and correction, and to effectively utilize the pressure obtained by stretching the expandable material in plural directions. Further, as compared with the conventional brassiere, the mechanism uses very small number of components and bears a very high production efficiency.

[0102] Further, the supporting and correcting mechanism of the breasts relating to the embodiment 1 is formed in the reduced size of more than 80 % to less than 100 % against the size of a wearer. On the other hand, as to the wearing part of the conventional brassiere, etc., the size has been reduced to approximately 70 % to less than 80 % against the size of a wearer. In view of this figure, it is also understood that the supporting and correcting mechanism relating to the embodiment 1 removes an excessive tightening and gives an excellent wearing feeling to a wearer.

[0103] Although around the breasts are the mammary tissues, vascular tissues, and lymphatic tissues, etc., minutely related, the supporting and correcting mechanism of the breasts relating to the invention will not damage the skeleton and muscles, vascular tissues, lymphatic tissues, and nervous tissues, etc., and will perform a health support and correction of the breasts, because the breasts are not pressured unnaturally firmly.

[0104] Further, the supporting and correcting mechanism of the breasts relating to the invention is able to achieve a wearing effect to various body forms and breast shapes of a wearers, in a range that the distance (length) from the under-bust UB reaching to the nipple 10 and the under-bust UB surrounding length are equal.

[EMBODIMENT 2]

[0105] Next, the supporting and correcting mechanism of the breasts relating to the embodiment 2 will be described with reference to Fig. 10 and Fig. 11.

[0106] In the embodiment 2, the same regions, parts, and members as in the embodiment 1 are given the same symbols, and the detailed explanations thereof will be omitted.

[0107] As shown in Fig. 10 and Fig. 11, the supporting and correcting mechanism 20 of the breasts relating to the embodiment 2 includes an expandable material in the same manner as the supporting and correcting mechanism of the breasts described in the embodiment 1.

[0108] The supporting and correcting mechanism 20 of the breasts includes the fan-shaped area 4 and the plane region formed by pinching the fan-shaped area 4, and a covering region 22 that covers a region reaching to the front center F, which is located on the upper side of the nipple 10 including the nipple 10 itself.

[0109] In the covering region 22, the scale factor against the body form size of a wearer is designed to be larger than the scale factor of the fan-shaped area 4 and the plane region formed by pinching the fan-shaped area 4. In other words, the pressure exerted on the cov-

ering region 22 is designed to be smaller than the pressure exerted on the plane region including the fan-shaped area 4.

[0110] Therefore, the mechanism can prevent a deformation and a flattening by pressure, in a top-bust region and an area covering from the top-bust reaching to the front center F.

[0111] The supporting and correcting mechanism 20 of the breasts with this construction provided produces tensile strengths in the directions shown in Fig. 11, when it is worn, and exerts a pressure to the under-bust UB and the fan-shaped area 4. The pressure is gradually weakened toward the nipple 10. And, a further weaker pressure is exerted to the region covering from the nipple 10 reaching to the front center F, located on the upper part of the nipple 10. As the result, even during a strong exercise, not to mention the normal state, the mechanism is able to securely support and correct the breasts, to prevent a swing of the breasts, and to give a pleasant wearing feeling to a wearer.

[0112] Next, an example of a clothing provided with the supporting and correcting mechanism of the breasts relating to the embodiment 2 will be described with reference to Fig. 12.

[0113] The clothing as shown in Fig. 12 is joined (sutured) with the supporting and correcting mechanism of the breasts described in the embodiment 1, which forms an integrated structure. Although, this clothing is an outer wear, it can bear the supporting and correcting function of the breasts. That is, on wearing, it does not need a correcting underwear such as a brassiere or a body suit, and it can support and correct the breasts healthily to an idealistic bust line, and a wearer can enjoy a pleasant wearing life.

[0114] The design of this clothing can be made voluntarily. For example, the clothing can be formed integrally with the supporting and correcting mechanism of the breasts, by making the whole clothing using an expandable material. Further, the integration of the clothing with the supporting and correcting mechanism of the breasts can be carried out by means of the gluing or weaving technique, etc., other than the suturing technique.

[0115] Further, in the embodiment 2, the supporting and correcting mechanism of the breasts is mounted on the clothing, however only the front parts in the embodiment 1 and 2 may be mounted on the clothing.

[0116] The supporting and correcting mechanism of the breasts relating to the invention avoids to use artistic and unhealthy materials as in the conventional, excels in wholesomeness and operability with the simple mechanism, and gives a comfortable wearing feeling to a wearer; and it can support and correct the nude breasts naturally beautifully, and it is suitable for a broad range of clothing products such as underwear and sportswear.

[0117] Especially, to various types of crews of air crafts, vehicles, vessels, etc., who work in an unstable posture, the wearing of a conventional brassiere that ac-

companies tightening or pain and lacks operability will damage a healthy function of the physiological mechanism such as inviting a bad blood circulation, or a further unwholesome and unstable conditions, which will cause a hindrance of the work.

[0118] The supporting and correcting mechanism of the breasts relating to the invention excels in mobility and wholesomeness, and it is specially effective for use in the clothing for various types of crews, which requires such a posture control and a stable support of the body form, and work clothes and sportswear, etc.

[0119] The supporting and correcting mechanism of the breasts relating to the invention is based on a concept that the mechanism should follow and make the best use of the structural, mobile and functional properties of the body tissues in the ranges thereof, and a human body and the mechanism should utilize the body form characteristics, and thereby a simple and dynamic mechanism should be configured which revives reasonably healthily the inborn shape of the breasts before a suspension and a deformation.

[0120] And, the supporting and correcting mechanism of the breasts relating to the invention responds to the swing conditions and volume variations of the breasts while a wearer moves, prevents a useless swing, reduces motional differences from the body movements, stabilizes the lower breasts, raises the breasts upward in a gradual manner, and thereby achieves the natural healthy simple support and correction of the breasts with a soft harness.

[0121] Fig. 14 illustrates one example of the supporting and correcting effect of the breasts, when the mechanism relating to the embodiment 2 shown in Fig. 10 and Fig. 11 is actually worn. The state on wearing is illustrated by the colored parts, and the nude state before wearing is shown by the borders. Both the states assume the median (front center) and the shoulder as the references. Fig. 14 compares the developed shapes of the body surfaces of the front half and the back half. The shapes of the backs are almost the same, but the shapes of the fronts are greatly varied. Especially, the positions of the breasts are shifted up inward, and the positions of the nipples on wearing are supported and corrected up inward by about 2 cm, compared with the positions of the nipples in the nude state before wearing.

[EMBODIMENT 3]

[0122] Next, the supporting and correcting mechanism of the breasts relating to the embodiment 3 of the invention will be described with reference to the drawings.

[0123] As shown in Fig. 15(1) and Fig. 15(2), the supporting and correcting mechanism of the breasts relating to the embodiment 3 employs an expandable material, and forms a plane so as to cover the lower breasts and the fan-shaped areas. And, as shown in Fig. 15(3), the mechanism is mounted and fixed by an adhesive

applied in advance in the order of a, b, c, first to the front center, next to the lower breasts, and further to the armpit regions and the shoulder regions so as to wrap the fan-shaped areas and to pull it slightly. As the result, the right and left breasts are supported and corrected up inward.

[0124] This mechanism can conveniently be used in case of wearing a dress with the shoulders and the shoulder areas exposed widely, or in case of wearing a costume for an entertainer, since it does not need the shoulder regions and the back parts. However, since considerations are necessary for the appropriateness to the skin of the materials and adhesives used in the mechanism, the wearing should be limited within a shorter time, and it should be preferred to use the mechanism in a form of a disposable product.

[0125] As described above, the supporting and correcting mechanism of the breasts relating to the invention forms the whole in one plane made of an expandable material, which includes the fan-shaped areas and the plane parts to pinch the fan-shaped areas; and therefore, on wearing, it will produce a tensile (tense) relation to the whole mechanism. As the result, it presents a comfortable wearing feeling to a wearer, and securely supports the lower breasts and the under-bust regions, whereby an idealistic bust line can be achieved.

[EMBODIMENT 4]

[0126] Next, the bottom mechanism and the clothing mechanism provided with the bottom mechanism relating to the embodiment 4 of the invention will be described with reference to the drawings.

[0127] Here, the "short type" stated in the invention means the shorts (including high leg, regular, basic, etc.) or the girdle types, as shown in Fig. 20 or Fig. 23, etc. And, the "pants type" stated in the invention means the long types such as the boxer pants, etc., as shown in Fig. 24.

[0128] The parts shown in Fig. 19 are generally named as follows. The symbol 1 denotes the median, 52 the buttock cleft, 53 a peak line buttock protrusion, 54 a buttock protrusion, 55 an ilium, 56 a groin, 57 a lower buttock; 58 a buttock furrow, 59 the vulva, 60 the anus.

[0129] Fig. 19B recognizes a big difference of shape in the lines indicating the median 1 and the peak line buttock protrusions 53. And, as shown in Fig. 19D, the crotch 62 in the split state has a right and left spread with the line indicating the median 1 as the border line. When the right and left thighs are closed, the root of the thighs forms a rising shape, as shown in Fig. 19C. The buttocks are constructed with the right and left individual skeletons, muscles, nervous tissues, vascular tissues, and lymphatic tissues, etc., with the median 1 as the border.

[0130] Therefore, in order to achieve a wearing product that fits to the bottom, it is necessary to construct

the form and mechanism based on the right and left buttocks.

[0131] On the median 1 of the bottom of a human body are located the buttock cleft 52, the vulva 59, and the anus 60. On the right and left sides of the abdomen are located the ilia 55, and between the positions thereof and the crotch are located the groins 56. On the back right and left are located the peak line buttock protrusions 53 and the buttock protrusions 54, and on the lower buttocks 57 near the crotch are located the buttock furrows 58.

[0132] The above major parts of a human body are the essential parts to accomplish the mechanism of this application, and at the same time they are the essential parts that are needed to bear the fitness and to carry out the support and correction.

[0133] As shown in Fig. 20, the bottom mechanism relating to the embodiment 4 assumes the median 1 as the design reference. The mechanism forms the right and left parts with the cut line 61 as the border, and the right and left parts are divided into the front and the back. Here, the median 1 is the reference for the design, and it is not always necessary to provide the cut line on the median 1. Further, it is not always necessary to divide into the right and left parts on the crotch, with the median 1 as the border.

[0134] In Fig. 20A to Fig. 20F, the cut line 61 on the median 1 goes from the abdomen by way of the crotch 62 and the buttock cleft 52, and reaches to the back. The cut line 61 on the median 1 signifies the front center and the back center. Darts 65 are provided on the lower sides of the buttock protrusions 54 on the peak line buttock protrusions 53 so as to bring out the round shapes of the buttocks. A division line of the front and back parts on the crotch 62 is illustrated by a symbol 67 in Fig. 20D. Joint (Suture) parts of the front and back parts are shown by symbols 66 in Fig. 20B.

[0135] Further, the darts 65 may be replaced by the cut lines running on the peak line buttock protrusions 53. Or, they may be replaced by forming the shapes so as to conform with the round shapes of the buttocks, for example, by utilizing the weaving technique. Further, the joint parts 66 on the sides and the division line 67 are not necessarily essential, and the whole may be developed into one integrated shape.

[0136] The short type bottom mechanism as shown in Fig. 21 has the front part F and the back part B. In this bottom mechanism, the front and back parts are divided by the division line 67 and joined (sutured) on this part, but they may be formed in an integral shape.

[0137] The right and left parts on the median are formed to be separated each other on a part corresponding to the crotch 62. When the right and left parts are joined (sutured), the part forms a swelling inward, whereby the bottom mechanism will fit to the crotch 62, the thighs 63, and the buttock cleft 52 to be matched comfortably.

[0138] Fig. 23 shows that the short type bottom mechanism

forms a swelling part 68 so as to conform with the narrow plane in the crotch 62. It confirms that the region near the cut line 61 corresponding to the median 1 comes inward against the peak line buttock protrusions 53, and fits to the buttock cleft 52 comfortably. And, also it confirms that the whole bottom mechanism forms a three-dimensional shape to conform with the bottom shape of a human body.

[0139] The pants type bottom mechanism as shown in Fig. 22 has the front part F and the back part B. In this bottom mechanism, the front and back parts are divided by the division line 67.

[0140] On the side of the cut line 61 on the median 1, viewed from the division line 67 of the right and left parts, the swelling part 68 (colored part) is provided in conformity with the shape between the vulva 59 and the thighs 63. The swelling part 68 forms a protruded shape against the division line 67 and makes a rising shape, when joined (sutured) each other. The swelling part 68 is located on the side of the median 1 against a line that connects the groin 56 and the lower buttock 57. Thereby, the part attains a comfortable fitness.

[0141] Fig. 24 confirms that the pants type bottom mechanism forms a three-dimensional shape in conformity with the shape of the bottom of a human body, and also clearly confirms that the swelling part 68 forms a rising shape so as to fit the shape in the crotch 62.

[0142] Next, the tensile (tense) state will be described which is produced when the bottom mechanism relating to the embodiment 4 is worn.

[0143] Fig. 25 illustrates a state, in which the bottom mechanism relating to the embodiment 4 is worn, and illustrates the tensile (tense) relations that are produced thereat by the arrows. Fig. 25A is the front view, Fig. 25B is the side view, and Fig. 25C is the back view. Fig. 25D shows the split state in the crotch. Fig. 25 E and Fig. 25 F show the postures in the split state. The arrows illustrate the fitness to the parts of the bottom, and the supporting and correcting function and the directions thereof.

[0144] As shown in Fig. 25, the arrows are directed toward the median 1 (namely, the cut line 61) on the hips, which shows that the right and left parts on the back of the bottom mechanism step into the median 1, and do not float but fit comfortably to conform with the shape thereof. And, in the same manner, it is also found that the crotch 63 and the buttock cleft 52 fit comfortably securely to conform with the shape thereof. This function is also effected during movements, which does not produce a displacement and a loosening, and displays a pleasant wearing feeling. The fitness to the buttock cleft 52 and the supporting and correcting effect present beauty and comfort to a wearer.

[0145] Further, the bottom mechanism can independently be offered as a clothes, however the mechanism can be incorporated into a clothes to thereby attain a clothing mechanism equipped with this bottom mechanism.

[EMBODIMENT 5]

[0146] Next, the bottom mechanism relating to the embodiment 5 of the invention will be described with reference to the drawings.

[0147] Fig. 26 illustrates a cut form (developed form) for a half body of an expandable core material relating to the embodiment 5. And, Fig. 27 illustrates a cut form (developed form) for another half body of the expandable core material relating to the embodiment 5, in which the side of the abdomen is formed in a plane.

[0148] The expandable core material 71 shown in Fig. 26 and Fig. 27 has a recess 69 formed on a region in the crotch 62, so that the expandable core material 71 does not come into contact with the physiological organs. Here, a symbol 70 denotes the joint (suture) part.

[0149] This mechanism equipped with the expandable core materials 71 effects to prevent the physiological organs from being pressured because of the provision of the recesses 69.

[0150] Fig. 28 illustrates a state that the expandable core materials 71 shown in Fig. 26 and Fig. 27 are joined (sutured) three-dimensionally. The arrows shown in Fig. 28 illustrate the tensile (tense) relations produced in the expandable core materials 71 during wearing, and the pressures for support and correction which are exerted on the abdomen and the lower parts of the buttocks. Further, Fig. 28 confirms that the expandable core materials 71 are formed individually right and left by way of the lower buttocks 57.

[0151] Fig. 29 illustrates a state of the installations of the expandable core materials 71 relating to the embodiment 5, when the short type with the expandable core materials 71 installed inside is worn. The arrows in the drawing illustrate the circumstances in which the tensile (tense) relations are produced when it is worn, and the circumstances of the fitness and the supporting and correcting functions effected by the tensile relations. Here, Fig. 29A is a front view, Fig. 29B is a side view, Fig. 29C is a back view. Fig. 29D illustrates the crotch in the split state, and Fig. 29E and Fig. 29F illustrate postures in the split state.

[0152] The core materials separately provided on the crotch 62 and the right and left buttocks and lumber parts support the lower sides of the right and left buttocks separately from under, and thereby the bottom mechanism relating to the embodiment 4 fits tightly to the buttock cleft 52, and makes a neat and beautiful silhouette of the right and left buttocks.

[0153] Further, this bottom mechanism can be incorporated into a clothes to thereby attain a clothing mechanism equipped with the foregoing bottom mechanism.

[EMBODIMENT 6]

[0154] Next, the bottom mechanism relating to the embodiment 6 of the invention will be described with reference to the drawings.

[0155] Fig. 30 illustrates a split state, in which a support member 72 that allows a sanitary product to be mounted thereon is installed in the crotch 62 in the bottom mechanism relating to the embodiment 4 or the embodiment 5. Fig. 30D1 shows a state, in which the support member 72 is installed in the crotch 62 in the short type bottom mechanism relating to the embodiment 4. Fig. 30D2 shows a state, in which the support member 72 is installed in the crotch 62 in the short type bottom mechanism relating to the embodiment 5, and Fig. 30D3 shows an appearance when the bottom mechanism shown in Fig. 30D1 and Fig. 30D2 is worn.

[0156] Here in the embodiment 6, the same parts and members as in the embodiment 4 and the embodiment 5 are given the same symbols, and the detailed explanations will be omitted.

[0157] As shown in Fig. 30D1, the support member 72 capable of mounting a sanitary product is installed inside the crotch 62 in the bottom mechanism. Concretely, the support member 72 is disposed on a region corresponding to the vulva 59 and the anus 60 in the right and left, front and back parts shown in Fig. 20D. The bottom mechanism furnished with this construction bears the effect derived from the bottom mechanism described in the embodiment 4 and the embodiment 5. This effect can prevent a sanitary product (for example, napkin or the like) from being displaced.

[0158] Further, as shown in Fig. 30D2, the support member 72 capable of mounting a sanitary product is installed in the bottom mechanism shown in Fig. 29D. Concretely are constructed in the order from the inner sides (the sides that touch the skin) to the support member 72, the expandable core material 71, and reaching to the expandable material included in the bottom mechanism.

[0159] Here, the joint (suture) of the support member 72 and the expandable core material 71 with the expandable material forming the external shape of the bottom mechanism is carried out only on the edges (on the sides of the thighs) of the expandable material. This will secure the operability of the expandable core material 71, and it is not always needed to join (suture) the whole areas of the members. Further, the bottom mechanism can be incorporated into a clothes to thereby attain a clothing mechanism equipped with the bottom mechanism.

[EMBODIMENT 7]

[0160] Next, the one-piece form clothing mechanism relating to the embodiment 7 of the invention will be described with reference to the drawings, which is equipped with the supporting and correcting mechanism of the busts and the bottom mechanism.

[0161] The one-piece form clothing mechanism is provided with the supporting and correcting mechanism of the breasts that forms the right and left, front and back parts in conformity with the shapes of the breasts and

the back, to conform with the shape of the median, namely, the front center and back center, and on wearing exerts pressures on the lower parts of the right and left breasts and the fan-shaped areas, and the bottom mechanism that forms the right and left, front and back parts in conformity with the shape of the median, and on wearing exerts pressures on the abdomen and the lower parts of the right and left buttocks.

[0162] And basically, the supporting and correcting mechanism of the breasts expects the same mechanism and construction and effect as those in the foregoing embodiment 1 and the embodiment 2. Also, the bottom mechanism expects the same mechanism and construction and effect as those in the foregoing embodiment 4, embodiment 5, and embodiment 6.

[0163] The one-piece form clothing mechanism may include the supporting and correcting mechanism of the breasts and the bottom mechanism separately, or in an integrated manner. Or, they may be provided separately or both on a one-piece form clothes. Or, they may be provided in separately finished upper and lower clothes, and the upper and lower clothes may be joined, on wearing, with a joint mechanism beforehand provided at a position near the waist. An integrated construction of the supporting and correcting mechanism of the breasts and the supporting mechanism of the bottom will effectively achieve the wearing stability by the whole clothing mechanism, the effect to derive the tensile (tense) relations, and the variety of a clothing design.

[0164] Fig. 34 and Fig. 35 illustrate an example, in which the supporting and correcting mechanism of the breasts and the bottom mechanism are integrated into a one-piece form, which can be used as, for example, a swimming wear, leotard, body suit, or the like.

[0165] Fig. 35 illustrates an example of a cut form, in which the front part on the upper half of the body is divided right and left on the front center with the median as the reference, and the front part on the lower half of the body is formed in a plane, and the back part is divided into the right and left sides of the body with the median as the reference. The finished shape size in this case is virtually the same as in Fig. 34, however the finished shape size will be varied slightly by an adjustment of the expansion ratio that depends on the shapes of the cut parts and the expansion directions of the materials and an influence by the joined (sutured) parts.

[0166] The cut line 61A of the one-piece form clothing mechanism, provided to conform with the median 1, is formed to completely wrap the fats put on inside the buttock furrows 58 of the right and left buttocks, whereby the fitness can be enhanced still more. Also, a creeping-up on the lower buttocks 57 and useless displacement and bite into the buttock cleft 52 during movements can be cleared, and the right and left hips can be shaped up naturally beautifully.

[0167] Further, the one-piece form clothing mechanism is provided with the supporting and correcting mechanism of the breasts that forms the right and left

parts in conformity with the shapes of the breasts, to conform with the median of the breasts, namely, the front center, and on wearing exerts pressures on the lower armpit regions of the right and left breasts.

[0168] Concretely, the whole supporting and correcting mechanism of the breasts is made up with the expandable material, which includes the right and left front parts 82 and back parts 83.

[0169] In this supporting and correcting mechanism of the breasts, the pressure is designed to gradually decrease from the under-bust toward the nipple 80. Therefore, the mechanism with this pressure prevents a deformation or a flattening around the top of the bust, and securely supports and corrects the breasts from thereunder. Further, the supporting and correcting mechanism of the breasts that is formed by pinching the fan-shaped areas and adjusting the tensile relations in the shoulder direction, armpit direction, and front center direction, and the shape and size of the expandable material brings the breasts inward upward in a natural form, and achieves an idealistic bust line.

[0170] Further, the front part 82 receives the pressure on areas, and prevents a load from being imposed locally, because the shoulder K is formed broadly. Here, a symbol 81 denotes darts. Further, an opening 87 may be formed between the back of the back part and the waist, and the tension of the material on the back part during an anteflexion movement can be eased by this opening 87. Thereby, the creeping-up of the hems on the lower buttocks can be easily prevented.

[0171] The lower half of the body in the one-piece form clothing mechanism with this construction provided is formed to completely wrap the fats put on inside the buttock furrows 58, whereby the fitness can be enhanced still more. Also, a creeping-up on the lower buttocks 57 and a bite into the buttock cleft 52 during movements can be cleared. And, the upper half of the body securely supports and corrects the breasts and prevents swings of the breasts, even during a strong exercise, not to mention in usual movements. Therefore, the mechanism gives a wearer a comfortable wearing feeling without giving an unpleasant pressure to the body, and shapes up the right and left breasts and hips in the nude state more naturally more beautifully.

[0172] Fig. 36 illustrates three-dimensionally a cut form for half the body in the one-piece form clothing mechanism shown in Fig. 34. Fig. 36A shows the front part on the right side of the body, Fig. 36C shows the back part on the right side of the body, and Fig. 36D is a sketch viewed from the joined (sutured) side of the right half of the front and back parts. The darts may be extended to the waist vicinities in conformity with the peak line buttock protrusions, which may be regarded as a cut line 83.

[0173] Fig. 37 illustrates the postures on the front and back sides and the posture on the left side, in which the one-piece form clothing mechanism shown in Fig. 35 is worn.

[0174] The one-piece form clothing mechanism in the foregoing embodiment is provided with the opening 87 on the back part, however the mechanism does not necessarily need to be provided with the opening 87. In the examples of the one-piece form clothing mechanism as shown in Fig. 38 and Fig. 39, the bottom part is the pants type, and yet the back part is not provided with the opening 87.

[0175] The buttock side part 83 in Fig. 38 is provided with a large darts 65 almost reaching to the waist. When this part is used as a cut line, it is only needed to cut on the line shown by the symbol S.

[0176] In the one-piece form clothing mechanism as shown in Fig. 39, the bottom part is the pants type. And, this mechanism makes the outward form neat and simple on wearing, by adding the shape and size of the protruded regions on the buttocks to each of the armpit regions of the front and back parts. Further, the colored parts show the positions where the expandable core materials are disposed and the state thereof, which are provided in the foregoing embodiment so as to still more reinforce the support and correction of the abdomen and the lower buttocks.

[0177] The one-piece form clothing mechanisms as shown in Fig. 34 to Fig. 39 displays an effect that supports and corrects the busts and hips to shape them up naturally beautifully, and in addition excels in wearing stability and operability. Therefore, these mechanisms can effectively be used for various types of work clothes, sportswear, or supporters.

[0178] Fig. 40 illustrates an example of cut forms of the front part and the right and left back parts of a conventional one-piece form swimming wear. Fig. 41 illustrates three-dimensionally the cut forms for half the body of the conventional one-piece form swimming wear shown in Fig. 40. 11B illustrates the front center and the back center. However, in the conventional products, the front center and back center lines are not necessarily coincident with the median, and they are dislocated rather significantly from the median. This is clearly seen from the fact that the length of 11B is set longer than the other parts, as shown in Fig. 40 and Fig. 41.

[0179] Being dislocated from the median as above, the part dislocated produces a large shift during movements, which consequently creates a displacement, loosening, and bite.

[0180] On the other hand, in the conventional swimming wear, an abnormally smallish swimming wear has generally been used in order to prevent an invasion of water in a competition. However, in spite of wearing such a smallish swimming wear and tightening firmly whatsoever, as far as the swimming wear is not designed to be matched with the body shape, body motions during swimming will create openings in various parts of the swimming wear, which results in inviting the invasion of water.

[0181] Furthermore, in the conventional swimming wear, it is a common exercise to firmly tighten the lower

buttocks as well as the openings with rubber strings so as to prevent a displacement and a loosening. However, if the body motions in swimming creep up the hems, etc., the hems will stay at the positions crept up, which needs actions to put back the hems afterwards, at any time when it happens.

Claims

1. A supporting, correcting and rectifying mechanism of regions of a human body, using an-expandable material (and/or an expandable thread), provided with the front and back parts and/or the right and left parts, and a clothing mechanism provided with the same, in which the body form characteristics and the median shape are regarded as the design reference, which pinch regions that are likely to produce a suspension and a deformation and need a support and correction, form planes jointly with plural regions facing to the regions, and adjust the size, the shape, and the reduction rate thereof, and produce a correlative tensile (tense) relation between the body and the mechanism and inside the mechanism, by means of the original form recovering property of the expandable material on wearing, whereby a pressure is exerted to important regions.
2. A supporting and correcting mechanism of the breasts and the clothing mechanism, wherein said front part of the upper half mechanism pinches fan-shaped areas with the nipples as the peaks, corresponding to areas covering from a region near the front center by way of the under-busts to regions near the armpit regions, which are likely to produce a suspension and a deformation of the breasts, forms planes jointly with the front center region, armpit regions, and shoulder regions that face to the fan-shaped areas, and unites the right and left parts on the front center, whereby upper areas from the nipples are made open.
3. A supporting and correcting mechanism of the breasts and the clothing mechanism, wherein said front part of the upper half mechanism provides change-over darts on voluntary areas reaching to the front center region with the nipples as the peaks, forms covering areas that cover the shoulder regions and the nipple regions and the upper regions to the nipples, forms planes continuously with the front part, and joins the right and left parts on the front center, whereby the front center region is made to fit.
4. A supporting and correcting mechanism of the breasts and the clothing mechanism, wherein said front part of the upper half mechanism sets the reduction rate of the shape and size of the covering

areas that cover the nipple regions and upper regions to the nipples lower than that of the lower sides of the nipple regions as set forth in claim 2.

5. A supporting and correcting mechanism of the breasts and the clothing mechanism, wherein the front part of any one of the aforementioned upper half mechanisms gradually decreases the reduction rate of the shape and size of the material in the regions from the lower breasts reaching to the nipples so as to gradually decrease the tension and the pressure exerted toward the nipples. 5
6. A supporting and correcting mechanism of the breasts which uses an expandable material, extends the material in the lower regions of the right and left breasts continuously toward both the armpit regions and extends the material in the lower regions of the right and left breasts toward both the shoulders by way of the fan-shaped areas and the armpit regions, and thereby forms a plane, wherein the mechanism is mounted with the adhesive applied in advance on the front center, the peripheries and lower regions of the right and left breasts, and the extended regions, by stretching the front center, the lower regions of the right and left breasts, and the extended regions. 10 15 20 25
7. A supporting and correcting mechanism of the bottom, in which the right and left parts and/or the front and back parts on the lower half of the body regard the median shape as the design reference, pinch the regions that need a support and correction in the abdomen and the lower buttocks that are likely to produce a suspension and a deformation, form planes jointly with plural regions facing to the regions, and adjust the size, the shape, and the reduction rate thereof, and produce a correlative tensile (tense) relation between the body and the mechanism and inside the mechanism, by means of the original form recovering property of the expandable material on wearing, whereby a pressure is exerted to important regions. 30 35 40
8. A supporting and correcting mechanism of the bottom as claimed in the preceding claim, including cut lines of the right and left parts and the front and back parts based on the median shape, in which the right and left parts that pinch the median form the crotch region and the neighborhood thereof in a shape that they are separated before being joined, form them in a shape to conform with the shape of the region between the crotch and the right and left thighs by being joined, provide change-over darts in regions from the buttock protrusions on the peak line buttock protrusions reaching to the lower sides of the buttocks to form the regions in shapes to conform with the shapes of the buttocks, whereby, on wear-

ing, tensile (tense) relations are produced over the whole mechanism to bring the parts into a close contact with the bottom areas and exert a pressure that prompts correction to the abdomen and the lower sides of the buttocks.

9. A supporting and correcting mechanism of the bottom as claimed in the preceding claim, including a cut line of the back part based on the median shape, which divides the back part into the right and left parts, forms the front part in one plane without dividing into right and left to conform with the median shape, and unites the front and back parts in the crotch, whereby the bottom mechanism brings the parts into a close contact with the bottom areas and exerts a pressure that prompts correction to the abdomen and the lower sides of the buttocks.
10. A supporting and correcting mechanism of the bottom as claimed in the preceding claim, having parts for the thighs, including cut lines of the front and back parts and the right and left parts, wherein the cut form of the crotch region and the neighborhood that pinch the median of the front and the back parts is made to protrude the crotch region on the median side each other before being joined, the front and back parts are joined to face each other to form the shape in conformity with the shape of the region, whereby, on wearing, tensile (tense) relations are produced on the whole mechanism to bring the parts into close contact with the bottom areas without creating a displacement or a loosening, and thereby a pressure is exerted which prompts correction to the abdomen and the lower sides of the buttocks.
11. A supporting and correcting mechanism of the bottom which prompts support and correction to the abdomen and the buttocks as claimed in any one of claim 6 to claim 12, wherein an expandable core material having a specified breadth is disposed on the abdomen regions including the front ilia and the groins of the front part of any one of the aforementioned bottom mechanisms, on the regions between the crotch and the thighs of the right and left parts, by way of the buttock furrows, lower buttocks, and armpit sides, and on a region reaching to the front center of the abdomen.
12. A supporting and correcting mechanism of the bottom as claimed in claim 6 to claim 12, wherein the whole abdomen covering from the right and left groins reaching to both the front ilia is formed in one plane, on the side of the abdomen having said expandable core material.
13. A supporting and correcting mechanism of the breasts, abdomen, and buttocks, and a clothing

mechanism provided with the same, comprising: said support and correction mechanism of the breasts on the upper half body, and said support and correction mechanism of the abdomen and the buttocks on the lower half body are integrally formed in a one-piece.

14. A supporting and correcting mechanism of the breasts, abdomen, and buttocks, and a clothing mechanism provided with the same, wherein, in said one-piece form mechanism, the cut lines of the right and left, front and back parts are provided in conformity with the median shape.
15. A supporting and correcting mechanism of the breasts, abdomen, and buttocks, and a clothing mechanism provided with the same, wherein, in said one-piece form mechanism, the cut line of the front and back parts on the upper half body is provided in conformity with the median shape, the regions from the breasts reaching to the back are formed in one plane, the front part on the lower half body is formed in one plane, the back part is divided into the right and left parts by providing a cut line in conformity with the median, and the parts are joined.
16. A supporting and correcting mechanism of the breasts, abdomen, and buttocks, and a clothing mechanism provided with the same, wherein the expandable material as set forth in claim 10 is disposed in said one-piece form mechanism.
17. A supporting and correcting mechanism of the abdomen and buttocks, and a clothing mechanism provided with the same, wherein, in any one of the aforementioned mechanisms, change-over darts are provided on the regions from the lower buttocks reaching to the peak line buttock protrusions.
18. A supporting and correcting mechanism of the abdomen and buttocks, and a clothing mechanism provided with the same wherein, in any one of the aforementioned mechanisms including the abdomen and the buttocks, cut lines are provided on the regions from the lower buttocks by way of the peak line buttock protrusions, reaching to the hips.
19. A supporting and correcting mechanism of the abdomen and buttocks, and a clothing mechanism provided with the same, wherein, in any one of the aforementioned mechanisms including the abdomen and the buttocks, the right and left, front and back parts are not provided with the darts or the cut lines reaching to the peak line buttock protrusions, and the cut form is made to add the shapes of the buttocks and peak line buttock protrusions and the corresponding quantities to the texture shape and

size on the hip sides of the right and left parts.

20. A supporting and correcting mechanism of the breasts, abdomen, and buttocks, and a clothing mechanism provided with the same, wherein, in any one of the aforementioned mechanisms, the ratio of the size of the mechanism formed by cutting and joining against the size of the human body is more than 80 %, less than 100 %.
21. A supporting and correcting mechanism of the breasts, abdomen, and buttocks, and a clothing mechanism provided with the same, wherein, in the upper half side, the lower half body side, and the one-piece form mechanisms, and the clothing mechanisms in any one of the aforementioned mechanisms, the front and back parts and/or the right and left parts are made with expandable threads by adjusting the expansion rate, the tensile (tense) (tense) relation, and the pressure into specific values, by means of the weaving technique.
22. A supporting and correcting mechanism of the breasts, abdomen, and buttocks, and a clothing mechanism provided with the same, wherein, in any one of the aforementioned bottom mechanisms, a support part allowing a physiological sanitary product to be mounted is provided at specific regions of the vulva and the anus in the crotch.
23. A supporting and correcting mechanism of the breasts, abdomen, and buttocks, and a clothing mechanism provided with the same, wherein the mechanism on the upper half side and the bottom mechanism on the lower half side in any one of the aforementioned mechanisms are joined by a joint mechanism or a joint member into a one-piece form.
24. A one-piece form mechanism and a clothing mechanism provided with the same, wherein either said supporting and correcting mechanism of the breasts, or said supporting and correcting mechanism of the abdomen and buttocks is installed.
25. A one-piece form supporting and correcting mechanism and a clothing mechanism provided with the same as claimed in the preceding claim, wherein, in said one-piece form mechanisms, an opening is provided in at least a part of the region corresponding to the back to remove a bracing or a loosening during wearing.

Fig. 1

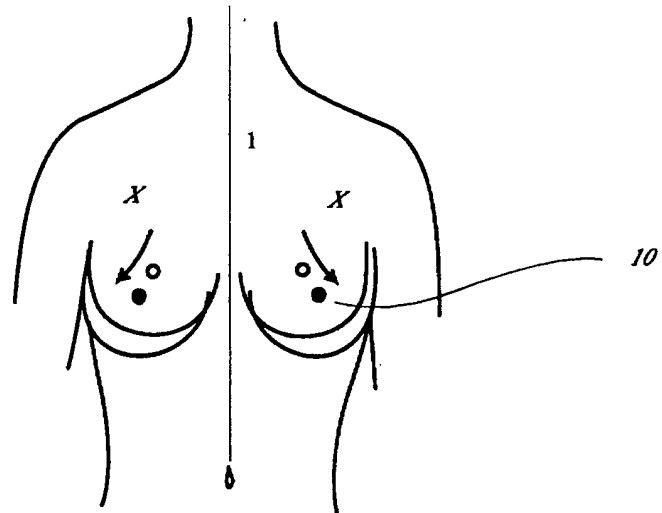


Fig. 2

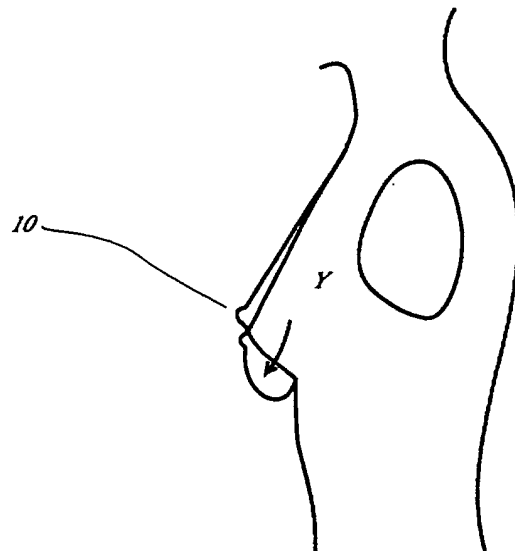


Fig. 3

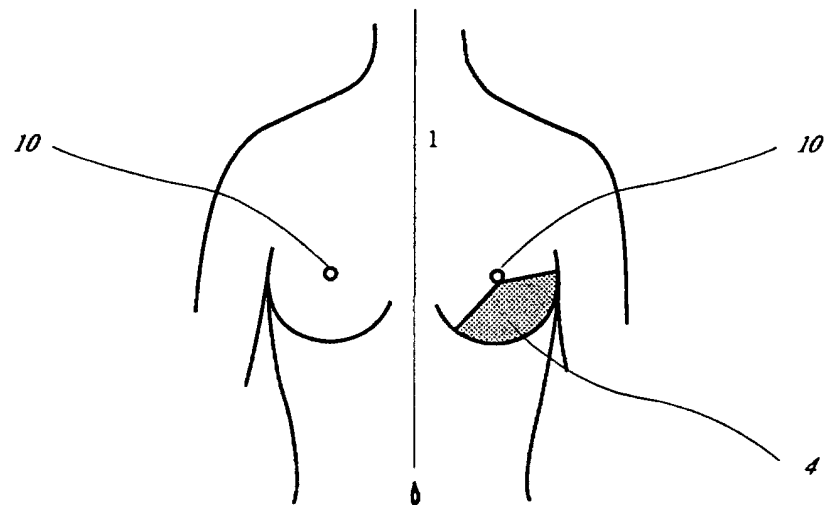


Fig.4

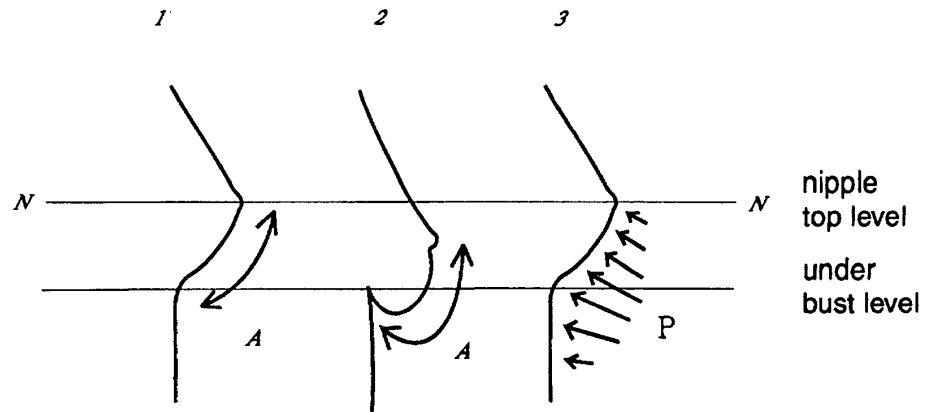


Fig. 5

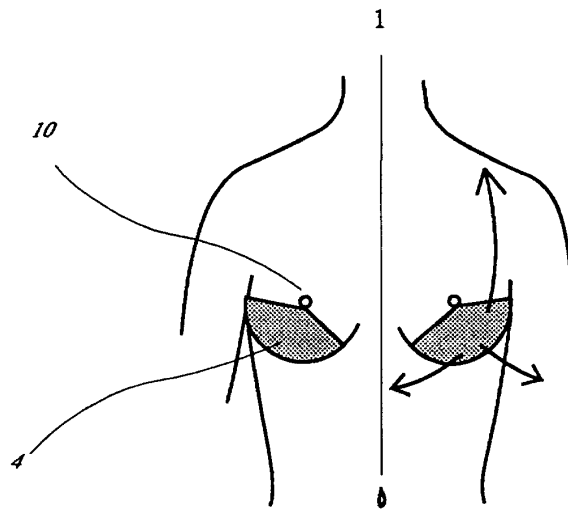


Fig. 6

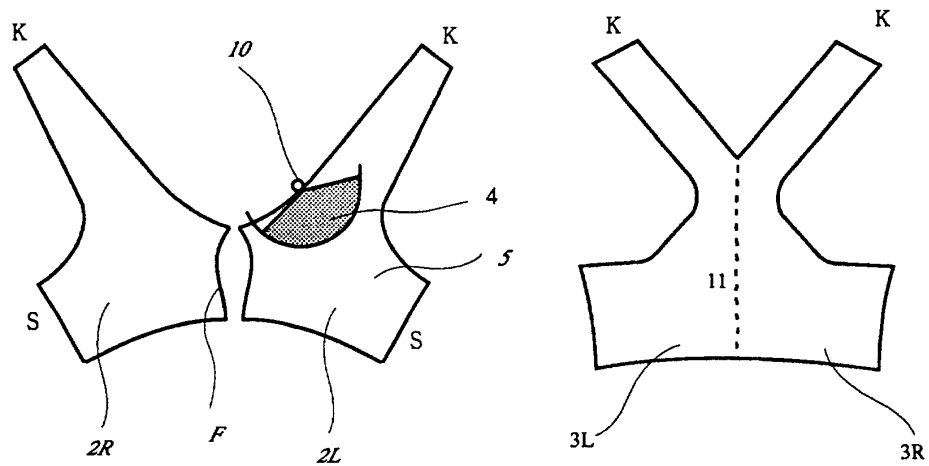


Fig. 7

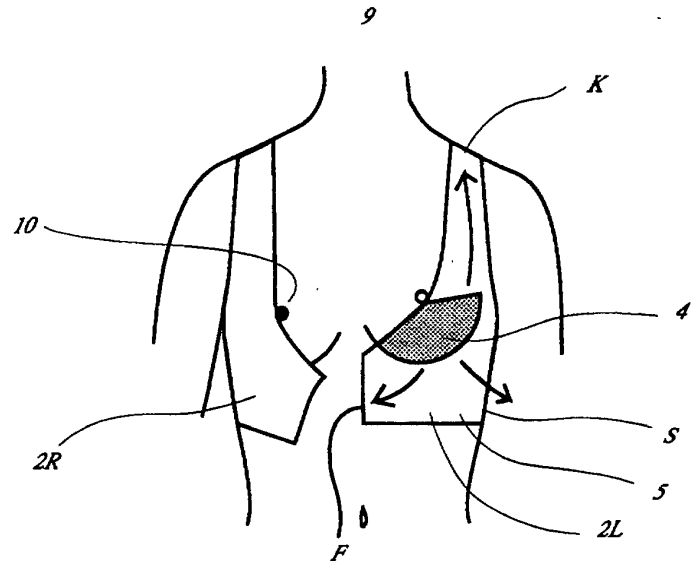


Fig. 8

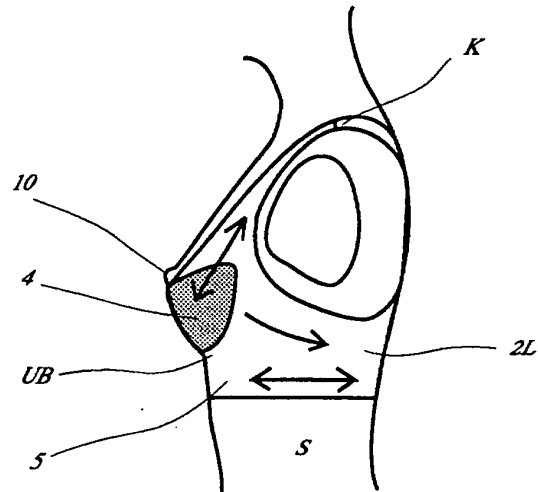


Fig.9

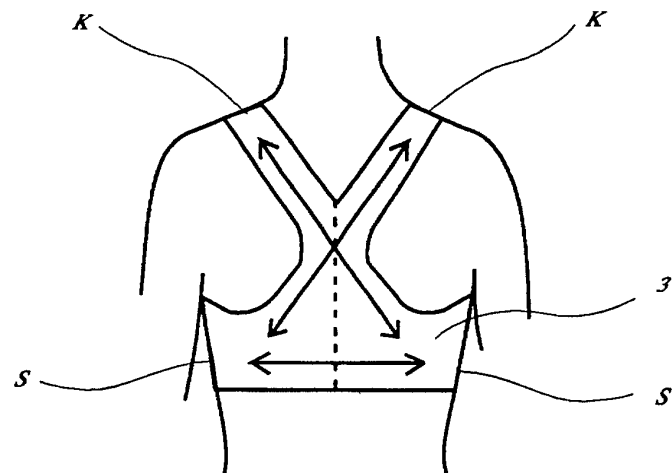


Fig. 10

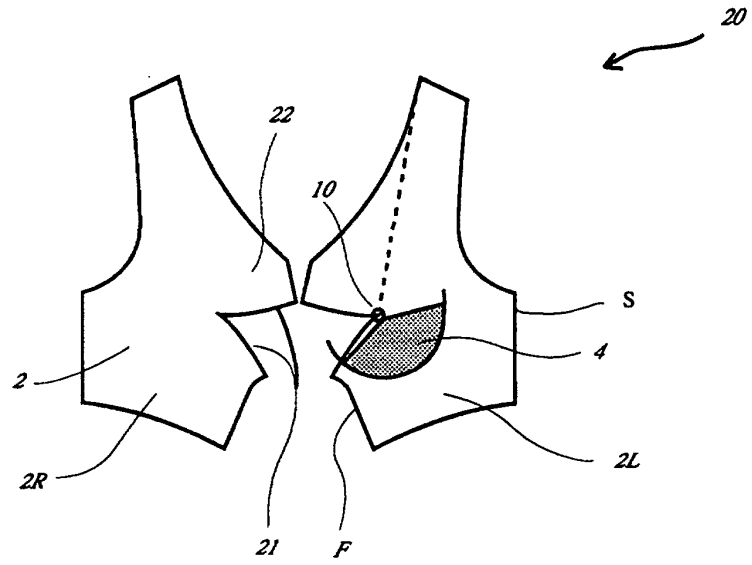


Fig. 11

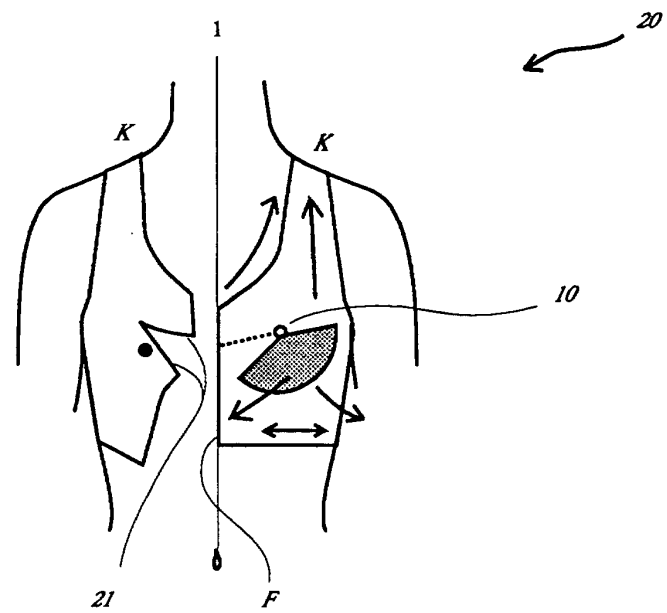


Fig. 12

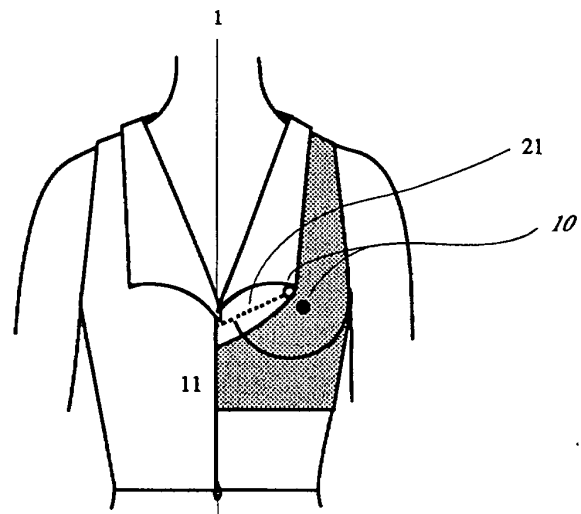


Fig.13

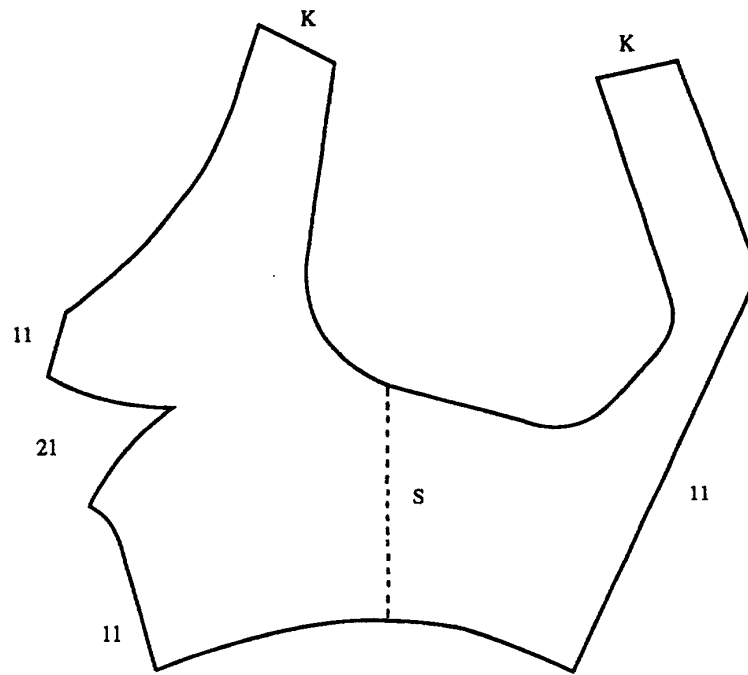


Fig.14

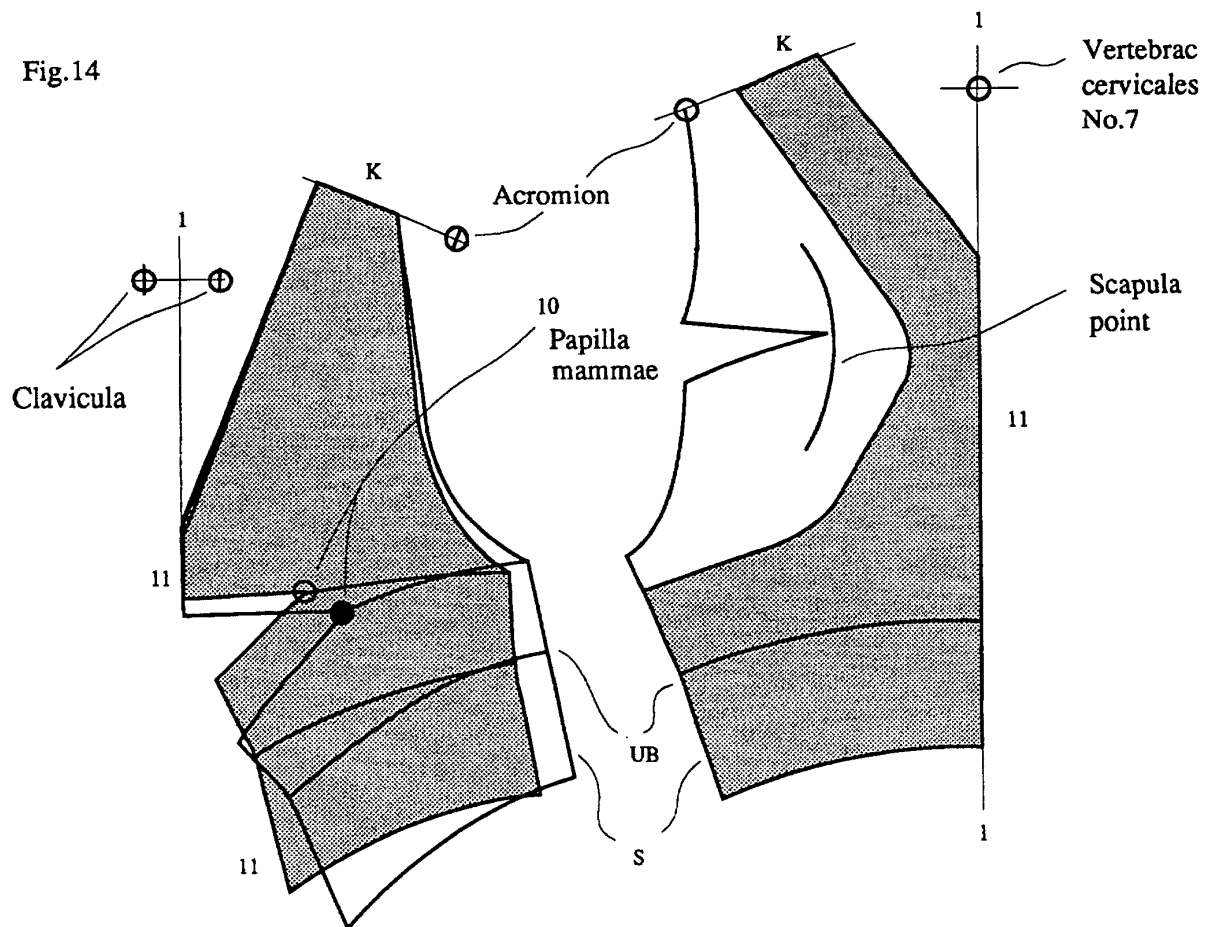


Fig. 15

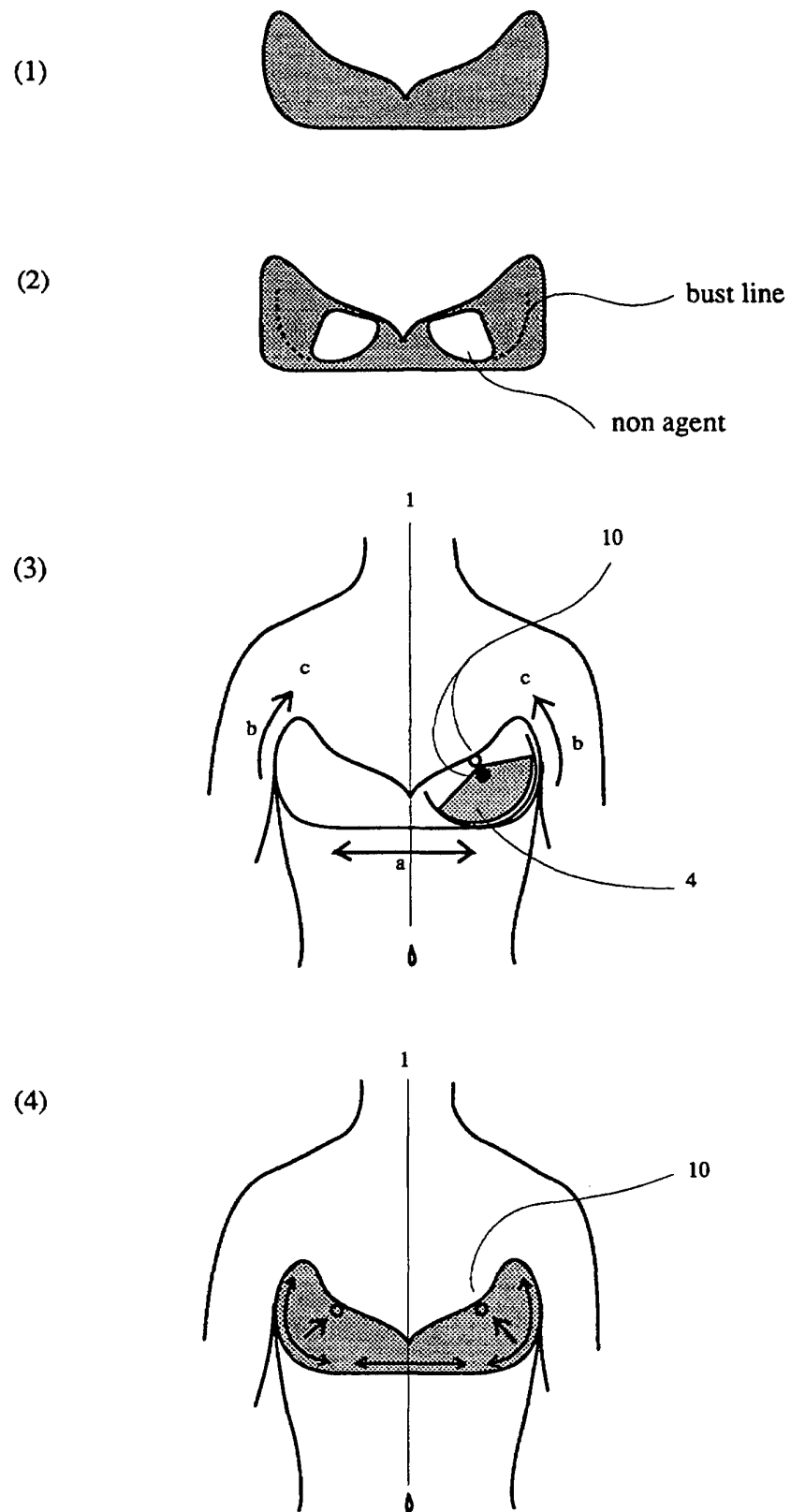


Fig. 16

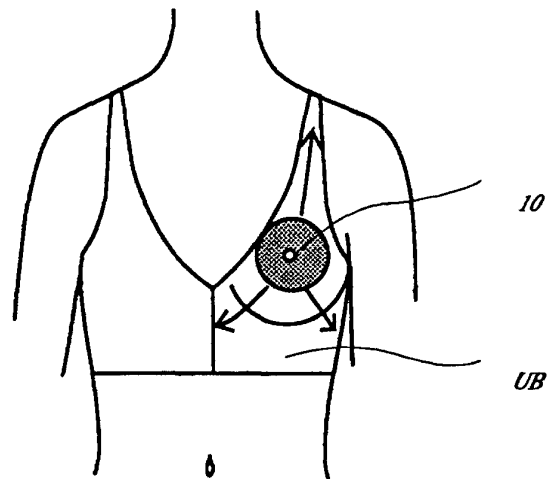


Fig. 17

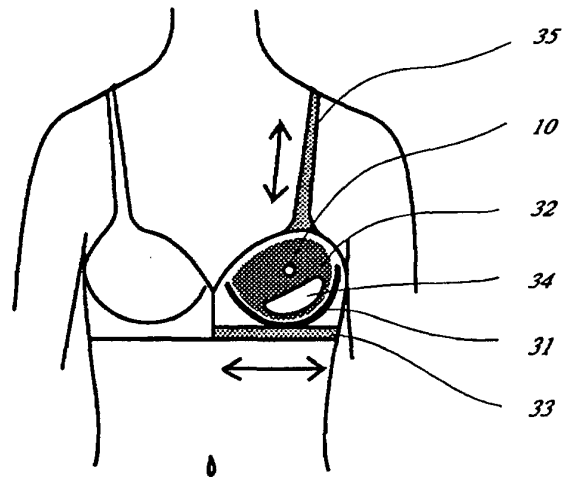


Fig. 18

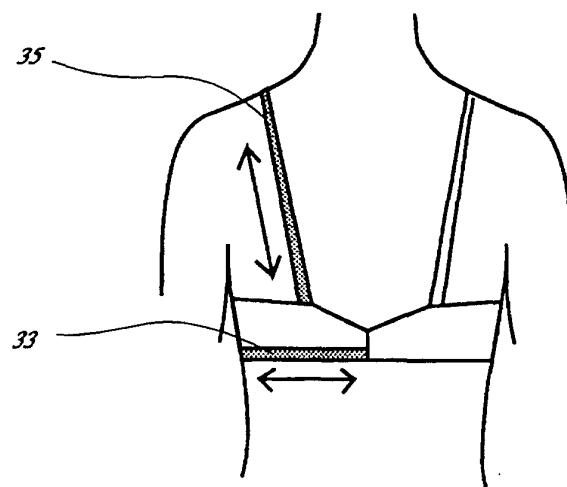


Fig. 19

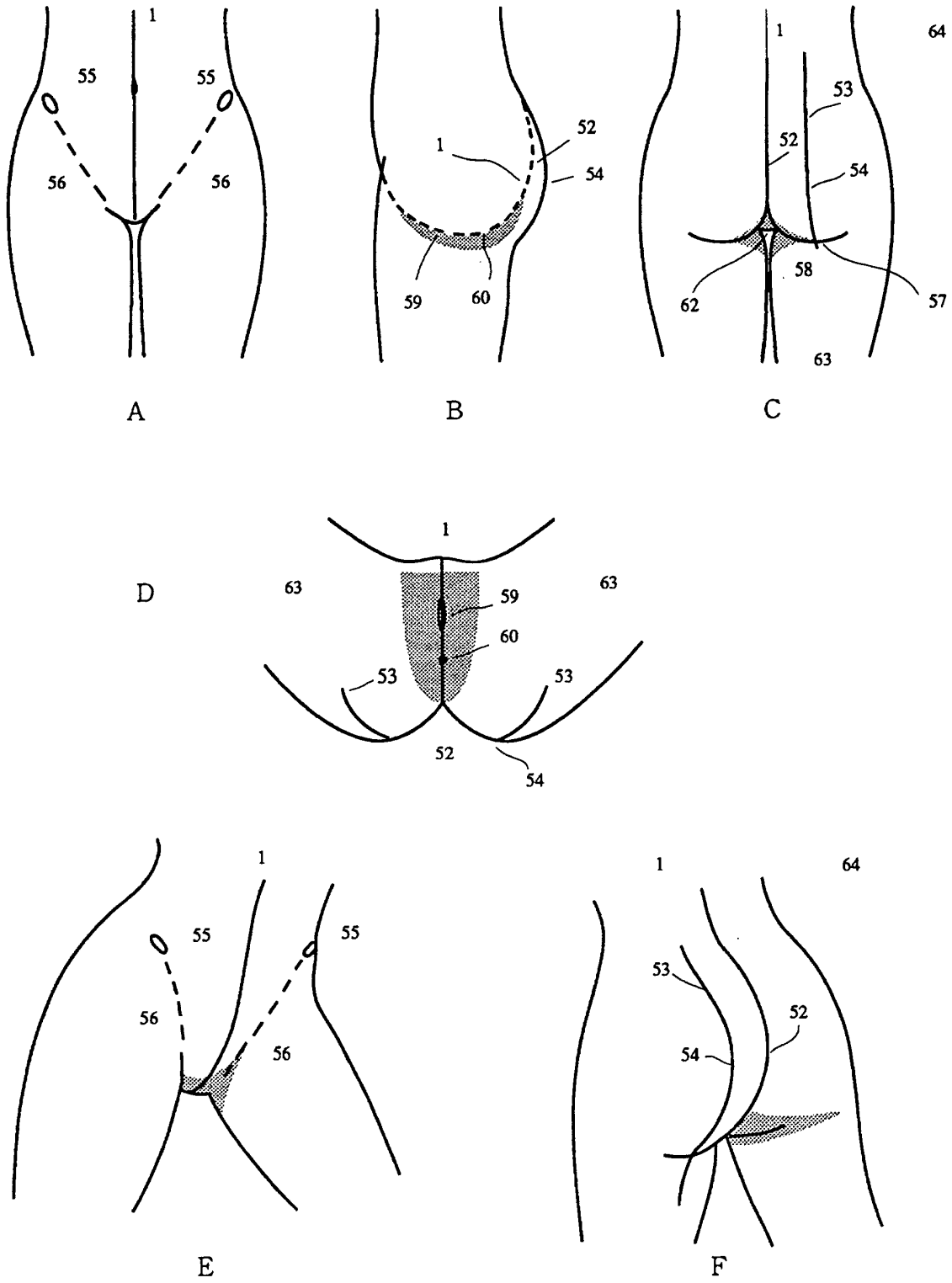


Fig. 20

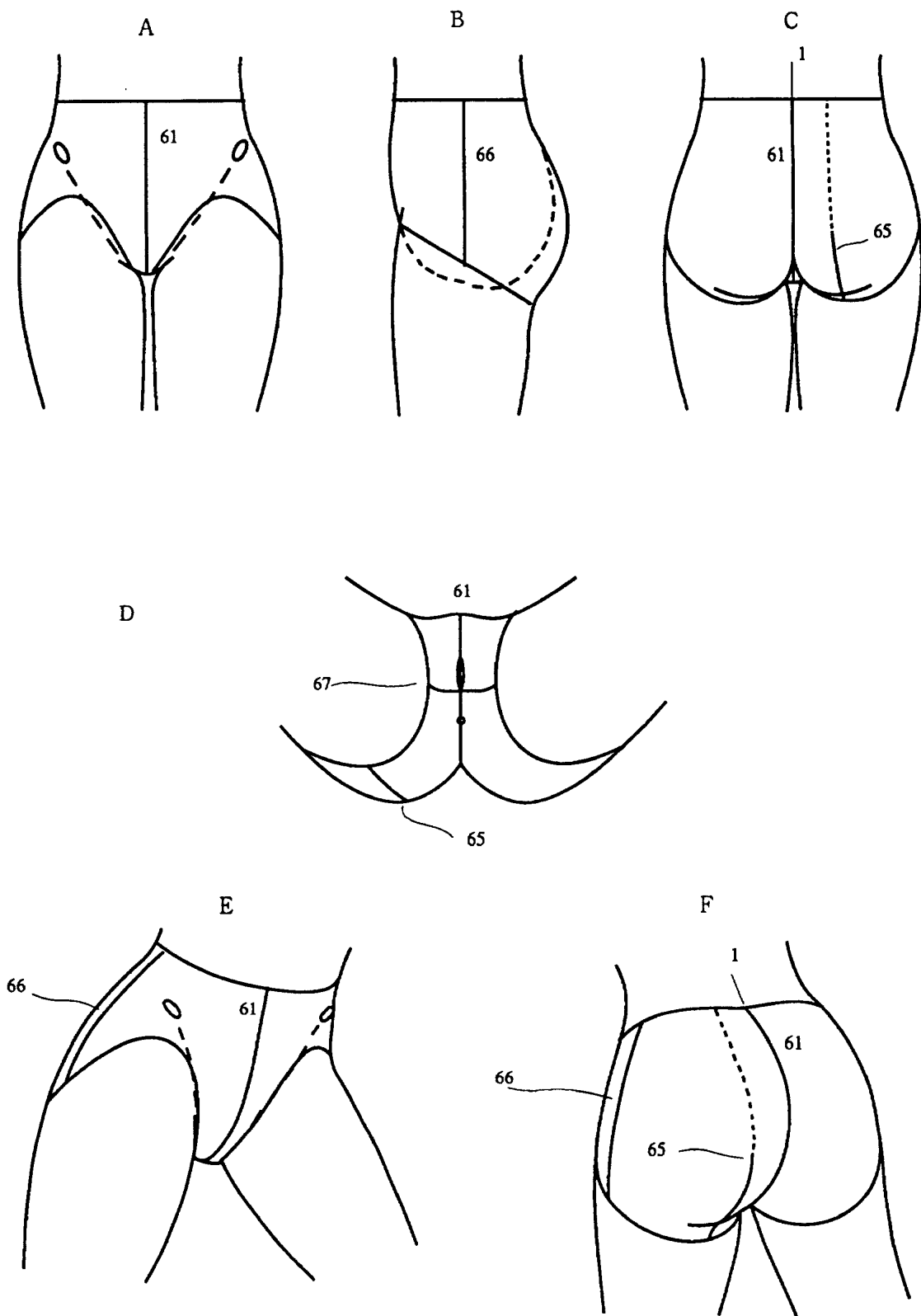


Fig. 21

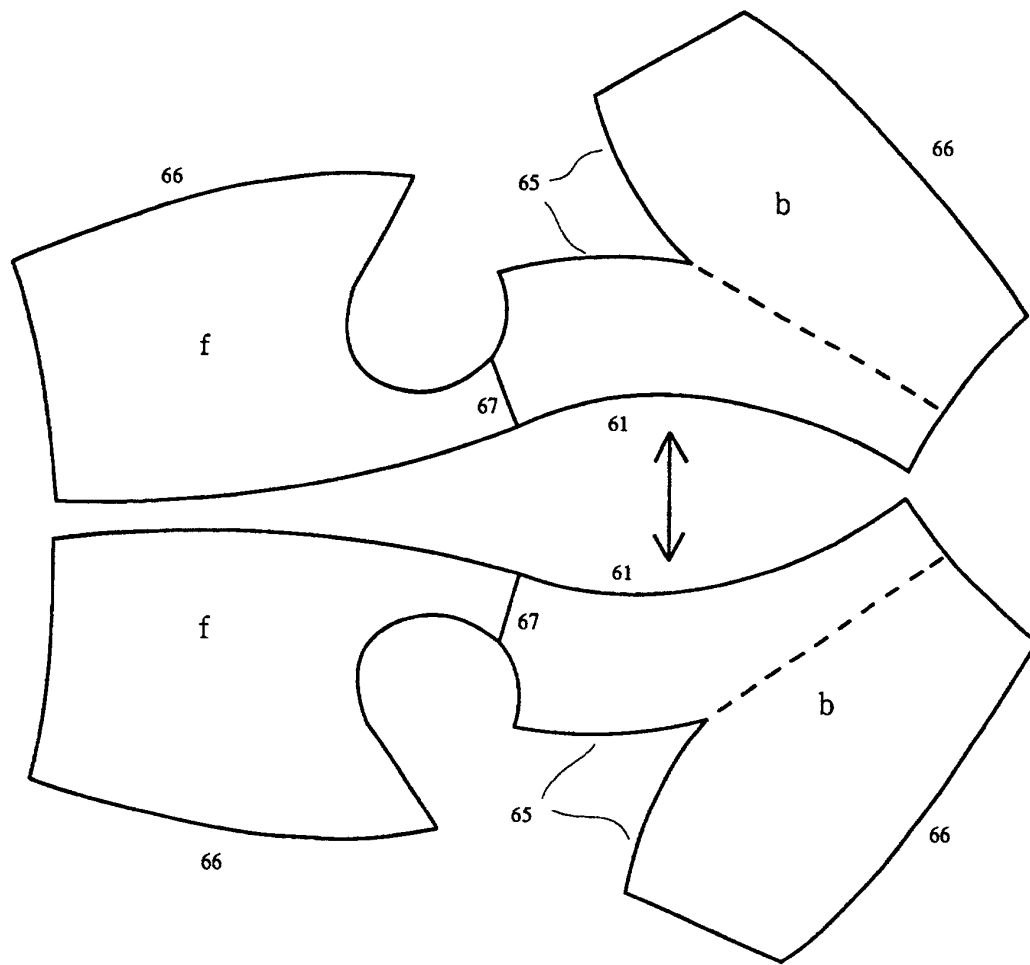


Fig. 22

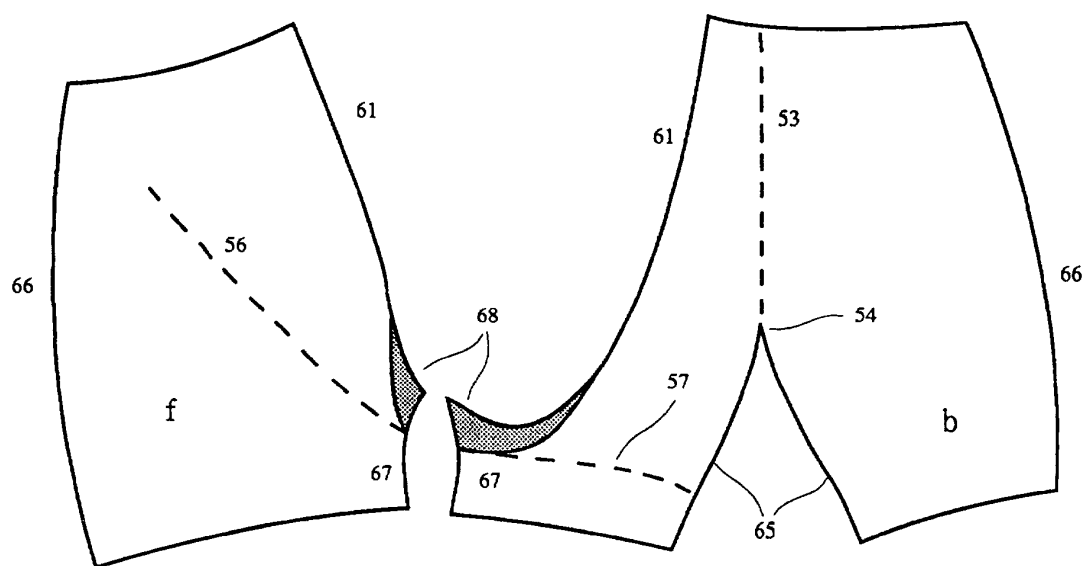


Fig. 23

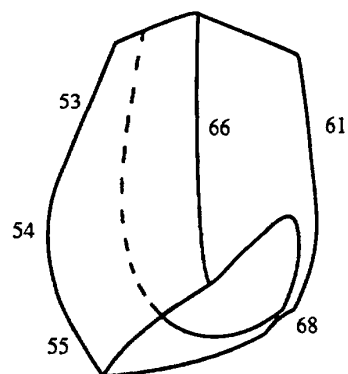
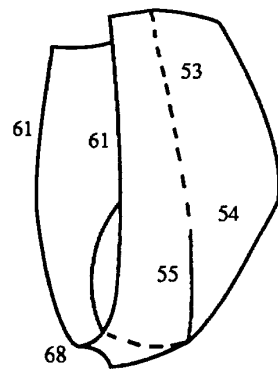
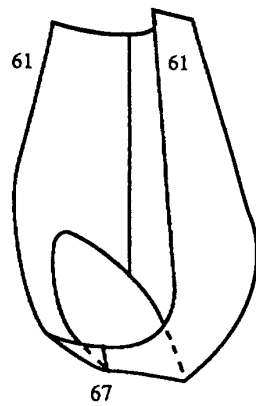
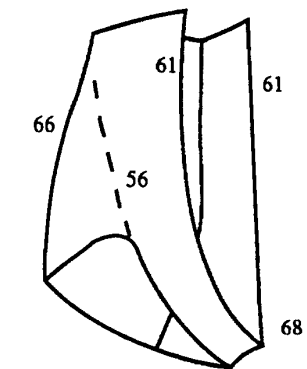


Fig. 24

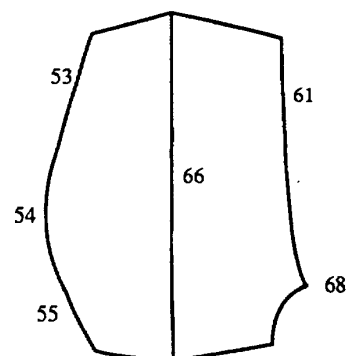
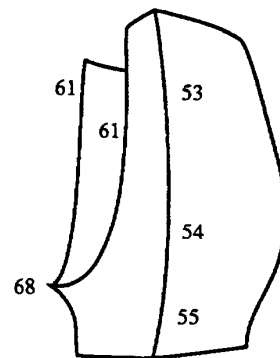
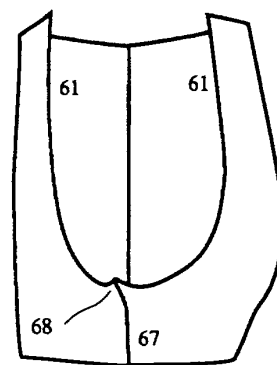
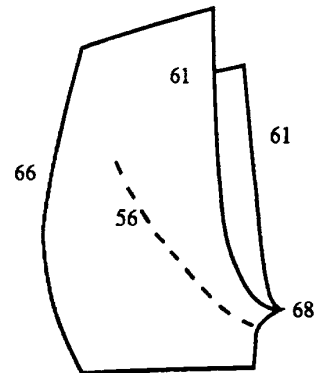


Fig. 25

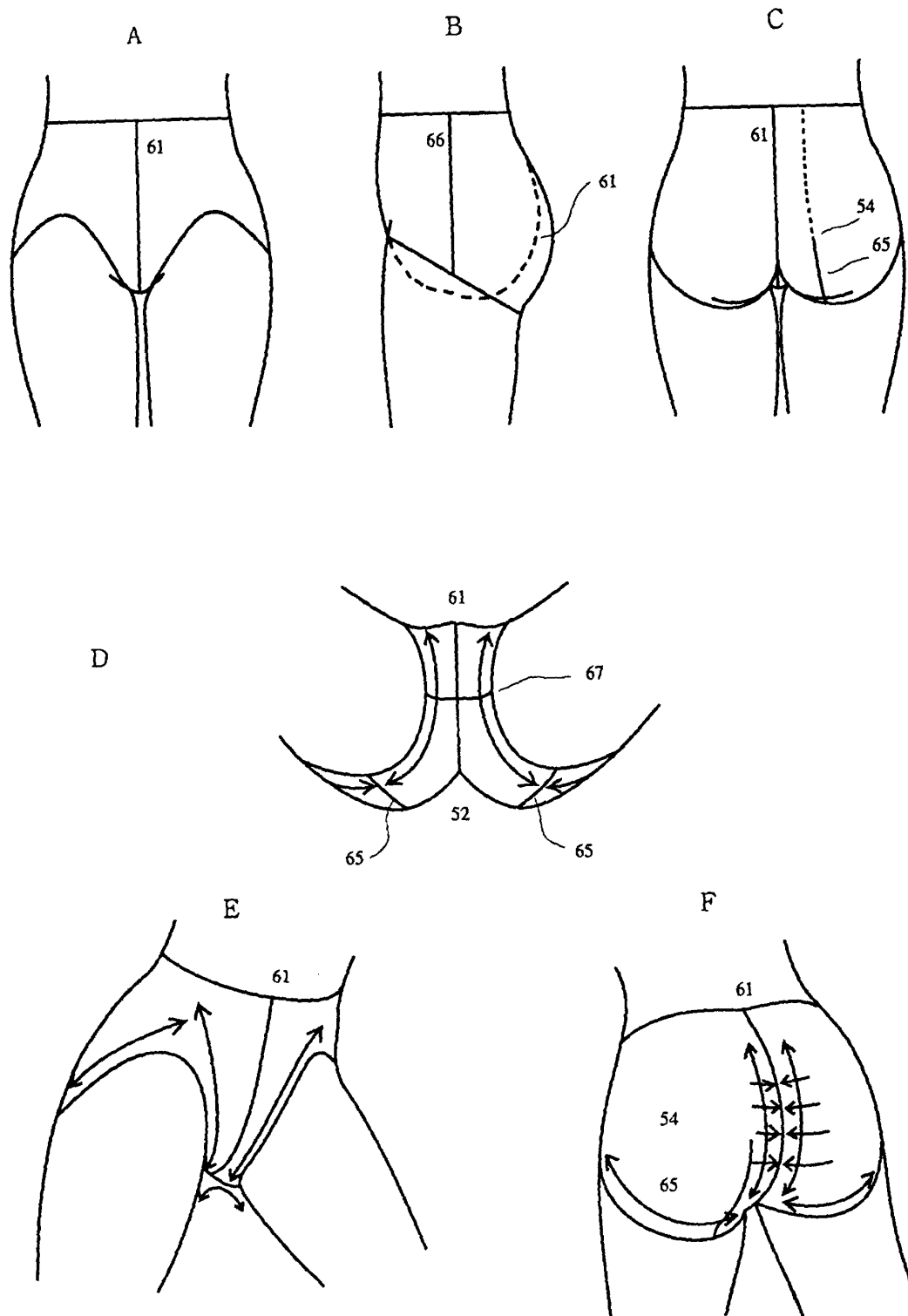


Fig. 26

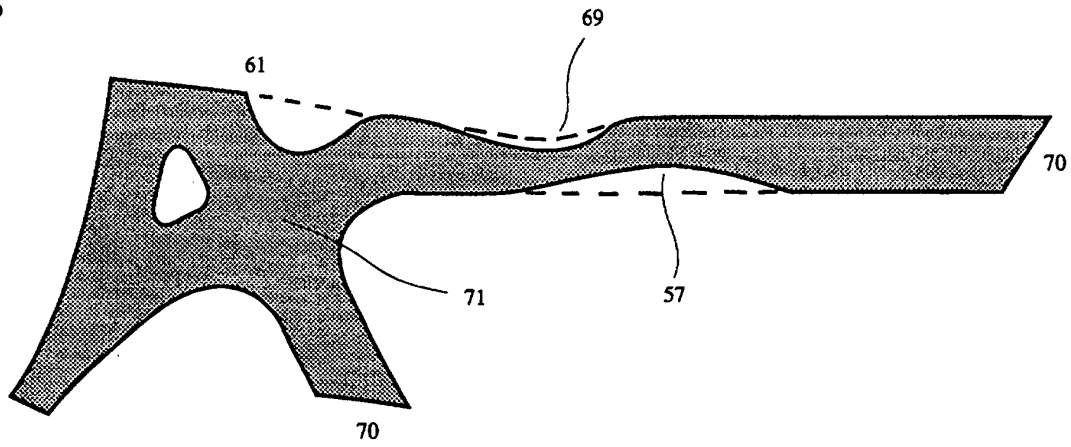


Fig. 27

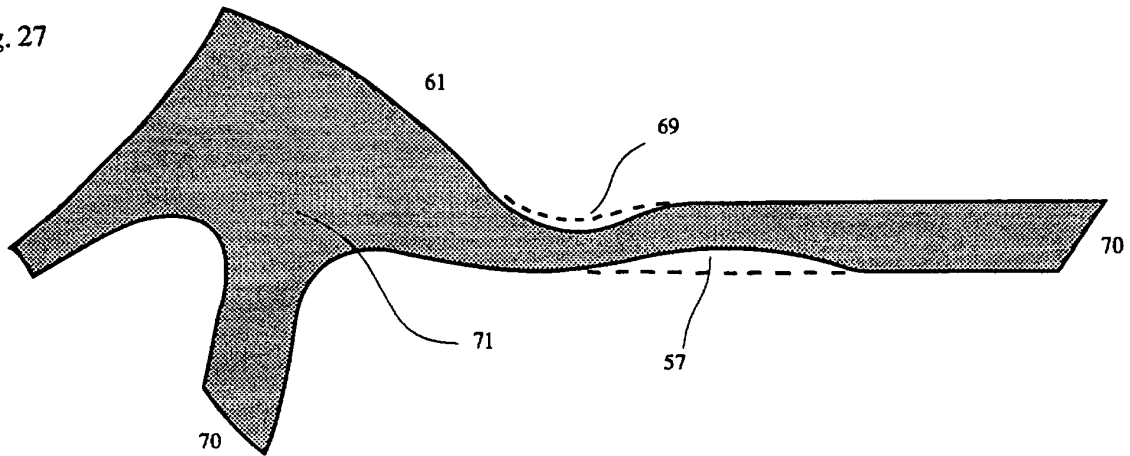


Fig. 28

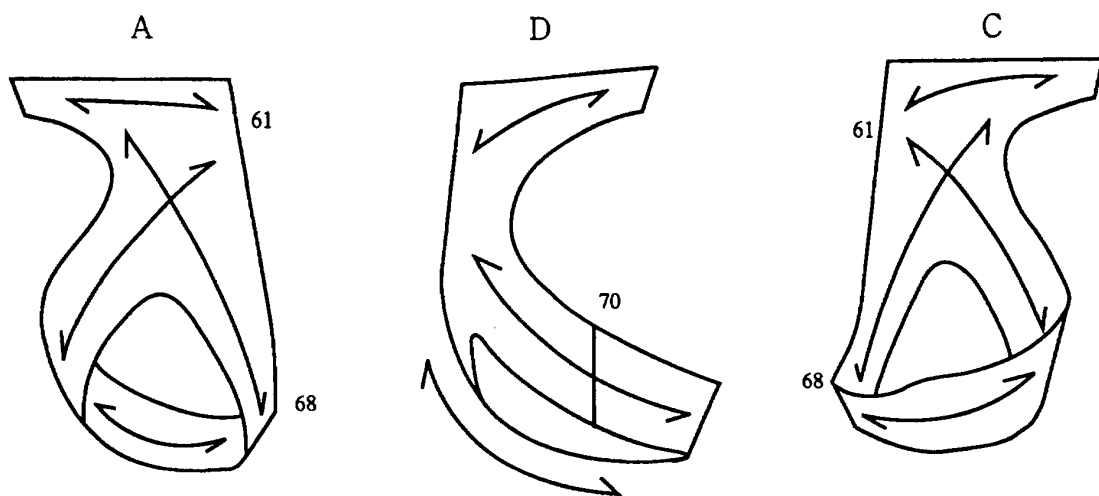


Fig. 29

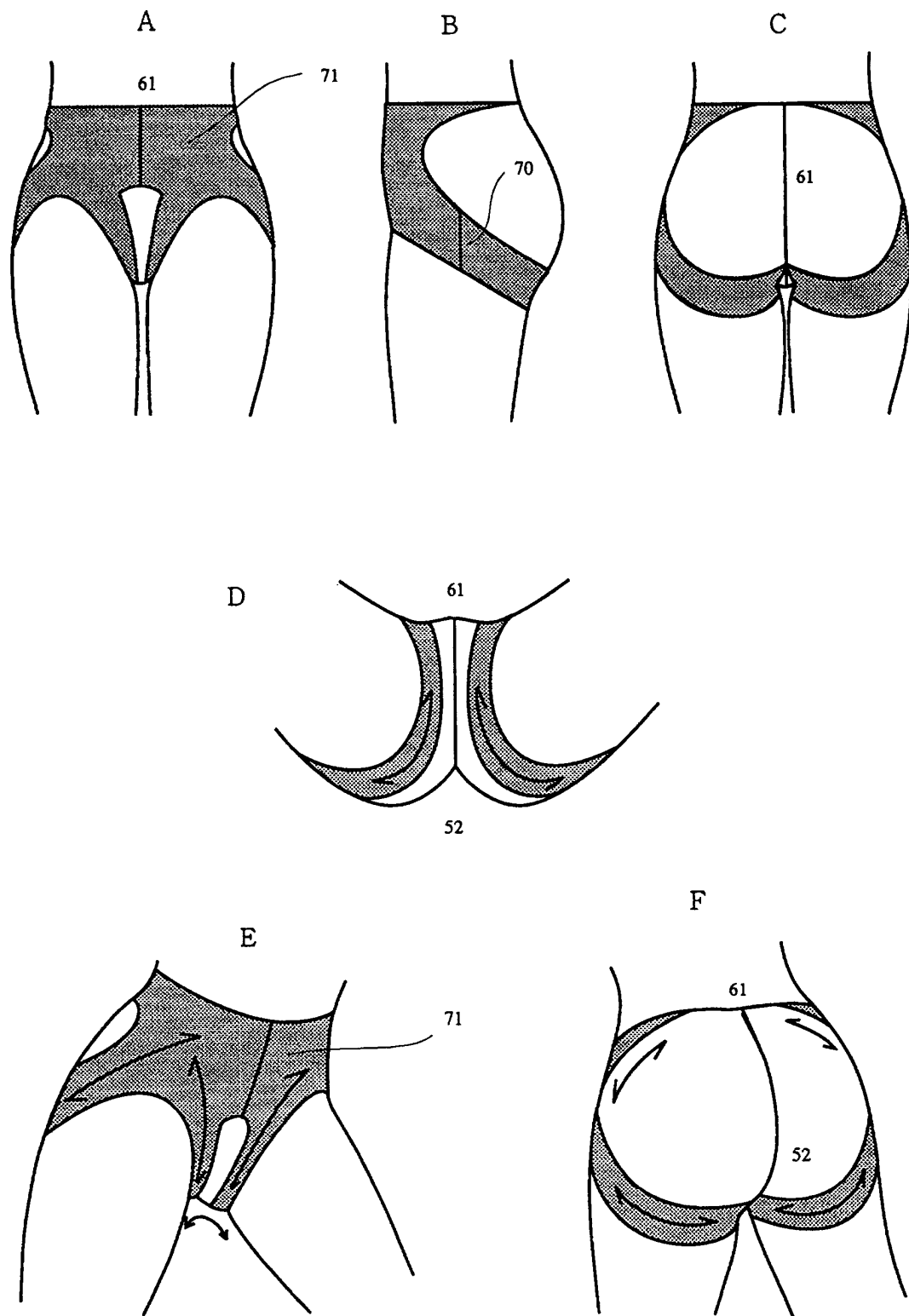
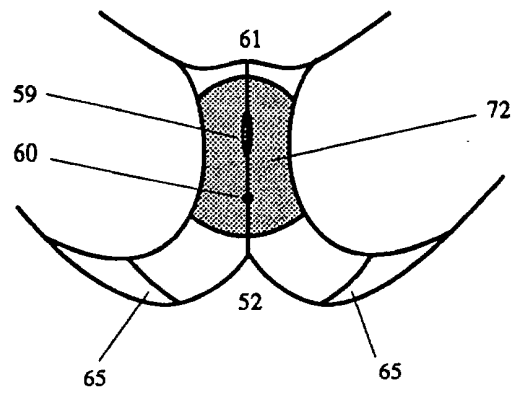
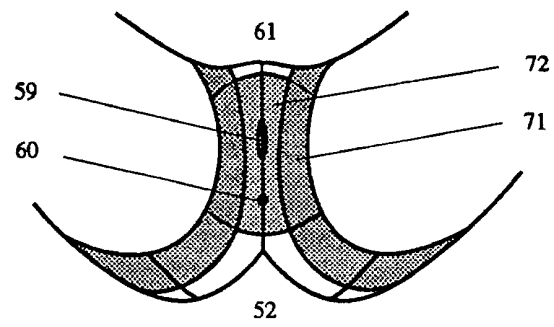


Fig.30

D1



D2



D3

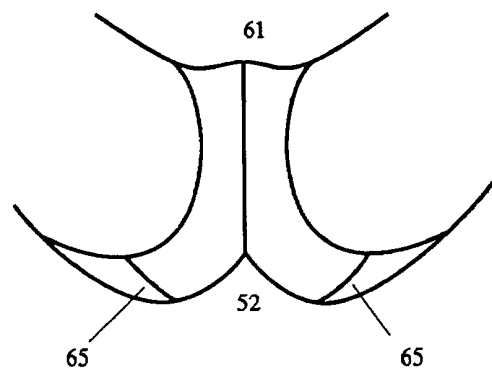


Fig.31

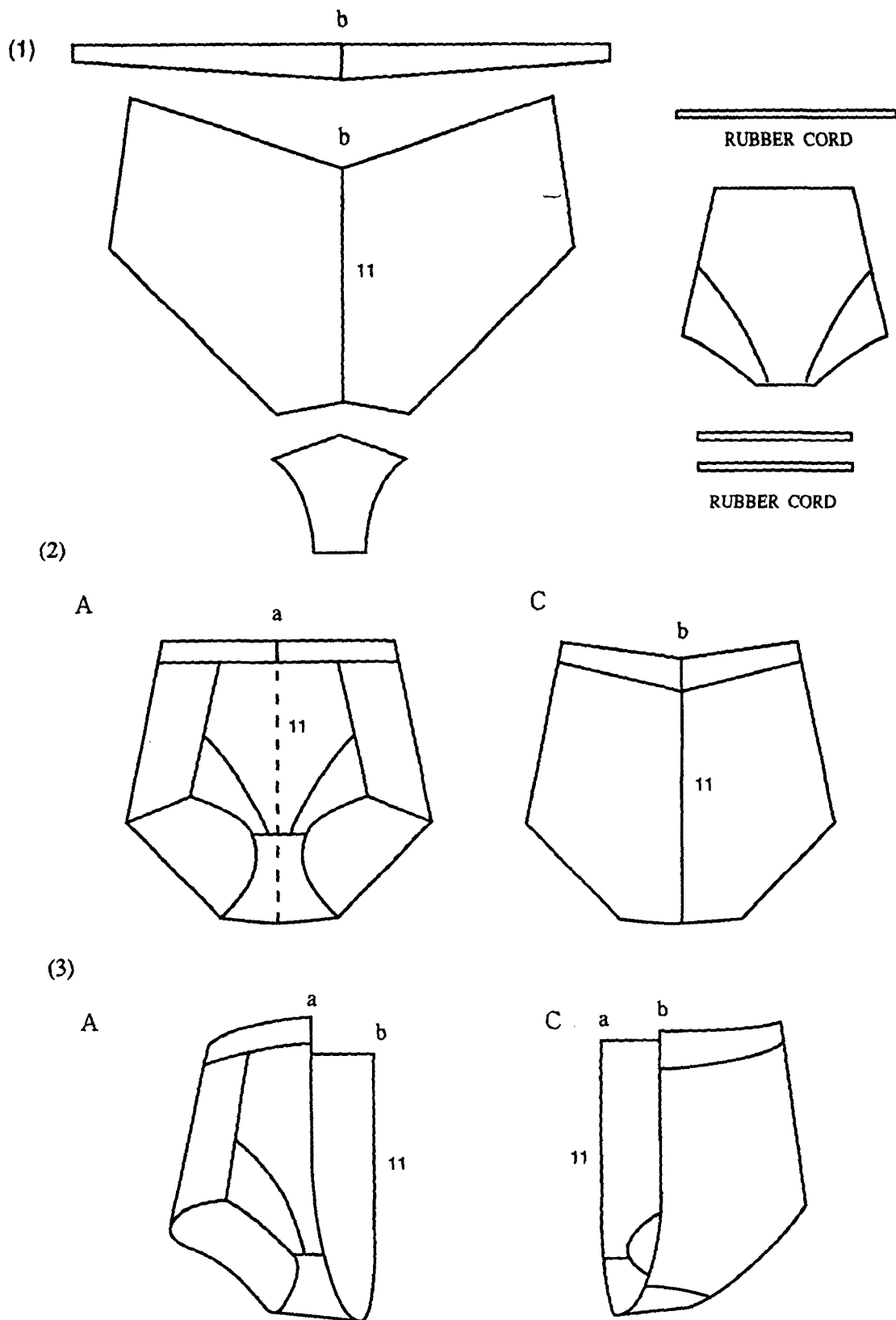


Fig. 32

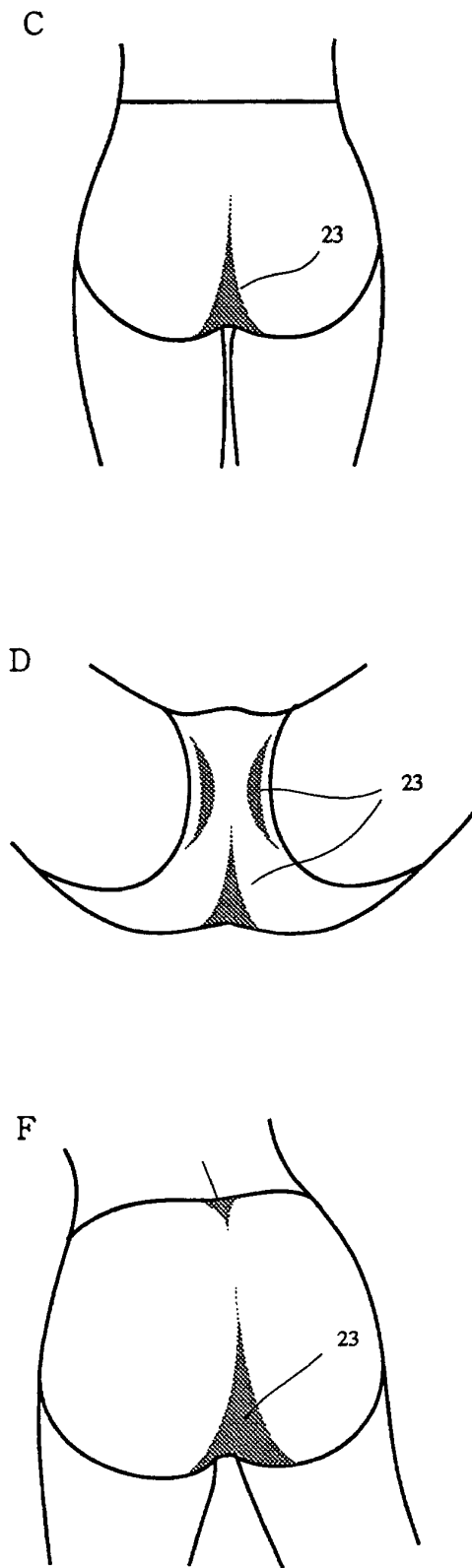


Fig. 33

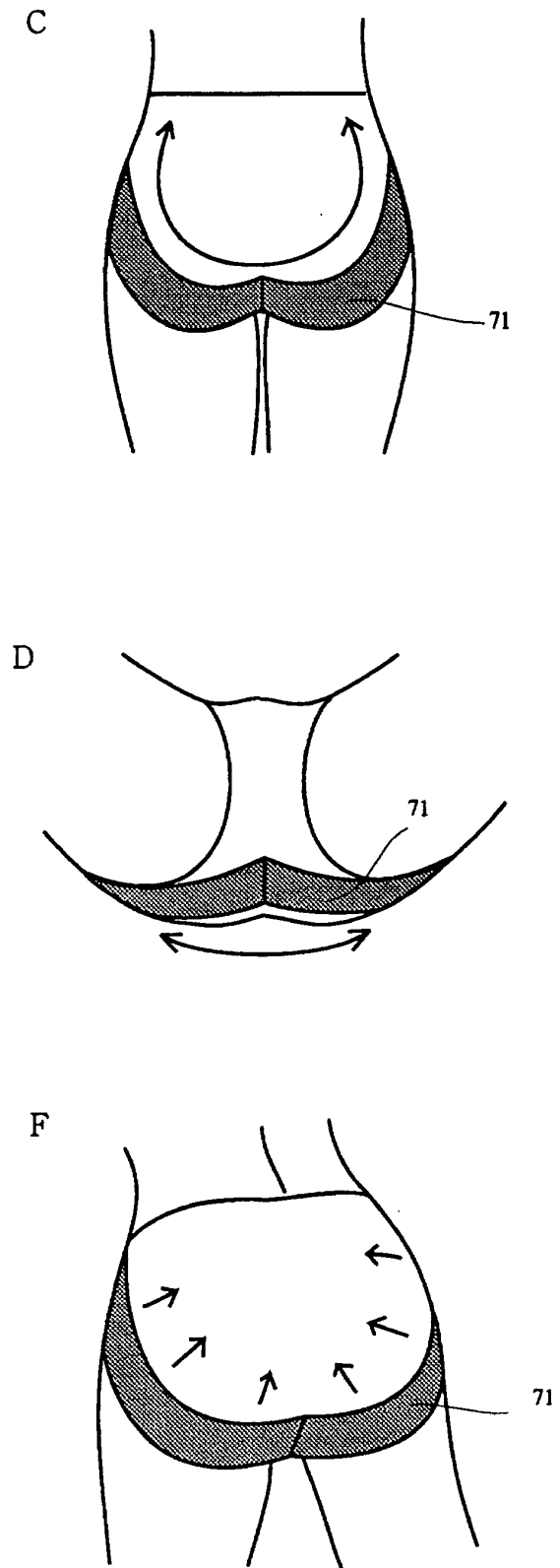


Fig. 34

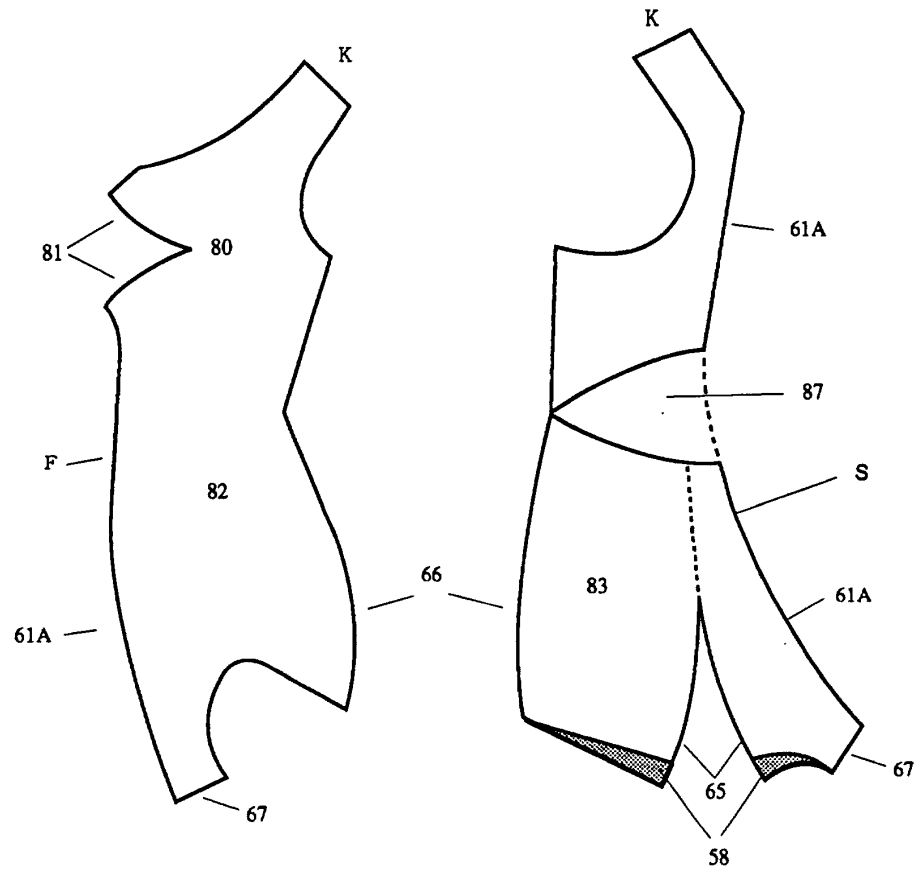


Fig. 35

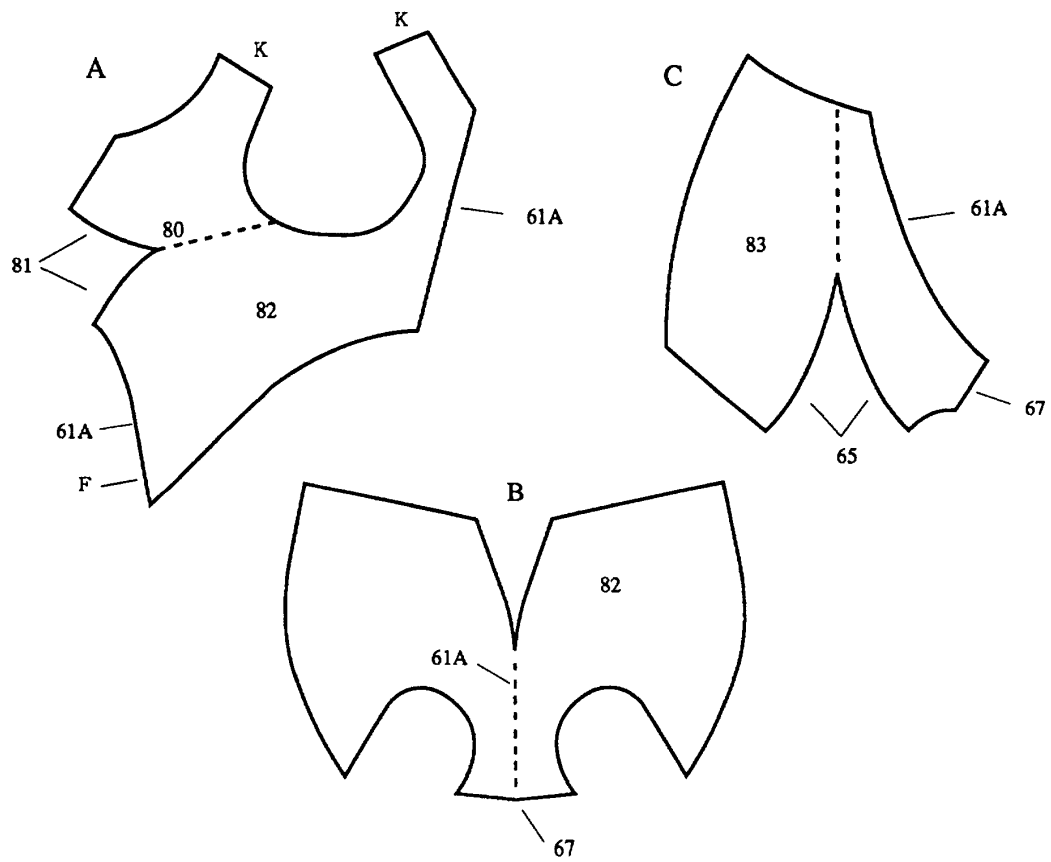


Fig. 36

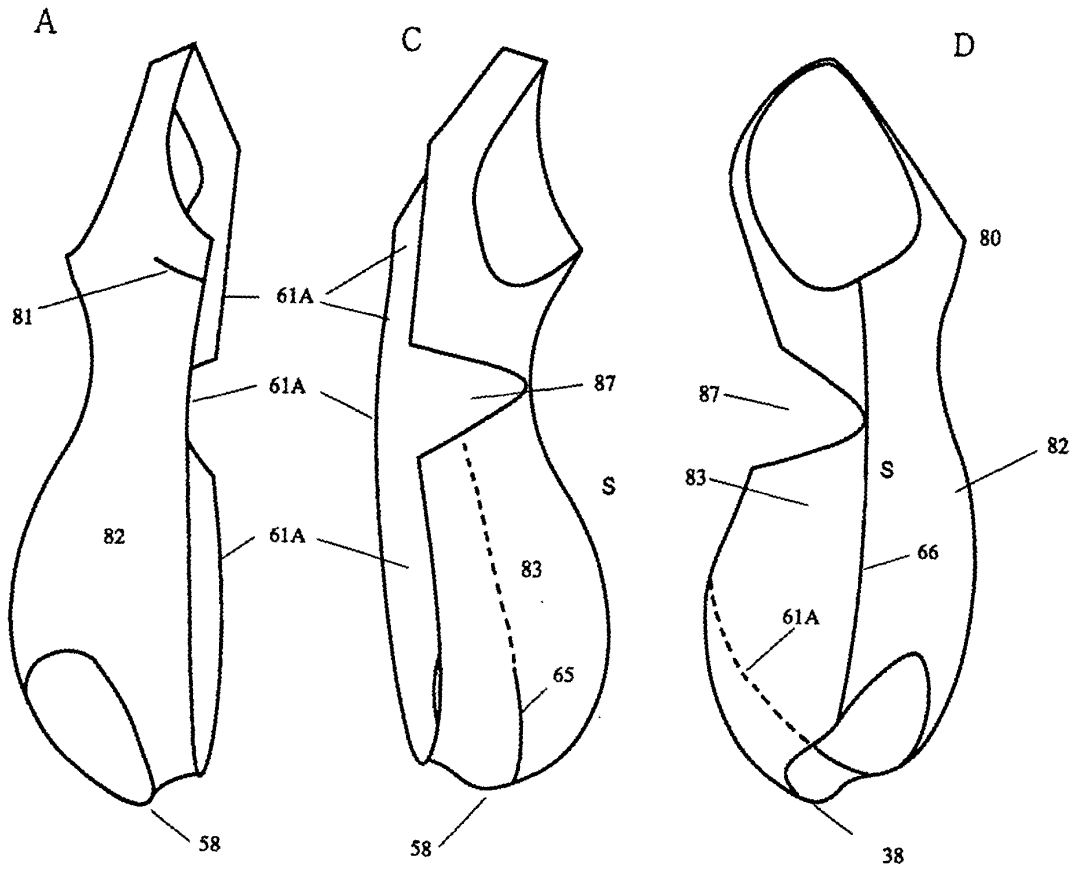


Fig. 37

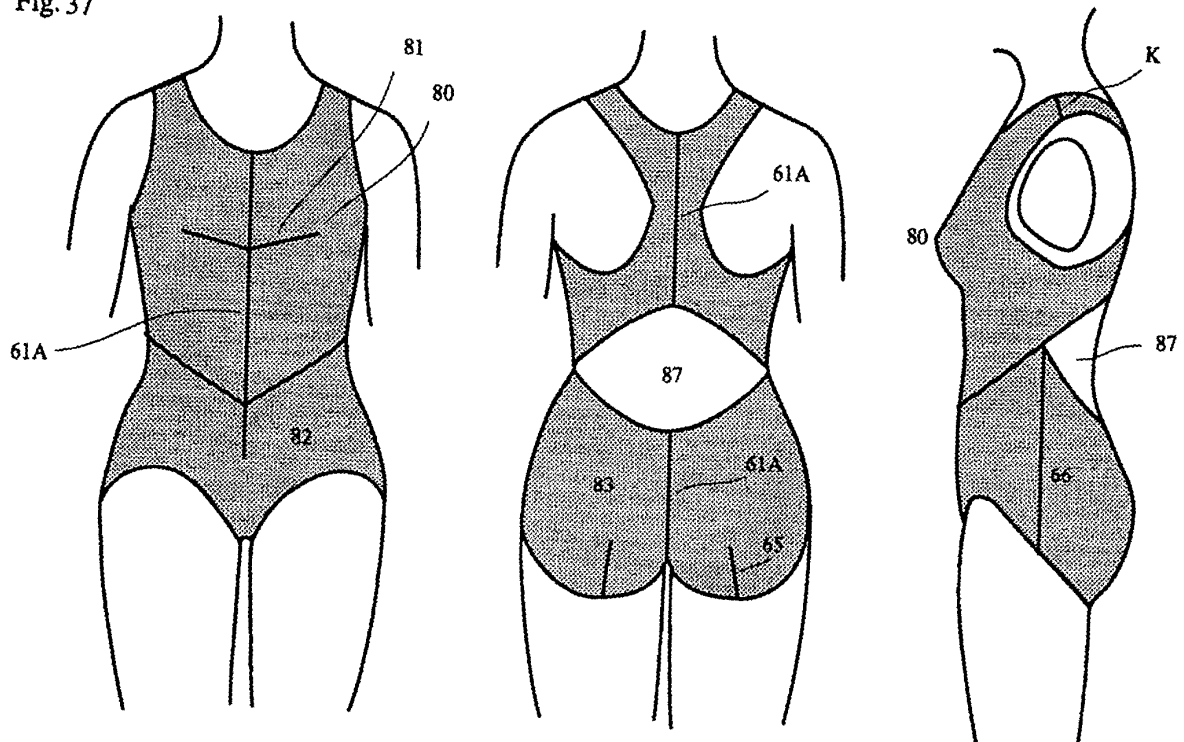


Fig. 38

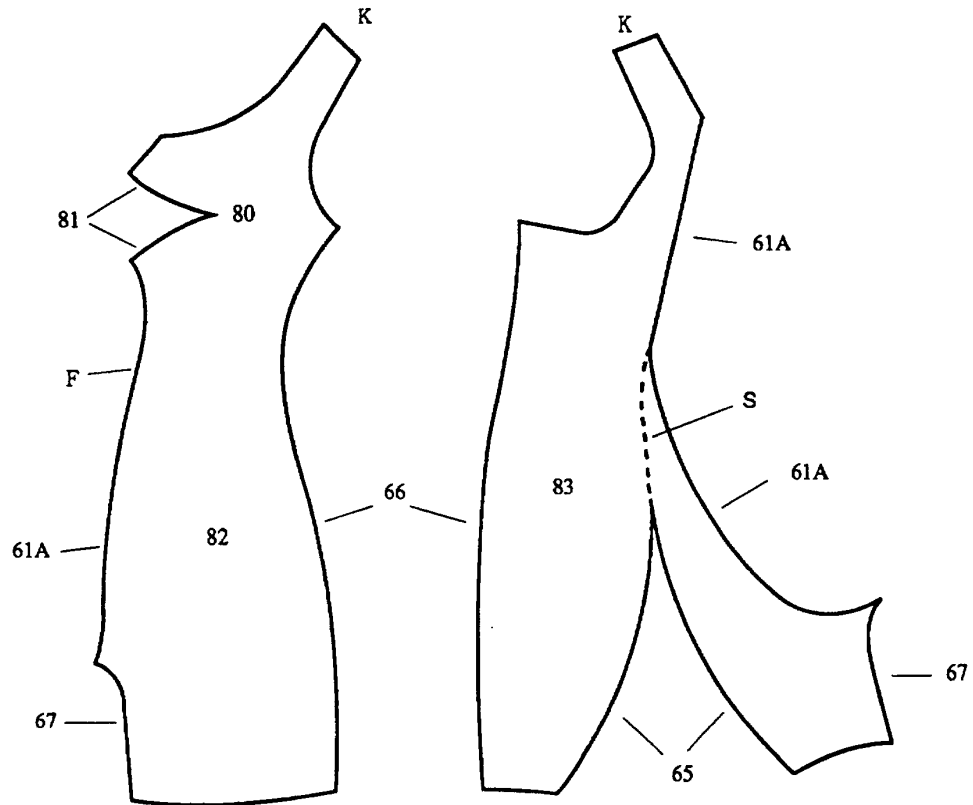


Fig. 39

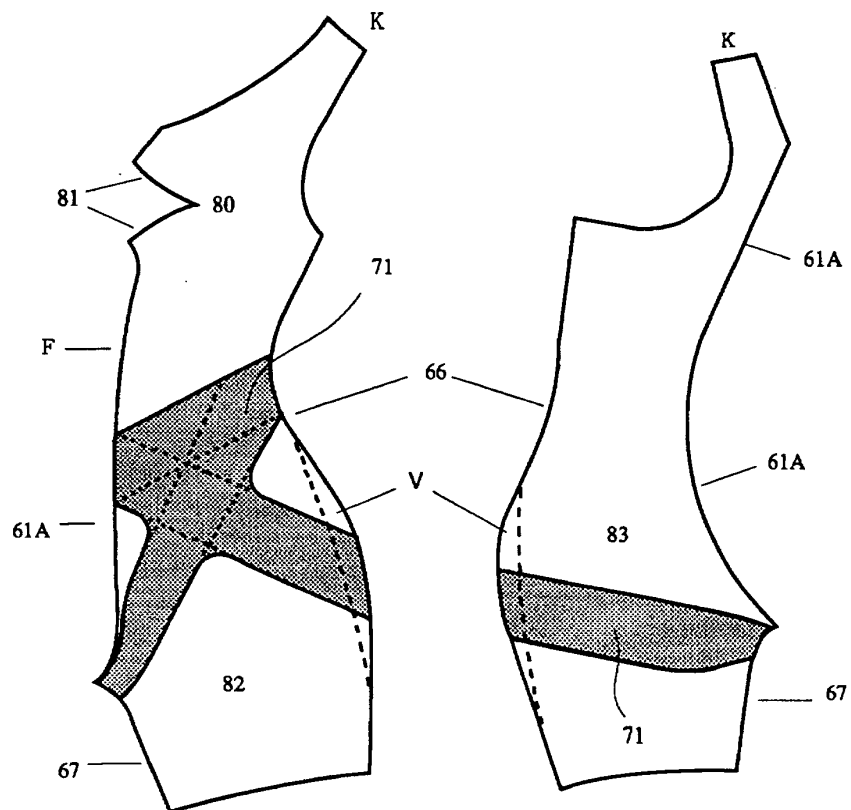


Fig. 40

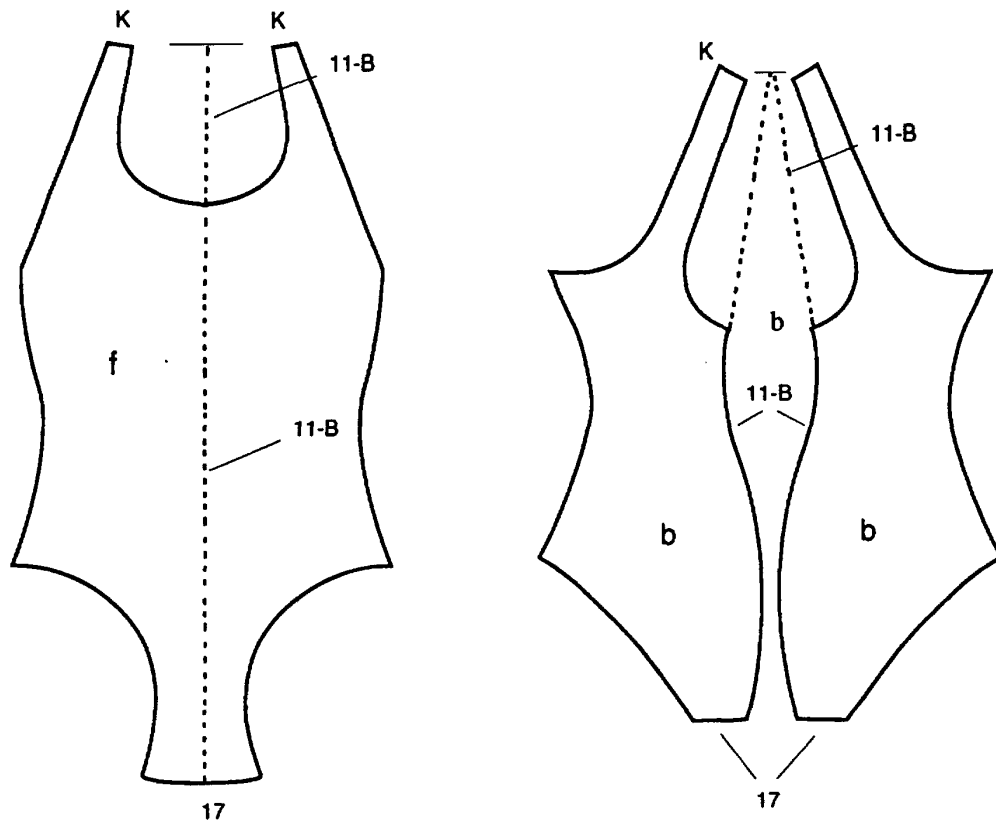
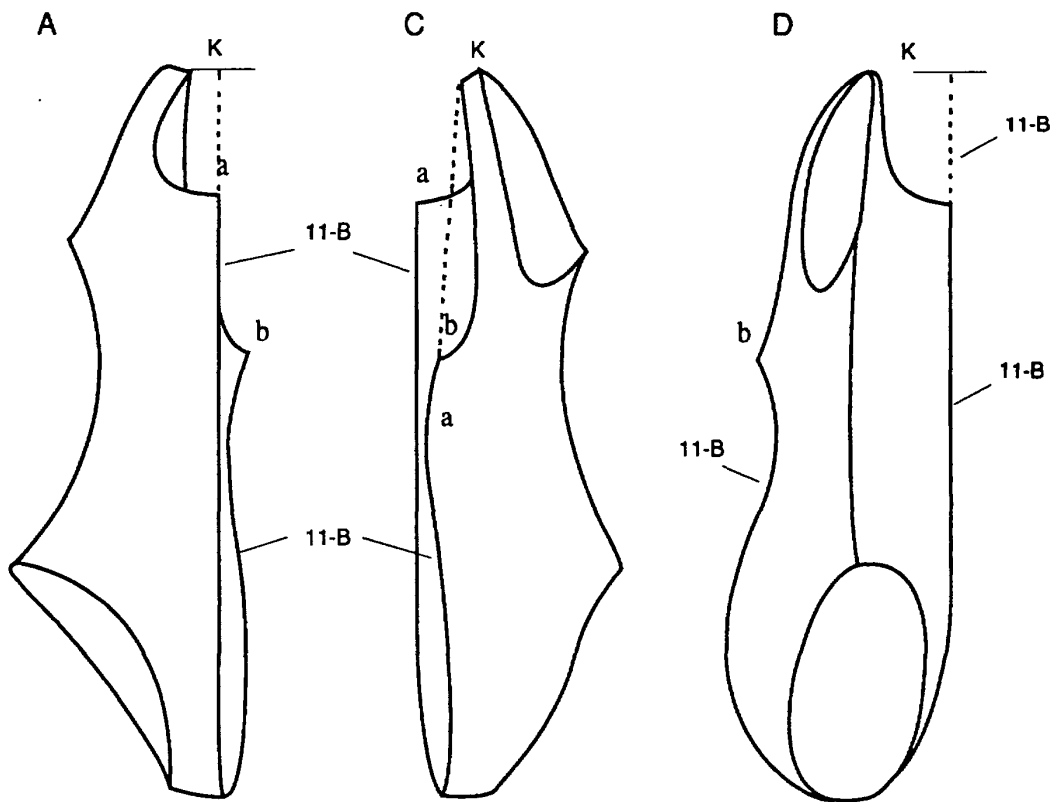


Fig. 41



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP99/02433

A. CLASSIFICATION OF SUBJECT MATTER Int.Cl. ⁶ A41C3/00, 1/00, 1/06, A41D7/00		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) Int.Cl. ⁶ A41C3/00, 1/00, 1/06, A41D7/00		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Jitsuyo Shinan Koho 1926-1996 Toroku Jitsuyo Shinan Koho 1994-1999 Kokai Jitsuyo Shinan Koho 1971-1999 Jitsuyo Shinan Toroku Koho 1996-1999		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP, 7-18503, A (Sakasei Orimono K.K.), 20 January, 1995 (20. 01. 95), Claim 1 ; Figs. 1, 3 (Family: none)	1
Y	JP, 2-22309, U (K.K. Kanae), 14 February, 1990 (14. 02. 90), Claims ; Fig. 5 (Family: none)	6
Y	JP, 7-18503, A (Sakasei Orimono K.K.), 20 January, 1995 (20. 01. 95), Claim 1 ; Fig. 3 (Family: none)	7-10
☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "U" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed		"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family
Date of the actual completion of the international search 26 July, 1999 (26. 07. 99)		Date of mailing of the international search report 3 August, 1999 (03. 08. 99)
Name and mailing address of the ISA/ Japanese Patent Office		Authorized officer
Facsimile No.		Telephone No.

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP99/02433

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 2-5, 11-25
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
Cited subject matters in claims 2 to 5 and in claims 13 to 25 are unclear.
A cited subject matter in claim 6 of claims 6 to 12 alternatively cited by claims 11 and 12 relating to a bottom structure has no bottom structure and is unclear.

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.