

- [54] **WAIST SUPPORT AND HIP GIRDLE**
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- [73] **Assignee: Etablissement Temova, Vaduz, Furstentum, Fla.**
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[30] **Foreign Application Priority Data**  
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- [51] **Int. Cl.** ..... **A41c 1/00**
- [58] **Field of Search**.....128/567-570,  
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 552; 66/175-177, 202

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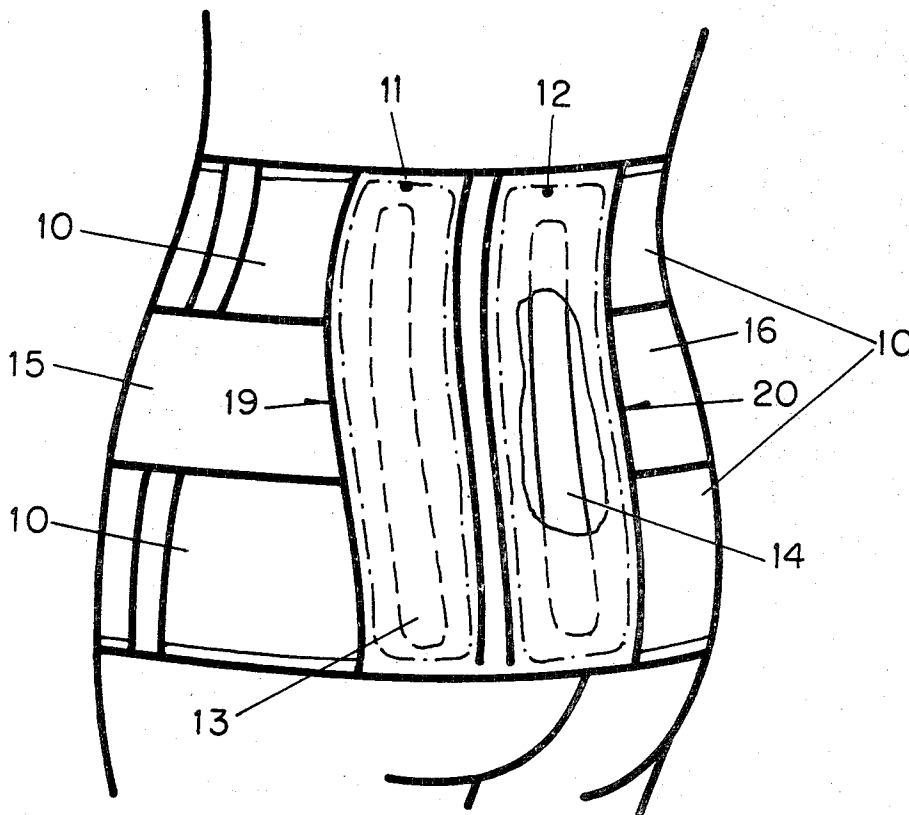
Text - "Artificial Fibres" - by Moncrief (John Wiley & Sons, 1954) pages 302-303.

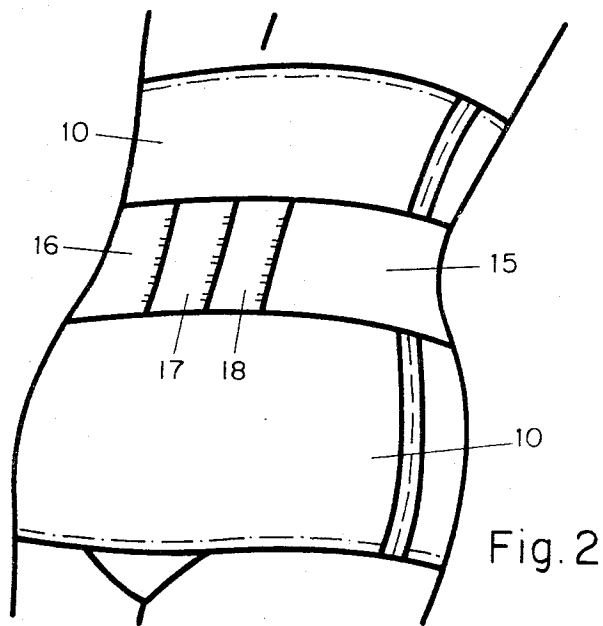
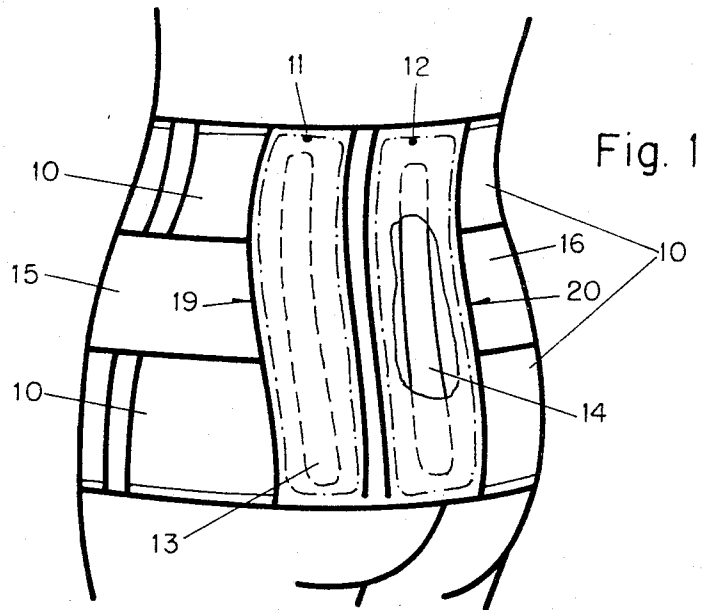
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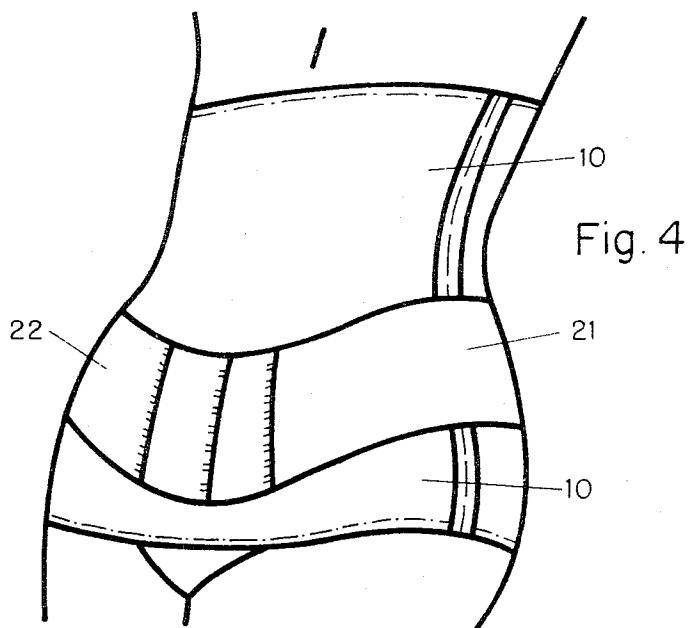
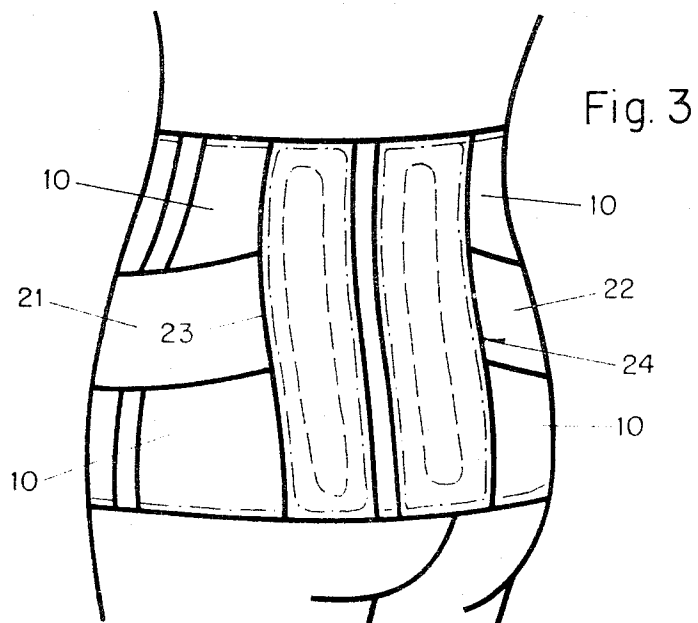
[57] **ABSTRACT**

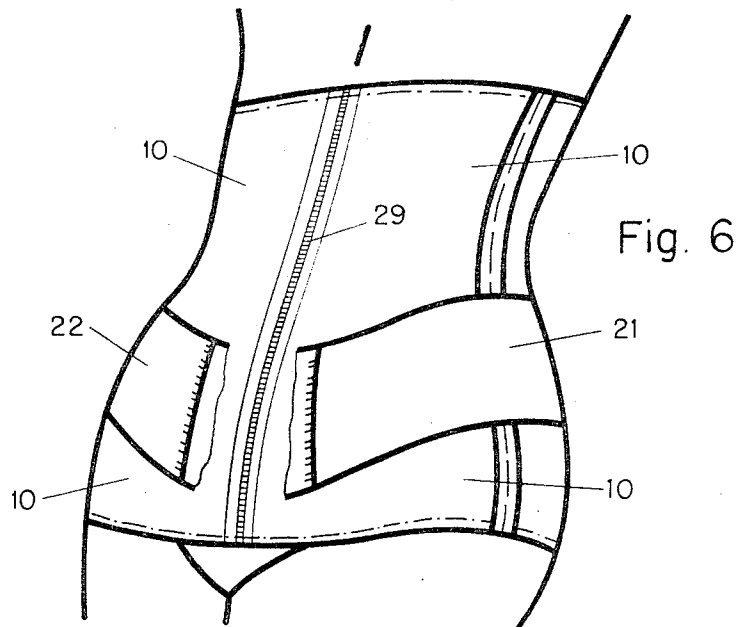
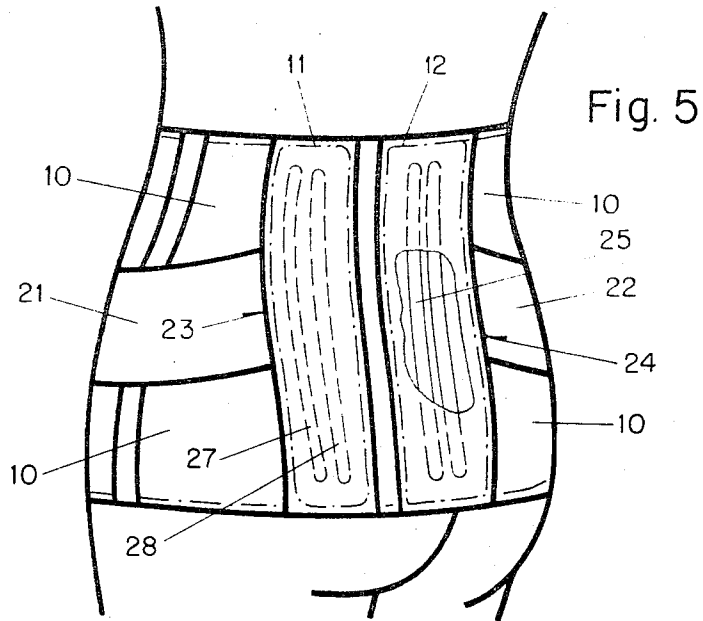
Waist support and hip girdle having a trunk part of knitted elastic fabric made of synthetic fibers suitable for producing static electricity and of sufficiently open mesh construction to allow skin moisture to evaporate. The girdle has spaced parallel stiffeners at the back and adapted to be positioned parallel to the spinal column, one on each side thereof, when the girdle is worn. The girdle also includes a strong elastic band having ends secured at the back adjacent the stiffeners without overlapping the latter, and having front ends adapted to be fastened together to close the girdle.

**7 Claims, 6 Drawing Figures**









## WAIST SUPPORT AND HIP GIRDLE

The present invention refers to a waist support and hip girdle, consisting of a trunk part of elastic fabric which surrounds the hip and dorsal part on all sides with a close fit, as well as of a strong elastic band fastened to the trunk part, which after the girdle has been put on, can be closed in front and is then holding the girdle.

Girdles of this type are already known and are meant primarily to be used for clothing purposes and for improving the figure, but occasionally can also serve orthopaedic purposes. The waist support and hip girdle of the invention belongs to the latter class and serves primarily for the treatment of certain troubles as hereinafter set forth. It is characterized in that the knitted fabric of the trunk part which lies directly on the skin is made of long synthetic fibres spun similarly to the spinning of worsted yarn and suitable for producing static electricity but whose mesh is sufficiently open to allow the skin moisture to evaporate. The dorsal part is provided with two parallel stiffeners, which after the girdle has been put on extend along on both sides of the spinal column. The elastic band consists of a left and a right part, each one being fastened to the trunk part next to the two stiffeners without overlapping them.

The waist support and hip girdle of the invention hereinafter is illustrated by two exemplified embodiments by means of FIGS. 1-6. They show:

FIG. 1 and 2 the back and front of a first exemplified embodiment in schematic representation;

FIG. 3 to 6 the back and front of two more exemplified embodiments.

As can be seen in FIGS. 1 and 2 the waist support and hip girdle consists of a trunk part 10, which surrounds the hip and dorsal part of a wearer on all sides with a close fit, as it is made of an elastic fabric. The dorsal part (FIG. 1) of the trunk part 10 is provided with two parallel stiffeners 11 and 12, which, by way of an example, are here made as fabric pockets, each one holding an elastic flat blade of synthetic material 13 and 14. These two flat stiffening blades 13 and 14 appear in FIG. 1 as being curved, to conform to the shape of the wearer. While the girdle is not worn, the two elastic blades of synthetic material 13, 14 keep their original flat shape. In the exemplified embodiment shown in FIG. 1, the two pockets 11 and 12 are closed on all sides. But the possibility also exists, to provide the pockets, for instance at a narrow edge, with an opening, which can be closed by means of a snap fastener, so that the two blades of synthetic material 13 and 14 can be pulled out and replaced by two other blades, which, as desired, can have a higher or lower degree of stiffness.

It has also proved convenient, as indicated in FIG. 5, to provide each of the pockets 11 and 12 with two elastic flat stiffening blades 25 and 26, and 27 and 28, offering the possibility, that the stiffening blades 25 and 28 which are at the inside and adjacent the spinal column can be made of a stiffer material than the stiffening blades 26 and 27 at the outside. Pockets 11 and 12 can be provided at their upper narrow edge with an opening each, which can be closed by means of a snap fastener, so that both pairs of blades of synthetic material 25, 26, 27 and 28 can be pulled out and replaced by other blades, which as desired, can have a higher or lower degree of stiffness.

As FIG. 1 furthermore shows, the girdle is provided with an elastic band consisting of a left and a right part 15 and 16, which, as shown in FIG. 2, is held together in front with adequate fastenings 17 and 18 and which can be tightened at the same time. The left part of the band is fastened next to pocket 11 by means of a seam 19 to the trunk part, whereas the right part 16 is fastened with seam 20 next to pocket 12 to the trunk part.

The two parts 15, 16 of the elastic band do not overlap the two stiffeners, which is a fundamental feature of the present girdle and has proved particularly beneficial for the treatment of injuries of the spinal column.

The second exemplified embodiment as represented in FIG. 3 and 4 has the two parts 21 and 22 of the elastic band fastened to the trunk part 10 by the oblique seams 23 and 24 next to the two parallel stiffeners. In this way the two parts 21 and 22 of the elastic band run obliquely downwards after the girdle has been put on, as indicated in FIG. 3 and 4, by which a support of the belly part on fat people or during pregnancy is guaranteed.

As shown in FIG. 6, the trunk part 10 can also be provided at its front with a zip-fastener 29, the slide of which can be unhooked at the lower end from one of the slide-ways, when the zip-fastener is not closed. In this way it is easy to put on the girdle.

It is of importance for the two above exemplified embodiments, that the knitted fabric of the trunk part 10, which is in direct touch with the skin, is made of a predetermined type of synthetic fibres, these being long synthetic fibres spun similarly to the spinning of worsted yarn and suitable for producing static electricity. Particularly suitable are fibres of polyvinyl chloride, to which a part of acrylic fibres can be added. In a preferred specific embodiment the fabric consists of 80 to 90%, preferably 85%, of polyvinyl chloride fibres and the remaining part of acrylic fibres.

These synthetic fibres suitable for producing static electricity, produce while the girdle is being used, by means of the movement of the trunk part 10 against the skin, a notable electrostatic charge, which for its part produces a strong feeling of warmth on the corresponding parts of the skin. The electrostatic charge does not disappear even if due to the warmth produced some skin moisture should develop, since the used synthetic fibres are not hygroscopic and the mesh of the knitted fabric is sufficiently open to make evaporation of the skin moisture possible as well as the discharge of the humid air through the meshes. Through the effect of the electrostatic charge with static electricity, which is continuously renewed with each movement, it is guaranteed that the skin under the trunk part 10 has a constant higher temperature, practically independent of the ambient temperature outside the trunk part 10. This effect is still improved by the isolating property of the fabric against heat losses.

The above mentioned polyvinyl chloride and acrylic fibres are so-called long fibres with a fineness in the range of about 3-20 denier and occasionally also are called polyvinyl chloride rayon staple. To this class of fibres also belong the fibres of re-chlorinated polyvinyl chloride and of vinyl chloride acetate interpolymers. Such synthetic fibres are usual in trade under different trade-marks, for instance under the trade names of THERMOVYL, FIBROVYL, ISOVYL, RHOVIL, etc. For the above exemplified embodiments the commercial fibres of polyvinyl chloride rayon staple of about

10 denier (little stretched out) under the trade-mark of THERMOVYL have proved good. Also the acrylic fibres used as admixture are usual in trade under different trade-marks such as ACRYBEL, CRYLOR, NIM-CRYLON, DRALON, DOLAN, etc.

The above synthetic fibres only represent preferred exemplified embodiments for manufacturing the fabric of the trunk part 10 of the girdle. Any knitted fabric of synthetic fibre can be used, which produces on the skin with each movement sufficient static electricity for maintaining a continuous electrostatic charge.

The present waist support and hip girdle preferably is intended for giving relief from pain to patients with kidney and/or spin injuries. To begin with it has to be pointed out that rheumatic troubles in the lower breast region and in the lumber spine region frequently appear together with functional disturbances of the kidneys. According to this knowledge the present girdle is provided both with stiffeners (11, 12, 13, 14) and a supporting girdle (15,16), and with a fabric used for the trunk part (10) which due to the developing static electricity charges itself electrostatically producing a heat effect on the skin, without preventing evaporation of skin moisture. The following examples show that both the supporting effect and the heat effect are necessary and useful, in order to reduce the discomforts in case of kidney and spine injuries. According to these examples the physical features of the present girdle represent a true combination and produce a combined, improved effect.

#### Example 1 (Sanatorium U.A., M.D.):

Girdles of the type at hand have been tried out on about 80 persons; out of these on about 60 patients an after-examination has been made after several weeks, with the following results:

Group A (28 patients suffering both of functional disturbances of the kidneys and of rheumatic pains in the region of the spinal column); a considerable lessening of discomfort was noted: none of the patients felt no improvement at all. Particular observations are increase of urine flow, disappearance of oppressive feelings in the head and breast region (front headache, ophthalmic migraine, shortness of breath, paroxysmal tachycardia) lessening of pain in the region of the lower thoracic and lumber spinal column, alleviation in turning and bending the trunk.

Group B (22 patients all with rheumatic pains and stiffness in the lower dorsum; mostly chronic cases with spondylotic symptoms at the vertebrae and gelotic regions in the muscle tissue). Special observations are: striking improvement in serious cases after some time, in lighter cases right at the beginning, lasting improvement for a longer time after taking off the girdle, softening of the hard gelosis, which do not anymore resist the massages, improvement in reacting to internal and external remedies against rheuma. Two patients of this group with pronounced series osteochondrotically changed vertebrae which led to a prolapsus, showed no improvement.

Group C (patients with kidney troubles, pathological urinary findings, renal insufficiency and due to it with front head-ache, light sweating, fatigue, heavy breathing, spongy tissues, as well as with more or less extensive gelosis formation, throbbing kidney

pains and permanent cold feeling in the kidney regions). Observations were: pleasant warming of the abdomen, feeling dry not moist, setting in of diuresis, less sweating, disappearance of cephalagic troubles and of heavy breathing, considerably improvement of the urinary findings according to the laboratory analysis, sinking of the diastolic blood pressure value.

#### Example II (Prof. W.H., M.D., director of the orthopedic university clinic of F.)

The girdle has been tried out during several months on 10 patient, predominantly on women with troubles within the lumber syndrome such as lumbago, sciatica, etc.; 9 patients, expressed themselves positively about the effect of the girdle. It feels comfortable, and a feeling of warmth and partly a feeling of pleasant tiredness have been reported. One of the patients, after the heavy pains had subsided, always used to put the girdle on again whenever she started to feel the slightest pain.

#### Example III (Municipal hospital of R., medical director Prof. K.M.B., M.D.)

The girdle has been tried out on 30 patients (both sexes) during 3 months at the urological ward. Patients suffered from renal damages of the most varied aetiology; all the patients have been previously examined (cystocopy, radiological and laboratory examinations). The following has been observed:

Group A (10 patients with kidney pains due to vegetative disorders, such as cold feet dysuria, dyskinesia, functional poakisuria, as well as with congestive pains of the upper ureters due to abnormal movement of the kidneys). The effect of a thorough regular warming of the skin in the flank region and above the discus interpubicus in the bladder region was stated to be very favourable. 9 patients reported a lessening of the dull flank pains and reduced strangury, as well as less frequent urination. One patient reported that the miction frequency from an interval of three hours before, was reduced by about half. The favourable influence on vegetative disorders of the urinary tract of patients sensitive to cold, has been observed during the winter. Two female patients with one-sided sinking kidney reported an improvement of the twinging kidney pains, possibly produced by better skin perfusion as well as by a mechanical fixation of the organs.

Group B (10 patients with kidney pains due to inflammatory manifestations e.g. chronic pyelonephritis.). The anatomic substrate remained unchanged (X-ray examinations), also the kidney chemistry and urine status. Without exception, however, all the 10 patients reported an improvement of their subjective wellbeing and a lessening of the dull kidney pains, possibly produced by a lessening of the distension pains of the perinephrium in acute cases due to the uniform heat application. This is in contrast to the generally pain increasing effect of a more intensive heat supply by means of short wave treatment, electric pad or moist and warm cataplasms. The patients of the group pointed out, that no unpleasant moistness appeared underneath the girdle contrary to other girdles.

Group C (10 patients with postoperative troubles in the region of the kidneys, bladder or prostate; organic and cicatricial pains). All patients gave a pos-

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itive judgement of the girdle and besides pointed out that the body is better supported in the operated region, that the heat has a pleasant effect and that the pains within or underneath the cicatricial region (paraesthesia) appeared with less frequency or had disappeared altogether. One patient with an operated polycystic kidney reported an alleviation of discomforts in the region of the other not operated organ, possibly caused by a uniform distribution of pressure or by a better support.

I claim:

1. A waist and hip support girdle comprising a trunk part of elastic knitted fabric adapted to surround the hip and lower dorsal part of a wearer on all sides with a close fit, said fabric being of a mesh sufficiently open to allow the skin moisture of a wearer to evaporate, and that portion of said fabric which directly contacts the skin of a wearer comprising long fibers spun of a synthetic material adapted to produce static electricity on frictional movement against the skin of a wearer; two parallel upright laterally-spaced stiffeners fastened to said trunk part in position to extend adjacent to and along both sides of the spinal column

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of a wearer; and a strong elastic band consisting of a left part and a right part having ends at the front adapted to be detachably connected together and ends at the back fastened to said trunk part adjacent to said two stiffeners without overlapping the latter.

2. A girdle according to claim 1 wherein the material is polyvinyl chloride.

3. A girdle according to claim 1 wherein a portion of the fibers are polyvinyl chloride and another portion of the fibers are acrylic.

4. A girdle according to claim 1 wherein the fibers comprise from about 90 percent to about 90 percent of polyvinyl chloride fibers and from about 10 percent to about 20 percent acrylic fibers.

5. A girdle according to claim 1 wherein the stiffeners are elastic blades of synthetic material and including pockets in the fabric enclosing said blades.

6. A girdle according to claim 1 wherein the back ends of the elastic band are fastened to the trunk part with downwardly converging oblique seams.

7. A girdle according to claim 1 including a zip fastener at the front of the trunk part.

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UNITED STATES PATENT OFFICE  
CERTIFICATE OF CORRECTION

Patent No. 3,783,879 Dated January 8, 1974

Inventor(s) Otto Stalder

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In the heading of the patent the address of the assignee should be:

-- Furstentum, Liechtenstein --

Claim 4, line 2, "90", first occurrence, should be --80--.

Signed and sealed this 17th day of September 1974.

(SEAL)  
Attest:

McCOY M. GIBSON JR.  
Attesting Officer

C. MARSHALL DANN  
Commissioner of Patents