

July 1, 1969

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3,452,748

BACK BRACE GARMENT

Filed March 22, 1966

Sheet 1 of 2

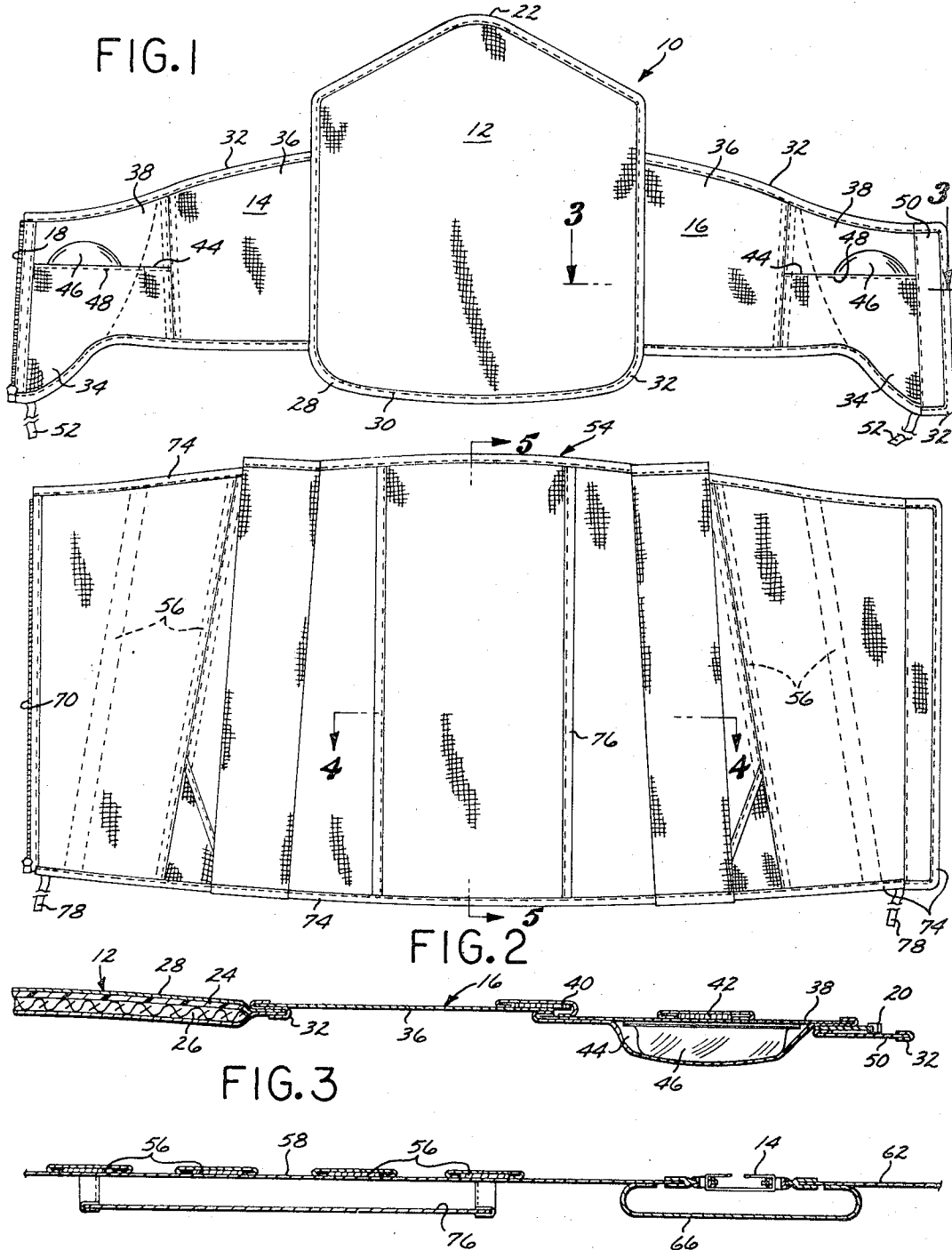


FIG. 4

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FIG. 6

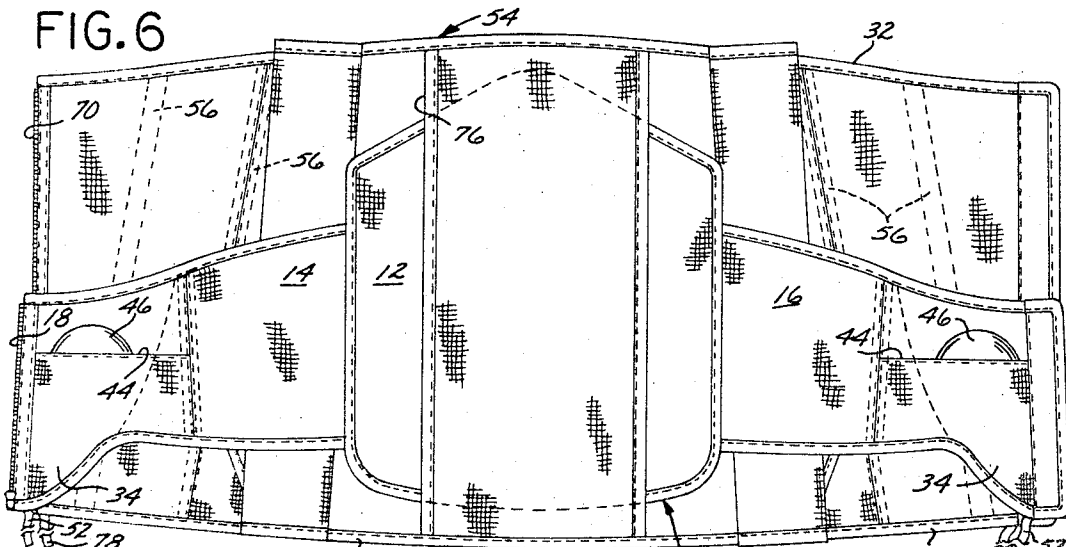


FIG. 7

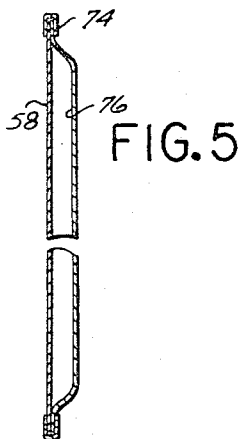
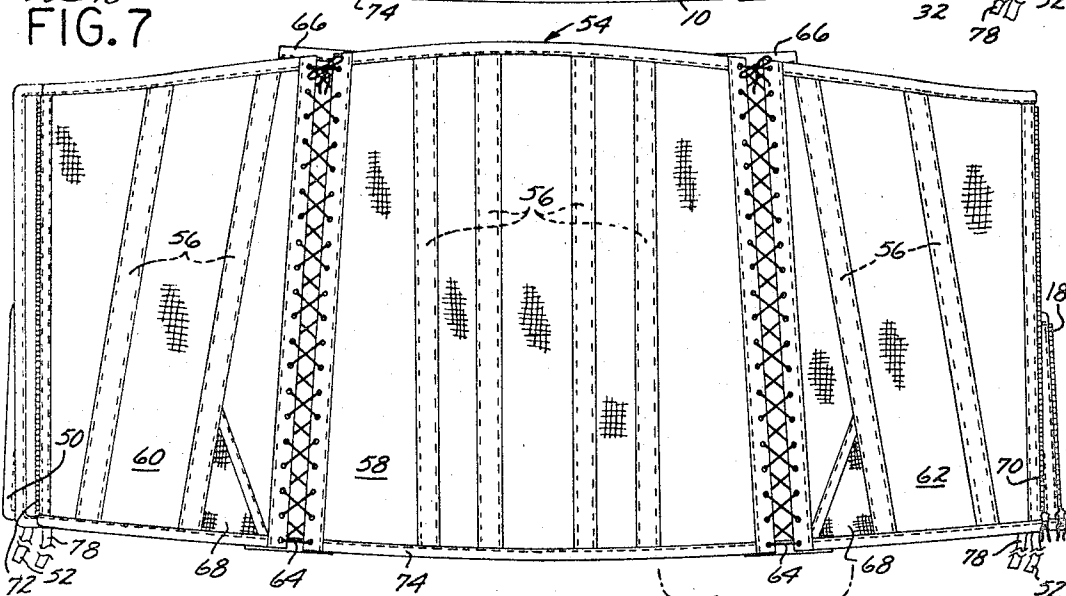


FIG. 5

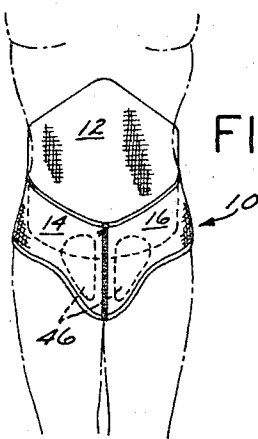


FIG. 8

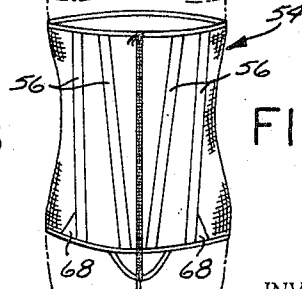


FIG. 9

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BACK BRACE GARMENT

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Filed Mar. 22, 1966, Ser. No. 536,389

Int. Cl. A61f 5/02

U.S. Cl. 128—78

3 Claims

ABSTRACT OF THE DISCLOSURE

A back brace garment including an inner section adapted to encircle the body and develop pressure against the sacrum and lumbar vertebrae regions. The garment also includes an outer section which overlies and cooperates with the inner section to constrain the upper portion of the wearer's body from twisting relative to his hips.

The present invention relates to a back brace garment, and more particularly to a garment which can be worn to support the sacrum and lumbar vertebrae regions, particularly following surgery.

It is an object of the present invention to provide a back brace garment of the aforementioned character which includes a back pad having a stiff supporting plate formed and arranged for bearing generally upon the sacrum and lumbar vertebrae regions. The comparatively large area of the supporting plate provides much improved support compared to previous trusses and like garments. The present back brace garment also includes elongated band portions which are made of continuous, inextensible material connected to the back pad and detachably and inextensibly connected together at their free ends in body-encircling relation. The continuous and inextensible character of the material of which the band portions are made enables supporting pressure to be developed on the back plate for immobilizing the sacrum and lumbar vertebrae regions.

The continuous, inextensible material of the band portions holding the back pad in position is in contrast with the lacing and like discontinuous, yielding structure widely used in the prior art. Lacing in the back is not practical to support the injured regions since the laced portions will generally gradually open at the bottom and close at the top, as during sitting.

Another object of the invention to provide a back brace garment of the aforementioned character in which the free extremities of the band portions include pockets for receiving and locating inguinal pads, whereby the garment may also be used for inguinal support. The use of pockets permits easy substitution of different sizes of inguinal pads, according to the particular need.

Yet another object of the invention is to provide a back brace garment of the aforementioned character in which the material is constituted of synthetic fibers, thereby providing a garment which holds its shape, is light weight in relation to its strength, is relatively smooth to thereby prevent skin marks or abrasions on the user, and is virtually inextensible.

A further object of the invention is the provision of a back brace garment of the aforementioned character which can be used alone or in combination with an outer supporting garment or band. The previously mentioned garment is particularly suited for use by patients undergoing post-operative care. However, when the patient leaves the hospital or his sick bed, it is desirable to further support the patient's back to prevent bending and twisting in the sacrum and lumbar vertebrae regions. Accordingly,

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a related object of the invention is to provide a garment which is adapted to be inserted within or otherwise detachably associated with an outer band of inextensible material. The band includes vertically oriented stays and is adapted to encircle the body and cover all portions of the body throughout the length of the sacrum and lumbar vertebrae regions covered by the back pad. With this arrangement, the wearer is constrained against both bending and twisting in the supported regions.

Another object of the invention is the provision of a back brace of the aforementioned character which is relatively inexpensive, easily manufactured, and characterized by a comparatively long service life.

Other objects and features of the invention will become apparent from consideration of the following description taken in connection with the accompanying drawings, in which:

FIG. 1 is a front elevational view of the back pad and the band portions utilized for holding the back pad in position upon the wearer;

FIG. 2 is a front elevational view of the outer band which is adapted to receive and locate the structure illustrated in FIG. 1;

FIG. 3 is an enlarged detail view taken along the line 3—3 of FIG. 1;

FIG. 4 is an enlarged detail view taken along the line 4—4 of FIG. 2;

FIG. 5 is a view taken along the line 5—5 of FIG. 2, portions being cut away for brevity;

FIG. 6 is a front elevational view of the structure of FIG. 1 carried by the structure of FIG. 2;

FIG. 7 is a rear elevational view of the structure shown in FIG. 6;

FIG. 8 is a perspective view of the structure of FIG. 1 as it would be worn by a user; and

FIG. 9 is a perspective view of the structure of FIG. 6 as the same would be worn by a user.

Referring now to the drawings, and particularly FIGS. 1, 3, and 8, there is illustrated a back brace garment 10 according to the present invention and comprising, generally, a back pad 12; elongated band portions 14 and 16 each connected at one end to an opposite side of the back pad 12; and zipper sections 18 and 20 for detachably and inextensibly connecting the free ends of the band portions 14 and 16 together.

The back pad 12 is generally rectangular in configuration, but includes an upward extension or apex portion 22. The pad 12 is slightly curved throughout its inner surface to better fit the lower back, and includes a stiff supporting plate 24 made of metal or relatively inflexible plastic or the like. A resilient pad 26 overlies the inner surface of the plate 24 and is made of any suitable cushioning material, such as foam rubber, polyurethane foam material, or a form of cloth cushion.

The back pad 12 is completely covered by an envelope of non-stretchable or inextensible material, preferably synthetic fiber material such as a double-thickness nylon parachute cloth. Such materials are preferred since they tend to hold their shape, are light in weight for their strength, are sufficiently smooth so that the wearer does not suffer skin marks or abrasions, and are virtually inextensible or stretchable.

As best viewed in FIGS. 1 and 3, the double-thickness material 28 covers the front and back of the pad 26 and plate 24, respectively, and the free margins of the material 28 are secured together about the periphery of the pad and plate by peripheral stitching 30 and welting 32. The band portions 14 and 16 are also connected to opposite side edges of the back pad 12 by the stitching 30.

The lower edge of each band portion 14 and 16 is hori-

zonally oriented adjacent the pad 12 but at its extremity extends downwardly to form a depending inguinal section 34. The upper edge of each band also extends generally downwardly from the pad 12. Thus, the portions 14 and 16 extend about the wearer's hip, underlie the abdomen, and terminate adjacent the inguinal regions.

Each band portion is constituted by a pair of adjacent panels 36 and 38 made of the material 28 and stitched together at their side edges in any suitable manner.

An elongated, substantially vertically oriented stay or stiffener 40 is stitched in position adjacent the juncture of each pair of the panels 36 and 38, as best seen in FIG. 3, and a similar vertically oriented stiffener 42 is stitched into position upon each of the panels 38. The four stiffeners 40 and 42 prevent buckling of the structure of the garment 10.

An overlying layer of the material 28 is stitched at its side and lower edges to each of the inguinal sections 34, being left open at the top to define a pocket 44. A pair of inguinal pads 46 made of any suitable cushioning material are inserted in the pockets 44 for engagement with the inguinal regions of the wearer. The pads 46 are easily removable from the pockets 44 but are preferably secured in place by a line of stitching.

The free ends of the band portions 14 and 16 mount complementary sections 18 and 20 of a usual and conventional zipper. A cover strip 50 is stitched onto the band portion 16 so as to underlie the assembled zipper sections 18 and 20 and protect the wearer against abrasion and other irritations from the zipper.

The garment 10 is particularly useful in the postoperative care of patients having lower back surgery, although with the inguinal pads 46 it can also be used for hernia support. In most types of back surgery, such as spinal fusion or laminectomy, it is extremely important that the affected vertebrae be maintained in a completely immobilized state. When properly fitted, the garment 10 does just that by developing controlled support at the affected areas. Once the free ends of the band portions 14 and 16 are connected by the zipper, adequate supporting pressure is developed at the back pad 12. In addition, by utilizing usual leg ties 52, the inguinal sections 34 of the garment can also be urged into pressure engagement with the inguinal regions. The removable character of the pad 46-pocket 44 arrangement permits pads of various sizes to be quickly and easily substituted if necessary.

Ordinarily the garment 10 is used, as described above, after surgery and during the period the patient is in bed. This permits the patient to be rolled on the bed or otherwise moved to a limited extent. However, when the patient is ready to walk, the garment 10 is preferably used in conjunction with the outer supporting band 54 illustrated in FIGS. 2, 4, 7, and 9.

The band 54 is preferably made of the same material 28 as the garment 10, and is effective to receive the garment 10 to support it in position, and is further effective to substantially prevent bending and twisting in the sacrum and lumbar vertebrae regions.

The band 54 is substantially uniform in width and overlies the anterior portions of the wearer's body opposite the back regions covered by the back pad 12. That is, the band 54 covers the sides and front of the user from a horizontal plane beginning approximately at the hip and extending to a horizontal plane passing generally through the thoracic area.

The outer supporting band 54 includes a plurality of generally vertically oriented stays or stiffeners 56 suitably stitched along the length of the band 54 to constrain the wearer against both bending and twisting movements in the supported region of his back.

The band 54 is made in three sections to enable it to be circumferentially tightened upon the wearer, a central section 58 being connected at its side edges to a pair of adjacent side sections 60 and 62 to protect the wearer from possible irritation and abrasion.

Suitable resilient material, such as two-way stretch elastic material or others well known in the art, is stitched in triangular panels 68 adjacent the lower margin of the outer supporting band 54 to thereby facilitate walking and sitting by the user.

The free edges of the outer supporting band 54 are closed together by cooperating zipper sections 70 and 72.

Welting 74 is stitched to the various edge margins of the outer supporting band 54 for the sake of appearance and also to provide protection against possible abrasion.

The garment 10 is carried by the outer band 54 through a sleeve 76 which is defined by stitching a substantially rectangular section of material 28 onto the inner face of the central section 58. The upper and lower edges of the section are sewn in place but the side edges are left unstitched to define the sleeve 76 through which the back pad 12 of the garment 10 is transversely slidable.

With this arrangement the garment 10 can be worn in the hospital or in bed during post-operative care. When the patient becomes ambulatory, the garment 10 is then merely slipped through the sleeve 76 and zipped into place upon the wearer. The wearer then zips the band 54 onto himself, in overlying position relative to the garment 10. This not only insures proper location of the garment 10 in proper position, but also prevents bending and twisting of the wearer in the area supported by the pad 12. In addition, a pair of usual leg ties 78 can be employed to prevent possible "riding-up" of the band 54 and the garment 10.

The continuous and inextensible character of the material out of which the garment 10 and band 54 is made makes bending and twisting movements of the supported regions virtually impossible, as compared to the ineffective belts and the like utilized in the prior art. To provide the best support, the garment 10 and band 54 are preferably custom-fitted to the wearer, and the back plate 24 molded to the contour of the wearer's back.

Various modifications and changes may be made with regard to the foregoing detailed description without departing from the spirit of the invention or the scope of the following claims.

I claim:

1. A back brace garment comprising:

a back pad having a stiff supporting plate formed and arranged for bearing generally upon the sacrum and lumbar vertebrae regions;

elongated band portions each made of continuous inextensible material, connected at one end to said back pad, and being sufficiently wide to overlie the wearer's hips, abdomen, and inguinal regions;

means for detachably and inextensibly connecting the free ends of said band portions together in body-encircling relation for developing supporting pressure on said plate, hips and abdomen to thereby tend to immobilize said sacrum and lumbar vertebrae regions and to tend to prevent swiveling of the hips and distension of the abdomen;

a body-encircling outer band adapted to overlie said back pad and said band portions, said outer band being made of inextensible material and of substantially uniform width to overlie the anterior portions of the wearer's body opposite said sacrum and lumbar vertebrae regions, said outer band having a plurality of vertically oriented stays constraining the wearer against bending in said regions;

and means for detachably connecting the free ends of said outer band together to thereby press upon and maintain said back pad in position and constrain the upper portion of the wearer's body from twisting relative to his hips.

2. A back brace garment according to claim 1 wherein said opposite ends of said band portions include inguinal pad means, and further include leg ties for pressing said pad means inwardly in the inguinal region.

3. A back brace garment according to claim 2 wherein

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said band portions include integral pockets into which said pads are insertable and removable to thereby accommodate different sizes of said pads.

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U.S. Cl. X.R.

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