June 9, 1942. L. M. REHTHALER 2,285,612

SACROILIAC AND ABDOMINAL SUPPORTER

Filed Dec. 2, 1939

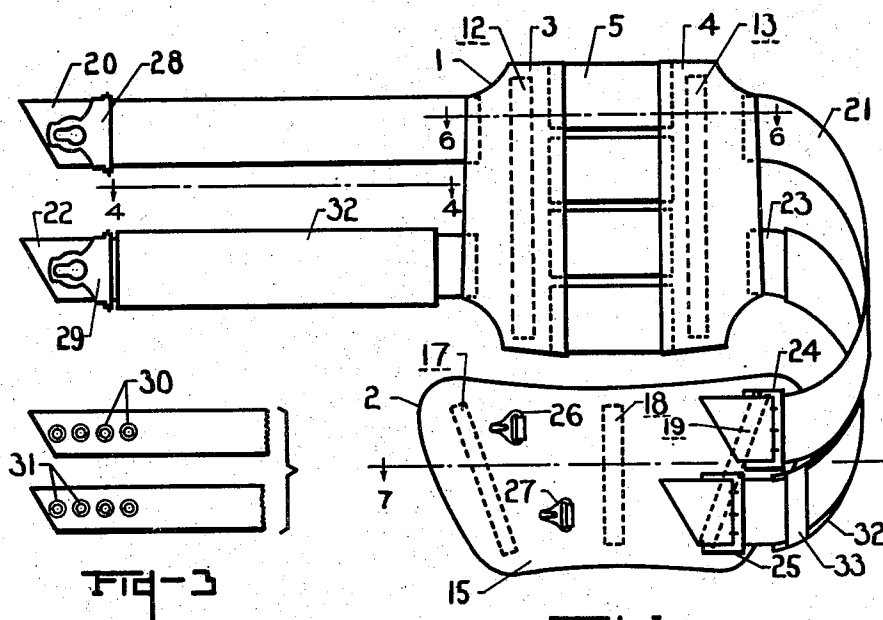


FIG-1

FIG-3

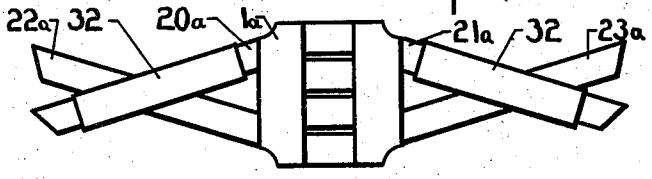


FIG-2

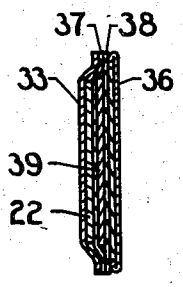


FIG-5

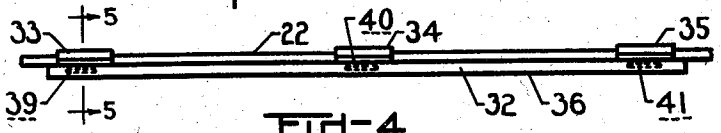


FIG-4

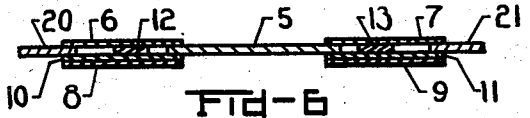


FIG-6

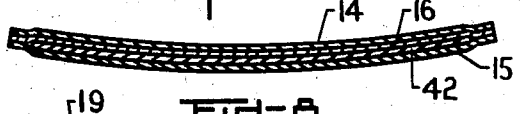


FIG-8

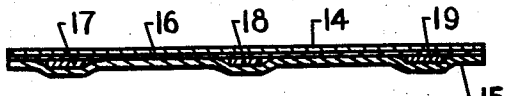


FIG-7

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SACROILIAC AND ABDOMINAL SUPPORTER

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5 Claims. (Cl. 128—96)

The present invention relates broadly to supporters, and in its more specific phases to supporters employed in the treatment of sacroiliac pain, enteroptosis, and like ailments, as well as for hernia, rupture, operation incision support, and for all other purposes for which supporters of this character are or may be used.

Back pains, commonly referred to as lumbago, may, in most cases, be more properly referred to as sacroiliac sprains. Enteroptosis and pregnancy are common causes of abnormal strains tending to tip the upper portion of the ilium forward with increase of the sacrovertebral angle with the last lumbar vertebra. This places abnormal tension on certain of the ligaments joining the sacrum to the hip or iliac bones, as well as the last lumbar vertebra, and such may cause these bones to be pulled out of perfect alignment necessary for painless articulation. The sacral, and other nerves in the sacroiliac portion of the body, may also be pinched, compressed, or stretched under these conditions to further accentuate the sensation of pain. Under conditions involving back pains of the lumbago type, it has been common practice to prescribe a short rather stiff girdle with thigh or perineal straps to hold same against creeping upward. Straps of this nature cause great discomfort due to their cutting tendency, and it is well recognized that patients sometimes prefer to suffer back pains rather than to use girdles or supporters with these straps. It has also been standard practice to provide lumbago treatment girdles or supporters with a pad at the center of the back where the central ridge of the pad will press against the patient's back at the lumbar and sacrum area. This type of treatment overlooks the fact that forward tipping of the upper end of the sacrum, which in some cases may be referred to as lordosis, is commonly the cause of the pain, and to accentuate this tipping by pressure through the use of a central back pad is fundamentally wrong. This pressure exerted by the central pad also causes discomfort when the patient sits down in a chair and trys to lean back. A better procedure is to eliminate the central back pad entirely and use a supporter which has relatively smooth back and front panels joined by adjustable straps. Preferably, the back panel has cushioned side members joined together in spaced apart relation with short pieces of webbing anchored between the back face of the back panel and the cushioning portion thereof. This construction removes direct pressure over the center of the sacrum and lower vertebra, and commonly gives noticeable immediate relief from pain. Such a device supports the abdomen, thus relieving part of the tension which tends to displace the sacrum, and at the same time, the straps joining the front and back panels exert side pressure on the hip or ilium bones to give them support at the points of their articulation with the sacrum, a thing which frequently results in immediate relief where the supporter of the present invention is used. It was with the above difficulties and problems in mind that the present invention was devised.

Accordingly, among the objects of the present invention is the provision of a supporter particularly adapted for use in the treatment of enteroptosis and sacroiliac pain.

Another object is to provide a supporter having front and back panels connected by straps in manner giving support to the abdomen and sidewise pressure on the sacrum by passing around the trunk of the patient's body at the point which includes the hip or ilium bones and sacrum.

Another object is to provide a supporter of non-upward creeping construction which does not require thigh or perineal straps.

A further object is to provide each of the straps which contact the groins of the patient with a padded member which prevents same from rolling or cutting at that point under conditions of use.

A still further object is to provide a pad on each of the groin contacting straps of the supporter which will prevent chafing due to stretching and retracting of the strap when made of elastic webbing and yet not interfere with such stretching and retracting action.

A still further object is to provide a simplified form of supporter which is exceptionally satisfactory in use and yet which is easy to manufacture and fit to the patient.

Still further objects and advantages of the invention will appear as the description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims, the annexed drawing and the following description setting forth in detail certain means for carrying out the invention, such disclosed means illustrating, however, but several of various ways in which the principle of the invention may be used.

In said annexed drawing:

Figure 1 is a diagrammatic perspective front view of one form of the present invention showing same as if it were applied to the human body with two of the straps still unfastened.

Figure 2 is a reduced size front elevational view of another construction of the back panel and straps usable as part of the supporter of the present invention, wherein the straps are mounted in crossed pattern.

Figure 3 shows straps with eye-type fasteners therein.

Figure 4 shows the upper edge of one preferred strap assembly as viewed along the line 4—4 of Figure 1.

Figure 5 is an enlarged section view taken along the line 5—5 of Figure 4.

Figure 6 is a section view of the back panel as taken along the line 6—6 of Figure 1.

Figure 7 is a section view of the front panel as taken along the line 7—7 of Figure 1.

Figure 8 is a section view of the front panel taken at a point corresponding with that of Figure 7, but showing a modified construction.

Referring more particularly to the drawing, the present invention involves the use of a back panel 1 and a front panel 2 suitably connected together for use as a supporter. The back panel, for instance, is preferably formed of side members 3 and 4 suitably joined together by means of webbing 5 or the like which may be of either elastic or non-elastic construction. The side members 3 and 4 of the back panel 1 are preferably of composite construction, each being provided with back face strips 6 and 7 (Figure 6) and front face strips 8 and 9, respectively. These front and back face strips may be made of any suitable material, but soft thin top grain leather is preferable for most purposes, since it is neat appearing, long wearing, and may be comfortably fitted to the patient. In preferred construction, cloth strips 10 and 11 are fastened in place under front face strips 8 and 9, and stays 12 and 13 are fastened thereto in conventional manner, for instance, by sewing or cementing. The cloth strips 10 and 11 may be of thin construction, but for most purposes, a thicker and softer piece of goods, such as relatively thick flannel, is preferable due to its cushioning effect and insulation of the individual stays from the patient's body. The stays 12 and 13, as well as the other stays hereinafter referred to, may be formed from any conventional stay material including whalebone, but for most purposes, steel stays are preferable, since they are thin and are not easily warped out of shape under continued use. For simplicity of understanding and showing of the details of the invention, the section views show the stays and other parts of the supporter in exaggerated proportion.

The front panel 2 in preferred form is substantially in the shape of an inverted truncated wedge with rounded corners. This type of construction permits the use of a front panel with a wider top which gives additional support without objectionable binding on the groins of the patient. Front panel 2 is also preferably of composite construction with a back strip 14 (Figure 7), front face strip 15, cloth strip 16, and stays 17, 18, and 19. These stays are also preferably fastened to the cloth strip 16 by sewing, cementing, or the like, and such cloth strip is preferably of relatively thick soft construction, such as flannel, for cushioning effect between the stays and the patient's body.

Instead of using narrow strip stays 17, 18, and 19, a sheet metal stay 42 (Figure 8) approximately of the same shape as front panel 2, but of a little smaller dimension to permit easy sewing of the edges of the assembly, may be used in like manner. The use of this sheet metal stay is exceptionally useful in the supporting of operation incisions and hernia in the area covered by front panel 2. The back and front face strips 14 and 15 may be of cloth or other suitable material such as flannel or thin soft top grain leather.

Referring to Figure 1, back panel 1 has a pair of upper straps 20, 21, and a pair of lower straps 22, 23 connected to the side edges thereof by sewing or other conventional fastening procedure. The ends of these upper and lower straps are fastenable to the front face 15 of front panel 2 in conventional manner as by means of hooking members, buckles, or the like. A combination of these which involves the use of buckles 24 and 25 on front panel 2 for anchoring the free ends of straps 21 and 23, and hooks 26 and 27 adapted to be engaged by conventional adjustable eye members 28 and 29 on the free ends of straps 20 and 22 may be used. This type of construction presents the advantages of quick fitting and removal of the supporter by the patient without the supporter coming apart after removal, and it also avoids accidental reassembly of the supporter with the front panel 2 in inverted position after accidental disassembly. The supporter, however, is obviously not limited to the use of a combination of buckles and hooks, since any conventional fastening means may be used and these include the entire use of buckles or the entire use of hooks.

The upper and lower straps may use eyelets 30, 31 (Figure 3) in the place of adjustable eye members 28 and 29, although the latter are preferable due to their ease of adjustability, and the fact that once having been adjusted, they remain in that adjustment until re-set, a thing which again facilitates quick on and off manipulation of the supporter with assurance that it will be identically hooked up each time.

The fitting of the supporter shown in Figure 1 involves the placing of same on the patient with the back panel 1 over the sacrum portion of his back, while the front panel 2 is held tightly against the lower front portion of his abdomen by means of straps 20, 21, 22, and 23 which in preferred construction are formed of elastic webbing. When the supporter is in proper position, the upper edge of the patient's hip or ilium bones will lie above the upper edge of lower straps 22 and 23 and below the lower edge of upper straps 20 and 21. Under these conditions, the upper straps 20 and 21 will remain in fixed position with practically no tendency to slip upward while the patient wearing the supporter walks or works. The lower straps 22 and 23, which are preferably of elastic construction, at the same time act to give and take under walking or working conditions, thus again avoiding the effect of forces which tend to push the supporter upward.

When the supporter is fitted as above described, the lower straps 22 and 23 closely follow the groins of the patient—in other words, the creases at the junction of his trunk and thighs. Under these conditions, if the patient's activities and work require him to sit or stoop over a substantial portion of the time, the lower straps 22 and 23 tend to gradually take on a hollow or rope-like appearance. This causes

these lower straps to have an irritating or cutting effect at the groins. One important phase of the present invention is the provision of means for preventing this cutting effect, regardless of the length of time that the supporter is worn, or the type of work carried on by the patient. In preferred construction, this means consists of a non-roll member **32** which in preferred form is provided with loops **33**, **34**, and **35** (Figure 4) permitting same to be slid on and off of the lower straps **22** and **23** at will. This construction also prevents interference with the stretching and retracting of the lower straps when they are of elastic construction. The body contacting face **36** (Figure 5) of the non-roll member **32** may be of thin soft top grain leather if desired, or it may be of a soft flannelized piece of goods. The back face **37** of the non-roll member **32** is preferably made of a firm and relatively stiffer material such as non-stretch webbing, since this will give the member a firmer construction. One or more thick soft or flannelized strips **38** are preferably used between front contacting face member **36** and back face member **37** so that the non-roll member will produce a cushioned feeling to the patient wearing same. The non-roll member in this form remains substantially flat at all times, and is relatively satisfactory and efficient in use. A preferred construction, however, is one which involves the use of a plurality of short stays such as **39**, **40** and **41** which are located crosswise of the non-roll member and at spaced intervals. These stays may be sewed or cemented in place on the back face of one of the strips **38** and preferably that strip which is adjacent back face member **37**. In preferred construction, these stays are mounted crosswise of the non-roll member **32** at points coinciding with the location of loops **33**, **34**, and **35**. Construction in this manner presents the advantage of positively holding the strap in flat position at each loop of the non-roll member, and this again facilitates holding same flat in the spaces between loops with a minimum number of stays.

Where the supporter is assembled as shown in Figure 1, there is a tendency, particularly noticeable with fat people, for a ridge of flesh to protrude outward between each side pair of straps. To avoid this condition, the straps may be mounted in crossed position, as is shown in Figure 2, with the ends of the straps fastening to the front of front panel **2** in conventional manner such as is shown in Figure 1. With the supporter assembled in this manner, upper straps **20***a* and **21***a* will be the under straps and the ones which will closely follow the patient's groins. Where non-roll protectors are used in connection with a supporter constructed in this manner, they will preferably be placed on these upper straps **20***a* and **21***a* as shown.

A preferred size for the form of the present invention shown in Figure 1, where same is to be used by an adult, involves a back panel **1** which is approximately 6½ inches high and 7 inches wide intermediate of the upper and lower straps. The space between side members **3** and **4** is approximately 2 inches. Front panel **2** is approximately 4¼ inches high by 9 inches long at its largest dimensions. The upper and lower straps in preferred construction are made from 1½ inch heavy elastic webbing substantially symmetrically wastened to back panel **1** and spaced approximately 1⅜ inches apart. The length of these straps will depend upon the size of the patient who is to wear the supporter. Where the groin straps are 10 inches long, a convenient length for the non-roll protector is approximately 7½ inches.

Other modes of applying the principle of my invention may be employed instead of those explained, change being made as regards the article herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claims as my invention:

1. A supporter having front and back panels, straps joining said panels, two of said straps being groin straps, a non-roll member on each groin strap in position to contact the groin of the user under normal conditions of use, said non-roll members comprising front and back face members and at least one intermediate cushioning member, all of said members being fastened together at the edges thereof, narrow stiffening stays crosswise of each of said non-roll members at spaced intervals, and loops on the back face of each of said non-roll members adapted to receive one of said groin straps in flat position.

2. A sacroiliac and abdominal supporter, which consists of a back panel, said back panel having a pair of upright relatively narrow side members, the adjacent sides of which are approximately parellel, each of said side members having front and back face members, an intermediate soft cushioning member between said front and back face members, a longitudinal stay fastened to said cushioning member on the side thereof adjacent the inner side of the back face member of said back panel, relatively short webbing means for joining said side members in close but substantially spaced apart relation adapted to relieve pressure on the sacrum and adjacent spinal area in the space between said side members under normal conditions of use, a front panel, said front panel having front and back face members, an intermediate soft cushioning member between said front and back face members, stay means between said cushioning member and the front face member of said front panel, a pair of upper and a pair of lower elastic webbing straps fastened to the side edges of the back panel, means on the front face of the front panel for adjustably anchoring the free ends of said upper and lower straps, the lower pair of straps being spaced from the upper pair of straps between the front and back panels and acting as groin straps, and a padded and crosswise stiffened non-roll member fastened to the inner face of each of said groin straps by means of loops, said non-roll member being located on said groin straps so as to contact the groin of the user under normal conditions of use.

3. A sacroiliac and abdominal supporter, which consists of a back panel, said back panel having a pair of upright relatively narrow side members, the adjacent sides of which are approximately parallel, each of said side members having front and back face members, an intermediate soft cushioning member between said front and back face members, a longitudinal stay fastened to said cushioning member on the side thereof adjacent the inner side of the back face member of said back panel, relatively short webbing means for joining said side members in close but substantially spaced apart relation adapted to relieve pressure on the sacrum and adjacent spinal area in the space between said side members under normal conditions of use, a front panel, said front

panel having front and back face members, an intermediate soft cushioning member between said front and back face members, stay means between said cushioning member and the front face member of said front panel, a pair of upper and a pair of lower elastic webbing straps fastened to the side edges of the back panel, means on the front face of the front panel for adjustably anchoring the free ends of said upper and lower straps, each strap of the pair of straps joined to the upper portion of the side edges of the back panel crossing the corresponding strap of the pair of straps joined to the lower portion of the side edges of the back panel at a point intermediate of the front and back panels, the upper pair of straps acting as groin straps and passing inside of the said lower straps, and a padded and crosswise stiffened non-roll member fastened to the inner face of each of said groin straps by means of loops, said non-roll member being located on said groin straps so as to contact the groin of the user under normal conditions of use.

4. A device of the class described which comprises a front and a back panel, said back panel having a pair of upright relatively narrow side members, the adjacent sides of which are approximately parallel, longitudinal stays in said side members, cushioning material within said side members and in front of said stays, means for joining said side members in spaced apart relation so as to form a complete back panel with a narrow hollow recess in front of said joining means and extending from side member to side member to provide a pressure reduction area, said front panel having front and back face members, an intermediate soft cushioning member between said front and back face members, a relatively rigid sheet metal means between said cushioning member and the front face member of said panel, said sheet metal means underlying a major portion of the area of the front face member of said front panel and being of substantially truncated wedge shape with the narrow edge down, and upper and lower straps between said front and back panels for adjustably joining said panels together.

5. A device of the class described which comprises a front and a back panel, said back panel having a pair of upright relatively narrow side members, the adjacent sides of which are approximately parallel, longitudinal stays in said side members, cushioning material within said side members and in front of said stays, means for joining said side members in spaced apart relation so as to form a complete back panel with a narrow hollow recess in front of said joining means and extending from side member to side member to provide a pressure reduction area, said front panel having front and back face members, an intermediate soft cushioning member between said front and back face members, a relatively rigid sheet metal means between said cushioning member and the front face member of said panel, said sheet metal means underlying a major portion of the area of the front face member of said front panel and being of substantially truncated wedge shape with the narrow edge down, upper and lower straps between said front and back panels for adjustably joining said panels together, two of said straps being groin straps said groin straps overlying the groins of the wearer under normal conditions of use, and a roll-resisting stiffening means on each of said groin straps and adapted to lie in contact with the groin of the user throughout the area of said groin strap overlying the groin under normal conditions of use, said roll-resisting means comprising front and back members with stiffening stays crosswise thereof at spaced intervals, and means for joining one of said roll-resisting means to each of said groin straps.

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