United States Patent [19]

Berntson et al.

[11] **3,888,245**

[45] **June 10, 1975**

[54] **WEIGHTED SURGICAL BELT**

[76] Inventors: **E. Boyd Berntson,** 5101 Marsha St., Apt.135, Bakersfield, Calif. 93309; **Douglas Lemmons,** 4201 Columbus St., Apt. B, Bakersfield, Calif. 93306

[22] Filed: **Nov. 19, 1973**

[21] Appl. No.: **416,890**

[52] **U.S. Cl.** ..... **128/78;** 272/57 R

[51] **Int. Cl.** **A61f 5/02**

[58] **Field of Search** 272/57, 80; 2/311, 312, 2/319, 259, 260; 128/78, 75, 99, 95, 96

[56] **References Cited**

UNITED STATES PATENTS

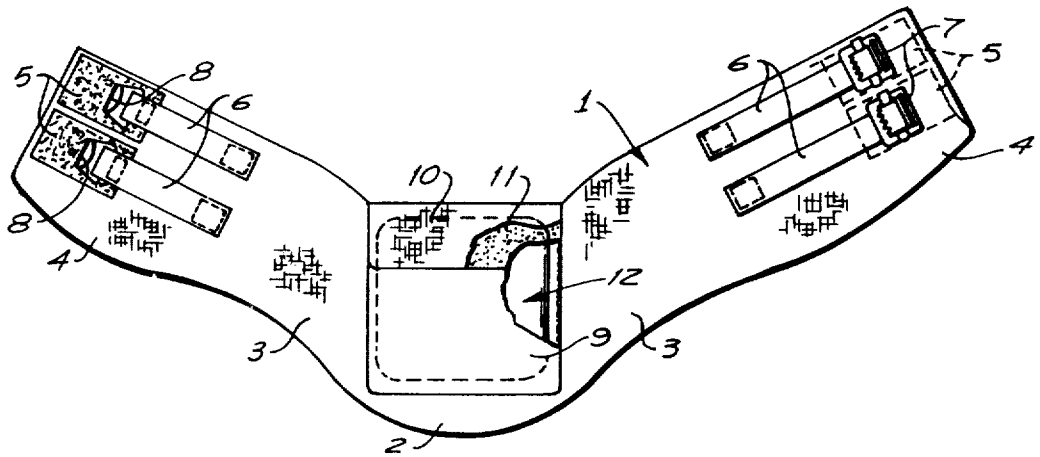
2,554,337	5/1951	Lampert	128/78 X
2,813,526	11/1957	Beebe	128/78
3,087,496	4/1963	Norman	128/78
3,374,636	3/1968	Mason	272/57 R
3,532,339	10/1970	Smith	272/57 R
3,751,031	8/1973	Yamauchi	128/75 X

Primary Examiner—Richard A. Gaudet
Assistant Examiner—J. Vasko
Attorney, Agent, or Firm—Lyon & Lyon

[57] **ABSTRACT**

A surgical belt for relief of certain lower back pains which includes a posterior portion having a pocket confronting the sacral and coccygeal vertebrae, opposed lateral portions which arch over the hip bones, and an anterior portion fastened in a conventional manner across the lower abdomen. The pocket contains a relativelly flat weight formed of a heavy metal, such as lead, to provide a pivotal force about an axis in the regions of the crests of the hip bones in a downward and anterior direction toward the sacral and coccygeal vertebrae so as to produce a corresponding movement of these vertebrae in a manner to straighten the lower back.

6 Claims, 6 Drawing Figures



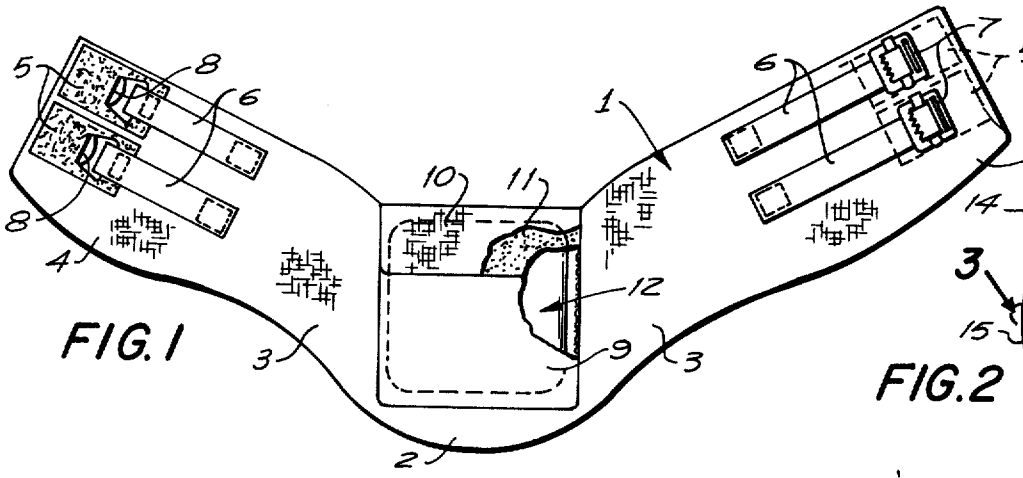


FIG. 1

FIG. 2

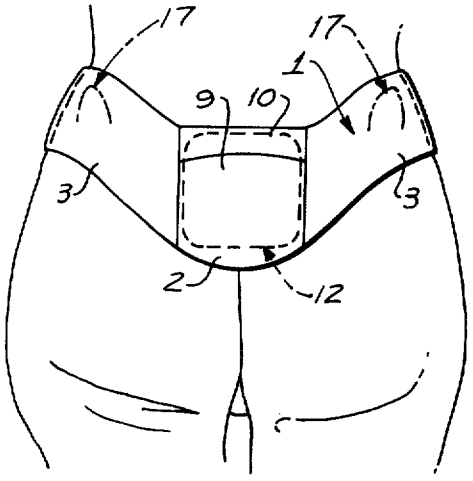


FIG. 4

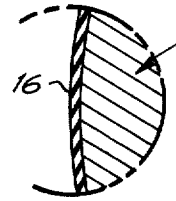


FIG. 3

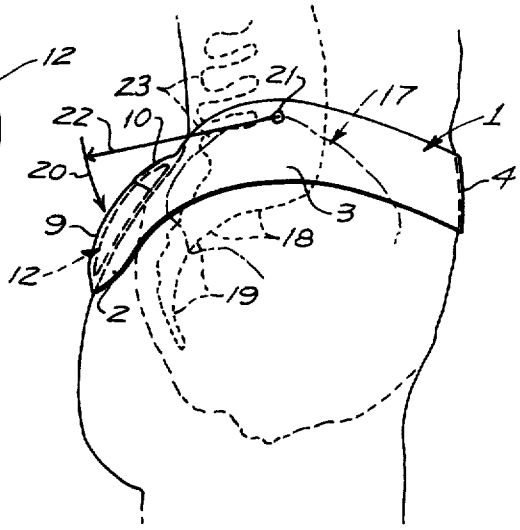


FIG. 5

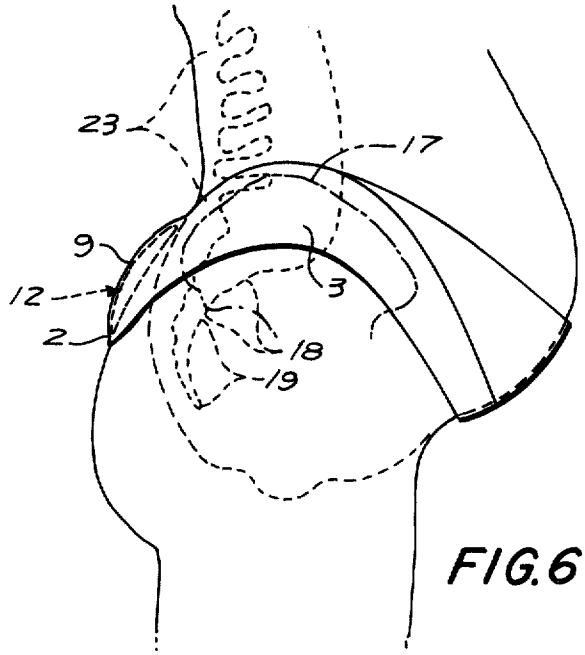


FIG. 6

WEIGHTED SURGICAL BELT

BACKGROUND AND SUMMARY OF THE INVENTION

Pain in the lower back is commonplace. Often the pain is occasioned by excessive curvature at the lower back in the region of the sacral and coccygeal vertebrae. Such excessive curvature is frequently due to excessive weight in the anterior pelvic region or merely to poor posture. Various surgical belts have been used on attempts to straighten the back by applying a constrictive force about the pelvic and lower abdominal region. Such belts, if effective to relieve back pain, often create discomfort in the anterior region.

The present invention overcomes the disadvantages inherent in past attempts to relieve pain in the lower back and is summarized in the following objects:

First, to provide a surgical belt which utilizes a weight member of metal, such as lead so supported in confronting relation to the sacral and coccygeal vertebrae as to exert a downward and anterial directed force urging such vertebrae toward a vertical position.

Second, to provide a surgical belt, as indicated in the previous object, which includes lateral portions so arranged as to fulcrum over the hip bones and a connecting posterior portion carrying the weight in such a manner that the weight pivots downwardly and anteriorly.

Third, to provide a surgical belt, as indicated in the other objects, which, provides a force in the manner and direction desired while minimizing the constrictive force about the body.

Fourth, to provide a surgical belt, an embodiment of which may be so constructed as to provide a lifting force against the lower abdomen of a pregnant woman while maintaining the desired corrective force against the lower vertebrae.

DESCRIPTION OF THE DRAWINGS

FIG. **1** is a plan view of the surgical belt when spread flatwise.

FIG. **2** is a typical sectional view of the weight member.

FIG. **3** is an enlarged fragmentary sectional view of the weight member taken within circle **3** of FIG. **2.**

FIG. **4** is a back view of the surgical belt as it appears when worn, adjacent portions of the human body being shown in outline.

FIG. **5** is a side view of the surgical belt when worn, adjacent portions of the human body being shown in outline and also indicating by broken lines portions of the back bone and hip bone.

FIG. **6** is a side view of a modified form of the surgical belt for use during pregnancy and indicating by outline adjacent portions of a pregnant woman.

The surgical belt includes a belt member **1** having a posterior portion **2** joined to upwardly curving lateral portions **3** which merge into anterior end portions **4.** The end portions **4** are provided with hook and loop fastener elements **5** such fastener elements being known by the trade name VELCRO. Alternatively or in addition to the fastener elements **5,** conventional straps **6** provided with buckles **7** and latch fittings **8** may be provided so that the belt member may be fastened about the lower abdomen or pelvic region.

The posterior portion **2** is provided with a pocket **9** which is relatively large and essentially square in configuration. The pocket is provided with a flap **10** which

is closed against the pocket by hook and loop fastener elements **11.**

The pocket **9** receives a high density weight member **12** preferably formed of lead. As shown in FIG. **2,** the weight member includes a back conforming inner side **13** relatively thin but rounded marginal portions **14** and a compound arched or essentially dome shaped outer side **15.** The weight member is encased in a yieldable covering **16** formed of rubber or other elastomeric material, as indicated in FIG. **3.** The mass of the weight member may range between 2 and 12 pounds. An optimum weight is in the order of 5 pounds.

The belt member is placed about the pelvic region in such a manner that the upper part of each lateral portion **3** overlies the hip bones **17,** the belt member curves downwardly therefrom and its posterior portion **2** and the pocket **9** confront the sacral and coccygeal vertebrae **18** and **19.** The anterior end portions **4** are dimensioned to fit snugly but not tightly across the lower abdomen and are secured together in a conventional manner by the hook and loop fastener elements **5** and the straps **6,** buckles **7** and latch fittings **8.** Except for FIG. **1,** the fastener means are omitted from the drawing to simplify the illustration.

The belt member which is formed of fabric is flexible. When the weight member **12** is placed in the pocket **9** the force exerted by the weight member is essentially in the direction of the arrow **20;** that is, the force is applied downwardly and anteriorly. The direction of this force is determined by an axis region **21** passing through the crests of the hip bones **17** which is spaced from the arrow **20** by a lever arm represented by the arrow **22.**

The pivotal force exerted by the weight member is in a direction tending to straighten the sacral and coccygeal vertebrae with respect to the vertebrae **23** above.

Medical description of the action of the Surgical Belt:

The pivotal traction force from this belt acts to force the pelvis to maintain its normal anatomical position in which the anterior superior iliac spines are in approximately the same frontal plane as the pubic tubercules.

This steady force acts much like the synergistic action of the Rectus Abdominus and External Cbliques pulling upward from their anterior insertion and the Gluteus Maximus pulling downard from its posterior insertion with the resultant force being rotational to hold pelvis in extension.

The pelvis being forced to hold its normal anatomical position allows a more normal distance between origin and insertion of the muscles which frequently exhibit the following defects: Anterior Abdominals overstretched and weak, Hip Flexors Unilateral or bilateral tightness pulling lumbar spine into more lordosis, Lumbar extensors tight and in spasm forcing lumbar spine into more hyperextension, Hamstrings tight.

Sprain to ligamentous structure or strain to muscle tissue usually in the acute stage usually require bed-rest and make standing and walking impossible, this pivot belt allows for earlier ambulation (must come from M.D.'s Judgement) by the unique stabilizing effect on the lumbar and sacral spine with the pelvis position properly, it minimizes excursion of lower vertebrae and pelvis when fatigue, pain, or sudden or incorrect movement is made in the up-right posture.

Preserves normal angle of inclination (130° to 160°) between lumbar and sacral spine. Checks tendency for excessive Lordosis posture which can result in the ver-

tebrae facets changing from their normal function which is to act as guides during vertebral movements to suddenly becoming weight bearing which can lead to mechanical blocking of movement and pain. Reduces stress force on lumbar disc's and thus, reduces nerve root irritation is some cases when a disc wall has weakened and is protruding upon a nerve root.

Reference is now directed to FIG. **6.** The force supplied by the weight member is particularly advantageous during the later conditions of pregnancy. In this case, the anterior end portions designated **24** are curved to a greater extent than in the previously described embodiment so as to underly the extended abdomen. Above the end portions there is provided a contoured supporting portion **25** preferably of elastic material so arranged as to minimize constraining pressure. Conventional fastener means such as suggested in FIG. **1,** but omitted from FIG. **6** are used to secure the belt in place. The posterior portion **2** and the lateral portions **3** in the regions of the crests of the hip bones is essentially the same as that previously described.

In each of the embodiments shown, the amount of force applied by the weight member is determined by its mass as modified by the pivotal force determined by the belt member. Thus, the weight of the weight member is selected to meet the needs of the patient. If substantial force is required to obtain the beneficial results, the size and hence the mass of the weight member is increased. Because of its shape, the weight member blends with the body contour so that the surgical belt is inconspicious when worn.

Having fully described our invention it is to be understood that we are not to be limited to the details herein set forth, but that our invention is of the full scope of the apppended claims.

We claim:

1. A surgical force applying means, comprising:

a. a weight member adapted to extend laterally of the sacral and coccygeal vertebraes to apply a distributed load, including a first side conforming essentially to the body surface, relatively thin margins, and an outwardly arched second side whereby the contour of the weight member blends with the body curvature; and

b. means adapted to extend over the lower back in confronting relation to the sacral and coccygeal vertebraes for fixing the weight member in position to exert a downwardly and anteriorly directed force on the sacral and coccygeal vertebraes.

2. A surgical force applying means, comprising:

a. a belt member dimensioned to encircle the pelvic region of the human body, the belt member including a posterior portion adapted to be placed in confronting relation to the sacral and coccygeal vertebraes, side portions adapted to arch over the hip bones, and anterior portions adapted to fit over the lower abdomen;

b. a high density weight member carried by the posterior portions of the belt member, the belt member being pivotable about an axis region passing through the crests of the hip bones whereby the weight member exerts a downwardly and anteriorly directed force on the sacral and coccygeal vertebraes.

3. A surgical force applying means as defined in claim **2,** wherein:

a. the belt member includes a pocket in its posterior portion for removably receiving the weight member.

4. A surgical force applying means as defined in claim **2,** wherein:

a. the weight member is formed of lead and weighs in a range between two and twelve pounds.

5. A surgical force applying means as defined in claim **2,** wherein:

a. the weight member extends laterally in opposite directions with respect to the confronting vertebrae to apply a distributed force to the back of the body and has a contour which blends with body curvature.

6. A surgical force applying means as defined in claim **2,** wherein:

a. the weight member is provided with a yieldable coating.

* * * * *