

[54] **SUPPORT BELT**  
 [76] Inventor: **Ira S. Lehman**, 1830 N.E. 197 Terrace, Miami, Fla. 33162  
 [22] Filed: **Aug. 8, 1974**  
 [21] Appl. No.: **495,649**

3,441,027 4/1969 Lehman..... 128/578  
 3,570,480 3/1971 Stubbs ..... 128/78

Primary Examiner—Robert W. Michell  
 Assistant Examiner—J. Yasko

[52] U.S. Cl. .... **128/96; 128/78**  
 [51] Int. Cl.<sup>2</sup> ..... **A61F 5/24**  
 [58] Field of Search ..... 128/96, 78, 578, 545, 541

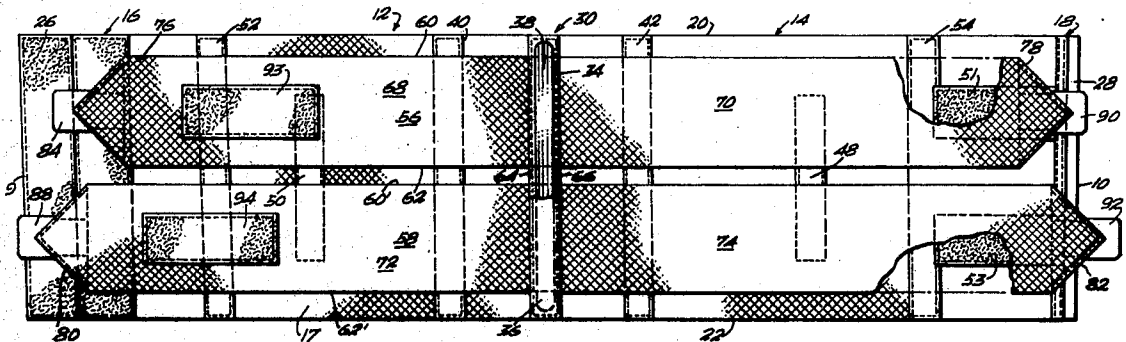
[57] **ABSTRACT**

A sized belt to fit the waist of a wearer which includes an elastic primary strip the ends of which are provided with Velcro fasteners to connect over the abdominal area and which includes a secondary band composed of a pair of strips connected to the central zone of the primary band and which overlap the abdominal area and are connected together and to the primary band by Velcro fasteners over the abdominal area to provide secure support.

[56] **References Cited**  
**UNITED STATES PATENTS**

2,104,699	1/1938	O'Dell.....	128/78
2,117,309	5/1938	Fritsch.....	128/78
2,596,765	5/1952	Dubner.....	128/578
3,434,469	3/1969	Swift.....	128/78

**8 Claims, 10 Drawing Figures**



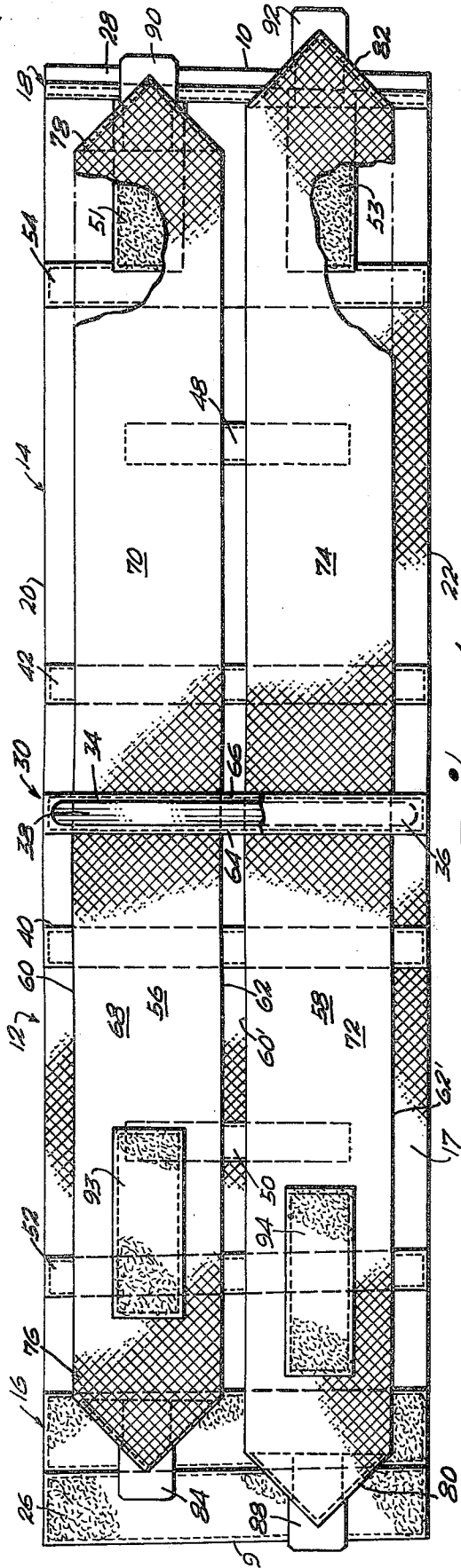


Fig. 1

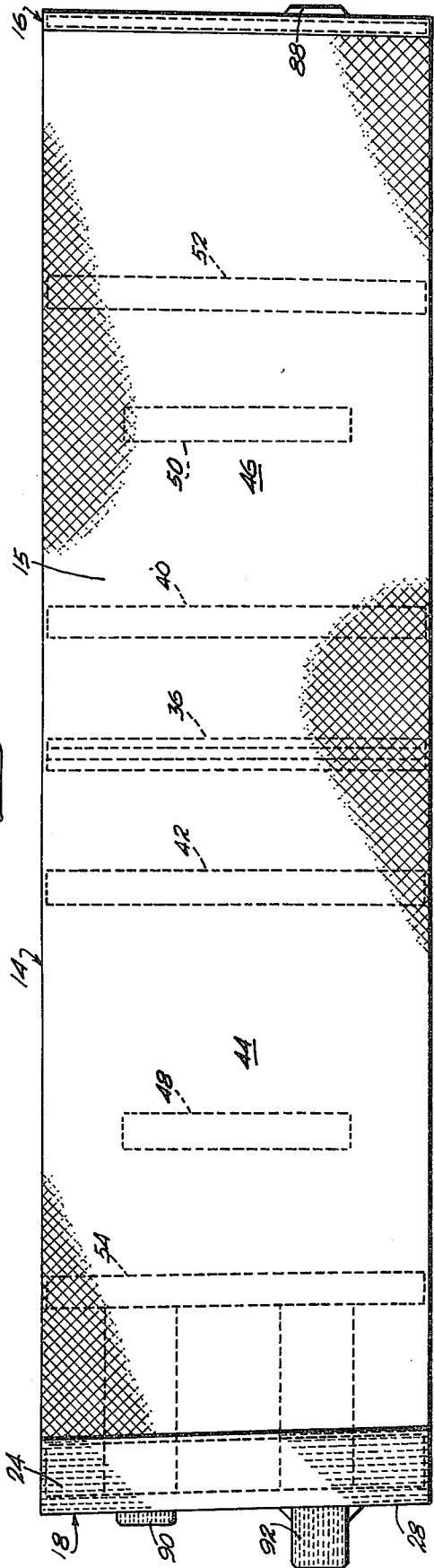
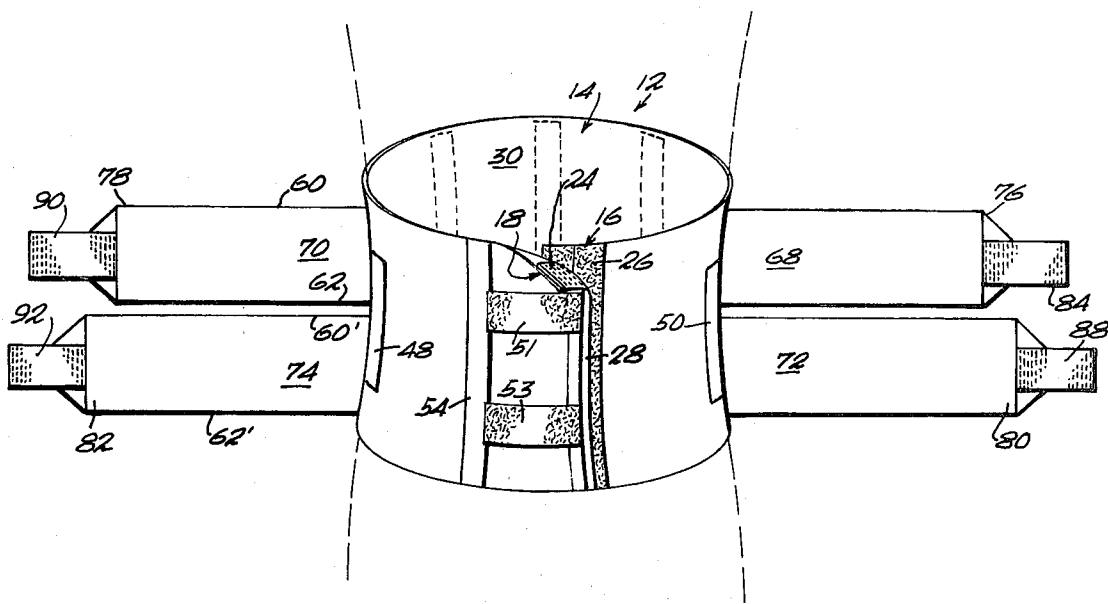
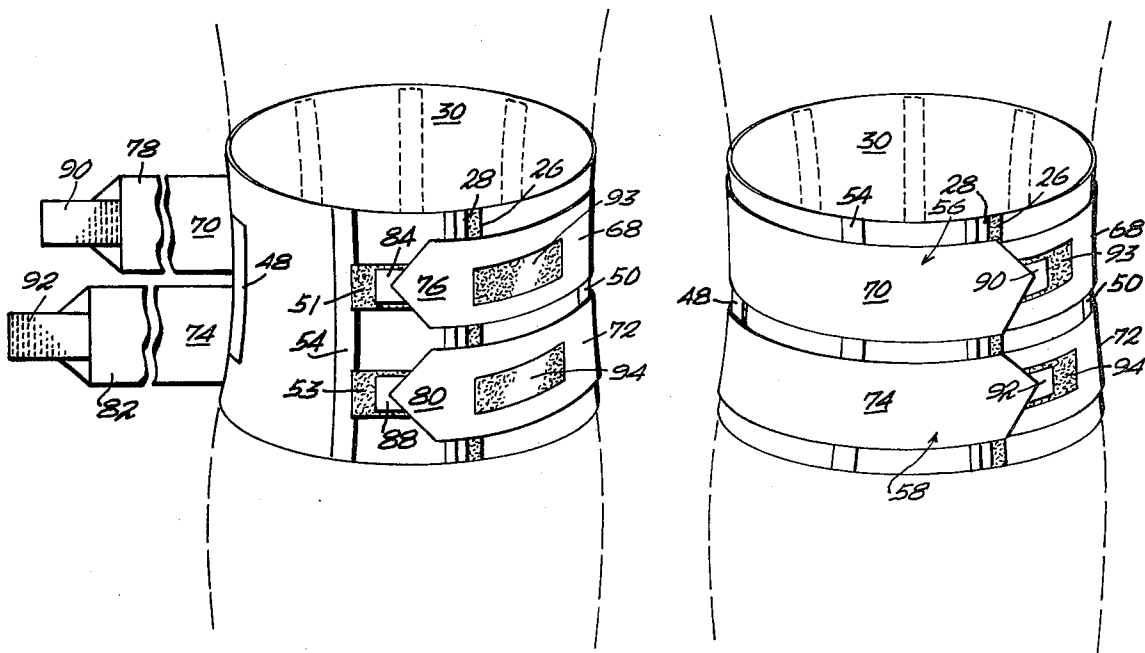


Fig. 2

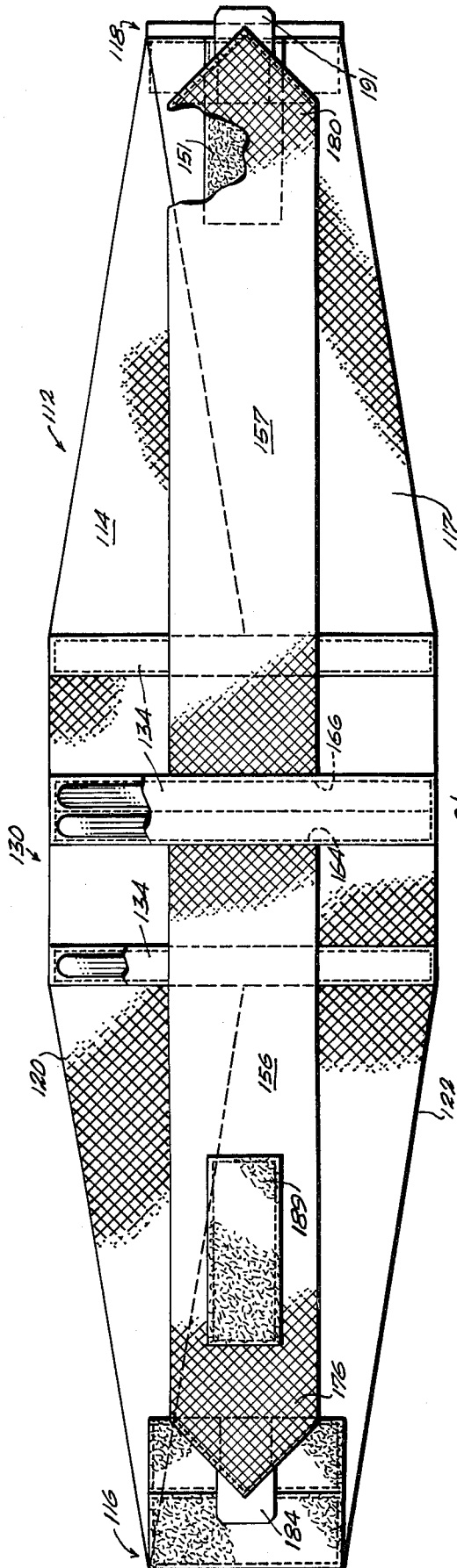


*Fig. 3*

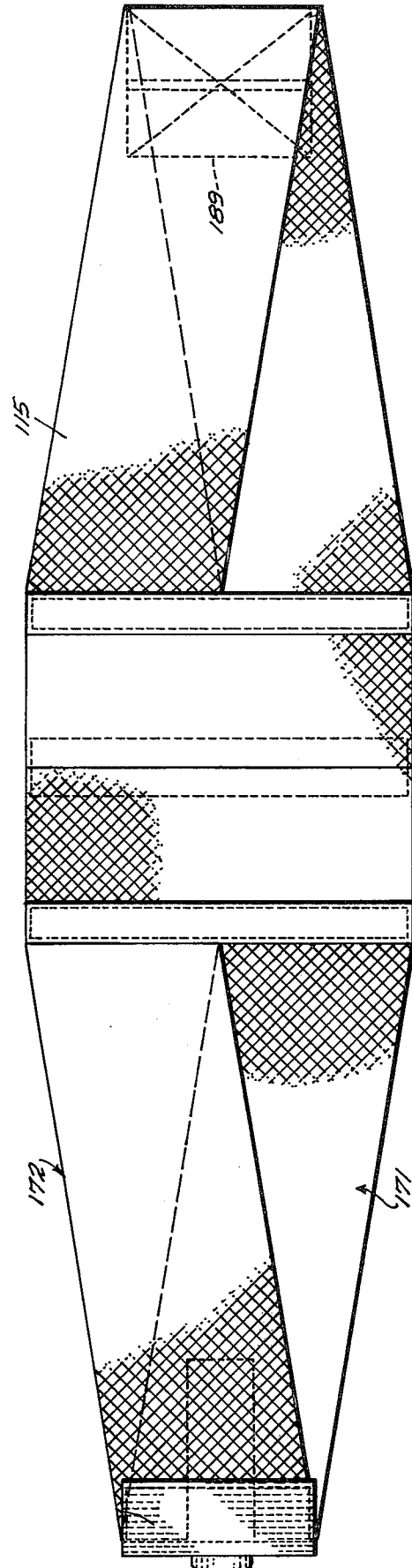


*Fig. 4*

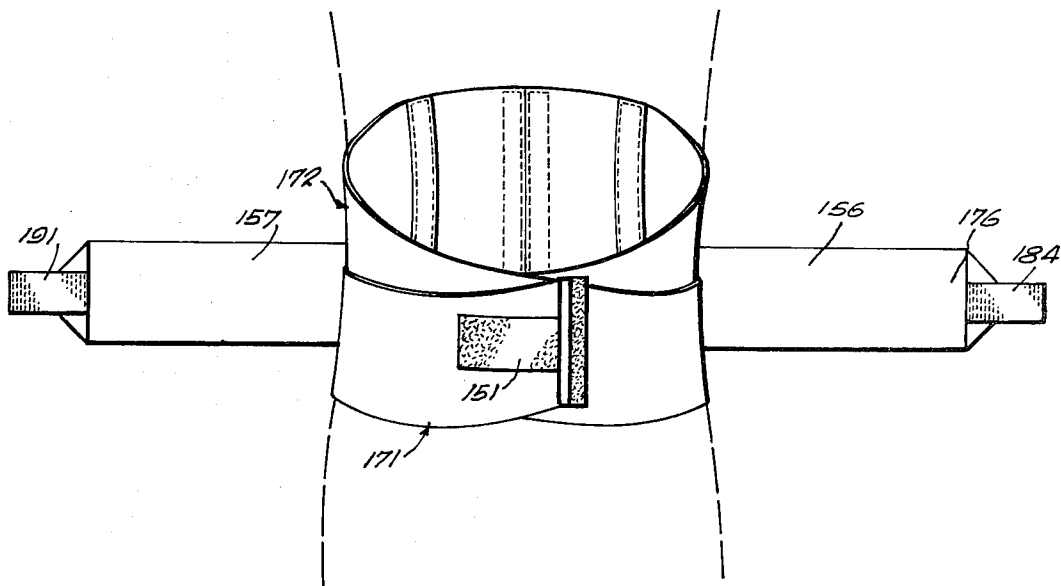
*Fig. 5*



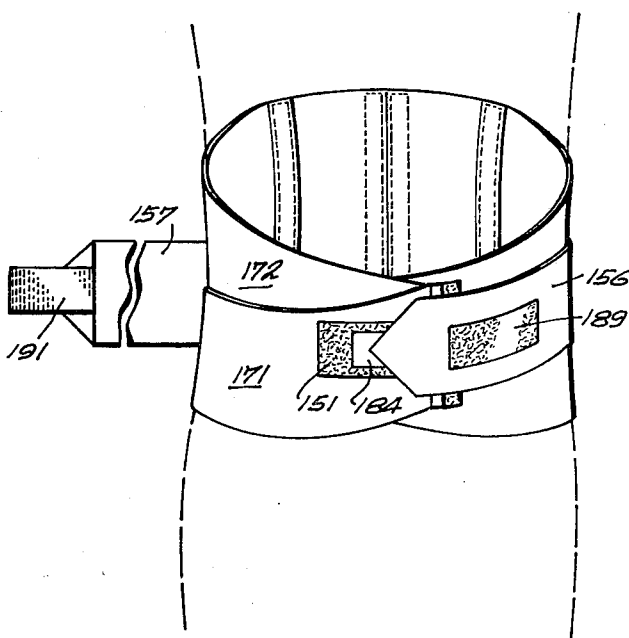
*Fig. 6*



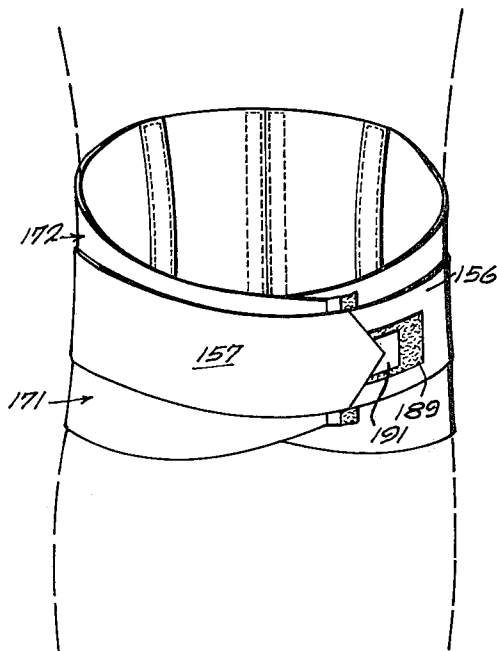
*Fig. 7*



*Fig. 8*



*Fig. 9*



*Fig. 10*

## SUPPORT BELT

### FIELD OF THE INVENTION

This invention relates to an abdominal belt.

### BACKGROUND OF THE INVENTION

As is perhaps well known, after an operation, the abdominal area is oftentimes weakened, sore and requires support to avoid pain such as by coughing or sneezing. The present invention provides a belt which supports the abdominal area securely and distributes the stresses and strains caused by body movements over a large area so as not to concentrate the forces exerted thereby and hence cause pain in any localized area. The present invention provides a support for the abdominal area of the wearer with a primary elastic belt or band and a secondary belt or band of elastic material which is secured to the primary belt in a zone of the primary belt which overlays the spine of the wearer and which is composed of two strips of a length such that when stretched they are adapted to extend around the body and over the abdominal area overlapping one another, with the result that great support is provided for the abdominal area.

### OBJECTS OF THE INVENTION

It is an object of this invention to provide an abdominal belt which provides secure support of the abdominal area which is adjustable and which belt is characterized by a first waist encircling elastic primary band of strip form the opposite end zones of which are overlapped and connected together by fastener means, such as Velcro, the zone of connection overlaying the abdominal zone; and which also includes a secondary elastic band means, either singular or dual, and composed of strip segments each of which segments which are secured at their respective proximal ends to the portion of the primary band which overlays the spine of the wearer and which are extendable, elastically so as to overlap the abdominal area and be connected together, and adjustable as to length within their elastic range, and which construction as described herein provides a secure overlocking of the primary band and secondary band means to adjustably support the abdominal area.

Generally it is the object of this invention to provide a support belt which distributes stresses and strains about the midriff of a wearer supporting the back relative to the abdominal area and providing a secure adjustable easy to apply, comfortable support, which is especially useful, for example, after surgery when muscles are sore and other types of abdominal conditions which give pain when stresses and strains are concentrated in a given area and which effectively distributes the loads over larger areas so as to reduce discomfort from such ailments.

Generally speaking, it is an object of this invention to provide an abdominal support belt for a wide range of conditions such as ventral hernia, ptosis, a prolapsed abdominal wall because of overweight or other factors, or other pathological conditions, which require mechanical realignment of the abdominal zone of a person in order for the person with the ailment to have function and comfort approaching that of a normal person.

It is an object also, to provide a belt of the type described which is adapted to be readily adjusted to accommodate changes in the condition of the wearer as

corrective steps bring results or changes in his condition.

Accordingly, this invention provides a primary body encircling abdominal belt through which an adjustable primary realigning force may be applied to the abdominal area and, subsequently, through a secondary band means carried on the primary band, the forces or tension applied by the belt may be increased or decreased readily to accommodate relatively minor changes that take place as a person wears the belt, such as a heavy meal, exercise, or the like.

### DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view of the outside surface of a belt constructed in accordance with this invention;

FIG. 2 is a view similar to FIG. 1 illustrating the inside surface of the belt shown in FIG. 1;

FIG. 3 is a view of the belt in an initial step of applying it about the girth of a wearer;

FIG. 4 is a view illustrating intermediate steps of applying the belt about the girth of a wearer; and

FIG. 5 is a view illustrating the belt fully applied to a wearer;

FIG. 6 is an outside surface view of a second embodiment of the instant invention which has been partially broken away to illustrate the same;

FIG. 7 is a view similar to FIG. 6 showing the inside of the belt;

FIG. 8 is a perspective view illustrating the application of the belt shown in FIG. 6 about the girth of a wearer;

FIG. 9 is a view of an intermediate step in the application of the belt of FIG. 8; and

FIG. 10 is a view illustrating the full application of the belt shown in FIGS. 8 and 9.

### DETAILED DESCRIPTION OF THE DRAWINGS

Referring to the drawings wherein like reference characters designate like or corresponding parts throughout the several views, the numeral 12 designates an elastic support belt which, when stretched longitudinally, is sized and adapted to fit about the waist of a wearer, see FIG. 5, and which belt includes a primary band provided with secondary adjustable overlapping band means, the latter to be explained more fully following the description of the primary band.

Referring to the primary band of the preferred embodiment of FIGS. 1 through 5, it is seen that it is composed of an elastic primary band 14 comprising a strip having end zones, a first end zone 16 and a second end zone 18 and opposing longitudinal edges 20 and 22. The primary band has an inside surface 15, see FIG. 2, and an outside surface 17, see FIG. 1. The primary band 14 is of a length between the end zones which is less than the girth of the wearer and stretchable longitudinally within the elastic range of the material to a length greater than the girth of the wearer for overlapping of the second end zone 18 over the front end zone 16, see FIG. 3. Mutually cooperating means are provided on the confronting faces of the end zones for fastening the ends together and holding the primary band in a stretched condition about the waist of a wearer; these means preferably are fastening means commercially known as "Velcro", the type wherein an array of a multitude of hooks of relatively rigid nylon or equivalent material are provided on a pad 24 on the inside surface of the second end zone 18 and a pad 26 of soft nap loops constituting keeper means provided on

the outside surface of the first end zone **16**. Preferably, the pad **26** of loops extends farther lengthwise, that is longitudinally of the belt, from the terminal edge of the end zone **16** than does the pad **24** of hooks on the second end zone **18** to provide an adjustment means of the stretch of the belt, that is to provide adjustment of it within its elastic range between its normal unstretched length and its practical elastic limit.

Also, in the preferred embodiment the margin **28** of the hook pad extends outwardly of the second end zone **18** to provide a relatively thin tab means which can be easily raised to initiate peeling of the Velcro pads to separate them and to remove the belt's primary band. Also, when the belt is being worn, this relatively thin tab, in comparison to the relatively thick belt band, resists peeling because it extends outwardly of the relatively thick end of the belt band and therefore keeps in engagement with the nap and hence remains securely fastened. In the preferred embodiment the edges **9** and **10** of the end zones may be tapered vertically inwardly, that is converging, slightly between the upper edge **20** and the lower edge **22**.

The primary band preferably includes in the central zone **30**, that is the zone between the end zones, reinforcement means or vertical stay means. More specifically, if reinforcement is desired, a center patch may be secured to the belt primary band by peripherally stitching, as at **34**, an elongate canvas patch **36** to the outside belt surface. Such a patch extends between the side edges **20** and **22** and may define a pocket to receive vertical stay means **38** or a supplemental reinforcing member of thin spring steel. Additional pocket means **40** and **42**, similarly constructed may be provided outboard of the central pocket. The pockets may be open for access to insert a relatively rigid vertically oriented stay which can be replaced by a thinner stay, depending upon the comfort preferences of the wearer.

In the intermediate zones **44** and **46**, which are the zones of the band outboard of the central belt zone and between that zone, and the end zones, roll preventing means may be provided in the form of pockets **48** and **50** on the exterior surface which extend about half of the distance on either side of the longitudinal centerline of the belt toward the side edges **20** and **22** and which, when holding a stay in each, resists curling of the longitudinal edges of the belt towards one another. The end zones may also be provided with pockets **52** and **54** extending vertically between the side edges for receiving stays.

For a purpose which will be apparent with respect to the following description of the secondary band means, fastener means to cooperate with companionate fastener means on the secondary band are provided on the primary band preferably in the form of Velcro fastener means provided on the outside surface of the second end zone of the primary band. In the preferred embodiment of FIGS. 1-5, now being described, an upper and a lower nap loop pad **51** and **53** are provided on the outside surface of the second end zone and extend longitudinally away from the end **10** and toward the end **9**. These pads are adapted to be connected to J-hooks on the secondary band as seen in FIG. 4.

Generally with continuing reference to FIGS. 1-5, the secondary band means are provided and comprise elongate strips fastened at their respective proximal ends to the central zone of the main or primary band and with their respective distal ends overlaying an associated end zone of the main belt; and when the belt is

applied to a person the distal ends are generally diametrically spaced from the reinforced central zone or back of the belt and arranged such that these distal ends of the band strips overlay one another in an overlapped relation as is seen in the drawings, FIGS. 4 and 5.

In the specific embodiment of FIGS. 1 through 5, the secondary band means comprise an upper and a lower elastic band **56** and **58**. Both of the secondary bands are in the form of a pair of oppositely extending strips of elastic fabric material and the band strips are characterized by a longitudinally extending upper and lower edge **60** and **62** and **60'** and **62'**. Each secondary band is centrally secured, as by stitching, see at **64** and **66**, to the central zone of the primary band and extend therefrom in overlaying relation of the outside surface of the primary band. For purposes of the following description, the upper band may be considered as being composed of a first and a second strip segment **68** and **70** while the lower band may be considered to be composed of a first and a second strip segment **72** and **74**. The segments or strips of the upper and lower bands are of a normal length extending from the attachment to the primary band to their respective distal ends **76** and **78** and **80** and **82** which is about equal to and, preferably, slightly less than the corresponding length of the underlying primary band. Each secondary band segment is of a width between its longitudinal edges which is less than the distance between the longitudinal edges of the primary band and the centerline of the primary band; and the proximal end of each strip segment is secured to the primary band such that its longitudinal centerline overlays the central longitudinally extending region of the primary band which lies between the centerline of the primary band and the adjacent edge of the primary band, as shown in FIG. 1.

The first upper band segment or strip **68** of the upper elastic band means **56** is provided with the companion means to interconnect with the means **51** on the primary band, see FIG. 4; and in the illustrated embodiment comprises a pad **84** secured to the distal end zone **76** which pad includes J-hooks to engage the nap loops of the pad **51**, such that when the secondary band is stretched within its elastic limit and connected to the primary band it is adapted to reinforce the midriff support of the primary band and be adjustable as to length within the elastic range. The first lower band segment or strip **72** is also provided with a pad **88** of J-hooks on the distal end zone **80** to also selectively reinforce the midriff. Adjustment means for the first upper and lower band segments **68** and **72**, to vary the elongation thereof, comprise the longitudinally extending length of the pads **51** and **53** on the exterior of the primary band and it is seen that as a result thereof, the secondary band segments **76** and **78** may be stretched or relaxed somewhat so long as the J-hooks engage the nap.

For a purpose which will be apparent with respect to FIG. 5 and the following description of the second upper and lower secondary band segments **70** and **74**, fastener means are provided on the outside surface of the first upper and lower secondary band segments **68** and **72** to cooperate with companion fastener means on the ends of the second upper and lower secondary band segments. Preferably the fastener means are in the form of Velcro, or nap and hooks.

As can be seen on reference to FIGS. 4 and 5, the second upper band segment **70** and the second lower band segment **74** are adapted to be longitudinally stretched so as to overlay the first upper and lower

5

band segments 68 and 72. Each of the second segments 70 and 74 are provided with a pad of Velcro hooks 90 and 92 on their respective distal ends for hooked up engagement with longitudinally extending nap pads 93 and 94 which extend longitudinally on the outside surface of the distal end zones of the first upper and lower band segments of the secondary band means.

It is thus apparent that there has been provided an adjustable abdominal belt to provide adjustable support for example, after abdominal surgery. The belt may be applied to achieve support and, then, adjusted to meet the comfort requirements of a wearer in use by separately adjusting some or all of the four segments of the secondary supportive band means for a relatively fine adjustment of the degree of support to be provided.

Referring now to the embodiment of FIGS. 6-10, a second preferred embodiment is illustrated. Generally this embodiment includes an elastic support belt designated by the numeral 112 which when stretched spans the midriff area of the wearer as previously described with respect to the first embodiment with the exception that it is somewhat less in overall height between the longitudinal edges which preferably taper from the central zone toward the end zones which overlap. This preferred embodiment is characterized by an elastic primary band 114 having end zones a first end 116 and a second end zone 118 and opposing longitudinal edges 120 and 122. The primary band has an inside surface 115 and an outside surface 117, see FIGS. 6 and 7. Mutually intercooperating means are provided on the confronting surfaces of the end zones for fastening the ends together in overlapping relation and holding the primary band in a stretched condition about the waist of a wearer, Velcro fastener means being preferred. Also, the primary band may include in the central zone 130 reinforcing means or vertical stay means in pockets 134; and supplemental reinforcing members as previously described may be utilized. The embodiment shown in FIGS. 6 through 10 differs from that of FIG. 1 in that the primary band may be tapered somewhat from the central zone toward the distal ends, 116 and 118, and may be composed of overlapping strips 171 and 172 which may be stitched together. The belt of this embodiment includes a single central secondary band means instead of an upper and lower secondary band means. The secondary band of this embodiment is composed of a first and a second secondary band segment 156 and 157. The secondary band is centrally secured, as by stitching, see at 164 and 166 to the central zone of the primary band and the portions of it extend therefrom in overlaying relation of the outside surface of the primary band along the center line zone thereof generally. The band may be considered as being composed of the first and second strip portion 156 and 157. The segments are of a normal length extending from the attachment to the primary band to their respective distal ends 176 and 180 which is about equal to and preferably slightly less than the corresponding length of the underlying primary band. The first band segment or strip 156 is provided with means to interconnect with means 151 on the exterior surface of the primary band, see FIG. 9; and in the illustrated embodiment a pad 184 secured to the distal end zone 176 which pad includes J-hooks to engage the nap loops of the pad 151 such that when the secondary band is stretched within its elastic limit and connected to the primary band it is adapted to reinforce the support of the primary band

6

and to be adjustable as to length within its elastic range. As is apparent from the preceding description with respect to the first preferred embodiment the first band segment is provided with fastener means 189 provided on the outside surface to cooperate with companionate fastener means 191 on the inside surface of the other band segment. Preferably, these fastener means are also in the form of Velcro or nap and hooks.

As can be seen in FIGS. 9 and 10, after the primary band has been positioned on a wearer in a stretched condition as shown in FIG. 8, the first of the secondary band segments is stretched and secured to the primary band; and, thereafter, the second of the secondary bands is stretched and secured, again permitting of a degree of adjustment of support by the wearer and permitting ready application by people who are relatively weak who may, apply the band without considerable effort being required.

What is claimed is:

1. A sized belt to fit about the waist of a wearer between the hip box and rib cage comprising:
  - an elongate elastic primary band having an inside surface and an outside surface and opposed longitudinal edges and a first end zone and a second end zone and an intermediate zone between the end zones, mutually interengaging means on the outside surface of the first end zone and the inside surface of the second end zone to intercooperate with one another to hold the band end zones in overlapping relation when the primary band is about the girth of a wearer with said second end zone overlapping said first end zone,
  - the normal longitudinal length of the primary band being less than the girth of a wearer and, when on a wearer and the end zones are in overlapping relation, being elastically stretched,
  - said intermediate zone having a central zone adapted to overlay the back of a wearer between the hip box and rib cage levels,
  - elastic secondary band means secured to the central zone of the primary band comprising:
    - a first band portion and a second band portion, each portion being a strip and having an inside surface and an outside surface and a proximal end and a distal end and opposed longitudinal edges,
    - said portions extending in opposite directions from said central zone and generally parallel to the center line of the primary band and being of a dimension between their respective longitudinal edges which is less than the distance between the opposed longitudinal edges of said primary band,
    - each of said secondary band portions having a distal end zone and
    - mutually interengaging means on the outside surface of the second end zone of said primary band and the inside surface of the distal end zone of said first band portion to intercooperate with one another to hold the distal end of the first band portion in overlapping relation of the first and second end zones of the primary band when the primary band is about the girth of a wearer with the first and second end zones in overlapping relation; and
    - mutually intercooperating means on the outside surface of the first band portion and on the inside surface of the distal end zone of the second band portion to intercooperate with one another to hold the distal end of the second band portion in overlap-



7

ping relation of said end zones of said primary band and the distal end zone of said first band portion, the length of said first band portion when overlaying said first primary band and extending toward said first end zone being of a normal length from the proximal end attachment to the central zone which is less than the distance from the proximal end attachment to the second end zone when said primary band end zones are in overlapping relation and the belt is about the girth of a wearer, the length of said second band portion when overlaying said primary band and extending toward said second end zone being of a normal length from the proximal end attachment to the central zone which is less than the distance from the proximal end attachment to the first end zone, when said primary band end zones and the distal end of the first band portion are in overlapped relation and the belt is about the girth of a wearer.

2. The sized belt as in claim 1 wherein the secondary band means comprises a single pair of said portions and the center line of said portions is normally in overlaying relation of the central longitudinal zone of the primary band when about the girth of a wearer.

3. The belt as set forth in claim 1 wherein the band means comprises said first band portion and said second band portion and said first and second band portions comprise an upper band means overlaying the zone of said primary band adjacent one of said longitudinal edges.

4. The belt as set forth in claim 3 wherein said elastic secondary band means comprises a lower first band portion and an upper first band portion and a lower second band portion and an upper second band portion.

5. The belt as set forth in claim 1 wherein said mutually interengaging means comprises a pair of soft nap loops constituting keeper means arranged on one of

8

said surfaces and a companionate array of hook means on the other of said surfaces when in confronting relation, said hook means comprising a pattern of outwardly projecting, commonly oriented, hook members in upstanding relation adapted in response to pressure against said pad to intermesh with said loops and releasably cling to the nap of said pads to be separated therefrom in response to a quick yanking force,

whereby when the elastic primary and secondary band means are stretched longitudinally from the central zone and positioned inwardly and forwardly about the body of a wearer, said hook means are adapted for hooked-up engagement with said nap loops.

6. The belt as set forth in claim 1 wherein said primary band means converges from said central zone toward the first and second end zones.

7. The improvement as set forth in claim 1 wherein the central zone includes reinforcement means extending between said longitudinal edges.

8. The improvement as set forth in claim 1 wherein said mutually interengaging means on the said inside surfaces comprises a plurality of hook means in a companionate array and said mutually intercooperating means on said outside surfaces comprise soft nap loops constituting keeper means and arranged on said exterior surfaces and being in elongate pad form and extending longitudinally of said belt, and said hook members comprising a pattern of outwardly projecting, commonly oriented, hook means in upstanding relation adapted in response to pressure against said pad to intermesh with said loops along their longitudinal lengths of said pads and releasably cling to the nap of said pads to be separated therefrom in response to a quick yanking force and comprising adjustment means for the stretch of the belt within its elastic limit.

\* \* \* \* \*

40

45

50

55

60

65