

July 23, 1968

H. G. NELKIN

3,393,674

TRUSS

Filed April 14, 1966

3 Sheets-Sheet 1

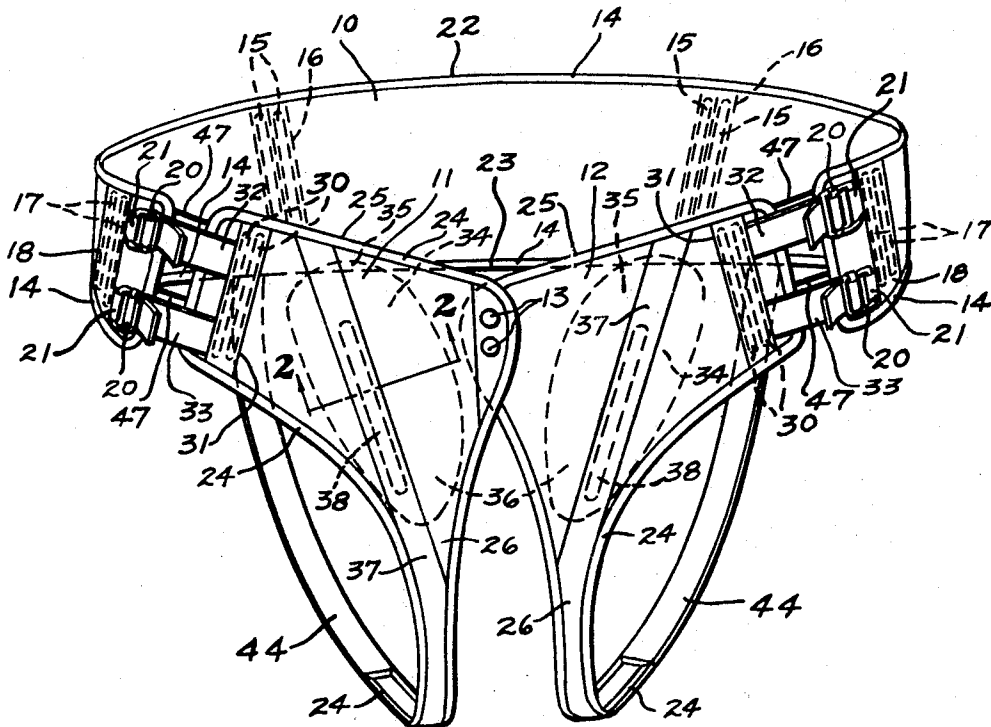


Fig. 1

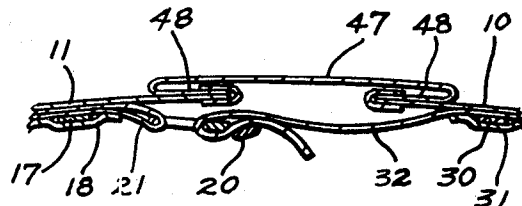


Fig. 8

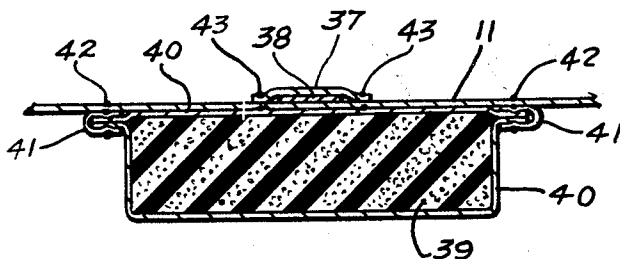


Fig. 2

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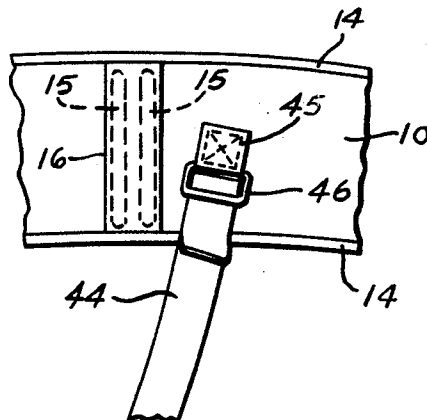
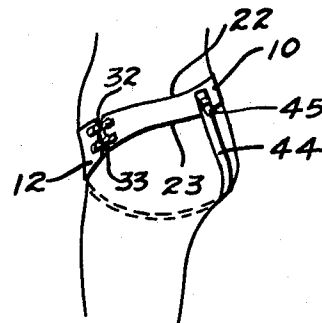
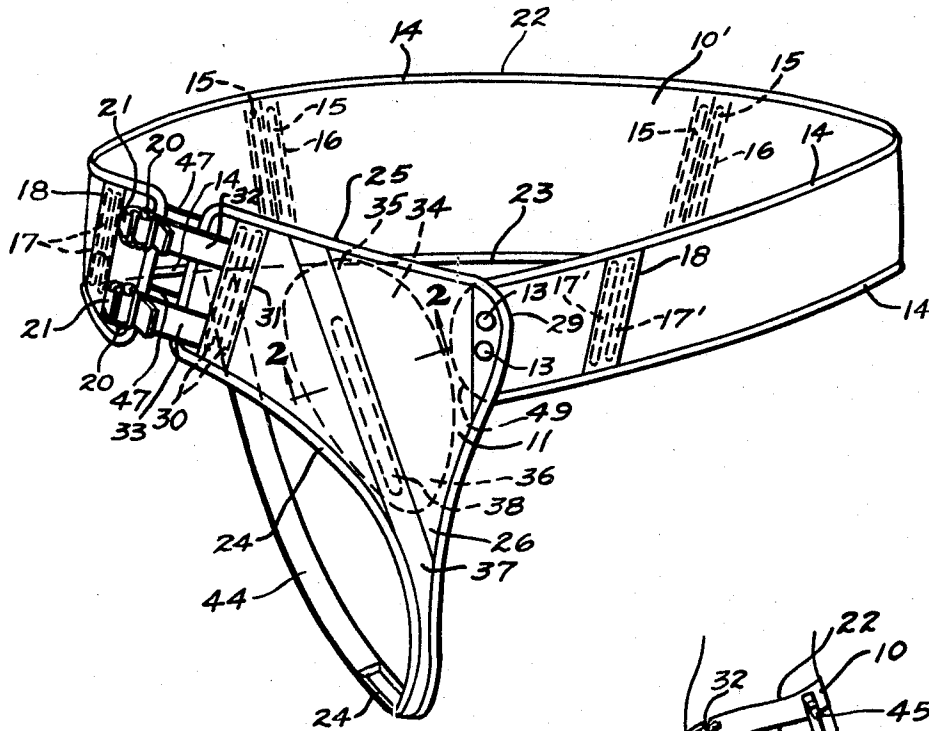
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3 Sheets-Sheet 3

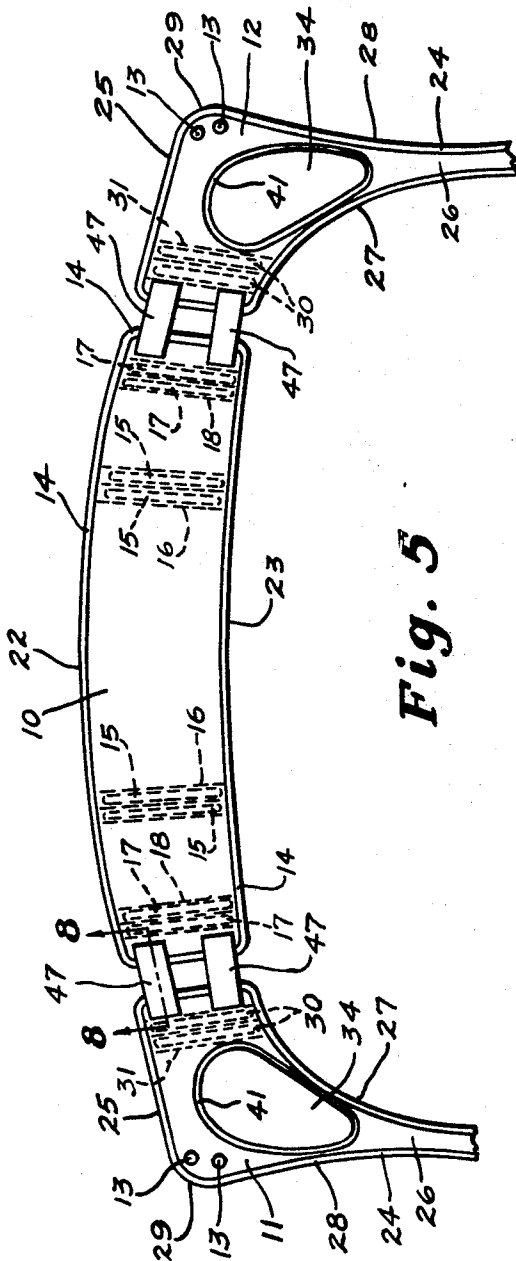


Fig. 5

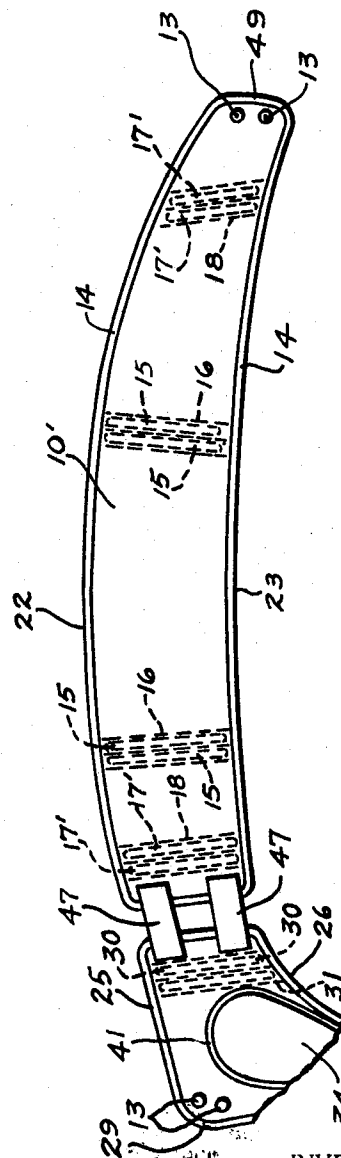


Fig. 6

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TRUSS

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Filed Apr. 14, 1966, Ser. No. 542,483

10 Claims. (Cl. 128—96)

My invention relates to trusses and is an improvement over the truss disclosed in the patent to Piper, 2,606,551, patented Aug. 12, 1952.

It is a purpose of my invention to provide a truss of the type shown in said Piper patent, that is more comfortable and provides better support for the wearer than the truss disclosed therein. It has been found that older people, who must wear such a truss have considerable difficulty in adjusting the lacing at the back of the truss and due to the fact that the lacing is at the back of the truss there is a tendency for the wearer to not adjust the lacing properly at the top and bottom of the truss so that it will closely fit the individual wearing the same. Also, people who are afflicted with arthritis have difficulty in adjusting the lacing at the back of the truss shown in the Piper patent referred to.

It is a purpose of my invention to provide a truss that can be easily adjusted, the adjusting means being so located that the wearer of the truss of any age and with less than average dexterity of his or her hands can easily adjust the truss for a snug and proper fit.

In order to carry out the purposes of my invention I provide a truss that has a body encircling or belt portion comprising a plurality of inextensible fabric sections, a pair of sections being connected together at the front of the body of the wearer by suitable detachable fastening devices, the fabric sections including an elongated continuous inextensible rear section extending over the major portion of the length of the device and a short forward section, that has a gradual tapering downward extension near the forward end thereof, and pull straps of inextensible material adjustably connecting the rear end of said forward section with the forward end of the rear section at one end thereof, the rear section inclining downwardly from the mid-portion toward the opposite ends thereof to dispose the forward section lower than the rear section, the forward section having its top edge inclining downwardly from adjacent the rear end thereof to adjacent the forward end thereof, and a soft, flexible, compressible, flat pad mounted on the forward section which pad is wider at the upper end thereof, that is located near the top edge of the forward section, and tapers downwardly extending into said tapering extension. This places the pull straps in a position that is slightly forward of the sides of the body of the wearer to make them readily accessible to the wearer for adjustment of the truss to fit snugly around the body of the wearer. Furthermore, the location of the pull straps with respect to the mounting of the pad is such that an inward and upward pull on the pad, to the desired extent, can be exerted by means of the pull straps.

The pull straps between a pair of section, comprise a pair thereof, one strap of a pair being near the upper marginal edges of the two sections, where the same are connected together thereby, and the other being near the lower marginal edges of said sections. This makes it possible to adjust the upper portion of the truss by means of the one strap and the bottom portion of the truss by

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means of the other strap each strap being independently adjustable to get the truss to conform closely to the body of the wearer. In order to prevent any contact of the pull straps with the body of the wearer, a band or web of elastic extends between the two sections under each of the pull straps.

My improved truss is capable of being provided with a single pad, for a single hernia, or a pair of pads for a double hernia. In the case of the model for the double hernia, both sides of the truss are adjustable in the same manner so that the desired upward and inward pressure of the pad on the rupture can be obtained.

Furthermore, by providing a continuous rear section that inclines downwardly from the middle thereof toward the opposite ends thereof, the rear section can be located above the buttocks at the back of the wearer and the forward section or sections will be located below the abdominal bulge of the wearer so that the pad will be in the proper position to support the hernia. After the leg straps provided and the pull straps have been adjusted properly for the truss to closely fit the body of the wearer, it is unnecessary to change the adjustment thereof to remove the truss or replace the truss in position on the body.

In the case of the single hernia model the detachable fastening means between the remote end of the rear section and the forward section can be operated to either remove or replace the truss and in the case of the double hernia model, the detachable connection between the two forward sections can be operated for the same purpose.

In order that the rear section of the body encircling portion be placed properly with respect to the body of the wearer, the rear section is so shaped that it will ride over the buttocks and will thus place the truss in proper position about the body and make it possible to provide a tight fit between the inextensible body portion of the truss and the body of the wearer so as to give firm support by means of the truss. In order to provide such a fit of the rear section, the bottom edge of the rear section is concavely curved.

Other objects and advantages of the invention will appear as the description of the drawings proceeds. However, I do not intend to limit myself to the particular details shown or described except as defined by the claims.

In the drawings:

FIG. 1 is a perspective view of a truss, for use by persons having a double hernia, made in accordance with my invention.

FIG. 2 is a section on an enlarged scale taken on a line 2—2 of FIG. 1.

FIG. 3 is a view similar to FIG. 1 of a truss made in accordance with my invention, for use by person having a single hernia.

FIG. 4 is a fragmentary side elevational view showing the manner in which the truss, forming the subject matter of my invention, is applied to the body of the wearer.

FIG. 5 is a plan view, partly broken away, of the truss shown in FIG. 1, spread out.

FIG. 6 is a similar view of the truss shown in FIG. 3.

FIG. 7 is a fragmentary detail outside elevational view showing the attachment of the leg strap to the rear section of my improved truss, and

FIG. 8 is a fragmentary section on an enlarged scale taken on the line 8—8, FIG. 5.

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Referring in detail to the drawings, in FIG. 1 is shown a truss, made in accordance with my invention, that is for use by persons having a double hernia. Said truss comprises a body encircling or belt portion having a rear section 10 and a pair of forward sections 11 and 12 the adjacent ends of the forward sections 11 and 12 being detachably secured together by means of snap fasteners 13 to encircle the body of the wearer. The rear section 10 extends over the major portion of the length of the body encircling portion and has a body portion of inextensible fabric which is provided with a binding 14 of inextensible material around the marginal edges thereof. The rear section 10 is thus inextensible in length.

Stays 15 are provided extending transversely of the rear section 10 on opposite sides of the mid-portion thereof, and somewhat nearer to the ends of the rear section 10 than to the middle thereof. Said stays 15 are secured in position between the body portion of the rear section 10 and reinforcing strips 16 that are secured by means of stitching to the body portion of the rear section 10. Stays 17 also extend transversely of the rear section 10 adjacent the opposite ends thereof, being secured to the rear section 10 in a similar manner to the stays 15 by means of the reinforcing strips 18. Buckles 20 are provided on opposite ends of the rear section 10 near the upper and lower marginal edges thereof, being secured in position by means of inextensible fabric straps 21, that are secured at their ends to the rear section 10, adjacent the forward-most stay 17, on each end of said rear section.

Upon reference to FIG. 5 it will be seen that the upper marginal edge 22 of the rear section 10 is convexly curved and the lower marginal edge 23 of said rear section 10 is concavely curved, the ends of said section 10 thus being downwardly disposed with respect to the mid-portion thereof, and the concavely curved bottom edge portion 23 of the rear section 10 being so shaped in order that the rear section 10 can be positioned above the buttocks of the wearer so as to be definitely located at a certain position with respect to the body in a vertical direction. This permits the rear section 10 to be located around the body at a point where it will fit snugly and smoothly against the body at the back thereof and at the sides thereof so as to more firmly hold the pad, to be described below, in position against the hernia when the truss is adjusted to proper tight position around the body of the wearer.

The forward sections 11 and 12 are each made up of a body portion of inextensible fabric and are provided with a binding 24 of inextensible material around the marginal edges thereof. Each of said sections 11 and 12 has a top edge 25 that inclines downwardly from the rear end thereof toward the front forward end thereof and it is provided with a tapering downward extension 26. A forwardly and downwardly concavely curved edge portion 27 extends from the rear end of each of said sections 11 and 12 into the tapering extension 26 and a forward edge 28 is provided on said forward sections 11 and 12 that is connected with the top edge by means of a convexly curved edge portion 29 and extends into the downwardly tapering extension 26. The fastening elements 13 are located adjacent this convexly curved edge portion 29 thus providing overlapping projections on the two forward sections 11 and 12 that will have the position shown in FIG. 1 when the fastening elements 13 are in engagement with each other.

Each of the forward sections 11 and 12 is provided with a plurality of stays 30 near the rear end of each of said sections 11 and 12. Said stays are mounted in position in the similar manner to the stays 15 between reinforcing strips 31 and the body portions of the sections 11 and 12. Pull straps are provided on the sections 11 and 12, each set of said pull straps comprising an upper pull strap 32 and a lower pull strap 33. The pull strap 32 is located near the top margin of the rear end of sections 11 and 12 and the pull strap 33 is located near the bottom margin of the rear end of said sections 11 and 12.

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The pull straps 32 and 33 are in alignment with the buckles 20 and are engaged therewith in the manner shown in FIG. 1. The ends of the pull straps that are secured to the sections 11 and 12 are secured thereto at or adjacent the stays 30. Accordingly a pull on the pull straps 32 and 33 will cause a pull on the transverse stays 30 that are provided in the sections 11 and 12. In order to prevent engagement of the pull straps 32 and 33 and the buckles 20 with the body of the wearer, bands of elastic fabric 47 having turned back ends 48 secured by stitching to the rear section 10 and forward section 11, are provided, underlying the pull straps.

Mounted on each of the sections 11 and 12 is a pad 34 which has a wider end 35 and a narrower end 36. The marginal edges of the pads 34 are curved as will be evident from FIG. 1 and each of the pads tapers gradually from its wider end 35 to its narrower end 36, so as to have a somewhat oval shape. The lower narrower ends 36 of said pads extend into the tapering extensions 26 of the sections 11 and 12. It will also be noted that the longitudinal center lines of said pads 34 extend at an oblique angle to the vertical, so that the lower narrower ends 36 thereof are nearer the forward ends of the forward sections 11 and 12 than the upper wider portions 35 thereof. It will be further noted that the upper wider end portions 35 of the pads 34 are close to the stays 30 to which the pull straps 32 and 33 are attached. A reinforcing strip 37 extends from the top marginal edge 25 of each of the forward sections 11, from a point near the stay 30 into the tapering extension 26 across the pad 34, and a stay 38 extending at an oblique angle is mounted back of the pad 34 between the reinforcing strip 37 and the body portion of the forward section 11 or 12.

The details of construction of the pad and the stay and reinforcing member are shown in FIG. 2. The pad comprises a flat faced body portion of sponge rubber 39 which is provided with a fabric facing 40 that is provided with a reinforcing binding 41 where the pad is secured to the body portion of the forward section 11 or 12, as the case may be. The pad is secured in position by means of stitching 42 and the stay 38 is secured in position between the reinforcing strip 37 and the body portion of the forward section 11 or 12, as the case may be, by means of stitching 43. Thus a flat soft yielding pad is provided that is flexible and yet will serve as means of providing the desired pressure against the hernia.

Extending from each of the reduced lower tapering extensions 26 of the forward sections 11 and 12 are leg straps 44. Said leg straps are secured in fixed position to the tapering extensions 26 of said forward sections 11 and 12 and are secured to the rear section 10, detachably, as shown in FIG. 7. A tab 45 of inextensible fabric is secured to the rear section 10 on the inner face thereof and is provided with a buckle 46 for detachably adjustably connecting the leg strap 44 with said rear section 10. Said leg straps extend considerably to one side of the middle of the rear section 10, the tabs 45 being located near the stays 15 at each side of the rear section 10 as shown in FIG. 1.

As the pull straps 32 and 33 act on the forward sections 11 and 12 near the upper wide end of the pad 34, the user of the truss can exert the desired pull on the straps 32 and 33 to get the proper fit and pressure of the pad 34 against the hernia. This action will be upwardly from under the abdominal bulge of the wearer and since the pull straps 32 and 33 are located at vertically spaced distances from each other near the upper and lower margins of the rear ends of the forward sections 11 and 12, the pull exerted by said straps can be varied so as to vary the amount of pull required to cause a snug fit of the pad 34 throughout the length thereof, particularly when considered in connection with the action of the leg straps 44. The pull straps are so located, that they are in a convenient position for pull thereon by the wearer of the truss, even though the person wearing the truss

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may be elderly and not have the manual dexterity that a younger person might have in adjusting means for varying the overall length of the body encircling portion of the truss, such as would be necessary with laces or pull straps at the rear center thereof.

While FIGS. 1 and 5 illustrate a truss that is for use by a person having a double hernia, my invention is applicable to trusses that are provided for persons that have a single hernia either on the right or the left side. In FIGS. 3 and 6 a truss is shown that is for use by a person that has a single hernia on the right hand side of the body. In this case a forward section 11 corresponding exactly to that shown in FIGS. 1 and 3 is used in connection with a rear body portion 10' which is similar to the rear body portion 10 described above. In case of a left hernia, the section 12 is used instead of the section 11 in conjunction with a rear section similar to the section 10'.

The rear section 10' is provided with a binding 14 and stays 15 mounted by means of reinforcing strips 16 in the same manner as the rear section 10, the rear section 10' being also provided with stays 17 at one end thereof mounted by means of reinforcing strips 18 in the same manner as previously described. Buckles 20 are provided, which are mounted on the rear section 10' by means of fabric strips 21, in the same manner as previously described. The other end of the section 10' however is considerably longer, from the location of the stays 15 to the extremity 49 thereof, than the rear section 10, from said stays 15 to the end thereof secured to the forward section 12. Stays 17' which are similar to the stays 17 and are similarly mounted by means of a fabric strip 18 are provided on the rear section 10' spaced a greater distance from the extremity thereof 49 than the stays 17 are spaced from the other extremity of said section 10', so as to place stays 17' on the forward side of the body of the wearer.

The rear section 10' is provided with a convex top edge 22 and a concave bottom edge 23 curved similarly to the top and bottom edges of the rear section 10, so as to throw the forward end 49 of the section 10' and the forward section 11 downwardly below the rear portion of the section 10', so that the section 11 and the forward end portion of section 10' of the truss will be on the under side of the abdominal bulge of the wearer, the concave bottom edge 23 further serving to position the rear body portion 10' above the buttocks of the wearer, for the same purpose as previously described. Separable fasteners 13 secured the forward end 49 of the rear section 10' and the forward section 11 together in overlapping relationship as shown in FIG. 3. The same reference numerals are applied to corresponding parts of the forward section 11 in FIGS. 3 and 6 as to these parts in the form of the invention shown in FIGS. 1 and 5. The pull straps 32 and 33 operate in the same manner with relation to the pad 34 of the forward section 11 as previously described and the bands of elastic fabric 47 are provided under the pull straps 32 and 33 in the same manner as described in connection with the form of the invention shown in FIGS. 1 and 5.

What I claim is:

1. A truss having a body encircling portion comprising a plurality of inextensible fabric sections, means detachably connecting a pair of said sections together at the front of the body of the wearer, said fabric sections including an elongated continuous inextensible rear section extending over the major portion of the length of said body encircling portion, a short forward section having a gradually tapering downward extension thereon near the forward end thereof, pull straps of inextensible material adjustably connecting the rear end of said forward section with one end of said rear section, said rear section inclining downwardly from the mid-portion toward the opposite ends thereof to dispose said forward section lower than said rear section, a leg strap extending from said downward extension, means detachably securing said leg strap to said rear section and a soft, flexible, compressible, flat

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pad mounted on said forward section, said pad having a wide upper end located near the top edge of said forward section, tapering toward the lower end thereof and extending into said tapering extension.

2. A truss as claimed in claim 1 in which said forward section is also permanently connected with said rear section by extensible means.

3. A truss as claimed in claim 1 in which said rear section has a concavely curved bottom edge.

4. A truss as claimed in claim 1 in which said forward section has a stay extending transversely thereof adjacent said pad and one end of each of said pull straps is secured to said forward section at said stay.

5. A truss as claimed in claim 1 in which said body encircling portion includes a second short forward section having a gradually tapering downward extension thereon near the forward end thereof, pull straps of inextensible material adjustably connecting the rear end of said second forward section with the other end of the rear section, a leg strap extending from the tapering downward extension of said second forward section and a soft, flexible, compressible, flat pad mounted on said second forward section, said pad having a wide upper end located near the top edge of said second forward section and tapering toward the lower end thereof, said pad extending into said tapering extension of said second forward section.

6. A truss as claimed in claim 1 in which said body encircling portion includes a second short forward section having a gradually tapering downward extension thereon near the forward end thereof, pull straps of inextensible material adjustably connecting the rear end of said second forward section with the other end of the rear section, a leg strap extending from the tapering downward extension of said second forward section and a soft, flexible, compressible, flat pad mounted on said second forward section and tapering toward the lower end thereof, said pad extending into said tapering extension of said second forward section and in which said rear section has a concavely curved bottom edge.

7. A truss as claimed in claim 1 in which said body encircling portion includes a second short forward section having a gradually tapering downward extension thereon near the forward end thereof, pull straps of inextensible material adjustably connecting the rear end of said second forward section with the other end of the rear section, a leg strap extending from the tapering downward extension of said second forward section and a soft, flexible, compressible, flat pad mounted on said second forward section, said pad having a wide upper end located near the top edge of said second forward section and tapering toward the lower end thereof, said pad extending into said tapering extension of said second forward section, and in which said second forward section has a stay extending transversely thereof adjacent said pad and one end of each of said pull straps is secured to said second forward section at said stay.

8. A truss as claimed in claim 1 in which said pull straps comprise an upper pull strap and a lower pull strap, said pull straps being independently adjustable and in which a pair of elastic bands connect said forward section with said rear section, said elastic bands underlying said pull straps.

9. A truss as claimed in claim 1 in which said body encircling portion includes a second short forward section having a gradually tapering downward extension thereon near the forward end thereof, pull straps of inextensible material adjustably connecting the rear end of said second forward section with the other end of the rear section, a leg strap extending from the tapering downward extension of said second forward section and a soft, flexible, compressible, flat pad mounted on said second forward section, said pad having a wide upper end located near the top edge of said second forward section and tapering toward the lower end thereof, said pad

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extending into said tapering extension of said second forward section, and said pull straps comprise upper and lower pull straps, said pull straps being independently adjustable, and an elastic band connecting a forward section with said rear section underlying each of said pull straps.

10. A truss as claimed in claim 1 that has the top edge of said forward section inclining downwardly from adjacent the rear end thereof to adjacent the forward end

thereof and has a downwardly concavely curved bottom edge.

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