

Feb. 7, 1939.

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2,146,444

TRUSS FOR INGUINAL HERNIA

Filed May 29, 1936

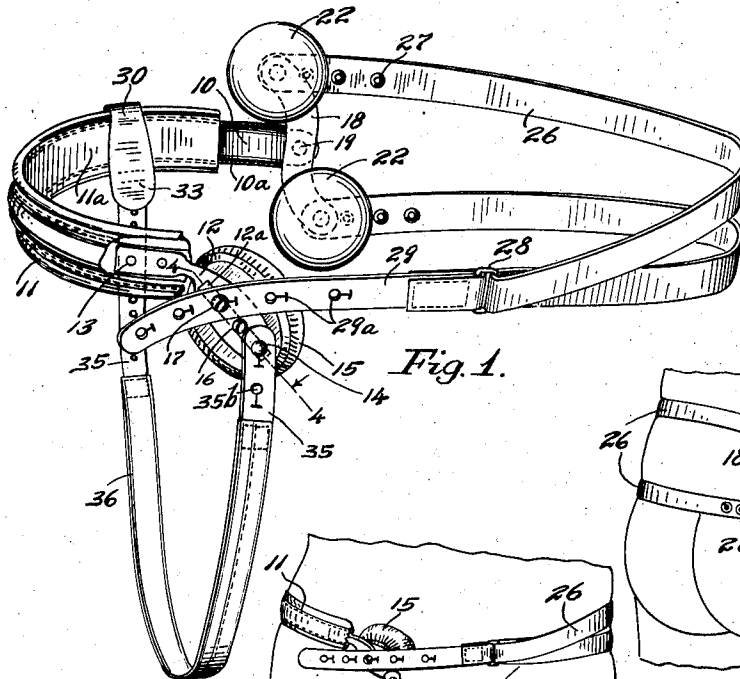


Fig. 1.

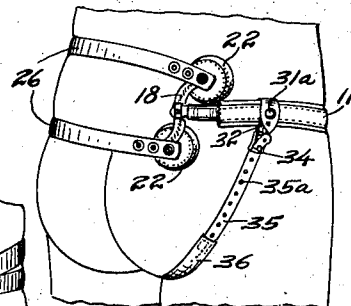


Fig. 3.

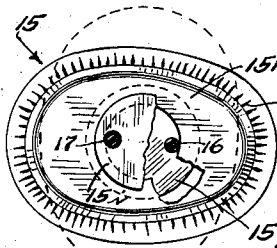


Fig. 2.

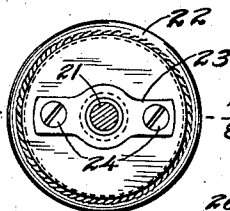


Fig. 7.

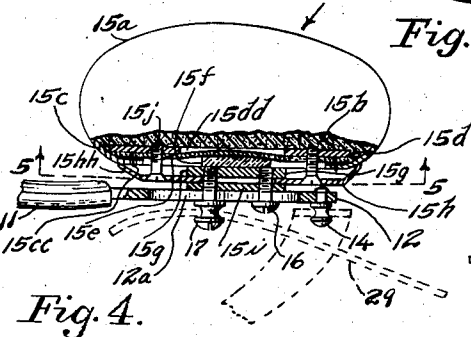


Fig. 4.

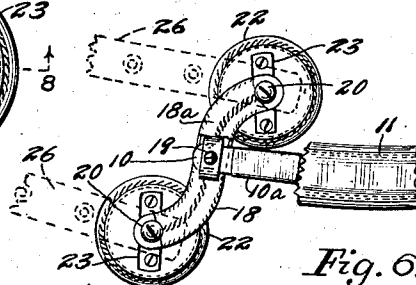


Fig. 6.

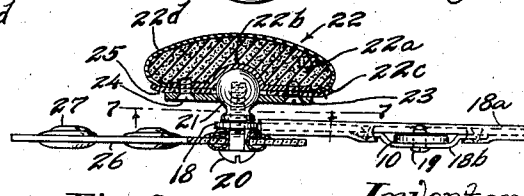


Fig. 8.

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UNITED STATES PATENT OFFICE

2,146,444

TRUSS FOR INGUINAL HERNIA

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Application May 29, 1936, Serial No. 82,487

12 Claims. (Cl. 128-95)

This invention relates to a truss and particularly to a truss to be used for an inguinal hernia.

It is desirable that such a truss be so constructed that there will be a positive retention of the hernia at all times regardless of the position assumed by the patient or wearer. This is particularly true when the patient is taking the injection treatment for hernia. It is also desirable that free movement of the body of the wearer be permitted without disturbance of the truss. It is also a great desideratum that a truss be comfortable for the wearer.

It is an object of this invention, therefore, to provide a truss which is constructed and arranged to be very comfortable on the wearer and to provide for perfect retention of the hernia at all times.

It is a further object of the invention to provide a truss having a yielding pad adapted to fit over the hernia or opening thereof, which pad is mounted upon an arm in relation to which it is longitudinally movable and also preferably rotatable.

It is another object of the invention to provide a truss having a substantially U-shaped member of semi-flexible resilient material adapted to fit around one side of the body of the wearer, the same having an arm extending transversely thereof at its rear end with yielding pads mounted at its ends, which pads are preferably rotatable or arranged for universal movement, said arm preferably being S-shaped.

It is still another object of the invention to provide a truss having at one side a substantially U-shaped member of resilient semi-flexible material adapted to extend around one side of the body of the wearer, the same having a pad adjustably secured thereto at its front end and a pair of pads secured thereto at its rear end together with a strap or straps secured at the rear end of said member and extending around the other side of the body of the wearer to the front end of said member, another perineal strap also preferably being provided.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawing, in which like reference characters refer to similar parts throughout the several views and in which:—

Fig. 1 is a perspective view of the truss;

Fig. 2 is a view in front elevation of a portion of the body of the wearer showing the truss in position thereon;

Fig. 3 is a similar view of the wearer's body as

seen from the side and rear with the truss in position thereon;

Fig. 4 is a vertical section taken substantially on line 4—4 of Fig. 1 as indicated by the arrows;

Fig. 5 is a horizontal section taken on line 5—5 of Fig. 4 as indicated by the arrows;

Fig. 6 is a view in rear elevation of the rear portion of the truss;

Fig. 7 is a horizontal section taken on line 7—7 of Fig. 8 as indicated by the arrows; and

Fig. 8 is a vertical section taken through the truss at a point approximately indicated by line 8—8 of Fig. 7 and seen as indicated by the arrows.

Referring to the drawing, a truss is shown comprising a substantially U-shaped or semi-circular member 10. Member 10 is made of very refined metal, the same being resilient and yet being sufficiently flexible to be shaped to the contour of the body of the wearer. Member 10 is enclosed for substantially all of its length in a casing 11 preferably made of leather or similar material and said casing also is arranged to extend beyond the sides of member 10 and to have a pad 11a formed at its inner side. At its front end member 10 has an arm 12 secured thereto by rivets 13, which arm has a narrow neck portion adjacent the end of member 10 and is then of greater width and of elongated elliptical form. Said arm has an elongated slot 12a extending longitudinally and centrally thereof and has at its terminal portion a strap-securing button 14 riveted thereto. A pad 15 is provided and while this pad might take various shapes, in the embodiment of the invention illustrated it is shown as of general elliptical form or egg-shaped in plan and having a well rounded face 15a. The main body of the pad is of considerable thickness and made of some yielding resilient material 15b. In practice resilient sponge rubber has been found to be very suitable. This sponge rubber is covered with a soft, smooth, flexible material 15c and while various materials might be used, in practice the finest quality of soft calfskin has been found to be very suitable. A plate 15d of elliptical form engages the lower side of the material 15b, the same having a circular opening 15dd therein. A layer of fabric material 15e extends over plate 15d and the edge of the cover 15c extends over the fabric 15e and is securely stitched thereto by stitching 15cc. A piece of rather stiff flexible material 15f, preferably of circular form and of smaller diameter than opening 15dd, overlies fabric 15f opposite opening 15dd. A circular metal plate 15g overlies member 15 and has a pair of tapped holes therein adjacent the ends of a diameter thereof. A

plate 15h of elliptical form having an inturned flange 15hh overlies the bottom of cover 15c and engages plate 15g at its outer side. Plate 15h has a circular opening disposed centrally therein of smaller diameter than plate 15g. Plate 15h is held in place by screws 15j having heads countersunk therein and threaded into tapped holes in plate 15d. Another circular plate 15i overlies plate 15g and has a pair of holes therethrough adjacent the ends of a diameter thereof, which holes are spaced the same distance as the holes through plate 15g. A screw 16 having a slotted and rounded head, which is of greater diameter than the width of slot 12a, extends through said slot, through one hole in plate 15i, through the opening in plate 15h and is threaded into the tapped hole in plate 15g. Another screw 17 formed with a button head for the attachment of a strap, which head is also slotted and of greater width than slot 12a, extends through said slot, through the other hole in plate 15i, through the opening in plate 15h and is threaded into the other tapped hole in plate 15g. With the above described construction it will be seen that if screws 16 and 17 are slightly loosened pad 15 can be rotated relatively to arm 12. At this time plate 15g is held stationary by screws 16 and 17 and said pad merely rotates with its plate 15h moving between plates 15g and 15i and guided somewhat by said screws engaging the edges of the opening through plate 15h. It will also be seen that pad 15 can be moved longitudinally of arm 12, screws 16 and 17 sliding in slot 12a. When screws 16 and 17 are tightened plates 15g, 15i and arm 12 are drawn together and pad 15 is held rigidly in position.

Member 10 at its rear end has an arm 18 extending transversely thereof. Member 10 extends between arm 18 and a recessed clip 18b secured to arm 18. A screw 19 extends through clip 18b and arm 10, being threaded into arm 18. The ends of arm 18 are curved to extend in opposite directions so that said arm as seen from the outer side thereof is S-shaped and said arm throughout most of its length is enclosed in a covering 18a of soft material, such as soft leather. The ends of arm 18 are apertured and each has a screw 20 extending therethrough and into a ball member 21 so that said ball member is secured at one side of arm 18. A pad 22 of circular form in plan has an interior filling 22a of some soft yielding material, such as resilient sponge rubber, and has a plate 22b overlying the same formed with a semi-spherical socket portion at its center extending around ball member 21. Another plate 23 is secured to plate 22b by the screws 24, having heads countersunk in plate 23 and through the bottom covering 22c of pad 22. Plate 23 holds member 22b and pad 22 in place on member 21 so that said pad is swivelly or universally mounted on arm 18. The pad can therefore be rotated and also tipped in any direction. Pad 22 is provided with a soft, smooth, flexible cover 22d, similar to the cover 15b, which is stitched to the cover 22c by stitching 25.

The outer ends of screws 20 form holding means for the ends of a strap 26. Said strap has eyelets 27 secured in spaced relation centrally thereof adjacent one end through which screws 20 extend. Strap 26 is folded intermediate its ends and a clip or buckle 28 is slidable on said strap and secured to the end of another strap 29. Strap 29 has holes or buttonholes 29a there-through in spaced relation and these can be secured over the head of screw 17 to hold strap 29 in desired position. It will be seen that strap

26 extends around the side of the body opposite that embraced by member 10. A strap 30 extends around member 11 being slidable thereon and the end of said strap is equipped with the female portion 31a of a snap fastener, the male portion of which is carried on the other end of a short strap 32 secured to the lower end of strap 30 by stitching 33. Straps 30 and 32 thus embrace member 11 and can be removed therefrom by opening the socket clasp 31a. Strap 32 has a small buckle 34 thereon overlying the lower end of strap 30 and a strap 35 forming a perineal strap is provided with quite a number of holes 35a, any one of which may be engaged by buckle 34. The other end of strap 35 is provided with the buttonholes 35b adapted to engage over the button 14 on arm 12. The intermediate portion of strap 35 is covered with some soft material 36, such as chamois. The end of member 10 between member 11 and arm 18 is preferably covered with a sheathing of soft material 10a, such as rubber.

In operation, the truss in position on the wearer is located as shown in Figs. 2 and 3. Member 10 is bent and flexed so as to snugly and nicely fit around the side of the body of the wearer and so that pad 15 is brought over the rupture or hernia. This pad is shaped so as to fit comfortably in the inguen. The pad can be moved longitudinally of arm 12 or can be rotated as desired to bring it into comfortable and proper position. Member 15f can move somewhat relatively to opening 15dd thus adding to the yielding capacity of the pad. Said member permits some movement of the sponge rubber 15b into opening 15dd, but also forms a limit for such movement. A very yielding structure is thus produced. The pads 22 are located on the upper hip of the wearer and act to hold the member 10 in position. These pads can move in various directions as required by the body movements without moving member 10. These pads are offset laterally of the body by the S-shaped arm 18 and this disposition of the pads assists in holding member 10 in its proper position. The maintenance of the pad 15 in desired position is further assured by the straps 26 and 29. These are adjusted as desired to snugly fit around the body by fastening the ends thereof in the proper adjusting holes. It is generally recognized that a truss pad for indirect inguinal hernia should be sufficiently deep to make an impression in the body. This has been accomplished by the special shaping of the pad 15 which has also been made to conform to the anatomical structure. The resilient member 10 encircles only about one-third of the body, thus leaving by far the greater part of the body free from incumbrance. This is very desirable at all times but is especially important when the patient is lying down. In cases where the injection treatment is used the truss must be worn while the patient sleeps so that the above feature is important at such time. The perineal strap 36 may be used as desired and is desirable when the patient wears the truss during his sleeping hours. This strap gives further assurance that the pad 15 will be kept in proper position and will not be shifted by engaging portions of the bed when the patient moves about thereon. There can be a slight adjustment of arm 18 about screw 19 which gives further flexibility to the structure.

From the above description it is seen that applicant has provided a simple and very efficient structure of truss and one which will assure that

the hernia will be properly retained at all times. The truss is easily adjusted, very comfortable and can be placed to give the best effects and be retained in this position. The metal parts are nicely plated and all parts are made quite rugged and durable. The device has been amply demonstrated in actual practice, found to be very successful and efficient and is being commercially made.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicant's invention, which generally stated, consists in a device capable of carrying out the objects above set forth in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:—

1. A truss having in combination, a stiff somewhat resilient substantially U-shaped member adapted to extend around the side of the body, said member having at its front end an arm extending at an angle thereto, an elliptical rounded pad mounted on said arm, a second arm secured at the rear end of said member extending transversely thereof, a rotatable substantially circular pad at each end of said second arm adapted to engage the hip of the wearer, a flexible means secured to the ends of said second arm extending around the other side of said body, a strap movably connected with said means and fastening means on said first mentioned arm to which said strap may be secured.

2. A truss having in combination, a stiff somewhat resilient substantially U-shaped member adapted to extend around the side of the body, said member having at its front end an arm extending therefrom, an elliptical pad having a rounded yielding face adjustably mounted on said arm, a second arm secured intermediate its ends to the rear end of said member, a substantially circular pad with a rounded yielding face universally mounted at each end of said second arm, a strap folded intermediate its ends and having its ends secured to the ends of said second arm, a second strap having means slidable on said first mentioned strap and adapted to be secured to said first mentioned arm with said straps extending around the other side of the body.

3. The structure set forth in claim 2 and a third strap slidable on said first mentioned member and adjustably secured thereto adapted to extend between the legs and along the groin of the wearer and adapted to be secured to said first mentioned arm at its other end.

4. A truss structure having in combination, a supporting arm, a pad having a body of soft yielding material of substantially elliptical form, a soft flexible covering for said body, a plate at the rear of said pad having a central opening therethrough, a fabric cover overlying said plate and opening and secured to said covering, a substantially rigid member of smaller dimension than said opening engaging said cover over said opening, a metal plate overlying said member and means securing said metal plate and pad to said arm whereby yielding movement is had when said pad is pressed toward said first mentioned plate.

5. A truss structure having in combination, a supporting arm, a pad having a body of soft yielding material of substantially elliptical form, a soft flexible covering for the top and sides of said pad, a metal plate at the rear of said pad having a central opening therethrough, said covering overlying the edges of said plate, a fab-

ric cover overlying said plate and secured at its edge to the edge of said covering, a substantially rigid member of smaller dimension than said opening overlying said cover over said opening, a second metal plate overlying said member and engaging said covering adjacent its edge, means extending through said metal plate and cover into said first mentioned plate and securing said metal plate to said pad, a second plate overlying said member and disposed between the same and said metal plate, said metal plate having a circular opening therethrough, a third plate overlying said metal plate and being of larger diameter than said opening therethrough, a pair of spaced members extending through said arm, through said third plate and the opening in said metal plate and secured in said second plate, said pad and metal plate being rotatable between said second and third plates.

6. A truss structure having in combination, a supporting arm, a pad having a body of soft yielding material of substantially elliptical form, a soft flexible covering for the top and sides of said pad, a plate at the rear of said pad having a circular opening therethrough, a pair of plates one at either side of said plate of larger diameter than said opening, spaced screws extending through said arm through the outer of said pair of plates, through said opening and into the inner of said pair of plates whereby said pad and first mentioned plate may be rotated between said pair of plates or clamped in fixed position by said screws.

7. A truss structure comprising an arm having an elongated slot extending longitudinally thereof, a pad having a rounded yielding face of flexible material, a substantially flat plate disposed at the rear of said pad having a circular opening therethrough, a second plate beneath said plate overlying said opening and of greater diameter than said opening, and rotatable beneath said first mentioned plate, a pair of spaced members extending through said slot and secured in spaced relation to said second plate extending through and being rotatable in said circular opening whereby said pad may be rotated relatively to said arm by relative frictional rotation of said plates and said pad and members moved longitudinally of said arm, said members being constructed and arranged to clamp said plates to hold said pad in fixed position.

8. A truss structure having in combination, a supporting arm having an elongated slot extending longitudinally thereof, a pad having a body of soft yielding material of substantially elliptical form, a plate secured to the rear of said pad, having a circular opening therethrough, a pair of plates disposed respectively at opposite sides of said plate and of greater diameter than said opening, a pair of spaced members extending through said slot, through one of said pair of plates and through said circular opening and secured in the inner one of said pair of plates whereby said pad and first mentioned plate may be rotated between said pair of plates, said pad and members may be moved longitudinally of said slot and said pad may be clamped in fixed position.

9. A truss structure having in combination, a supporting arm having a slot extending longitudinally therein, a pad having a body of soft yielding material of substantially elliptical form, a soft flexible covering for the top and sides of said pad, a metal plate at the rear of said pad having a central opening therethrough, said covering

overlying the edges of said plate, a fabric cover overlying said plate and secured at its edge to the edge of said covering, a substantially rigid member of smaller dimension than said opening

5 overlying said cover over said opening, a second metal plate overlying said member, a third metal plate overlying said second plate and having a circular aperture therethrough of smaller diameter than the transverse dimension of said second

10 plate, a fourth metal plate overlying said third plate and aperture and of greater transverse dimension than the diameter of said aperture, spaced screws extending through said slot, through said fourth plate and said aperture and

15 threaded into said second plate the remote sides of said screws being spaced substantially the distance of the diameter of said aperture, whereby said pad may be rotated and moved longitudinally of said arm and clamped in fixed position thereon.

20 10. A truss structure having in combination, a supporting arm having a slot extending longitudinally therein, a pad having a body of soft yielding material of substantially elliptical form,

25 a plate in the rear of said pad the rear edge of said pad extending over the edge of said plate, a second plate at the rear of said pad secured to said first mentioned plate and having a central opening therethrough, plates disposed at

30 either side of said last mentioned plate and of greater diameter than the diameter of said opening, a pair of screws extending through said slot in said supporting arm and extending into said pair of plates and through said opening substan-

tially at the sides of said opening whereby said pad and said second plate may be rotated between said pair of plates and said pad may be adjusted longitudinally of said slot by loosening said screws and may be held in position in said slot.

11. A truss having in combination, a stiff somewhat resilient substantially U-shaped member adapted to extend around one side of the body, said member having at its front end an arm extending therefrom, an elliptical pad having a rounded yielding face adjustably mounted on said arm, a second arm secured intermediate its ends to the rear end of said member and extending transversely of and to either side of said member,

15 a strap folded intermediate its ends to form a bight and having its ends pivotally secured to the ends of said second arm, a second strap having means slidable on said first mentioned strap but located at and adapted to pull upon said bight

20 and adapted to be secured to said first mentioned arm with said straps extending around the other side of said body whereby said strap can move relatively to said means so that the position of said bight relative to the ends of said strap may

25 vary with the movement of the wearer's body.

12. The structure set forth in claim 11 and a third strap adjustably secured to said first mentioned member so as to be slidable thereon adapted to extend between the legs and along the groin

30 of the wearer and adapted to be secured at its other end to said first mentioned arm.

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