T. E. MARTIN.

TRUSS.

APPLICATION FILED MAY 12, 1909.

958,267. **Patented May 17, 1910.**

2 SHEETS—SHEET 1.

Fig. 1.

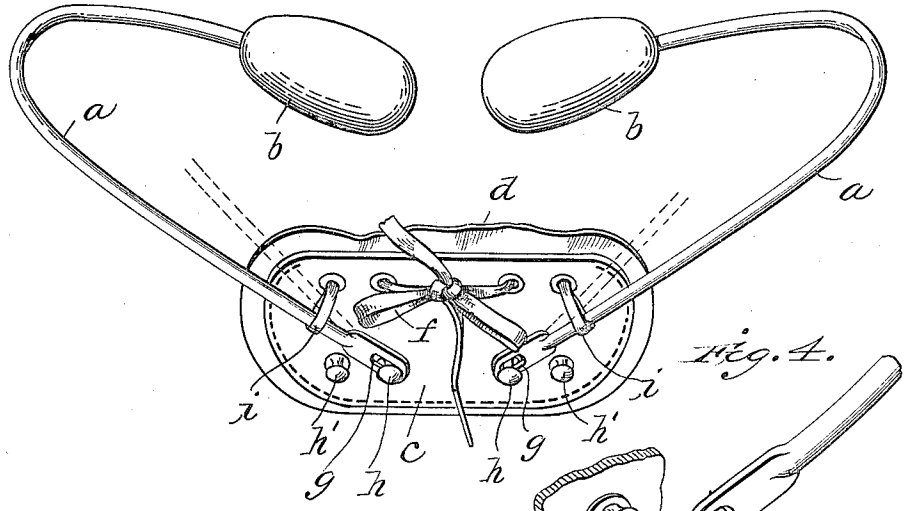

Fig. 4.

Fig. 3.

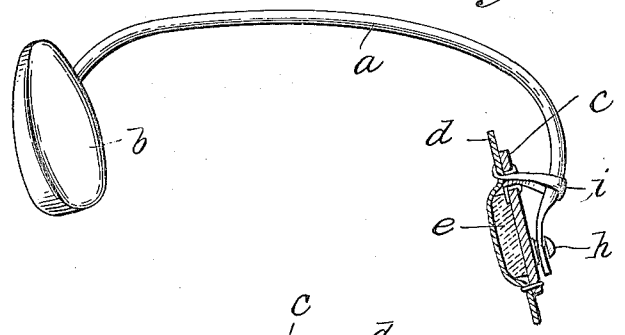

Fig. 2.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 5.

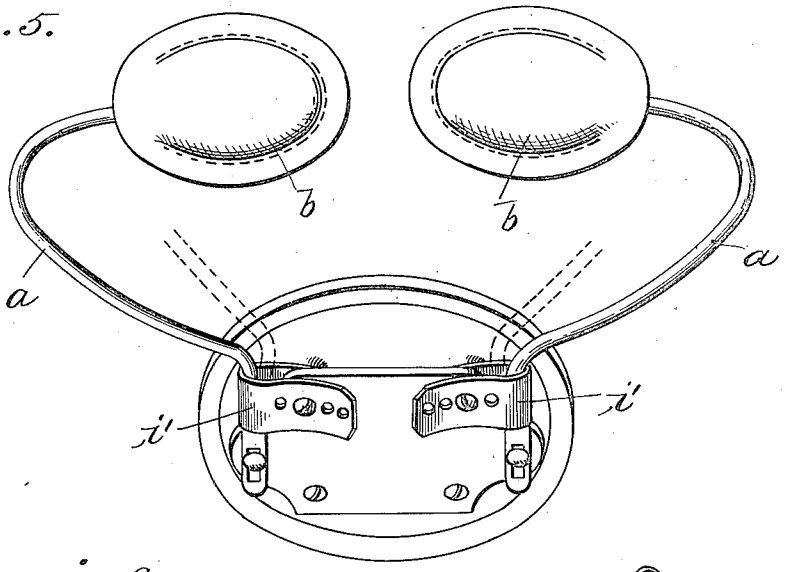


Fig. 6.

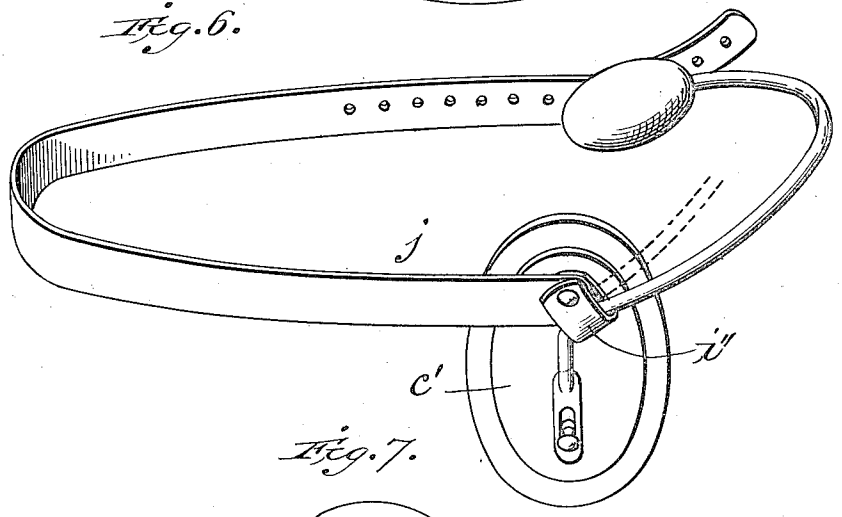
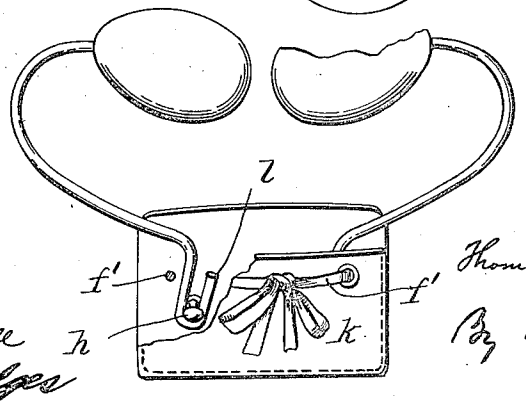


Fig. 7.



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TRUSS.

958,267. Specification of Letters Patent. Patented May 17, 1910.

Application filed May 12, 1909. Serial No. 495,465.

To all whom it may concern:

Be it known that I, THOMAS E. MARTIN, a citizen of the United States of America, and a resident of Buffalo, county of Erie, State of New York, have invented certain new and useful Improvements in Trusses, of which the following is a full and clear specification, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view showing my invention applied to a double truss; Fig. 2 is a plan view, showing the padded connection in horizontal section; Fig. 3 is a vertical central section through the padded connecting piece; Fig. 4 is a detail perspective showing the preferred manner of connecting the body-arm to the pad; Fig. 5 is a perspective view of a modified form of connecting piece especially adapted for umbilical ruptures; Fig. 6 is a perspective view showing the invention applied to a single truss; and, Fig. 7 is a perspective view of a double truss especially adapted for the smaller sizes.

The object of this invention is to adapt the truss for use in the treatment of all kinds of hernia as well as floating kidney and also as a laporotomy and abdominal support, and at the same time secure to the wearer the greatest possible degree of safety and comfort by so constructing the device that it is susceptible of being adjusted so perfectly to the figure of the particular individual and to each complaint that the wearer shall be permitted the utmost freedom of movement and exertion without disarranging or dislodging the apparatus, as more fully hereinafter set forth.

Referring to the drawings by reference letters, *a* designates the body-arms, which are bowed substantially as shown in my former Patent No. 862,387, dated August 6, 1907, and which are each provided with a pad *b* at its free end. The other ends of the arms are connected by a pad appliance which may be of any suitable sort but which usually consists, as shown in Figs. 1, 2 and 3, of a flat piece *c* of stiff leather, or other material, having affixed to its inner face a suitable pad. In the present instance this pad consists of a piece *d* of soft leather stitched to the piece *c* along all its edges except the top edge which is left open for insertion and removal of a piece of felt or other cushioning material *e*. This cushion *e* is held removably in place by a lacing-string *f* which is interlaced in a series of holes in the supporting plate *c* and the covering piece *d*. In this way this pad is adapted to be readily kept sanitary, since it may be removed from time to time for washing or renovation or renewal.

The connection of the arms to the connecting plate *c* is peculiar and in this peculiar connection lies the gist of the present invention. The end of each arm is preferably flattened and slightly curved outwardly and provided with a short slot *g*, and this slotted end is engaged over a hook *h* fastened to the outer face of the plate *c* at a point below the middle thereof. This hook may be any suitable shape but I find that an ordinary lacing stud is satisfactory since, by reason of the slot in the arm, the arm may be readily attached to and detached from the plate by relatively rotating them a quarter turn from the normal or operative position. This lacing hook is also desirable as affording a simple and secure fastening and at the same time affording a free relative and independent tilting of the arms and the connecting pad appliance. This connection of each arm to the pad is in reality a universal joint since the arms are free to swing relatively to the pad in all directions within a limited radius, this radius being determined by the outer face of the pad and the flexible loops *i* of the lacing, through which the arms pass. These flexible loops *i* are desirable because while they act as keepers in restricting the field of action of the arms they do not restrict their freedom of movement in the least within that field; and they are further desirable in that they are readily adjustable as to length by simply drawing up or letting out the lacing, this adjustability as to length being desirable in that it assists in adjusting the truss to the wearer's body to a perfect fit.

I prefer that the arms shall be permanently bendable and that the connecting pad appliance shall be stiff but flexible, as in my former patent, in order that the arm may be bent to fit the wearer and to locate the pads at the proper points on the back and the abdomen and in order that the connection may be flexed in putting on and taking off the truss. In the present appliance, however, the connecting part need not be flexed to so great a degree, if at all, in view of the capability of the arms to tilt a con-

siderable distance away from the outer face of the connecting piece. This is a highly desirable result as it tends to avoid permanent flexure of the connecting piece, as is obvious.

The most important result of connecting the arms in the manner described is that while the truss is on, the arms have a free as well as independent tilting movement inwardly and downwardly without shifting the pad from the located points of pressure, whereby the arms may be closely adjusted to the sides of the body without causing them to press upon the body and at the same time permitting an automatic adjustment to the changing positions of the body incident to the variety of occupations in which men are engaged. This construction thus prevents pressure on any part of the body save directly under the pads, and thus reduces the discomfort of truss wearing to a minimum, while attaining the maximum of safety, as the desired results are secured by the least possible pressure and the appliance is prevented from being forced from its proper position on the body by the most violent exercise.

The idea of attaching the arms to the pad at a point below its middle has the advantage that the necessary degree of rocking action forwardly and backwardly between the arms and the pad is secured, this being peculiarly desirable where the appliance is used for umbilical hernia, prolapsus of the abdomen or other ailment where the connecting pad bears upon the fleshy part of the abdomen since in that use the capacity in the pad to rock independently permits an automatic adjustment, thus producing an even pressure of all parts of the pad upon the body in any and all possible positions.

I have shown in Fig. 1 a supplemental pair of studs h' which may be used to adjust the arms for a larger waist or for the attachment of a supplemental arm for use when it is necessary or desirable to provide two pads on the same side of the abdomen one above the other.

In Fig. 5 is illustrated a truss especially desirable for umbilical hernia. In this device the soft or flexible pad is replaced by a plate of substantially rigid material but may be replaced by any kind of pad suitable to the case, fastened to the connecting piece, and the lacing loops by adjustable leather-strap loops i'.

In Fig. 6 the invention is shown adapted to a single truss, the arm being confined to the single pad appliance c' by a strap or other loop i'' riveted or otherwise fastened to said part c', and the usual body strap j being employed.

In Fig. 7 is illustrated a type I prefer employing in the smaller sizes of truss; in this form the connecting piece is provided with a soft leather pocket k closed by a lacing f' which restricts the tilting of the arms, and the ends of the arms are bent to form open-ended hooks l for ready attachment and detachment.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is:

1. In a truss, a body-arm carrying a pad-appliance at each end, the connection with one of the pads being a loose universal one permitting the arm to tilt freely backwardly and upwardly and downwardly while on the body, and a keeper on the pad above the pivotal point to limit the extent of free movement of the arm.

2. In a truss, a body-arm carrying a pad-appliance at each end, the connection with one of the pads being a loose universal one permitting the arm to tilt freely backwardly and upwardly and downwardly while being worn, and a keeper on the pad above the pivotal point to limit the extent of free movement of the arm, said pivotal point of connection being below the middle of the pad-appliance.

3. In a truss, a pair of curved body-arms each carrying a pad at one end, a connecting pad-appliance at the other end, the connection between the arms and this pad-appliance being a free universal one to permit the arms to have free backward up and down tilting action while in use, and means for limiting the outward play of the arms with respect to each other.

4. In a truss, a pair of curved body-arms each carrying a pad at one end, a connecting pad-appliance at the other end, the connection between the arms and this pad-appliance being a free pivotal one to permit the arms to have free up and down tilting action, and means on the pad-appliance for restricting the play of the arms with respect to the pad-appliance, said means being adjustable and flexible.

5. In a truss, a pair of body-arms, a pad-appliance connecting their ends, the connection between the appliance and each arm being substantially a free or loose universal joint and being on the outer face of the appliance, and a keeper for each arm on the pad-appliance above said joint, whereby while in use on the body each arm has a free independent universal movement with respect to the pad-appliance within a predetermined radius.

6. In a truss, a pair of body-arms, a pad-appliance connecting their ends, the connection between the appliance and each arm being substantially a free or loose universal joint and being on the outer face of the appliance, and a keeper for each arm on the pad-appliance above said joint, whereby while in use on the body each arm has a free independent universal movement with respect to the pad-appliance within a pre-

determined radius, the points of connection to the pad-appliance being at a point below its middle.

7. In a truss, a pair of body-arms each carrying a pad at one end, a connecting pad-appliance at the other end, the connections between each arm and the pad appliance being a free pivotal one to permit the arm to have a free up and down tilting action while in use, and means for limiting the play of the arms with respect to each other, said means consisting of a flexible and adjustable lacing string laced through openings in the pad appliance and formed into loops through which latter the body arms extend, for the purpose set forth.

8. In a truss, a body arm carrying a pad-appliance at each end, the connection with one of the pads being a loose universal pivotal one, permitting the arm to tilt freely, and the outer or middle portion of the body arm to move on the line of the arc of a circle, away from or toward the perpendicular of the line of attachment, with means of limiting the outward movement at any desired angle, and means connecting the upper part of the back pad to the abdominal pad.

9. In a truss, a pair of curved body arms, each carrying a pad at one end, a connecting pad-appliance at the other end, the connection between the arms and this pad-appliance being a free pivotal universal one, to permit the arms to have free tilting action, permitting the outward or middle portion of the bowed arms to move on the line of the arc of a circle, away from or toward the perpendicular of their respective lines of attachment, with means for limiting the outward movement to any desired angle.

In testimony whereof I hereunto affix my signature in the presence of two witnesses this 7th day of May 1909.

THOMAS E. MARTIN.

Witnesses:

CHARLES D. DAVIS,

CHARLES LOWELL HOWARD.