(No Model.)

T. H. WOODWARD.

TRUSS.

No. 589,773. Patented Sept. 7, 1897.

Fig. 4.

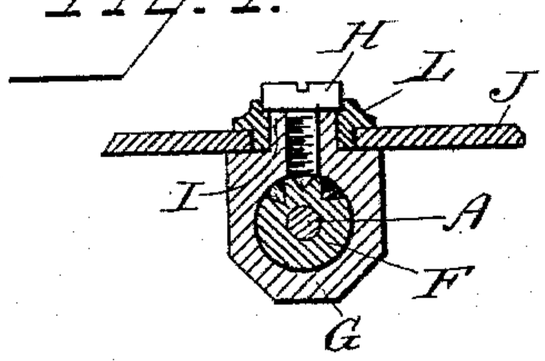

Fig. 3.

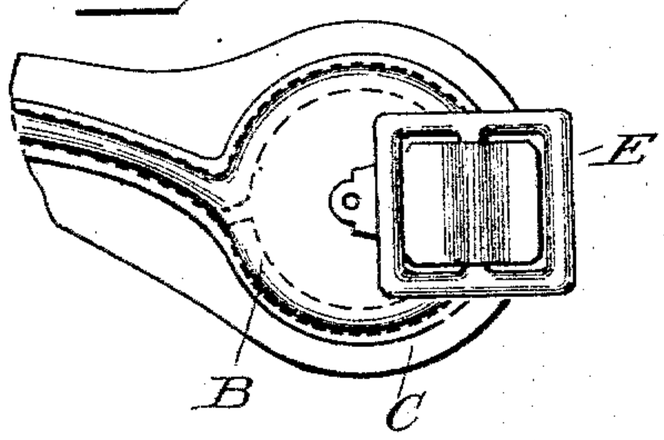

Fig. 5.

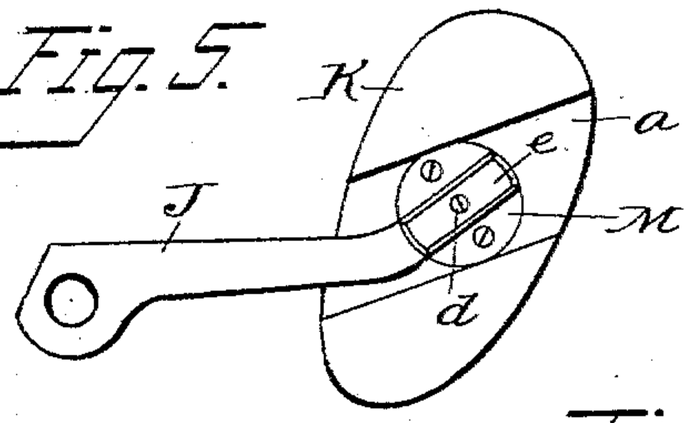

Fig. 6.

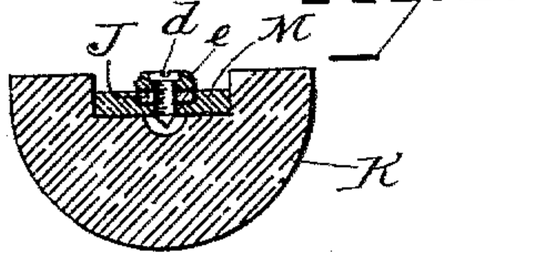

Fig. 2.

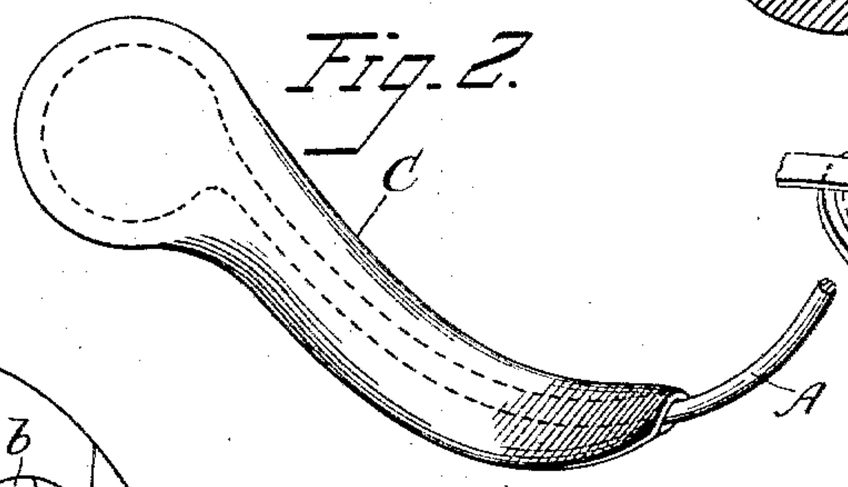

Fig. 1.

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UNITED STATES PATENT OFFICE.

THADDEUS H. WOODWARD, OF LINCOLN, NEBRASKA.

TRUSS.

SPECIFICATION forming part of Letters Patent No. 589,773, dated September 7, 1897.

Application filed September 30, 1895. Serial No. 564,178. (No model.)

To all whom it may concern:

Be it known that I, THADDEUS H. WOODWARD, a citizen of the United States, residing at Lincoln, in the county of Lancaster and State of Nebraska, have invented a certain new and useful Improvement in Trusses for Controlling Ruptures, of which the following is a description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to that class of trusses which employ a main supporting wire or spring curved to extend partially around the body and having its opposite extremities provided with friction-pads or bearing-surfaces adapted to press or snugly fit against the back of the wearer, while the pad or pads for holding the rupture in place are suitably supported upon the forward portion of the main wire near its middle, the rear extremities of the wire being usually connected by a strap to more securely hold the truss in position upon the body.

My invention has for its object the production of a truss which shall be simple in construction and cheap to manufacture; which shall be readily adjustable to fit persons of different sizes and figures, so that the same truss may accommodate a wide range of patients; which shall likewise be readily adjustable to properly apply to and control ruptures of varying locations or characters; which shall automatically adjust or accommodate itself to all the ordinary movements of the wearer without displacing the holding-pads from substantially fixed positions against the body, and which, finally, shall be easy and comfortable to wear and of the greatest possible efficiency for the purpose intended.

To the above ends my improved truss consists solely of the single supporting wire or spring having the bearing-pads at its rear extremities connected by a suitable strap and the holding-pads and means for adjustably supporting them upon the forward portion of the main wire at or near its middle. The main wire is so shaped as to snugly fit around the body, yet readily accommodate itself to patients varying considerably in size. The pads upon the rear extremities of the wire are shaped to closely fit and adhere to the back of the patient, so that the resiliency of the wire pressing them in place serves largely to hold the truss in position, while the strap effectually prevents it from becoming displaced therefrom. The holding-pads at the front of the truss are adjustably supported upon the oppositely-projecting spring-arms of a thin metal plate, which latter is swiveled or pivotally supported upon the main wire in such manner that the pads may accommodate themselves to the movements of the wearer and yet remain in fixed position against the body under all ordinary motions. In addition to these facilities for adjustment the pivotal support of the pad-plate (the plate having the spring-arms which carry the pads) upon the main wire is itself adjustable around said wire, so that the holding-pads may be adjusted in such manner as to exert either a direct inward pressure or an upward pressure, as the figure of the patient may render necessary or desirable.

Having now indicated the general nature and purpose of my improved truss, I will next proceed to describe it more in detail by reference to the annexed drawings, in which—

Figure 1 represents a full view of the truss with one of the holding-pads detached; Fig. 2, a detail view of the inner face of one of the rear ends of the main wire with the friction-pad or bearing-surface thereon; Fig. 3, an enlarged detail of the outer face of the rear end of such pad carrying the buckle for the strap; Fig. 4, an enlarged detail vertical section on the line 4 4 of Fig. 1; Fig. 5, a detail front view of one of the holding-pads and the end of the spring-arm connected to it; and Fig. 6, a cross-section of one of the holding-pads, showing the means for attaching the ends of the spring-arm to it.

The same letters of reference are used to indicate identical parts in all the figures.

The main supporting or body wire of the truss consists of a spring-wire A, whose middle portion, forming the front side of the truss, is approximately straight for some distance on each side of the middle, and whose opposite ends are curved away outwardly and rearwardly from the ends of this straight section and then inwardly again at their rear ends. They are also curved or bowed downwardly from the ends of the middle straight section and then upwardly at their rear ends.

At their rear extremities they are bent to form loops or rings B, dotted lines, Fig. 3, which serve to support and give shape to the leather pads C, with which the rear ends of the wire are covered. These pads preferably extend forward approximately to the middle of the curve of each side of the wire, so as to afford an extended bearing-surface to fit against the body, while the upward and inward curve of the rear end of each side of the wire and the widened rear ends of the pads surrounding the rings B cause them to conform to the shape of the body and snugly fit and press against the same. Each pad C consists in this instance of a piece of leather of suitable thickness and rigidity and of the full size of the pad placed against the inner face of the rear end of the wire A and its ring B and a second piece of leather of just sufficient size to cover the wire and the ring and be stitched down upon the other piece and inclose the wire between, as seen in Figs. 1, 2, and 3, though these pads may be otherwise constructed, if desired. The strap D is secured at one end to one of the pads C and at the other coöperates with a buckle E, carried by the opposite pad.

Secured or formed upon the main wire A, at or near the middle of its straight forward section, is an enlarged cylindrical bearing F. Fitted upon this bearing is a block or collar G, Figs. 1 and 4, which may be adjusted around the bearing and be secured in different adjusted positions by a set-screw H, passed through a threaded hole in the collar G and bearing at its inner end against the part F. The latter may, as shown, be provided with notches to coöperate with the end of the screw to more securely hold the parts in the different positions.

Formed upon the block or collar G is a cylindrical boss I, the threaded hole for the screw H in this instance passing through said boss, though the screw might be applied at the opposite side of the collar or at any other suitable point in its circumference. Swiveled upon the boss I is a thin metal plate J, having two oppositely-projecting spring-arms, which carry the holding-pads K, the latter being adjustably secured upon the outer ends of the arms in the manner hereinafter described. The plate J does not in the present instance fit directly against the boss I, there being a flanged washer L interposed between them, the flange of the washer projecting over the upper surface of the plate J and the head of the screw H engaging a shoulder in the upper end of the washer and thereby serving to hold the plate J in position while permitting it to turn freely upon its bearing. This is a suitable and convenient means for swiveling or pivotally supporting the plate J upon the block or collar G, but it may be done in any other desirable manner. The plate is in this instance free to completely revolve upon its pivotal support, but it is not necessary that it should have such an extensive range of movement, and any swiveling or pivotal arrangement which will allow it sufficient movement to accommodate all the motions of the body will answer the purpose.

The holding-pads K, of the usual or any desired shape and formed of wood, rubber, or other suitable material, have secured to their forward faces (in this instance in recesses *a*, though the recesses are not essential) metal plates M, having transverse recesses or guideways *b*, Fig. 1, for the reception of the outer ends of the spring-arms of the plate J, which arms are shaped to snugly fit and slide in the guideways *b*. The ends of the arms J are provided with longitudinal slots *c*, and the pads K are secured to the arms by screws *d*, Figs. 5 and 6, passing through the slots and entering threaded holes in the plates M. The heads of the screws *d* might of course bear directly upon the arms J, but I prefer to provide clamping-plates *e*, resting upon the upper surfaces of the arms J, and have the heads of the screws bear upon these plates to clamp the pads to the ends of the arms. By slightly loosening the screws *d* the pads may be adjusted along the arms J within the limits of the slots *c* and be secured in any desired position, as occasion may require. While the above is an efficient and desirable means for adjustably connecting the pads to the ends of the spring-arms, and I believe is a novel one, yet other means for the purpose may be employed without departing from my invention.

From the description heretofore given of the means for adjusting the block or collar G around the main wire A it will be understood that the pads may be readily set to exert a direct inward pressure, or more or less of an upward pressure, the latter being generally desirable in the case of obese patients and the former in other cases. For instance, assuming the pads in Fig. 1 to be adjusted according to the position of the parts shown in Fig. 4, they will be exerting an upward pressure, but not such an extreme one as if the collar G were turned to the right in Fig. 4 and the set-screw engaged with the right-hand notch, while on the other hand, if the collar be turned to the left and engaged with the left-hand notch the pads will exert an approximately direct inward pressure instead of an upward one. It will also be seen that when the truss has been properly adjusted in the manner above described, and also by adjusting the pads upon the ends of the spring-arms and has been applied to the patient and the pads caused to press upon the body at exactly the proper place to efficiently control the rupture, the resiliency of the spring-arms J and their swiveled support upon the main wire A will permit the pads to remain in substantially fixed position against the body under all ordinary movements of the wearer, and the truss be thus caused to efficiently perform its duty under all usual conditions to which the patient is subjected.

While I have illustrated and described my invention as embodied in a double truss, it will be understood that many of its advantages may be utilized in a single truss, as by removing one of the pads K from the plate J, or employing a plate J having only one spring-arm instead of two.

Having thus fully described my invention, I claim—

1. In a truss, the combination, with the main wire shaped to fit around the body and provided at its rear ends with pads adapted to bear against the back, of a supporting block or collar mounted upon and adjustable axially around said wire at or near the middle of its forward side, a sheet-metal spring-arm loosely hung upon and depending from said block, a holding-pad mounted upon said spring-arm at its outer end and adjustable longitudinally thereof, and means for firmly securing the supporting block or collar to the main wire in different positions around the latter while still leaving the spring-arm loosely connected to said block, substantially as and for the purpose specified.

2. In a truss, the combination, with the main wire shaped to fit around the body and provided at its rear ends with pads adapted to bear against the back, of a supporting block or collar mounted upon and adjustable axially around said wire at or near the middle of its forward side, a pad-supporting plate loosely mounted upon and depending from said block or collar and provided with two divergent spring-arms, said plate and arms being formed of a single piece of thin spring metal, so that they are free to move upon the supporting-block and also yield to outward pressure, holding-pads adjustably mounted upon said arms at their extremities, and means for firmly securing the suppporting block or collar to the main wire in different positions around the same while still leaving the pad-supporting plate loose upon said block, substantially as and for the purpose described.

3. In a truss, the combination of the main wire A, the collar G supported upon and adjustable around the same, and having the boss I, the plate J loosely swiveled upon said boss, the interposed flanged washer L, the set-screw H, and the pads K carried by the spring-arms of the plate J, substantially as described.

4. In a truss, the combination of the main wire A having the enlarged bearing F at the middle of its forward side, the collar G fitting around the part F, the set-screw H for holding the collar in different adjusted positions, the plate J swiveled on the collar G and having the spring-arms, and the pads K adjustably supported on said arms, substantially as described.

5. In a truss, the combination of the main wire A, the collar G supported upon and adjustable around the same, the plate J pivotally supported on said collar and having the spring-arms, the pads K having the plates M provided with the recesses *b* in which fit the ends of the spring-arms, and the screws *d* passing through the slots *c* in the ends of said arms and entering the plates M, substantially as described.

6. In a truss, the combination of the main wire A, the collar G supported upon and adjustable around the same, the pad-supporting plate J pivotally supported on said collar and having the spring-arms, the pads K having the plates M provided with the recesses *b* in which fit the ends of the spring-arms, the clamping-plates *e* fitting over the ends of the spring-arms, and the screws *d* passing through the plates *e* and slots *c* in the spring-arms and entering the plates M, substantially as described.

7. The herein-described truss, consisting of the main wire A shaped to partially surround and fit the body and having its rear extremities provided with the pads C adapted to bear against the back of the wearer and connected by the strap D, the collar G adjustable around the wire A at or near the middle of its forward side, the set-screw H for holding the collar G in its adjusted positions, the plate J swiveled upon the collar G and having the spring-arms, and the pads K adjustably mounted upon the outer ends of said arms, substantially as described.

8. The herein-described truss, consisting of the main wire A shaped to partially surround and fit the body and having its rear extremities formed into the rings B and covered by the pads C adapted to bear against the back of the wearer, and having the middle portion of its forward side provided with the enlarged bearing F, the collar G mounted upon and adjustable around the part F, the set-screw H for holding the collar in different adjusted positions, the plate J swiveled upon the collar G and having the two spring-arms, and the pads K adjustably mounted upon the ends of said arms, substantially as described.

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JOHN T. WOODWARD.