(No Model.) 2 Sheets—Sheet 1.

W. S. RICE.

TRUSS.

No. 523,844. Patented July 31, 1894.

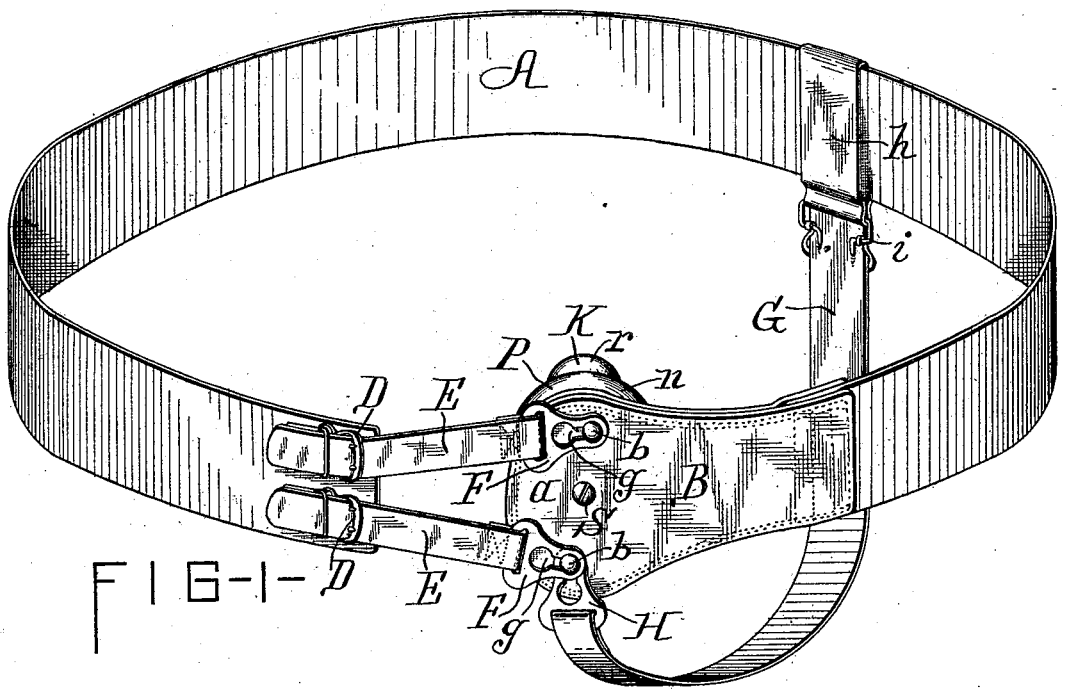


FIG-1-

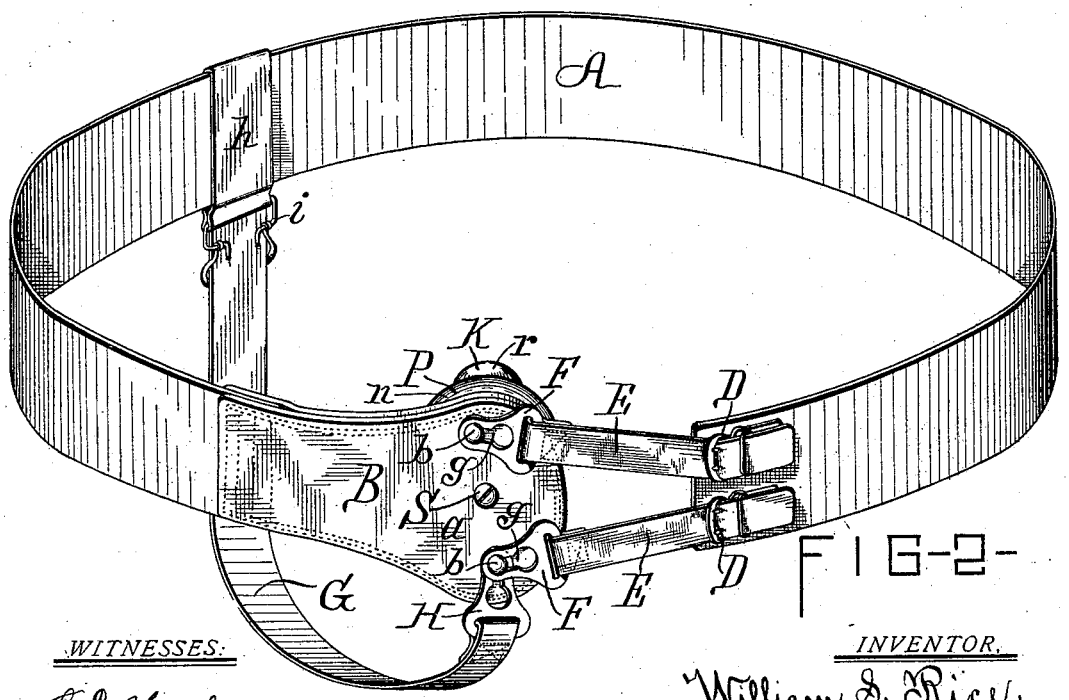


FIG-2-

WITNESSES:

C. C. Tomlinson

E. Kaufmeller

INVENTOR.

William S. Rice,

BY Chas. B. Raymond,

his ATTORNEY

(No Model.) 2 Sheets—Sheet 2.

W. S. RICE.

TRUSS.

No. 523,844. Patented July 31, 1894.

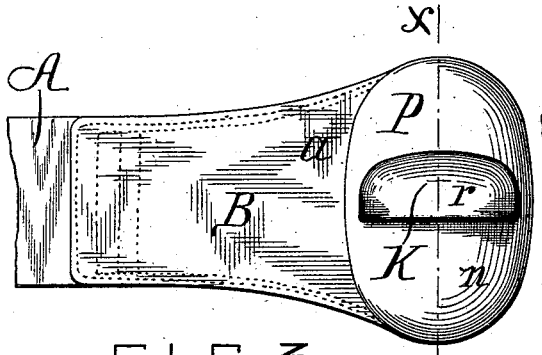


FIG-3-

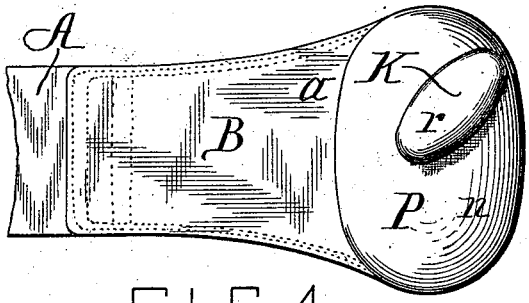


FIG-4-

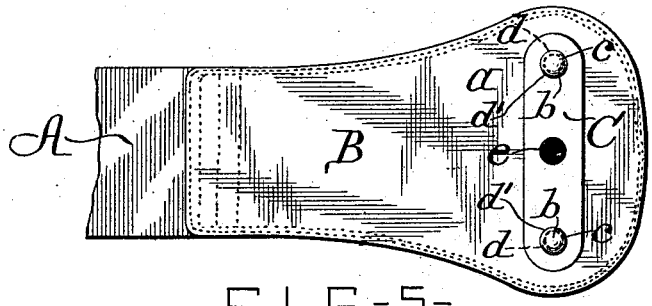
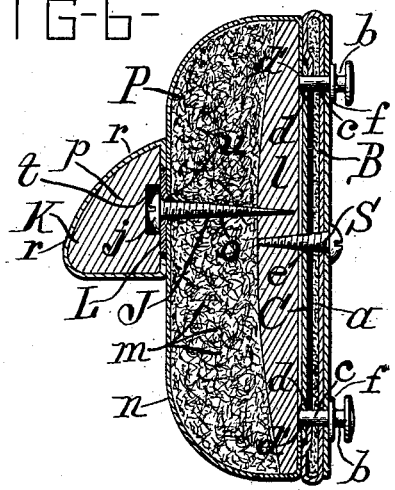


FIG-5-

FIG-6-



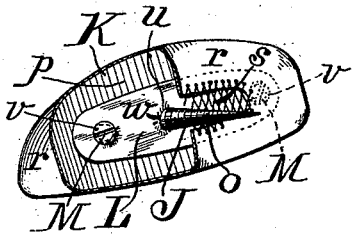


FIG-7-

WITNESSES:

C. E. Tomlinson

D. Taussmueller

INVENTOR,

William S. Rice,

BY Wm. C. Raymond,

his ATTORNEY.

UNITED STATES PATENT OFFICE.

WILLIAM S. RICE, OF SMITHVILLE, NEW YORK.

TRUSS.

SPECIFICATION forming part of Letters Patent No. 523,844, dated July 31, 1894.

Application filed January 8, 1894. Serial No. 496,216. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. RICE, a citizen of the United States, residing at Smithville, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Trusses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, in which—

Figure 1 is an isometric view of my improved truss showing it as adjusted for a left-side truss; Fig. 2 an isometric view of same representing it reversed and adjusted for a right-hand truss; Fig. 3 an enlarged detail of the front-piece (inner face) and the pad proper with adjustable knuckle appertaining to my truss construction, as appearing looking toward its front or wearer-contacting faces; Fig. 4 a similar enlarged detail delineating a variation in the shape of the detachable knuckle as well as its location upon the pad; Fig. 5 an enlarged detail of the front-piece (inner face), and stay-plate whereto fastening-posts are secured, as appearing minus the attachable pad and its adjustable detachable knuckle; Fig. 6 a considerably enlarged central vertical section of the pad, knuckle and contiguous portions of my appliance, taken upon dotted line *x*, *x*, Fig. 3; and Fig. 7 is an isometric detail, enlarged, of the adjustable knuckle segregated from the pad portion of my truss, as appearing looking toward its back-face or pad-contacting side.

Like letters of reference denote corresponding parts throughout the several views of the drawings.

My invention relates to trusses for hernia or rupture, and the more especially to that species thereof denominated as adjustable elastic trusses, either single or double.

The object of my invention is, the production of a hernial truss (either single or double) that is readily reversible for a right or left side hernia; that insures equal pressure on the top and bottom of its pad portion through a double line of draft; wherein the under-strap is readily interchangeable from right to left side upon the reversing of the truss from a right to a left-side rupture or vice versa; wherein accidental dislodgement of the under-strap from proper operative position is impossible; a truss formation embodying such connection of the posts or studs to the front-piece (to a face of which the pad is movably secured) as will insure their thorough retention in place; and finally a truss construction embodying a pad or pads having an adjustable or movable knuckle located upon the face of the main pad, adapted to exert additional and direct pressure into the hernial opening, the larger pad exerting pressure against the surrounding muscles; a feature of my invention of the greatest advantage and importance.

My invention consists in the novel features of construction, combination and co-adaptation of parts, and manner of manipulation and operation hereinafter described, and specifically set forth in the annexed claims.

Referring to the letters of reference indicative of parts, in the illustrations of my device embodied by the accompanying drawings, the construction of my improved hernial truss is as follows:—A denotes an elastic band or strip formed of any suitable cloth or webbing possessing elastic properties; which band, of satisfactory length, width and thickness, has at one extremity, secured thereto by sewing or other fastenings, a front-piece B of flattened form, the upper and lower boundary edges thereof curving outwardly as they approach the outer end and curving gradually at the outer vertical edge portion of the front-piece, and whereby in plan the said front-piece at its forward-end portion presents an enlarged or head-like portion *a*.

Usually the front-piece B is formed by means of two or more blanks or layers of leather and felt, velvet, &c., of like contour and dimensions, connected together by sewing at or contiguous their edges; and, obviously, the soft side or face is disposed at that part of the front-piece that comes against the flesh of the wearer of the truss, while the stiffer leather layer is located outwardly.

b, *b*, indicate strap-attaching posts or studs projecting horizontally outward from the outer face of the front-piece B at its swelled extremity, said posts being headed at their outstanding extremities as illustrated; the shank-like opposite extremities or ends *c*, *c*,

penetrating through the front-piece from front to rear, and projecting through orifices *d*, *d*, in a stiff metallic stay and securing plate C disposed against part of the inner or rear face of the front-piece, are thereat upset as denoted by the letters *d'*, *d'*, the shoulders or flanges created by the upsetting bearing firmly against the outside of the combined stay and retaining plate through which the shanks *c*, *c*, penetrate.

The flat metallic plate C afore referred to, of elongated shape, and having a central circular orifice *e*, and the two end orifices *d*, *d* afore alluded to, lie against the inner or rear face of the front-piece B upon a vertical plane and transversely to the direction longitudinally of said front-piece; the shanks *c*, *c*, of the fastening posts *b*, *b*, upset at their point of projection through the stay-plate C, *i. e.*, through the upper and lower orifices *d*, *d*, create in conjunction with the circular flanges *f*, *f*, of the posts *b*, *b*, impinging against the outer forward face of the leather portion of the front-piece B, a rivet like fastening to each post, insuring thorough and rigid attachment of the posts or studs to the front-piece, while the plate C assures requisite immovability and staying qualities to that portion of the front piece whereon the posts are located as well as forming an immovable and firm anchorage for the mentioned posts.

To the opposite extremity of the band or belt A there is connected by sewing or other suitable means small buckles D, D, of ordinary construction, located one above the other, slightly apart, upon or standing from the outer face of the band whereto they are pivotally secured; each buckle lengthwise being parallel to the band's length.

E, E, are end-straps, of non-elastic fabric, disposed one above the other, respectively adjustably connected to the end of the band A by means of the buckles D, D, while their forward ends are detachably connected with the front-piece B by means of hooks or hooking-plates F, F, sewed to the said ends, the slots *g*, enlarged circular at rear portions, adapting the hooks of the duplicate straps to respectively hook over in positive engagement upon the upper and lower headed posts *b*, *b* projecting laterally from the outer face of the front-piece.

The straps E, E, while on a like vertical plane, yet stand divergent, starting from the end of the band A and widening apart to their points of attachment to the posts *b*, *b*, of the front-piece.

G, is the detachable under strap appertaining to my truss construction, the rear extremity thereof being removably connected to a rearward side portion of the elastic band A by means of a loop and buckle fastening *h*, *i*, as illustrated, while the forward upwardly-rising extremity of the normally curved under-strap is detachably connected with the lower post *b* of the front-piece through the medium of the attached hook or hooking-plate H, of like construction to the hooks F, F; said hook upon the lower post *b* lying contiguous the face of the front piece, while the flat slotted hook F leading from the lower disposed end-strap E lies (when hooked) directly over, by its forward end, the upper end of the underneath hook-plate H of the under-strap, each plate E and H being secured one over the other upon the same lower post *b* for reasons to be hereinafter stated.

P denotes the main pad portion forming a component part of my truss formation, which large pad is of any preferred or advantageous shape, although usually of the shape delineated; said pad portion comprising a solid back *l* of wood or other satisfactory material, its front portion being covered by a thick layer of hair, excelsior, or other yielding substance forming a suitable cushioning *m*, the same being inclosed and retained in place by a covering or jacket *n* of kid or other soft pliable leather, which single piece of covering is tautly drawn over the rear of the back *l* and the approaching edges retained in juxtaposition by sewing or other sufficient fastenings.

The cushioned face of the main pad-portion P is provided at any desired or predetermined part thereof with an adjustable detachable knuckle or auxiliary pad K, removably secured upon the front of the large pad by means of a wood-screw J, (or obviously other satisfactory attaching means) projecting rearwardly from the back of the knuckle, whereto its head *j*, is rigidly connected, its threaded shank *o*, penetrating the covering and underneath cushioning and entering by its extremity the coincidently located portion of the penetrable back *l* of the main pad, and thereby firmly retaining the knuckle in desired operative position upon the pad P.

The pad portion P is secured to the inner or rear face of the front-piece B by means of a wood-screw S entering from the outside the outer face of the front-piece midway the bottom and upper posts *b b* and practically lineal therewith, penetrating through an aperture in the front-piece and thence passing through the central orifice *e* of the metallic stay plate C enters by its threaded extremity the coinciding portion of the back *l* of the pad P and thus thoroughly retaining said pad in operative connection with the front-piece.

Evidently through the medium of its screw connection with the front-piece, the pad P can be swung to any desired fixed position in relation to the front-piece, *i. e.*, vertical, horizontal or oblique plane. Moreover that the knuckle K projecting forwardly from the cushion face of the main pad, may, by reason of its screw connection with said pad be readily turned and set at any desired angle; and that said knuckle or auxiliary pad is susceptible of ready attachment to or detachment from one position upon the front of the large pad P to erect same at some other spot upon its face.

The adjustable knuckle K, which in conjunction with the pad portion P is an essentially important feature of my invention, consists of a turned block of wood *p*, or other suitable material, of preferred configuration, having a covering *r*, of a single or double blank of kid or other suitable soft substance, the edges of the tautly-drawn covering being held in juxtaposition at the back of knuckle block by suitable sewing *s*, as indicated; and centrally the back face of the block *p* there is a cavity or recess *t* into which the head *j* of the screw J is disposed; while L is an elongated flat plate of metal provided with a central aperture *u*, and end holes *v*, *v*; said plate being disposed against the back of the knuckle block K, its aperture *u* located centrally in front of the cavity *t*, and the plate extending parallel to the length of the back, screws (or nails) M, M, are inserted through the end holes *v*, *v*, and penetrating the wood firmly hold the plate aforesaid upon the knuckle's back.

As illustrated the screw J passes through the aperture *u* of the plate directly contiguous the head, and is prevented from turning independently of the knuckle block by means of solder *w* disposed about the screw-shank and plate at that point where the screw passes through the circular aperture therefor. Obviously other simple and ordinary means may be utilized in lieu of soldering for the prevention of the screw J turning independently of its block wherein its head is seated; and it is also apparent that, perchance other means may be employed, requiring mere mechanical adaptation, to detachably retain the knuckle upon the pad's front, in lieu of the screw connection shown.

An especially advantageous feature of my construction of a truss is, that the attaching posts *b b* upon the front-piece B penetrate by their rear extremities clear through the aforesaid front piece and rivet to a metallic plate on the under side thereof, whereby secure fastening and stability of the posts is assured. A further advantageous feature is, that in my truss construction the under-strap and the lower end-strap both fasten to the same post on the front-piece B.

My employment of two fastening posts *b*, *b*, an upper and a lower one disposed some distance apart, in conjunction with the upper and lower end-straps E, E, insures by their connection at one end with the band at the other end with the posts of the front-piece a double line of draft in lieu of a single line of draft as is the case with commonly constructed forms of trusses; my double attachment from the end of the band A to the front piece B, giving an equal and uniform pressure on the top and bottom of the pad portion of my truss, independent of the under strap, an advantage lacking in other forms of trusses.

In elastic trusses wherein the band is connected to the front-piece by a single line of draft, obviously the line of draft must come over the top part of the pad portion, causing necessarily the bottom of the pad to roll up, whereby all pressure essential for the retention of the bottom of the pad down, and retaining the rupture, must come strainingly upon the under-strap; a very disadvantageous feature.

My truss is perfectly adjustable in all its bearings. The pressure over the front-piece and pad or pads can be regulated to meet the requirements of the case. And the greater pressure can be secured on the bottom of the pad if necessary, thereby transmitting through the pad a combined inward and upward pressure. By my manner of construction, in whatever position the pad or pads are disposed beneath the front-piece, the pressure remains uniform at both their top and bottom.

In view of the uniform even pressure attained by my adjustable double line of draft through the medium of the upper and lower divergently extending end-straps as operatively disposed, in many instances the utilization of the under-strap may be dispensed with.

By my manner of hooking the under strap underneath the lower stauling end-strap on the same post, accidental unhooking and dislodgment of said under-strap therefrom is rendered impossible; a feature of value.

My truss is reversible, whereby it can readily be adjusted for utilization either as a right or a left side truss; for instance, in Fig. 1, it is represented as arranged for a left-side truss, while to arrange it in shape for a right side truss, as illustrated in Fig. 2, of the drawings, all that is required to adjust it for such antagonistic position is, to invert the truss thereby bringing the front-piece and pad portion to the right side, and concurrently turning the loop *h* of the under-strap around so as to cause the under-strap to hang pendent from its point of attachment to the band A, while also disengaging its hook-provided extremity from what was the lower post of the front-piece in its former position, and hooking said extremity to what now is, in the right-side disposition of the pad or pads, the lower-standing post of the front piece, the hooking-plate of the now lower disposed end-strap being secured upon the self-same post abuttingly over said hook of the under-strap. As is observant, the upper and lower duplicate end-straps E, E, as well as the under-strap G, may be readily lengthened or shortened by means of the adjusting and retaining buckles shown, whereby any degree of tension desirable can expeditiously be had.

An all important feature of my improved construction of a hernial truss is, the pad *per se* provided with the adjustable or movable knuckle, which knuckle, as is evident, is susceptible of being disposed in any desired position upon the face of the large pad that may in any given case be determined necessary or advisable for the securing of an additional pressure directly into the hernial opening while concurrently the large pad thoroughly

supports the muscles surrounding said opening; a matter of the utmost importance in a vast proportion of cases of hernia or rupture.

Evidently, by reason of the screw-shank with which the knuckle or auxiliary pad is provided, said knuckle may detachably be erected at any desired spot upon the face, of the main pad-portion.

Obviously, when sufficient closure and healing of the ruptured part is attained, or additional direct pressure into the hernial opening superfluous, the knuckle may be detached from position leaving only the pad *per se* for causing general pressure and retention of the muscles in proper place.

While I illustrate two varied forms of knuckles by way of exemplification, it is clear that knuckles of different configuration are adaptable of utilization, the shapes being varied to accord with the necessities of any particular case.

Although in the drawings I illustrate a single reversible truss, it is apparent that my invention equally applies to a non-reversible truss formation or to a double truss adapted to reversal or contrariwise.

Clearly my construction of a hernial truss embodies all advantageous features essential to a perfect-working and satisfactory appliance.

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

1. A truss comprising a pad and clamping means therefor, said pad consisting of a yieldable portion having a knuckle secured thereto and adjustable over its entire surface said knuckle being of a material offering more resistance than the said yieldable portion of the pad.

2. The combination with a truss pad, of a knuckle therefor, said knuckle being pyramidal in form and adjustable over the entire surface of the said pad whereby its apex may be caused to extend at any desired angle from said pad.

In testimony whereof I affix my signature, in presence of two witnesses, this 25th day of August, 1893.

WILLIAM S. RICE. [L. S.]

Witnesses:
WM. C. RAYMOND,
G. A. RICE.