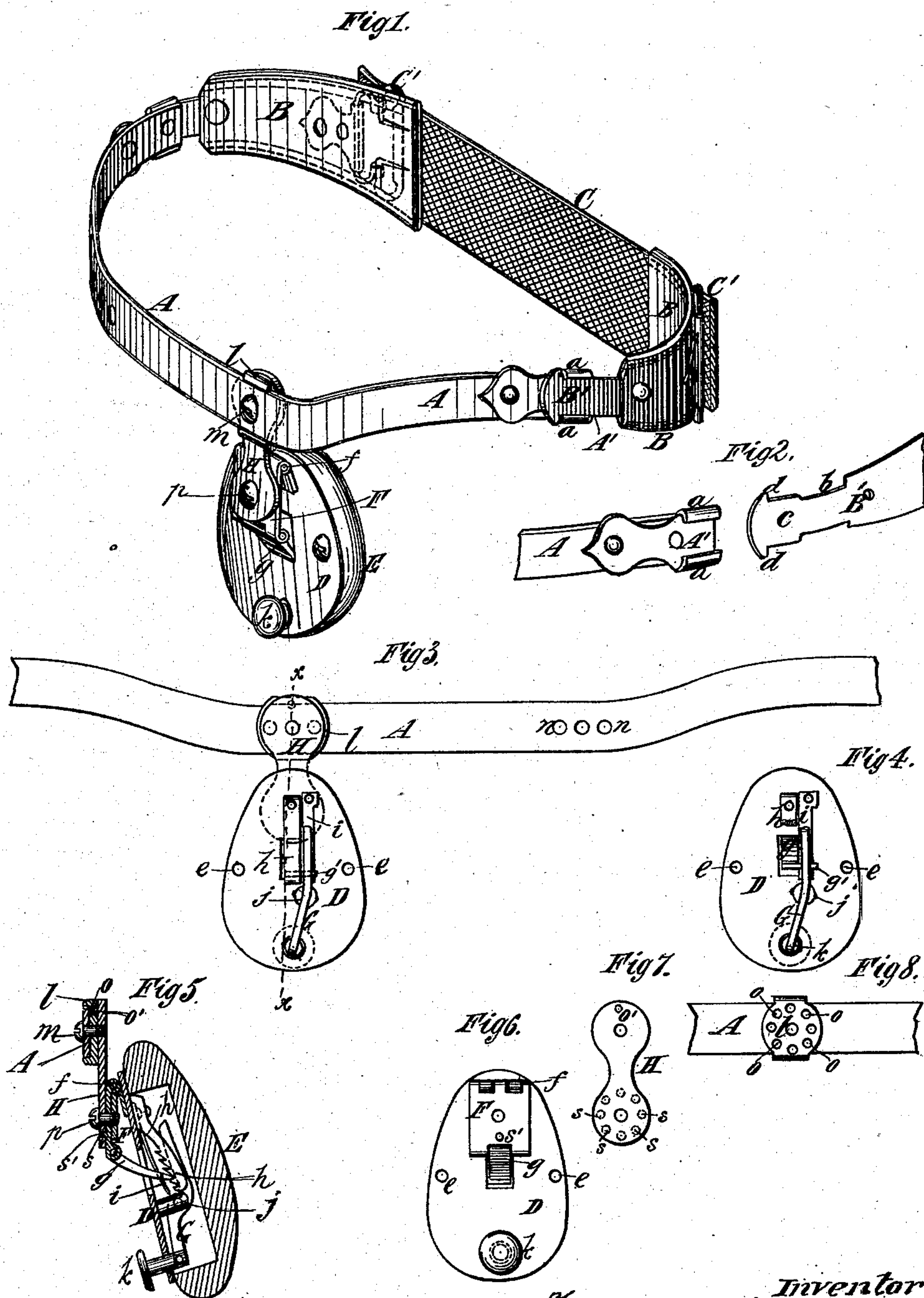


(Model.)

F. N. NORRIS & C. E. SWEET.
Truss.

No. 238,955.

Patented March 15, 1881.



Witnesses

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TRUSS.

SPECIFICATION forming part of Letters Patent No. 238,955, dated March 15, 1881.

Application filed November 9, 1880. (Model.)

To all whom it may concern:

Be it known that we, FREDERICK N. NORRIS, of Poughkeepsie, and CLAYTON E. SWEET, of Wappinger's Falls, both in the county of Dutchess and State of New York, have invented certain new and useful Improvements in Trusses, of which the following is a specification.

Our invention relates to certain improvements in trusses for the relief of hernia or rupture.

Our invention consists in the novel combination, in a truss, of a metal bed-plate, to which is secured the pad or pads, hip-plates which are more elastic or flexible than said bed-plate, and an elastic strap uniting the two hip-plates and adapted to pass across the back of the wearer, whereby the truss is held securely in place, while pressure is taken off the hips, and the pressure of the pad or pads is sustained across the back by the elastic strap, and not concentrated at any one point, as in a spring-truss.

Our invention also consists in the combination, with the hip and bed plates, of a novel form of locking devices, whereby the said hip-plates are connected to the ends of the bed-plate.

Our invention also consists in various details of construction, to be hereinafter fully explained.

In the accompanying drawings, Figure 1 represents a perspective view of a truss of our improved construction. Fig. 2 represents a face view of the adjacent ends of the front or bed plate and one of the hip-plates detached from each other, but illustrating clearly the means for locking them together. Fig. 3 represents a back view of a portion of the bed-plate and an attached pad-plate, the pad itself being removed. Fig. 4 represents a back view of the pad-plate detached from other parts, with the pad removed and the ratchet-bar partly broken away. Fig. 5 represents a section upon the line *x x*, Fig. 3. Fig. 6 represents a front view of the pad-plate. Fig. 7 represents a face view of an extension-arm employed to connect the pad to the bed-plate, and Fig. 8 represents a back view of a portion

of the bed-plate and a saddle to which the pad or the extension-arm is connected.

Similar letters of reference designate corresponding parts in all the figures.

The band of our truss, which surrounds the body of the wearer, consists of four distinct and separate parts—namely, a bed-plate, two hip-plates, and an elastic strap.

A designates the bed-plate, which is composed of metal, which requires to be only in a slight degree elastic, and extending across the front of the wearer, the said bed-plate serving to support the pad or pads of the truss upon the right or left side, or upon both the right and left sides of the wearer, as may be desired. The bed-plate A, as represented, composes nearly half the length of the band, and to each end thereof is connected a hip-plate, B, which is composed of a covered metal plate having more elasticity or flexibility than the bed-plate A, and which may be conveniently bent, to adapt it to come nearly close to the hips of the wearer without pressing thereon. The ends of the two hip-plates B are connected at the back by an elastic strap, C, which is attached to said hip-plates by a buckle, C', at each end thereof, whereby provision is afforded for adapting the truss to the size of the wearer.

It will be observed that as the elastic strap C extends across the back of the wearer the pressure of the pad or pads is sustained by a broad surface, and is not concentrated upon the spine, as in a metal-spring truss, and it does not, like the common elastic truss, have to be drawn so tight around the hips as to cause uneasiness and possibly interfere with the proper circulation in the lower limbs.

One end at least of the bed-plate A, and preferably both ends thereof, have a detachable connection or lock with the hip-plates B, which may be of any suitable character. A very convenient form of connection, and one which we prefer to use, is here illustrated and most clearly shown in Fig. 2.

The bed-plate A has at each end a slideway, A', formed by inwardly turned or projecting lips *a*, which, as here represented, are formed on a separate piece from the bed-plate, and at-

tached thereto by riveting or otherwise. The end of each hip-plate B is provided or constructed with a projecting tongue, B', comprising a portion, *b*, of sufficient width to be inserted and removed transversely between the lips *a*, a second portion, *c*, of greater width, which is adapted to slide under the lips, but cannot be withdrawn or inserted transversely, and stops *d*, whereby the tongue is prevented from being drawn entirely through the slideway. If desirable, the slideway A' might be formed upon the hip-plate, and the bed-plate be provided with a tongue similar to the tongue B'. This connection or lock is very convenient, being placed directly at the side of the band of the truss, where it may be easily reached by the wearer, and the accidental detachment of the hip-plate B from the bed-plate A is effectually prevented.

D designates the pad-plate, and E the pad, which may be composed of wood, ivory, rubber, or other material, and is attached to the plate D in any convenient manner—as, for instance, by screws passing through holes *e* in said plate. The pad-plate D is hinged at *f* to one edge of a supporting-plate, F, which is attached to a support, and to the opposite edge of the supporting-plate F is hinged a pawl, *g*, which engages with a ratchet-bar, *h*, upon the inside of the pad-plate D, as seen clearly in Fig. 5, whereby facility is afforded for tilting the pad relatively to the plate F, and pressing the pad inward and holding it to cause it to press with greater force upon the hernia or rupture.

In connection with the parts last described, devices are very often employed for withdrawing the pawl from the teeth of the ratchet-bar *h*, and permitting the pad to move outward.

The pawl *g* is constructed with a horn or arm, *g'*, forming part thereof and projecting laterally from one side thereof; and *i* designates a spring, which acts upon said horn or arm, and holds the pawl against becoming accidentally disengaged from the ratchet-bar *h*. This spring is attached to the inner side of the pad-plate D, and as it is contained entirely within the pad E it is protected against injury. It also has very little movement, and hence there is no liability of the spring being strained by the movement of the pawl, as in trusses now in use.

In order to disengage the pawl *g* from the ratchet-bar *h*, we employ a lever, G, pivoted at *j* to the back of the pad-plate D, and bearing at one end upon the horn or arm *g'* of the pawl *g*, and having at the other end a push-piece, *k*, extending through an opening in the pad-plate D, so as to be reached from the front of the pad. The novel feature in the lever G over a lever for a similar purpose shown in our Letters Patent No. 169,833, dated November 9, 1875, consists in its being straight, or nearly straight, and arranged at the side of and parallel with the ratchet-bar *h*, and adapted to move in a plane parallel with the

ratchet-bar *h*, thus bringing the lever nearly in the center of the pad, and enabling the pad to be used with equal convenience either for a left or right hand truss. By pressing the push-piece *k* inward the lever G is moved, and bearing against the horn or arm *g'* of the pawl *g*, it raises said pawl against the action of the spring *i* sufficiently to raise the end of the pawl out of engagement with the teeth of the ratchet-bar and permit the pad to move outward.

In order to provide great facility for the adjustment of the pad E, we attach said pad to an extension-arm, H, depending from the bed-plate A, and which serves the purpose of a support for said pad. Upon the bed-plate A is fitted a slide or saddle, *l*, the edges of which form lips for grasping the said bed-plate, thus permitting it to slide upon said bed-plate. The extension-arm H is pivoted to the bed-plate A and saddle *l* by a screw, *m*, passing through a hole in said saddle, and one of several holes, *n*, in the bed-plate, and screwed into a hole in the arm H, thus affording provision for the adjustment of the arm H upon the screw as a pivot. The several holes *n* in the bed-plate A provide for securing the saddle *l*, arm H, and pad E in different positions upon the bed plate. The flat arm H, fitting upon the flat surface of the saddle *l*, forms a turn-table connection; and in order to hold the arm H rigidly at any angle relatively to the bed-plate A to which the wearer may adjust it, we provide one of said parts—in this example of our invention the saddle *l*—with a series of holes or recesses, *o*, and we provide the other of said parts—in this example of our invention the arm H—with a pin or projection, *o'*, adapted to enter any of said holes or recesses *o*, and, when the screw *m* is tightened, to hold the arm rigidly in the position to which it is adjusted. The plate F, to which the pad-plate D is hinged, has a similar turn-table connection with the lower end of the arm H, to which it is secured by a screw, *p*, and the said arm has in it a series of holes or recesses, *s*, and the said plate F a single pin or projection, *s'*, adapted to enter any of said holes or recesses, and to serve the same purpose as the similar connection between the arm H and the bed-plate A.

The plate F, to which the pad-plate D is hinged, may be considered as a part of the pad, so far as the turn-table connection with its support is concerned, for in some cases the pad-plate D might be secured directly to the arm H, or, perhaps, even to the bed-plate A.

It will be observed that the manner of attaching the pad to the bed-plate affords a great facility for adjustment. For example, the pad may be turned and secured at any angle relatively to the arm H when said arm is depending straight down from the bed-plate A, or adjusted at an angle thereto, or the arm may be turned at an angle to the bed-plate A and the pad depend straight down from said arm; and these

adjustments may be effected when the screw which holds the arm H to the bed-plate A is inserted through either of the holes *n* in the bed-plate.

5 If desirable, the arm H might be dispensed with and the pad E connected directly to the saddle *l* and bed-plate A in a manner similar to that in which it is secured to said arm.

10 By our invention we provide a truss which may be worn without inconvenience, and in which provision is afforded for conveniently adjusting the pad to any position which the wearer may desire.

15 We are aware that it is old to connect the parts of trusses by means of a screw inserted through a slot in one part and screwed into the other part. This provides for very conveniently adjusting the position of the two parts relatively to each other; but in order to
20 separate the parts it is necessary to take out the screw.

We are also aware that it is old to connect the pad of a truss to another part, or to an extension-arm, and to connect the arm to the
25 body-band or bed-plate by turn-table connections which provide for swiveling the pad or extension piece or arm.

We are also aware that it is old to connect the extension-arm with the bed-plate by means
30 of a pin on one part adapted to enter any one of a series of holes in the other part. We do not therefore claim this as of our invention.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination, in a truss, of a bed-plate, hip-plates more elastic or flexible than
35 said bed-plate, connected one to each end thereof, and an elastic strap connecting the ends of said hip-plates, substantially as and for the purpose specified.

2. The combination, in a truss, of a bed-plate and a hip-plate, one having at its end a
40 slideway, A', and the other having at its adjacent end a tongue, B', comprising the portions *b c*, of different width, and the stops *d*, whereby provision is afforded for connecting
45 or disconnecting the hip-plate and bed-plate by moving the hip-plate first longitudinally and then transversely, substantially as specified.

3. The combination, in a truss, of a bed-plate having in it a number of holes, *n*, a sliding saddle, *l*, and extension-arm H, secured to
50 said bed-plate and saddle by a screw passing through one of said holes *n*, and a pad having
55 a turn-table connection with said arm, substantially as specified.

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