Aug. 23, 1927. 1,640,229

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ADJUSTABLE SECURING DEVICE FOR TRUSSES

Filed June 11, 1925

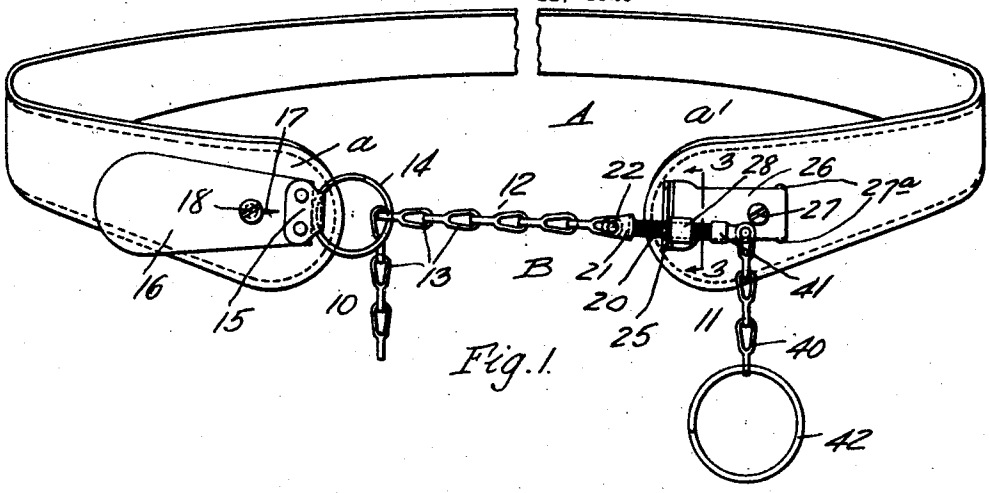


Fig. 1.

Fig. 2.

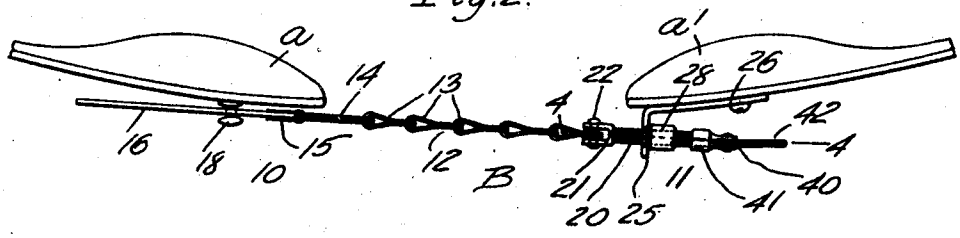


Fig. 3.

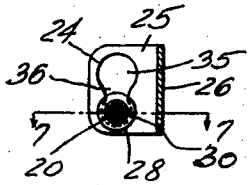


Fig. 4.

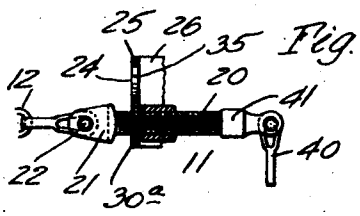


Fig. 5.

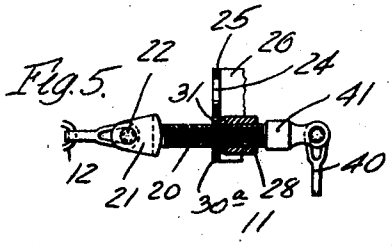


Fig. 6.

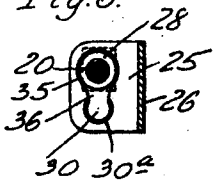
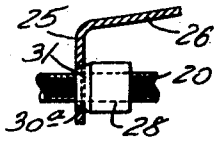


Fig. 7.



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Patented Aug. 23, 1927. 1,640,229

UNITED STATES PATENT OFFICE.

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ADJUSTABLE SECURING DEVICE FOR TRUSSES.

Application filed June 11, 1925. Serial No. 36,397.

This invention relates to trusses, and more particularly to improvements in adjusting means or devices therefor, which are used for the purpose of adjusting the trusses about the body of the wearer and maintaining the pad or pads of the truss in proper position.

The present invention is particularly applicable to trusses formed of a yielding body embracing member of the sort usually made of one or more strips of metal suitably covered, and provided at one or both ends with pads, and which is placed under tension for adjusting and holding the pads firmly in their intended position.

Some objects of the present invention are to provide an improved adjusting device for trusses of the character stated, in which provision is made for a primary or coarse adjustment adapting the truss to be adjusted to the girth of different individuals, and a secondary or fine adjustment by appropriate manipulations of which the truss may be closely and accurately fitted, and which may be easily and quickly adjusted to meet varying or temporary conditions; also to provide an adjusting device for trusses which is instantly detachable or separable to permit the truss to be removed from the body of the wearer without in any way affecting either the primary or secondary adjustments previously effected.

Other objects are to provide, in a truss of this sort, a primary adjusting means which is composed of parts which cannot stretch or shrink and thereby change the relation of the ends of the truss, and will therefore positively remain in its adjusted position, but which can nevertheless be quickly changed so as to permit the truss pads to be moved appreciable distances from or toward each other so that the pads may be positioned approximately in their correct relation on the wearer, and in which the secondary adjusting means is connected to said primary adjusting means, so that the distance between the ends or pads of the truss can be instantly changed to suit temporary conditions or needs of the wearer without affecting the approximate adjustment secured by the primary or coarse adjustment; also to provide secondary or fine adjusting means which, after having been adjusted to correctly position the ends of the truss, may be temporarily released to slacken the truss, and which can be instantly returned to its original position without affecting the adjustment thereof; also to improve or simplify adjusting means for trusses in the other respects hereinafter specified and claimed.

In the accompanying drawings,

Fig. 1 is a face view of a truss showing, by way of example, one embodiment of my improved truss adjusting device applied thereto.

Fig. 2 is a plan view of the adjusting device and the adjacent ends or pads of the truss.

Fig. 3 is a vertical section, on an enlarged scale, of a portion of the adjusting device, on line 3—3, Fig. 1.

Figs. 4 and 5 are vertical sections, taken on an enlarged scale, on the line 4—4, Fig. 2, showing two different adjustments of the secondary adjusting means.

Fig. 6 is a view similar to Fig. 3, showing the secondary adjusting means in releasing position.

Fig. 7 is a horizontal section, on an enlarged scale, on line 7—7, Fig. 3.

The adjusting device of the present invention may be applied to different forms of trusses of that sort which are adapted to yield or give, so as to be maintained in position about the body of the wearer by being placed under tension, and for the purpose of disclosing the invention a truss A formed of a strip or strips of leather covered metal is shown, having pads *a* and *a'* at opposite ends. The adjusting device, designated generally at B, is adapted to be secured to the ends or pads *a*, *a'* of the truss and to extend across the space between said pads for the purpose of positioning these pads as is usual, by appropriate adjustments of said device B.

In the particular embodiment of the invention shown, the adjusting device B comprises a primary or coarse adjusting means 10 attached to one of the ends or pads, and a secondary or fine adjustment 11 attached to the other pad *a*, and which is flexibly connected to the primary means 10, as by a chain 12 composed of a plurality of links 13 of any suitable form so that by drawing the chain taut the truss will be placed under tension when in use.

For the purpose of effecting a quick primary or coarse adjustment, a part is provided which is adapted to be detachably secured to any one of the links 13 so as to vary the distance between the pads *a* and *a'* according to the girth of the wearer, and

for this purpose, in the construction shown a split ring 14 is provided, such as is commonly known as a key ring, and which is connected to one of the pads in a suitable manner as by means of a loop or shackle 15 secured to a flexible attaching element such as the leather tongue 16, which is preferably pivotally and detachably secured to the pad *a*, as by means of an aperture or slit 17 formed therein and engageable over a fixed stud 18 projecting outwardly from the truss A. By disconnecting and moving the split ring 14 from one of the links and securing it to another link, the pads *a* and *a'* may be quickly moved an appreciable distance towards or from each other as required.

By using the chain 12, instead of the usual leather strap and buckle, the desired flexibility is secured without the stretching and shrinkage which commonly occurs with leather or fabric connecting members.

The fine adjusting means 11 preferably includes a screw threaded rod 20 provided at one end with a fixed shackle or head 21 provided with a pin or stud 22 adapting it to pivotally secured to that end of the chain 12 which is adjacent the pad *a'*. For the purpose of varying slightly the distance between the pads *a* and *a'* after the initial adjustment has been effected by the adjusting means 10, the threaded rod 20 is arranged to pass through an aperture 24 in a fixed lug or projection 25 formed on a plate 26 rigidly secured, as by means of a screw or stud 27 and prongs 27ª to the outer face of the pad *a'*, and the rod 20 is provided with a nut 28 movable lengthwise thereon, and which is adapted to bear against the outer face of said lug 25.

In the construction shown, the aperture 24 is provided with a rounded portion 30 which is of less dimensions than the transverse dimensions of the nut 28 and is formed with a tapered or chamfered seat 30ª, and the nut is provided with a tapered or conical end 31 adapted to fit in said seat 30ª with a wedging action.

After the coarse or primary adjustment of the truss has been made, the pads *a* and *a'* may be very accurately positioned by turning the nut 28 on the rod 20 in one direction or another as required, so that after the proper adjustment of the truss has been effected, the resulting tension under which the same is placed will cause the nut 31 to be maintained in contact with the lug 25, while through the medium of the flexible connection of chain 12, the pads *a* and *a'* are permitted to adapt themselves to the body movements of the wearer, thereby providing the maximum of comfort during the use of the truss.

The truss is preferably further provided with means for permitting the tension thereon to be temporarily relieved without removing the truss or disturbing the adjustments thereof, and for this purpose, in the construction shown, the aperture 24 of the lug 25 is formed with an enlarged portion 35 which is sufficiently large to permit the nut 28 to easily pass therethrough, so that if an outward pull be exerted upon the rod 20, to disconnect the nut 28 from the seat 30ª of the aperture 24, the rod 20 may be passed through the connecting portion 36 of said aperture so as to bring the nut 28 into alignment with the enlarged portion 35 of said aperture, and allow the same to pass therethrough in a direction towards the other pad *a*.

If desired, means may be provided for enabling said outward movements to be effected. The means shown in the drawings for this purpose comprises a chain 40 pivotally connected to a head 41 on the outer end of the rod 20, said chain being, if desired, connected to a ring 42 at its outer end, and which forms a convenient means adapted to be grasped so as to exert an outward pull on the rod 20. The outer head 41 of the rod is preferably of a size such that it will readily pass through the portion 35 of the aperture 24, and the ring 42 is adapted to form a stop engageable with the lug 25 to prevent the chain 40 from passing entirely out through the aperture 24. The outward movement of the rod 20 is preferably limited, as, for instance, by forming the inner head or shackle 21 thereof of a size such that it cannot pass through the aperture 24, so that by this arrangement the chain 12 cannot accidently pass into said aperture, and upset or change the adjustment of the device B or cause the misplacement of the pads *a* or *a'*. By making the shackle or head 21 larger than the enlarged part 24 of the key hole slot or opening, the placing of the parts of the fine adjustment into their operative positions is greatly facilitated since the chain 41 is then pulled until the shackle 21 acts as a stop against the lug 25, whereupon the chain 40 is pulled downwardly to move the bolt into the narrow portion of the slot.

By means of the adjusting means B described, the truss A can be readily adjusted so as to approximately position the pads *a* and *a'* thereof according to the individual user's requirements by means of the coarse or primary adjustment 10, after which an exact adjustment of the pads may be effected by means of the secondary or fine adjustment 11.

If during the wearing of the truss, the user desires to momentarily release the pressure thereof, this may be done by disengaging the nut 28 from the seat 30ª and allowing it to pass through the portion 35 of the aperture 24, while when it is necessary to remove the truss entirely, the same may

be instantly accomplished by disconnecting the tongue 16 from the stud 18.

It is obvious that, if desired, said quick detachable means for removing the truss may be associated with the secondary adjusting means on the pad a' instead of the primary adjusting means 10 as shown.

I claim as my invention:—

1. In a truss having a flexible body embracing member, the combination of an adjusting device for adjusting the truss to fit the user and placing said body member under tension, quick operable means for slackening said truss and relieving the tension on said body member, and quick detachable means independent of said slackening means for disconnecting said adjusting device and permitting the removal of the truss.

2. In a truss, the combination of a flexible body embracing member, an adjusting device for adjusting the truss to fit the user and placing said body member under tension, said adjusting device having quick detachable means for slackening said truss and relieving the tension on said body member, said quick detachable means being constructed to permit said truss to be slackened and again placed under tension without disturbing the original adjustment of the truss or said adjusting device.

3. In a truss having a yielding body embracing member formed with its ends in spaced relation, pads on said ends a chain adjustably connected to one of the ends of said truss, adjusting means including a plate fixed to the other end of said truss, an apertured part extending from said plate, a rod passing through said aperture and having a swivelled connection with said chain, and a part movable lengthwise on said rod and adapted to bear against said apertured part of said plate which is adapted to vary the distance between said ends of said truss and to place said truss under tension to position said pads by appropriate movements thereof along said rod.

4. In a truss having a yielding body embracing member formed with its ends in spaced relation, pads on said ends, a flexible member connected to one of the ends of said truss, adjusting means including a plate fixed to the other end of said truss, a part projecting from said plate and having an aperture therein, a threaded rod passing through said aperture and having a connection with said flexible member at one side of said projecting part, and a nut movable lengthwise upon said rod and disposed on the opposite side of said projecting part and adapted to engage the same, whereby movements of said nut along said rod will cause the distance between said truss pads to be varied and said truss placed under tension.

5. In a truss having a yielding body embracing member formed with its ends in spaced relation, pads on said ends a flexible member connected to one of the ends of said truss, adjusting means including a plate fixed to the other end of said truss, a part projecting from said plate and having an aperture therein, a threaded rod passing through said aperture and having a connection with said flexible member at one side of said projecting part, a nut movable lengthwise upon said rod and disposed on the opposite side of said projecting part and adapted to engage the same, whereby movements of said nut along said rod will cause the distance between said truss ends to be varied and said truss placed under tension, and said nut having a tapered end adapted to engage a tapered seat formed in said aperture to frictionally maintain said nut in engagement with said projecting part while said truss is under tension.

6. In a truss having a yielding body embracing member formed with its ends in spaced relation, pads on said ends, a flexible member connected to one of the ends of said truss, adjusting means including a plate fixed to the other end of said truss, a part projecting from said plate and having an aperture therein, a threaded rod passing through said aperture and having a connection with said flexible member at one side of said projecting part, a nut movable lengthwise upon said rod and disposed on the opposite side of said projecting part, said aperture in said projecting part having a portion of less dimensions than said nut to permit said rod to pass therethrough and said nut to abut against the adjacent portions of said projecting part to maintain a desired relation between said truss ends and hold said truss under tension, and said aperture also having a portion through which said nut may pass toward said first mentioned end of said truss, to permit the tension on said truss to be relieved.

7. In a truss having a yielding body embracing member formed with its ends in spaced relation, pads on said ends a flexible member connected to one of the ends of said truss, adjusting means including a plate fixed to the other end of said truss, a part projecting from said plate and having an aperture therein, a threaded rod passing through said aperture and having a connection with said flexible member at one side of said projecting part, a nut movable lengthwise upon said rod and disposed on the opposite side of said projecting part, said aperture in said projecting part having a portion of less dimensions than said nut to permit said rod to pass therethrough and said nut to abut against the adjacent portions of said projecting part to maintain a desired relation between said truss pads and

hold said truss under tension, the relation between the ends of said truss being adapted to be varied by turning and moving said nut along said rod, and said aperture in said projecting part also having a portion through which said nut may pass towards said first mentioned end of said truss to relieve the tension on said truss and which permits said nut to be reengaged in the first mentioned portion of said aperture, without disturbing the setting of said adjusting means or the position of said pads.

8. In a truss having a body embracing member the ends of which are in spaced relation, pads on said ends the combination of primary quick adjusting means pivotally connected to one of said ends and adapted to effect approximate adjustments of said truss, a secondary fine adjusting means connected to the other end, said primary adjusting means having a flexible part connected to said secondary adjusting means and adapted to be drawn taut thereby, said secondary fine adjusting means being operable to effect a close adjustment of said truss, and said ends of said truss being adapted to change their relative positions in accordance with the body movements of the wearer without disturbing said adjustments of said truss by reason of said pivotal connection of said primary adjusting means and said flexible connection between the same and said secondary adjusting means.

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