J. W. BUNKER.

HERNIAL TRUSS.

APPLICATION FILED DEC. 30, 1904. RENEWED JUNE 5, 1909.

948,305. Patented Feb. 8, 1910.

Fig. 1.

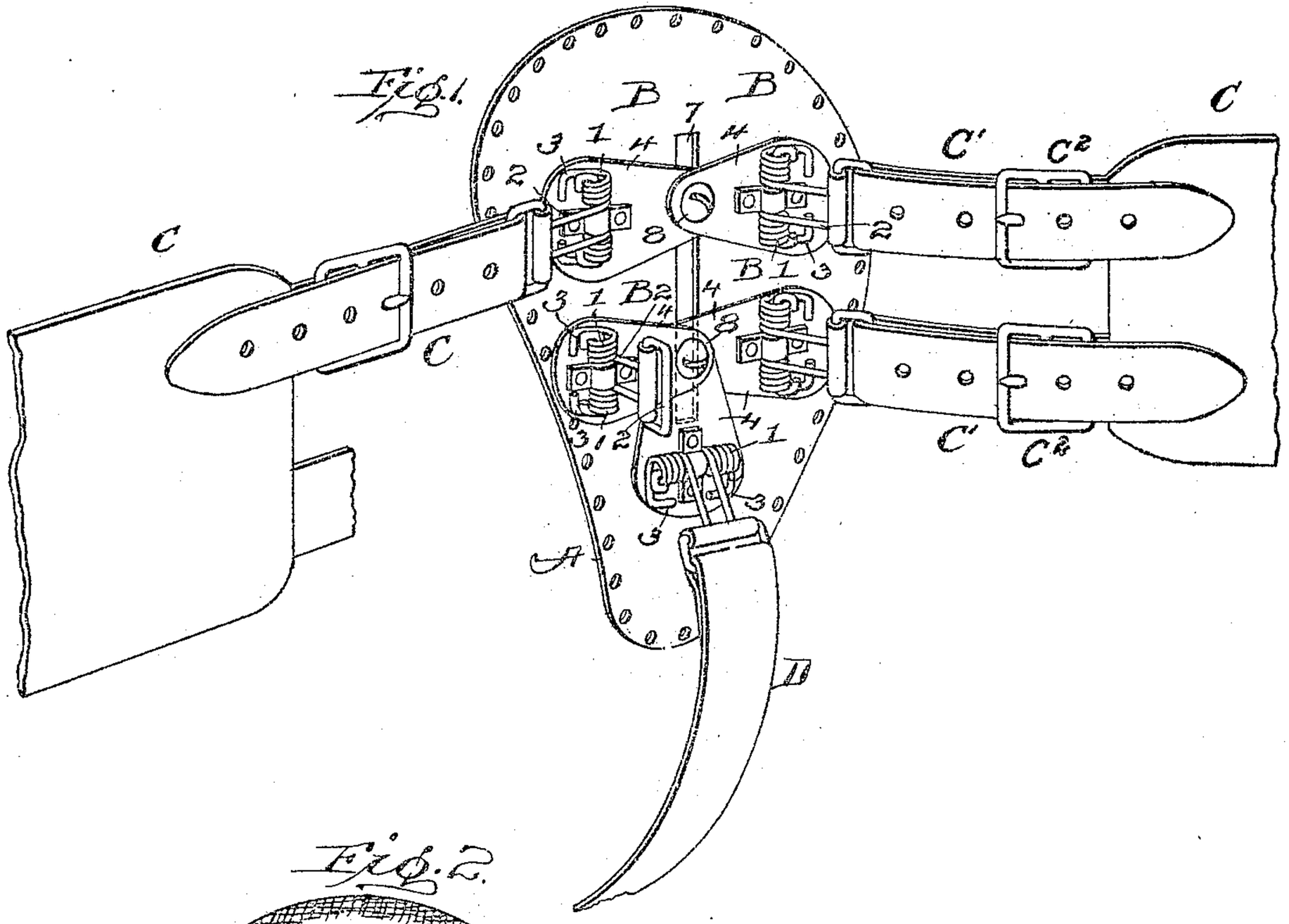


Fig. 2.

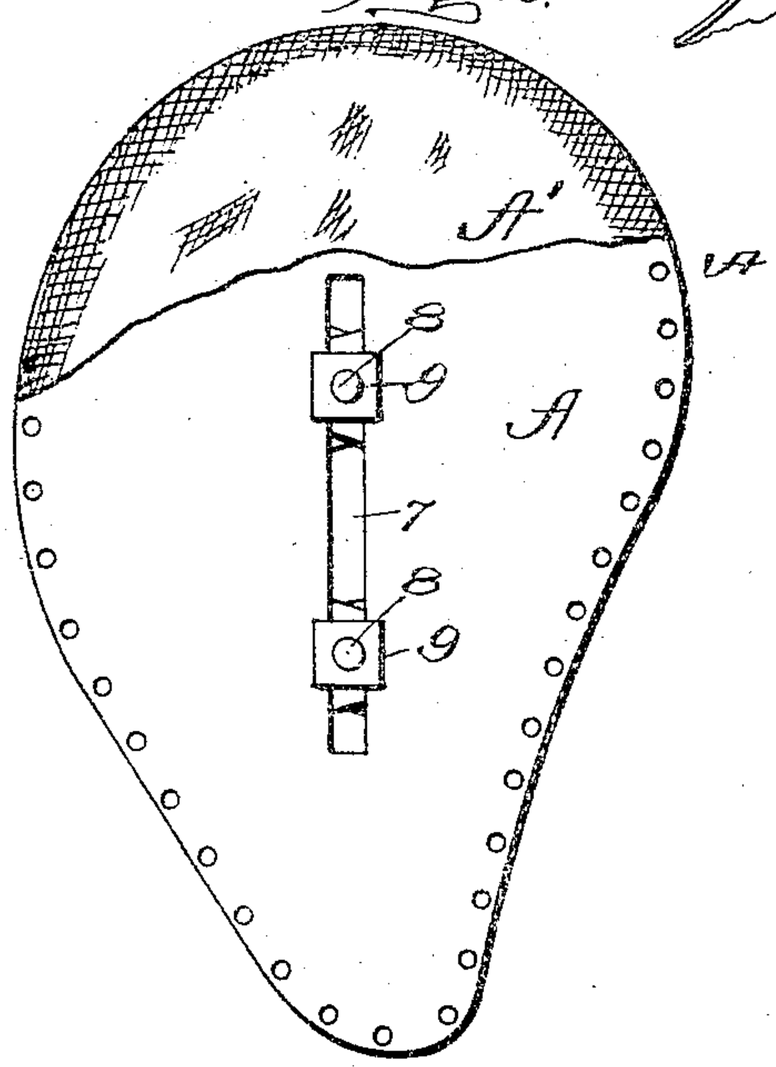
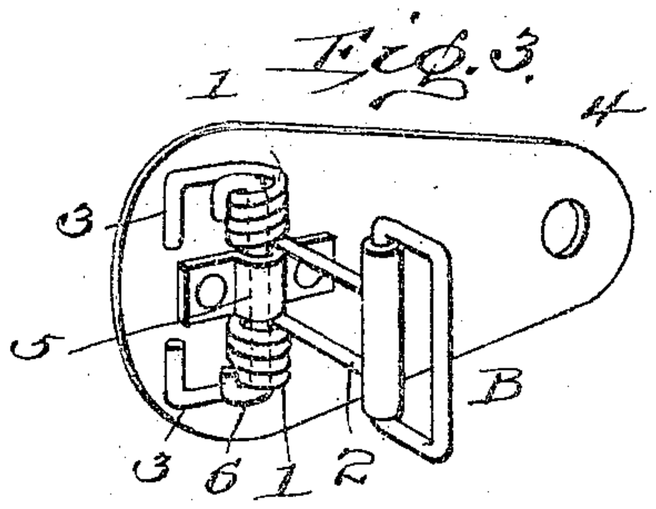


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

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HERNIAL TRUSS.

948,305. Specification of Letters Patent. Patented Feb. 8, 1910.

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To all whom it may concern:

Be it known that I, JOHN WALLACE BUNKER, a citizen of the United States, residing in the borough of Bronx, in the city of New York and State of New York, have invented new and useful Improvements in Hernial Trusses, of which the following is a specification.

This invention relates generally to certain improvements in trusses and particularly to the pads thereof and has for its main or ultimate object the provision of a pad having spring tension members and provision for adjusting the pressure exerted by the same, whereby the pad is adapted to be used for different ruptures, scrotal, umbilical or femoral for example.

The invention consists in certain peculiarities in the construction of parts and in certain novel combinations of elements substantially as hereinafter described and particularly pointed out in the subjoined claims.

In the accompanying drawings, I have illustrated an embodiment of the present invention which is preferred for the reason that by it the full measure of advantages is best secured, but changes in the detail embodiment shown may be made without departing from the spirit of the invention.

In said drawings:—Figure 1 is an outer face view of the base plate of a pad embodying my improvements, showing the ends of the waist and crotch straps connected with the spring tension devices thereof. Fig. 2 is a rear face view of the pad, showing a portion of the same broken away to disclose the base plate and Fig. 3 is a detail view of one of the spring tension devices and its support.

The same reference characters designate the same parts in the several views.

A designates a pad which is preferably oval and is provided with any suitable means or inner-surface portion (as indicated at A′, Fig. 2) for contact with the wearer. Upon the outer face of this pad there are mounted a plurality of spring tension devices B which are adjustable relatively to each other and are engaged by the waist belt and crotch straps C and D, as indicated in Fig. 1. The spring tension devices preferably employed are of that type which hold the pad yieldably to the rupture and with a pressure which increases when the abdominal wall is expanded; each comprising a spring element, such as the coils 1 connected with each other by a loop 2 constituting an outward projecting means adapting the spring for connection with the waist belt or crotch strap, and each of said coils terminating at one end in an arm or projection 3 which presses the pad toward the wearer.

In operation the belt and strap are drawn sufficiently tight to put the springs under tension, which is communicated to the pad, and when the abdominal wall is expanded additional pressure is imposed on said belt and strap and the same are caused to pull the loops of the spring tension devices outward, thus giving the effect of an elongation of said belt and straps, which compensates for such expansion and avoids an uncomfortable increase of pressure of the belt and straps upon the person of the wearer, and at the same time increasing the tension of the coiled spring 1 and causing the same through the arms 3 to press the pad more firmly to the wound. Thus protrusion of the wound is efficiently prevented when the wearer coughs or bends forward as well as at all other times, and the truss may be worn with a minimum of discomfort.

The series of spring tension devices are preferably arranged to provide, in addition to one for the crotch strap, a plurality or pair adapted to be arranged near one end of the pad or above the horizontal center thereof, and a second plurality or pair adapted to be arranged near the other end of said pad or below the horizontal center of the same, which devices are adapted to be engaged by the waist strap or belt C, which latter has at each end a plurality of independently adjustable straps C′ each of which is suitably engaged with the spring tension device contiguous to it. The independent adjustment of said straps C′ may be provided for in various ways, such, for example, as the buckles C^2, shown. The crotch strap D has one of its ends similarly, or by other suitable means, attached to its spring tension device and its other end is suitably secured to the belt or strap C. Thus, the straps may be adjusted to cause the pressure upon the wound to be, or to preponderate, in an upward or downward direction, or to be equal throughout the entire effective area of the pad. Thus, if the tendency to protrusion is in a downward di-

rection, the lower straps C′ may be drawn more tightly than the upper ones, whereby the lower spring tension devices will be put under greater tension than the upper ones and the pad thus caused to impose pressure in an upward direction, while if a downward pressure is desired the upper straps are tightened more than the lower ones, and if a direct upper pressure (in a horizontal line) is desired the four straps are tightened equally. Each of these spring tension devices is mounted upon a plate 4 which constitutes a base therefor, and said plate is provided with a strap 5 through which extends a pin 6 which also extends through said coils 1 and serves to secure the parts together. Each of said plates 4 is pivotally mounted. It is very advantageous to mount the pivots adjustably on the pads, which is best accomplished by mounting them in an elongated slot 7 formed in the pad A. Preferably, the pivot is composed of a screw 8 engaged by a nut 9, as shown, whereby the parts may be fixed in adjusted position. Thus, the pad is provided with a plurality of groups of spring devices, which groups are adjustable relatively to each other and each member of each of which groups is adjustable relatively to the other member thereof. It will be observed that said adjustments are for the purpose of changing the relation of the spring devices to each other and to the pad in order to further adapt the pad for the treatment of different types of hernia. It is considered to be very advantageous to use a series of five of said spring tension devices arranged in two groups of two and three respectively and to mount the members of each group upon a common pivot 8 from which the members extend in different directions.

It will be observed that the construction described provides a very advantageous means for giving any desired direction of pressure and for adapting the pad to various ruptures. Thus, in the form shown in Fig. 1 the pressure is directly inward and approximately equal throughout the area of the pad, but this pressure may be changed in various ways, for example, by adjusting the straps C′ as above stated; or by adjusting the members of either or both groups of tension devices pivotally relatively to each other: or by adjusting the groups bodily toward or from each other (which gives a pressure in an upwardly or a downwardly inclined direction, according to their location with respect to the center of the pad); or by removing one or more of the members of either group, or one or the other group as an entirety; or by certain combinations of such suggested adjustments. It will be understood that when the pivot screw 8 is slacked up or loosened either of the members secured thereby may be turned pivotally or the group moved bodily in the slot and that when said screw is tightened the members will be fixed in their adjusted position: and, further, it will be evident that when either of said pivot screws 8 is withdrawn, any of the tension devices thereon may be removed bodily, if its use is not needed. This last named adjustment is desirable when, for example, the pad is to be used for the treatment of umbilical hernia in which event the bottom tension device and leg strap are not needed.

In practice the under or rear face of the pad A will be covered by suitable means such as A′, Fig. 2 which will render the device comfortable to the wearer, but the particular means for this purpose form no part of the present invention and many suitable for the purpose will readily suggest themselves to those persons skilled in this art.

Having thus described the invention what I believe to be new and desire to secure by Letters Patent, and what I, therefore, claim, is:—

1. A truss pad provided with a plurality of springs having means adapting them for connection with the devices by which the truss is attached to the wearer, said springs being adjustable on said pad relatively to each other, and means for fixing them in their adjusted position on said pad.

2. A truss pad provided with a plurality of springs having means adapting them for connection with the devices by which the truss is attached to the wearer, said springs being mounted so as to be bodily and pivotally adjustable relatively to said pad and to each other, and means for fixing them in their adjusted position.

3. A truss pad provided with a plurality of groups of spring devices having means adapting them for connection with the devices by which the truss is attached to the wearer, each member of said group being adjustable relatively to the other member thereof, and means for fixing said members in their adjusted position.

4. A truss pad comprising a plurality of relatively adjustable groups of spring devices having means adapting them for connection with the devices by which the truss is attached to the wearer, and means for fixing the same in their adjusted position.

5. A truss pad comprising a plurality of relatively adjustable groups of spring devices having means adapting them for connection with the devices by which the truss is attached to the wearer, each of said groups composed of relatively adjustable members, and means for fixing the same in their adjusted position.

6. A truss having its pad provided with a group of springs, and supporting devices for said springs having a common pivot around which the springs and their supporting de-

vices are adjustable on the pad and provided with means for fixing them in adjusted position, and means for attaching the truss to the wearer and putting tension on said springs.

7. A truss pad provided with a plurality of independently adjustable plates each provided with a spring, said springs having means adapting them for connection with the devices for attaching the pad to the wearer, and means for fixing said plates in adjusted position on said pad.

8. A truss pad provided with a plurality of plates each provided with a spring, said springs having means adapting them for connection with the devices for attaching the pad to the wearer, means by which said plates are bodily adjustable on said pad and means by which they are secured in adjusted position.

9. A truss pad provided with a plurality of plates each provided with a spring, said springs having means adapting them for connection with the devices for attaching the pad to the wearer, means by which said plates are bodily and pivotally adjustable on said pad, and means by which they are secured in adjusted position.

10. A truss pad provided with a plurality of groups of plates, each of said plates being provided with a spring and said springs having means adapting them for connection with the devices for attaching the pad to the wearer, and means by which said groups of plates are adjustable bodily toward and from each other and the members of each group adjustable pivotally relatively to each other and said plates are fixed in adjusted position.

11. A truss pad comprising a group of spring devices each comprising a plate and a spring mounted on said plate and having means adapting it for connection with a device by which the pad is attached to the wearer, a screw pivot extending through adjacent ends of said plates and through said pad, and a holding nut engaging said screw pivot.

12. A truss pad having an elongated slot, a group of spring devices having means adapting them for connection with the devices which attach the pad to the wearer, a common pivot for said spring devices extending through said slot and means coöperating with said pivot to fix said devices in adjusted position.

13. A truss comprising a pad having an elongated slot, a plurality of groups of spring tension devices having means adapting them for connection with the devices which attach the pad to the wearer, each of said spring devices comprising a plate, a pivot extending through said slot and the adjacent ends of said plates of each group, and means coöperating with said pivots to hold the plates in adjusted position.

14. A truss pad comprising a plate having means by which it is secured in various positions of adjustment to said pad, and a spring carried by said plate and provided with means adapted to engage the strap by which the pad is attached to the wearer.

15. A truss pad comprising a plate having means by which it is secured in various positions of adjustment on said pad, and tension means carried by said plate and comprising a loop at one end, spring coils at the base of the arms of said loops and arms projecting from said coils and bearing upon said plate.

16. A truss pad comprising a plurality of plates having means by which they are secured in various positions of adjustment relatively to each other on said pad and tension means carried by said plate and comprising a loop at one end, spring coils at the base of the arms of said loops and arms projecting from said coils and bearing upon said plate.

17. A truss pad comprising a plurality of groups of plates, one of said groups being composed of two members and the other of said groups being composed of three members, each of said plates having a tension spring and said springs being provided with means for connecting them with the waist and crotch straps, means by which each of said members is adjustable on the pad, and means for fixing the same in adjusted position.

18. A truss pad formed with an elongated slot and provided with a plurality of groups of plates, each of said groups having attaching means adjustable in said slot and each plate having a pivotal connection with said attaching means, a tension spring carried by each plate, said springs having means by which they are connected with the waist and crotch straps, and means by which said plates are fixed in adjusted position on said pad.

19. A truss pad provided with a plurality of spring tension devices, each comprising a spring, a part projecting inward from the spring and adapted to press the pad inward when pressure is put on the device and a part extending outward from the spring and adapted to engage the means which attaches the pad to the wearer, and independently adjustable carrying means for the spring tension devices.

20. A truss pad provided with a plurality of spring tension devices bodily and pivotally adjustable thereon, each comprising a spring, a part projecting inward from the spring and adapted to press the pad inward when tension is put on said device and a part extending outward from the spring and adapted to engage the means which attaches the pad to the wearer.

21. A truss pad provided with a spring

tension device and bodily and pivotally adjustable carrying means therefor, said tension device comprising a spring, a part projecting inward from the spring and adapted to press the pad inward when tension is put on the device and a part extending outward from the spring and adapted to engage the means which attaches the pad to the wearer.

22. A truss pad provided with a plurality of spring tension devices and a carrying means for each of the same, said carrying means being adjustable bodily and pivotally relatively to each other.

23. A truss, comprising a pad having a pair of spring tension devices above and a second pair of spring tension devices below its horizontal center, each comprising an outwardly projecting part, a spring intermediate of its ends and an inner part projecting from the spring and adapted to press the pad inward when tension is put thereon; and means for attaching the pad to the wearer, having a pair of straps at each end, engaging the outwardly projecting parts of the adjacent spring tension devices, said straps being independently adjustable to put tension on said devices, substantially as described and for the purposes set forth.

24. A truss, comprising a pad having a plurality of spring tension devices adjustably mounted thereon and adapted to be arranged, in pairs, at opposite sides of the center of the pad, and means for attaching the truss to the wearer, having each of its ends provided with a plurality of straps each connected with one of said spring tension devices, said straps being adjustable to vary the tension of said devices.

25. A truss, comprising a pad having a plurality of groups of spring tension devices, said groups being independently adjustable on said pad and each composed of members which are adjustable relatively to each other, and means for attaching the truss to the wearer, having its ends provided with independently-adjustable straps connected with said spring-tension devices.

26. A truss, comprising a pad having a plurality of spring tension devices adjustably mounted thereon, each having a spring intermediate of its ends, a part projecting inward from the spring and adapted to press the pad inward when tension is put on the device and a part extending outward from the spring and adapted to engage the means which attaches the truss to the wearer; in combination with said means, having straps connected with the outward-extending parts of the spring-tension devices, and adjustable to vary the tension on said devices.

27. A truss, comprising a pad having a plurality of spring tension devices at each side of its center, said spring tension devices being adjustable bodily and pivotally on said pad, and means for attaching the truss to the wearer, having its ends provided with straps each of which is connected with one of said spring tension devices, said straps being adjustable to vary the tension of said devices.

In testimony whereof I affix my signature, in presence of two subscribing witnesses.

JOHN WALLACE BUNKER.

Witnesses:

HORACE G. PECK,

WILLIAM H. MCSOLEY.