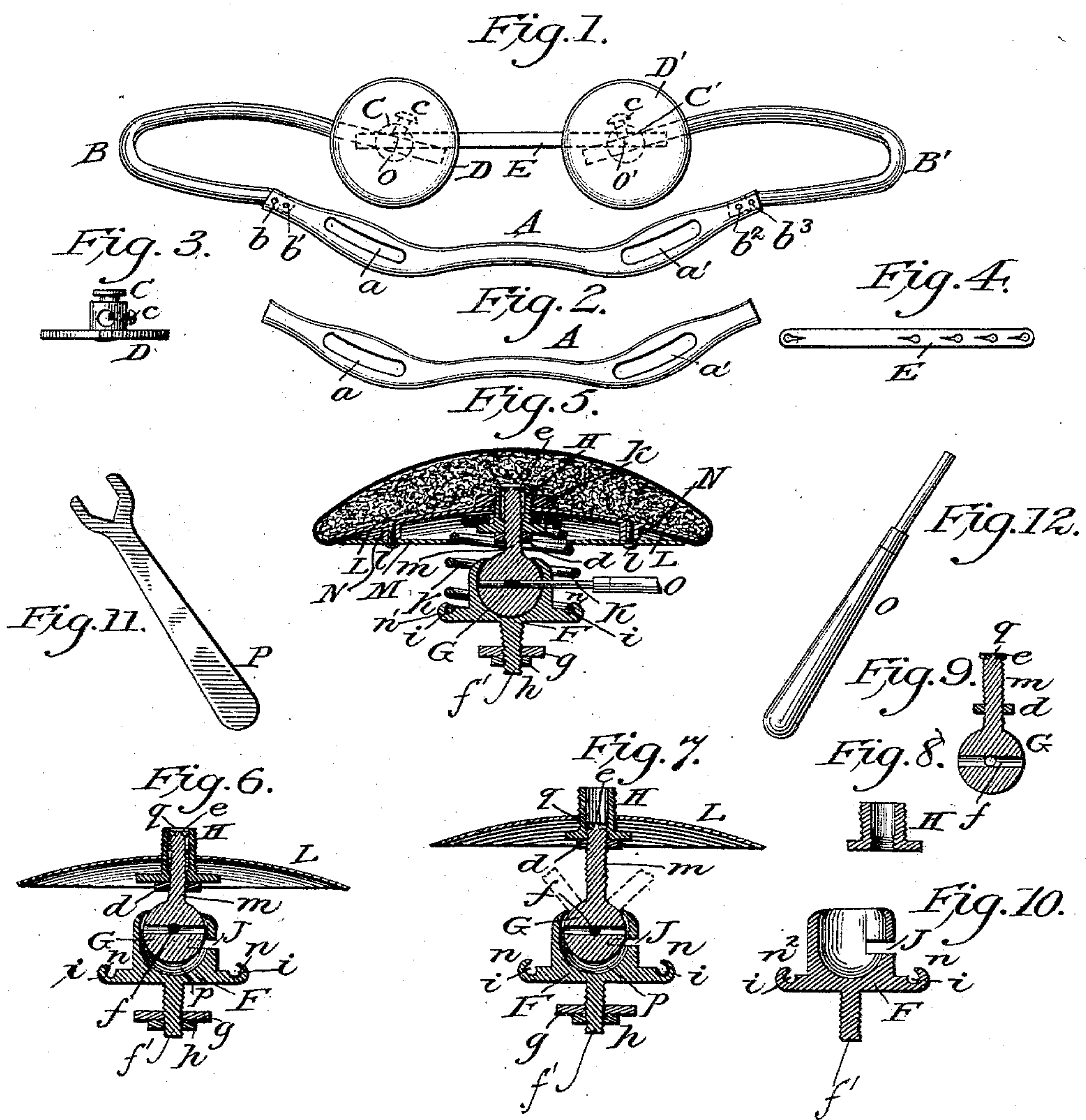


(No Model.)

H. KLINGLER.  
TRUSS.

No. 414,550.

Patented Nov. 5, 1889.



Witnesses.

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## TRUSS.

SPECIFICATION forming part of Letters Patent No. 414,550, dated November 5, 1889.

Application filed December 13, 1888. Serial No. 293,530. (No model.)

*To all whom it may concern:*

Be it known that I, HERMAN KLINGLER, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Trusses, of which the following is a specification.

This invention relates to that class of trusses which consist of a metallic band or belt to which the pads are yieldingly attached, so as to exert a continuous pressure on the rupture.

The object of my invention is to improve the construction of the truss-belt and also to improve the construction of the truss-pad, so as to render the same easily adjustable to permit the pressure exerted by the pad to be regulated.

The invention consists to these ends of the improvements which will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of the truss with the pads removed. Fig. 2 is a detached elevation of the central front portion of the truss. Fig. 3 is a top plan view of one of the back plates of the truss. Fig. 4 is an elevation of the strap connecting the rear ends of the belt. Fig. 5 is a longitudinal section of one of the pads and connecting parts detached from the belt. Figs. 6 and 7 are similar views of the pads with the padding and spring omitted, showing different adjustments of the pad-plate. Fig. 8 is a vertical section of the screw-nut secured to the pad-plate. Fig. 9 is a section of the ball of the joint whereby the pad is connected with the belt. Fig. 10 is a horizontal section of the socket of said joint. Figs. 11 and 12 are views of the wrench and lever whereby the parts are adjusted.

Like letters of reference refer to like parts in the several figures.

The belt of the truss consists of two spring-wire bows B B', connected together at their front ends by a connecting bar or piece A, and at their rear ends by a detachable leather strap E, or other fastening.

D D' represent the back plates, which are movably attached to the rear portion of the truss-belt in any suitable manner, so as to accommodate themselves to the motions of the body of the wearer. In the construction

shown in the drawings they are provided with perforated cylindrical lugs or shanks C, Fig. 3, through which the ends of the bows B B' pass, and they are held against lengthwise movement on the bows by set-screws c, which project into annular grooves o o' (shown by dotted lines in Fig. 1) in the bows, so as to permit the back plates to rock on the bows. The central connecting-bar A is provided at opposite ends with sockets, in which the front ends of the bows B B' are secured by pins or rivets b b' b<sup>2</sup> b<sup>3</sup> or otherwise. This forms a strong connection having no projecting parts. The central portion of the connecting-piece A is curved, as shown, so as to properly conform to the shape of the pelvis-bone. The bar A is provided on opposite sides of its central curve with longitudinal slots a a', which receive the attaching shank or screw of the truss-pads.

L represents the rigid pad-plate, to which the cushion of the pad is secured by means of a clamping-plate M, attached to the rear side of the pad-plate by screws l l'. These screws pass through space-blocks N N', arranged between the plates M L, as represented in Fig. 5. The edge of the facing-cloth of the pad is stretched over the edge of the pad-plate L, and is clamped between the pad-plate and the clamping-plate M. Upon loosening the clamping-plate M the facing-cloth can be removed and cleaned or a new cloth substituted therefor. The pad is attached to the truss-belt by a ball-and-socket joint, so as to have a free universal movement, which enables it to adapt itself to the motions of the wearer's body.

F represents the socket of the joint, which is provided with a screw-shank f', whereby the pad is attached to the belt, the shank passing through the slot a of the center portion A, and being held therein by a washer g and nut h applied to the shank, the washer bearing against the outer side of the center piece. The slotted portions of this center piece are preferably flattened, as shown, while the intermediate central portions and the socketed end portions are preferably round in cross-section. Upon loosening the nut h the pad may be moved in the slot to accurately adjust it to the rupture.

G is the ball seated in the socket F and



provided with a threaded stem *m*, which engages in a cylindrical screw-nut *H*, secured centrally in the pad-plate *L*, as represented in Fig. 5. The screw-nut *H* is externally threaded and secured in a threaded opening in the pad-plate by a nut *k*, applied to the nut and bearing against the inner side of the pad-plate.

*K* represents a spiral spring surrounding the stem *m* and socket *F* and interposed between the pad-plate *L* and a projecting annular flange or rim *i*, formed on the socket *F*, the clamping-plate *M* being provided with a central opening through which the spring passes. The upper end of the spring *K* is clamped between the pad-plate *L* and a flange on the screw-nut *H*, and the lower end of the spring is seated in an annular groove *n*, formed in the outer side of the flange of the socket *F*. The spring *K* tends to press the pad outwardly against the rupture and exerts a continuous pressure on the pad. The cavity of the socket *F* is elongated or made larger lengthwise than the ball *G*, as shown in Figs. 6 and 7, so as to give the ball the necessary amount of play in the socket to permit the pad to move inwardly and outwardly, as well as swivel in the socket. The ball *G* is provided with radial holes *f*, in which a lever or pin *O*, Fig. 12, may be inserted for turning the ball in its socket. A circumferential slot *J* is formed in the side of the cylindrical socket *F* for admitting this lever, as represented in Figs. 5, 6, 7, and 10. Upon turning the ball in one or the other direction, the screw-nut *H* of the pad is caused to move inwardly or outwardly on the screw-stem *m* of the ball and the pad caused to approach the socket *F* or recede therefrom, thereby increasing or diminishing the tension of the spring *K* and regulating the pressure exerted by the pad. After adjusting the pad the parts are held in position by a jam-nut *d*, applied to the screw-stem *m* and bearing against the screw-nut *H*, as represented in Figs. 5, 6, and 7. The movement of the pad on the stem *m* is limited in one direction by the ball *G* and in the other by a head or enlargement *e*, Fig. 9, formed at the outer end of the stem *m*, which bears against an offset or shoulder in the bore of the cylindrical screw-nut *H*, said bore being smooth and larger than the diameter of the threaded opening of the nut, so as to receive said enlargement and form the offset, as represented in Figs. 5, 6, and 7.

Upon loosening the jam-nut *d* by means of a wrench *P*, Fig. 11, and pressing the ball *G* into the bottom of its socket, so that its holes *f* register with the slot *J*, the ball may be turned to adjust the pad. After the adjustment is made the jam-nut is again tightened.

The ball-and-socket joint gives the pad freedom of movement in all directions, allowing it to accommodate itself to the rupture and to the motions of the body, and the spring renders the pad elastic and yielding, so as to exert a gentle continuous pressure on the rupture, and also limits the swiveling movement of the pad.

The adjusting device of the pad permits the tension of the spring to be readily regulated to suit the conditions of the rupture and the comfort of the weaver.

I claim as my invention—

1. The combination, with a pad provided on its rear side with a screw-nut and a band or belt having a longitudinal slot, of a cylindrical socket provided with a shank which is adjustably secured in the slot of the belt, a ball seated in said socket and provided with a screw-threaded shank engaging with the screw-nut on the pad, whereby the pad can be adjusted toward and from the socket, and a spiral spring surrounding the ball and socket with one of its ends secured to a flange or rim formed on the socket and its opposite end bearing against the rear side of the pad, substantially as set forth.

2. In a truss, the combination of the socket *F*, the ball *G*, mounted therein and having a shank *m*, the screw-nut *H*, for receiving the end of the shank *m*, the plate *L* in which the nut is mounted, and a spiral spring *K*, encircling the shank *m* and held at one end between a flange upon the nut *H* and the plate *L* and at the other end to a flange upon the socket *F*, substantially as set forth.

3. In a truss, the combination, with a socket having a circumferential slot, of a ball seated therein having a screw-stem and provided with holes for turning it in its socket, a pad having a screw-nut fitted on said screw-stem, and a spiral spring interposed between the pad and a flange on said socket, substantially as set forth.

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Witnesses:

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