June 30, 1925. 1,544,162

A. J. LA VIGNE

BACK BRACER

Filed Dec. 4. 1924

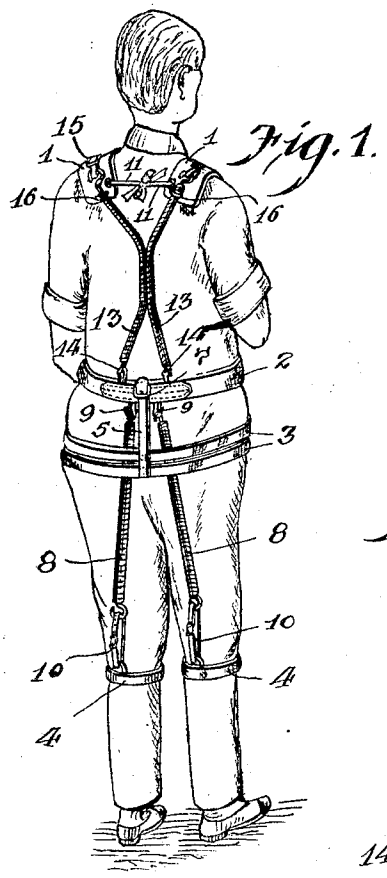


Fig. 1.

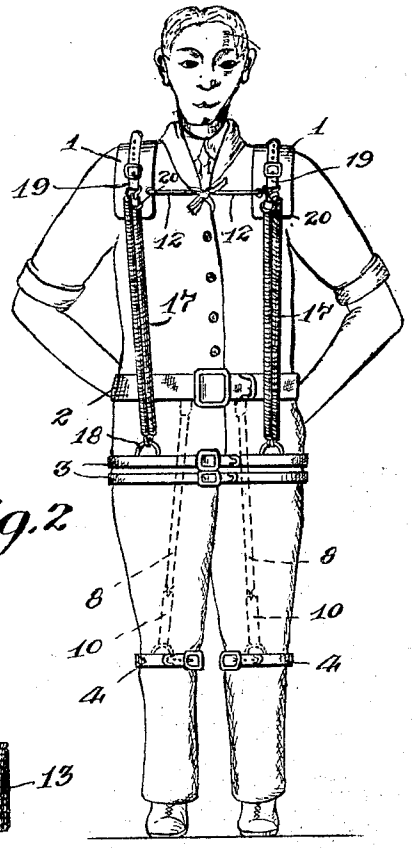


Fig. 2.

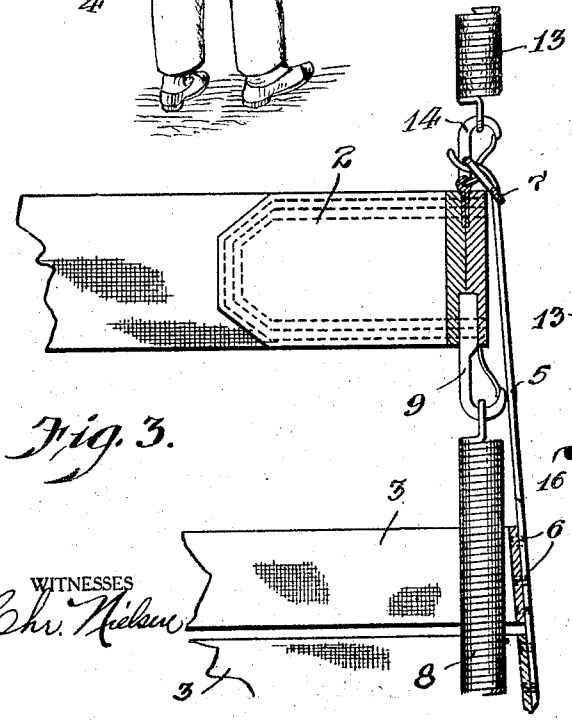


Fig. 3.

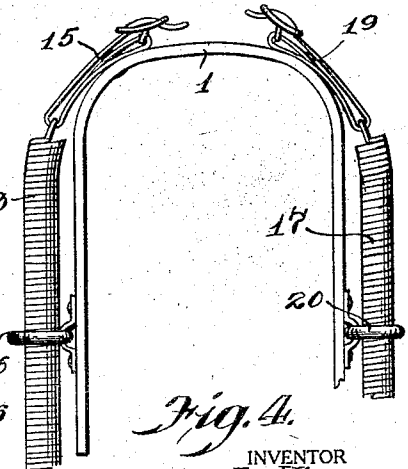


Fig. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

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BACK BRACER.

Application filed December 4, 1924. Serial No. 753,949.

To all whom it may concern:

Be it known that I, ALFRED J. LA VIGNE, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Back Bracers, of which the following is a specification.

My invention relates to improvements in appliances which are adapted to be secured on the body of a wearer to brace a portion of the body, and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of the invention is to provide a simple, easily applied and reliable harness which will prevent strain of the back muscles of a wearer when the wearer stoops, as in picking objects from position on or near the ground.

A further object of the invention is the provision of a harness of the character described which is adjustable for application to wearers of different sizes and to vary the resistance to the stresses which are set up when the wearer bends from upright position to a stooping position.

A still further object of the invention is the provision of a harness of the character described which is adapted to distribute the stresses which otherwise would be placed on the back muscles when the wearer thereof bends over to the stronger muscles of the body, such as the shoulders and leg muscles, whereby the wearer of the harness will not feel any appreciable fatigue after bending over repeatedly during the performance of a given work.

A still further object of the invention is to provide a harness of the character described which comprises separable parts which can be replaced quickly and easily at a slight cost when required.

Other objects and advantages will be apparent from the following description, considered in conjunction with the accompanying drawings, in which—

Figure 1 is a rear view showing the harness in applied position on a wearer.

Figure 2 is a front view of the wearer and harness.

Figure 3 is a relatively enlarged fragmentary vertical section through the waist encircling strap and the hip encircling strap and showing portions of the elements which are associated with said straps,

Figure 4 is an edge view of a shoulder pad and associated elements of the harness.

A harness embodying the invention comprises a pair of shoulder pads 1, a waist encircling strap or belt 2, a pair of hip encircling straps 3, and a pair of leg encircling straps 4. The straps 2, 3 and 4 are adjustable in an ordinary manner within limits as to size as by each having an end portion thereof provided with a series of apertures and having the other end portion provided with a buckle for engaging with the apertured end portions.

The hip encircling straps 3 are connected to each other and to the waist encircling strap by a connecting strap 5 which is secured adjacent to one of its ends by rivets 6 or like fastening devices to the straps 3 intermediate the ends of the latter, the other end portion of the strap 5 being adjustably engageable with a buckle 7 which is carried by the waist encircling belt intermediate its ends. With this arrangement, the connecting strap 5 will be disposed at the back of the wearer.

The leg encircling straps 4 are adapted to be secured in encircling relation to the legs of a wearer just below the knees. A pair of flexible resilient members which may be elongated coiled springs as indicated at 8 are flexibly attached at their upper ends to the waist encircling strap 2 at opposite sides of the buckle 7 and extend downwardly along the backs of the legs of the wearer between the hip encircling straps 3 and the legs of the wearer nearly to the level of the knees of the wearer when the wearer is standing erect. Straps 10 adjustably and flexibly connect the elongated spring members 8 at their lower ends to the leg bands 4 at the backs of the legs of the wearer. The rearward end portions of the shoulder pads 1 are adjustably connected together by co-engaging flexible tie members 11 and the front portions of the shoulder straps likewise are connected by a flexible tie element 12. A pair of flexible resilient rear suspender elements having the form of coiled springs is provided for connecting the rearward end portions of the shoulder pads to the back portion of the waist encircling strap. The rear suspender members are indicated at 13 and each is attached at its lower end to the strap 2 as at 14 and at its upper end adjustably to the portion of one of the shoulder straps which overlies the

shoulder of a wearer, as by means of a strap 15, as best seen in Fig. 4. The respective rear suspender members 13 are secured together intermediate their ends by a binding cord or other suitable fastening means and the corresponding end portions of these rear suspender members diverge apart from their intermediate connected portions toward their opposite ends. The upper end portions of the rear suspender members 13 extend through guide rings 16 which are carried by the rearward portions of the shoulder pads.

The forward end portions of the shoulder pads are connected by front flexible resilient suspension members 17. In the embodiment of the invention illustrated in the drawings, each front suspension member comprises a pair of elongated coiled springs connected at its lower end to a ring 18 on the upper of the two hip encircling straps 3 and adjustably connected at its upper end by a strap 19 to one of the shoulder pads 1, each pair of front suspension springs extending straight downward at the front of the body of the wearer and one of said spring members extending through a guide ring 20 carried by the front end portion of the shoulder pad with which that particular front suspension spring is associated.

From the foregoing decription of the various parts of the device, the operation thereof may be readily understood. The wearer of the harness may bend over or stoop during the performance of a given work, such as picking onions, strawberries, potatoes or like agricultural work without subjecting the muscles of the back to any appreciable strain. The use of the device therefore tends to prevent fatigue.

Any part of the device may be replaced at a slight cost without there being any necessity of replacing the remaining parts of the device.

I claim:—

1. An appliance of the character described comprising a pair of shoulder pads, a waist encircling strap, a hip encircling strap, tension spring means connecting the rearward ends of said shoulder pads to said waist encircling strap, and other tensioning means connecting the forward ends of said shoulder pads to said hip encircling strap.

2. An appliance of the character described comprising a pair of shoulder pads, a waist encircling strap, a hip encircling strap, tension spring means connecting the rearward ends of said shoulder pads to said waist encircling strap, other tension means connecting the forward ends of said shoulder pads to said hip encircling strap, and flexible means connecting said waist encircling strap and said hip encircling strap.

3. An appliance of the character described comprising a pair of shoulder pads, a waist encircling strap, a hip encircling strap, tension spring means connecting the rearward ends of said shoulder pads to said waist encircling strap, other tension means connecting the forward ends of said shoulder pads to said hip encircling strap, a pair of leg encircling straps, and tension spring means extending at the backs of said legs and connecting said waist encircling strap to the back portions of said leg encircling straps.

4. A harness of the character described comprising a pair of shoulder pads, a waist encircling strap, a pair of hip encircling straps, a pair of leg encircling straps, a pair of elongated tension spring members connected at their lower ends to said waist encircling straps at the back of the body of a wearer, and adjustably connected at their upper ends to said shoulder pads, a pair of other back spring connectors attached at their upper ends to the back portion of said waist encircling strap and extending between said hip encircling strap and the body of a wearer along the back portions of the legs of the wearer, said last named spring members being adjustably connected at their lower ends to the back portions of said leg encircling straps, and front tension spring suspension members adjustably connected at their upper ends to said shoulder pads and flexibly connected at their lower ends to said hip encircling strap at the front of the body of the wearer.

ALFRED J. LA VIGNE.