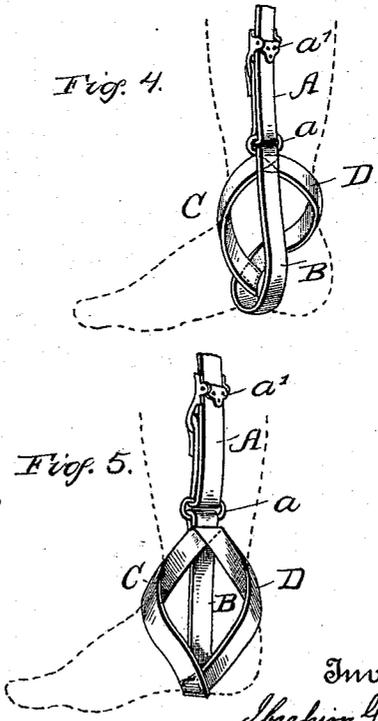
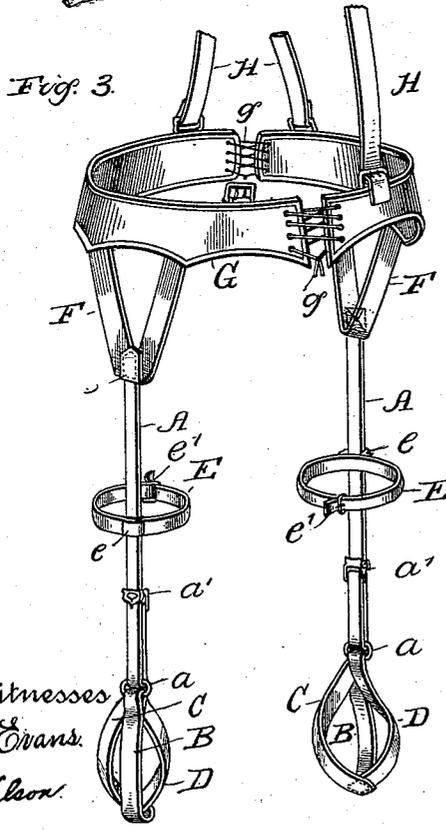
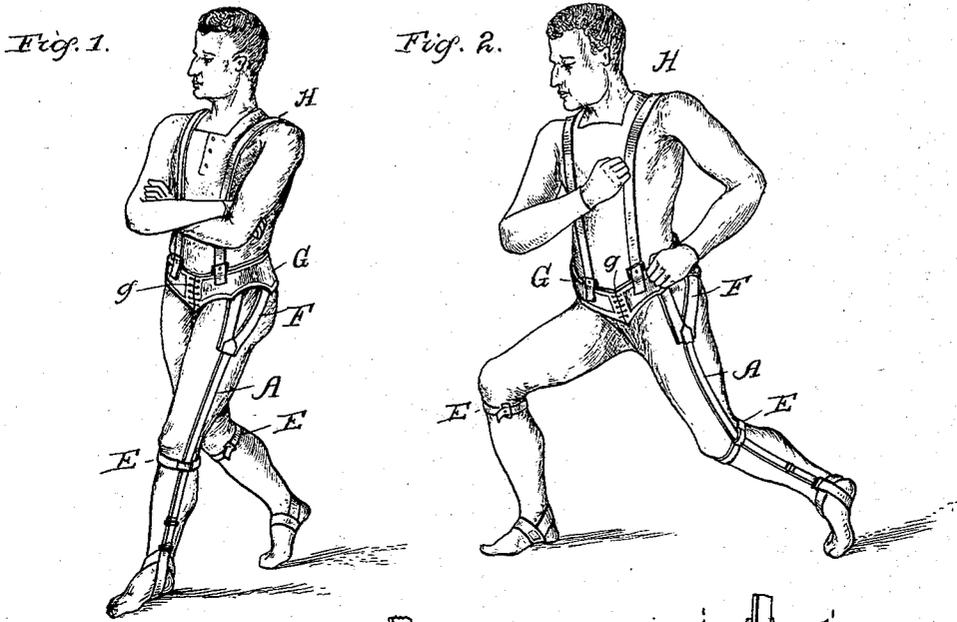


(No Model.)

I. G. KHEIRALLA.  
EXERCISING APPARATUS.

No. 539,872.

Patented May 28, 1895.



Witnesses  
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# UNITED STATES PATENT OFFICE.

IBRAHIM G. KHEIRALLA, OF CHICAGO, ILLINOIS.

## EXERCISING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 539,872, dated May 28, 1895.

Application filed April 4, 1895. Serial No. 544,409. (No model.)

*To all whom it may concern:*

Be it known that I, IBRAHIM G. KHEIRALLA, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Assisting Locomotion; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of my invention is to provide an apparatus for assisting the muscles in lifting the leg and moving it forward in the act of locomotion, whether of walking, running, skating, or snow-shoeing; to be extremely light, comfortable to the wearer, and designed to be worn under or concealed by the clothing if so desired.

To this end my invention consists in providing an apparatus having a flexible contractile connection attached to the body of the wearer above the hip joint, mounted to the outer side of each leg, confined at the knee, and connected to the foot of the wearer below the ankle joint, whereby I utilize the vertical movement, lateral sway and weight of the body, through the alternate straightening and flexure of the knee and ankle joint, to cause said contractile connection to expand and contract and assist the muscles in lifting the leg and carrying it forward, thus preventing fatigue.

In the accompanying drawings, forming a part of this specification, Figure 1 shows the figure of a man in the act of walking, showing my apparatus in operative position. Fig. 2 is a like view showing a man in the act of running. Fig. 3 shows the apparatus detached. Figs. 4 and 5 show detail views of the foot-harness.

Referring more particularly to the drawings, A A, denote elastic lifting straps mounted to the outer side of each leg.

a, a, denote metal loops attached to the lower ends of said straps, and a' a' denote buckles for adjusting the length and regulating the tension of said straps. Said buckles are located near the lower ends of said straps in order that they may be accessible without removing the clothing.

B, C, and D denote three straps fastened together forming a harness which is expressly

designed to allow free movement of the ankle joint, and to afford a sling or support for the foot and heel. Said straps meet under the instep and above the ankle joint and pass back of said joint and above the heel and in front of and above the ankle joint as shown in Figs. 4 and 5, the former showing the left foot upon the outer side and the latter the right foot inside. Said harness is united to the loop a through the strap B which is the longer, and the straps C and D are sewed on bias to the upper and lower ends of the strap B. This foot harness is designed to be worn over the sock or stocking and under the shoe.

E, E, denote straps which are loosely mounted to the lifting straps by loops ee and provided with buckles e' e'. Said straps are secured around the legs below the knee joints as shown in the drawings, and serve to confine the lifting straps to the outer side of each leg and prevent said straps from drawing back of the legs as they are lifted and carried forward when a step is taken, the loops or guides ee allowing the vertical play of said lifting straps as they stretch and contract.

The upper ends of the lifting straps are connected to V-shaped stirrups F, F, each formed of a single strap suspended by its ends from a hip band, hereinafter described, and folded bias at the center and sewed as shown in Fig. 3.

G, G, denote two hip bands united by lacings g, g, in front and back, and designed to form together a support for the lifting straps to be attached about the waist and above the hip joints.

H, H, denote two supporting straps which are fastened by buckles to the front and rear portions of the bands G, G. Said straps cross on the back of the wearer, pass over his shoulders and are recarried in front as shown in the drawings. They serve to support the bands G, G, by suspending the same from the shoulders and distribute the weight of the legs upon the upper part of the body.

In attaching the apparatus the bands G, G, are first adjusted upon each side of the body above the hips, the V-shaped loops passing upon each side of the hip joint and the front lacing fastened. The straps B, C, D, are then secured to the foot under the instep and back of the heel as shown in Figs. 4 and 5. The ten-

sion of the lifting straps is then adjusted by the buckles *a, a*, to suit the comfort of the wearer. The straps *H, H*, are then fastened over the shoulders, but the latter may be dispensed with and good results obtained by supporting the lifting straps by the bands *G, G*, only, in which case, however, they should be laced tightly to prevent the lifting straps drawing them down over the hips.

In operation my apparatus assists in relieving the muscles which are constantly brought into play in lifting the weight of the leg, clothing and foot wear in the act of locomotion. Where heavy shoes and boots are worn, or in snow shoeing and skating where an additional weight is placed on the feet my invention is of especial value. In walking the lifting strap is stretched as the leg is straightened under the body which occurs when the weight of the body is thrown upon it, thus employing the weight and momentum of the body to stretch said strap and increase its contractile tension which is utilized to lift the leg and foot in rear of the body and assist it forward to the next step. When the straps *H, H*, are in place the vertical movement and forward and lateral sway of the upper part of the body are also utilized to stretch the lifting straps. As the body moves forward upon the right foot, the right side of the body and shoulder is elevated and swayed forwardly and laterally. The body harness communicates these movements of the right side of the body to the lifting strap upon the left leg which at this juncture is in rear of the body and being lifted. As the body moves forward upon the left leg the same movements of the left side of the body are utilized to operate or stretch the lifting strap upon the right leg. As a

corollary the body harness also serves through the medium of the lifting straps on each side as a means for reducing an abnormal lateral or vertical movement of the body in walking.

The straps *E E* may be secured above or below the knee, and I do not confine myself to the means described for attaching the elastic straps to the trunk and feet.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. An apparatus for assisting locomotion and preventing fatigue, consisting of a harness adapted for attachment to the body above the hip joint, adjustable elastic straps mounted upon the outer side of each leg and connected to said harness by a V-shaped attachment, guides for said straps sliding upon the elastic straps and confined to the outer side of each leg above or below the knee, a sling passing around the ankle and the foot of the wearer and connected to the lower ends of said elastic straps.

2. An apparatus for assisting locomotion consisting of an elastic strap adapted to be mounted upon a waist belt and located upon the outer side of each leg and connected at their upper ends to hip bands secured upon each side of the body; and at their lower ends to a foot sling consisting of three straps adapted to unite under the instep and above the ankle joint and to inclose the ankle joint; substantially as shown and described.

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

IBRAHIM G. KHEIRALLA.

Witnesses:

WILLIAM F. JAMES,  
JOHN B. MORGAN.