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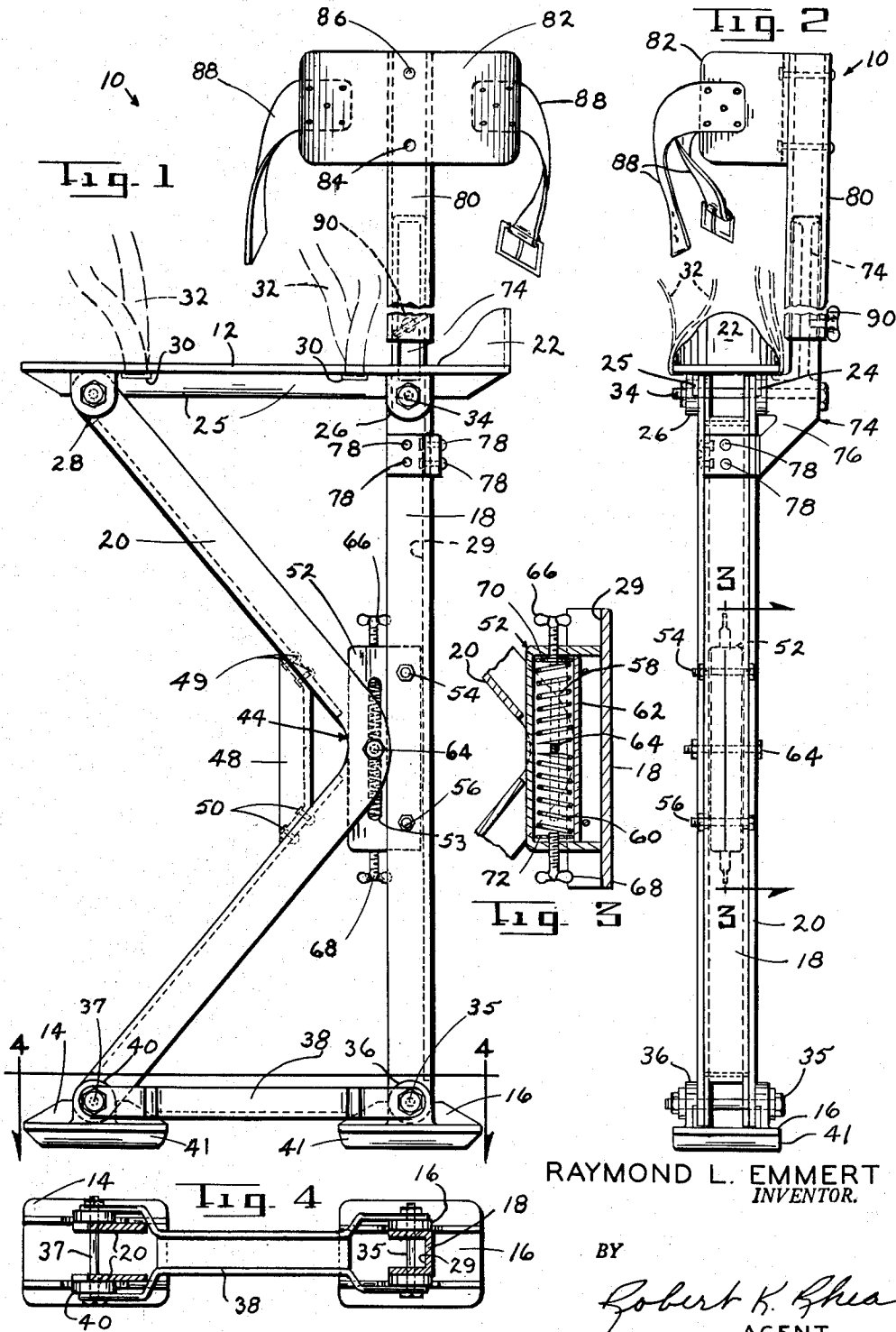
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STILT

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2 Sheets-Sheet 1



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STILT

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The present invention relates to a stilt construction or leg extension device.

The prior art reveals a plurality of stilts or leg extensions; a number of which are of fixed heights and which do not permit freedom of toe or ankle action similar to the natural action of the user. Some of the other devices, shown by the prior art, have hinged connections which, in part, permit a heel and toe surface contacting action, but do not provide means for regulating this action and assuring stability of the device during use. Those stilts, shown by the prior art, which incorporate a resilient means for assisting the control of the walking action are relatively complicated in the formation and arrangement of parts which result in an expensive device.

One of the principal objects of the instant invention is to provide a stilt or leg extension which is adapted for use by persons whose work or trade involves overhead construction, application or inspection ordinarily requiring the use of an elevated platform or scaffold.

Another object is to provide a device of this class which is not only suited for use of individuals whose occupation require them to work at an elevation with respect to a common supporting surface but which may be used for amusement.

Another object of the invention is to provide a stilt for the purposes stated above which is simple in construction, relatively inexpensive and of light weight.

Another object is to include in the stilt construction a system of pivoting links and other members yieldingly biased in a selected manner to produce what may be termed a supplemental ankle joint or movement which will impart natural ankle and leg movements to the user free of any stiffness and instability which might tend to induce fatigue.

Another object is to provide a device of this class which includes means which may be adjusted to the weight of the user and the type of foot action desired while standing or walking.

Still another object is to provide a device of this class which is sturdily constructed and which will have a relatively long useful life.

The present invention accomplishes these and other objects by providing a foot member with leg attaching means associated therewith which is pivotally connected to a pair of foot plates by a forward partial load bearing control lever and a rearward strut. Pressure actuated resilient members, carried by the rearward strut, yieldingly adjust the pivoting relationship between the foot member and shoe plates.

Other objects will be apparent from the following description when taken in conjunction with the accompanying two sheets of drawings, wherein:

FIGURE 1 is a side elevational view of the device;

FIGURE 2 is a rear elevational view thereof;

FIGURE 3 is a fragmentary vertical cross-sectional view taken substantially along the line 3—3 of FIG. 2;

FIGURE 4 is a horizontal cross-sectional view, partially in elevation, taken substantially along the line 4—4 of FIG. 1;

FIGURE 5 is a side elevational view of an alternate embodiment of the device;

FIGURE 6 is an elevational view of a fragmentary portion of the device shown by FIG. 5 with a portion broken away for clarity; and,

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FIGURE 7 is a top view of the foot plate taken substantially along the line 7—7 of FIG. 5.

Like characters of reference designate like parts in those figures of the drawings in which they occur.

In the drawings:

The reference numeral 10 indicates the device, as a whole, which is substantially rectangular in overall configuration. A normally horizontal top member or foot plate 12 is joined to a pair of shoe plates 14 and 16 in vertical spaced relation by a rearward vertical load bearing strut or support 18 and a forward partial load bearing control member or lever 20.

The foot member 12 is rectangular in plan view and is provided with an arcuate upstanding projection 22 at its rearward end for receiving the heel portion of the user's shoe. The depending surface of the foot member 12 is provided with a pair of longitudinally extending bars 24 and 25 which act as a stiffener. Two pairs of transversely aligned centrally bored bosses 26 and 28 are connected to the respective rearward and forward end portions of the depending surface of the foot member outwardly of the bars 24 and 25. The bars 24 and 25 are transversely perforated between the bosses 26 and 28 to form apertures 30, through which strip or strap members 32 are inserted for securing the user's foot to the upper surface of the foot member 12.

The strut 18 is channel shaped in horizontal cross section with the flanges thereof projecting forwardly of its bight portion 29.

The upper end portion of the strut 18 is pivotally connected to the pair of bosses 26 by a bolt 34. The depending end of the strut 18 is similarly pivotally connected by a bolt 35 to the rearward shoe plate 16 by a pair of transversely aligned centrally bored bosses 36 formed on the upper surface of the shoe plate.

A connecting link 38 is pivotally connected at one end to the rear shoe plate bosses 36 and is pivotally connected at its other end by a bolt 37 to a similar pair of bosses 40 formed on the upper surface of the forward shoe plate 14 to maintain the shoe plates 14 and 16 in spaced-apart relation. The spacing between the shoe plate bosses 36 and 40 is substantially equal to the spacing between the bosses 26 and 28 on the foot member 12. Each of the shoe plates 14 and 16 is provided with resilient padding 41 for gripping the surface walked on by the user.

The front member or lever 20 is similarly pivotally connected at its opposing ends to the foot member bosses 28 and forward shoe plate bosses 40. The lever 20 is channel-like in cross section and is angularly bent rearwardly medially its ends, as at 44, so that the flanges or leg portions of the channel shape overlap opposing outer sides of the strut 18. A brace member 48 is connected to the leg 20 by rivets 49 and 50 to strengthen the leg member 20.

A rectangular housing 52, having opposing slots 53 in its vertical side walls, is secured within the flanges of the strut 14 medially its ends by bolts 54 and 56. A pair of springs 58 and 60 are positioned in vertically aligned relation within the forward portion of the housing 52 and are maintained in this position by a shield or wall 62. A bolt or shaft 64, or the like, is transversely extended through the leg member 20 and slots 53 and between the adjacent ends of the springs 58 and 60. The springs 58 and 60 normally maintain the bolt 64 centrally positioned between the upper and lower limits of the housing 52 and thus maintain the upper plate 12 and shoes 14 and 16 in parallel relation. Wing nuts or thumb screws 66 and 68, each connected with face plates 70 and 72, respectively, bear against the outwardly disposed end of the springs 58 and 60 for ad-

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justing the tension on the spring members for the purposes more fully explained hereinbelow.

A leg support bracket 74 is secured to the upper end portion of the strut 18 by the bolt 30. The bracket 74 includes a depending portion 76 which extends downwardly from its connection with the bolt 30 and encompasses a portion of the strut 18 and is secured thereto by rivets 78. The bracket 74 projects upwardly above the foot member 12 at one side thereof for telescopically receiving an elongated leg support 80 which is box-like in horizontal cross section. A curved plate 82 is secured to the upper end portion of the support 80 by rivets 84 and 86. The curvature of the plate 82 permits it to partially envelope the leg of the user, not shown. Strap means 88, secured to opposing ends of the plate 82, surrounds the user's leg when in use. A wing nut 90, threadedly engaged with the wall of the support 80, frictionally engages the upper end portion of the bracket 74 to maintain the support 80 in a selected vertically adjusted position.

Referring now more particularly to FIGS. 5 to 7, an alternate embodiment of the device 10a is illustrated which is similar to the device 10. The alternate shoe plate 12a is provided with an adjustable heel plate 22a for lengthening the foot member 12a. The heel plate 22a, in this embodiment, is formed on a strip of material 92 which is slidably received within a suitable groove 94 formed in the foot member 12a. A bolt and wing nut 96, cooperatively received by an elongated slot 98 formed in the strip 92, permits adjustably positioning the heel member 22a.

The alternate lever or member 20a is formed of a length slightly greater than the length of a rearward tubular strut 18a so that the forward shoe plate 14a is normally positioned downwardly below the plane of the rearward shoe plate 16a a distance shown in FIG. 5 and denoted by the letter D when the foot member 12a is positioned horizontally. In this embodiment the wall of the strut 18a is oppositely slotted, as at 53a, and the springs 58 and 60 are positioned within the strut 18a and retained therein at their respective upper and lower end portions by rivets 100 and 102 extending transversely through the strut. The bolt 64 is similarly extended through the leg member 20a and strut 18a between the springs 58 and 60. This arrangement of securing the springs does not permit adjustment of tension of the latter to compensate for the walking action of the user.

Operation

In operation the device is connected to the feet and legs of the user by the straps 34 and 88 as disclosed hereinabove. As the user moves one foot forwardly the rearward shoe plate 16 contacts the surface being walked upon, not shown, while the foot member 12 is tilted upwardly at its forward end with the bolt 64 starting to compress the lower spring 58 and as the user's weight is placed upon this foot the forward shoe plate 14 contacts the common supporting surface further compressing the lower spring 60. When the user moves forwardly the lower spring 60 is allowed to expand until an equilibrium position for the springs is reached. Thereafter the upper spring 58 is compressed in resisting the force of the user's weight in completing the step. The springs 58 and 60 reach an equilibrium position when the user's foot is lifted. This action allows both shoe plates 14 and 16 to remain on the common supporting surface throughout the greater portion of the action of each step and results in an action substantially identical to the normal foot and ankle action of the user. The thumb screws 66 and 68 may be tightened or loosened to provide the desired resiliency of the respective springs 58 and 60 against the vertical reciprocating action of the connecting bolt 64.

The operation of the alternate embodiment 10a is similar to the above description of the preferred embodi-

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ment 10 with the exception that the springs cannot be adjustably tensioned but wherein the extra length of the leg 20a, positioning the shoe plate 14a downwardly of the rearward shoe plate 16a, aids the foot and ankle action of the user by the addition of a slight lift or push which is particularly desirable when the user is running or walking fast.

Obviously the invention is susceptible to some change or alteration without defeating its practicability, and I therefore do not wish to be confined to the preferred embodiment shown in the drawings and described herein, further than I am limited by the scope of the appended claims.

I claim:

1. A stilt of the character described, including: a horizontally disposed elongated foot member adapted for connection with a user's foot; forward and rearward shoe plates pivotally connected together in spaced-apart relation; a strut extending between and pivotally connected at its respective ends to one end portion of said foot member and said rearward shoe plate; a control lever extending between and pivotally connected at its respective ends to the forward portion of said foot member and said forward shoe plate, said control lever being bent, medially its ends, to extend rearwardly in overlapping relation on opposing sides of said strut intermediate the ends of the latter; resilient means secured to said strut intermediate its ends; and a shaft transversely connecting said control lever to said strut through said resilient means and urged by the latter toward the transverse central portion of said strut.

2. Structure as specified in claim 1 in which the resilient means includes a box-like housing having oppositely slotted side walls; and a pair of compression springs within said housing.

3. Structure as specified in claim 2 and means carried by said housing for adjusting the compression of said springs.

4. A walking stilt, comprising: a foot member; a pair of spaced-apart shoe plates; a strut extending between and pivotally connected to one said shoe plate and the rearward portion of said foot member; a control lever extending between and pivotally connected to the forward end portion of said foot member and the other said shoe plate, said control lever extending rearwardly intermediate its ends and formed to nest an intermediate portion of said strut; a pair of compression springs secured within said strut intermediate its ends; and bolt means interconnecting said control lever and said strut between said springs for vertical sliding movement of said control lever with respect to said strut.

5. A walking stilt, comprising: a foot member adapted to be connected to the shoe of a user; a pair of spaced-apart shoe plates; a link extending between and pivotally connected with said shoe plates; a strut extending between and pivotally connected to one said shoe plate and the rearward portion of said foot member; a control lever extending between and pivotally connected to the forward end portion of said foot member and the other said shoe plate, said control lever extending rearwardly intermediate its ends and formed to nest an intermediate portion of said strut; a pair of compression springs secured to said strut intermediate its ends; and bolt means interconnecting said control lever and said strut between said springs for vertical sliding movement of said control lever with respect to said strut.

6. Structure as specified in claim 5 and a housing connected with said strut and surrounding said springs, said housing having slotted vertical side walls slidably receiving said bolt means; and means for forcing said springs toward said bolt means.

7. A walking stilt, comprising: a foot member adapted to be connected to the foot of a user; a pair of shoe plates; a bar interconnecting said shoe plates in forward

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and rearward spaced-apart relation; an elongated tubular strut extending between and pivotally connected to the lower surface of the rearward portion of said foot member and the upper surface of the rearward said shoe plate; a control lever extending between and pivotally connected at its respective ends to the lower surface of the forward portion of said foot member and the upper surface of the forward shoe plate, said control lever being arcuately bowed rearwardly and formed to overlap opposing sides of said strut intermediate its ends, said strut having opposing elongated slots through its wall intermediate its ends; a pair of compression springs secured within said strut intermediate its ends; a bolt interconnecting said

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control lever to said strut between said springs through the slots therein, said springs normally urging said bolt toward a transverse central portion of said strut; a leg support secured to the upper end portion of said strut and projecting vertically above said foot member; and clamp means connected to the upper end portion of said leg support adapted for gripping a user's leg.

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