Nov. 19, 1935. A. P. MEYER 2,021,801

FOOT AND LEG EXERCISER APPARATUS

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Fig. 1.

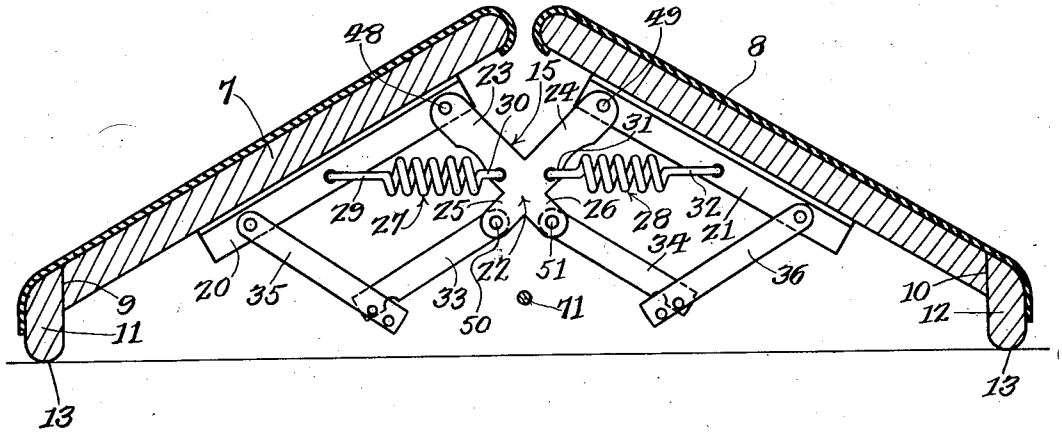


Fig. 2.

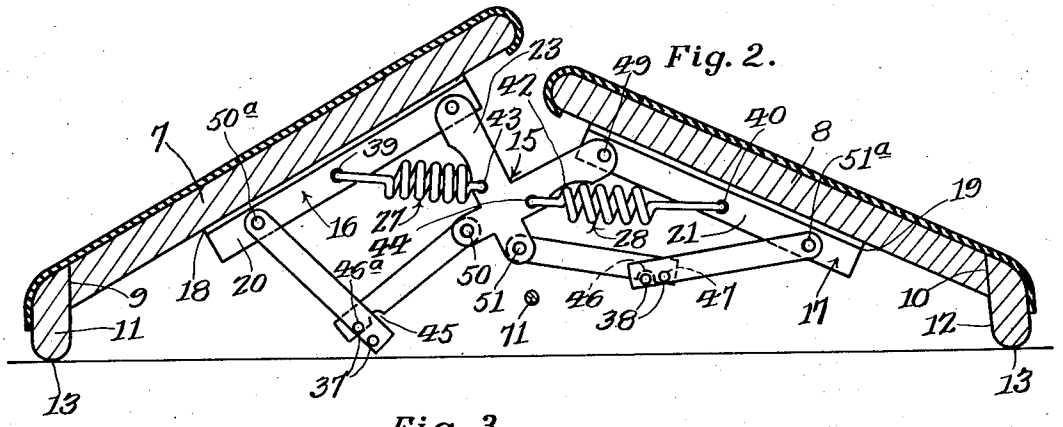
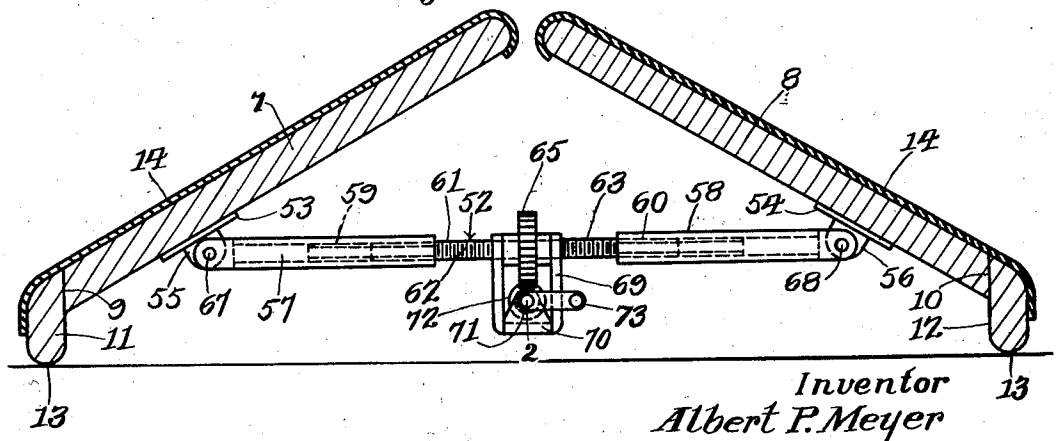


Fig. 3.



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Fig. 4.

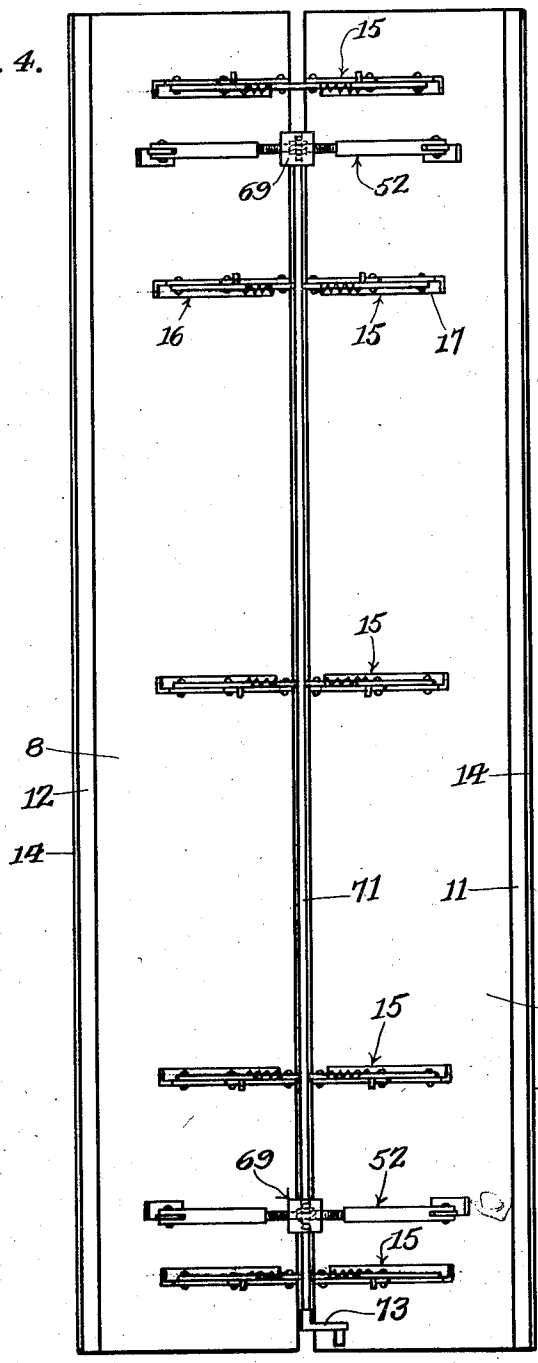
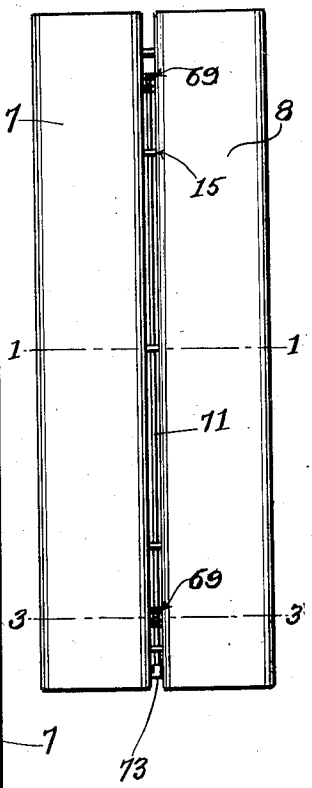


Fig. 5.



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FOOT AND LEG EXERCISER APPARATUS

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Application September 7, 1935, Serial No. 39,615

5 Claims. (Cl. 272—70)

This invention relates to a foot and leg exerciser apparatus and has for its object to provide, in a manner as hereinafter set forth, an apparatus of the class referred to for rejuvenating, exercising and re-strengthening the muscles of the feet and legs.

Further objects of the invention are to provide, in a manner as hereinafter set forth, an apparatus for the purpose referred to which is simple in its construction and arrangement, strong, durable, compact, thoroughly efficient for the purpose intended thereby, readily assembled, quickly repaired when occasion requires, adjustable and comparatively inexpensive to manufacture.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts as will be more specifically described and as are illustrated in the accompanying drawings wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention as claimed.

In the drawings:

Figure 1 is a sectional view on line 1—1, Figure 5,

Figure 2 is a sectional view on the line 1—1, Figure 5, when one of the platforms of the apparatus is depressed,

Figure 3 is a sectional view on line 3—3, Figure 5,

Figure 4 is an inverted plan view of the apparatus, and

Figure 5 is a top plan view of the apparatus.

The apparatus includes a pair of depressible and extendible rectangular platforms 7, 8 of the desired width and length to the outer side edges 9, 10 of which are secured upstanding supports 11, 12 respectively having rounded bottom edges 13. The supports are coextensive with the outer side edges of and have their tops flush with the upper faces of the platforms. The supports depend from the platforms and constitute fulcrums therefor. The platforms and supports are preferably constructed from wood. The upper face throughout each platform has secured thereon a covering 14 of rubber which is of a width to overlap completely the inner side edge of the platform, to extend on the lower face of the latter and also to extend upon the upper portion of the outer side face of a support. The coverings 14 are also secured to the supports and to the inner side edges and inner faces of the platforms. The coverings 14 extend from one end to the other of the platforms and constitute tread surfaces for the patient to walk upon. The platforms are maintained, by adjustable means to be referred to, at opposite inclinations with respect to each other, that is to say, each platform extends inwardly at an upward inclination from its associated support. When the platforms are in their normal position the inner side edges thereof will be spaced from each other, such as is shown in Figures 1 and 3.

Associated with the platforms is a series of spaced parallel, upstanding, extendible and depressible coupling structures 15 therefor normally maintaining the platforms 7, 8 extended, that is to say, in the position shown in Figures 1 and 3. The structures 15 are of like form and the description of one will apply to the other. Each of said structures includes a pair of spaced angle bars 16, 17 formed of horizontal legs 18, 19 respectively and vertical legs 20, 21 respectively depending from one side of the horizontal legs, a vertically disposed compound lever 22 formed with a pair of oppositely inclined upper long arms 23, 24 and a pair of lower oppositely inclined short arms 25, 26, a pair of oppositely extending endwise aligning, horizontally disposed combined extendible and contractible springs 27, 28, a pair of oppositely inclined upstanding links 33, 34 and a pair of oppositely outwardly inclined coupling arms 35, 36. The spring 27 is formed with a pair of oppositely extending axially arranged end terminal portions 29, 30. The spring 28 is formed with a pair of oppositely extending axially arranged end terminal portions 31, 32. The arm 35 has secured to its lower end a pair of spaced laterally extending parallel inner and outer pins 37. The arm 36 has secured to its outer end a pair of spaced laterally extended parallel inner and outer pins 38. The vertical legs 20, 21 of the angle bars 16, 17 are formed centrally thereof with the openings 39, 40 respectively. The lower end of the long arms 23, 24 merge into the upper ends of the short arms 25, 26. The arms 23, 24 have their outer side edges cut out to provide clearances 41, 42 respectively for the coiled parts of the springs 27, 28 respectively. The lever 22, in proximity to the point of mergence of the arms 23, 24 with the arms 25, 26, is formed with a pair of spaced parallel openings 43, 44. The lower side edges of the links 33, 34, in proximity to the lower ends of the latter, are formed with cutouts 45, 46 respectively to provide clearances for a purpose to be referred to. The lower ends of the links 33, 34 are provided with openings 46a, 47 for a purpose to be referred to.

The horizontal leg 18 of bar 16 is secured to the inner face of platform 7 and has its ends spaced from the side edges of the latter. The horizontal leg 19 of bar 17 is secured to the inner face of platform 8 and has its ends spaced from the side edges of the latter. The upper ends of the arms 23, 24 are pivotally connected, as at 48, 49 respectively, in proximity to the upper ends of the legs 20, 21 respectively of the bars 16, 17 respectively. The lower ends of the arms 25, 26 are pivotally connected, as at 50, 51 respectively, to the upper or inner ends of the links 33, 34 respectively. The lower ends of the links 33, 34, through the medium of the openings 46a, 47, are detachably connected to one of the pins 37 and to one of the pins 38 in the lower ends of the coupling arms 35, 36 respectively. The links 33, 34 are connected to the inner pins 37, 38. The cutouts 45, 46 provide clearances for the outer pins 37, 38. The outer pins 37, 38 coact with the cutouts 45, 46 respectively to provide stops for arresting the depressible movement of the structures 15. The coupling arms 35, 36 are pivoted at their outer ends, as at 50a, 51a respectively, to and in proximity to the lower ends of the vertical legs 20, 21 respectively. The end terminal portions 30, 31 of the springs 27, 28 respectively are connected through the medium of the openings 43, 44 respectively to the lever 22. The end terminal portions 29, 32 of the springs 27, 28 respectively are connected to the angle bars 16, 17 respectively through the medium of the openings 39, 40 respectively formed in the legs 20, 21 respectively.

The apparatus includes a pair of adjustable spaced parallel combined coupling and angularly adjusting structures 52 for the platforms 7, 8. The structures 52 are of like form and each consists of a pair of oppositely disposed plates 53, 54 formed with depending apertured lugs 55, 56 respectively, a pair of horizontally disposed spaced aligning oppositely extending arms 57, 58 provided with oppositely threaded sockets 59, 60 opening at the inner ends thereof; a rotatable shaft 61 having spaced oppositely threaded portions 62, 63; a hub 64 encompassing and fixed, as at 65, to the shaft 61 between the portions 62, 63 and a worm pinion 66 carried by hub 64. The arms 57, 58 are pivotally connected at their outer ends, as at 67, 68 respectively, to the lugs 55, 56 respectively of the plates 53, 54 respectively. The plates 53, 54 are fixedly secured to the inner faces of the platforms 7, 8 respectively.

There is associated with the structures 52 a common adjusting means therefor. The said means includes a pair of yoke-shaped hangers 69 depending from the shafts 61 and having the hubs 64 arranged between the upper ends thereof. Journaled in bearings 70 in the lower portion of the hangers 79 is an elongated rotatable adjusting shaft 71 carrying spaced worms 72 which mesh with the worm pinions 66 for rotating the latter on the operating of shaft 71. The latter has extended from one end thereof a crank handle 73.

When shaft 71 is rotated in one direction the shaft 61 will be rotated in a direction to draw the lower portions of the platforms towards each other to increase the angle of inclination of the platforms 7, 8. When shaft 61 is rotated in the opposite direction the lower portions of the platforms are moved away from each other to decrease the angle of inclination of the platforms.

The plates 53, 54, lugs 55, 56, arms 57, 58 and shaft 61 coact to provide a brace for the platforms, as well as a pair of coupling supports upon which the platforms may pivot when they are depressed and extended.

A structure 15 is located in proximity to the end of the apparatus. A structure 52 is arranged in proximity to each end of the apparatus. The structures 52 are arranged inwardly but in close proximity to those structures 15 located in proximity to the ends of the apparatus. Another structure 15 is disposed at the transverse median of the apparatus and the other structures 15 are arranged in proximity to but inwardly of the structures 52.

A person with weakened muscles of the feet and legs to be treated by the apparatus steps on the platforms, at one end thereof and walks along at a normal pace to the other end. The platforms, during this treatment, will be at an angle of about 22½ degrees. As the patient walks along the platforms, the springs allow a rebound of about 1½ inches. This rebound is increased as treatments progress, and the angles of the platforms will also be gradually increased from a 22 degree angle to a 45 degree angle. The rebound and angle of the platforms are adjusted by the worm shaft coacting with the structures 52.

What I claim is:

1. In a foot and leg exercising apparatus, a pair of upstanding oppositely inclined spaced extendible and depressible platforms, shiftable supports for, secured to and providing fulcrums for said platforms, spaced parallel adjustable combined coupling, bracing and angularly adjusting structures for and pivotally connected to the inner faces of the platforms, and spaced parallel compressible spring controlled link and lever structures common to and for normally extending the platforms and each pivotally connected at spaced points with the inner face of each platform.

2. In a foot and leg exercising apparatus, a pair of upstanding oppositely inclined spaced extendible and depressible platforms, shiftable supports for, secured to and providing fulcrums for said platforms, spaced parallel adjustable combined coupling, bracing and angularly adjusting structures for and pivotally connected to the inner faces of the platforms, spaced parallel compressible spring controlled link and lever structures common to and for normally extending the platforms and each pivotally connected at spaced points with the inner face of each platform, and an adjusting means for and common to said adjustable combined coupling, bracing and angularly adjusting structures for said platforms.

3. In a foot and leg exercising apparatus, a pair of upstanding oppositely inclined spaced extendible and depressible platforms, shiftable supports for, secured to and providing fulcrums for said platforms, spaced parallel adjustable combined coupling, bracing and angularly adjusting structures for and pivotally connected to the inner faces of the platforms, spaced parallel compressible spring controlled link and lever structures common to and for normally extending the platforms and each pivotally connected at spaced points with the inner face of each platform, and each of said spring controlled link and lever mechanisms provided with a pair of stops, each for limiting the depressible action of a platform.

4. In a foot and leg exercising apparatus, a pair of upstanding fulcrumed oppositely inclined spaced independently extendible and depressible platforms providing tread surfaces, coupling structures for and pivotally connected to the inner faces of said platforms, said structurers including

means for simultaneously angularly adjusting said platforms relative to each other, said platforms independently pivoting on said structures, and spaced spring controlled structures pivotally connected to the inner faces of said platforms normally tending to maintain said platforms extended.

5. In a foot and leg exercising apparatus, a pair of upstanding fulcrumed oppositely inclined spaced independently extendible and depressible platforms providing tread surfaces, coupling structures for and pivotally connected to the inner faces of said platforms, said structures including means for simultaneously angularly adjusting said platforms relative to each other, said platforms independently pivoting on said structures, spaced spring controlled structures pivotally connected to the inner faces of said platforms normally tending to maintain said platforms extended, and each of said spring controlled structures having coacting parts to provide a pair of stops, each for limiting the depressible action of a platform.

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