FOOT ROLLER MEANS

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References Cited
UNITED STATES PATENTS

131,234 9/1872 Todd 280/11.19
668,685 2/1901 Lier 267/16
1,200,049 10/1916 Tomasini 267/16

FOREIGN PATENTS OR APPLICATIONS

233,545 4/1911 Germany 280/11.23
461,286 5/1928 Germany 280/11.19
191,036 5/1937 Switzerland 280/11.23

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ABSTRACT

This invention is related to a foot roller means including a frame provided between front and rear wheel or roller units, wherein the frame presents an arched or arcuate portion which is elastically resilient to permit resiliency in the foot roller means, and at least one spring means is associated to the foot roller means, said spring means being operative at all times to increase the radius of the arcuate portion of the frame.

6 Claims, 4 Drawing Figures
FOOT ROLLER MEANS

The present invention is related to a foot roller means of the kind comprising in a conventional manner a frame provided between front and rear wheel or roller units, said frame securing and supporting a foot of the user of the foot roller means.

Object of the invention is to provide a foot roller means having a frame providing resiliency and elasticity when tramping off, the aim of the invention being more particularly to provide a foot roller means in which, on one hand, the resiliency or elasticity of the frame will be possible to maintain under practically unlimited time independent of the material and design of the frame, on the other said resiliency may be varied in dependence of occurent load, e.g. in dependence of the weight of the runner.

The above objects are attained through a foot roller means which is in accordance with the principle of the invention primarily characterized by the combination, that the frame presents an arched or arcuate portion which is elastically resilient to permit resiliency of the foot roller means, and that at least one spring means is associated to the foot roller means, said spring means being at all times operative to decrease the radius of the arcuate portion of the frame.

This spring means enables the arcuate portion of the frame, following each terminated tramp-off and the planing out of the portion in question associated thereto, on one hand to swiftly and safely return to its initial arched form, the runner being aided in lifting his foot and leg, and on the other, following said action, to provide a resilient or elastic backing at a renewed tramp-off. By virtue of the specific spring means according to the invention this resiliency or elasticity in the foot roller means is assured independent of the choice of material in the frame so as to avoid every risk of a deteriorated resiliency through fatigue of the frame material, in that the resilient device proper by itself is possible to provide for the return of the frame portion into its initial form. Further the resilient means permits of a selective control of the resiliency, for example in dependence of the runner's weight or in dependence of other individual wants or desires with the runner.

With reference to the appended drawings below follows a more particular description of a number of embodiments of the invention cited as examples. In the drawings,

FIG. 1 is a partial cross sectional side view of a foot roller means according to a first embodiment of the invention,

FIG. 2 a similar side view of a second, alternative embodiment of the foot roller means of the invention.

FIG. 3 an enlarged cross sectional view of part of a foot roller means showing an alternative part of the invention, and

FIG. 4 a further alternative embodiment similar to that shown in FIG. 1.

In FIG. 1, 1 designates a front wheel, 2 a rear pair of wheels, and 3 a frame of the roller means provided between said two wheel units. On the frame 3 is in a manner known per se provided a clamping device 4 to retain the runner's foot on the frame.

In accordance with the principle of the invention the frame 3 exhibits an arched or arcuate portion 5 which is elastically resilient to permit resiliency in the foot roller means, besides which at least one spring means generally designated by 6 is associated to the foot roller means, said spring means being at all times operative to decrease the radius of the arcuate portion 5 of the frame.

As appears clearly by FIG. 1 the spring means 6 is provided below the frame 3, more particularly it is connected to the lower side of the frame.

The spring means 6 includes in this case an individual spring element 7 which, in accordance with the preferred embodiment of the invention, is connected with means to vary the spring force of the element. Besides said spring element 7 the spring means 6 includes a substantially rigid or resilient part 8 in the form of a rod, which is e.g. by means of a pivotable bracket 9 attached to or adjacent to one end of the frame, in this case the front end of the frame. From the front end of the frame the rod 8 extends below the frame and projects beyond or through a backing 10 disposed at or adjacent to the opposite end of the frame, in this case the rear end. On the portion of the rod 8 projecting beyond the backing 10 a stop 11 is provided in the form of an adjusting nut besides alternatively also a washer and displaceable in the longitudinal direction of the rod. The spring element 7 has the form of a compression spring which is provided between the stop 11 and the backing 10. Thereby the spring will tend to increase the distance between the stop and the backing and thus increase the distance between the backing 10 and the bracket 9 and consequently tend to decrease the radius of curvature of the frame portion 5.

By changing the location of the stop 11 along the rod 8 the spring force of the compression spring 7 can be decreased or increased as needed whereby different resiliency will be obtained in the frame portion 5.

The rod 8 shown in FIG. 1 may be replaced by a tension spring, e.g. an elongate body of elastically resilient material the two opposite ends of which are attached to or connected to the frame at or adjacent to the two opposite ends thereof. In FIG. 2 an embodiment is shown having a tension spring 12 which is connected to the two opposite ends of the frame 3 through rods 13. To vary the resiliency in this embodiment the spring 12 may be exchangeable so as to make an exchange possible between springs having a great and small elasticity or spring force respectively.

In FIG. 3 a spring means 6' is shown which in accordance with a preferred embodiment of the invention includes at least one progressively operating spring element 14, which is operative to increase, in response to increasing load or deflection of the arcuate frame portion, the resistance against such deflection. The elastic spring 14 may as illustrated in FIG. 3 be a simple spring element having decreasing pitch, or be assembled of two or a plurality of spring elements having different spring characteristics.

In FIG. 4 finally an embodiment is shown in which, in the space between the lower side of the arcuate frame portion 5' and the rigid part 8' extending between the two ends of the frame, at least one spring element 15 is provided, the spring action of which is directed transversely to the longitudinal direction of the frame or portion. This spring element is of advantage in that it will take up loads which are directed parallel to the proper operating direction of the spring.

It is understood that the invention is not limited to the embodiment described and shown in the drawings solely. Thus the spring means according to the invention may be designed in a variety of manners without
departing from the spirit of the invention, e.g. it may be
connected to at least one of the two wheel units 1, 2
instead of to the frame proper. Also other modifica-
tions of the invention are conceivable within the scope
of the appended claims.

What I claim is:

1. A resilient foot roller comprising:
a front wheel unit;
a rear wheel unit;
a frame connected to said front wheel unit and said
rear wheel unit, said frame having a continuous
elastically resilient, downwardly curving, arcuate
portion longitudinally extending between said front
and rear wheel units and having two opposite end
portions, said arcuate portion for permitting resil-
ience of the foot roller;
clamping means attached to said frame for retaining
the foot of a user of said foot roller;
spring means connected to said frame for decreasing
the radius of said arcuate portion of said frame; and
adjusting means connected to said spring means for
varying the spring force of said spring means.

2. A resilient foot roller according to claim 1,
wherein said spring means is located below said frame.

3. A resilient foot roller according to claim 1,
wherein said spring means includes at least one pro-
gressively operating spring element operative to, in
response to increasing load or deflection of the arcuate
frame portion, increase the resistance to such deflec-
tion.

4. A resilient foot roller according to claim 1
wherein said spring means comprises a substantially
longitudinally extending rigid portion having two
opposite ends, and a spring element;
wherein said foot roller further comprises first and
second attaching means for supporting respective
ends of said substantially rigid portion at respective
end portions of said arcuate portion and wherein
one end of said substantially rigid portion is axially
displaceable with respect to said respective attach-
ing means and extends therebeyond;
wherein said adjusting means comprises a stop on
said extending end of said substantially rigid por-
tion, said stop being axially displaceable on said
extending end; and
wherein said spring element is a compression spring
disposed between said stop and said respective
attaching means.

5. A resilient foot roller according to claim 4,
wherein said rigid part includes at least one rod.

6. A resilient foot roller according to claim 4,
wherein in the space between the underside of said
arcuate frame portion and said rigid portion at least
one spring element is provided, the spring action of
which is directed transversely to the longitudinal direc-
tion of the frame.

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