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3,472,510

FRICTION PULL EXERCISING DEVICE

Filed July 23, 1965

Fig. 1.

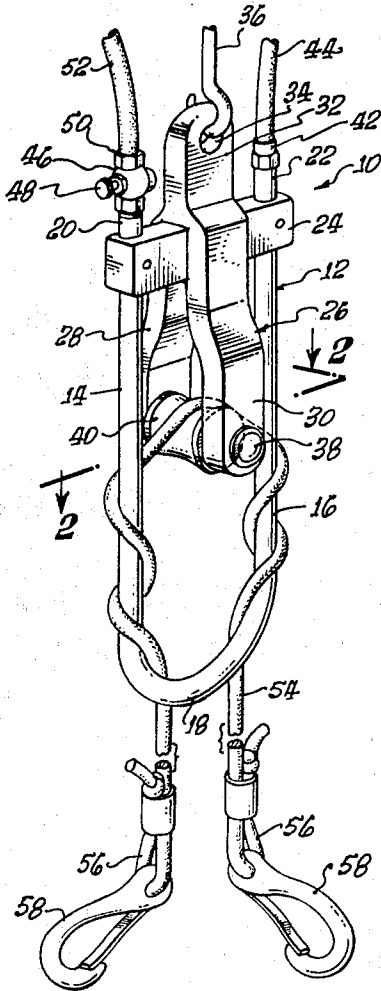


Fig. 2.

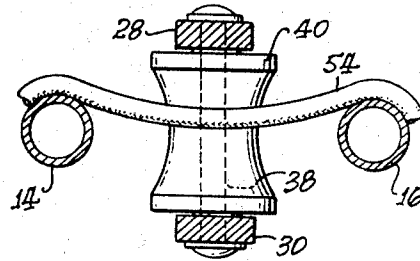


Fig. 3.

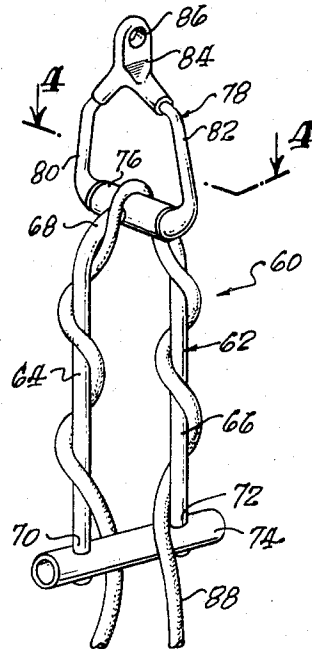
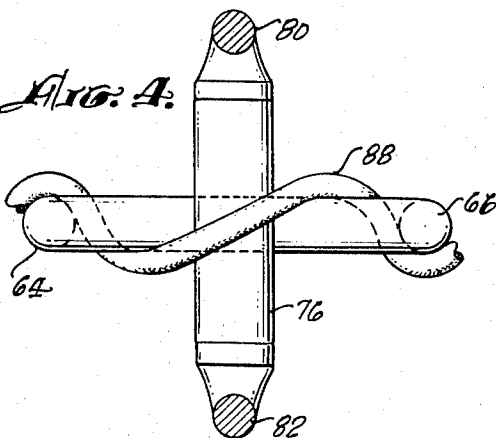


Fig. 4.



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FRICITION PULL EXERCISING DEVICE
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14 Claims

ABSTRACT OF THE DISCLOSURE

An exercising device for sliding, frictional engagement with a length of rope, having two elongated members positioned side-by-side in spaced apart relationship to have several turns of the rope wrapped therearound, with means adjacent one set of ends of the elongated members to retain the turns of rope on said members and with guide means between the other set of ends to guide the rope between members as it is moved on said members.

The present invention relates generally to the physical conditioning art and more particularly to a novel athletic exercising device which has particular advantages when used by football players and runners.

Briefly stated, one embodiment of the present invention includes a generally U-shaped tubular member including opposed leg portions with a closed end and adjacent free ends. Connecting means extend transversely between the leg portions adjacent the free ends thereof, and transversely extending guide means with a smooth surface is supported between the leg portions. Means are provided for connecting a water hose to the free end of one leg portion for admitting water to the interior of the U-shaped tubular member, and means are associated with the other free end to provide for the flow of water from the interior of said U-shaped member. In use, a length of rope is wrapped around one leg portion, over the guide means, and thence around the other leg portion.

It is well known in the physical conditioning field that school and professional athletes must engage in strenuous physical conditioning activities to strengthen their leg muscles, not only to make the athletes more proficient but also to minimize leg injuries. This is particularly true of football players because of the reoccurring physical contact to which they are subjected and the sudden and violent strain on their leg muscles as occur during line play and when they are running down field to catch or protect against the catching of forward passes.

It is also important for a football player to learn to maintain his balance while running, even though he is subjected to physical contact from opposing players who endeavor to block him out or otherwise interfere with his movement.

At the present time, in order to develop and condition leg muscles, football players and other athletes engage in various types of exercises such as deep knee bends, the duck walk, broad jumping, and the like, and also push weighted sleds. Although these exercises and related activities have beneficial results, they do not duplicate the same conditions as occur during play and it is difficult to control the degree or intensity of the exercises.

Also, before the advent of the present invention, there was no satisfactory way of teaching a football player to maintain his balance at all times while running down-field.

Accordingly, it is an object of the present invention to provide a novel athletic exercising device which is particularly useful for developing and strengthening the leg muscles of football players, and which can be used to closely approximate actual playing conditions. More par-

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ticularly, it is an object to provide such a device which produces a restraining force or "drag" on football players as they run down field, and which can be easily and quickly adjusted to control the intensity or degree of retardation or "drag." Specifically, it is an object to provide such an exercising device whereby a restraining force of varying magnitude can be applied to a football player running down field or practicing charging into an opposing lineman.

A further object is to provide a novel athletic exercising device which can be used to teach football players to maintain their balance while running down field. More particularly, it is an object to provide such a device whereby a player can be subjected to varying degrees of retarding force or "drag" so that he must endeavor to maintain a proper balance at all times to prevent himself from falling to the ground when the retarding force is suddenly released.

Yet another object is to provide a novel athletic exercising device which provides resistive conditioning in the exact motion of the sport. More particularly it is an object to provide such a device which can be employed for building strength and teaching technique at the same time. Thus, by way of example, a sprinter utilizing a device which embodies the teachings of the present invention when coming off the starting blocks, acquires the habit of completely extending his front leg while at the same time he is building up strength in his trailing leg.

Another object is to provide an athletic exercising device which is relatively simple in design and operation, but which is relatively strong and rugged so as to withstand strenuous and repeated usage.

Also, inasmuch as an appreciable amount of heat is produced in the subject exercising device during the operation thereof, yet another object is to provide a convenient and simple means for cooling the exercising device during usage.

Further objects and advantages of the present invention will be apparent from the following detailed description, reference being had to the accompanying drawing wherein preferred embodiments of the present invention are shown.

In the drawing:

FIG. 1 is a perspective view of a novel athletic exercising device constructed in accordance with the teachings of the present invention, and embodying the water cooling improvement;

FIG. 2 is an enlarged, horizontal, sectional view taken on the line 2—2 in FIG. 1;

FIG. 3 is a perspective view of a modified athletic exercising device which is not water-cooled; and

FIG. 4 is an enlarged, horizontal, sectional view taken on the line 4—4 in FIG. 3.

Referring to the drawing more particularly by reference numerals, particularly FIG. 1, 10 indicates generally an athletic exercising device embodying the teachings of the present invention, and which includes a generally U-shaped tubular member 12 (preferably made from stainless steel) with a smooth outer surface and which includes opposed leg portions 14 and 16, with a closed end 18 and adjacent free ends 20 and 22.

Extending between the leg portions 14 and 16 adjacent the free ends thereof, is a bar-like connecting member 24 which has mounted thereon a bifurcated support bracket 26 having legs 28 and 30 which extend between the leg portions 14 and 16 toward the closed end 18.

The upper end of the bracket 26 contains a flange portion 32 which is provided with an aperture 34 for receiving a hook-like member 36 for fastening the device to a support (not shown), as will be described more fully hereinafter.

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Extending between the ends of the leg portions 14 and 16 of the bracket 26 is an axle 38 which has a sheave 40 with a smooth outer surface rotatably mounted thereon.

The free end 22 of the U-shaped tubular member 12 is threaded to receive a coupling 42 on the end of a water hose 44, whereby water can be introduced into the interior of the tubular member 12.

The other free end 20 of the U-shaped member is also threaded to receive a valve member 46 which includes a control member 48 for varying the opening in the valve to control the rate of water flow from the interior of the U-shaped tubular member 12. The valve member 46 includes a threaded nipple on the outlet side thereof to receive a coupling 50 of a drain hose 52 for carrying away any water which passes through the U-shaped member 12.

The exercising device 10 is used with a length of rope 54 which is wrapped around the one leg portion 16, passed over the sheave 40, and thence around the other leg portion 14. Each end of the rope 54 is provided with a loop or bight 56 which preferably receives a snap hook 58 of conventional construction, for a purpose to appear.

In use, the hook-like member 36 is fastened to a support (not shown) such as one of the uprights of a goal post on a football practice field to permit the exercising device 10 to extend in a horizontal direction, the rope 54 is wrapped around the leg portions 14 and 16 the number of times required to achieve the desired frictional resistance as the rope is pulled through the device, and one of the snap hooks 58 at one end of the rope 54 is fastened to the back portion of a belt worn by a football player who is to use the device.

On a given signal, the football player starts to run down the field, pulling the rope 54 through the exercising device 10. Inasmuch as the rope 54 is wrapped around the leg portions 14 and 16 so as to be in frictional engagement therewith, there will be a "drag" or retarding force on the rope 54, which force remains substantially constant and is proportional to the number of turns of the rope around the legs of the U-shaped member 12. This requires the player to exert more force than usual with his legs and thereby helps develop the leg muscles which are used in running.

However, if the coach wishes to increase the "drag" on the rope, he merely grasps the other portion of the rope which is passing into the device, and permits it to slide through a gloved hand at a predetermined rate in order to increase the frictional engagement of the rope with the legs of the U-shaped member. In this manner, the coach can increase the pull or "drag" to cause the player to exert more pulling effort, and then by suddenly releasing the "drag," cause the player to lose his balance. Accordingly, when the increased "drag" is released the player would normally fall forward and onto the ground unless he had his feet positioned properly to maintain his balance, as is required when a player is running down field while being subjected to blocks and other types of body contact with opposing players.

Thus, the present exercising device helps strengthen and condition the player's leg muscles, and, at the same time, requires the player to learn to maintain his balance with proper leg positioning while he is running down the field.

After the one player with the hooks fastened to his belt runs the required distance down the field, he merely disengages the snap hook 58 from the back of his belt, and another player fastens the other end of the rope 54 with its snap hook to his belt in a like manner so that the rope 54 will be pulled through the exercising device in the opposite direction. In this manner, the rope 54 will be pulled back and forth without requiring any change in the device or otherwise manually retracting the rope.

Inasmuch as the retarding force or "drag" is achieved by the frictional engagement of the rope 54 with the leg

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portions 14 and 16 of the U-shaped member, an appreciable amount of heat is produced in the device as the rope 54 is being pulled therethrough by the players alternately running down the field.

To cool the device, water is introduced into the interior of the tubular U-shaped member 12 through the inlet water hose 44. Although the control member 48 of the valve 46 can be adjusted to permit substantially unrestricted water flow through the valve 46 and out through the outlet hose 52, it has been determined that a relatively small amount of water flow will achieve the desired cooling results. Thus, in order to maintain the temperature of the U-shaped member 12 within reasonable limits, it is only necessary to have a very small amount of water flowing through it. Consequently, in many instances the outlet hose 52 can be omitted and the control member 48 of the valve 46 adjusted so that there is a very slight flow of water from the valve 46, which water can flow onto the ground where it will be quickly absorbed.

Referring to FIGS. 3 and 4, the numeral 60 indicates a modified exercising device 60 also constructed in accordance with the teachings of the present invention and which includes a similar generally U-shaped tubular member 62 (also preferably made from stainless steel) with a smooth outer surface. It includes opposed leg portions 64 and 66 with a closed end 68 and adjacent free ends 70 and 72.

Extending between the leg portions 64 and 66 adjacent the free ends is a tubular connecting member 74 which also has a smooth outer surface.

A cylindrical guide member 76 with a smooth outer surface is fastened to the U-shaped member at the closed end 68 thereof, said guide member extending transversely to the connecting member 74 and the plane of the U-shaped member.

A bifurcated supporting bracket 78 with leg portions 80 and 82 has the free ends of said leg portions fastened to the ends of the cylindrical guide member 76, the upper end of the bracket containing a flange portion 84 which is provided with an aperture 86, whereby the device can be fastened to a support (not shown).

The athletic exercising device 60 is used with a length of rope 88 which is wrapped around one leg portion 64 a predetermined number of times, thence over the guide member 76, and around the other leg portion 66 an equal number of times to create an equivalent amount of resistance when pulling either free end of the rope 88.

It will be obvious that the modified embodiment of the exercising device illustrated in FIGS. 3 and 4 operates in the same manner as the exercising device 10 previously described. However, as mentioned hereinabove, the exercising device 60 does not contain the cooling means shown in FIGS. 1 and 2.

It will thus be apparent that there has been provided two embodiments of a novel athletic exercising device which fulfills all of the objects and advantages sought therefor.

It is to be understood that the foregoing description and the accompanying drawing have been given only by way of illustration and example, and that changes and alterations in the present disclosure which will be readily apparent to one skilled in the art, are contemplated as within the scope of the present invention.

I claim:

1. An athletic exercising device, comprising:
 - two elongated members with smooth outer surfaces positioned side-by-side in spaced apart relationship in the same plane providing two sets of opposed end portions,
 - each of said members being adapted to have a length of rope wrapped therearound;
 - guide means positioned between said elongated members adjacent one set of end portions and extending

transversely of the plane of the elongated members for guiding a rope from one elongated member to the other elongated member;

means adjacent the other set of end portions for retaining on each of said elongated members, a length of rope wrapped therearound; and
means connected to the device for attaching it to a support.

2. An athletic exercising device, comprising, in combination:

two elongated members with smooth outer surfaces positioned side-by-side in spaced apart relationship in the same plane providing two sets of opposed end portions,

each of said members being adapted to have a length of rope wrapped therearound;

guide means positioned between said elongated members adjacent one set of end portions and extending transversely of the plane of the elongated members for guiding a rope from one elongated member to the other elongated member;

a length of rope wrapped around one elongated member, over said guide means, and thence around the other elongated member;

means adjacent the other set of end portions for retaining the wrapped around rope on said elongated members; and

means connected to the device for attaching it to a support.

3. An athletic exercising device, comprising:

a generally U-shaped cylindrical member including opposed leg portions in the same plane with a closed end and adjacent free ends,

the outer surface of the U-shaped member being smooth and free of grooves;

connecting means extending between the leg portions adjacent the free ends thereof;

guide means with a smooth surface extending transversely of the plane of the leg portions for engaging a rope adapted to movably extend over said guide means from one leg portion to the other leg portion; and

means connected to the device for attaching it to a support.

4. An athletic exercising device, comprising, in combination:

a generally U-shaped cylindrical member including opposed leg portions in the same plane with a closed end and adjacent free ends,

the outer surface of the U-shaped member being smooth and free of grooves;

connecting means extending between the leg portions adjacent the free ends thereof;

guide means with a smooth surface extending transversely of the plane of the leg portions;

means connected to the device for attaching it to a support; and

a length of rope wrapped around one leg portion starting adjacent said connecting means, over the guide means, and thence around the other leg portion starting adjacent the guide means.

5. An athletic exercising device, comprising:

a generally U-shaped cylindrical member including opposed leg portions in the same plane with a closed end and adjacent free ends, the outer surface of the U-shaped member being smooth and free of grooves; connecting means extending between the leg portions adjacent the free ends thereof;

guide means with a smooth surface supported between the leg portions and extending transversely of the plane of the leg portions intermediate the connecting means and the closed end for engaging a rope adapted to movably extend over said guide means from one leg portion to the other leg portion; and

means fastened to the device for attaching it to a support.

6. An athletic exercising device, comprising, in combination:

a generally U-shaped cylindrical member including opposed leg portions in the same plane with a closed end and adjacent free ends, the outer surface of the U-shaped member being smooth and free of grooves; connecting means extending between the leg portions adjacent the free ends thereof;

guide means with a smooth surface supported between the leg portions and extending transversely of the plane of the leg portions intermediate the connecting means and the closed end;

means fastened to the device for attaching it to a support; and

a length of rope wrapped around one leg portion a predetermined number of times, over the guide means, and thence around the other leg portion the same number of times.

7. An athletic exercising device, comprising:

a generally U-shaped tubular member including opposed leg portions with a closed end and adjacent free ends;

connecting means extending between the leg portions adjacent the free ends thereof;

guide means with a smooth surface supported between the leg portions for engaging a rope adapted to movably extend over said guide means from one leg portion to the other leg portion;

means for connecting a water hose to the free end of one leg portion for admitting water to the interior of the U-shaped tubular member; and

means at one of the ends for adjustably controlling the rate of flow of water through said U-shaped member.

8. An athletic exercising device, comprising:

a generally U-shaped tubular member including opposed leg portions with a closed end and adjacent free ends;

connecting means extending between the leg portions adjacent the free ends thereof;

guide means with a smooth surface supported between the leg portions for engaging a rope adapted to movably extend over said guide means from one leg portion to the other leg portion;

means for connecting a water hose to the free end of one leg portion for admitting water to the interior of the U-shaped tubular member; and

valve means at the other free end for controlling the flow of water from the interior of said U-shaped member.

9. An athletic exercising device, comprising, in combination:

a generally U-shaped tubular member including opposed leg portions with a closed end and adjacent free ends;

connecting means extending between the leg portions adjacent the free ends thereof;

guide means with a smooth surface supported between the leg portions;

means for fastening the U-shaped member to a support;

means for connecting a water hose to the free end of one leg portion to admit water into the interior of the U-shaped tubular member;

valve means at the other free end for controlling the flow of water from the interior of said U-shaped member; and

a length of rope wrapped around one leg portion, over the guide means, and thence around the other leg portion.

10. An athletic exercising device, comprising:

a generally U-shaped tubular member including op-

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posed leg portions with a closed end and adjacent free ends;
 connecting means extending between the leg portions adjacent the free ends thereof;
 a bracket mounted on the connecting means;
 guide means for engaging a rope adapted to movably extend over said means carried by the bracket between the leg portions and intermediate the connecting means and the closed end of the U-shaped member;
 means for fastening the device to a support;
 means for connecting a water hose to the free end of one leg portion to admit water into the interior of the U-shaped tubular member; and
 valve means at the other free end for controlling the flow of water from the interior of said U-shaped member.

11. An athletic exercising device, comprising:
 a generally U-shaped tubular member including opposed leg portions with a closed end and adjacent free ends;
 connecting means extending between the leg portions adjacent the free ends thereof;
 a bifurcated bracket mounted on the connecting means and supporting a rotatably mounted sheave having the axis thereof extending transversely of the leg portions,
 said sheave being positioned between the leg portions and intermediate the connecting means and the closed end of the U-shaped member;
 means for connecting a water hose to the free end of one leg portion to admit water into the interior of the U-shaped tubular member;
 valve means at the other free end for controlling the flow of water from the interior of said U-shaped member; and
 means for fastening the device to a support.

12. An athletic exercising device, comprising:
 a generally U-shaped, rod-like member including opposed leg portions with a closed end and adjacent free ends;
 connecting means extending between the leg portions adjacent the free ends thereof;
 a guide member with a smooth outer surface connected to the U-shaped member at the closed end thereof for engaging a rope adapted to movably extend over

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said guide member from one leg portion to the other leg portion; and
 support means connected to said guide member for fastening the device to a support.

13. An athletic exercising device, comprising, in combination:
 a generally U-shaped, rod-like member including opposed leg portions with a closed end and adjacent free ends;
 connecting means extending between the leg portions adjacent the free ends thereof;
 a transversely extending guide member with a smooth outer surface connected to the U-shaped member at the closed end thereof;
 support means connected to said guide member for fastening the device to a support; and
 a length of rope wrapped around one leg portion, over the guide member, and thence around the other leg portion.

14. An athletic exercising device, comprising:
 a generally U-shaped, rod-like member including opposed leg portions with a closed end and adjacent free ends;
 connecting means extending between the leg portions adjacent the free ends thereof;
 a cylindrical guide member with a smooth outer surface for engaging a rope adapted to movably extend over said guide member from one leg portion to the other leg portion connected to the U-shaped member at the closed end and extending transversely thereof; and
 a bifurcated support member with free ends having said free ends connected to the ends of the guide member.

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