A Smith Machine comprising a barbell displaceable between a pair of guide rails, wherein the barbell comprises one or more grip-arms laterally extending therefrom.
FOR PHYSICAL EXERCISE MACHINE

FIELD OF THE INVENTION

[0001] The present invention is concerned with an exercise machine and more particularly with a so-called Smith Machine and an improvement therefore.

BACKGROUND OF THE INVENTION

[0002] Body fitness has become increasingly popular with people of all ages and one common way to practice is by using exercise machines e.g. in a gym or at home.

[0003] Fitness and expected health benefits are generally accomplished through practicing of a continuous exercise program depending, among others, on age, state of health, personal goals, type of equipment and facilities, etc.

[0004] One type of exercise is primarily associated with body building and/or strengthening and training of certain muscle groups. Such exercise may be carried out using free weights or equipment and machinery designed for these purposes, and such equipment is often referred to as universal equipment.

[0005] The universal equipment is often presented in a number of separate machines specifically designed to exercise one or more groups of muscles.

[0006] One of the most common exercise routines requiring an individual to move his knees between extending and bent positions as he maintains his balance over his feet is the so-called 'squat exercise', wherein an individual raises and lowers his upper body between upper and lower positions as he moves between a standing position and a squat position. When the squat exercise is desired to be performed with weights, a bar having weights (often referred to as a barbell) secured at each of its ends and which may be balanced and held across the neck of the individual as the individual moves between the standing position and the squat position. While performing this exercise, the barbell is grasped by the individual's hands while defending until thighs are just past parallel to the floor. Then back to a standing position with the assistance of the arms, extending knees and hips until legs are straight. While performing this exercise, one should keep his head forwards, back straight and feet flat on the floor with equal distribution of weights through forefoot and heel.

[0007] The squat exercise above described and variations thereof are typical examples of exercise performed by the so-called Smith Machine. Another type of exercise performed by this machine is the so-called 'lunge exercise'. This exercise is carried out by placing the barbell on the individual's lower neck and getting into a start position wherein one foot extends forward and one foot backwards. The back leg is positioned such that when the individual lunges down his leg is vertical to the ground, i.e., not at an angle. While using a Smith Machine, the barbell is placed on the thicker muscle part of the trapeze used muscle and then, the barbell is unlocked by slightly lifting the barbell and rotating it in a counter clockwise direction disengaged from its arresting position. Then, individual lunges down until the knee of the rear leg is close to the floor. Then, the individual stands back up and returns to the starting position with several repetitions on one leg and then on the other leg.

[0008] A large variety of Smith Machines and other exercising machines are available on the market and have been disclosed through the years.

[0009] U.S. Pat. No. 4,744,560 discloses an exercising and body fitness assembly (of the time often referred to as a multi-trainer) comprising, among its other exercising features, also a lift bar (barbell) fittable with a plurality of weights as known, per se.

[0010] U.S. Pat. No. 5,184,992 is also directed to a multi-station physical exercise apparatus comprising, two barbell disk carrying carriages each of which being independently movable along a pair of vertical rails and suited, among others, for carrying out the above exercises.

[0011] However, the above referred to exercising machines are fitted with a barbell which for some individuals may be a problem to grip at the position behind their neck (e.g. owing to sport or other injuries, lack of flexibility, etc.). Even more so, the squat exercises may be relatively difficult for some people to perform because of the balance required during the exercise routine.

[0012] U.S. Pat. No. 5,569,133 discloses an exercise apparatus for performing squat exercises wherein the resistance i.e. working load/weights, is borne by a yoke assembly positionable about the neck of the user, said yoke assembly including a horizontally-disposed portion positionable across the neck of the user and carriage member portions secured to guideways for slideable movement therealong, and further, the apparatus comprises grip means connected to the post capable of being gripped by the hands of the user throughout the performance of squat exercise for stabilizing the user and helping him to maintain his balance over his feet.

[0013] It is an object of the present invention to provide an improved exercising machine of the type generally referred to as a Smith Machine, for performing effective exercising i.e. loading a desired group of muscles whilst preventing unintended load from other groups of muscles and furthermore, avoiding or minimizing issues of lack of balance and potential damage to different groups of muscles.

[0014] The present invention calls for a Smith Machine comprising a barbell replaceable between a pair of generally parallelly extending guide rails, wherein said barbell comprises one or more grip-arms laterally extending therefrom. Also the invention suggests a pair of arms fitted on the barbell for gripping while performing different exercises with a Smith Machine.

SUMMARY OF THE INVENTION

[0015] According to the present invention there is provided a Smith Machine comprising a barbell having a longitudinal axis and replaceable between a pair of parallelly extending guide rails, said barbell comprising a pair of grip-arms laterally extending therefrom and spaced apart from one another to conveniently be gripped by an individual extending between said grip-arms.

[0016] The grip-arms according to the present invention serve also for locking/unlocking (arresting/un-arresting) from locking pins associated with one or two supporting frame members of the machine.
According to a second aspect of the present invention there is provided a barbell for use with a Smith Machine comprising a pair of parallelly extending guide rails slidingly supporting the barbell; wherein said barbell comprises a pair of grip-arms laterally extending therefrom and spaced apart from one another to conveniently be gripped by an individual.

According to a third aspect of the present invention there is provided a grip-arm for articulately positioning over a barbell of a Smith Machine such that it laterally extends therefrom. Typically, two such grip-arms are articulated on the barbell at a spaced apart relationship so as to be conveniently gripped by an individual.

The invention according to the present invention may include several modifications, for example:

The barbell may be fitted with one or two grip-arms;

The barbell may be slidingly articulated to the guide rails, e.g. by linear bearings, or it may be otherwise supported, as known per se;

The grip-arms may be fixedly articulated to the barbell (i.e. integrated therewith e.g. by welding) or detachably articulated thereto;

The grip-arms may be slidingly displaceable over the barbell (about its longitudinal axis) to allow adjustment of the distance therebetween so as to fit ergonomic requirements of different individuals;

The grip-arms may be slidingly displaceable over the barbell (about its longitudinal axis) between an exercising position where they are spaced apart at a distance for conveniently being gripped by an individual extending between the grip-arms, and a stand by position where the grip-arms are positioned adjacent the frame members of the Smith Machine;

The grip-arms may be fitted with a hand grip (padding) or it may be roughened e.g. by knurling;

The grip-arms may be fitted for fast release/mounting over and from the barbell by a fast release attachment mechanism;

The grip-arms may be fitted for articulating to a barbell by a mechanism suited for engaging over barbells of different diameters;

The grip-arms may be used in a variety of exercises, for example: lunge exercise, squat exercise, bench pressing, parallel bar dips, etc., for substantially vertical displacement of the barbell or about an inclined plane;

The grip-arms may be articulated to the barbell at a front or rear orientation, or at any intermediate angular position (i.e. angularly shifted about the longitudinal axis of the barbell);

The grip-arms may be foldably articulated to the barbell so as to extend substantially parallel thereto when not in use;

The grip-arms may be fitted at their free ends (remote from the barbell) with a gripping segment extending offset from a longitudinal axis of the grip-arms, for gripping thereof at an angle;

Where the arm-grips are detachable, the attachment mechanism is a fast release type, for example, a Vise Grip™ coupler, an eccentric lock clamp coupler, etc.

According to one particular embodiment the attachment mechanism comprises a pair of hingedly coupled bracing segments, secured to one another by a fastening bolt and where the grip arm is attachable to one of said segments.

**BRIEF DESCRIPTION OF THE DRAWINGS**

In order to understand the invention and to see how it may be carried out in practice, several embodiments will now be described, by way of non-limiting examples only, with reference to the accompanying drawings, in which:

**FIG. 1** is a front isometric view of a Smith Machine fitted with a barbell according to the present invention;

**FIG. 2** is a rear isometric view of a top portion only of Smith Machine fitted with a barbell according to an embodiment of the present invention;

**FIG. 3** illustrates grip-arms according to the an embodiment of the present invention, apart from the Smith Machine;

**FIG. 4A** is a schematic side view illustrating an individual exercising squats with a Smith machine fitted with grip-arms according to the present invention;

**FIG. 4B** is a front isometric view of an individual exercising squats with a Smith machine fitted with grip-arms according to the present invention;

**FIG. 4C** is a rear isometric view of an individual exercising squats with a Smith machine fitted with grip-arms according to the present invention;

**FIG. 5** is a rear isometric view illustrating an embodiment of a grip-arm fitted with a different attaching mechanism; and

**FIG. 6** is a rear isometric view of an embodiment of grip-arms according to the present invention.

**DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS**

Attention is first directed to **FIG. 1** illustrating a Smith Machine generally designated 10 comprising a frame 12 which in turn comprises at each side a front post 16 and a rear post 20 connected to one another by transversing beams 22, 24 and 26.

Parallel extending at each side of the Smith Machine 10 there are provided a pair of rails 30 which in the present example extend substantially vertically.

The frame 12 is a rigid construction stably positioned on the ground which if necessary, may be secured to the ground, e.g. by bolts.

Slidingly mounted on each rail 30 there is a carriage 34 in the form of a cylindric/linear bearing 36 supporting a barbell 40 though allowing for its rotation, at least partially.

Barbell 40 is fitted with a pair of hooks 42 adapted for engagement with pins 46 laterally projecting from frame
16, so as to arrest the barbell 40 at any desired level. Engagement of hooks 42 with pins 46 takes place by rotating the barbell 40 in the direction of arrow 50 whilst disengagement thereof is facilitated by slightly elevating the barbell 40 and simultaneously rotating thereof in an opposite direction, i.e. in the direction of arrow 52.

[0048] Barbell 40 is of typical diameter corresponding with some international standards; e.g. in the range of about 28-32 mm, and so-called in the art an Olympic Bar. The ends 60 of the barbell are thickened and are fitted with a non-slip coating (e.g. rubber, etc.) and further comprise a stopper ring 64 for supporting weights (not shown) as known in the art.

[0049] While not in use, a plurality of weights are supported over weight supports 68 laterally projecting from the rear frame 12.

[0050] As can further be seen in FIG. 1, the barbell 40 comprises a pair of grip-arms 70 which in the present embodiment are fixedly articulated at 72 to the barbell 40, said grip-arms being spaced apart from one another so as to conveniently allow gripping by an individual extending between said grip arms such that his shoulders can support the center portion 76 of the barbell 40 as known in a variety of exercises, e.g. squats, lunges exercise, etc.

[0051] It is appreciated that the Smith Machine illustrated in FIG. 1 is a mere example and that the present invention may be applied to a barbell of any type of Smith Machine, as may well be appreciated by the artisan.

[0052] Turning now to FIG. 2 of the drawings, there is illustrated a rear view of the barbell 40 fitted with the two grip-arms 70 laterally extending therefrom at a symmetric orientation (i.e. equally spaced apart from the posts 16 and parallelly extending with respect to one another.

[0053] It is seen that the grip-arms 70 are formed with a knurled portion 80 which, however, may be fitted with a gripping pad, e.g. made of elastic material, sponge-like material, etc.

[0054] As can further be seen in FIG. 2, and with further reference being made also to FIG. 3, the grip-arms 70 are screw coupled to an attachment mechanism generally designated 84 in the form of a pair of segmented braces 86 and 88 pivotally articulated to one another at 90 and which are tightly clamped over the is barbell 40 by means of fastening bolts 96.

[0055] This arrangement allows for a rapid mounting or dismounting of the grip-arms depending on needs of the individual and on the exercise to be performed, namely, the spacing between the grip-arms 70 may be increased or narrowed per demand. Furthermore, when not in use, the grip-arms 70 may be loosened and displaced to a position adjacent either or both the post 16 or altogether removed. Still furthermore, the angular position of the grip-arms 70 may be altered so as to suit different requirements of different individuals.

[0056] Whilst in FIG. 3 the grip-arms 70 are screw coupled to the attachment mechanism 84 (by threaded portions 98), it is to be appreciated that the grip-arms 70 may be integrated thereto, e.g. by welding or individually formed therewith.

[0057] With further reference now being made to FIGS. 4A to 4C, there is illustrated in FIG. 4A a schematic side elevation of a Smith Machine generally designated 100 with an individual 102 performing squat exercises. The dark figure illustrates the individual at the squatting position, namely with folded knees whilst the light figure illustrates the individual at the upright position. It is noticed that rather than gripping the barbell 106, the individual is gripping the grip arm 110 as can be clearly seen in FIGS. 4B and 4C. As can further be seen in FIGS. 4B and 4C, the barbell 106 is fitted with a cylindrical padding 114 for bearing on the individual’s shoulders, as often known in the art. It is further apparent from the drawings, that the individual maintains a correct posture position throughout the exercise, namely the individual’s head is substantially continuously above his knees and whereby forward inclining is eliminated or avoided to prevent loading of undesired muscles.

[0058] The technique of the squat exercise calls for exercising the tis and gluteus according to which the individual stands with his feet just in front of the barbell with a distance of approximately 40-60 cm between the feet (turned slightly outwards). While keeping one’s head up the body is lowered with a straight back until reaching a position where the angle of the knees is slightly under 90° whereupon the individual pushes upwards without moving his back forward.

[0059] It is seen in FIGS. 4A through 4C that the individual may grip the grip-arms at any desired position along the grip-arms 110 at his comfort and depending on flexibility of his shoulders, this not being the case when the individual should grip the barbell.

[0060] With further reference to FIG. 5, there is a closer view on a rear portion of a barbell 140 fitted with a grip arm 142 in accordance with an embodiment of the invention where the connecting mechanism 144 comprises a lever 146 for fastening an eccentric bolt 150 (e.g. of the type often referred to as “fast release eccentric screw”), whereby the attachment mechanism 144 may be easily engaged or released from the barbell 140.

[0061] In the embodiment of FIG. 6, there is illustrated a barbell 160 fitted with a pair of grip-arms 162 each fitted at its free end with a gripping portion 166 which at the present embodiment extends substantially parallel to the longitudinal axis of the barbell 160 though such gripping portions may extend at other angles as well. It is noticed that the gripping portion 166 is knurled for better gripping thereof.

[0062] Whilst several embodiments have been shown and described, it is to be understood that it is not intended thereby to limit the disclosure of the invention, but rather it is intended to cover all modifications, embodiments and arrangements falling within the spirit and the scope of the invention, mutatis mutandis.

[0063] For example, it should be appreciated the Smith Machine represented in some of the Figs. And described with reference thereto, is a mere example and any other type of Smith Machine may be used as well. Furthermore, whilst several exercises have been discussed in connection with the present invention, it is to be realized that the artisan may use the grip-arms for any exercise and at any respective position thereof.

1-24. (canceled)

25. A weight lifting aid comprised of
a cylindrically shaped barbell engaging member having a recess extending along a main axis thereof, and
at least one handle having a first end attached to said cylindrically shaped barbell engaging member and having a second unattached end.

26. A weight lifting aid as recited in claim 25, further comprised of a second handle, said second handle being spaced apart from said at least one handle so as to be gripped by an individual positioned between said at least one handle and said second handle.

27. A weight lifting aid as recited in claim 26, wherein both said at least one handle and said second handle are slidingly displaceable along said cylindrically shaped barbell engaging member to allow adjustment of a distance therebetween so as to fit ergonomics of different individuals.

28. A weight lifting aid as recited in claim 25, wherein said at least one handle is detachably articulated to said cylindrically shaped barbell engaging member.

29. A weight lifting aid as recited in claim 25, wherein said at least one handle is fitted with a padded hand grip.

30. A weight lifting aid as recited in claim 26, wherein said at least one handle and said second handle are each fitted with a padded hand grip.

31. A weight lifting aid as recited in claim 25, wherein said at least one handle comprises a knurled portion.

32. A weight lifting aid as recited in claim 26, wherein said at least one handle and said second handle each comprise a knurled portion.

33. A weight lifting aid as recited in claim 25, wherein said at least one handle is articulated to said barbell at any angular position.

34. A weight lifting aid as recited in claim 25, wherein said at least one handle is foldably articulated to said cylindrically shaped barbell engaging member so as to extend substantially parallel thereto when not in use.

35. A weight lifting aid as recited in claim 26, wherein said at least one handle and said second handle are both foldably articulated to said cylindrically shaped barbell engaging member so as to extend substantially parallel thereto when not in use.

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