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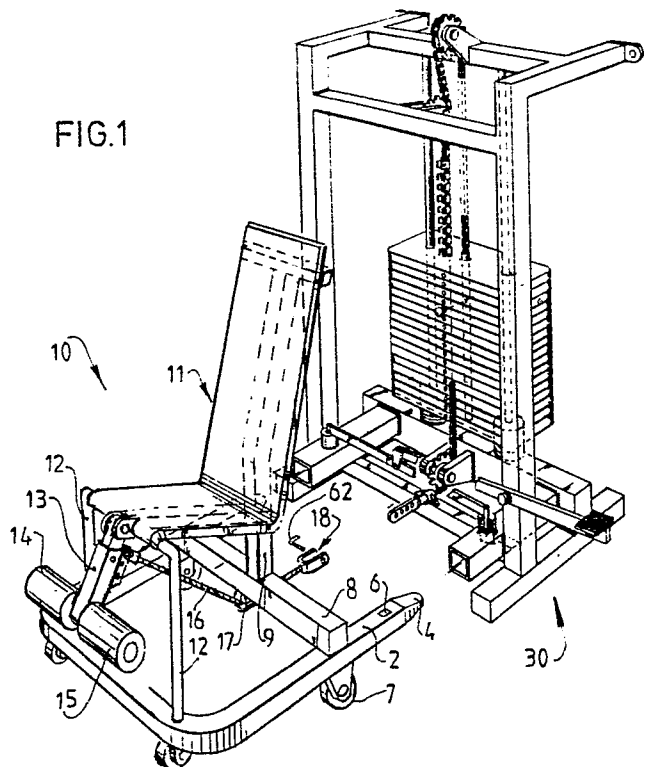
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NL-2517 GK The Hague(NL)(54) **Exercising apparatus consisting of a weight unit and at least one work unit.**

(57) Exercising apparatus consisting of a weight unit (30) and at least one work unit (10; 20) which may be coupled with each other for cooperation and may be separated from each other for separate storage or subsequent coupling of an other work unit with the weight unit. Both the respective coupling members (45,46,1-4) of the units, serving to assure their stationary coupling, and their respective connective members (52,16; 52,27), serving to assure their dynamic cooperation during exercising, are of type which can be easily and quickly joined and released by a user.

FIG.1



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Exercising apparatus consisting of a weight unit and at least one work unit.

The invention relates to an apparatus for exercising one or more muscles or other body members, consisting of a weight unit comprising a number of weights selectively activatable and of at least one work unit comprising at least one member to be displaced with respect to an other member against the force of the activated weights by a user during exercising, the at least one work unit and the weight unit being releasably connected for cooperation with each other by means of respective connecting members, like cables, rods and/or chains, and being coupled with each other by means of respective coupling members, characterized in that the one or more coupling members of the at least one work unit and those of the weight unit are of a type which can be easily and quickly coupled and decoupled by a user.

American patent specification US-A-4 390 179 discloses such an exercising apparatus having associated with a single, central weight unit a number of work units which can be alternately connected, that is, each one preventing the employment of the others, by means of their respective connecting members with the connecting member in the form of a cable of the central weight unit so as to be able to cooperate with a desired number of weights thereof. Although they can only be used one by one, the various work units are coupled permanently or semi-permanently with the weight unit such that they protrude permanently outward on its different sides. As a result thereof, the prior art exercising apparatus under consideration here occupies a comparatively large floor area and, during use of one of the work units, "offers" a number of further work units which, however, cannot be used at that moment. Accordingly, this "offering" of various work units, or different exercising possibilities, gives the apparatus only a seeming versatility, and this at the cost of an unnecessarily high use of available floor area. These considerations not only play a part in the use of such exercising apparatus in professional fitness training centres and the like, but also prevent their purchase and use by private individuals with a limited exercising space.

The invention has for its object to improve this situation and to realize an exercising apparatus of the type under consideration here such that at least the same versatility is attained as in the prior art exercising apparatus described above, that a greater flexibility is attained than with the known apparatus, and that during use, and to an even greater extent when not in use, considerably less uninterrupted floor space is occupied.

To this end the invention proposes, for an exercising apparatus of the type referred to in the preamble, that the one or more coupling members of the at least one work unit and those of the weight unit are of a type which can be easily and quickly coupled and decoupled by a user. This per se simple measure according to the invention has various advantages. In the first place, this measure has the result that at any time only one work unit is required to be coupled to the weight unit, so that the latter only needs facilities, that is, one or more appropriate coupling members and suitable dimensions, for coupling with a single work unit. In the second place, the weight unit occupies considerably less uninterrupted floor space than has been possible up to the present with a versatile exercising apparatus, not only during use (after selective coupling to a work unit by the user) but also when not in use (after decoupling of a work unit used earlier). This enables a more efficient use of the floor area available in a fitness training centre or the like. In addition, the purchase and use of an exercising apparatus according to the invention, consisting of a single weight unit and one or more separate work units, are brought within the reach of private individuals who have at their disposal only a restricted exercising space or a space also to be used for other purposes. As will be explained hereinafter, this last point forms an important aspect of the invention.

Namely, in a preferred embodiment of the exercising apparatus according to the invention, the starting point is formed by earlier proposals according to which an exercising apparatus is provided with means, such as rollers, for displacing the apparatus over a floor (see US-A-3 290 044) and/or is provided with means for attaching the apparatus to a floor and/or against a wall (see US-A-3 743 282). In such a case, the invention now proposes not only that each work unit can be easily detached from the weight unit, as explained above, but also that only the one unit is provided with displacement means and that only the other unit is provided with attachment means. More particularly, the invention proposes in such a case that the weight unit is characterized by means for attaching the unit to a floor and/or against a wall, and that the work unit is characterized by means, such as rollers, for displacing the unit over a floor. In the case of attachment of such a weight unit against a wall and the use of one or more work units on rollers or the like, the possibility is created, of placing a decoupled work unit next to the weight unit against the wall concerned when the exercising apparatus is not in use. Both units will in that case generally

occupy comparatively little floor area, or leave as much floor area as possible free for other activities. The displacement means arranged on the work unit, which can consist for example of slide members instead of rollers, in that case enable a rapid displacement of the work unit to and from the weight unit.

In order to achieve a stable operating position of the exercising apparatus it is recommended, according to the invention, that of the respective coupling members of the two units the one fits telescopically into the other, such for example that in the weight unit the at least one coupling member is a profile bar open towards a work unit to be coupled therewith, and that in each work unit to be coupled therewith the at least one coupling member is a rod protruding towards a weight unit to be coupled therewith. It is noted that US-A-3 917 262 discloses an apparatus for exercising leg muscles, the construction of which can be described as a fixed combination of a weight unit and a work unit with a small seat added thereto which can be adjusted relative to a pair of foot pedals with the aid of members which fit telescopically into each other. This publication does not, however, disclose the application proposed by the invention of such members for coupling a central weight unit with one or more work units which are detachable therefrom.

From considerations of safety it is recommended, according to the invention, that the exercising apparatus is provided with releasable means for locking the respective coupling members in their coupled position. To this end, for example, the weight unit used and/or the work units associated with it are provided with releasable means for locking its own coupling member with a coupling member of the work unit or the weight unit, respectively, in the coupled position of these members.

As will be apparent from the above, the invention provides an exercising apparatus with a single weight unit, to which a work unit selected by a user can be coupled quickly and easily by the latter one. Such an exercising apparatus derives its versatility from its flexibility and occupies in use as well as out of use as little floor area as possible.

The invention will be elucidated in the following description with reference to the accompanying drawings of a preferred embodiment, to which the invention is not limited, however. In the drawings:

fig. 1 and 2 show, schematically and in perspective, two different embodiments of an exercising apparatus according to the invention, comprising two different work units but the same weight unit, respectively, and

fig. 3 shows, in a manner similar to fig. 1 and 2 but on a somewhat larger scale, a weight unit according to the invention and the associated part of a compatible work unit of any exercising type.

In the following description, a fuller explanation will be made with reference to the figs. 1 and 2 of the work units 10 and 20 shown respectively therein, while with reference to fig. 3 the weight unit 30 shown therein will be described in more detail.

Both work units 10 and 20 as according to the respective figures 1 and 2 show a substantially U-shaped underframe with legs 1 and 2 which are chamfered at their respective free outer ends 3 and 4; close to their free ends legs 1 and 2 have respective openings 5 and 6 for accommodation of locking pins, as yet to be described with reference to fig. 3, of the weight unit 30 in the operating position of the exercising apparatus.

At the underside of legs 1 and 2 are located several wheels or rollers 7 for displacing the work unit 10 or 20 over a floor now shown in the drawing. Resting on both legs 1 and 2 is a cross beam 8 connected to and forming a rigid entity with them.

In the case of the exercising apparatus shown in fig. 1 where the two units 10 and 30 are not yet coupled to each other, there is located on cross beam 8 an upright column 9 which supports the rear part of a seat 11 having front legs 12 also resting on the U-shaped underframe. A special mechanism for altering the position of seat 11 relative to column 9 and front legs 12, is not separately shown in fig. 1, but such a mechanism can be arranged in a manner usual for exercising apparatus. On the front of seat 11 can pivot a lever 13 of adjustable length which carries on its outer end two rollers 14 and 15 protruding sideways, and which is coupled at the back with a cable 16 which runs in the embodiment described here over a cable pulley 17 arranged on the underside of cross beam 8 and ends in a U-shaped connecting member 18.

No further embodiment details of the work unit 10 and possible variants will be explained here. It will be apparent to a person skilled in the art that the work unit 10, after joining together with a weight unit 30 to form a complete exercising apparatus, serves for exercising the thigh muscles of a user.

In the exercising apparatus shown in fig. 2 as two units 20 and 30 not yet coupled to each other, a column 19 is located on cross beam 8, this column having more towards the top a number of perforations 21 in sideways direction. Inserted into one of these perforations 21, to be chosen depending on the height of a user, is a hinge pin of which only an outside knob 22 is visible in fig. 2. Able to pivot on the said hinge pin is a rocker body 23

which is fork-shaped at the front, and the forward directed fork limbs 24 of which bear a push rod 26 bent round at both its outer ends in a forward direction and provided there with handles 25; push rod 26 is locked against rotation relative to fork limbs 24 in a manner not shown in the drawing. A displacement of hand grips 25 in upward direction (see the upward directed arrows in fig. 2) results in a tilting of the rocker body 23 on the hinge pin with the knob 22 such that a projection 27 of rocker body 23 directed rearward, that is, towards the weight unit 30 in fig. 2, performs a substantially downward directed movement (see the slightly curved, downward directed arrow in fig. 2). The projection 27 has on its free outer end a thinned portion 28 which serves as connecting member.

No further embodiment details of the work unit 20 and possible variants will be explained here. It will be apparent to a person skilled in the art that after joining together with a weight unit 30 the work unit 20 serves as a complete exercising apparatus for exercising the shoulder (delta) muscles of a user. In the exercising apparatus according to fig. 2 the user in that case stands on a base plate 29 arranged permanently on the front part of legs 1 and 2.

Although only two different embodiments 10 and 20 of a work unit for an exercising apparatus according to the invention have been described in the foregoing with reference to figs. 1 and 2, the invention is not limited to the use of these work units. Other such work units can for example be formed and intended for exercising other muscles of a user, such as the biceps, triceps, the stomach muscles etc. More generally it can be stated that the invention lends itself for application to any exercising apparatus with a work unit, the use of which also requires the presence of a weight unit intended to provide a reaction force for the work unit.

Fig. 3 shows such a weight unit 30 on a slightly larger scale. Shown on the left in fig. 3 is also a part, comprising the previously described elements 1-8, of the underframe of just any suitable work unit, such as 10 or 20. Apart from these elements, also shown in fig. 3 are a connecting cable 16 of work unit 10 as in fig. 1 which ends in a U-shaped connecting member 18, and a connecting member 28 of work unit 20 as in fig. 2 (which forms the thinned outer end of projection 27). These connecting members 18 and 28 only represent examples of a connecting member associated with a work unit, and to be connected with a matching connecting member of a weight unit.

The weight unit 30 in fig. 3 displays a frame with two beams 31 and 32 which rest on the floor of a room or hall not shown in the drawing, where the exercising apparatus has to be used. Although

this is not shown in the drawing, beams 31 and 32 can have perforations via which the beams can be fastened to the floor by means of bolts. Both the beams are coupled rigidly to each other by a transverse beam 33 and bear respective upright columns 35 and 36. Near their upper ends, the columns 35 and 36 are rigidly coupled to each other by a second transverse beam 34. At their respective upper ends the upright columns 35 and 36 become wall supports 37 and 38 respectively which, in the embodiment described here, run horizontally and end in the same vertical plane as the lower beams 31 and 32. At their outer ends the wall supports 37 and 38 have respective eye plates 39 and 40 for attachment of the weight unit by means of bolts against a partition or wall not shown in fig. 3. Extending towards each other from wall supports 37 and 38 are cross beam portions 41 and 42, respectively; accommodated between the outer ends of these cross beam portions 41 and 42 and forming an integral part therewith is a chain wheel support 43 which bears a freely rotatable chain wheel 44.

At a little height above the common lower plane of beams 31-33, the columns 35 and 36 support respective hollow coupling profiles 45 and 46 which are open towards the front; the height just referred to is thereby chosen such that the legs 1 and 2 of a work unit, such as 10 or 20, located on the same floor as the weight unit 30 can be positioned opposite to and in line with the coupling profiles 45 and 46, respectively. The hollow coupling profiles 45 and 46 can accommodate legs 1 and 2 with a sliding fitting for telescopic coupling of a work unit with the weight unit 30. Coupling profiles 45 and 46 are rigidly connected at their rear ends by a cross beam 47 resting on the beams 31 and 32, the beam 47 bearing on its front side a chain wheel support 48 with a freely rotatable chain wheel 49. This chain wheel 49, just as the already mentioned chain wheel 44 and a chain wheel 51 mounted for free rotation by means of chain wheel support 50 attached to the second transverse beam 34, co-operates with a roller chain 52, the function of which will be further explained later.

The cross beam 47 extends parallel to and precisely beneath the already mentioned cross beam portions 41 and 42 of wall supports 37 and 38. Accommodated between cross beam portions 41 and 42 on the one hand and cross beam 47 on the other are two vertical rods 53 and 54 which serve as guides for a number (17 in fig. 3) of weight plates 55 having perforations not indicated in fig. 3 with separate reference numerals, through which rods 53 and 54 extend. Each weight plate 55 has in its centre a similar perforation 56 for accommodating a tube 57 passing through all the weight plates 55, which is coupled at its top with the

previously mentioned chain 52. In addition the weight plates 55 are provided with horizontal bores 58 which extend in each case from the front side of a weight plate visible in fig 3 to at least as far as the perforation 56 therein. Tube 57 is provided with a number of perforations at least corresponding to the number of weight plates employed, which perforations are not shown in fig. 3 but which, in the position of the weight plates 55 drawn in fig. 3, are located precisely opposite the respective bores 58 of the plates. By means of a suitable pin, of which only the forward protruding, thickened head 59 can be seen in fig. 3, an appropriate number of the weight plates 55 can be selectively coupled to tube 57 and via this to cable 52 by a user. If the pin in question is inserted for example into the fifth bore 58 from the top and into the perforations of the tube 57 located behind, the five upper weight plates 55 are coupled to tube 57 and via this to chain 52. As such a weight adjusting mechanism for exercising apparatus is usual, no further explanation will be made here. The bottom weight plate 55 rests on supporting cylinders 60 which encircle the guide rods 53 and 54 above cross beam 47.

As described above, chain 52 runs from tube 57 with the one or more weight plates 55 coupled to it by means of the previously mentioned pin (head 59) first to the chain wheel 44 and then via chain wheel 51 to chain wheel 49. It is noted that instead of a roller chain, such as 52 in fig. 3, another chain or a cable could also be employed. It will moreover be apparent that the number of chain wheels employed, such as 44, 49 and 51 in fig. 3, or the number of corresponding cable pulleys, as well as the respective positions of such chain wheels or cable pulleys can be selected at random and are essentially only restricted by the position where the connecting member, such as 18 of the work unit 10 and 28 of the work unit 20, has to be connected to the weight unit.

As is shown in fig. 3, the chain 52 ends at the front side of chain wheel support 48 in a perforated strip 61 for connection at a small height above the floor to a U-shaped connecting member 18 of a work unit 10 as according to fig. 1 or the like; designated in the latter figure by the reference numeral 62 is a separately drawn connecting pin which serves for this purpose. Any other suitable connecting members, other than the U-shaped connecting member 18 of cable 16 and the perforated strip 61 with connecting pin 62, can of course be employed for connecting together the connecting members concerned of both units.

As is also shown in fig. 3, it is also possible for a connecting member of a work unit, such as the connecting member 28 of the work unit as in fig. 2, to be coupled with chain 52 at a considerably

higher level. To this end, for example, several links of chain 52 are provided or fitted at the appropriate level of the chain with suitable jaws 63 in which a connecting member 28 of a work unit as shown in fig. 2 can be locked by means of a suitable pin, such as for example the connecting pin 62 in fig. 1. Connecting members other than the thinned portion 28 of the projection 27 of work unit 20 and the cable jaws 63 of the weight unit according to fig. 3 can of course be employed to effect a suitable connection between both the units.

As fig. 3 shows, legs 1 and 2 of a work unit not further represented in fig. 3 are located facing the coupling profiles 45 and 46 of weight unit 30, respectively. It will be apparent that the associated work unit can be displaced towards weight unit 30 using rollers 7 or other suitable displacement means, such as for example slide members fitted under legs 1 and 2, the chamfered outer ends 3 and 4 of the legs facilitating their penetration into coupling profiles 45 and 46. As previously noted, legs 1 and 2 of the underframe of a work unit are provided with respective openings 5 and 6 for accommodation of locking pins. In the embodiment of the invention here described, these pins belong to the weight unit 30 and are respectively designated as 65 and 66 in fig. 3. Pins 65 and 66 are driven in downward direction by respective spring mechanisms 67 and 68, the latter one of which is shown somewhat cut away in fig. 3, arranged on coupling profiles 45 and 46, and they penetrate into the respective openings 5 and 6 of legs 1 and 2 that have been inserted into the coupling profiles, and in this way lock the coupling effected between a work unit and a weight unit. Pins 65 and 66 extend vertically on both outer ends of a supporting arm 64 which can be lifted for releasing of the coupling by means of a pedal 69 arranged in the embodiment described here for pivoting on the upright column 36. Obviously, other releasable means for locking the respective coupling members of two units, such as 10 and 30 or 20 and 30, in their coupled state can also be employed.

It will be apparent that from the coupled state of a work unit and a weight unit according to the invention, after connecting together of the appropriate connecting members of both units, there results an exercising apparatus which, from a practical viewpoint, does not differ from monolithic exercising apparatus of known type. In comparison to such known exercising apparatus, however, the exercising apparatus according to the invention has the advantage that it consists of two units which can be separated from each other, that is, a work unit and a weight unit, the latter of which can be used with various work units of different exercising types. This provides in the case of collective use as well as of private use the possibility of making

use of a smaller number of weight units than the number of available work units. In view of the fact that aspects of purchase or investment as well as aspects of storage (space required) are an important consideration in such a "use", this represents a considerable advantage which can manifest itself well in the case of collective as well as private use.

As explained in the foregoing, the invention provides for this purpose, as new components, an exercising apparatus which can easily be separated into two units, a separate work unit for such an exercising apparatus and a separate weight unit for such an apparatus.

Claims

1. Apparatus for exercising one or more muscles or other body members, consisting of a weight unit (30) comprising a number of weights (55) selectively activatable and of at least one work unit (10; 20) comprising at least one member (14,15; 25) to be displaced with respect to an other member (11; 29) against the force of the activated weights by a user during exercising, the at least one work unit (10; 20) and the weight unit (30) being releasably (18,61,62;28,63,62) connected for cooperation with each other by means of respective connecting members, like cables (16), rods (27) and/or chains (52), and being coupled with each other by means of respective coupling members (1-4; 45,46), characterized in that the one or more coupling members (1-4) of the at least one work unit (10; 20) and those (45,46) of the weight unit (30) are of a type which can be easily and quickly coupled and decoupled by a user.

2. Weight unit (30) for an exercising apparatus according to claim 1, comprising a number of selectively activatable weights (55), at least one connecting member, such as a chain (52), for releasable (61-63) connection and co-operation with a connecting member of a work unit, and at least one coupling member (45,46) for coupling with a work unit, characterized in that the at least one coupling member (45,46) is of a type which can be easily and quickly coupled and decoupled by a user.

3. Work unit (10; 20) for an exercising apparatus according to claim 1, comprising at least one member (14,15; 25) to be displaced with respect to another member (11; 29) by a user during exercising, at least one connecting member such as a cable (16) or rod (27) for releasable (18;28) connection and co-operation with a connecting member of a weight unit and at least one coupling member (1-4) for coupling with a weight unit, characterized in that the at least one coupling member (1-4) is of a type which can be easily and quickly coupled and decoupled by a user.

4. Exercising apparatus according to claim 1, provided with means, such as rollers (7), for displacing the apparatus over a floor and/or provided with means (39,40) for attaching the apparatus to a floor and/or against a wall, characterized in that only the one unit (10; 20) is provided with displacement means (7) and that only the other unit (30) is provided with attachment means (39,40).

5. Weight unit according to claim 2, characterized by means (39,40) for attaching the unit (30) to a floor and/or against a wall.

6. Work unit according to claim 3, characterized by means, such as rollers (7), for displacing the unit (10; 20) over a floor.

7. Exercising apparatus according to claim 1 or claim 4, characterized in that of the respective coupling members of the two units (10,30; 20,30) the one (1-4) fits telescopically into the other (45,46).

8. Weight unit according to claim 2 or claim 5, characterized in that the at least one coupling member is a profile bar (45,46) open towards a work unit (10; 20) to be coupled therewith.

9. Work unit according to claim 3 or claim 6, characterized in that the at least one coupling member is a rod (1-4) protruding towards a weight unit (30) to be coupled therewith.

10. Exercising apparatus as claimed in claim 1, claim 4 or claim 7, characterized by releasable means (5,6,64-69) for locking the respective coupling members (1-4,45,46) in their coupled position.

11. Weight unit according to claim 2, claim 5 or claim 8, characterized by releasable means (64-69) for locking its own coupling member (45,46) with a coupling member of the work unit in the coupled position of these members.

12. Work unit according to claim 3, claim 6 or claim 9, characterized by releasable means (5,6) for locking its own coupling member (1-4) with a coupling member of the weight unit in the coupled position of these members.

FIG.1

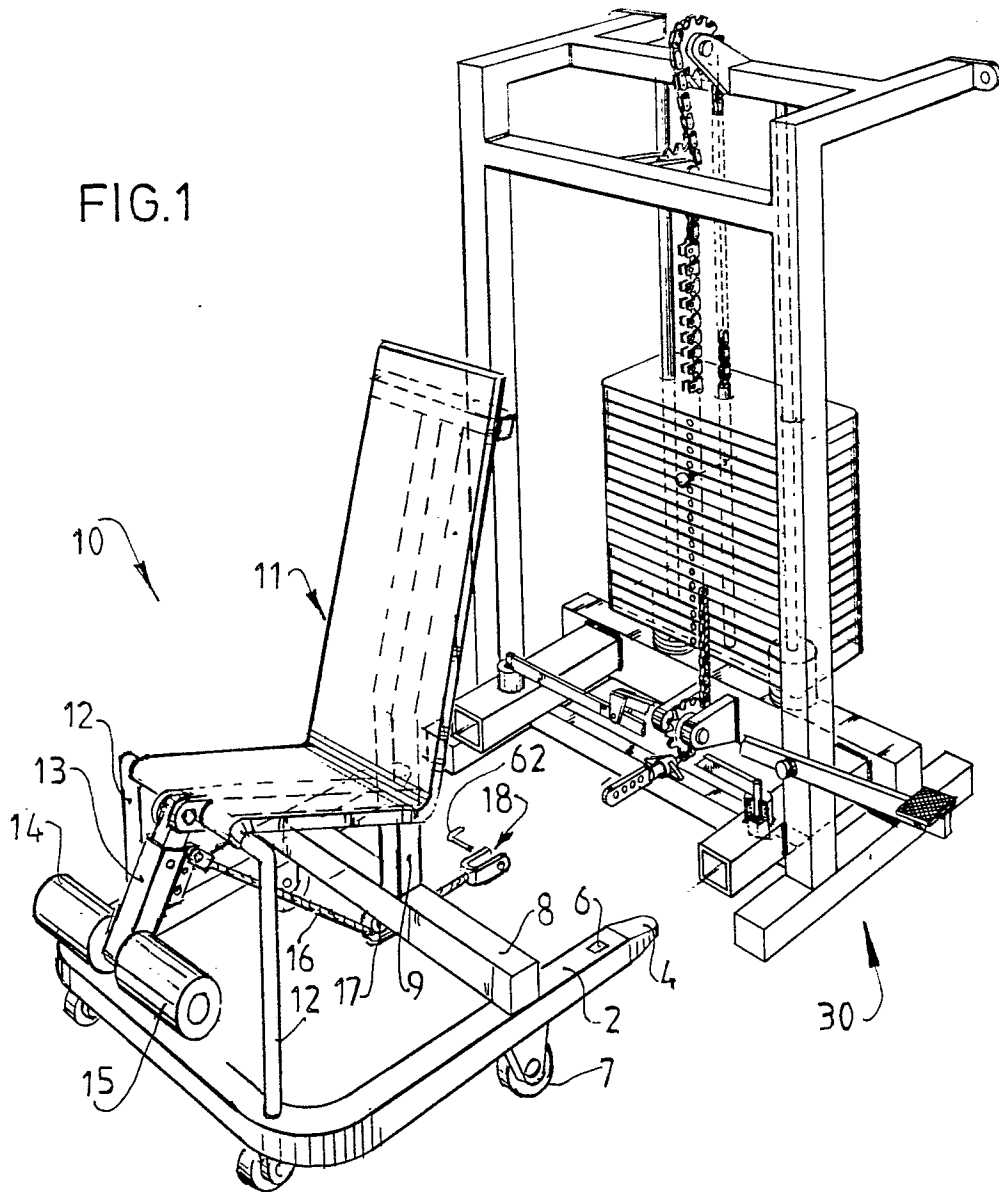


FIG. 2

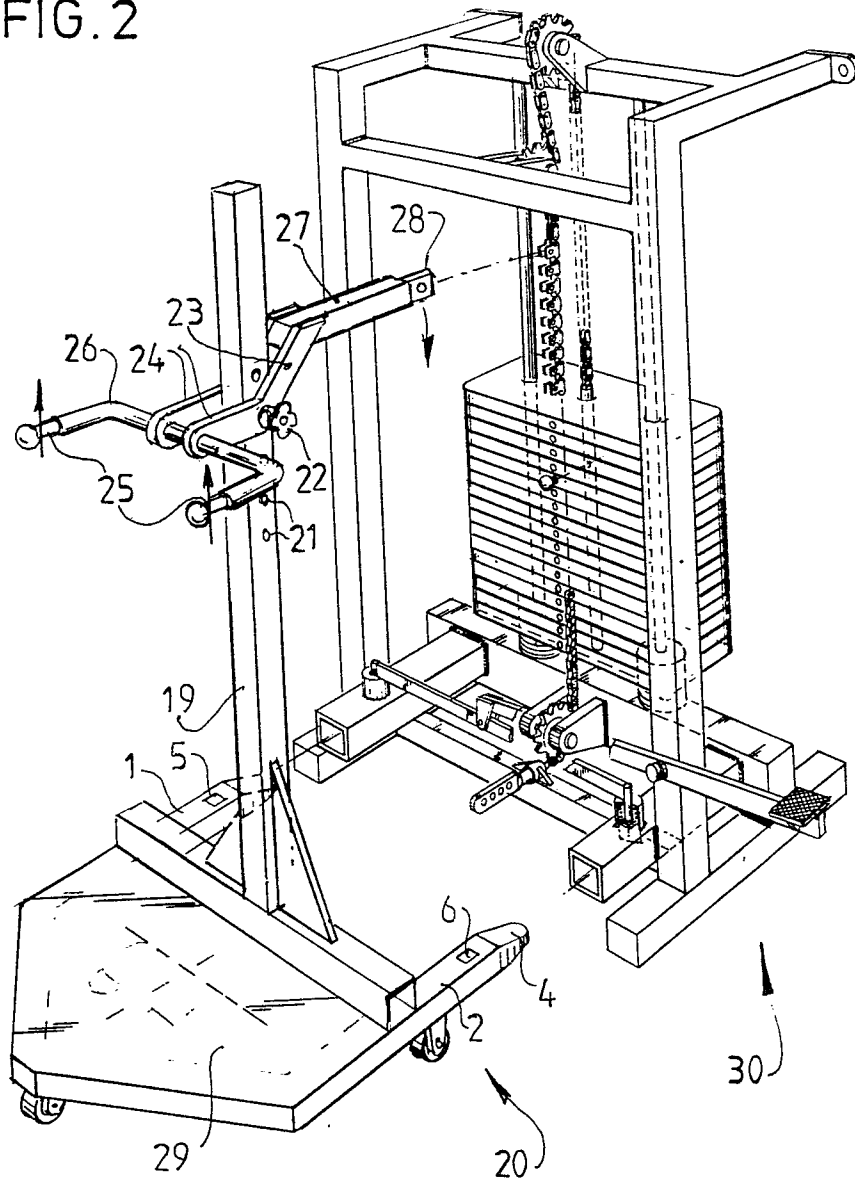
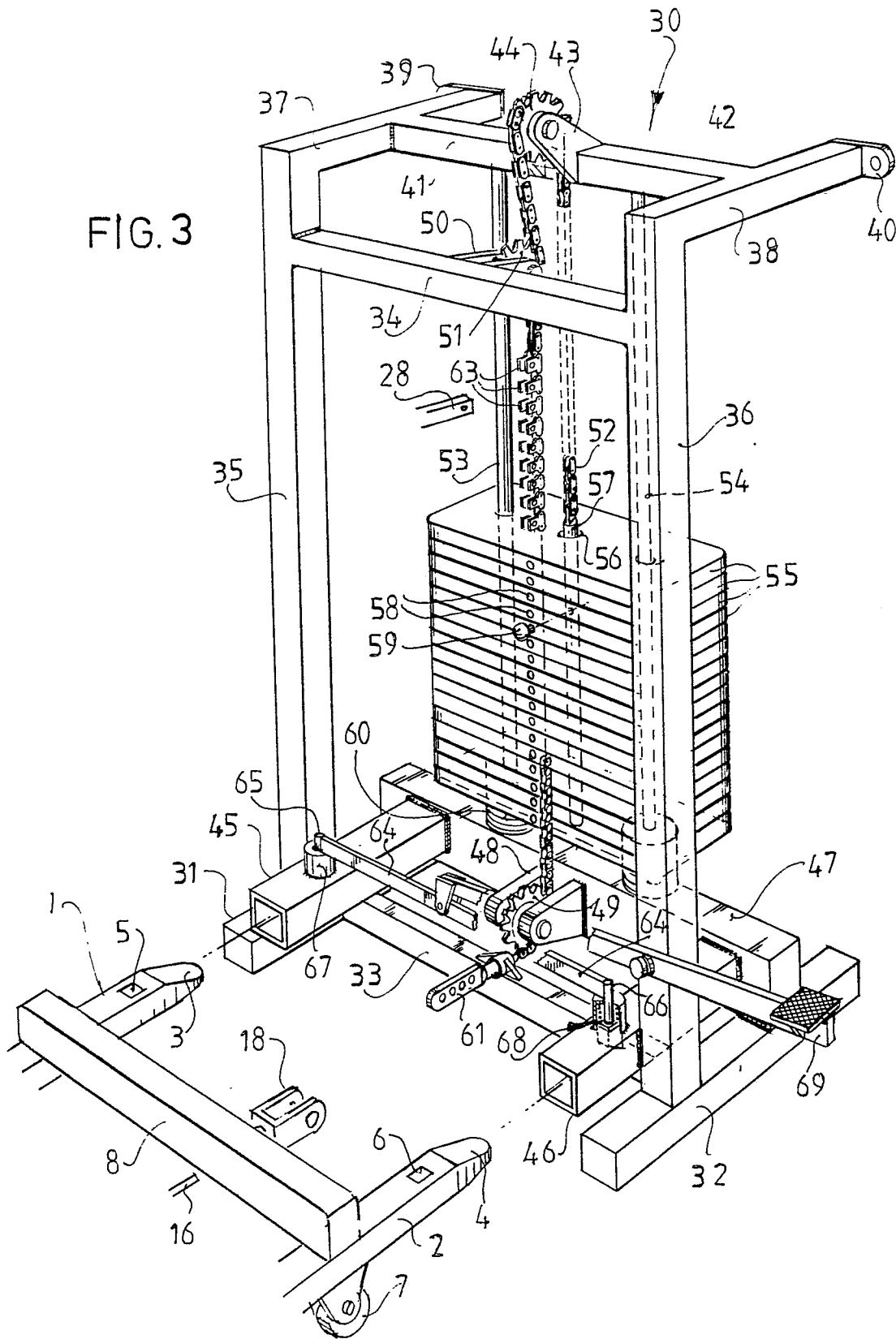


FIG. 3





DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
D,X	US-A-4 390 179 (K.Z. SZKALAK) * Column 3, lines 19-30; figure 1 *	1-6	A 63 B 23/00
Y		7-9	
X	--- GB-A-2 162 434 (YORK BARBELL CO. LTD) * Page 1, lines 6-11; page 3, lines 89-124; page 4, lines 39-49 *	1-3	
D,Y	--- US-A-3 917 262 (L.A. SALKELD) * Column 2, lines 45-54; figure 2 *	7-9	
D,A	--- US-A-3 290 044 (J.K. KRODSEN) * Column 2, lines 13-17 *	4,6	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
D,A	--- US-A-3 743 282 (H. ZINKIN) * Column 2, lines 10-16 * -----	5	A 63 B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 24-06-1987	Examiner GERARD B.E.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	