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(54) Exercising apparatus for calf muscle stretching

Übungsgerät für Wadenmuskeldehnung

Appareil d'exercice pour étirement du muscle du mollet

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Description

Technical field

[0001] The present invention relates to an exercising apparatus for calf muscle stretching.

Background

[0002] During exercise, keep-fit activities and rehabilitation, it is common that a practician carry out so called stretching, for stretching of different groups of muscles like, inter alia the calf muscle. The calf muscle consists of two parts: the twin muscle (gastrocnemius) with its two projections from the back side of the condyles of the thigh-bone and the soleus muscle, a flat muscle on the back side on the fibula. The muscle parts join in the Achilles tendon that attach on the heel bone (calcaneus). For stretching of the calf muscles, a usual exercise is to place the leg to be stretched in a direction behind the body as far back as possible, with the heel in contact with the base. The other leg is suitably placed a distance ahead of the body. Either the person leans against the wall or the similar, or tries to balance with the hands around the waist of the body. The stretching of the calf muscle is activated by forcing the foot blade against the base a few seconds, in order then to slowly bend forward in the ankle joint such that the calf muscle is stretched. By a straight knee, the gastrocnemius muscle is stretched and by a bent knee the soleus muscle is stretched.

[0003] Shortened calf muscles may result in that the foot decides to take a position with the toes pointing downwards. This may give inconveniences such as periostitis, Compartment syndrome, difficulties to descend stairs in a usual way, and also weakness in the shortened musculature. The problem related to stretching of gastrocnemius and soleus is that unstressing is difficult since the muscle must be balanced, stressed and relaxed. It is also difficult to find the correct stretching movement.

[0004] An exercise for stretching of the calf muscle as has been described above may thus be difficult or even impossible to perform correctly alone without facilities, for instance for unskilled exercisers or persons that are during rehabilitation training, and therefore there is a need for facilitating the stretching of the calf muscle.

[0005] Various means for facilitating the stretching of the calf muscle are known. In common for those known apparatus is that they are either relatively complicated or that they are not working satisfactory in a desired way.

[0006] By US-A-5,611,770 an aid is previously known for the stretching of the calf muscle for patients during rehabilitation.

[0007] US 2006/0058719-A discloses an apparatus for ankle mobilisation.

Description of the invention

[0008] An object with a present invention is to provide an aid for stretching of muscle groups of the calf that at least partially eliminates those drawbacks that are associated with devices according to the state of the art. A further object is to achieve an aid for stretching of the calf muscle that may provide sufficient power during the stretching, for efficient stretching of the calf muscle. An additional object is to achieve an equipment for calf muscle stretching that is sample to use and prevents the risk for incorrect stretching of the calf muscle.

[0009] This object is achieved by an exercising apparatus for the calf muscle stretching of a leg of a practician according to the present invention as defined in claim 1, which comprises a foot support having an upper side for supporting the foot of the practician and a lower side intended to be arranged on a base, where the upper side is arranged with an inclination compared to the lower side such that a first part of the foot support, for supporting a toe part of the foot, is arranged on a distance from the base, and where the foot support has attachment means at a second part of the foot support for securing a heel part of the foot. On one side of the foot support, at the second part of the foot support, a bar extending in the vertical direction is arranged in a joint, the bar is rotatably arranged to the foot support in said joint. The bar comprises a handle part and a supporting part, which supporting part is arranged between the handle part and the joint, which supporting part is intended as support for the calf of the practician. The supporting part extends at least around a part of the calf, where a stretching of the calf muscle of the practician may be provided by bringing the bar during rotation in the joint in a direction against said first part of the foot support while the heel part of the practician is secured at the foot support and the calf is supported by the supporting part and brought in the rotational direction, such that a sufficient stretching of the calf muscle is achieved.

[0010] An advantage with this solution according to the present invention is that stretching of the calf muscle may be performed in a correct way such that the stretching becomes sufficiently effective and powerfully performed. Yet an advantage is that stretching may be performed in a safe and reliable way, such that the risk for injuries may be avoid. Yet an advantage is that the present invention eliminates the need for an instructor for correct performance of the stretching. The exercising apparatus according to the present invention is further more user-friendly. Stretching of the calf muscle may be performed by straight or bent knee and it is also possible to lean the foot sidewards on the foot support, for stretching different muscles of the calf. In that the foot board is arranged with an inclination against the base, the practician may stand steadily with support of the foot placed on the upper side of the foot support and additionally the practician does not need to lean the leg as far forward, during the stretching of the calf muscle, during the use of the exercising apparatus, which makes the stretching of the exercising apparatus according to the present invention user-friendly, safe and efficient. By the apparatus according to the

present invention, the calf muscle may be stretched in relaxed condition without having stresses in the other muscles, so called antagonists, influencing the stretching ability. It is also possible to keep the stretching position a longer time, since other muscles are not strained.

[0011] Further advantages and features according to embodiments of the invention is evident from the claims, and also in the following description of the embodiments.

Description of the drawings

[0012] The present invention will now be described more in detail in embodiments, with reference to the attached drawings, without a limited interpretation of the invention to those, where

Fig 1A is a perspective view slantingly from the front showing an exercising apparatus according to the present invention, and

Fig 1B is a view straight from the back showing the exercising apparatus according to fig 1A.

Detailed description of embodiments

[0013] In fig 1A and B there is shown an embodiment of an exercising apparatus 2 for calf muscle stretching of a leg of a practician, according to the present invention. The exercising apparatus 2 comprises a foot support 4 having an upper side 6 for supporting of the foot of the practician and a lower side 8 intended to be arranged against a base 10. According to the embodiment shown in fig 1A-B, the foot support 4 is designed with an elevated part 11, that comprises the inclined upper side 6, and two protruding flat side parts 11' that are extending on each side of the middle part 11. This design has been achieved by bending of a sheet metal. Of course, the foot support may be designed and produced in another way, for example by moulding in one piece. The upper side 6 is arranged with an inclination α in comparison to the lower side 8 such that the first part 12 of the foot support, for supporting of a toe part of the foot, is arranged with a distance D from the base. In the shown embodiment in fig 1A and B, the inclination of the upper side of the foot support relative the base, and with that the distance D, can not be adjusted. Of course, it is within the scope of the protection of the present invention that the upper side may be adjustably arranged at the foot support such that the inclination α and the distance D relative the base may be adjusted. The foot support 4 has attachment means 14 at a second part 15 of the foot support for securing a heel part of the foot. Attachment means 14 may be in form of a strap (not shown) or the similar that is arranged at the foot support 4, or a U-shaped clamp 16 securely arranged at the foot support, as is evident in fig 1A and B.

[0014] At a long side 18 of the foot support 4, at the mentioned second part 15 of the foot support, suitably in close connection to a foot joint of the practician when the foot is placed on the foot support, a bar 22 is arranged in a joint 20 extending in a vertical direction. The bar 22 is rotatably arranged to the foot support 4 in said joint 20. The bar 22 comprises a handle part 23 and a support part 24 intended for supporting the calf of the practician. The supporting part 24 is arranged between the handle part 23 and the joint 20. The bar 22 has suitably a straight longitudinal extension, preferably vertical, in a first part 26 that extends from the joint 20 up to the supporting part 24, which constitutes a second part 28 of the bar 22. The supporting part 24 is designed such that it extends at least around a part of the calf. As is evident from the embodiment shown in fig 1A and B, the bar may be in the shape of a round pole, that in the middle in the second part 28 has been designed with a partly helically bending 29. If the bar 22 is viewed in an elevated view straight from above or from below, that is seen perpendicular against the horizontal plane, the bending presents a semicircular form or a U-shape, form fitted after the shape of a calf. From a viewpoint of comfort and for adapting of different sizes of calf's, the supporting part may suitably be provided with a soft non-rigid material. The handle part may suitably have a straight longitudinal extension, essentially vertical, in a third part 30 of the bar that extends from the connection to the supporting part 24. As is evident in the shown embodiment in fig 1A and 1B, the bar 22 is designed such that the bar extends in the first part 26 along a side of the leg of a practician and that the third part 30 comprising the handle part, extends at least along a part of the opposite other side of the leg of the practician, when a practician of the exercising apparatus has placed the foot on the foot support 4 and the calf of its leg in contact with the supporting part 24.

[0015] According to a second alternative embodiment (not shown), a second bar may be rotatably arranged in a joint at a second long side 18' of the foot support 4, opposite the first long side 18, which second bar is arranged to the supporting part 24. According to this second embodiment, the exercising apparatus may then be shaped such that the two bars are extending essentially vertically on each long side of the foot support and where the supporting part 24 is arranged between the bars.

[0016] According to a preferred embodiment, the exercising apparatus according to the present invention comprises a stop member 32 that is arranged such that the bar may be brought sufficiently far forward for achieving a correct and powerful stretching, at the same time as it prevents the bar from being brought forward to long, to prevent occurrence of injuries during incorrect use. Preferably the stop member 32 is adjustably arranged to the bar such that the desired movement of the bar in a direction R1 towards said first part 12 of the foot support may be set to a desired degree. Suitably the stop member 32, for instants in a shape of a threaded pin, may be releasably and adjustably arranged to a disk-shaped plate 34, which plate is vertically arranged around the joint at the side of the foot support 4. The bar 22 may rotate along the disk-shaped plate, that has indications of the inclination in degrees, which the bar may rotate

from the initial position at a substantially vertical extension. The stop member 32 may be secured at a desired inclination in degrees to a position where the bar 22 shall be brought forward maximally. The bar may comprise two arms 36 that form a U-shaped part in its end against the joint, which free ends 38 of the arms are arranged in the joint 20, respectively. In the U-shaped part, between the arms, the disk-shaped plate 34 is arranged.

[0017] The upper side 6 of the foot support 4 is suitably also sufficiently wide such that the foot can be leaned sideways, inwards or outwards, in order to be able to decide the stretching effect on the inside or the outside of the calf musculature during bent or extended knee joint. It is also possible according to a non-shown embodiment that the upper side 6 is adjustably arranged at the foot support for setting the inclination sidewards.

[0018] A suitable total height for the exercising apparatus, from the base up to the end of the handle part of the bar, may be about 100 cm and a suitable height up to the connection of the handle part at the supporting part 24 can be about 45 cm. The first 26, the second 28 and the third 30 part of the bar 22 may suitably be mutually adjustable in the longitudinal extension. The distance D of the foot support 4 may suitably be 7-8 cm. Of course, the present invention is not limited to those dimensions mentioned above.

[0019] A stretching of a practician's calf muscle, by straight or bent knee for stretching of the muscle gastrocnemius or the muscle soleus of the calf, may be achieved by bringing the bar 22 in a direction R1 towards said first part 12 of the foot support, during rotation in the joint 20, while the heel part of the practician is secured at the foot support 4 and the calf is supported by the supporting part 24 and brought in the rotational direction R1, such that a sufficient stretching of the calf muscle can be provided.

Claims

1. An exercising apparatus (2) for stretching of the calf muscle of a leg of a practician, comprising a foot support (4) that has an upper side (6) for supporting a foot of the practician and a lower side (8) intended to be arranged against a base (10), where the upper side is arranged with an inclination (α) in comparison to the base such that the first part (12) of the foot support, for supporting of a toe part of the foot, is arranged on a distance (D) from the base, and where the foot support has attachment means (14) at a second part (15) of the foot support for securing a heel part of the foot, **characterized in that** on a side (18) of the foot support (4), at the second part (15) of the foot support, a bar (22) extending in a vertical direction is arranged in a joint (20), that the bar (22) is rotatably arranged to the foot support (4) in said joint (20), the bar (22) comprises a handle part (23) and a supporting part (24) which supporting part (24) is arranged between the handle part (23) and the joint (20), which supporting part is intended as support for the calf of the practician, the supporting part extends at least around a part of the calf, where stretching of the practician's calf muscle can be achieved by bringing the bar (22) during rotation in the joint (20) in a direction (R1) towards said first part (12) of the foot support while the heel part of the practician is secured at the foot support (4) and the calf is supported by the supporting part (24) and brought in the rotational direction (R1), such that a sufficient stretching of the calf muscle is achieved.

2. An exercising apparatus according to claim 1, **characterized in that** the supporting part (24) is designed with a helically-shaped bending (29).

3. An exercising apparatus according to claim 2, **characterized in that** the helically-shaped bending (29) presents a semicircular form seen perpendicular from a horizontal plane.

4. An exercising apparatus according to any of the preceding claims, **characterized in that** it comprises a stop member (32) for preventing the bar (22) from being brought too far forward during rotation of the bar.

5. An exercising apparatus according to claim 4, **characterized in that** the stop member (32) is a adjustably arranged to the bar, such that a desired movement of the bar in a direction (R1) towards said first part (12) of the foot support can be set to a desired degree.

6. An exercising apparatus according to claim 4 or 5, **characterized in that** the stop member (32) is arranged to a disk-formed plate (34), which plate is vertically arranged around the joint (20) at the side of the foot support (4).

7. An exercising apparatus according to claim 6, **characterized in that** the bar (22) in its end against the joint comprises two arms (36) that form a U-shaped part, which free ends (38), respectively, of the arms are arranged in the joint (20).

8. An exercising apparatus according to claim 7, **characterized in that** the disk-shaped plate (34) is arranged in the U-shaped part between the arms (36).

9. An exercising apparatus according to any of the proceeding claims, **characterized in that** the bar (22) is designed such that it has an extension in the first part (26) along a side of the leg of a practician, during location in the exercising apparatus, and that the third part (30) comprising the handle part has an extension along the opposite other side of the leg of

the practician.

10. An exercising apparatus according to claim 1, **characterized in that** a second bar is rotatably arranged in a joint at a second long side (18') of the foot support (4) and that the supporting part (24) is arranged between the bars.

Patentansprüche

1. Übungsgerät (2) zur Dehnung des Wadenmuskels eines Beins einer trainierenden Person, umfassend eine Fußstütze (4) welche eine Oberseite (6) zum Stützen eines Fußes der trainierenden Person aufweist und eine Unterseite (8), welche zur Anordnung gegen eine Grundlage (10) vorgesehen ist, wobei die Oberseite im Vergleich zur Grundlage mit einer Neigung (α) angeordnet ist, so dass der erste Teil (12) der Fußstütze zum Stützen eines Zehenteils des Fußes in einer Entfernung (D) zur Grundlage angeordnet ist, und wobei die Fußstütze Befestigungsmittel (14) an einem zweiten Teil (15) der Fußstütze zur Sicherung eines Fersenteils des Fußes aufweist, **dadurch gekennzeichnet, dass** auf einer Seite (18) der Fußstütze (4) an dem zweiten Teil (15) der Fußstütze eine Stange (22), die sich in vertikaler Richtung erstreckt, in einem Gelenk (20) angeordnet ist, dass die Stange (22) in dem Gelenk (20) drehbar gegenüber der Fußstütze (4) angeordnet ist, die Stange (22) einen Handgriff (23) und ein tragendes Teil (24) umfasst, wobei das tragende Teil (24) zwischen dem Handgriff (23) und dem Gelenk (20) angeordnet ist, wobei das tragende Teil als Stütze für die Wade der trainierenden Person vorgesehen ist, sich das tragende Teil wenigstens um einen Teil der Wade herum erstreckt, wobei die Dehnung des Wadenmuskels der trainierenden Person durch Verbringung der Stange (22) während einer Drehung im Gelenk (20) in eine Richtung (R1) auf den ersten Teil (12) der Fußstütze zu erreicht werden kann, während der Fersenteil der trainierenden Person an der Fußstütze (4) gesichert ist und die Wade durch das tragende Teil (24) gestützt ist und in die Drehrichtung (R1) verbracht wird, so dass eine ausreichende Dehnung des Wadenmuskels erreicht wird.

2. Übungsgerät nach Anspruch 1, **dadurch gekennzeichnet, dass** das tragende Teil (24) mit einer spiralförmigen Krümmung (29) ausgestaltet ist.

3. Übungsgerät nach Anspruch 2, **dadurch gekennzeichnet, dass** die spiralförmige Krümmung (29) eine halbkreisförmige Form zeigt, welche von einer horizontalen Ebene aus senkrecht erscheint.

4. Übungsgerät nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Übungsgerät ein Anschlagelement (32) umfasst, um zu verhindern, dass die Stange (22) während der Drehung der Stange zu weit nach vorne verbracht wird.

5. Übungsgerät nach Anspruch 4, **dadurch gekennzeichnet, dass** das Anschlagelement (32) verstellbar an der Stange angeordnet ist, so dass eine gewünschte Bewegung der Stange in eine Richtung (R1) auf den ersten Teil (12) der Fußstütze zu auf einen gewünschten Grad eingestellt werden kann.

6. Übungsgerät nach Anspruch 4 oder 5, **dadurch gekennzeichnet, dass** das Anschlagelement (32) an einer scheibenförmigen Platte (34) angeordnet ist, wobei die Platte an der Seite der Fußstütze (4) vertikal um das Gelenk (20) herum angeordnet ist.

7. Übungsgerät nach Anspruch 6, **dadurch gekennzeichnet, dass** die Stange (22) in ihrem gelenkseitigen Ende zwei Arme (36) umfasst, die ein U-förmiges Teil bilden, wobei dessen freie Enden (38) bzw. die freien Enden der Arme in dem Gelenk (20) angeordnet sind.

8. Übungsgerät nach Anspruch 7, **dadurch gekennzeichnet, dass** die scheibenförmige Platte (34) in dem U-förmigen Teil zwischen den Armen (36) angeordnet ist.

9. Übungsgerät nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Stange (22) so ausgelegt ist, dass sie in dem ersten Teil (26) entlang einer Seite des Beins der trainierenden Person, während der Lage in dem Übungsgerät eine Verlängerung aufweist, und dass der dritte Teil (30), welcher den Handgriff umfasst, eine Verlängerung entlang der entgegengesetzten anderen Seite des Beins der trainierenden Person aufweist.

10. Übungsgerät nach Anspruch 1, **dadurch gekennzeichnet, dass** eine zweite Stange an einer zweiten Längsseite (18') der Fußstütze (4) drehbar in einem Gelenk angeordnet ist, und dass das tragende Teil (24) zwischen den Stangen angeordnet ist.

Revendications

1. Appareil d'exercice (2) pour l'étirement du muscle du mollet d'une jambe d'une personne effectuant l'exercice, comprenant un support de pied (4) présentant une face supérieure (6) destinée à supporter un pied de la personne effectuant l'exercice et une face inférieure (8) destinée à être agencée contre une base (10), dans lequel la face supérieure est agencée avec une inclinaison (α) par rapport à la base qui est telle que la première partie (12) du sup-

port de pied, destinée à supporter une partie orteils du pied, est agencée selon une distance (D) par rapport à la base, et dans lequel le support de pied présente un moyen de fixation (14) au niveau d'une deuxième partie (15) du support de pied pour maintenir en place une partie talon du pied, **caractérisé en ce que**, sur un côté (18) du support de pied (4), au niveau de la deuxième partie (15) du support de pied, une barre (22) dirigée dans le sens vertical est agencée dans une articulation (20), **en ce que** la barre (22) est agencée rotative sur le support de pied (4) dans ladite articulation (20), la barre (22) comprenant une partie formant poignée (23) et une partie de support (24), laquelle partie de support (24) est agencée entre la partie formant poignée (23) et l'articulation (20) et est destinée à supporter le mollet de la personne effectuant l'exercice, la partie de support enveloppant au moins une partie du mollet, et l'étirement du muscle du mollet de la personne effectuant l'exercice pouvant s'obtenir en amenant la barre (22), tournant dans l'articulation (20), dans un sens (R1) dirigé vers ladite première partie (12) du support de pied tandis que la partie talon de la personne effectuant l'exercice est maintenue en place au niveau du support de pied (4) et que le mollet est supporté par la partie de support (24) et amené dans le sens de rotation (R1), permettant d'obtenir un étirement suffisant du muscle du mollet.

2. Appareil d'exercice selon la revendication 1, **caractérisé en ce que** la partie de support (24) est prévue pour présenter une torsion hélicoïdale (29).

3. Appareil d'exercice selon la revendication 2, **caractérisé en ce que** la torsion hélicoïdale (29) présente une forme semi-circulaire, vue perpendiculairement depuis un plan horizontal.

4. Appareil d'exercice selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il comprend un élément d'arrêt (32) visant à empêcher la barre (22) de s'abaisser trop en avant lors de la rotation de la barre.

5. Appareil d'exercice selon la revendication 4, **caractérisé en ce que** l'élément d'arrêt (32) est monté réglable vis-à-vis de la barre, permettant de régler un degré de mouvement choisi de la barre dans un sens (R1) dirigé vers ladite première partie (12) du support de pied.

6. Appareil d'exercice selon la revendication 4 ou 5, **caractérisé en ce que** l'élément d'arrêt (32) est agencé sur une plaque en forme de disque (34) qui est agencée verticalement autour de l'articulation (20) sur le côté du support de pied (4).

7. Appareil d'exercice selon la revendication 6, **caractérisé en ce que** la barre (22), à son extrémité proche de l'articulation, comprend deux bras (36) formant une partie en U dont les extrémités libres (38) respectives sont agencées dans l'articulation (20).

8. Appareil d'exercice selon la revendication 7, **caractérisé en ce que** la plaque en forme de disque (34) est agencée dans la partie en U entre les bras (36).

9. Appareil d'exercice selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la barre (22) est conçue de manière à présenter un prolongement dans la première partie (26) qui longe un côté de la jambe d'une personne effectuant l'exercice, lors de son emplacement dans l'appareil d'exercice, et **en ce que** la troisième partie (30) comprenant la partie formant poignée présente un prolongement longeant le côté opposé de la jambe de la personne effectuant l'exercice.

10. Appareil d'exercice selon la revendication 1, **caractérisé en ce que** la deuxième barre est agencée rotative dans une articulation au niveau d'un second côté long (18') du support de pied (4) et **en ce que** la partie de support (24) est agencée entre les barres.

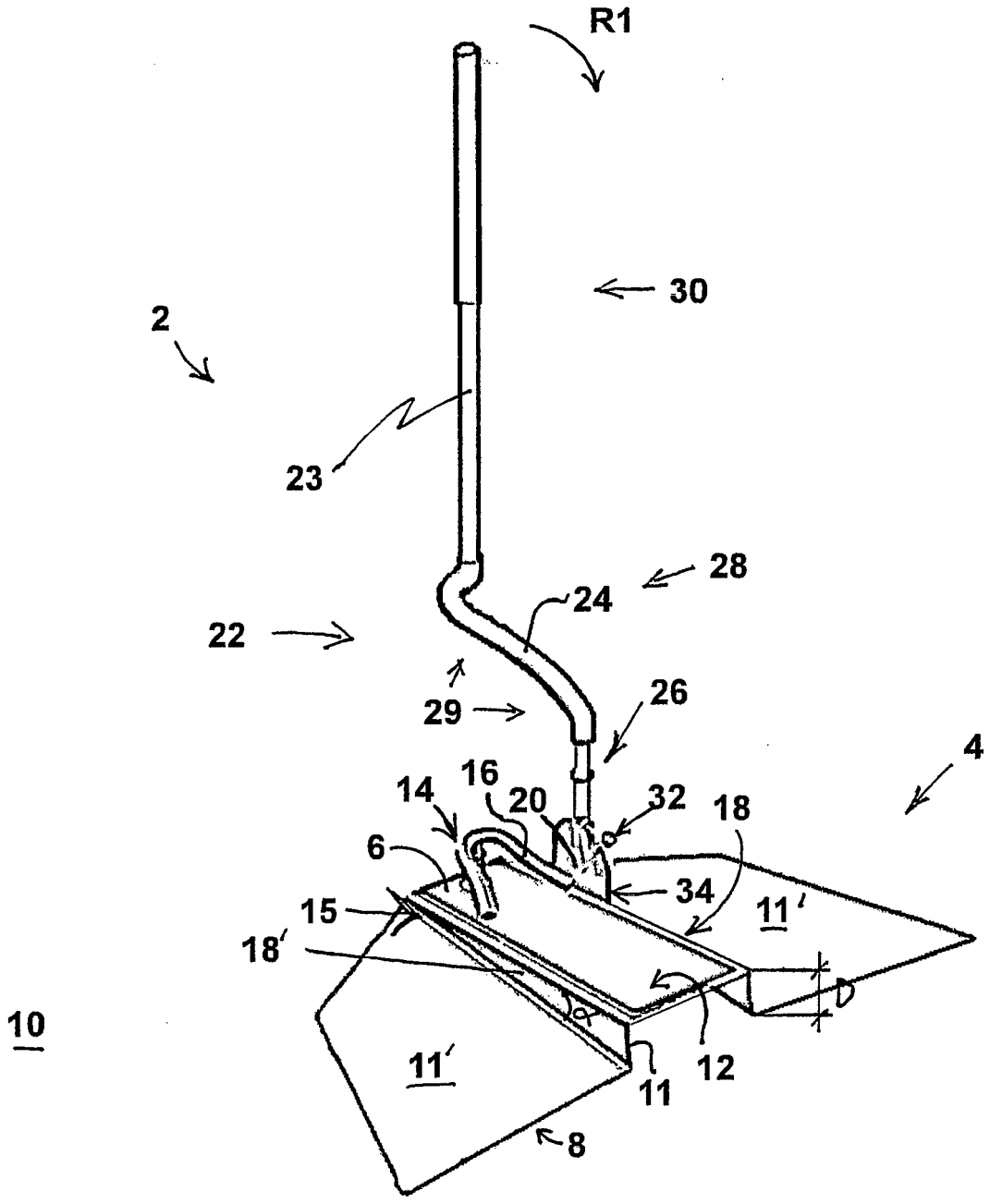

FIG.1A

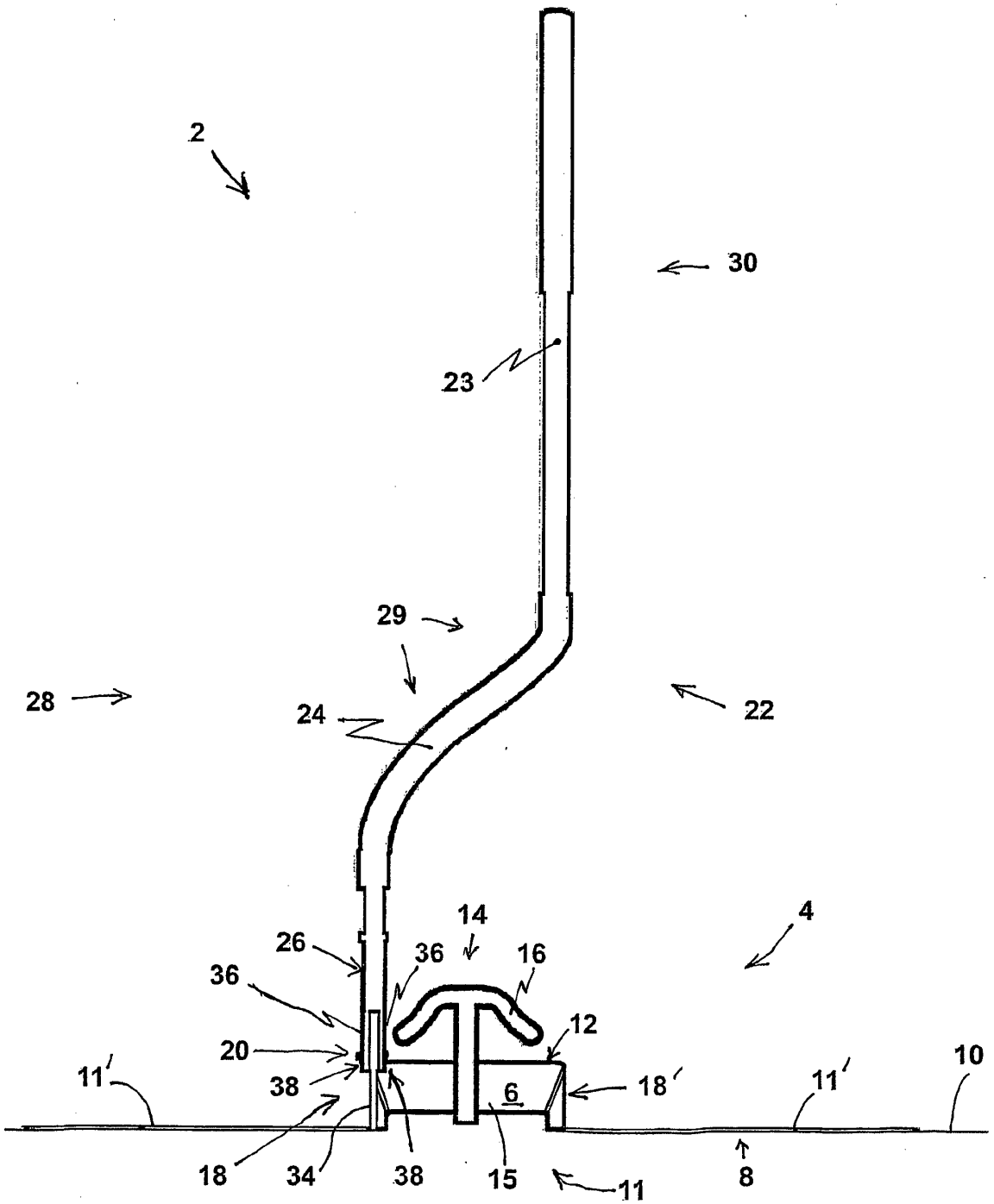
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FIG.1B

REFERENCES CITED IN THE DESCRIPTION

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