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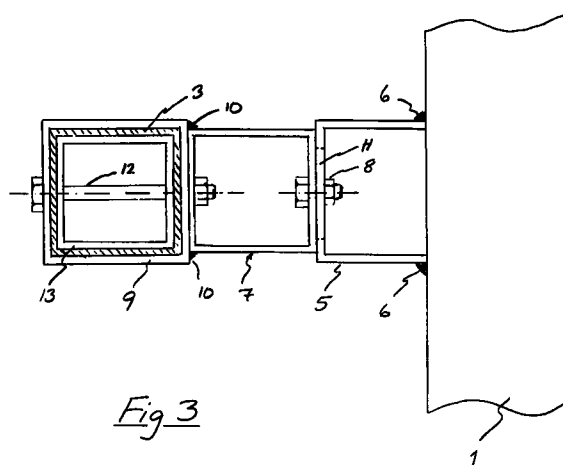
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**(54) Leg arrangement**

(57) Leg arrangement for modular walking or driving ramps (1) at rest surfaces (2) for handicap adaptation of preferably stair entrances to homes. The leg arrangement comprises at least one console (5) arranged at the ramp (1), which console is intended for a leg (13) belonging thereto. The console (5) is so designed that a leg retainer (7, 9) may be attached thereto in an angle which may be freely chosen within limits in relation to the console (5). The leg arrangement may thereby be arranged perpendicularly in relation to the horizontal.



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## Description

The present arrangement relates to a leg arrangement for walking or driving ramps, at rest surfaces for adaptation of preferably stair entrances to homes of handicapped people, which leg arrangement is modularly constructed and comprises at least one attachment arranged at the ramp, which attachment is intended for legs belonging thereto.

Ramps with rest surfaces are in most cases a prerequisite for allowing handicapped persons to keep their personal mobility when they are dependent on means of assistance such as a wheel-chair or a walking frame. The ramp with the rest surface fully or partly replaces the function of a stair, which for obvious reasons can not be used by people who are dependent on means of assistance of said kind.

The constructional and functional demands on such equipment are very high, not least because they are first of all to be used by handicapped people. The admissible load in such constructions often has to be compared to the functionality thereof and the latter may many times prevail even if it means that the construction will become overdimensioned. This, however, makes it clumsier and less aesthetically pleasant. Further, there are since some years requirements regarding the possibility of reuse of the equipments when they are no longer needed at a certain location.

Since the length of each of the legs varies depending on the inclination allowed in relation to the horizontal (normally between plus/minus 10 %), hitherto known leg arrangements implies a maximum inclination of the leg in relation to the vertical of up to 6°.

Buyers of equipment of this kind are at present mainly municipal administrations and the demand is strongly increasing. This probably depends on the increasing use of home medical assistance. The buyers are then presupposed to buy an equipment which is both safe, simple to assemble and disassemble and which is adaptable to entrances of different kinds. As a consequence of the requirement on adaptability and also of the admissible load requirement, previously known ramps have depending on their length, inclination and use often been provided with legs that have adaptable length. However, depending on the possible height differences of maybe up to one meter, it has been necessary to keep in stock a lot of legs with different lengths and ancillary connection parts.

In order to be able to keep up a rational manufacture in spite of this, the leg connection has been fixedly arranged and in alignment with the ramp, with the consequence that legs with lengths of up to a meter may incline substantially. This means that it has become necessary to dimension the leg consoles and their attachments also with regard to the varying and partly recurrent pulsating torsion forces occurring at use (dimensioning with regard to fatigue stress).

Above all, since equipments in the future in many

cases will be reused at several places, the risks that leg consoles or attachments sooner or later will fracture during use due to wrong dimensioning increase. Under unfortunate circumstances this may lead to a complete collapse of an equipment, which over all may be very worn. The consequences may be serious, not least to the person, previously handicapped, who may meet with a fall due to a broken leg attachment. The consequences will even if they are not serious, at least be costly to the municipal administration responsible. Demands for damages will probably be raised against those responsible for the security of the equipment.

The purpose of the present invention is to achieve a leg arrangement of the kind initially described, in which both the basis for the problem with the torsion stress and also the requirements for a fatigue dimensioning will be eliminated.

According to the invention the arrangement is so built that leg retainers may be attached thereto in an angle which may be freely chosen within limits, whereby the leg of the leg arrangement may be arranged perpendicularly to the horizontal.

In such cases when the attachment is constituted by a separate console, the console may with the adaptability according to the invention be made much more slender, which will positively effect the impression which an equipment of this kind necessarily gives.

The use of such consoles gives an extra large width between handrail attachments arranged in the leg arrangement.

Since a handrail attachment is arranged in connection with the leg attachment, the immediate consequence of the turnability of the console will be that the handrail attachment will coincide with the vertical.

The leg attachment, the leg, and the handrail attachment, which each may be constituted by square pipes arranged in each other in decreasing dimension, are mutually slidable and fixable in relation to each other in fixed positions which are determined by boltholes penetrating the respective parts. The parts that are mutually fixed lengthwise with said bolt joints, rest on these joints. By the telescopic mutual slidability one single leg length may be used to manage all mounting heights normally occurring.

The invention will in the following be described with reference to an embodiment shown on the enclosed drawings, in which:

Fig. 1 shows a schematic view of a ramp with details;

Fig. 2 shows a view from II-II in Fig. 1 and shows a leg attachment fixed to a ramp and a leg console with an integrated leg/polepipe attached thereto with screws;

Fig. 3 shows a view from III-III in Fig. 1 of the attachment/console and the leg/polepipe.

Fig. 1 shows schematically a perspective view of a ramp 1 with a rest surface 2 belonging thereto, handrails 3 with attachments and leg arrangements 4. From the encircled portion, which is enlarged, it can be seen how the view according to Figs. 2 and 3, respectively, have been taken.

Fig. 2 shows in approximately full size and more in detail, how a console 5 is attached with a weld 6 to the ramp 1. As can be seen from Fig. 3, the console 5 is made up from a U-profile. An intermediate portion 7, preferably a square pipe, is attached to the console 5, using two screw connections 8 (schematically shown with dashed lines). The hole in the console 5 for the upper one of the screw connections 8 is ovaly shaped in transverse direction. Said hole is shown as a hidden contour in Fig. 3, where it carries the designation H, is preferably of the dimension 9 x 26 mm. By the oval shape of the hole, the inclination of the respective leg 13 and its handrail pipe 3 may be adapted (+/- 6°) to the actual inclination of the ramp 1. The intermediate portion 7 is at 10 in turn welded to an attachment pipe 9 of the leg arrangement 4. The attachment pipe is preferably of the dimension (W x H x TH) 40 x 40 x 2 mm. The intermediate portion 7 and the attachment pipe 9 may together be designated as a leg retainer 7, 9. The intermediate portion 7 is, as shown in Fig. 2, obliquely cut at 11, the purpose of which is to achieve a better accessibility, for in turn achieving a simpler mounting of details necessary for each of the connections 8.

In an alternative embodiment according to the invention, not shown, one of the screw connections 8 may be replaced by a dowel co-operating with a round hole, around which dowel a turning is possible.

In each attachment pipe 9, first the handrail pipe 3 and thereafter a leg pipe 13 are mounted. The handrail pipe 3 and the leg pipe 13 preferably are of the dimensions 35 x 35 x 2 mm, and 30 x 30 x 2 mm, respectively. The mutual dimensions of these pipes are such that they have a clearance fit, and consequently may be pushed into and out of each other.

Likewise in an approximately natural size, Fig. 3 shows a leg arrangement according to the invention, partially as a view and partially as a cross-section from III-III of Fig. 1. Here it is more clearly seen how the different joints and pipe portions are mutually arranged. The pipe portions 3, 13, arranged in the attachment pipe 9, are mutually fixed with at least two sturdy through bolt joints 12. The handrail pipe 3 has such a length that it goes beyond the lower one of the bolt joints 12.

## Claims

1. Leg arrangement for a modularly constructed walking or driving ramp (1) at a rest surface (2) for handicap adaptation of preferably stair entrances to homes, which leg arrangement comprises a console (5) attached to the ramp (1) and intended for a

leg (13), the console (5) being so constructed that a leg retainer (7, 9) may be attached thereto in an angle which may be freely chosen within limits in relation to the console (5), so that the leg arrangement may be arranged perpendicularly in relation to the horizontal, **characterized** in that the leg retainer (7, 9) is pivotable in relation to a pivot portion arranged on the console (5) or the leg retainer (7, 9), which pivot portion co-operates with a related cavity on the corresponding portion, a set pivot position being lockable by means of a screw connection (8), which is arranged between the details using either a combination of a round hole in one of the details (the leg retainer (7, 9) or the console (5)) and an oval or arched hole in the other detail (console (5) or leg retainer (7, 9)) or arched or oval holes in both said details.

2. Leg arrangement according to claim 1, **characterized** in that the pivot portion comprises a screw connection (8) arranged through both the console (5) and the leg retainer (7, 9).
3. Leg arrangement according to claim 1, **characterized** in that the pivot portion comprises a fixed dowel, co-operating with one of the holes of the joint between the parts (5 and 7, 9).
4. Leg arrangement according to claim 2 or 3, **characterized** in that the console (5) is constituted by a U-profile, the legs of which are welded to the ramp (1).
5. Leg arrangement according to claim 4, **characterized** in that the leg retainer (7, 9) is so chamfered in the length direction of the ramp, that its height decreases in a direction away from the ramp (1).
6. Leg arrangement according to claim 5, **characterized** in that the leg retainer (7, 9) comprises an intermediate portion (7), which is attached to the console (5) by means of a screw connection (8) and a leg attachment pipe (9) which is welded to the portion (7).
7. Leg arrangement according to claim 6, **characterized** in that the intermediate portion (7) and the attachment pipe (9) are manufactured from a square pipe.
8. Leg arrangement according to anyone of the preceding claims, **characterized** in that a handrail (3) as well as a leg (13) are arranged in the leg attachment pipe (9) and are mutually fixed with bolt joints (12).

Fig 1

