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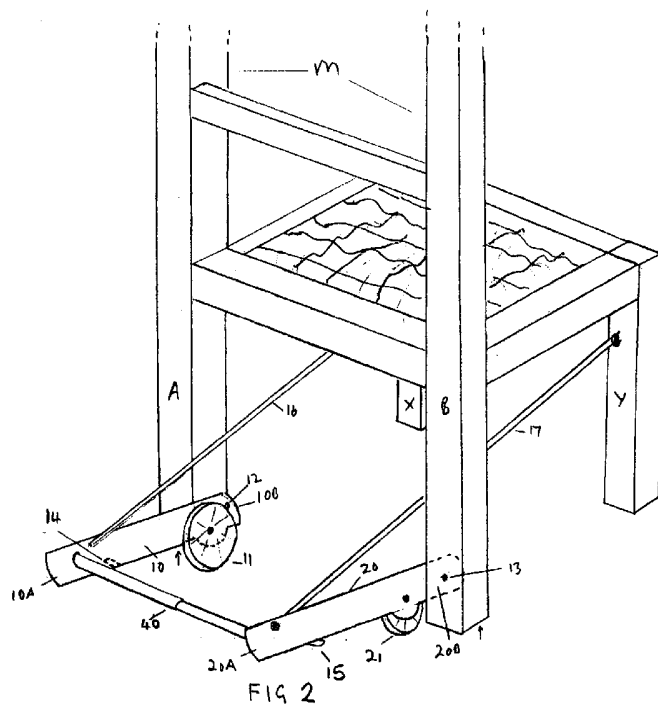
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(54) Abstract Title: Chair moving aid

(57) A lever and wheel attachment device for a chair with a pair of rear legs "A" "B", comprising a pair of lever arms 10 20 each having first and second ends 10A 20A; 10B 20B, a foot-operated member 40 connected to the first end 10A 20A of each lever arm, a chair leg engaging member 12 13 at the second end 10B 20B of the lever arm 10 20 and a ground-engaging wheel 11 21 between the first and second ends of each lever arm 10 20. When the foot-operated member 40 is in a raised position the rear legs "A" "B" of the chair are on the ground, and when downward pressure is applied to the foot-operated member 40 the lever arms 10 20 pivot about a pivot point centred on the wheels 11 21 and raise the rear legs "A", "B" off the ground allowing the chair to be moved backwards with weight being taken at least in part on the wheels 11, 21. The foot operated member 40 may be a telescopic rod with adjustment means allowing the device to be used on chairs of different width. There may also be a cord retaining means 16 17, preferably elasticated cord, attached to the lever arm 10 20 and the underside of the chair.



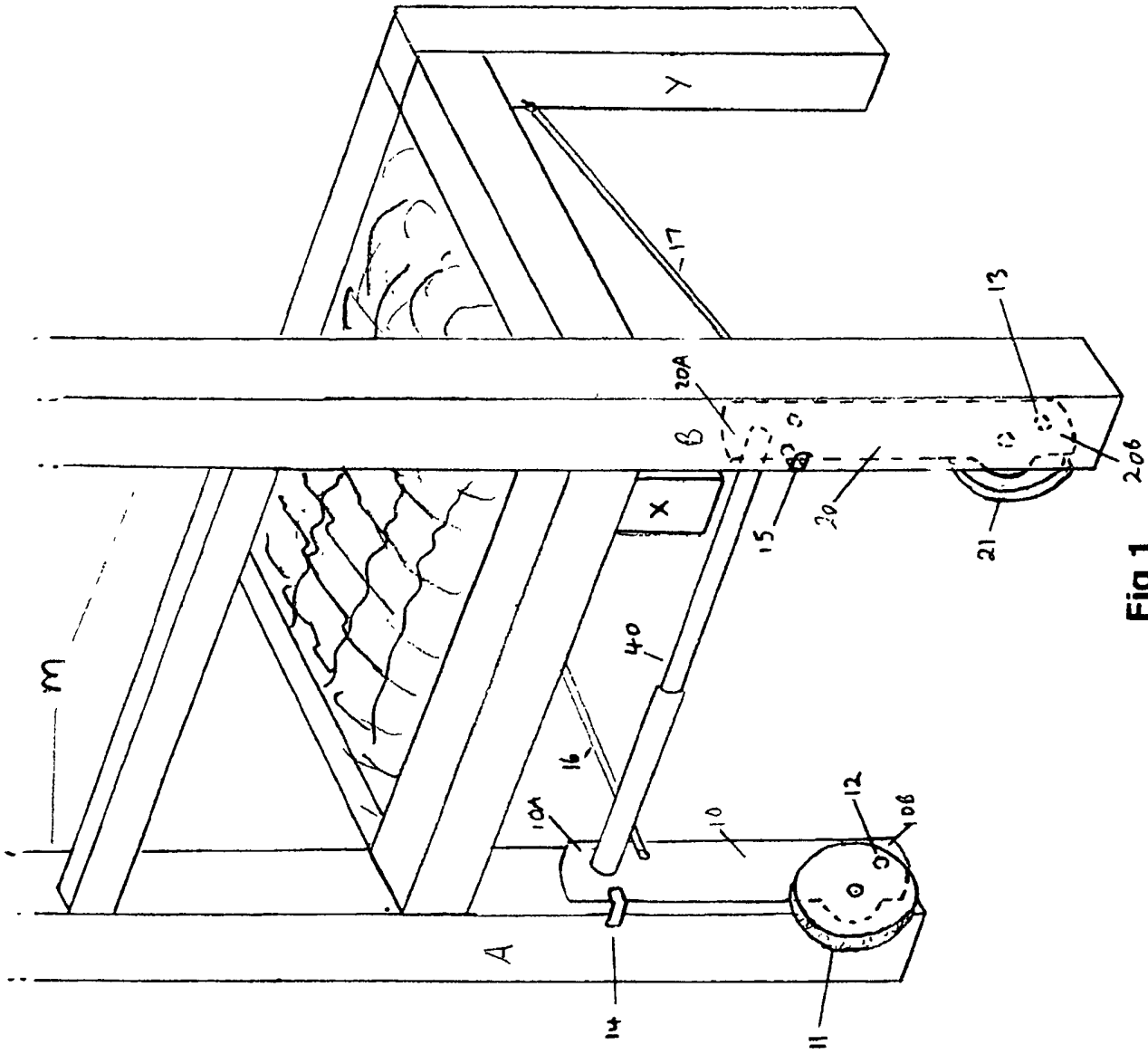
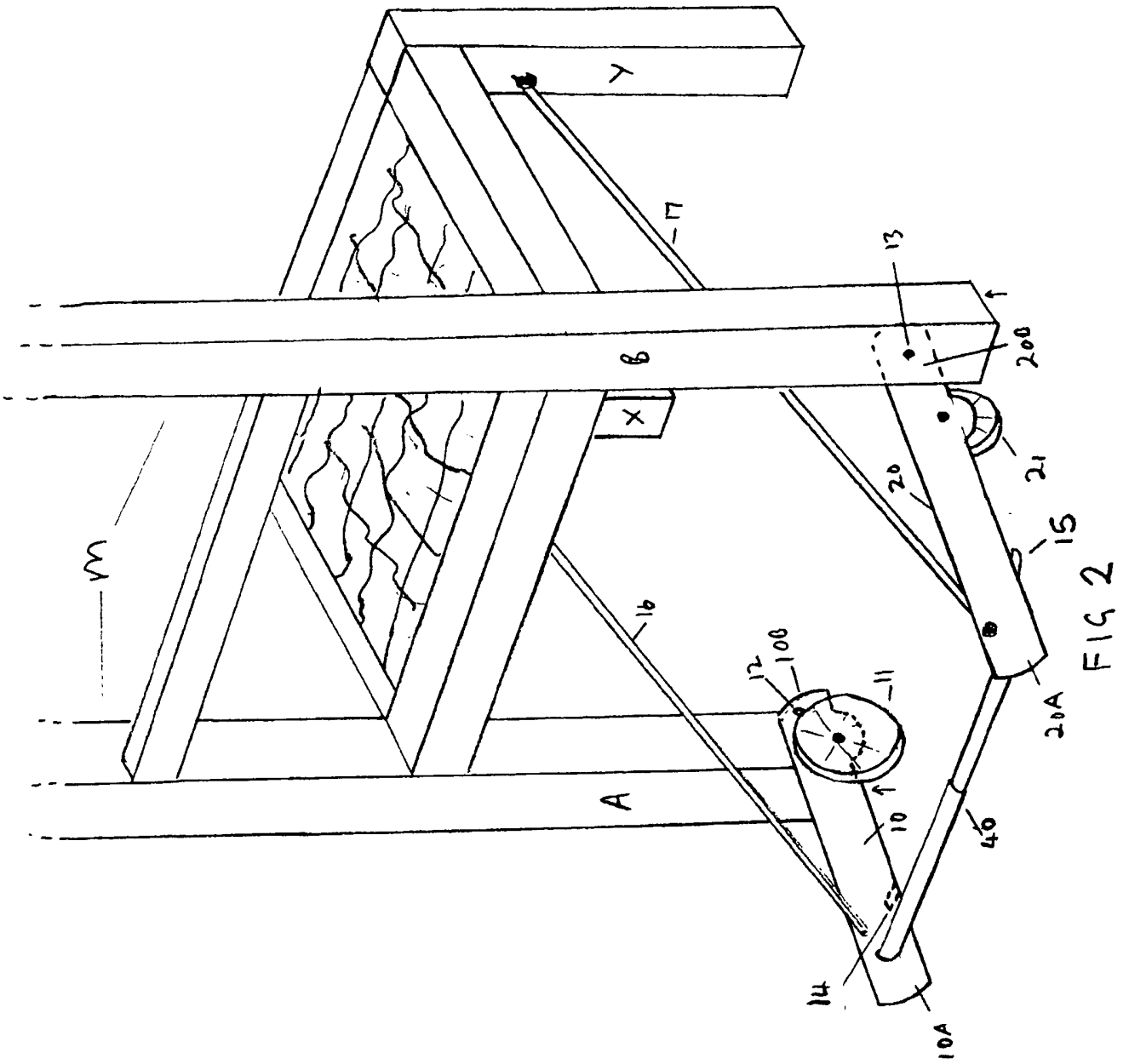


Fig 1



**LEVER AND WHEEL ATTACHMENT DEVICE FOR CHAIRS**

This invention relates to a lever and wheel attachment device for chairs.

When disabled persons are sitting in chairs, it is often a problem to move the chairs backwards. This in turn causes problems if the disabled persons are sitting at a table and wish to leave the table, for example after a meal or other activity. Many disabled persons cannot push their own chair backwards. It is difficult for a carer to pull a seated person backwards. It is known to use a lever and wheel attachment device on a chair for enabling the chair to be moved easily forwards, even with someone sitting on the chair. However, this known lever and wheel attachment device cannot be used for moving a chair and a person seated on the chair backwards.

The present invention seeks to provide a solution to the above mentioned problem.

Accordingly, in one non-limiting embodiment of the present invention there is provided a lever and wheel attachment device for a chair with a pair of rear legs, comprising:

- (a) a pair of lever arms each having first and second ends;
- (b) a foot-operated member connected to the first ends of each lever arm;

- (c) a chair leg engaging member at each second end of each lever arm; and
- (d) a ground-engaging wheel between the first and second ends of each lever arm, each wheel providing a pivot point about its axis for each lever arm,

and the lever and wheel attachment device being such that in use each chair leg engaging member is connected to each rear leg of a chair, the foot-operated member has a raised position whilst the rear legs of the chair are on the ground, and when downward pressure is applied to the foot-operated member then the lever arms pivot about the wheels in order to raise the rear legs of the chair off the ground and thereby allow the chair to be moved backwards with weight of the chair and any person on the chair being taken at least in part on the wheels.

The lever and wheel attachment device of the present invention is advantageous in that the chair is able to be moved backwards in a stable and safe manner.

Preferably, the foot-operated member is a rod. Other types of foot-operated member may be employed.

The chair leg engaging member may be a pivot member. Other constructions for the chair leg engaging member may be employed.

The raised position of the foot-operated member is preferably a vertical position. Raised positions that are off the vertical may however be employed.

The lever and wheel attachment device may include adjustment means for adjusting the distance between the second ends of each lever arm whereby to accommodate different distances between rear legs of chairs.

Advantageously, the lever and wheel attachment device is one in which the foot-operated member is a telescopic rod, and in which the adjustment means is formed by telescoping parts of the telescopic rod. Other types of adjustment means may however be employed.

The lever arms may be in the form of elongate plates. Other constructions for the lever arms may be employed.

The lever and wheel attachment device may include retainer means for retaining the foot-operated member in the raised position.

The retainer means may be at least one cord having a first end secured to the lever and wheel attachment device, and a second end secured in use to the chair. The cord is preferably an elasticated cord. If desired, two of the cords may be employed, positioned one on either side of the chair during use of the lever and wheel attachment device.

The present invention also extends to a chair when provided with the lever and wheel attachment device of the invention.

An embodiment of the invention will now be described solely by way of example and with reference to the accompanying drawings in which:

Figure 1 is a perspective view of a lever and wheel attachment device on a chair, and with a foot-operated member in a first position; and

Figure 2 is a perspective view like Figure 1 but shows the foot-operated member in a second position.

Referring to the drawings, there is shown a lever and wheel attachment device for a chair. The chair has a pair of rear legs "A" and "B", and a pair of front legs "X" and "Y".

The lever and wheel attachment device comprises a pair of lever arms 10, 20. The lever arm 10 has a first end 10A and a second end 10B. The lever arm 10 is formed from an elongate plate which is made from a metal or other suitable material. The lever arm 20 has a first end 20A and a second end 20B. The lever arm 20 is formed similarly as the lever arm 10. A foot-operated member 40 is connected to the ends 10A, 10B of the lever arms 10, 20.

The ends 10B, 20B of the lever arms 10, 20 are secured to the rear legs "A" and "B" of the chair by chair leg engaging members in the form of pivots 12 and 13 respectively. A ground-engaging wheel 11, 21 is fitted to each of the lever arms 10, 20 respectively at their ends 10B, 20B. The ground-engaging wheels 11, 21 are located between the pivots 12, 13 and the ends 10A, 20A of the lever arms 10, 20.

As shown, a cord 16 is provided between the end 10A of the lever arm 10 and the chair. A cord 17 is provided between the end 20A of the lever arm 20 and the chair. The cords 16, 17 are elasticated cords 16, 17 and they form a retainer means for ensuring that, when not in use, the lever arms 10, 20 are retained between the rear legs "A" and "B" of the chair in a vertical position as shown in Figure 1

Two stops 14, 15 are provided, one for each lever arm 10, 20. The stops 14, 15 ensure that the elasticated cords 16, 17 do not pull the lever

arms 10, 20 beyond the vertical position shown in Figure 1. The stops 14, 15 engage the rear legs "A" and "B" of the chair in order to prevent movement beyond the vertical.

The lever and wheel attachment device shown in Figures 1 and 2 is able to fit on chairs with different distances between the rear legs of the chairs. More specifically, the foot-operated member 40 is in the form of the illustrated rod. The rod consists of two tubular parts with one part sliding into the other part. The rod is thus a telescopic rod, and the telescoping parts form adjustment means for adjusting the distance between the first ends 10A, 20A of the lever arms 10, 20, whereby to accommodate different distances between rear legs of chairs.

When it is desired to move a person sitting on the chair backwards, a carer stands behind the chair with their foot on the foot-operated member 40. As shown in Figure 2, when downward pressure is applied to the foot-operated member 40, the downward pressure lowers the foot-operated member to a lowered position. The lever arms 10, 20 pivot downwardly about the pivots 12, 13 and cause the wheels 11, 21 to engage the floor. This raises the rear legs "A" and "B" of the chair off the ground. This in turn allows the chair to be moved backwards, with weight of the chair and any person on the chair being taken, at least in part, on the wheels 11, 21 as the backrest "M" of the chair is pulled backwards. When the chair is in the required position, the carer's foot is removed from the foot-operated member 40. The foot-operated member 40 then returns to the position shown in Figure 1 due to the restoring force applied by the elasticated cords 16, 17.



Each wheel 11, 21 is located close to its second end 10B, 20B of the lever arms 10, 20. This provides a good mechanical advantage for use in lifting the rear legs "A" and "B" of the chair when applying downward pressure on the foot-operated member 40.

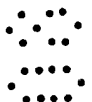
It is to be appreciated that the embodiment of the invention described above with reference to the accompanying drawings has been given by way of example only and that modifications may be effected. Thus, for example, the various parts of the illustrated lever and wheel attachment device may be made of any suitable and appropriate material. The foot-operated member 40 may be other than the illustrated rod. Other types of adjustment means for adjusting the distance between the second ends of each lever arm may be employed. Retainer means other than the cords 16, 17 may be employed. The retainer means may retain the lever arms 10, 20 in a raised position but one which is other than the vertical position shown in Figure 1. The cords 16, 17 may be non-elasticated and used with biasing means such for example as a spring.

**CLAIMS**

1. A lever and wheel attachment device for a chair with a pair of rear legs, comprising:

- (a) a pair of lever arms each having first and second ends;
- (b) a foot-operated member connected to the first ends of each lever arm;
- (c) a chair leg engaging member at each second end of each lever arm; and
- (d) a ground-engaging wheel between the first and second ends of each lever arm, each wheel providing a pivot point about its axis for each lever arm,

and the lever and wheel attachment device being such that in use each chair leg engaging member is connected to each rear leg of a chair, the foot-operated member has a raised position whilst the rear legs of the chair are on the ground, and when downward pressure is applied to the foot-operated member then the lever arms pivot about the wheels in order to raise the rear legs of the chair off the ground and thereby allow the chair to be moved backwards with weight of the chair and any person on the chair being taken at least in part on the wheels.



2. A lever and wheel attachment device according to claim 1 in which the foot-operated member is a rod

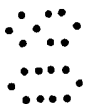
3 A lever and wheel attachment device according to claim 1 or claim 2 in which the chair leg engaging member is a pivot member.

4 A lever and wheel attachment device according to any one of the preceding claims in which the raised position of the foot-operated member is a vertical position.

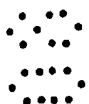
5 A lever and wheel attachment device according to any one of the preceding claims and including adjustment means for adjusting the distance between the second ends of each lever arm whereby to accommodate different distances between rear legs of chairs.

6. A lever and wheel attachment device according to claim 5 in which the foot-operated member is a telescopic rod, and in which the adjustment means is formed by telescoping parts of the telescopic rod.

7. A lever and wheel attachment device according to any one of the preceding claims in which the lever arms are in the form of elongate plates.



8. A lever and wheel attachment device according to any one of the preceding claims and including retainer means for retaining the foot-operated member in the raised position.
9. A lever and wheel attachment device according to claim 8 in which the retainer means is at least one cord having a first end secured to the lever and wheel attachment device and a second end secured in use to the chair.
10. A lever and wheel attachment device according to claim 9 in which the cord is an elasticated cord.
11. A lever and wheel attachment device substantially as herein described with reference to the accompanying drawings.
12. A chair when provided with the lever and wheel attachment device according to any one of the preceding claims.



**Application No:** GB0810312.9

**Examiner:** Mr Philip Lawrence

**Claims searched:** 1-12

**Date of search:** 9 September 2008

**Patents Act 1977: Search Report under Section 17**

**Documents considered to be relevant:**

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1, 4, 5, 7, 9, 10	GB2442573 A (CLAYTON), see Abstract and Figure 1.
A	-	US2937850 A (WINKLER et al.), see Figures
A	-	US2003/0062699 A1 (GARGARO), see Abstract and Figure 2.
A	-	WO99/61276 A (HERCULIFT TECHNOLOGIES INC ), see Abstract and Figures 1-3.
A	-	FR2828483 A (BOBEDA), 14.02.2003 (see WPI Accession Abstract No. 2003-270420 [27] and Figures).

**Categories:**

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art
Y	Document indicating lack of inventive step if combined with one or more other documents of same category	P	Document published on or after the declared priority date but before the filing date of this invention
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than the filing date of this application

**Field of Search:**

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>X</sup>:

Worldwide search of patent documents classified in the following areas of the IPC:

A47C; A61B; B62B

The following online and other databases have been used in the preparation of this search report

EPODOC, TXTE, WPI

**International Classification:**

Subclass	Subgroup	Valid From
A61G	0005/10	01/01/2006

<b>Subclass</b>	<b>Subgroup</b>	<b>Valid From</b>
B62B	0005/00	01/01/2006