

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 836 821 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

22.04.1998 Bulletin 1998/17(51) Int Cl.⁶: **A47C 9/02**(21) Application number: **97307818.1**(22) Date of filing: **03.10.1997**

(84) Designated Contracting States:

**AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC
NL PT SE**

Designated Extension States:

AL LT LV RO SI(30) Priority: **18.10.1996 GB 9621721**(71) Applicant: **Kneel Easy Limited****Preston, Lancs. PR1 3NU (GB)**

(72) Inventors:

- **Iavertino, Michael**
Lancashire, PR2 9QN (GB)

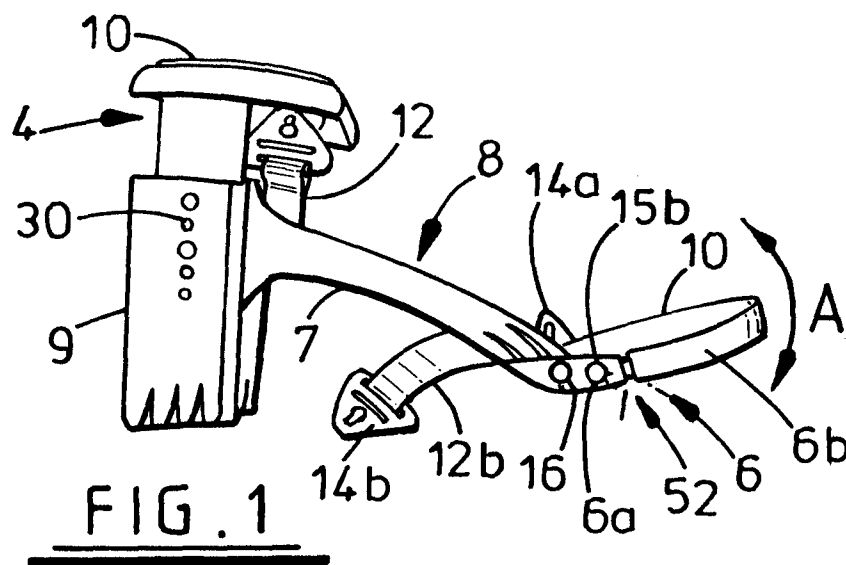
- **Holland, Janusz Lucien**
Birmingham, B18 6JQ (GB)
- **Hughes, Mark Christopher**
Birmingham, B18 6JQ (GB)
- **Parks, Colin**
Bolton, BL4 8RN (GB)

(74) Representative: **Cardwell, Stuart Martin et al**
Roystons
Tower Building
Water Street
Liverpool, L3 1BA (GB)

(54) **An improved portable seat and knee-rest apparatus**

(57) A portable seat and knee-rest apparatus is provided which comprises a seat member (4) and knee-rest (6) both of which are secured to a framework (8). The apparatus is strapped to a person's leg so that on kneeling the seat (4) provides support for the person's buttock and the knee-rest (6) for the person's knee. In order to further avoid potential discomfort or worse, the knee-

rest is divided into at least two relatively moveable parts (6a, 6b). This allows movement of the knee-joint - especially under load. A hinged connection between the two parts is proposed. More particularly, plastics materials are employed for the parts of the knee-rest and the hinge (52) is formed integrally from plastics. The framework comprises L-shaped members and the seat is mounted adjustably to the framework.

**FIG. 1****EP 0 836 821 A2**

Description

The present invention relates to an improved portable seat and knee-rest apparatus particularly for use when kneeling to work.

A variety of jobs require a person to crouch or kneel in order to carry out the work in hand, for example, house maintenance jobs such as plumbing and decorating, car maintenance and gardening. This position puts strain on a person's knees and/or lower back which can lead to muscular tensions with possible long term effects on a person's health and fitness. The use of a small, low level stool to sit on and a cushion for kneeling on are often employed for such purposes but are far from satisfactory.

A device which provides both a seat and knee-rest for working at low levels is described in European Patent Application No. 92860015.2. This comprises an adjustable J-frame having at its respective ends a transversal knee-supporting panel and a transversal seat supporting panel, the knee-supporting panel being pivotally connected to the frame. The device may also be provided with straps for securement to the leg of the user. The pivotal knee-supporting panel is intended to accommodate bending at the knee when the user moves between an upright and a kneeling position.

In practice the knee-supporting panel is also engaged by the upper end of the tibia as well as the knee-cap and it has been found that the use of a single knee-supporting panel can inhibit relative movement therebetween and that this may give rise to user discomfort.

An aim of the present invention is to provide an improved seat and knee-rest apparatus for use when kneeling to work.

Accordingly, the present invention provides a portable seat and knee-rest apparatus for attachment to a leg of a person for use when kneeling to work, the apparatus comprises a frame carrying in spaced relation a seat member and a knee-rest, in use, the seat member provides support for a buttock of the user and the knee-rest is engaged by the lower leg and the knee of the user, means is provided to secure the apparatus to the user, and characterised in that the knee-rest comprises two or more relatively movable parts.

Preferably the knee-rest comprises two parts, one of which is fixedly secured to the frame and the other is movable with respect to the said one part. In one embodiment, relative movement between the two parts of the knee-rest is by means of a hinge which affords pivoting of one part with respect to the other. Pivoting is usually in response to bending of the leg. The part which is fixed to the frame is usually contacted by the upper end of the tibia, whilst the pivotal part is contacted by the knee-cap.

The knee-rest section is preferably attached to the free end of the long limb of the L-shaped members. Preferably, the two parts of the knee-rest are attached to one another by means of a living hinge, ie. a thin area of

flexible plastics material. Padding is provided on the knee-rest parts for cushioning purposes.

The framework preferably comprises two parallel profiled substantially L-shaped members, the long limb of the members being positioned at either side of the leg when the device is secured to the user. Preferably, the long limbs of the framework are arcuate to follow the curve of the lower part of the person's leg.

The seat member is preferably attached between ends of the short limb of the L-shaped members. Preferably, the seat member is attached to the end of the short limb nearest the long limb of the L-shaped members with the free ends of the short limb of the members providing legs for supporting the seat when the apparatus is in use.

Preferably, the free ends of the short limbs taper outwards to provide a foot for enhanced stabilisation of the device when in the operative position.

The seat member is preferably a moulded component supported between two spaced-apart legs extending perpendicularly therefrom for attachment to the framework. The upper surface of the seat member is preferably provided with padding for cushioning purposes. A foam plastics material is preferred. It may be fabric-covered. Preferably, the height of the seat member is adjustable, for example by the provision of a series of complementary holes in the legs of the seat member and the framework which holes may be aligned and the components secured at the required height by retaining means received in the aligned holes.

Preferably, the underside of the seat member is profiled to form a reception location, for example, an arch to receive the user's leg. The reception location may be provided with padding to cushion the leg/heel of the user when the device is in use.

The knee-rest parts are preferably moulded components. Indeed, preferably all the individual components, ie. the parts of the knee-rest, seat member and framework are moulded components of a reinforced plastics material.

The framework may be secured to the leg of the user by any suitable means. Preferably, adjustable straps are used, for example being secured using buckles or Velcro (registered trade mark). The straps are preferably positioned to secure the framework around the ankle and just below the knee of the user. In this manner the device may be carried along with the user when moving to a new work position.

The present invention will now be described further hereinafter, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 is a perspective view of a portable seat and knee-rest apparatus according to a preferred embodiment of the present invention;

Figure 2 is a back view of the apparatus shown in Figure 1;

Figure 3 is a cross-section of the longitudinal view

of an L-shaped member of a preferred embodiment of the framework for the present invention;

Figure 4 is a cross-sectional view of a preferred embodiment for the seat member of the present invention;

Figure 5a is a cross-section of a longitudinal view of a preferred embodiment of a knee-rest for the present invention; and

Figure 5b is a cross-section of the surface view of the knee-rest shown in Figure 5a.

Referring to Figures 1 and 2 of the accompanying drawings, a preferred embodiment of a seat and knee-rest apparatus according to the present invention is illustrated. The apparatus is portable and comprises a seat member 4 and an articulated knee-rest section 6 which are spaced apart from one another and are secured with respect to a framework 8. The seat member and knee-rest are provided with padding 10 to cushion a buttock and knee of the user when the apparatus is in use. Adjustable straps 12a, 12b are provided to secure the apparatus to the leg of the user. When we use the term knee it will be understood that we refer to that portion of the leg which normally contacts the ground when kneeling and that this usually includes the upper end of the tibia and the knee-cap. Thus the knee-rest is engaged by these parts.

The framework 8 is made up of two parallel profiled substantially L-shaped members, the free end of the long limb 7 having attached to it the knee-rest 6 and the ends of the short limb 9 nearest the long limb 7 (in the illustrated embodiment) having connected thereto the seat member 4. The long limb is arcuate such that it follows the natural curve of the leg of the user when the device is in use (see Figures 1 and 3) and is attached to the knee-rest by retaining means 16.

The short limb 9 of the L-shaped frame member is wider than the long limb 7. The free ends of the short limbs opposite the ends attached to the seat section provide ground engaging legs 18 for supporting the seat and taper outwards to form a wider base area or foot 20. This assists in stabilisation of the device when in use. Gripping means may also be provided on the underside of the base area to prevent movement of the device when in use.

The seat member 4 is a moulded plastics component comprising a transverse seat element 21 supported between two, spaced-apart legs 22 extending perpendicularly therefrom for attachment to the L-shaped members (see Figure 4). The height of the seat member 4 is relative to the ground engaging foot is adjustable to enable a satisfactory height to be chosen by the user of the device. Adjustment may be by the provision of a series of complementary holes 30 in the legs 22 of the seat member and the short limbs 9 of the members 5 which may be aligned and secured at the required height by suitable retaining means. The transverse seat region has padding 10, such as foam, which may be fabric cov-

ered, on its upper surface to enhance the comfort for the user.

It will be appreciated that the size and shape of the transverse seat region may be varied, but preferably is rectangular with a slightly curved surface.

The legs 22 of the seat member preferably converge towards to the transverse seat region 21 to provide a reception location 40 (shown as an inverted V-shape in Figure 2). The reception location may also be provided with padding 10 to cushion the back of the leg/heel of the user. Preferably the leg is held in contact with the padded surface by strapping 12.

The knee-rest 6 of the apparatus comprises two parts 6a and 6b hingedly mounted with respect to one another. Preferably, the parts are joined by means of a living hinge 52 consisting of a region where the plastics material of the two sections is substantially reduced in thickness to enable the bending of the material. This allows the part 6b to pivot with respect to part 6a as denoted by arrow A. The smaller part 6a of the knee-rest is attached non-movably to the long limb 9 of the framework by retaining means 60. Both sections carry resilient padding for cushioning purposes. A foam plastics material is preferred.

An adjustable strap 12b having buckles 14a and 14b is provided on the smaller part 6a to secure the apparatus to the leg of the user by passing around the back of the knee. The buckles connect with headed pins 15a, 15b respectively.

In operation, the user is able to balance his weight between the seat 4 and knee-rest 6 depending on the operation being performed. If the user has to move to a new working position, the apparatus can remain attached to the leg such that it is carried along with the user.

Where bending of the leg gives rise to relative movement between the upper end of the tibia and the knee-cap, this is accommodated by the provision of the articulated knee-rest which greatly improves the overall comfort of the portable seat and knee-rest apparatus because the flexible nature of the knee-rest enables it to move with the corresponding movement of the leg. This is far more desirable than the rigid structure of the device of the prior art since the knee-rest bends with the bending of the knee when the user walks and/or bends to kneel down.

The use of moulded lightweight reinforced plastics components for the portable seat and knee-rest apparatus of the present invention result in a less bulky and heavy device than was available prior hereto. The individual components may also be replaced independently of one another if required, for example due to damage or wear and tear.

Claims

1. A portable seat and knee-rest apparatus for attach-

ment to a leg of a person for use when kneeling to work, the apparatus comprising a frame (8), a seat member (4) and a knee-rest (6), the seat and knee-rest being carried in spaced relation on the frame, wherein in use the seat member provides support for a buttock of the user and the knee-rest is engaged by the lower leg and the knee of the user, the apparatus further comprising means (12a, 12b) for securement to the user characterised in that the knee-rest comprises two or more relatively movable parts (6a, 6b).

2. Apparatus according to claim 1 wherein the knee-rest (6) comprises two parts, one (6a) of which is fixedly secured to the frame (8) and the other (6b) is movable with respect to the said one part. 15
3. Apparatus according to claim 2 wherein relative movement between the two parts (6a, 6b) of the knee-rest (6) is by means of a hinge (52) which affords pivoting of one part with respect to the other. 20
4. Apparatus according to claim 2 or claim 3 wherein pivoting is in response to bending of the leg, the part (6a) which is fixed to the frame (8) being contacted by the upper end of the tibia, whilst the moveable part (6b) is contacted by the knee-cap. 25
5. Apparatus according to claim 3 or 4 wherein the two parts (6a, 6b) of the knee-rest (6) comprises at least in part plastics material and the hinge (52) comprises a thin portion of the plastics material which is flexible. 30
6. Apparatus according to any one of claims 1 to 5, wherein the framework (8) comprises two parallel profiled substantially L-shaped members having a long limb (7) and a shorter limb (9) whereby in use, the long limbs thereof are positioned at either side of the leg when the device is secured to the user. 35 40
7. Apparatus according to claim 6 wherein the knee-rest (6) is attached to a free end of the long limb (7) of the L-shaped members. 45
8. Apparatus according to claim 6 or claim 7 wherein the seat member (4) is attached between ends of the short limb (9) of the L-shaped members.
9. Apparatus according to claim 8 wherein the seat member (4) is attached to that end of the short limb (9) disposed nearest the intersection with the long limb (7) of the L-shaped members and wherein the free ends (20) of the short limb of the members provide legs (18) for supporting the seat when the apparatus is in use. 50 55
10. Apparatus according to any one of the preceding

claims wherein the seat member (4) is a moulded component (21) supported between two spaced-apart legs (22) extending perpendicularly therefrom for attachment to the framework.

11. Apparatus according to claims 9 or 10 wherein the height of the seat member (4) is adjustable.
12. Apparatus according to any one of the preceding claims wherein the underside of the seat member (4) is profiled to form a reception location (40) to receive the user's leg.
13. Apparatus according to any of the preceding claims wherein adjustable releasable strapping (12a, 12b) is provided to secure the leg of the user with respect to the framework (8).

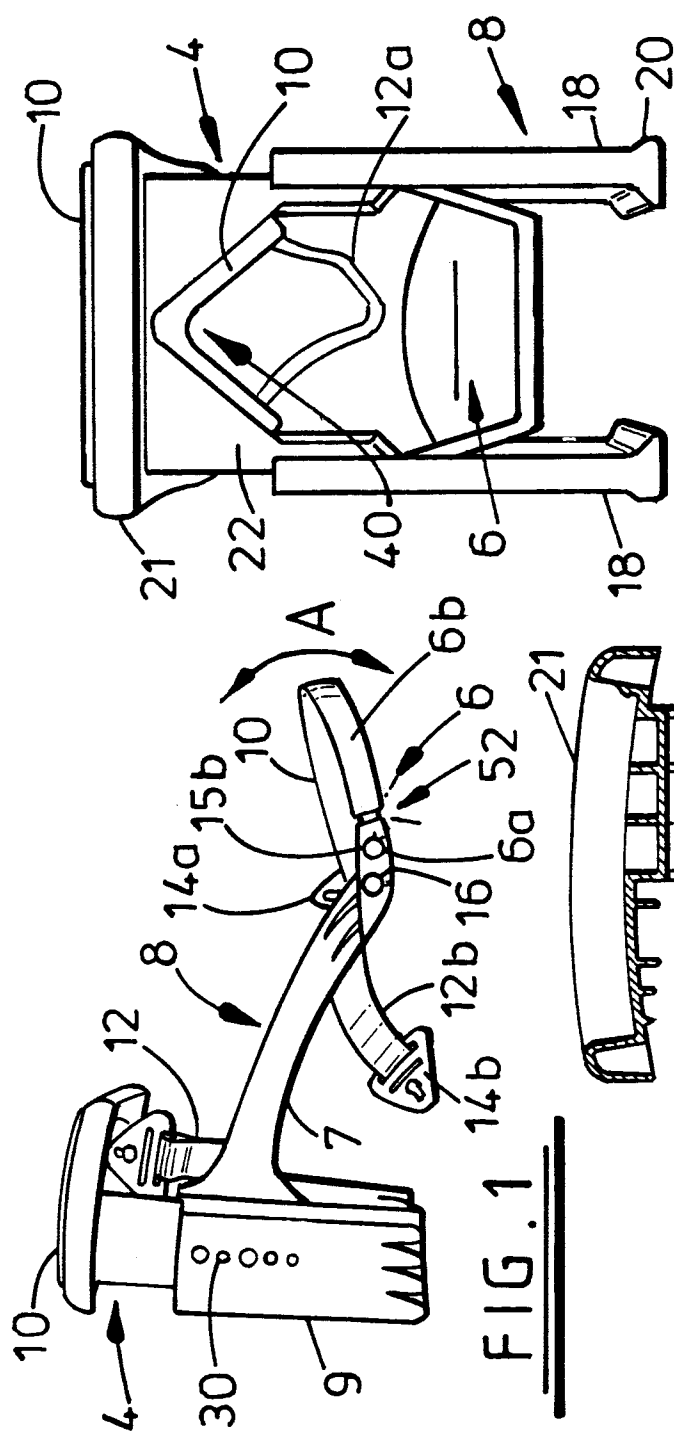


FIG. 2

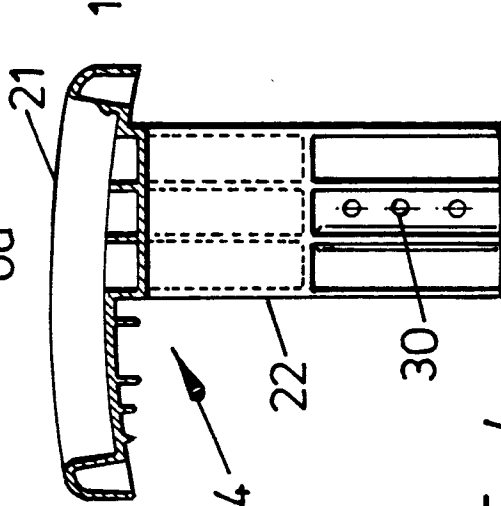


FIG. 4

