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(71) Applicant: **NESBIT EVANS HEALTHCARE LIMITED**
5 Regent's Court, South Way, Walworth Industrial Estate
Andover, Hampshire SP10 5NX(GB)

(72) Inventor: **Sarll, David Peter Gratwick**
49 Hollymoor Drive
Chellasto, Derby DE7 1OF(GB)

(74) Representative: **Hands, Horace Geoffrey et al**
GEORGE FUERY & CO Whitehall Chambers
23 Colmore Row
Birmingham B3 2BL(GB)

(54) **Hoist.**

(57) The invention provides a folding portable hoist. As shown in Figure 1, the boom 18 20 can pivot on the mast to fold to a condition generally parallel to the mast, and the mast 16 can hinge on the base plate 30 to fold, with the boom, to a position generally parallel to the chassis 10, so as to form a compact bundle.

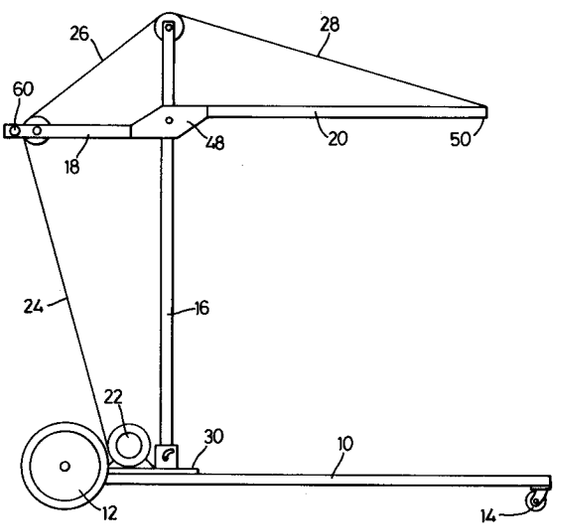

Fig. 1

EP 0 506 245 A2

This invention relates to portable or transportable hoists primarily but not exclusively for domestic use in invalid or patient care. The usual design comprises a wheeled chassis, a mast upstanding from the chassis, a boom extending outwardly from the mast, and winch means for raising or lowering a chair, sling or other carrying means. The hoist may be used for example to lift a patient in or out of a bath.

The problem is that the hoist occupies a substantial space which is particularly inconvenient at times when it is not actually in use. Its volume also makes it difficult to manoeuvre through doorways and upstairs so that for example storage in a outhouse or garage, and return to the place of use only when needed is not a satisfactory option.

The invention aims to solve this problem.

According to the invention, a hoist comprises a wheeled chassis, a mast, a boom, and a winch, and is characterised in that the mast is hinged and arranged to fold to a collapsed position on the chassis.

The carrying means which are to be raised or lowered may be in fixed position on the boom, and in this case the winch may pivot the boom on the mast: or the boom may be a normally fixed lateral extension of the mast and not intended to pivot during hoisting operations and in such case the winch may be connected to the carrying means by a cable which depends from the end of the boom.

Effectively the invention provides a hoist which, in preferred embodiments, can be collapsed to a relatively small cross section bundle, which can be suitably dimensioned to go in a car boot, under a bed, or in a wardrobe for example.

One presently preferred embodiment of the invention will now be more particularly described wherein:-

Figure 1 is a side elevation of a hoist in a position for use;

Figure 2 is a view similar to Figure 1 showing a stage in collapse to the compact folded condition:

Figure 3 is a view similar to Figure 2 but showing a further stage in collapse to a bundle;

Figure 4 is a fragmentary and somewhat diagrammatic view on an enlarged scale showing the mast/chassis connection;

Figure 5 is a fragmentary front elevation and Figure 6 is a plan view.

Referring first to Figure 1, the hoist comprises a chassis 10 with wheels 12 14, a mast 16, boom 18 20, winch 22, and cable or other flexible tie 24 26 28.

Figures 5 and 6 show the chassis in more detail. It comprises a base plate 30 carrying a socket 32 shown separately in Figure 4, and legs 34 36 which may be telescopically extendable to the illustrated position, and/or pivotally mounted on the base plate to allow them to be spread for stability or moved parallel to one another and close together, or perhaps detached from the base plate for such purposes so as to make the stored bundle even more compact.

The legs may carry castor wheels 14 at their free ends.

Wheels 14 may be on inclined stub axles 40, as shown, in the interests of stability. These axles may be fixed to the base plate. Any one or more of the wheels may be braked.

The boom comprises a bracket portion 48 pivoted to the mast, and offset limbs 18 20. Stop means not shown may prevent the boom moving anticlockwise relative to the mast from the Figure 1 position. However the boom is, in this embodiment, free to move clockwise, under the control of the cable 24 28, which extends about pulleys, and the winch 22. Extending the cable 24 by clockwise winch movement lowers the end 50 and, subject to the mentioned stop means, vice versa.

A seat or other carrying means (not shown) may be fixedly suspended at the end 50 and raised and lowered by use of the winch pivoting the boom.

The winch may have a geared system to enable even a child or weak person to raise and lower loads, and preferably also brake means or a so-called overspeed governor to control the speed of raising and more especially of lowering, to prevent the load falling out of control.

If desired the winch may have a ratchet action and be operated from an upwardly extending reciprocable lever to avoid a user having to bend down to reach the winch. Or it may be a power operated winch connected to any suitable power source such as a nearby mains electric power socket by a cable, and operable by a hand-held controller.

By a combination of winch means and or manual manipulation, the boom may be folded to the Figure 2 position, and of course this folding operation is only done when the seat is unoccupied and perhaps detached from the boom.

Socket 42 is mounted on the base plate, and is used to mount the mast. The mast has a cross pin 44 running in slots 46 in the socket, and the latter includes an aperture receiving the extreme lower end of the mast when in the Figure 1 and Figure 4 position. So the socket and pin together hold the mast upright. In this position, hinging of the mast is impossible. To hinge the mast it is lifted slightly, for example by a handle 60 manually manipulated, to free the extreme end from the aperture and take the pin towards the opposite end of the slots. This action will normally be accomplished after first folding the boom to the Figure 2 position. By further

manual manipulation and or winch control the complete mast and boom can be folded to the Figure 3 position. The bundle may be fastened by a strap or like encircling the chassis, mast and boom. In the folded condition the bundle can be trailed using the wheels at either end, but usually by towing with wheels 12 engaging the ground.

Erection, or re-erection from the Figure 3 position is accomplished by the reverse movements, except that the mast may re-engage in the vertical position in the socket automatically.

Handle 60 is also intended for use for steering and guidance of the erected hoist and for this purpose projects laterally as a pair of handlebars as shown in Figure 6.

Claims

1. A hoist comprising a wheeled chassis, a mast, a boom and a winch, characterised in that the mast is hinged and arranged to fold to a collapsed position on the chassis.

2. A hoist as claimed in Claim 1 wherein the boom is pivoted on the mast and arranged to fold to a position generally parallel to the mast.

3. A hoist as claimed in Claim 1 wherein a socket is provided on the chassis for the mast and the socket is arranged so that in one relative position of the mast the latter is supported in an upright position and in another relative position is free for hinging.

4. A hoist as claimed in Claim 1 wherein a hoist cable extends from the winch via pulleys on the boom and mast and is arranged to allow hinging of the mast relative to the chassis under the control of the winch.

5. A hoist as claimed as Claim 2 wherein a hoist cable extends from the winch via pulleys on the boom and mast and is arranged to allow pivoting of the boom under the control of the winch.

6. A hoist as claimed in Claim 3 and Claim 4 wherein the socket is arranged so that in raising the mast from a collapsed position on the chassis, the hinging of the mast continues until it is substantially vertical when the mast displaces to a second position in the socket in which hinging is prevented.

7. A hoist as claimed in Claim 5 wherein a stop is provided to limit pivotal movement of the boom.

8. A hoist as claimed in any preceding claim wherein the chassis comprises telescopically extendable parts.

9. A hoist as claimed in any preceding claim wherein the chassis comprises parts which are pivoted to spread apart so as to increase the track dimension of wheels mounted on said parts.

10. A hoist as claimed in any preceding claim wherein the wheels or ones of the wheels are mounted on inclined axles.

11. A hoist substantially as described and with reference to the accompany drawings.

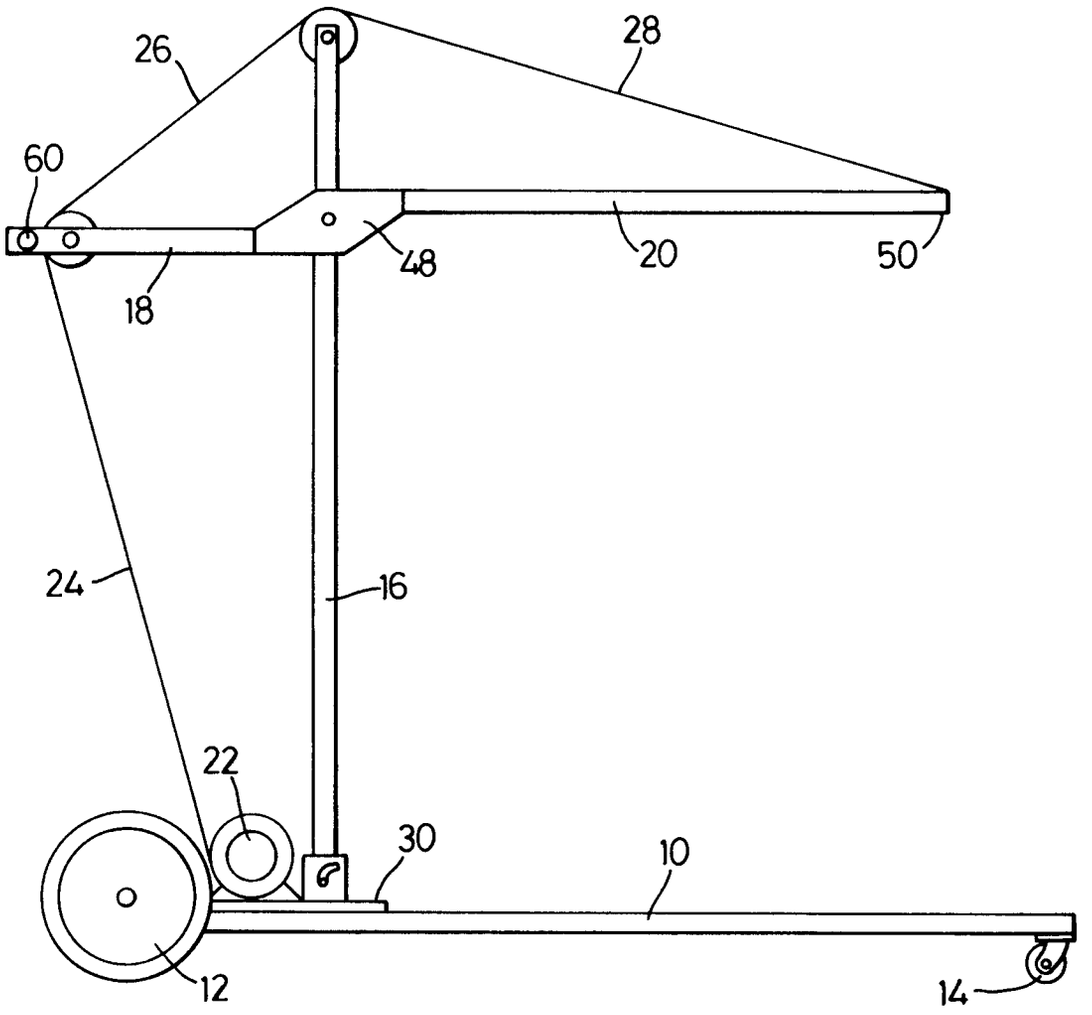

Fig. 1

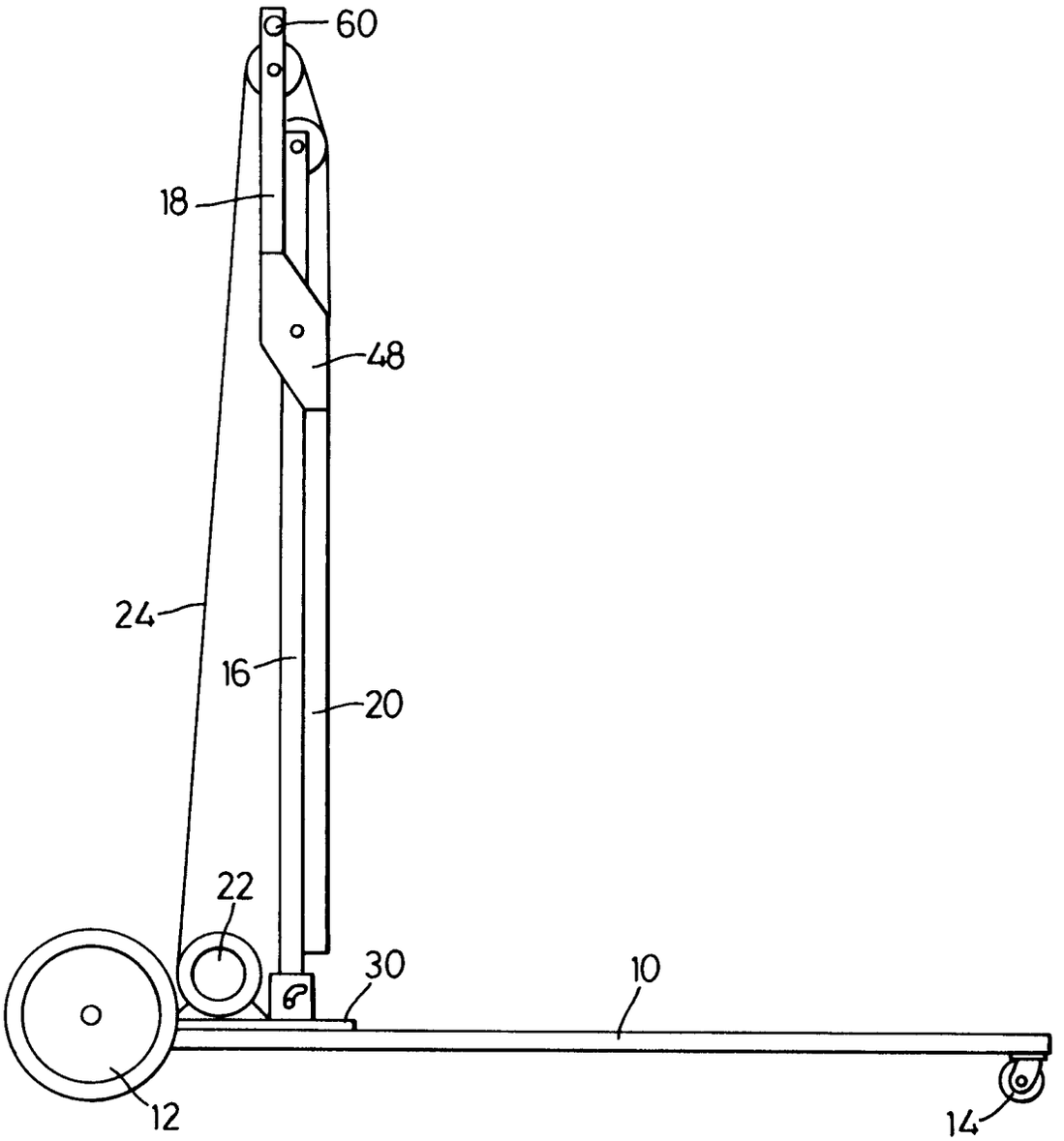

Fig. 2

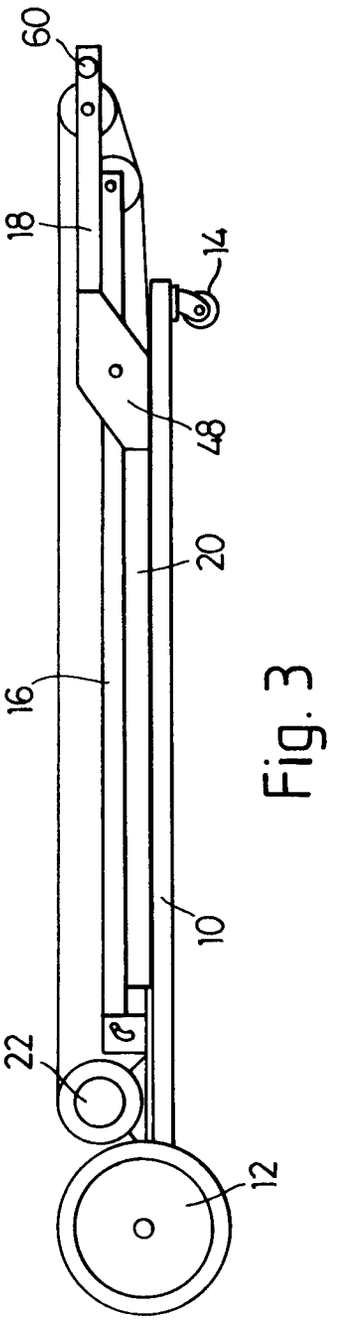

Fig. 3

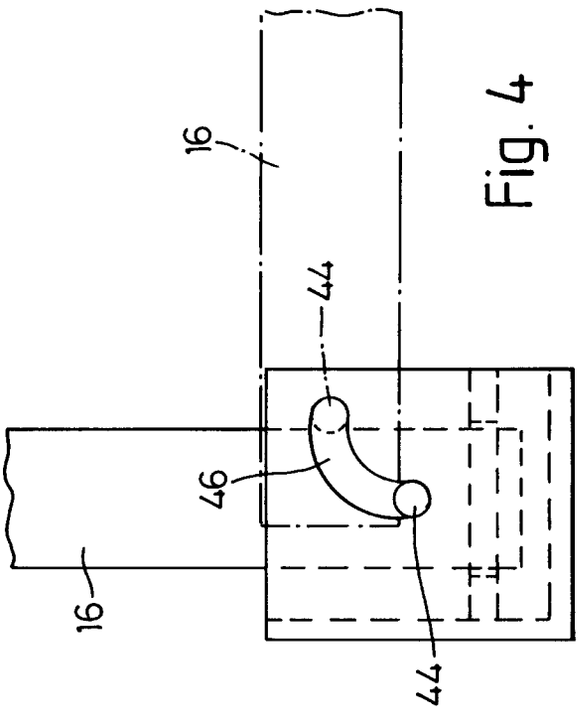

Fig. 4

Fig. 5

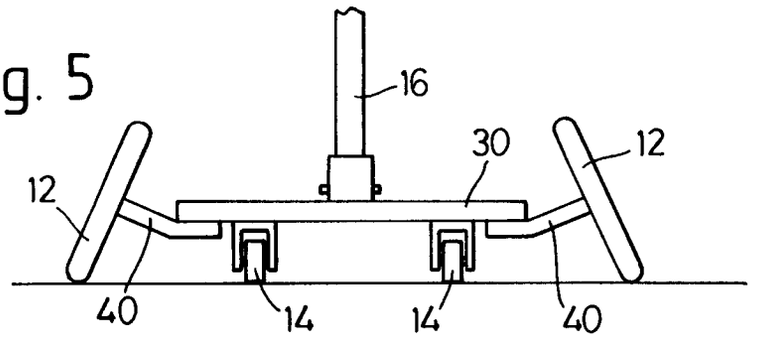

Fig. 6