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(54) Pavement hoist

(57) A lift comprises an outer framework (1) with a planar top surface (2) forming a walkway and an inner car (5) within the outer framework, the inner car (5) having a roof (7) and a floor (6) and being movable relative to the outer framework (1) from a position in which the roof (7) is spaced below the top surface (2) to a position in which the roof (7) engages the top surface (2) so that upon further upward movement, the inner car (5) raises the outer framework until the floor (6) is in a position flush with level P previously occupied by upper surface (2) of framework (1).

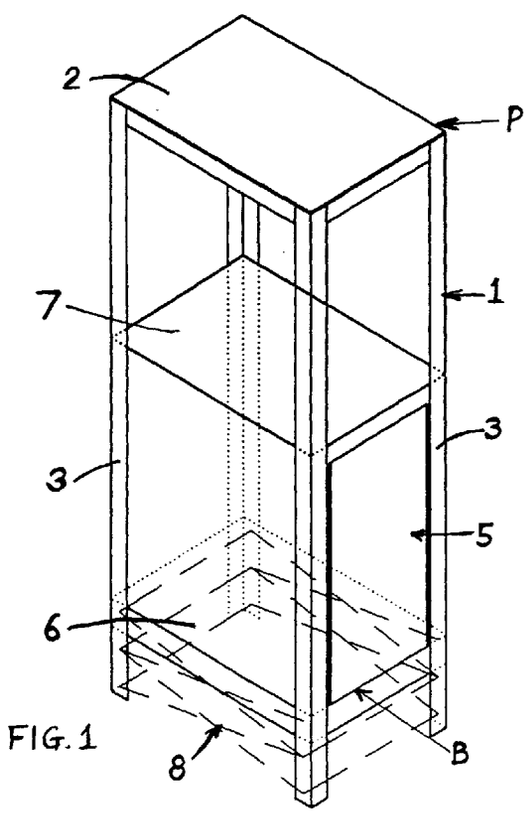

FIG. 1

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Description

[0001] The present invention relates to a pavement hoist for moving articles between a pavement level and a lower level.

[0002] A pavement hoist is known which enables goods to be transported from the ground-floor pavement level of a building to a basement level, the hoist having an upper surface such that when the hoist is in the basement the upper surface forms part of the pavement or a continuation thereof on the same plane. The degree to which the hoist can be lowered into the basement is limited by the lowest level at which the upper surface is aligned with the pavement.

[0003] It is also known that a multiple-scissors lift mechanism can provide a travel of 4 metres by using, for example, two double-scissor mechanisms with a platform surface of 1500mm x 1000mm. However, it would be impractical to fit such a mechanism to an existing hoist because this would call for a car having a height of 4 metres which is impractical. There are, however, many cases in which it is desirable for the car of a hoist to have a travel of over 3 metres and it is not possible to achieve such a height of travel with the known arrangements.

[0004] The present invention seeks to solve this problem by providing a mechanism which enables a pavement hoist to have a travel which exceeds the height of the car.

[0005] According to the present invention, there is provided a pavement hoist comprising a substantially rectangular framework having at least four legs and an upper surface which is arranged to be supported at a predetermined level, a transporter which comprises a parallelepipedal car, which fits within and is movable up and down the legs, and lifting means, the transporter being mounted on the lifting means and being arranged to be raised and lowered by said lifting means, the transporter further having an engagement member which is adapted to engage the said upper surface or supporting means therefor when the transporter is raised by the lifting means by more than a predetermined distance to cause the framework to be raised by further upwards movement of the transporter by said lifting means whereby the upper surface is raised above the said predetermined level.

[0006] The upper surface of the framework may be planar.

[0007] Preferably, the engagement member comprises an upper member of the car and the predetermined distance is the distance which the car travels before the upper member engages the upper surface of the framework whereupon it remains in contact with the said upper surface as it travels further upwards and raises the upper surface above the predetermined level. The contact between the upper member and the upper surface may be direct or indirect. Furthermore, the means for supporting the upper surface may be provided with stops or engagement means and when the upper member moves by the predetermined amount it engages the stops or engagement means and upon further upward travel raises said upper surface above said predetermined level.

[0008] The upper member may be formed by a roof of the car, which roof can be, for example, a planar surface, with or without an access trap-door, or a four-sided open framework.

[0009] The lifting means may be in the form of a mechanism having a hydraulically-operated multiple-scissors construction.

[0010] A constructional embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawings, wherein:-

Figure 1 shows a pavement hoist according to the present invention at a lowered level;

Figure 2 shows the pavement hoist at an intermediate level;

Figure 3 shows the pavement hoist at a raised position;

Figure 4 shows a cross-sectional elevation taken on line A-A of Figure 5; and

Figure 5 shows a front view of the pavement hoist in a shaft.

[0011] The pavement hoist comprises a rectangular outer car or framework 1 having an upper planar surface 2 and four legs 3. The pavement hoist further comprises a parallelepipedal inner car 5 having a floor or base 6 and an upper roof 7. The car 5 is mounted on a lifting mechanism 8 with a hydraulically-operated multiple-scissors construction.

[0012] In the position shown in Fig. 1 the car 5 is at its lowest level with the scissors of the lifting mechanism 8 fully retracted. The upper surface 2 of the framework 1 is at a level P flush with a pavement and the base 6 of the car 5 is flush with a level B which is flush with the floor of a basement or lower ground level. The bases of the legs 3 of the framework 1 rest on the floor of the basement or lower ground level. In Fig. 2 the car 5 has been lifted or raised to an extent such that its roof 7 engages the undemeath of the surface 2. Upon further raising of the car 5 the framework 1 is also raised and the floor 6 of the car 5 can move to a position flush with level P previously occupied by the upper surface 2 of the framework 1.

[0013] Upon downward movement of the car 5, by contraction of the scissors of mechanism 8, the framework 1 is lowered until the surface 2 is again flush with level P whereupon the roof 7 disengages the surface 2 and can continue on its downward travel leaving the surface 2 in situ.

[0014] Thus the construction according to the present invention provides a pavement hoist in which the height of the car 5 is unrelated to the distance between levels P and B.

[0015] When in its lowest position the floor of the car is preferably flush with the floor of the basement or lower ground level with the lifting mechanism recessed into a space S in the basement floor. However, it would be possible to mount the lifting mechanism on the basement floor so that in its lowest position the floor 6 is at a convenient height for the loading and removal of articles with steps down to the basement floor if necessary.

[0016] The legs 3 of the outer car or framework 1 are provided with adjustable feet 9 for levelling purposes.

[0017] The pavement hoist may be provided with a safety switch so that it could not be operated when anyone is standing on the surface 2. Alternatively or in addition viewing means such as CCTV could be provided to be able to view level P when operating the hoist from level B and/or vice versa. It is primarily intended, however, that the pavement hoist should be operated from level P with an interlocked door in the basement to prevent access to the hoist shaft when the inner car is raised. The interlocking of shaft doors may be electrical or mechanical but normally both.

[0018] Although the pavement hoist has been described in relation to pavement and basement levels it could of course be used at other levels such as a balcony.

[0019] Furthermore although the surface 2 is primarily intended to be substantially planar so that people can stand or walk on it, it could be of a shape to deter such use or other shapes for other purposes.

[0020] The invention is not restricted to the above-described embodiment but variations or modifications may be made without departing from the scope of the invention. For example, instead of resting on the floor of the basement or lower ground level when the surface 2 is at level P, the legs 3 could be shorter and arranged to rest on stops or other engagement means located at a convenient point to the sides of the framework 1.

Claims

1. A pavement hoist characterised in that it comprises a substantially rectangular framework (1) having at least four legs (3) and an upper surface (2) which is arranged to be supported at a predetermined level, a transporter which comprises a parallelepipedal car (5), which fits within and is movable up and down the legs (3), and lifting means (8), the transporter (5) being mounted on the lifting means (8) and being arranged to be raised and lowered by said lifting means, the transporter (5) further having an engagement member (7) which is adapted to engage the said upper surface (2) or supporting means therefor when the transporter (5) is raised by the lifting means (8) by more than a predetermined distance to cause the framework (1) to be raised by further upwards movement of the transporter (5) by said lifting means (8) whereby the upper surface is raised above the said predetermined level.

2. A pavement hoist according to claim 1, characterised in that said upper surface (2) is substantially planar.

3. A pavement hoist according to claim 1 or claim 2, characterised in that the engagement member (7) comprises an upper member of the car (5).

4. A pavement hoist according to claim 3, characterised in that the upper member (7) comprises a roof for the car (5).

5. A pavement hoist according to claim 3 or claim 4, characterised in that the upper surface (2) is contacted directly by the upper member (7) of the car (5) when said car is raised by the lifting means (8).

6. A pavement hoist according to any one of the preceding claims, characterised in that the lifting means (8) comprises a mechanism having a hydraulically-operated multiple scissor construction.

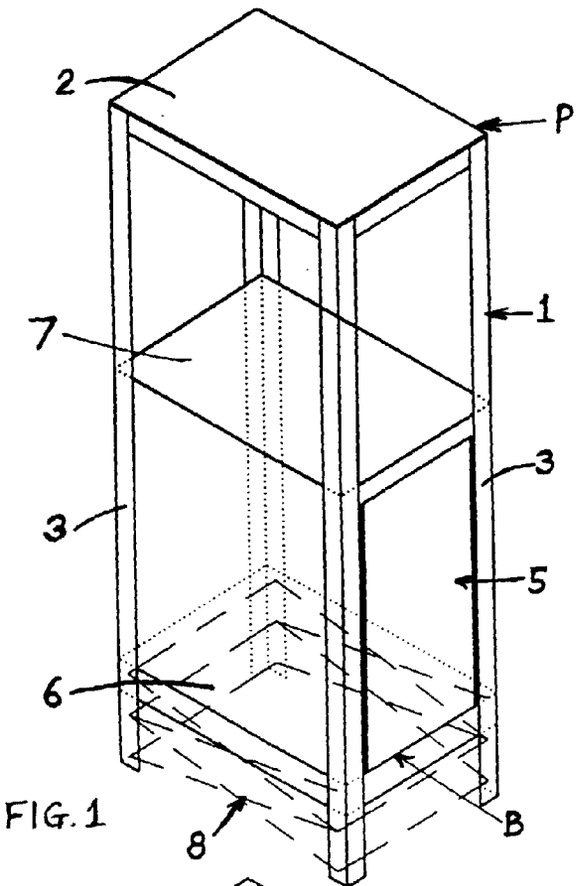

FIG. 1

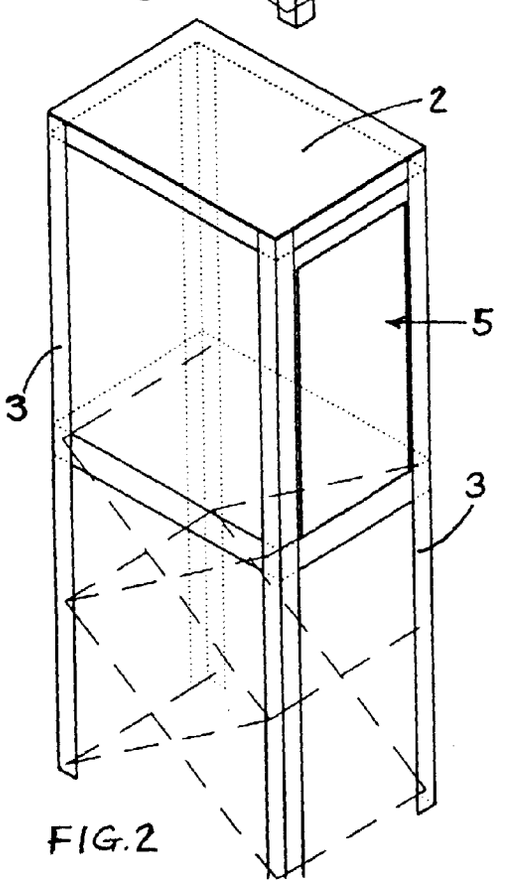

FIG. 2

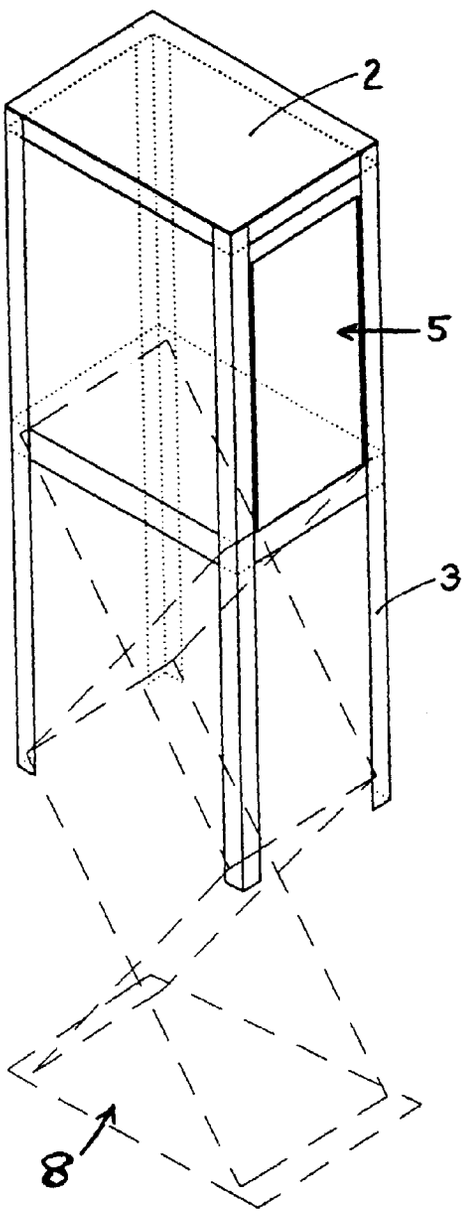

FIG. 3

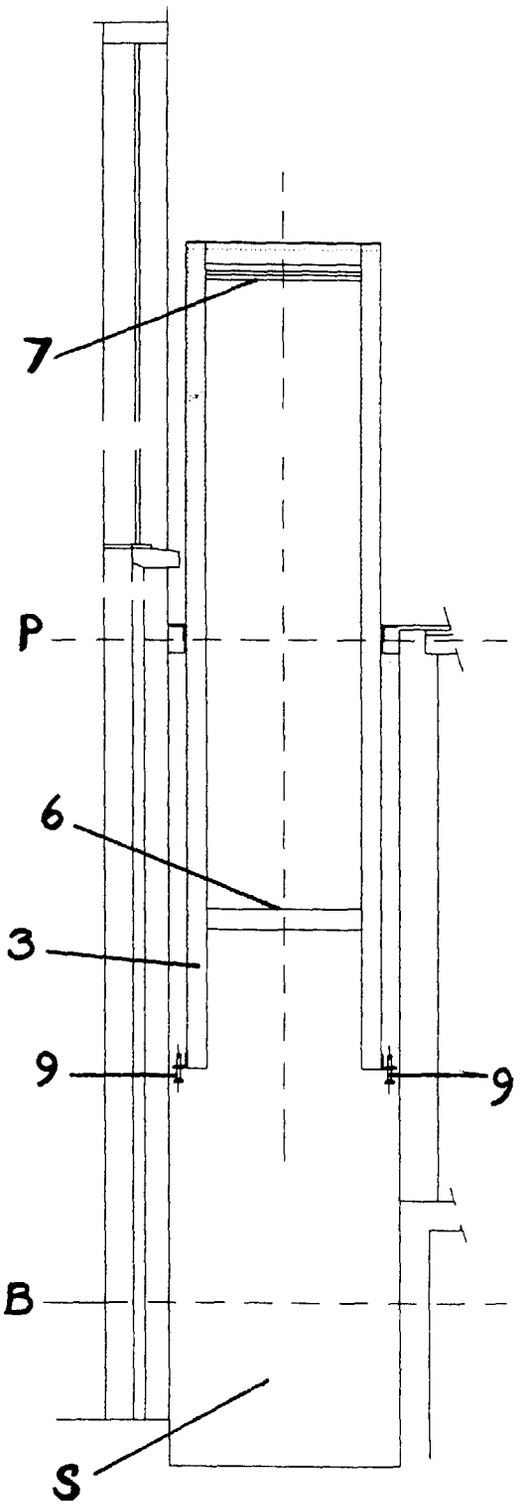

FIG. 4

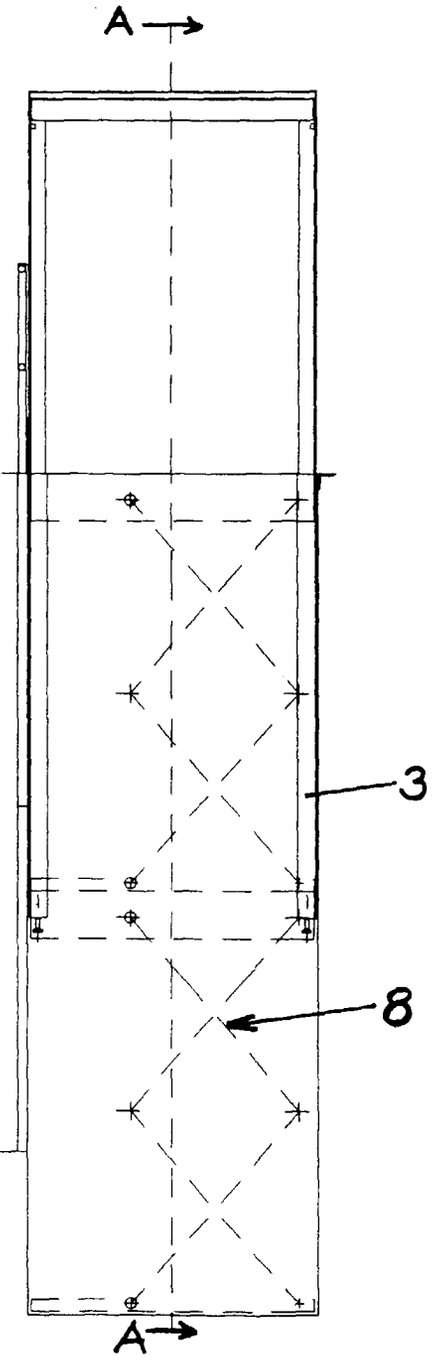

FIG. 5