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(56) Documents Cited
GB 2247269 A GB 2142358 A EP 0141623 A2
US 4869343 A US 4729149 A US 4702036 A
US 4565261 A US 4124954 A

(58) Field of Search
UK CL (Edition O) **E1J JA JB JCG JDG JGA JGB JGS**
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INT CL⁶ **E04G 1/26 , E06B 1/00 1/02 1/04 3/26 5/00**
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(54) **Safety gate for a scaffolding walkway**

(57) A safety gate assembly for mounting on scaffolding, comprises of a pair of gate supports 11,12 with a gate 13,14 hinged with pintle-type hinges 15 allowing 180° movement, to one of them and the other having gate engagement means 17. The upper and lower ends of the gate supports are axially offset in a 'crank' shape, to form mounting portions 21 for attachment via conventional means to the existing scaffolding 20. This allows the mounting portions to be outside the scaffolding whilst still allowing the door to open inwardly. Preferably the gate is of the stable door type, a stop 16 limiting the movement of the doors relative to each other. Optionally each gate has a conventional bolt 18 and also a toe board can be attached to the bottom of the gate supports.

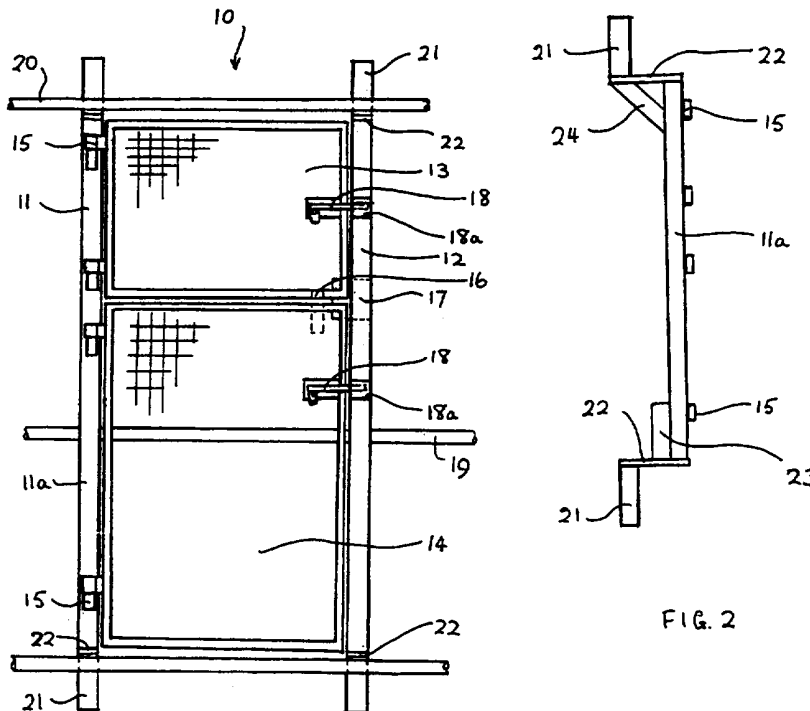


FIG. 1

FIG. 2

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1995

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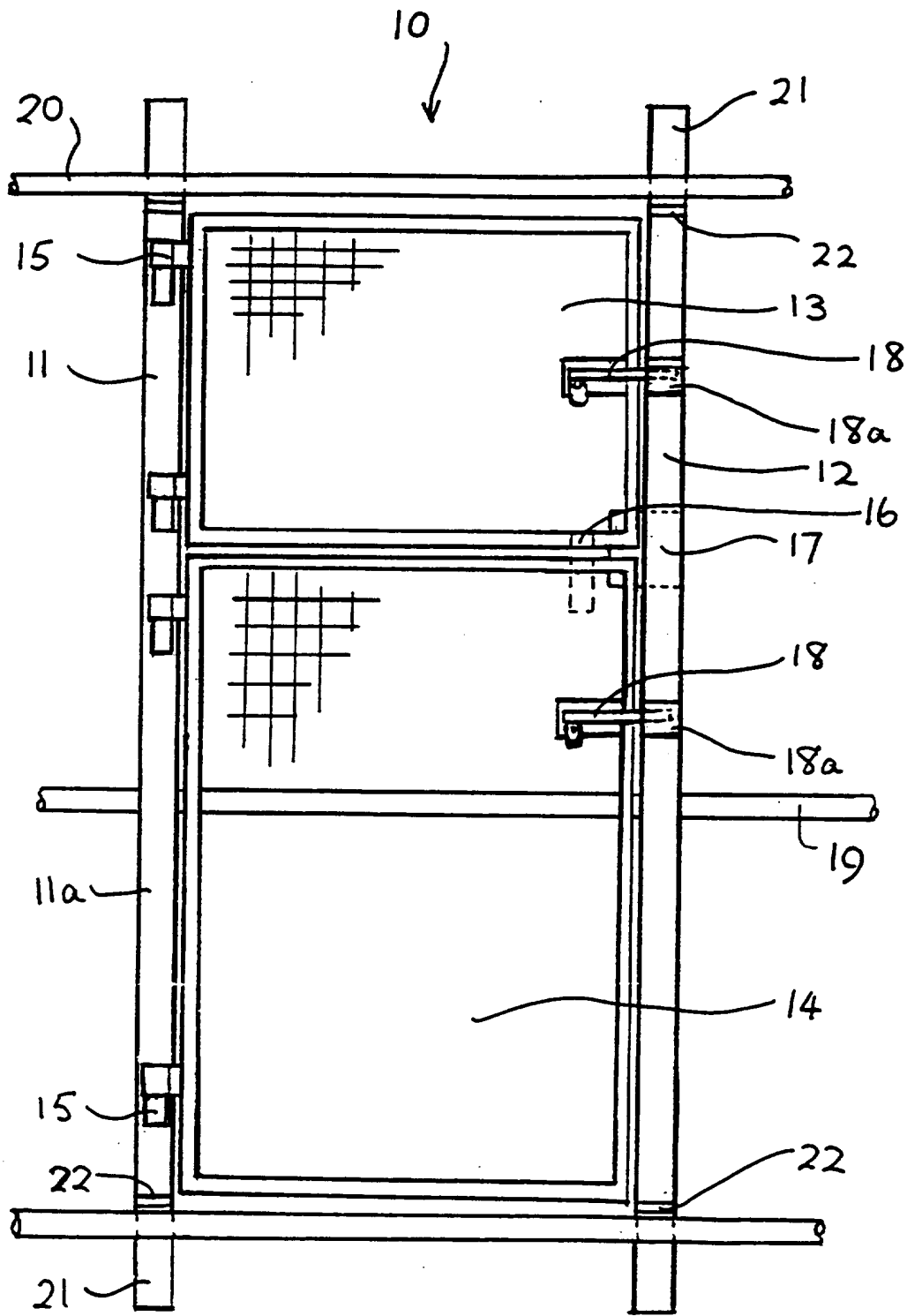


FIG. 1

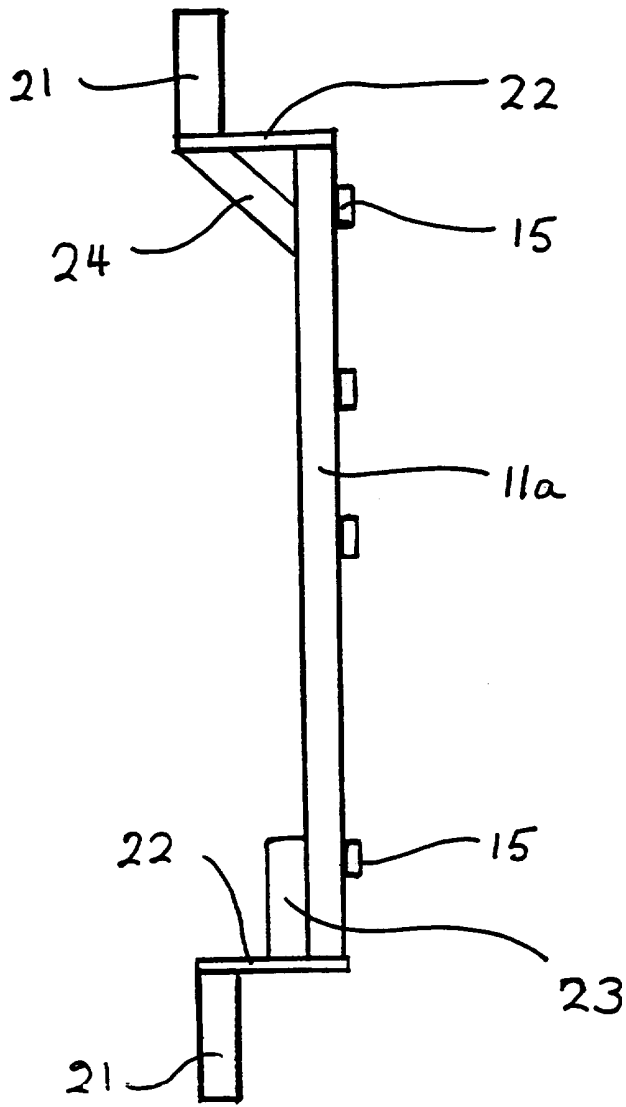


FIG. 2

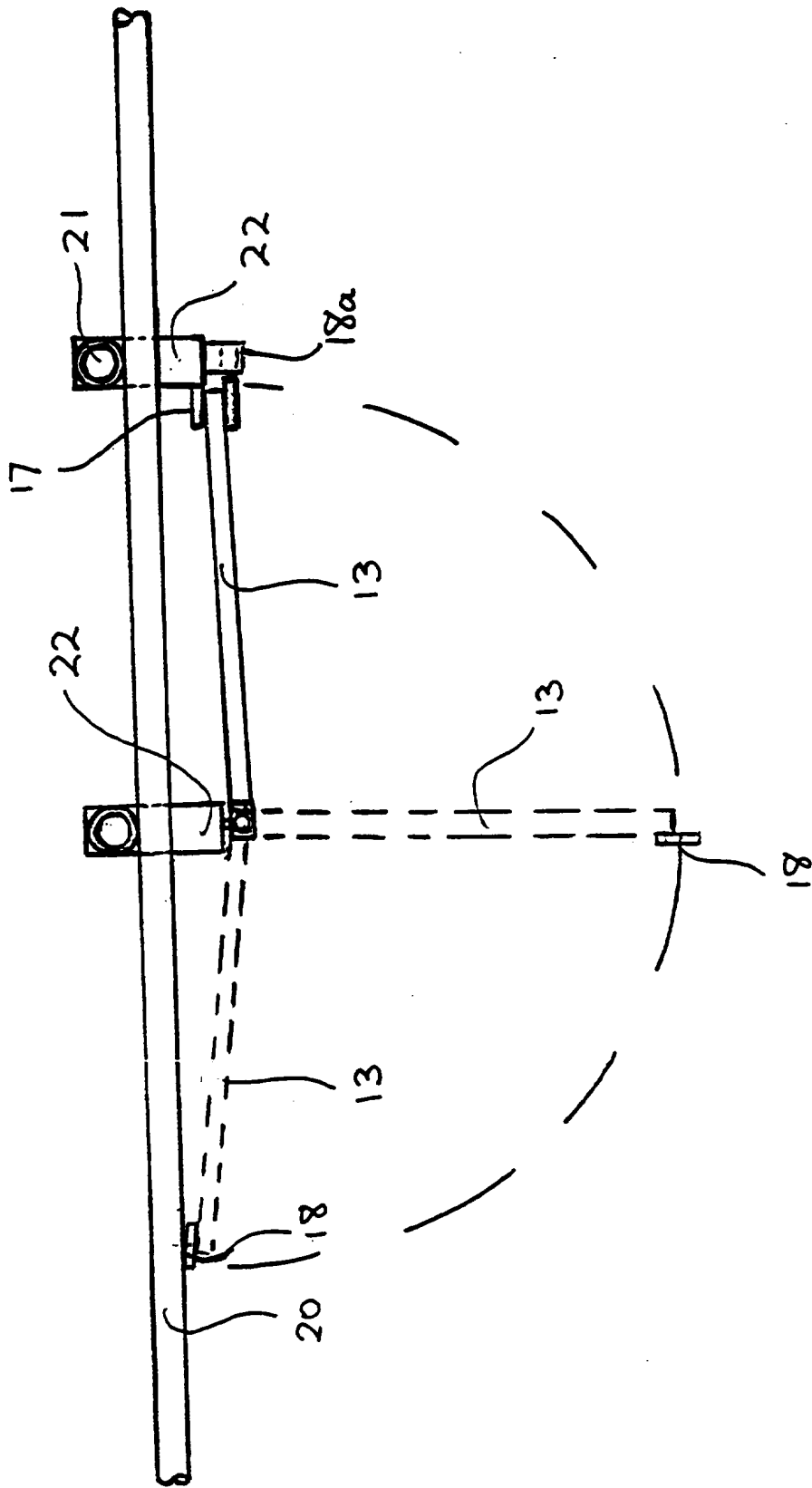


FIG. 3

SAFETY GATE

This invention relates to safety gates especially for use on scaffolding in combination with hoists.

Where hoists are used with scaffolding it is a safety requirement that the landings or platforms are shielded from the pass of the hoist so that workers cannot unwittingly lean out from the scaffold below a descending hoist. To allow goods or equipment to be loaded on or removed from the hoists, the shielding is replaced by gates which can be opened to allow workers to have access to the hoists for the handling of the goods or equipment. Conventionally, these gates are simply a frame enclosing a wire mesh barrier, the upper member of the frame bearing sleeves, optionally with wheels or rollers therein, through which a scaffold tube is inserted; the frame is thus able to slide along the scaffold tube from which it is suspended. Thus, the length of scaffold tube adjacent the gate, that is corresponding to the pass of the hoist and extending on one side thereof, has to be clear of fittings so as not to impede the movement of the gate along the tube. Additionally, a range of frames of different heights should be provided, since the required height is determined by the dimensions between the scaffold tube from which the gate is suspended and the platform.

An alternative safety gate has been proposed using a rigid substantially rectangular static frame which can be incorporated in scaffolding during erection by virtue of female parts provided on the upper and lower frame members for the insertion of scaffold tubes therein. The gate is mounted within the frame and is hinged to the

frame on one side. Two gates of the stable door type are generally provided. The gates may open inwardly, that is across the scaffolding platform, or outwardly, that is away from the scaffolding platform, depending on the orientation of the frame in use. Naturally, outward opening is undesirable as there is a risk of a worker falling from the scaffolding when reaching out to close the gate. The framework itself extends over part of the scaffolding platform and thus constitutes an obstruction. Further, the lower member of the frame constitutes an obstacle at the bottom of the gate portal particularly where the object being removed from the hoist is, for example, in a wheel barrow. Moreover, the use of a rigid frame means that the height between scaffolding poles, and hence between the decks, is determined by the height of the frame. Additionally, such frames are heavy and unwieldy and cannot readily be fitted to pre-erected scaffolding.

It is therefore an object of the present invention to provide a safety gate which does not present an obstacle on the scaffolding platform and which is easily installed. Ideally, the safety gate can be installed by one man.

The invention provides a safety gate assembly for mounting on scaffolding, the assembly comprising one or more gate supports and at least one gate, the or each gate support comprising gate engagement and mounting portions in which the axes of the respective portions are mutually offset.

The axially offset portions of the gate supports allow the supports to be mounted externally of the scaffolding while the gates are able to open inwardly. The gate

supports do not therefore cause an obstruction to the passage of goods or equipment between the hoist and the scaffolding platform.

Generally, two gate supports are provided, preferably in the form of gate posts. The gate engagement portion of one support includes gate connection means, and the engagement portion of the other may include gate retaining means. The gate connection means preferably allows the gate to pivot relative to the support; for example, where the support comprises a post, the gate may be hinged to the gate engagement portion such that the gate is able to pivot through approximately 180° between the open and closed positions, whereby it can lie adjacent the inner side of the scaffolding in the open position. Conveniently, pindle-type hinges may be used to facilitate assembly of the gate *in situ*. The gate retaining means keeps the gate in the closed position and in a simple form may comprise slidable bolts carried by the gates for engagement with keepers carried by the support. Desirably, the support which includes the retaining means has stop means such as a plate to prevent the gate from opening outwardly.

Preferably, two gates are provided, such as of the stable door type. That is, upper and lower gates are provided of which the upper gate is usually smaller. Optionally, the gates are releasably connected to one another for independent or simultaneous movement; preferably, the gates are provided with means to permit the lower gate to be opened independently of the upper gate and to allow the upper gate to be opened either in concert with the lower gate or when the lower gate is already open, but not to be opened when the lower gate is closed.

Preferably, the mounting portion of the gate support is attachable to scaffolding tubes by means of conventional clamps or other means for fixing two scaffold tubes together, thus eliminating the need to use specialised connectors. The mounting portion may be axially offset from the gate engagement portion, for example, by bending one end of the support into a swan-neck type arrangement. Alternatively, the support may be fabricated from discrete mounting and gate engagement elements with a flange or plate secured at each end of the mounting element and carrying the engagement elements in axially offset relationship. Such a flange or plate may be reinforced, for example, by the provision of cross-braces or webs. Preferably, the reinforcement portion which would be lowermost in use is adapted to receive a toe board in abutment thereto.

In use, two gate supports are erected on a scaffold structure, the mounting portions being located on the outside of the scaffolding and held in place on a scaffold tube by conventional fixing means and the engagement portion being to the inside of the scaffolding. The gates are then mounted on the gate connection means and may be fastened closed by the gate retaining means.

Embodiments of the invention will now be described by way of example with reference to the accompanying drawings, of which

Figure 1 shows schematically a front view of a safety gate assembly according to the invention attached to scaffolding, from the point of view of a person standing on the scaffolding boards;

Figure 2 shows a side view of a gate post of the assembly of Figure 1, and

Figure 3 shows schematically, in plan view, the opening of the gate.

With reference first of all to Figure 1, a safety gate assembly, generally indicated 10, comprises two gate posts 11, 12 and two gates 13, 14. The gates 13, 14 are mounted on the gate post 11 by hinges 15. A bar 16 is welded to the upper gate 13 and projects downwardly from the front thereof, to prevent the upper gate 13 from being opened inwardly without the lower gate 14. A stop plate 17 is welded to gate post 12 to prevent either gate from opening outwardly. Optionally each gate has a conventional bolt 18 which engages with keepers 18a mounted on gate post 12, to secure the gates in the closed position. Upper and lower scaffold tubes 20 and handrail 19 are shown as part of the scaffolding structure.

The upper and lower ends 21 of each gate post 11, 12 are clamped to the front of scaffold tubes 20 by means of conventional clamps (not shown).

Figure 2 shows the gate post 11 with housings for the hinges 15. The gate post 12 corresponds except that the housings are replaced by the keepers 18a. The upper and lower ends 21 of the posts are axially offset in relation to the central part 11a by virtue of plates 22 which connect the ends to the central part in a cranked arrangement. The lower plate 22 has a web which conveniently allows for a toe-board (not shown) to be placed against it. The upper plate 22 has a cross-brace 24 which increases the strength and rigidity of the gate

post.

As can be seen in Figure 3, since the ends 21 of the post lie outside the scaffolding, opening of the gates is not impeded by the gate posts and the gates are able to be opened through at least 180°.

In use, the assembly 10 is erected *in situ*. The gate posts 11, 12 are connected from the outside to scaffold tubes 20 by means of clamps, the distance between the gate posts corresponding to the width of the gates. The height of the gates may be varied within predetermined safety limits by using gates of different heights. The gates are suspended by the hinges and are fastenable in the closed position. The ends 21 of the posts are sufficiently long to enable them to be attached to scaffolding poles of variable vertical spacing, thereby rendering the assembly usable, without adaptation, on scaffolding structures of different dimensions in terms of the distance between adjacent floor levels.

CLAIMS

1. A safety gate assembly for mounting on scaffolding, the assembly comprising one or more gate supports and at least one gate, the or each gate support comprising gate engagement and mounting portions in which the axes of the respective portions are mutually offset.

2. A safety gate assembly according to Claim 1, including two gate supports, the gate engagement portion of one support including gate connection means and the engagement portion of the other including gate retaining means.

3. A safety gate assembly according to Claim 2, in which the gate connection means allows the gate to pivot relative to the support.

4. A safety gate assembly according to Claim 3, in which the gate is hinged to the gate engagement portion for pivot movement through approximately 180° between the open and closed positions, whereby it can lie adjacent the inner side of the scaffolding in the open position.

5. A safety gate assembly according to any preceding claim, in which pintle-type hinges are used to support the at least one gate on the gate engagement portion of the gate support.

6. A safety gate assembly according to any preceding claim, in which one of said supports includes stop means to prevent the gate from opening outwardly.

7. A safety gate assembly according to any preceding claim, including upper and lower gates of the stable door

type.

8. A safety gate assembly according to Claim 7, in which the gates are releasably connected to one another for independent or simultaneous movement.

9. A safety gate assembly according to Claim 8, in which the gates are provided with means to permit the lower gate to be opened independently of the upper gate and to allow the upper gate to be opened either in concert with the lower gate or when the lower gate is already open, but not to be opened when the lower gate is closed.

10. A safety gate assembly according to any preceding claim, in which the mounting portion of each gate support is axially offset from the gate engagement portion by fabrication from discrete mounting and gate engagement elements with a flange or plate secured at each end of the mounting element and carrying the engagement elements in axially offset relationship.

11. A safety gate assembly according to Claim 10, in which the flange or plate is reinforced by the provision of cross-braces or webs.

12. A safety gate assembly according to Claim 11, in which the reinforcement portion which is lowermost in use is adapted to receive a toe board in abutment thereto.

13. A safety gate assembly substantially as herein described with reference to and as illustrated in the accompanying drawings.



Application No: GB 9518907.2
Claims searched: 1-13

Examiner: Richard Jupp
Date of search: 27 November 1996

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK CI (Ed.O): E1J: JA, JB, JCG, JDG, JGA, JGB, JGS, JGX, JHX, JXX
Int CI (Ed.6): E04G: 1/26
E06B: 1/00, 1/02, 1/04, 3/26, 5/00, 5/10, 5/11,
7/00, 9/02, 11/00, 11/02, 11/04
Other: Online: World Patents Index

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X, Y	GB 2247269A (SPS (HOLDINGS) LIMITED) see fig.1 wing support means 18 and wing support mounting means 20	X:1-3,6 Y:4
X, Y	GB 2142358A (JOLPINE LIMITED) see fig.2 wing support means 5 and wing support mounting means 16	X:1-3,5,6 Y:4
X, Y	EP 0141623A2 (ICC CONSTRUCTION LIMITED) see figure, wing support means 1 and wing support mounting means 8	X:1-3,6 Y:4
Y	US 4869343A (CARL ANDREWS) see fig.1 door 3 in bracket 72 (fig.3)	4
Y	US 4729149A (HACKNEY WHOLESALE) see fig.4 gate post 17 in bracket 55	4
X, Y	US 4702036A (STANLEY A. JOHNSON) see fig.2 wing support means 10 and wing support mounting means 4	X:1-3,5,6 Y:4

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.



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Claims searched: 1-13

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Date of search: 27 November 1996

Category	Identity of document and relevant passage	Relevant to claims
X,Y	US 4565261A (JOSEF MAIER) see fig.1 wing support means 13 and wing support mounting means 1c	X:1-3,5,6 Y:4
Y	US 4124954A (DANIEL J. REDICK) see fig.1 door 1 hinges 5,6	4

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.