

Oct. 26, 1965

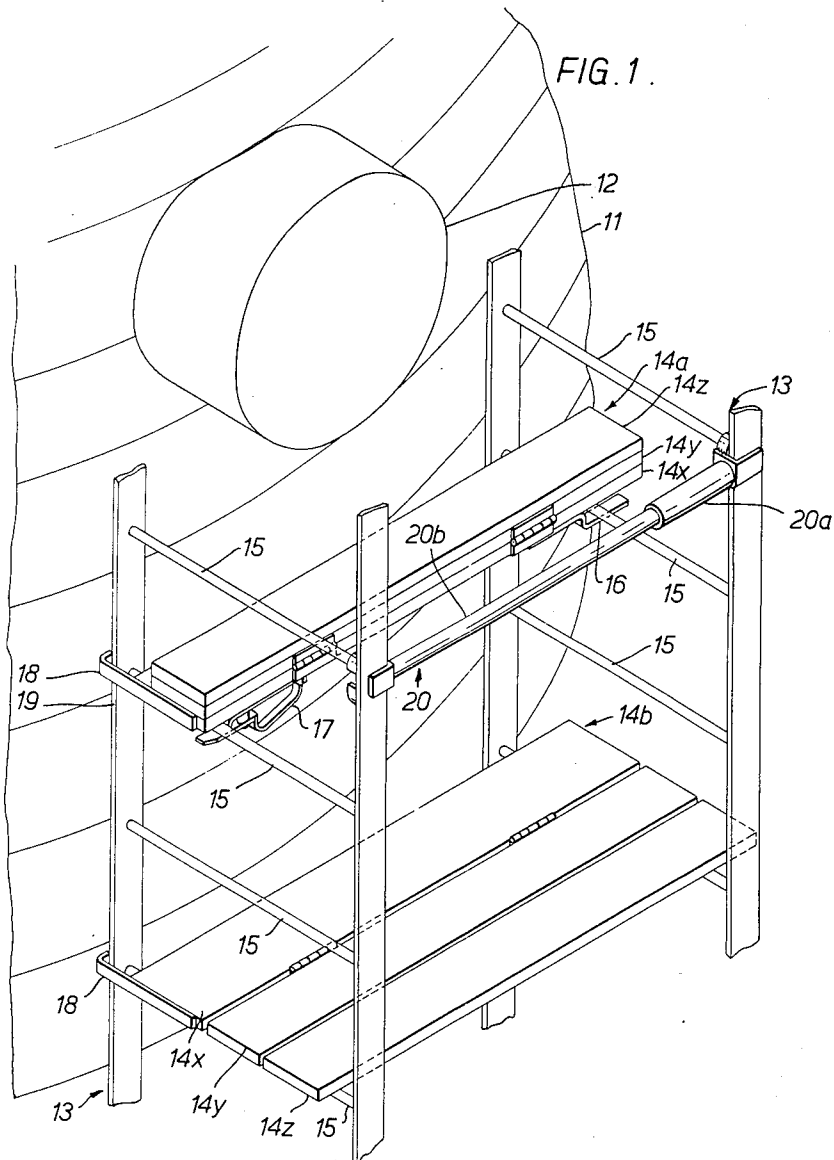
M. J. TUCKER ETAL

3,213,964

PLATFORMS

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4 Sheets-Sheet 1



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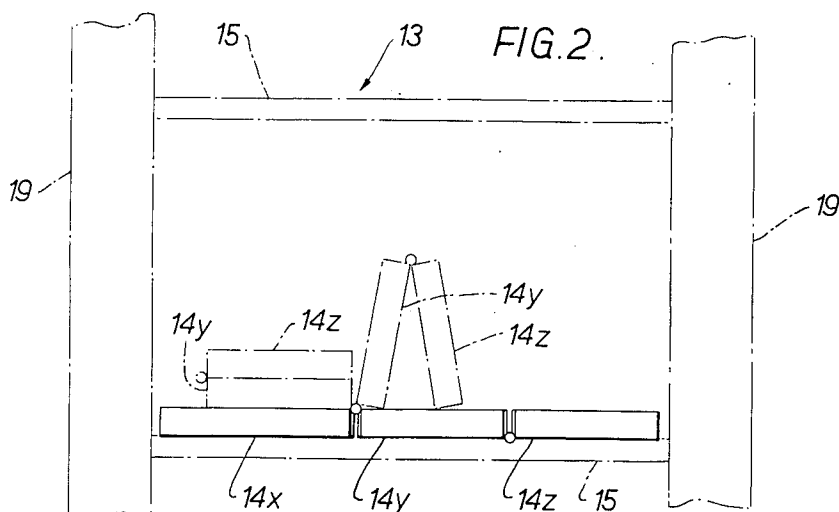


FIG. 7.

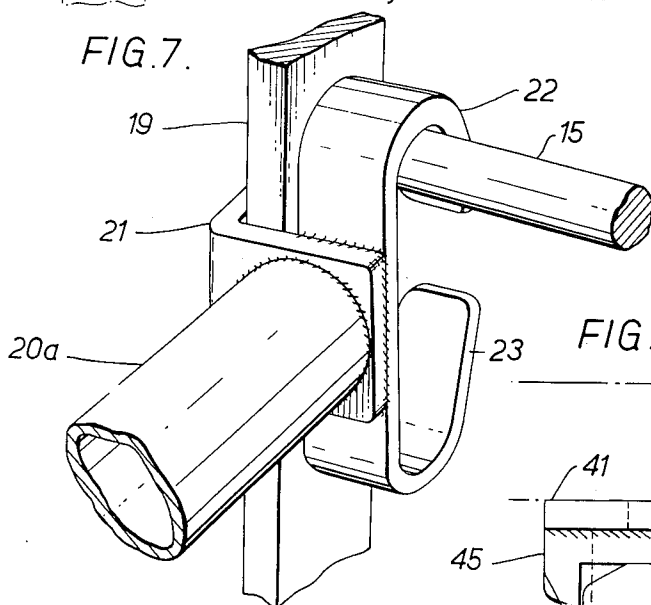
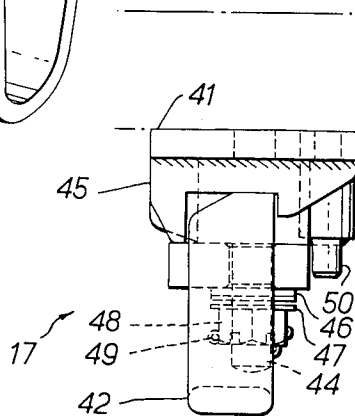


FIG. 6.



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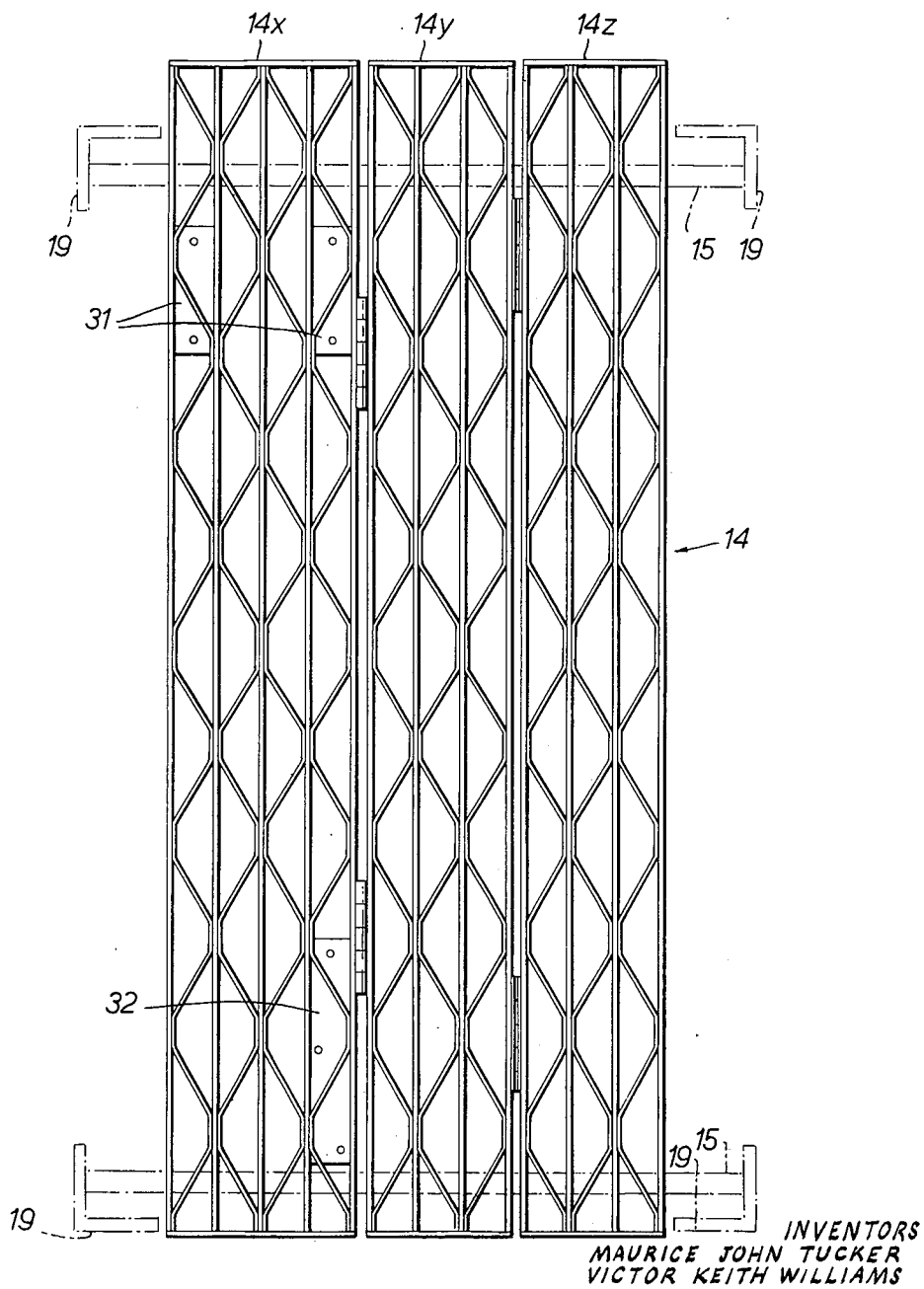
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FIG. 3.



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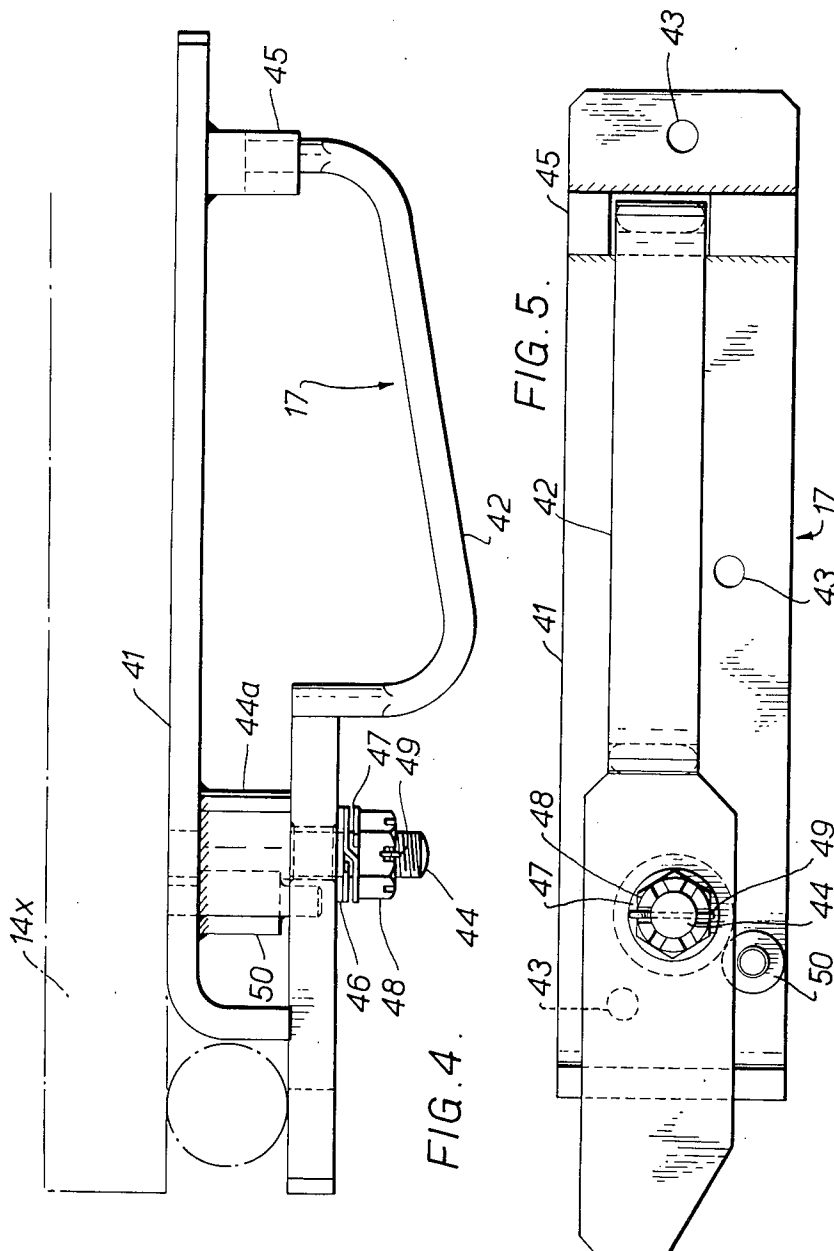
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3,213,964 PLATFORMS

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Claims priority, application Great Britain, Jan. 17, 1962, 1,711/62

4 Claims. (Cl. 182—119)

This invention relates to platforms and more particularly to platforms which may be used to span two spaced apart substantially parallel members.

In oil refineries there are many tall tower-like structures which are used in the processes of refining oil. These towers are divided internally into sections and each section has a manhole to allow men to enter the sections for inspection and maintenance work. Formed into the tower structures are vertical ladders to provide access to the manholes. Usually there are two ladders provided for each tower and they extend up the tower and are positioned parallel to one another, with the rungs substantially normal to the tower surface, one on each side of the manholes. When access to the manholes is required it is presently achieved by placing wooden scaffolding planks across the appropriate corresponding rungs of the two ladders and then lashing them safely in position with wire ropes. Access to the selected manhole is achieved with difficulty by the present arrangements and if access is subsequently required to manholes higher up or lower down the tower with the scaffolding in position it is an arduous and dangerous climb around the scaffolding. It is also a lengthy and therefore expensive task to lash the scaffold planks in position.

It is an object of the present invention to overcome the above difficulties.

According to the present invention, we provide a platform for use in spanning two spaced apart substantially parallel members, comprising a first plank member having means adapted to secure the first plank member in position across two spaced apart members, and a second plank member hingedly attached to the first plank member whereby, when the platform is located in a position for use, the second plank member is capable of being folded so that the plank members are superimposed one upon the other to reduce the obstruction caused by the platform.

Preferably at least a third plank member is provided, the third plank member being hingedly attached to the second plank member whereby the platform can be folded concertina-like so that the plank members are superimposed upon each other to reduce the obstruction caused by the platform.

Conveniently the plank members each comprise a sheet of open tread flooring preferably fabricated of aluminum or aluminum alloy.

The securing means preferably comprises at least one bracket fixed near to one end of the first plank member adapted to accommodate one of two spaced apart members slidably between the bracket and the plank member, and a latch fixed near to the other end of the first plank member adapted to slidably latch the other of the two spaced apart parallel members between the plank mem-

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ber and the latch in its operable position, whereby the platform can be held in position spanning a pair of spaced apart parallel members irrespective of the cross sectional shape of the members and whereby the distance between the members can be varied between predetermined limits.

The latch is conveniently of the pivoted spring-loaded type.

To afford further fixing of the platform in use, an angle bracket may be fixed to the first plank member arranged to co-operate with a support member which supports, and is substantially normal to, one of two parallel spaced apart members which the platform may be used to span.

When the platform is in position for use between two ladders, a safety bar may be provided between the ladders so that a person standing on the platform has a rail to hold for support.

Conveniently the bar may be telescopic and have a claw-like fitting at each end.

In order that the invention may be more clearly understood a specific embodiment will now be described, by way of example only, with reference to the accompanying drawings, in which:

FIGURE 1 shows a perspective view of two identical platforms, one open and one folded, in position between two ladders on a tower.

FIGURE 2 shows an end elevation of one of the platforms of FIG. 1 showing how it folds in concertina-like fashion.

FIGURE 3 shows a plan view of the platform of FIG. 2 fabricated of open tread flooring.

FIGURE 4 shows a side elevation on enlarged scale of the spring loaded latch shown on the closed platform of FIG. 1.

FIGURE 5 shows a plan view of the spring loaded latch of FIG. 4.

FIGURE 6 shows an end elevation of the spring loaded latch of FIGS. 4 and 5.

FIGURE 7 shows a perspective view on a larger scale of one end of a safety bar.

Referring firstly to FIGURE 1 there is shown part of a fractionating column 11 with a manhole 12 for inspection and maintenance. Positioned on each side of the manhole and extending up the column 11 are ladders 13 (part only of each ladder shown). Across corresponding pairs of rungs 15 of the ladders 13 are platform 14a and 14b shown folded and unfolded respectively.

Each of the platforms comprises three plank members 14x, 14y and 14z. Plank member 14x is slidably secured to the rungs 15 by two brackets 16 at one end (one only shown on platform 14a) and by a spring loaded latch member 17 at the other end. Plank members 14y is hingedly attached to member 14x to allow it to be folded onto member 14x and member 14z is hingedly attached to member 14y to allow it to be folded onto member 14y.

When the platform is in use it is placed in position spanning the ladders 13 as shown by platform 14b. When a person wishes to climb up or down one of the ladders past the platform 14b, the latter can be folded as illustrated in FIG. 2 to a position with a member 14y superimposed upon member 14x and member 14z superimposed upon member 14y. The platform is then in a position as illustrated by platform 14a whereby a person can easily climb up or down either of the ladders past the platform 14a.

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An angle bracket 18 is fixed to the same end of member 14x as the latch 17, the bracket 18 embracing the stringer 19 of the ladder 13 to keep the platform from sliding along the rungs between the stringers.

There is also shown in FIG. 1 a telescopic safety bar 20, comprising a cylindrical member 20a and a further cylindrical member 20b which slidably fits inside member 20a. Welded to each end of the bar 20 is a claw-like arrangement (see FIG. 7) comprising an angle bracket 21 one arm of which is welded to the bar and the other free arm of which is adapted to engage the stringer 19 of the ladder to maintain the bar from moving in a direction along the rung 15 away from the stringer 19, an inverted "U" shaped member 22 one arm of which is welded to the arm of angle bracket 21 which is fixed to the bar, the member 22 hooking over the rung 15 to hold the bar in position and also engage the stringer 19 on the opposite side to bracket 21, and finally an upright "U" shaped member one arm of which is a continuation of, and may be formed integrally with, the arm of member 22 which is welded to bracket 21. The member 23 is included in the claw-like member as a safety device, the free arms of members 22 and 23 being spaced apart a distance which is only slightly larger than the diameter of the rung 15 so that a determined effort must be made to disengage the bar from the ladder, and so that an accidental knock upwards only causes the member 23 to engage with the rung 15 and then the bar falls back to its proper position. The bar is preferably fabricated of steel as it needs to be robust and it is its own weight that holds it in position.

Referring now to FIGURE 3 there is shown a plan view of a platform 14 fabricated of open tread flooring preferably of aluminium or aluminium alloy. The use of open tread flooring provides an extremely strong structure with far less weight than with a solid structure, a typical weight for such a platform is 22 lbs. This allows a man to carry the complete platform to a desired position up a ladder in one journey whereas several journeys are needed to complete a platform of heavy wooden scaffold boards.

Mounting plates 31 and 32 are welded to the member 14x to allow fixing of brackets 16 and latch 17 respectively to the platform.

The method of securing the platform in position between two ladders comprises the following steps: with the platform folded, engage the required rung of the first ladder slidably between the platform and the brackets 16; allow the platform to span the required corresponding rungs and engage the bracket 18 with the stringer of the appropriate ladder; actuate the latch member 17 to latch the required rung of the second ladder between the platform and the latch member; and then finally unfold the platform so that all the plank members rest on the corresponding rungs of the two ladders. The use of the brackets 18 and latch 17 allow the platform to be fitted to ladders having any rung cross-section provided they will pass between the platform and the securing members, and also the platform may be used to span ladders which are varying distances apart provided that when the platform is in position the rungs come between the platform and the securing members.

Referring finally to FIGURES 4, 5 and 6, there is shown, in greater detail, the latch 17 of FIGURE 1. The latch comprises an "L" shaped base member 41 and a combined handle and latching member 42 rotatably fixed to the base member 41. The base member 41 has three fixing holes 43 (FIG. 5) which cooperate with holes on mounting plate 32 whereby the latch 17 can be bolted to the mounting plate 32.

The handle 42 is rotatably mounted on a spindle member 44 which is formed with a wide collar 44a at one end which is welded to the base member 41. The length of the collar 44a is the same length as the shorter arm of the base 41. The spindle 44 passes through a hole in the

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handle 42 so that the handle rests on the collar 44a, on the end of the shorter arm of the base member and on a stepped retaining member 45. The handle 42 is held in this position by also placing on the spindle a washer 46, a spring washer 47 and a castellated nut 48, the spindle having a screw thread to accept the nut. The castellated nut 48 is held in position and kept from rotation by a split pin 49.

When in the latched position, the handle 42 is kept from rotating by the stepped retaining member 45. When it is required to release the latch 17, the handle 42 is pulled away from the base member 41 at the retaining member end, against the action of the spring washer 47, the handle pivoting on the end of the short arm of the base member. When the handle 42 is clear of the retaining member 45, it is rotated so that the platform can be lifted off the rung upon which it is resting, the corner 42a being partly cut away so that the handle need not be rotated 180° before the platform can be lifted clear of the rung.

A stop 50 is welded to the base member 41 so that the handle can be rotated only one way. The one way rotation is such that the handle 42 when rotated back to the latched position snaps back into position in the retaining member 45 against the action of the spring washer 47 due to co-operating chambers on the handle 42 and the retaining member 45.

The platform described above can be used on its own to bridge two spaced apart members or can be used to supplement a platform fixed in position across two spaced apart members.

We claim:

1. A platform for use in spanning two substantially parallel members spaced apart a predetermined variable distance, comprising: first, second and third plank members; said second plank member being hingedly attached to said first plank member and said third plank member being hingedly attached to said second plank member, all in such manner that the platform can be folded concertina-like whereby said plank members are super-imposed upon each other; means adapted to slidably secure said first plank member in releasable locked position transversely of said two spaced apart members, said means comprising at least one open-ended bracket member and a latch member; said bracket member being fixed near one end of said first plank member and forming therewith an open-ended slot for receiving and transversely slidably accommodating one of said two spaced apart members; said latch member being fixed near the other end of said first plank member and having a handle element mounted in spaced relationship to said first plank member, said handle element pivotally movable relative to said first plank member for forming therewith an open-ended slot adapted to receive and transversely slidably releasably latch the other of said two spaced apart members, whereby said platform is releasably locked in position spanning said two spaced apart members.

2. A platform as claimed in claim 1 including an angle bracket fixed to said first plank member arranged so as to cooperate with a support member which supports, and is substantially normal to, one of the two spaced apart members, whereby the platform can be more rigidly secured in position spanning the two spaced apart members.

3. A platform as claimed in claim 1 wherein each of said spaced apart members is secured to an associated support member and including a safety bar for use with said platform, said safety bar having a claw-like fitting at each end, each fitting comprising a first arcuate member adapted, in use, to be hooked over one of said spaced apart members adjacent its supporting member, a second arcuate member arranged below the first arcuate member in such manner that, in use, it will engage the spaced apart member if the safety bar is accidentally knocked upwards and a further member arranged, in use, to engage the supporting member on its face opposite the face carry-

ing the spaced apart member to maintain the first arcuate member adjacent the supporting member.
4. A safety bar as claimed in claim 3 whose length can be adjusted telescopically.

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