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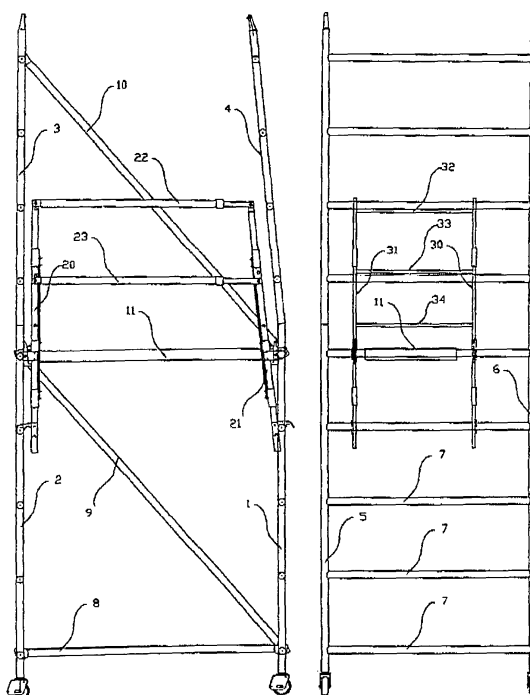
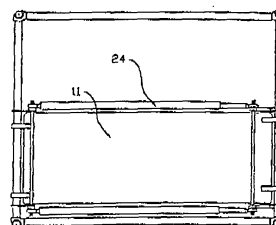
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(54) **Guardrail attachment means for scaffolding towers**

(57) A guard rail assembly which may be releaseably attached to a scaffolding structure incorporating remotely releasable hook (55) devices and hand grips (63,64) such that the guard rail (20-23) assembly may be easily repositioned within the scaffolding structure to provide a safely guarded perimeter to the scaffolding platform at all times. The sliding handgrips may be used to carry the weight of the guardrail assembly (20-23) such that the assembly may be relocated on the scaffolding without having to release hold of the handgrip (63,64) and such that on lowering the guardrail frame assembly into the desired final position the locking device may be reapplied in one movement sequence only releasing the handgrip (63,64) when the final locked state is achieved.

Fig. 1



Description

[0001] Scaffolding has long been used in industry for gaining access to high and awkward locations. Whilst scaffolding provides a safe environment for operatives to work this is not always the case for the persons erecting and dismantling scaffolding structures. Various systems exist for providing temporary safety rails guard rails in advance of the erection of the scaffolding tower but they are often difficult to install and adjust.

[0002] This invention relates to a releasable attachment system whereby the guardrail system may be easily adjusted within the scaffolding tower.

[0003] The guard rail system is independent from the scaffolding structure and is arranged such that the scaffolding can be erected and dismantled whilst within the perimeter of the guard rail system.

[0004] Once in place on the scaffold at ground level, the guard rail system may be progressively relocated to higher levels in the scaffold tower providing a safe place of work for the scaffolder to erect further equipment and to erect the permanent guardrail system. During dismantling the safety rail system may be progressively relocated to lower levels within the scaffold tower to provide a safe working environment for the operatives.

[0005] When the scaffold tower is erected to the required height, it is not necessary to remove the upper guardrail system which may be left in place as a permanent safety system until such time as dismantling of the scaffolding is performed.

[0006] The invention will now be described with reference to the following drawings in which:-

Fig.1 shows a front elevation, side elevation and plan view of a typical scaffolding tower together with the guardrail system.

Fig.2, & Fig.3, show side elevations of the guardrail system used in the vertical mode incorporating the locking and release mechanism.

Fig.4 shows a side elevation of the guardrail system used in the angled mode incorporating the locking and release mechanism.

[0007] The Invention comprises of scaffolding frames 1-4 which incorporate vertical frame members 5 and 6 and multiple, equally pitched, horizontal frame members 7 forming a ladder like structure. These frames together with tie members 8 and bracing members 9 and 10 are coupled together using releasable hook members to form a scaffolding structure. Platform units 11 may be positioned on any rung position to provide a level working platform. The platform must be provided with a safely guarded area for the scaffolding erector to work. This is achieved by attaching a guard rail system comprising of end frames 20 & 21 and telescopic guard rails 22 & 23 which are pivotally and releasably attached to the end frames. This 'guard rail assembly' may be attached to the scaffolding rungs by remotely releasable hook devices.

es.

[0008] The guard rail end frames 20 & 21 comprise upright members 30 & 31 together with upper and intermediate horizontal members 32 & 33 together with a spacing member 34 which connect the upright members together. Releasable couplings 35 are incorporated near to the upper and intermediate rail positions for the releasable attachment of the telescopic guard rails. Each end frame upright member incorporates a lower hook assembly 36 incorporating twin downward facing receiving apertures 37 & 38 which are dimensioned such that they are a close fit around the scaffolding frame rung members.

[0009] Additionally third and fourth receiving members 39 incorporating horizontally facing receiving apertures 40 are attached to the end frame members at such a position as to present the apertures at a position relating to the position of a frame horizontal member. Hook member 51 are attached to each of the third and fourth receiving members and incorporates an abutment portion 52 and a limiting portion 53 and is pivotally attached to the second receiving member such that the end of the hook member 55 partially blocks the receiving aperture. The end frame upright members each incorporate a sliding member 61 which is located around the upright frame member and incorporates blocking pieces 62 and pairs of operating hand grips 63 and 64 similarly located around the vertical member which are connected to the sliding member by a linking member 65 such that when either the upper or lower hand grips are raised or lowered the sliding member incorporating the blocking piece is raised in unison.

[0010] Raising of the blocking piece releases the rotating hook such that the hook is free to rotate allowing the restriction in the horizontal receiving aperture to be removed, lowering the blocking device causes the blocking piece to push onto the surface 62 causing the hook to rotate into the blocking position thus preventing the release of the frame from the scaffolding.

[0011] To adjust the position of the guardrail system within the tower structure, the scaffolder positions himself in a position within the permanent guarding on the tower and with two hands grips either the upper or lower hand grips whichever is most convenient. Raising both mechanisms simultaneously causes both hook blocking piece to be raised (arrow 'A'), by then drawing the end frame towards himself rotationally (arrow 'C') the hook members are caused to rotate (arrow 'B') opening the jaws of the horizontal receiving aperture. The end frame and attached handrails may be lifted from the tower and may be repositioned at a higher or lower position within the scaffold.

[0012] The action of holding the handgrips upwards maintains the disengagement of the blocking piece and causes the complete end frame assembly to be carried by the mechanism. To relocate the frame at a new position the lower hook jaws 37 are reengaged over the required rung position and the frame is pushed away from

the operator causing the horizontal apertures to re-engage around the frame rung member.

[0013] Lowering the handgrips causes the blocking piece to cause the rotating hook to rotate to the locking position thus securing the end frame at a new position.

[0014] In some circumstances it is necessary to install the guardrail end frames at an inclination to the scaffolding tower frames such that further frame members may be installed or removed. This is achieved by locating the alternative lower hook jaws 38 around the scaffolding rung member such that when the end frame is relocated and locked onto the scaffolding frame an angle is formed between the scaffolding frame 4a and the guardrail end frame member.

5. A guard rail system as claimed in any one of the preceding claims, **characterised in that** when the scaffold tower is erected to the required height, the upper guardrail system may be left in place as a permanent safety system until such time as dismantling of the scaffolding.

Claims

1. A guard rail protection system for use on scaffolding **characterised in that** the system comprises at least one lockably releasable hook means, a blocking portion and slidable means with at least one grip so operable that when the grip means is raised or lowered the hook means is rotationally released or locked allowing the restriction in the upper receiving aperture to be applied or released.
2. A guard rail system for use on scaffolding as claimed in, claim 1, **characterised in that** end frames and pivotally connected telescopic guard rails with each guard rail end frame upright member incorporating a lower hook assembly incorporating at least one downward facing receiving aperture and incorporating at least one horizontally facing receiving aperture at such a position as to present the apertures at a position relating to the position of a frame horizontal member.
3. A guard rail system as claimed in any one of the preceding claims, **characterised in that** the end frame member may be attached in an angularly situated position in relation to the scaffolding.
4. A guard rail system as claimed in any one of the preceding claims, **characterised in that** the sliding handgrip may be used to carry the weight of the guardrail assembly such that the assembly may be relocated on the scaffolding without having to release hold of the handgrip and such that on lowering the guardrail frame assembly into the desired final position the locking device may be re-applied in one movement sequence only releasing the handgrip when the final locked state is achieved. When the scaffold tower is erected to the required height, it is not necessary to remove the upper guardrail system which may be left in place as a permanent safety system until such time as dismantling of the scaffolding is performed.

Fig. 1

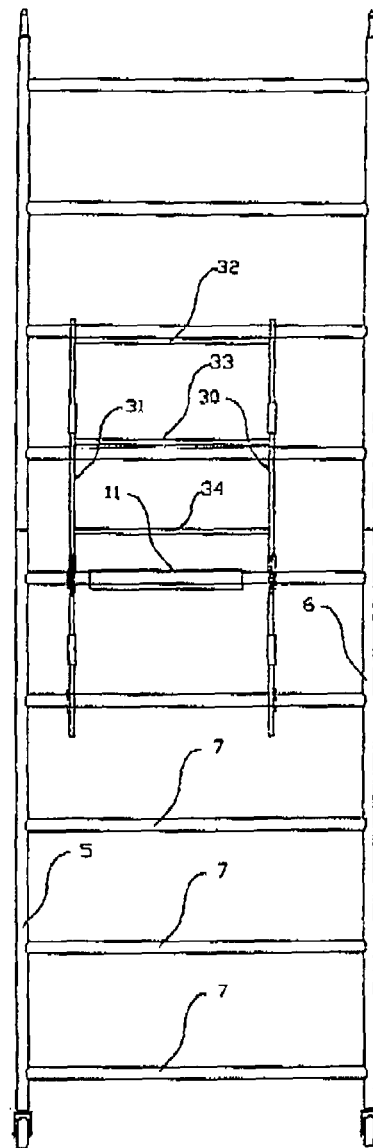
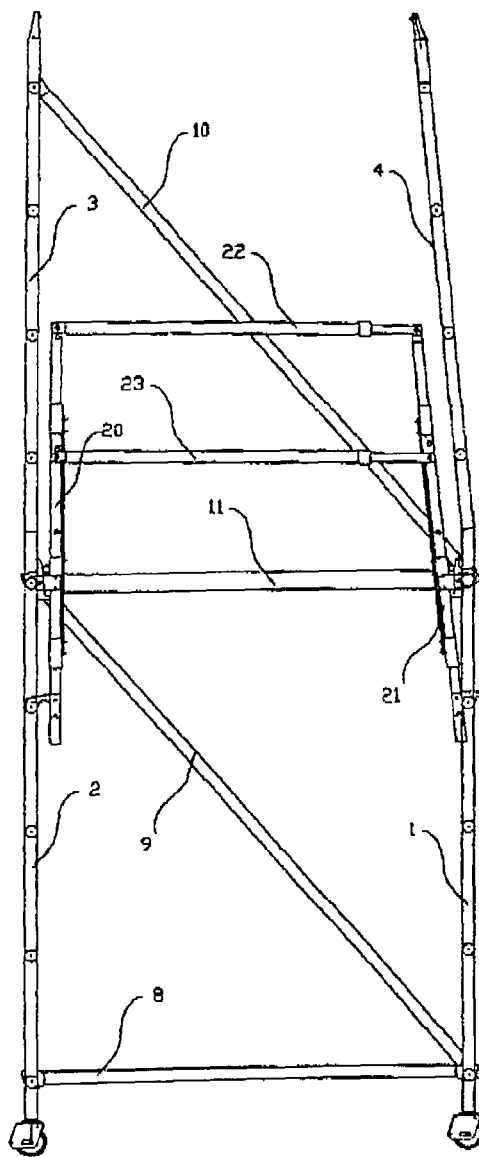
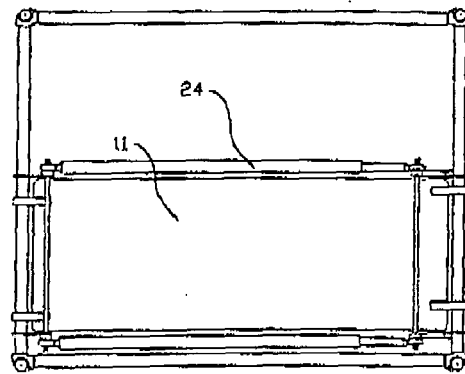


Fig.2

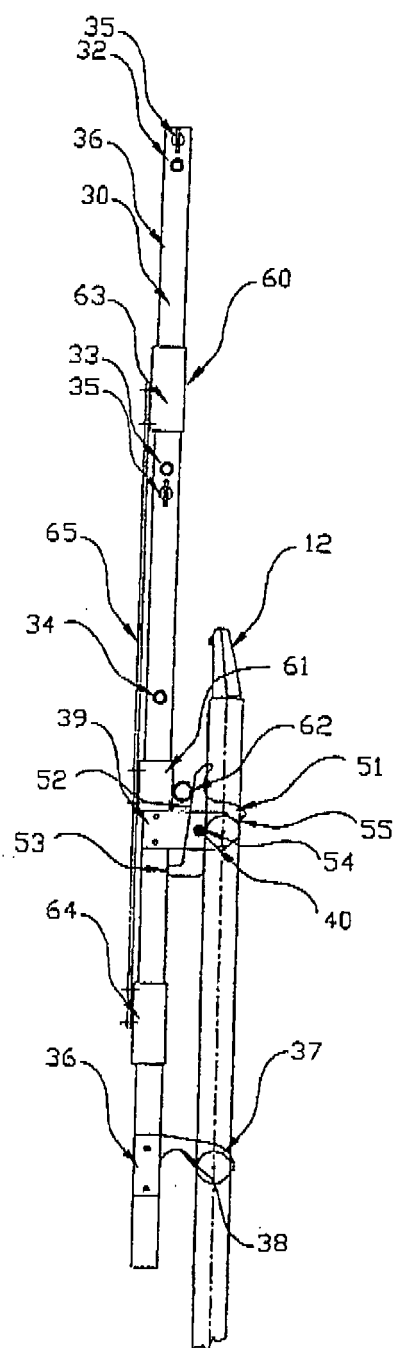


Fig.3

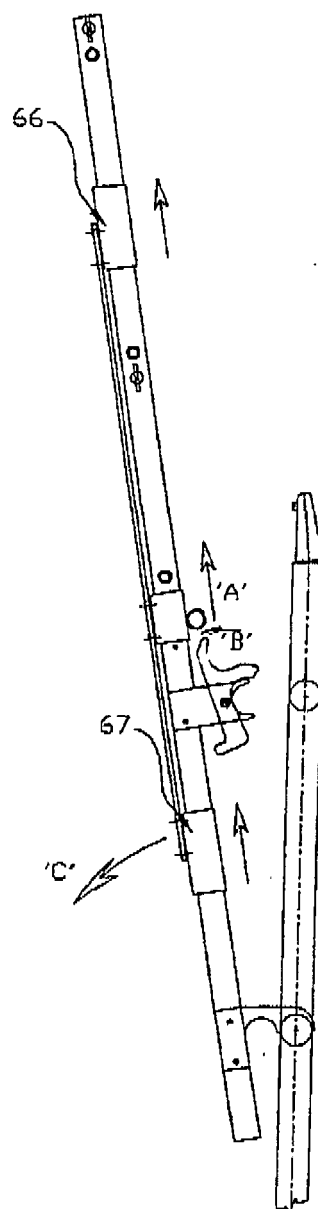


Fig.4

