SCAFFOLD AND SCAFFOLD ASSEMBLY

Field of the Invention

[0001] The present invention relates to scaffolds, and particularly to a scaffladder employed in assembling scaffolds, and to a process of scaffold assembly using the scaffladder.

Background of the Invention

[0002] Scaffolds are employed in building constructions. The commonly used scaffolds include ring lock scaffold, cuplock scaffold and tubular scaffold. For example, a ring lock scaffold usually comprises a plurality of standards with rosettes, ledgers, transoms, braces and deck planks. The space defined between two decks is designated as a lift. A lift usually contains a bottom ledger, a middle ledger, and a top ledger. In an assembled scaffold, the top ledger of the first lift is also the bottom ledger of the second lift.

[0003] Traditionally, scaffolders are exposed to an uncontrolled risk of falling during installing and dismantling scaffolds. The risk exposure is at its highest level prior to the handrails being installed on the deck under construction. Safety harnesses are often offered to personnel, but a safety harness does not prevent falls.

[0004] A dummy deck procedure has been used successfully in past years, but there is a significant manual handling aspect and negative productivity impact introduced.

[0005] Therefore, there is an imperative need to improve the level of safety for scaffolders.

Summary of the Invention

[0006] The present invention provides a scaffladder suitable for being employed in scaffold assembly. In certain embodiments, the scaffladder comprises:

[0007] two longitudinal beams in a parallel configuration;

[0008] a plurality of rungs disposed at regular intervals between the two longitudinal beams;

[0009] an adjustable platform being configured to have an upper surface, a bottom surface, a proximity side being close to the two longitudinal beams, and a distal side being the furthest away from the two longitudinal beams when the adjustable platform is extended during operation, where the adjustable platform is pivotally or releasably disposed at middle section of the two longitudinal beams via a location at or near the proximity side of the adjustable platform, thereby the adjustable platform provides a temporary working bay for a scaffolder when the adjustable platform is extended during operation;

[0010] a support module supporting the adjustable platform during operation, where the support module comprises at least two pairs of legs, each end of the adjustable platform being disposed with one pair of the at least two pairs of legs, where each of the at least two pairs of legs has a first end and a second end, the first end being pivotally or releasably disposed at the bottom surface at a location near the distal side of the adjustable platform, and the second end being equipped with one middle secure means so that the middle secure means releasably secures the adjustable platform onto one of the plurality of rungs or a middle ledger, and a foldable locking beam connecting two legs so that when the adjustable platform is in operation, the foldable locking beam is locked in for secure support; and

[0011] a top secure means disposed at the top section of the longitudinal beams for securing the scaffladder onto a top ledger.

[0012] In certain embodiments of the scaffladder, the plurality of rungs are disposed only in bottom half of the two longitudinal beams.

[0013] In certain embodiments of the scaffladder, the top secure means is a hook.

[0014] In certain embodiments of the scaffladder, the middle secure means are a hook.

[0015] In certain embodiments of the scaffladder, angle between the longitudinal beams and vertical plane of the middle and top ledgers is 74-75 degrees.

[0016] The present invention provides a process of assembling a scaffold. In certain embodiments, the process comprises:

[0017] providing a first assembled lift with a first set of standards, a first set of bottom ledgers, middle ledgers, top ledgers, and a first deck, where the standards are equipped with connecting means, the ledgers are connected with the standards in tandem, and the ground deck is formed by disposing planks on the bottom ledgers;

[0018] providing one or two scaffladders before a deck is being formed on the top ledgers of the first lift, wherein the one or two scaffladders are being secured onto the first deck, one of the first set of middle ledgers, and one of the first set of top ledgers so as to be in operation position;

[0019] disposing a second set of standards on top of the first set of standards by scaffolders standing on the platform of the scaffladders;

[0020] installing a second set of middle ledgers of second lift on the second set of standards by scaffolders standing on the platform of the scaffladders;

[0021] removing the scaffladders when all of the second set of the middle ledgers are installed; and

[0022] installing a second deck onto the first set of top ledgers from below the second deck, wherein an access is created so that the second deck is accessible by a monkey ladder.

[0023] In certain embodiments, the process of assembling a scaffold further comprises:

[0024] installing a second set of top ledgers from the second deck;

[0025] providing one or more scaffladders, wherein the scaffladders are positioned on the second deck to install a third set of middle ledgers by scaffolders standing on the platform of the scaffladders;

[0026] removing the scaffladders when all of the third set of middle ledgers are installed; and

[0027] installing a third deck on the second set of top ledgers.

[0028] The objectives and advantages of the invention will become apparent from the following detailed description of preferred embodiments thereof in connection with the accompanying drawings.

Brief Description of the Drawings

[0029] Preferred embodiments according to the present invention will now be described with reference to the Figures, in which like reference numerals denote like elements.

[0030] FIG. 1 shows a perspective view of the scaffladder in an operation position in an assembled lift in accordance with certain embodiments of the present invention.

[0031] FIG. 2 shows a side view of the scaffladder in an operation position in an assembled lift in accordance with certain embodiments of the present invention.

[0032] FIG. 3 shows a front view of the scaffladder in an operation position in an assembled lift in accordance with certain embodiments of the present invention.

[0033] FIG. 4 shows a perspective view of an assembled first lift in accordance with certain embodiments of the present invention.

[0034] FIG. 5 shows a perspective view of an assembled first lift with two scaffladders in operation position in accordance with certain embodiments of the present invention.

[0035] FIG. 6 shows a perspective view of standards for a second lift being installed with the two scaffladders in operation position in accordance with certain embodiments of the present invention.

[0036] FIG. 7 shows a perspective view of middle ledgers being installed with the two scaffladders in operation position in accordance with certain embodiments of the present invention.

[0037] FIG. 8 shows a perspective view of a scaffold with the middle ledgers being fully installed with the two scaffladders in operation position in accordance with certain embodiments of the present invention.

[0038] FIG. 9 shows a perspective view of a scaffold with the second deck being installed with an access to the second deck with a monkey ladder in accordance with certain embodiments of the present invention.

[0039] FIG. 10 shows a perspective view of top ledgers of the second lift being installed in accordance with certain embodiments of the present invention.

[0040] FIG. 11 shows a perspective view of two scaffladders being in operation position for installing middle ledgers for third lift in accordance with certain embodiments of the present invention.

[0041] FIG. 12 shows a perspective view of a scaffold with the middle ledgers for third lift being fully installed in accordance with certain embodiments of the present invention.

Detailed Description of the Invention

[0042] The present invention may be understood more readily by reference to the following detailed description of certain embodiments of the invention.

[0043] Throughout this application, where publications are referenced, the disclosures of these publications are hereby incorporated by reference, in their entireties, into this application in order to more fully describe the state of art to which this invention pertains.

[0044] The present invention provides a scaffladder suitable for being employed in assembling a scaffold. The scaffold can a ring lock scaffold, a cuplock scaffold, or a tubular scaffold. The scaffolds are well known in the art. For example, a ring lock scaffold comprises standards, ledgers, braces, and deck planks; these are industrially standardized components. In addition, a scaffold can have up to thousands lifts. For the brevity, the components and practices known in the industry will not be described herein.

[0045] The term “ledger” refers to any horizontal connecting components such as tubular pipes in tubular scaffolds and ledgers in ring lock scaffolds.

[0046] Referring now to FIGS. 1-3, the scaffladder **10** comprises:

[0047] two longitudinal beams **11** in a parallel configuration;

[0048] a plurality of rungs **12** disposed at regular intervals between the two longitudinal beams; in certain embodiments, the plurality of rungs are disposed only in bottom half of the two longitudinal beams;

[0049] an adjustable platform **13** being configured to have an upper surface, a bottom surface, a proximity side being close to the two longitudinal beams, and a distal side being the furthest away from the two longitudinal beams when the adjustable platform **13** is extended during operation, where the adjustable platform **13** is pivotally or releasably disposed at middle section of the two longitudinal beams via a location at or near the proximity side of the adjustable platform **13**, thereby the adjustable platform **13** provides a temporary working bay for a scaffolder when the adjustable platform **13** is extended during operation;

[0050] a support module **14** supporting the adjustable platform **13** during operation, where the support module **14** comprises at least two pairs of legs, each end of the adjustable platform **13** being disposed with one pair of the at least two pairs of legs, where each of the at least two pairs of legs has a first end and a second end, the first end being pivotally or releasably disposed at the bottom surface at a location near the distal side of the adjustable platform **13**, and the second end being equipped with one middle secure means so that the middle secure means releasably secures the adjustable platform **13** onto one of the plurality of rungs **12** or a middle ledger, and a foldable locking beam connecting two legs so that when the adjustable platform **13** is in operation, the foldable locking beam is locked in for secure support; in certain embodiments, the middle secure means is a hook; and

[0051] a top secure means **15** disposed at the top section of the longitudinal beams for securing the scaffladder onto a top ledger; in certain embodiments, the top secure means **15** is a hook.

[0052] As shown in FIG. 1, when the scaffladder is in operation position, it has three points of contacts with the scaffold: deck, middle ledger, and top ledger; this ensures that the scaffladder operates in safe mode at all times. The angle **16** between the longitudinal beams **11** and the vertical plane of ledgers is 74-75 degrees, making it suitable for being used a narrow lift and simultaneously providing stability.

[0053] The scaffladder can made by any suitable materials, preferably aluminum for its light weight.

[0054] The present invention provides a process of assembling scaffolds using the scaffladders as described above.

[0055] Referring now to FIGS. 4-12, there are provided exemplary steps in assembly a ring lock scaffold using the scaffladder. It is to be noted that the drawings are not meant to provide full assembly instructions; instead, they are intended to illustrate the safe installation of middle ledgers of a N+1th lift from the deck of a Nth lift that is below the N+1th lift.

[0056] As shown in FIG. 4, an exemplary ground lift is assembled by a first set of ring lock standards **1** (**4** as shown) disposed on jack bases, a first set of bottom ledgers **100** (4 as shown), middle ledgers **110**, top ledgers **120**, and a ground deck **130**, where the ring lock standards **1** are equipped with connecting means such as rosettes, the ledgers **100**, **110**, **120** are connected with the ring lock standards **1** in tandem, and the ground deck **130** is formed by disposing planks on the bottom ledgers **100**. For the convenience of narration, the designations of “first”, “second”, “third”, “bottom”, “middle” and “top” are used; they shall not be interpretated as referring to specific sequences or orientations, or different components.

[0057] As shown in FIG. 5, before a deck is being formed on the top ledgers **120** of the ground lift, two scaffladders **10** are in operation position so that two scaffolders can work as a unit. The scaffladders **10** are rested on the ground deck **130**, and secured on the middle ledger **110** and the top ledger **120**.

[0058] As shown in FIG. 6, a second set of standards **2** are disposed on top of the first set of standards **1** by scaffolders standing on the platform **13** of the scaffladders **10**.

[0059] As shown in FIG. 7, a second set of middle ledgers **210** of the second lift are installed on the second set of standards **2** by scaffolders standing on the platform **13** of the scaffladders **10**.

[0060] As shown in FIG. 8, when all of the second set of the middle ledgers **210** are installed, the scaffladders **10** are removed.

[0061] As shown in FIG. 9, a second deck **230** is installed onto the first set of top ledgers **120** from below the second deck **230**, where an access is created so that the second deck **230** can be accessed by a monkey ladder **500**. When a person goes up through the monkey ladder **500** and reaches the second deck **230**, the middle ledgers **120** are installed already, providing full protection against falling off the second deck **230**.

[0062] As shown in FIG. 10, a second set of top ledgers **220** are installed by scaffolders from the second deck **230**.

[0063] As shown in FIG. 11, two scaffladders **10** are positioned on the second deck **230** to install a third set of middle ledgers **310** by scaffolders standing on the platform **13** of the scaffladders **10** similar to the operation as shown in FIG. 7.

[0064] As shown in FIG. 12, after the third set of middle ledgers **310** are installed, the scaffladders **10** are removed, and the third deck is being installed on the second set of top ledgers **220** as described above.

[0065] Additional lifts can be assembled by repeating the same operations.

[0066] The present invention ensures that all assembly work is performed from a lower deck (behind middle ledgers) or from the scaffladder. At NO time has any scaffolder been exposed to the risk of working on a deck without surrounding ledgers for protection.

[0067] While the present invention has been described with reference to particular embodiments, it will be understood that the embodiments are illustrative and that the invention scope is not so limited. Alternative embodiments of the present invention will become apparent to those having ordinary skill in the art to which the present invention pertains. Such alternate embodiments are considered to be encompassed within the scope of the present invention. Accordingly, the scope of the present invention is defined by the appended claims and is supported by the foregoing description.

CLAIMS

What is claimed is:

1. A scaffladder suitable for being employed in scaffold assembly, said scaffladder comprising:

two longitudinal beams in a parallel configuration;

a plurality of rungs disposed at regular intervals between the two longitudinal beams;

an adjustable platform being configured to have an upper surface, a bottom surface, a proximity side being close to the two longitudinal beams, and a distal side being the furthest away from the two longitudinal beams when the adjustable platform is extended during operation, where the adjustable platform is pivotally or releasably disposed at middle section of the two longitudinal beams via a location at or near the proximity side of the adjustable platform, thereby the adjustable platform provides a temporary working bay for a scaffolder when the adjustable platform is extended during operation;

a support module supporting the adjustable platform during operation, where the support module comprises at least two pairs of legs, each end of the adjustable platform being disposed with one pair of the at least two pairs of legs, where each of the at least two pairs of legs has a first end and a second end, the first end being pivotally or releasably disposed at the bottom surface at a location near the distal side of the adjustable platform, and the second end being equipped with one middle secure means so that the middle secure means releasably secures the adjustable platform onto one of the plurality of rungs or a middle ledger, and a foldable locking beam connecting two legs so that when the adjustable platform is in operation, the foldable locking beam is locked in for secure support; and

a top secure means disposed at the top section of the longitudinal beams for securing the scaffladder onto a top ledger.

2. The scaffladder of claim 1, wherein the plurality of rungs are disposed only in bottom half of the two longitudinal beams.

3. The scaffladder of claim 1, wherein the top secure means is a hook.

4. The scaffladder of claim 1, wherein the middle secure means are a hook.

5. The scaffladder of claim 1, wherein angle between the longitudinal beams and vertical plane of the middle and top ledgers is 74-75 degrees.

6. A process of assembling a scaffold, comprising:

providing a first assembled lift with a first set of standards, a first set of bottom ledgers, middle ledgers, top ledgers, and a first deck, where the standards are equipped with connecting means, the ledgers are connected with the standards in tandem, and the ground deck is formed by disposing planks on the bottom ledgers;

providing one or two scaffladders of claims 1-5 before a deck is being formed on the top ledgers of the first lift, wherein the one or two scaffladders are being secured onto the first deck, one of the first set of middle ledgers, and one of the first set of top ledgers so as to be in operation position;

disposing a second set of standards on top of the first set of standards by scaffolders standing on the platform of the scaffladders;

installing a second set of middle ledgers of second lift on the second set of standards by scaffolders standing on the platform of the scaffladders;

removing the scaffladders when all of the second set of the middle ledgers are installed; and

installing a second deck onto the first set of top ledgers from below the second deck, wherein an access is created so that the second deck is accessible by a monkey ladder.

7. The process of claim 6, further comprising:

installing a second set of top ledgers from the second deck;

providing one or more scaffladders of claims 1-3, wherein the scaffladders are positioned on the second deck to install a third set of middle ledgers by scaffolders standing on the platform of the scaffladders;

removing the scaffladders when all of the third set of middle ledgers are installed; and

installing a third deck on the second set of top ledgers.

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