

【DESCRIPTION】**【Invention Title】****DEVICE FOR LIFTING TEMPORARY STAND****【Technical Field】**

5 The present invention relates to a lift apparatus, and more particularly, to an apparatus for lifting a temporary stand capable of lifting various temporary stands or scaffolds to positions of desired height at construction sites, cargo bases, or the like.

【Background Art】

10 In lifting a heavyweight temporary construction or construction material to a position of a desired height at a construction site or conveying a heavyweight temporary stand to a position of a desired height at a cargo base, a lift apparatus is necessarily used.

 For example, upon construction of a building structure, a mold is installed at an outer wall of the structure. At this time, in order to smoothly perform a task at the outer wall of the structure, a temporary stand acting as a kind of scaffold is installed at the outer wall of the structure. Such a temporary stand is additionally installed upward according to an increase in stair number of the structure. In a related art, when a high-rise building structure is constructed, a lift-type temporary stand entirely lifted upward by a crane has been used. However, use of the crane increases time and cost consumed for the work, causing delay of the construction. For this, the applicant of the present invention has proposed a technique capable of performing a lift operation of a temporary stand using a lift member configured to raise and lower a profile in a stepped manner, with no use of a crane, disclosed in Korean Patent Registration No. 0704720,

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entitled "Temporary Stand Lifting Apparatus and Temporary Stand Lifting Method Using the Same."

The registered patent is characterized in that a lift member is hooked by hooking projections formed at predetermined intervals in a vertical direction of the profile of the temporary stand to raise and lower the profile in a stepped manner. In particular, the lift member moves forward or rearward through a configuration of a hydraulic cylinder and a hook following a lifting direction to be selectively hooked by any one of the hooking projections of the profile. Accordingly, the temporary stand can be safely and easily raised and lowered to a target height in a stepped manner.

In addition, the applicant of the present invention has filed Korean Patent Application Nos. 10-2007-0113115 and 10-2007-0113116. The applications have proposed a temporary stand lifting apparatus conveniently and easily installing or uninstalling a profile at/from lift operating means using a guide arm, which can be opened or closed.

Meanwhile, the applicant of the present invention has felt a need for a technique capable of more safely and easily raising and lowering a temporary stand, in addition to the lift apparatus disclosed in the registered patent and the filed applications, and developed the present invention.

【Disclosure】

【Technical Problem】

In order to solve the foregoing and/or other problems, it is an aspect of the present invention to provide an apparatus for lifting a temporary stand capable of safely and easily raising and lowering a temporary stand at a construction site or a cargo base,

where various temporary stands are used, and providing a simplified structure.

【Technical Solution】

According to a first aspect of the present invention there is provided an apparatus for lifting a temporary stand including a profile installed at a side opposite to an outer wall of a structure and having a plurality of latches disposed at predetermined intervals, including: a pair of left and right guide frames having guide grooves formed in a direction perpendicular to a lift direction of the profile; support frames configured to support the guide frames, and facing and spaced apart from each other; guide channels obliquely formed in the support frames, and configured to provide a moving path of a stopper such that the stopper is raised along an oblique path by the latch when the profile is raised, and the stopper is lowered due to its own weight after the latch passes; the stopper installed between the support frames such that the stopper contacts the latch to move straight upward along the guide channel when the profile moves upward, and the stopper is latched by the latch, when the profile is lowered, to support a lower portion of the latch to raise the profile; and a pair of left and right guide arms configured to slide along the guide grooves formed in the guide frames to be opened or closed.

According to a second aspect of the present invention there is provided an apparatus for lifting a temporary stand including a profile installed at a side opposite to an outer wall of a structure, including: a profile including a plurality of latches disposed in a longitudinal direction thereof; a pair of upper and lower lift operating means, one of which is fixed to the structure, including a stopper latched by the latch so that at least one of the pair of lift operating means supports a lower side of the latch to raise and lower the profile; and lift driving means coupled between the upper and lower lift operating means to provide a

lift driving force to the lift operating means, wherein the lift operating means includes: a pair of left and right guide frames having guide grooves formed in a direction perpendicular to a lift direction of the profile; support frames configured to support the guide frames, and facing and spaced apart from each other; guide channels obliquely formed in the support frames, and configured to provide a moving path of the stopper such that the stopper is raised along an oblique path by the latch when the profile is raised, and the stopper is lowered due to its own weight after the latch passes; the stopper installed between the support frames such that the stopper contacts the latch to move straight upward along the guide channel when the profile moves upward, and the stopper is latched by the latch, when the profile is lowered, to support a lower portion of the latch to raise the profile; and a pair of left and right guide arms configured to slide along the guide grooves formed in the guide frames to be opened or closed.

According to a third aspect of the present invention there is provided an apparatus for lifting a temporary stand including a profile installed at a side opposite to an outer wall of a structure and having a plurality of latches disposed at predetermined intervals, including: a pair of left and right guide frames having guide grooves formed in a direction perpendicular to a lift direction of the profile; support frames configured to support the guide frames, and facing and spaced apart from each other; guide channels obliquely formed in the support frames, and configured to provide a moving path of a stopper such that the stopper is raised along an oblique path by the latch when the profile is raised, and the stopper is lowered due to its own weight after the latch passes; the stopper installed between the support frames such that the stopper contacts the latch to move straight upward along the guide channel when the profile moves upward, and the stopper is latched by the latch, when the profile is lowered, to support a lower portion of the latch to raise the

profile; a pair of left and right guide arms configured to move along the guide grooves formed in the guide frames to be opened or closed; a first guide pin connected to the guide arms through the guide grooves formed in the guide frames and that moves straight along the guide grooves formed in the guide frames to move the guide arms; and a second guide pin connected to the guide arms through the guide grooves formed in the guide frames, configured to slide along the guide grooves formed in the guide frames to move straight, and rotated about the first guide pin, which functions as a rotational center axis, along an oblique arc of the guide grooves to move the guide arms, wherein the guide arms are opened or closed according to movement of the first guide pin and the second guide pin.

According to a fourth aspect of the present invention there is provided an apparatus for lifting a temporary stand including a profile installed at a side opposite to an outer wall of a structure, including: a profile including a plurality of latches disposed in a longitudinal direction thereof; a pair of upper and lower lift operating means, one of which is fixed to the structure, including a stopper latched by the latch so that at least one of the pair of lift operating means supports a lower side of the latch to raise and lower the profile; and lift driving means coupled between the upper and lower lift operating means to provide a lift driving force to the lift operating means, wherein the lift operating means includes: a pair of left and right guide frames having guide grooves formed in a direction perpendicular to a lift direction of the profile; support frames configured to support the guide frames, and facing and spaced apart from each other; guide channels obliquely formed in the support frames, and configured to provide a moving path of the stopper such that the stopper is raised along an oblique path by the latch when the profile is raised, and the stopper is lowered due to its own weight after the latch passes; the

stopper installed between the support frames such that the stopper contacts the latch to move straight upward along the guide channel when the profile moves upward, and the stopper is latched by the latch, when the profile is lowered, to support a lower portion of the latch to raise the profile; a pair of left and right guide arms configured to move
5 along the guide grooves formed in the guide frames to be opened or closed; a first guide pin connected to the guide arms through the guide grooves formed in the guide frames, and configured to slide and move straight along the guide grooves formed in the guide frames to move the guide arms; and a second guide pin connected to the guide arms through the guide grooves formed in the guide frames, configured to slide and move
10 straight along the guide grooves formed in the guide frames, and rotated about the first guide pin, which functions as a rotational center axis, along an oblique arc of the guide grooves to move the guide arms, wherein the guide arms are opened or closed according to movement of the first guide pin and the second guide pin.

The apparatus for lifting the temporary stand may further include a pair of fixing
15 frames projecting rearward from the support frames to be integrally formed with the support frames, wherein the fixing frames have through-holes through which coupling pins are inserted to fix a lower end or an upper end of the lift driving means inserted between the pair of fixing frames, and the lift operating means is coupled to the lift driving means as the coupling pin is inserted into the through-holes of the support
20 frames in a state in which the lower end or the upper end of the lift driving means is inserted between the pair of support frames.

The apparatus for lifting the temporary stand may further include a bracket configured to be fixed to the structure, wherein the bracket includes; a pair of panel frames installed to partially overlap side surfaces of the support frames, and facing and

spaced apart from each other; and a connecting frame configured to connect the panel frames to each other, wherein the support frame and the panel frame are fastened to each other through a coupling fixing pin.

Through-holes through which the coupling fixing pin may be inserted are
5 formed in the support frames and the panel frames, the coupling fixing pin may have a structure in which a protrusion partially protrudes from a cylindrical rod in a longitudinal direction thereof, the through-hole may have a complex structure of an insertion groove, into which the protrusion is inserted, and a circular portion, corresponding to the structure of the coupling fixing fin, and when the coupling fixing
10 pin is inserted into the through-hole to be rotated, the coupling fixing pin may be prevented from separating from the through-holes due to the protrusion projecting from the circular rod.

A through-hole configured to fix the bracket to the structure may be formed in the connecting frame, and a bolt may be inserted through the through-hole to fix the
15 bracket to the structure.

An inclination compensating groove configured to compensate for an inclination of the support frame to correspond to an inclination of the profile may be formed in the panel frame in a direction perpendicular to a longitudinal direction of the profile, a connecting pin may be inserted into the inclination compensating groove, and a position
20 of the connecting pin with respect to the longitudinal direction of the inclination compensating groove may be controlled to adjust the inclination of the support frame.

The apparatus for lifting the temporary stand may further include an anchor unit installed at a flat slab of the structure, wherein the bracket is connected to a fixing part configured to be fixed to the anchor unit, and the fixing part partially enters the anchor

unit to overlap the anchor unit and is detachably coupled to the anchor unit by a fastening pin passing through the overlapping portion of the fixing part and the anchor unit.

5 The anchor unit may have a trench and at least one inclination adjusting groove formed of a through-groove at both sides of the trench, one end of the fixing part may have a square pillar structure to be inserted into the trench of the anchor unit, and at least two fastening pins may pass through the inclination adjusting groove to be fastened to the square pillar to be inserted into the anchor unit.

10 A screwdriver connected to the fixing part may be installed on one end of the anchor unit, and as the screwdriver is rotated, the fixing part may move straight forward and rearward along the inclination adjusting groove formed in the anchor unit.

The apparatus for lifting the temporary stand may further include a stopper seating groove formed in an upper end of the guide channel to seat the stopper.

15 The stopper may have a circular rod structure and a radius of curvature smaller than that of a seating groove of the latch such that the stopper can stably support a curved lower portion of the latch.

The profile may have a structure in which a first beam having substantially a '□' shape and a second beam having substantially a reverse '□' shape are opposite and coupled to each other, and the latch may be installed at a connecting pin configured to
20 connect the first beam and the second beam.

A channel frame configured to guide a flange of the profile may be installed at one end of the support frame in a direction facing the profile, an upper portion of the channel frame may have an oblique flat plate to guide insertion of the profile when the profile is inserted into the lift operating means from top to bottom, and a lower portion

of the oblique flat plate may have a vertical flat plate to guide the flange of the profile inserted into the lift operating means.

The guide groove may have a through-groove structure including a first guide groove configured to provide a path through which the guide arm moves straight, and a
5 second guide groove configured to provide a path in which the guide arm is rotated along an oblique arc with respect to the first guide groove.

The guide frame may include: a pair of left and right upper guide frames having guide grooves; and a pair of left and right lower guide frames installed under the upper guide frames, spaced apart from each other, and having guide grooves.

10 The guide arm may include: a pair of left and right upper guide arms installed over or under the upper guide frames to partially overlap the upper guide frames; a pair of left and right lower guide arms installed over or under the lower guide frames to partially overlap the lower guide frames; and a support member configured to connect the upper guide arms and the lower guide arms.

15 The apparatus for lifting the temporary stand may further include: a first guide pin configured to pass through the guide grooves formed in the upper and lower guide frames to connect the upper guide arm and the lower guide arm, and slide and move straight along the guide grooves formed in the upper and lower guide frames; and a second guide pin configured to pass through the guide grooves formed in the upper and
20 lower guide frames to connect the upper guide arm and the lower guide arm, and slide and move straight along the guide grooves formed in the upper and lower guide frames, and rotated about the first guide pin, which functions as a rotational center axis, along oblique arcs of the guide groove, wherein the upper guide arm and the lower guide arm move along the guide grooves according to movement of the first and second guide pins.

The upper guide frame may have a step formed at a position in which the second guide pin is positioned when the guide arm is closed, a head portion of the second guide pin may be inserted to fix the second guide pin by the step, and when the second guide pin is raised upward, the second guide pin may be moved along the guide groove.

5 The apparatus for lifting the temporary stand may further include a resilient member configured to recover the second guide pin downward when the second guide pin is raised upward by an external force, wherein the second guide pin can move along the guide groove when the second guide pin is raised upward and the second guide pin is fixed when the second guide pin is not raised.

10 【Advantageous Effects】

According to the present invention, since a guide arm of lift operating means can be easily opened or closed, a profile can be easily installed or uninstalled at/from the lift operating means.

15 The apparatus can be connected to the profile installed at an outer wall of a building structure to be used to raise or lower a temporary stand, or connected to a cargo box to load or unload a heavyweight object.

Since various temporary stands can be safely and easily raised and lowered to desired positions at construction sites or cargo bases, works can be smoothly performed. In particular, since the present invention has a remarkably simplified mechanical configuration and an improved operational convenience in comparison with a lift
20 apparatus of the related art, the apparatus can be usefully applied to actual sites.

【Description of Drawings】

FIG. 1 is a perspective view of an apparatus for lifting a temporary stand in

accordance with an exemplary embodiment of the present invention, showing a state in which first and second lift operating means are fastened to lift driving means.

FIG. 2 is an exploded perspective view of the apparatus for lifting a temporary stand in accordance with an exemplary embodiment of the present invention.

5 FIG. 3 is a perspective view of an apparatus for lifting a temporary stand in accordance with another exemplary embodiment of the present invention, showing a state in which first and second lift operating means are fastened to lift driving means.

FIG. 4 is an exploded perspective view of the apparatus for lifting a temporary stand in accordance with another exemplary embodiment of the present invention.

10 FIG. 5 is a partial perspective view showing a profile.

FIG. 6 is a perspective view showing a state in which the first lift operating means is fastened to the profile.

FIG. 7 is a perspective view showing an assembled state of the first lift operating means described in the embodiment.

15 FIGS. 8 and 9 are perspective views showing a state in which a guide arm of the first lift operating means is opened.

FIG. 10 is an exploded perspective view of the first lift operating means.

FIG. 11 is a perspective view showing a state in which a bracket is fastened to the first lift operating means.

20 FIG. 12 is a perspective view showing a state in which the bracket is fastened to the first lift operating means, wherein a stopper seating groove is formed in the first lift operating means.

FIG. 13 is a partial perspective view specifically showing the first lift operating means including the stopper seating groove.

FIG. 14 is a perspective view showing an assembly state of the second lift operating means described in the embodiment.

FIGS. 15 and 16 are perspective views showing a state in which a guide arm of the second lift operating means is opened.

5 FIG. 17 is an exploded perspective view of the second lift operating means.

FIGS. 18A to 18C are side cross-sectional views showing inclinations according to positions of a connecting pin with respect to inclination correction grooves.

FIG. 19 is an exploded perspective view of a fixing part and an anchor unit.

10 FIG. 20 is a cross-sectional view showing an embodiment in which the apparatus for lifting a temporary stand is mounted on a structure.

FIGS. 21 and 22 are perspective views showing an embodiment in which the apparatus for lifting a temporary stand is mounted on the structure.

<Description of Major Reference Numerals>

	10: Structure	100: Profile
15	200, 300: Lift operating means	210, 310: Stopper
	220, 230: Guide frame	222, 232: Guide arm
	238: First guide groove	239: Second guide groove
	240: Support frame	244: First guide pin
	246: Second guide pin	252: Bracket
20	400: Lift driving means	500: Fixing part
	600: Anchor unit	

【Mode for Invention】

Reference will now be made in detail to the embodiments of the present invention, examples of which are illustrated in the accompanying drawings. However,

it will be apparent to those skilled in the art that the following embodiments can be readily understood and modified into various types, and the scope of the present invention is not limited to the embodiments. Like reference numerals designates like elements throughout the invention.

5 FIG. 1 is a perspective view of an apparatus for lifting a temporary stand in accordance with an exemplary embodiment of the present invention, showing a state in which first and second lift operating means are fastened to lift driving means, FIG. 2 is an exploded perspective view of the apparatus for lifting a temporary stand in accordance with an exemplary embodiment of the present invention, FIG. 3 is a
10 perspective view of an apparatus for lifting a temporary stand in accordance with another exemplary embodiment of the present invention, showing a state in which first and second lift operating means are fastened to lift driving means, FIG. 4 is an exploded perspective view of the apparatus for lifting a temporary stand in accordance with another exemplary embodiment of the present invention, FIG. 5 is a partial perspective
15 view showing a profile, FIG. 6 is a perspective view showing a state in which the first lift operating means is fastened to the profile, FIG. 7 is a perspective view showing an assembled state of the first lift operating means described in the embodiment, FIGS. 8 and 9 are perspective views showing a state in which a guide arm of the first lift operating means is opened, FIG. 10 is an exploded perspective view of the first lift
20 operating means, FIG. 11 is a perspective view showing a state in which a bracket is fastened to the first lift operating means, FIG. 12 is a perspective view showing a state in which the bracket is fastened to the first lift operating means, wherein a stopper seating groove is formed in the first lift operating means, FIG. 13 is a partial perspective view specifically showing the first lift operating means including the stopper seating

groove, FIG. 14 is a perspective view showing an assembly state of the second lift
operating means described in the embodiment, FIGS. 15 and 16 are perspective views
showing a state in which a guide arm of the second lift operating means is opened, FIG.
17 is an exploded perspective view of the second lift operating means, FIGS. 18A to
5 18C are side cross-sectional views showing inclinations according to positions of a
connecting pin with respect to inclination correction grooves, FIG. 19 is an exploded
perspective view of a fixing part and an anchor unit, FIG. 20 is a cross-sectional view
showing an embodiment in which the apparatus for lifting a temporary stand is mounted
on a structure, and FIGS. 21 and 22 are perspective views showing an embodiment in
10 which the apparatus for lifting a temporary stand is mounted on the structure.

Referring to FIGS. 1 to 22, an apparatus for lifting a temporary stand includes
lift operating means 200 and 300 installed at an outer wall of a structure to face each
other to raise or lower the temporary stand including a profile 100 having a plurality of
latches 140 disposed at predetermined intervals, and lift driving means 400 coupled
15 between the lift operating means 200 and 300 to provide a driving force to the lift
operating means 200 and 300 to move the temporary stand upward. Hereinafter, “lift”
will be used to include the meanings “raise” and “lower.” Reference numerals of
common elements in the first lift operating means 200 and the second lift operating
means 300 are designated to have the same number in the tens and the ones digits, and
20 different numbers in the hundreds digits. For example, a stopper of the first lift
operating means 200 is designated by reference numeral 210, and a stopper of the
second lift operating means 300 is designated by reference numeral 310. Accordingly,
it will be understood that an undesignated reference numeral performs the same
function of any one member of the first lift operating means 200 or the second lift

operating means 300 when it is described.

The lift operating means 200 and 300 are provided at upper and lower sides of the lift driving means 400 to form a pair. For the sake of convenience, the lower side is referred to as the first lift operating means 200 and the upper side is referred to as the
5 second lift operating means 300. Any one of the first lift operating means 200 and the second lift operating means 300 is installed at an outer wall or a slab 10 of a building structure and fixed thereto. Hereinafter, the case in which the first lift operating means 200 is fixed to a concrete structure 10 (see FIGS. 20 to 22) will be described by way of an example.

10 When the profile 100 is raised or lowered, in a state in which the latch 140 is latched by any one of the stopper 210 of the first lift operating means 200 or the stopper 310 of the second lift operating means 300, the profile 100 is raised or lowered without interference of the unlatched stopper 210 or 310 and then latched by the stopper 210 or 310 at a predetermined height, which will be described later.

15 The lift driving means 400 is coupled between the first lift operating means 200 and the second lift operating means 300 to provide a driving force required to raise and lower the lift operating means 200 and 300. A typical example of the lift driving means 400 may be a hydraulic actuator having high output power, and good shock absorbing performance and controllability. FIGS. 1 to 4 show a hydraulic actuator
20 constituted by a hydraulic cylinder 410 configured to receive a hydraulic fluid from a hydraulic source (not shown) to be operated, a piston rod 420, and so on.

In a state in which the first and second lift operating means 200 and 300 and the lift driving means 400, which are configured as described above, are assembled to each other as shown in FIGS. 1 to 4, the profile 100 is installed.

The profile 100 is a structural member including the latches 140 at each lift section, and in the embodiment, has a structure in which substantially a C-shaped first beam is coupled to substantially a reverse C-shaped second beam to face each other. The profile 100 is connected to an empty temporary stand or a cargo-loaded temporary stand. In a state in which the profile 100 is installed at the lift operating means 200 and 300, the profile 100 moves up and down along the lift operating means 200 and 300, which function as a lift shaft, to raise and lower the temporary stand. The latches 140 are fixed to connecting pins 130 connecting the first beam and the second beam through welding, and so on, and the latches 140 are disposed at predetermined intervals at each section in which the temporary stand moves up and down. The stoppers 210 and 310 of the lift operating means 200 and 300 (described later) are latched by the latches 140. The latch 140 has, for example, a beak shape with an upper end 142 sloped downward in an obliquely inclined shape and a lower end having an inwardly concaved seating groove. The stoppers 210 and 310 have cylindrical rod shapes to stably support a lower end of the latch 140 and have radii smaller than a radius of curvature of the seating groove of the latch 140. The profile 100 configured as described above is installed at the lift operating means 200 and 300 installed at the structure 10, which requires a lift operation of the temporary stand (for example, at an outer wall or a plate-shaped slab of the structure at which a temporary stand for construction is installed).

Hereinafter, a specific embodiment of the lift operating means 200 and 300 will be described in detail.

The first lift operating means 200 includes an upper guide frame 220, a lower guide frame 230, and support frames 240 configured to connect the upper and lower guide frames. The upper guide frame 220, the lower guide frame 230, and the support

frames 240 are disposed at left and right sides of the stopper 210 to form a pair.

An oblique guide channel 260 is provided at the pair of support frames 240 facing each other to guide the stopper 210, which is installed between the support frames 240. The stopper 210 is guided along the oblique guide channel 260 formed inside the support frames 240. The stopper 210 has a cylindrical rod shape to be latched by the latch 140 of the profile 100. A curved seating groove is formed at a corresponding portion of the latch 140 engaged with the stopper 210. Here, the seating groove of the latch 140 may have a radius of curvature larger than a radius of the stopper 210. According to such a structure, the stopper 210 is stably latched by the latch 140.

The stopper 210 is guided and moved along the oblique guide channel 260 with respect to the latch 140 of the profile 100 when the profile 100 is raised, and the stopper 210 is latched by the latch 140 of the profile 100 upon stoppage of the lift. That is, when the profile 100 is raised, the stopper 210 is pushed upward along the oblique guide channel 260 by the latch 140, and after the latch 140 passes, the stopper 210 is moved downward along the guide channel 260 by its own weight. When the stopper 210 is moved downward to a lower side of the guide channel 260 by its own weight, the stopper 210 is latched by the latch 140. When the stoppers 210 and 310 are latched by the latch 140 of the profile 100, the profile 100 is kept fixed to the lift operating means 200 and 300. As described above, when the profile 100 is moved upward, the stopper 210 contacts the latch 140 to move upward along the oblique guide channel 260, and when the profile 100 is moved downward, the stopper 210 is latched by the latch 140 to support a lower portion of the latch 140.

Meanwhile, as shown in FIGS. 12 and 13, a stopper seating groove 262

configured to seat the stopper 210 may be formed at one end of the oblique guide channel 260. When the lift operating means 200 and 300 does not perform an operation of raising or lowering the profile 100, the stopper 210 is fixed to the stopper seating groove 262 formed in the support frame 240, and when the lift operating means
5 200 and 300 performs the operation of raising or lowering the profile 100, an operator can slightly lift the stopper 210 from the stopper seating groove 262 so that the stopper 210 can be slid down along the oblique guide channel 260. The stopper seating groove 262 and the guide channel 260 are connected to each other to enable smooth fixing and movement of the stopper 210, and the stopper seating groove 262 is formed at an upper
10 end of the guide channel 260. When the stopper 210 is introduced into the oblique guide channel 260 from the stopper seating groove 262 by the operator, the stopper 210 is moved along the oblique guide channel 260 by its own weight, and thus, the stopper 210 is always positioned at a lower end of the guide channel 260 unless an external force is applied. Accordingly, the stopper 210 is always kept latched by the latch 140
15 when no external force is applied.

Configurations of the guide frames 220 and 230, the support frames 240 and the stopper 210 are the same as in the second lift operating means 300.

The first lift operating means 200 includes guide arms 222 and 232 configured to be closed or opened to partially surround the profile 100. As shown in FIG. 6, the
20 guide arms 222 and 232 partially surround a flange 120 of the profile 100 so that the profile 100 can be smoothly raised and lowered. The guide arms 222 and 232 include an upper guide arm 222 and a lower guide arm 232, and support members 234 configured to connect the guide arms. The upper guide arm 222, the lower guide arm 232 and the support arms 234 are disposed at left and right sides of the stopper 210 to

form a pair. The guide arms 222 and 232 may further include a guide channel 236 configured to guide a web 110 of the profile 100. The guide channel 236 functions to guide the web 110 of the profile 100, when the profile 100 is raised and lowered, to suppress lateral movement thereof, and may have a flat-plate shape having a width
5 smaller than that of the web 110 of the profile 100.

A channel frame 243 configured to guide the flange 120 of the profile 100 is installed at one end of the support frame 240 in a direction facing the profile 100. The channel frame 243 functions to guide the flange 120 of the profile 100 when the profile 100 is raised and lowered, and includes an upper portion having an oblique flat-plate
10 structure to guide insertion of the profile 10 upon insertion of the profile from top to bottom to enable smooth insertion even when an insertion deviation occurs, and a lower portion of the oblique flat-plate having a vertical flat-plate structure to guide the flange 120 of the inserted profile 100.

A configuration of the guide arms 222 and 232 and the channel frame 243 is the
15 same as the second lift operating means 300.

One ends of the guide arms 222 and 232 are installed to overlap portions of the upper guide frame 220 and the lower guide frame 230 to be engaged therewith. One end of the upper guide arm 222 is installed under the upper guide frame 220, and one end of the lower guide arm 232 is installed over the lower guide frame 230.

20 Guide grooves 238 and 239, which are moving paths of the guide arms 222 and 232, are installed at the upper guide frame 220 and the lower guide frame 230. The guide arms 222 and 232 are vertically slid along the guide grooves 238 and 239 formed of through-holes and having a certain length with respect to a lift direction of the profile 100 to be opened or closed. The guide grooves 238 and 239 formed at the upper guide

frame 220 and the lower guide frame 230 have a structure in which the guide arms 222 and 232 are moved straight and then rotated in a path (an arc) of an oblique direction with respect to the straight moving path. The upper guide arm 222 and the lower guide arm 232 are connected to each other through a first guide pin 244 and a second guide pin 246 passing through the guide grooves 238 and 239. When the guide arms 222 and 232 move along the guide grooves 238 and 239, the first guide pin 244 moves horizontally in a straight line only, and the second guide pin 246 moves horizontally in a straight line and then is rotated in an oblique path (an arc) about the first guide pin 244, which functions as a rotational center axis, with respect to the straight moving path.

When the guide arms 222 and 232 are closed, the guide arms 222 and 232 are fixed by the first guide pin 244 and the second guide pin 246 to prevent movement thereof.

When the profile 100 is installed at the first lift operating means 200, as shown in FIGS. 9 and 10, the guide arms 222 and 232 of the first lift operating means 200 are moved along the guide grooves 238 and 239 to be tilted and opened. In order to mount the profile 100 on the lift operating means 200, the guide arms 222 and 232 are slid along the first guide groove 238 by straight movement of the first guide pin 244 and the second guide pin 246, and the second guide pin 246 is rotated about the first guide pin 244, which functions as a rotational center axis, along the second guide groove 239 having an arc shape in an oblique direction with respect to the first guide groove 238 so that the guide arms 222 and 232 are moved along the second guide groove 239 to be opened. The first guide pin 244 and the second guide pin 246 are simultaneously moved straight along the first guide groove 238. Once the first guide pin 244 arrives at one end of the first guide groove 238, the first guide pin 244 is fixed, no longer moving straight, and the second guide pin 246 is rotated about the first guide pin 244 along the

second guide groove 239. When the guide arms 222 and 232 are completely moved along the guide grooves 238 and 239, the guide arms 222 and 223 are fixed, no longer moving.

As shown in FIGS. 8 and 10, a step 247 is provided on the upper guide frame 220, at which the second guide pin 246 is positioned when the guide arms 222 and 232 are closed. A head portion of the second guide pin 246 is inserted to fix the second guide pin 246 by the step 247. When the second guide pin 246 is slightly raised upward (about 1 to 3 cm), the second guide pin 246 can be moved along the guide grooves 238 and 239, and when the second guide pin 246 is not raised upward, the second guide pin 246 is fixed by the step 247 to prevent movement thereof.

Meanwhile, a resilient member 249 may be installed at the second guide pins 246. A conventional torsion spring may be applied to such a resilient member. The torsion spring may be installed at each second guide pin 246. In this case, the resilient member 249 applies a resilient force to be recovered in a downward direction when the second guide pin 246 is raised upward by an external force. The resilient member 249 allows the second guide pin 246 to move along the guide grooves 238 and 239 when the second guide pin 246 is slightly raised upward (about 1 to 3 mm), and functions to fix the second guide pin using the resilient force when the second guide pin 246 is not raised upward. The second guide pin 246 can move along the guide grooves 238 and 239 when the second guide pin 246 is raised upward, and the second guide pin 246 is fixed, not raised upward, when the second guide pin 246 is not raised upward.

When the profile 100 is installed at the first lift operating means 200, as shown in FIGS. 8 and 9, in a state in which the guide arms 222 and 232 of the first lift operating means 200 are moved along the guide grooves 238 and 239 to be tilted and

opened, the flange 120 of the profile 100 is inserted in a direction in which the lift operating means 200 and 300 are positioned.

When the flange 120 of the profile 100 is inserted, as shown in FIG. 6, the guide arms 222 and 232 are closed and the profile 100 is installed at the lift operating means 200 and 300 such that the guide arms 222 and 232 of the lift operating means 200 and 300 partially surround the flange 120 of the profile 100. That is, after the second guide pin 246 configured to fix the guide arms 222 and 232 to prevent movement thereof is slightly raised upward and the first guide pin 244 is rotated about the first guide pin 244, which functions as a rotational center axis, along the second guide groove 239 using the second guide pin 246, when the first guide pin 244 and the second guide pin 246 are slid along the first guide groove 238, as shown in FIG. 6, the guide arms 222 and 232 are closed to partially surround the flange 120.

A configuration of the first lift operating means 200 as described above may be similarly applied to the second lift operating means 300. The first lift operating means 200 and the second lift operating means 300 may be provided to be compatible with each other.

Meanwhile, as shown in FIGS. 1 and 2, through-holes 270, through which a coupling pin 242 is inserted, are formed at a pair of fixing frames 241 to fix the lower end of the lift driving means 400 inserted between the fixing frames 241. The fixing frames 241 may project from the support frame 240 in a rearward direction (an opposite direction of a direction in which the profile is fastened to be integrally formed with the support frame 240). Accordingly, the first lift operating means 200 is coupled to the lift driving means 400 as the coupling pin 242 is inserted into the through-holes 270 formed at the upper sides of the support frames 241 in a state in which the lower end of the lift

driving means 400 is inserted between the pair of support frames 241.

A configuration of the first lift operating means 200 may be applied to the second lift operating means 300. That is, the second lift operating means 300 has a through-hole, through which a coupling pin 342 is inserted, such that the upper end of the lift driving means 400 inserted between a pair of fixing frames 341 is fixed by the coupling pin 342. Accordingly, the second lift operating means 300 is coupled to the lift driving means 400 as the coupling pin 342 is inserted through the through-hole formed at the lower side of the support frame 340 in a state in which the upper end of the lift driving means 400 is inserted between the pair of fixing frames 341.

In addition, the apparatus for lifting a temporary stand may further include a bracket 252 configured to fix the first lift operating means 200 to the structure 10 or a fixing part 500. The bracket 252 is installed at a side surface of the fixing frame 241 or the support frame 240 to partially overlap the side surface, and includes a pair of panel frames 254b spaced apart from each other and facing each other, and a connecting frame 254a configured to connect the panel frames 254b. The support frame 240 and the panel frames 254b may be fastened to each other through a coupling fixing pin 258. Through-holes 264 through which the coupling fixing pin 258 passes are formed in the fixing frames 241 or the support frames 240 and the panel frames 254b. The coupling fixing pin 258 has a structure in which a protrusion 259 is partially formed at a cylindrical rod in a longitudinal direction thereof, and the through-hole has a complex structure of an insertion groove 264'', into which the protrusion 259 is inserted, and a circular portion 265', corresponding to the structure of the coupling fixing pin 258. When the coupling fixing pin 258 is inserted into the through-hole 264 and then rotated, the coupling fixing pin 258 is prevented from separating from the through-hole 264 due

to the protrusion 259 protruding from the cylindrical rod. A through-hole 266 configured to fix the first lift operating means 200 to the structure 10 is formed in the connecting frame 254a. A bolt is inserted through the through-hole 266 to fix the first lift operating means 200 to the structure 10 or the fixing part 500.

5 An inclination compensating groove 268 configured to compensate for an inclination of the first lift operating means 200 to correspond to an inclination of the profile 100 is formed in the panel frame 254b in a direction perpendicular to a longitudinal direction of the profile 100. A connecting pin 272 is inserted into the inclination compensating groove 268 and a position of the connecting pin 272 with
10 respect to the inclination compensating groove 268 is controlled to adjust an inclination of the support frame 240 (or the first lift operating means 200). FIGS. 18A to 18C are side cross-sectional views showing an inclination of the connecting pin 272 with respect to the inclination compensating groove 268 according to a position thereof. For example, even when the profile has an inclination of a “/” or “\” shape due to the weight
15 of the temporary stand, the position of the connecting pin 272 with respect to the inclination compensating groove 268 can be adjusted to adjust the inclination of the first lift operating means 200 to correspond to the inclination of the profile 100.

 The first lift operating means 200 may be coupled to and supported by the fixing part 500 through the bracket 252. The fixing part 500 includes a first body 502 and a
20 second body 504, which are connected to each other. The first body 503 has a nut hole, into which a fastening bolt is inserted through a connecting hole 266 of the bracket 252, to connect the first lift operating means 200 thereto. As the fastening bolt is inserted into the nut hole formed in the first body 502 through the connecting hole 266 formed in the connecting frame 254a, the first lift operating means 200 can be coupled to the

fixing part 500.

When the fastening bolt is inserted into the nut hole of the fixing part 500 to couple the bracket 252 to the fixing part 500 through the connecting hole 266 of the bracket 252, the bracket 252 is rotated leftward and rightward with respect to the fastening bolt inserting direction to adjust the bracket according to the inclination of the profile 100 so that the temporary stand can be raised or lowered according to distortion in a lift direction. Since the bracket 252 can be rotated leftward and rightward with respect to the fastening bolt inserting direction, even when the inclination of the profile 100 is varied, the temporary stand can be raised or lowered according to the inclination. As the rotation of the bracket 252 can adjust a relative position thereof according to the inclination of the profile 100, the first lift operating means 200 can be adjusted according to the inclination of the profile 100.

The fixing part 500 may be coupled to an anchor unit 600 installed at a flat slab of the structure 10. The second body 504 of the fixing part 500 partially enters and overlaps the anchor unit 600, and is detachably coupled to the anchor unit 600 by fastening pins 516 and 516' passing through the overlapping portion. That is, the anchor unit 600 has a trench 602, and the second body 504 of the fixing part 500 is inserted into the trench 602 of the anchor unit 600. The second body 504 has a square pillar structure, and at least two pin fasteners 518 and 518' are provided at both sides of the square pillar to be inserted into the anchor unit 600.

The anchor unit 600 has the trench 602, and at least one inclination adjusting groove 604 and 604' is formed at both sides of the trench 602. The inclination adjusting grooves 604 and 604' are grooves having a certain length and formed at both sides of the trench 602. When the second body 504 is inserted into the trench 602 of

the anchor unit 600, the fastening pin is fastened to the fasteners 518 and 518' through holes of the inclination adjusting grooves 604 and 604' to couple the anchor unit 600 and the fixing part 500. The inclination adjusting grooves 604 and 604' of the anchor unit 600 provide a path through which the fixing part 600 moves horizontally in a straight line. A screwdriver 610 is installed on one end of the anchor unit 600. The screwdriver 610 is connected to the first body 502 of the fixing part 500. As the screwdriver 610 is rotated, the fixing part 500 moves forward and rearward in a straight line along the inclination adjusting grooves 604 and 604'. As the screwdriver 610 is driven, the fixing part 500 can move forward and rearward. Since the first lift operating means 200 is fastened to the fixing part 500, the fixing part 500 moves straight forward and rearward and thus the first lift operating means 200 also moves straight forward and rearward. The screwdriver 610 is fixed to the anchor unit 600. A connecting part 620 configured to fix the screwdriver 610 to the anchor unit 600 is provided and a bolt is fastened to bolt fasteners 612 and 622 formed at the connecting part 620 and the anchor unit 600 so that the screwdriver 610 can be fixed to the anchor unit 600.

Forward and rearward straight movement of the first lift operating means 200 is needed to adjust a gap when the profile 100 is raised or lowered. In addition, since the fixing part 500 and the first lift operating means 200 can move straight forward and rearward, even when an appearance of the structure to be constructed is varied, the temporary stand can be raised or lowered according to the variation. As a relative position of the fixing part 500 is adjusted by the screwdriver 610, even when the outer wall of the structure is inclined, the profile 100 can be lifted upward while adjusting the inclination of the profile 100. For example, in the outer wall of the structure having an

inclination of a “\” shape, the fixing part 500 coupled to the first lift operating means 200 disposed under the structure is adjusted to project to the outside using the screwdriver 610, and the fixing part 500 coupled to the first lift operating means 200 disposed over the structure is adjusted to enter the inside using the screwdriver 610 so
5 that the profile 100 is inclined to a “\” shape to raise and lower the temporary stand.

Hereinafter, a lift operation of the lift apparatus in accordance with the present invention will be described with reference to the configuration of the above-mentioned embodiment.

FIGS. 20 to 22 show a state in which the apparatus for lifting a temporary stand
10 in accordance with the embodiment of the present invention is mounted on the structure, explaining a lift operating process of the lift apparatus. In FIGS. 20 to 22, while the structure 10 may be seen as floating in mid-air for the purpose of simple illustration, the structure 10 shown in FIGS. 20 to 22 is a concrete slab, which may be connected to a concrete structure. An operating sequence of the lift apparatus performed when the
15 temporary stand is raised to a predetermined height will be described below with reference to the drawings.

As shown in FIGS. 20 to 22, the first lift operating means 200 is installed at and fixed to the structure 10 through the bracket 252, the fixing part 500 and the anchor unit 600, and both of the first lift operating means 200 and the second lift operating means
20 300 oppose the profile 100. Here, it is assumed that the profile 100 is disposed on, for example, the ground. The through-hole configured to fix the bracket 252 to the structure 10 may be formed in the connecting frame 254a, and the bolt may be inserted through the through-hole to fix the bracket 252 to the structure 10.

The stoppers 210 and 310 of the first lift operating means 200 and the second lift

operating means 300 have a shape configured to support a lower side of the latch 140 of the profile 100. The first lift operating means 200 has the stopper 210 latched by the latch 140 of the profile 100. Similarly, the second lift operating means 300 has the stopper 310 also latched by another latch 140 of the profile 100. Meanwhile, in the case in which the stopper seating groove 262 is provided, when the stoppers 210 and 310 are separated from the stopper seating groove 262, the stoppers are moved downward along the guide channel 260 to be adhered to the profile 100 by force due to their own weight, and the stoppers 210 and 310 moved down along the guide channel 260 are to be latched by the latch 140 of the profile 100.

In this state, the lift driving means 400 connecting the first lift operating means 200 and the second lift operating means 300 is operated. A piston rod 420 is sufficiently released from the hydraulic cylinder 410 of the lift driving means 400 to raise the second lift operating means 300. That is, when a hydraulic fluid is supplied from a hydraulic source (not shown) to the hydraulic cylinder 410 of the lift driving means 400, which is a hydraulic actuator illustrated in the embodiment, the piston rod 420 is released from the hydraulic cylinder 410 to raise the second lift operating means 300. Here, as the second lift operating means 300 is raised in a state in which the stopper 310 of the second lift operating means 300 is latched and supported by the latch 140 of the profile 100, the profile 100 is raised. When the profile 100 is raised, the stopper 210 of the first lift operating means 200 contacts the latch 140 to be raised along the oblique guide channel 260 by the latch 140, and after the latch 140 passes, the stopper 210 is lowered along the guide channel 260 by its own weight, so that the profile 100 can be raised without interference of the stopper 210 of the first lift operating means 200.

In order to latch the first lift operating means 200 by the latch 140 disposed at the corresponding height in a state in which the second lift operating means 300 and the profile 100 are raised to a predetermined height by the lift driving means 400, the piston rod 420 is released and then contracted such that the latch 140 of the profile 100 is disposed at a slightly higher position than a stop position (a position of the stopper of the first lift operating means). As a result, the stopper 210 of the first lift operating means 200 is latched by the latch 140 so that the profile 100 is fixed to the first lift operating means 200.

When the profile 100 is fixed by the first lift operating means 200, the piston rod 420 of the lift driving means 400 is contracted to lower the second lift operating means 300. Here, the profile 100 is fixed by the first lift operating means 200. Since the stopper 310 can move along the guide channel 260 when the second lift operating means 300 is lowered, the second lift operating means 300 can be lowered with no interference even when the stopper 310 contacts the latch 140 of the profile 100. That is, when the stopper 310 contacts an upper portion of the latch 140 of the profile 100 upon lowering of the second lift operating means 300, the stopper 310 moves upward along the guide channel 260 and then moves downward to a lower end of the guide channel 260 due to its own weight when no contact with the latch occurs.

In order to latch the second lift operating means 300 by the latch 140 disposed at a corresponding height in a state in which the second lift operating means 300 is lowered to a predetermined height, as the piston rod 420 is contracted and then released such that the stopper 310 of the second lift operating means 300 is disposed at a position slightly under the position of the latch 140 of the profile 100, the stopper 310 of the second lift operating means 300 is fastened to the latch 140 of the profile 100.

As described above, as the lift apparatus in accordance with the present invention repeats the above-mentioned process, the profile 100 can be raised to a desired height position. Since the profile 100 is raised with an increase of the second lift operating means 300, the profile 100 can be raised to a desired height in a stepped manner.

Hereinafter, an operating sequence of the lift apparatus performed when the temporary stand is lowered to a predetermined height will be described below.

It is assumed that the stoppers 210 and 310 of the first lift operating means 200 and the second lift operating means 300 are latched and fixed by the latches 140 of the profile 100, respectively.

As the piston rod 420 is slightly lowered from the hydraulic cylinder 410 of the lift driving means 400 in a state in which the lift driving means 400 is released while the latch 140 of the profile 100 is engaged with the stopper 310 of the second lift operating means 300, the stopper 210 of the first lift operating means 200 is spaced apart from the latch 140 of the profile 100. Here, the stopper 210 of the first lift operating means 200 is spaced apart from the latch 140 such that the stopper 210 can move into the stopper seating groove 262 along the guide channel 260 with no interference of the latch 140.

Next, the stopper 210 of the first lift operating means 200 is seated in the stopper seating groove 262. Then, when the hydraulic cylinder 410 and the piston rod 420 of the lift driving means 400 is contracted, the profile 100 can be lowered with no interference with the stopper 210 of the first lift operating means 200.

Next, when the hydraulic cylinder 410 and the piston rod 420 are contracted, the latch 140 of the profile 100 initially latched by the stopper 210 of the first lift operating means 200 passes the stopper 210, and the latch 140 of the profile 100 initially latched

by the first lift operating means 200 is lowered. When the latch 140 of the profile 140 initially latched by the first lift operating means 200 completely passes the first lift operating means 200, the stopper 210 of the first lift operating means 200 is separated from the stopper seating groove 262 to be moved downward along the guide channel 260. Then, when the profile 100 is lowered by the piston rod 420, the stopper 210 is kept adhered toward the profile 100.

When the profile 100 is completely lowered to a predetermined height, the stopper 210 of the first lift operating means 200 is latched by the latch 140 disposed at the corresponding height to stop the profile 100.

When the profile 100 is fixed by the first lift operating means 200, the hydraulic cylinder 410 and the piston rod 420 of the lift driving means 400 are slightly contracted so that the stopper 310 of the second lift operating means 300 is spaced apart from the latch 140 of the profile 100. Here, the stopper 310 is spaced apart from the latch 140 to move into a stopper seating groove 362 along a guide channel 360 with no interference with the latch 140.

Next, the stopper 310 of the second lift operating means 300 is seated in the second seating groove 362. Then, when the piston rod 420 of the lift driving means 400 is raised, the second lift operating means 300 can be raised with no interference with the latch 140 of the profile 100.

The piston rod 420 of the lift driving means 400 is released to raise the second lift operating means 300. Here, the profile 100 is fixed by the first lift operating means 200.

In order to latch the second lift operating means 300 by the latch 140 disposed at a corresponding height in a state in which the second lift operating means 300 is raised

to a predetermined height, the stopper 310 is separated from the stopper seating groove 362 to be moved downward along the guide channel 360 so that the stopper 310 of the second lift operating means 300 is fastened to the latch 140 of the profile 100.

As described above, the lift apparatus in accordance with the present invention
5 repeats the above-mentioned process to be lowered to a desired height position, and thus, a temporary stand- or cargo-loaded means connected to the profile 100 can be lowered to a predetermined height.

The foregoing description concerns an exemplary embodiment of the invention, is intended to be illustrative, and should not be construed as limiting the invention.
10 The present teachings can be readily applied to other types of devices and apparatuses. Many alternatives, modifications, and variations within the scope and spirit of the present invention will be apparent to those skilled in the art.

【CLAIMS】**【Claim 1】**

An apparatus for lifting a temporary stand including a profile installed at a side opposite to an outer wall of a structure and having a plurality of latches disposed at
5 predetermined intervals, comprising:

a pair of left and right guide frames having guide grooves formed in a direction perpendicular to a lift direction of the profile;

support frames configured to support the guide frames, and facing and spaced apart from each other;

10 guide channels obliquely formed in the support frames, and configured to provide a moving path of a stopper such that the stopper is raised along an oblique path by the latch when the profile is raised, and the stopper is lowered due to its own weight after the latch passes;

the stopper installed between the support frames such that the stopper contacts
15 the latch to move straight upward along the guide channel when the profile moves upward, and the stopper is latched by the latch, when the profile is lowered, to support a lower portion of the latch to raise the profile; and

a pair of left and right guide arms configured to slide along the guide grooves formed in the guide frames to be opened or closed.

20 **【Claim 2】**

An apparatus for lifting a temporary stand including a profile installed at a side opposite to an outer wall of a structure, comprising:

a profile including a plurality of latches disposed in a longitudinal direction

thereof;

a pair of upper and lower lift operating means, one of which is fixed to the structure, including a stopper latched by the latch so that at least one of the pair of lift operating means supports a lower side of the latch to raise and lower the profile; and

5 lift driving means coupled between the upper and lower lift operating means to provide a lift driving force to the lift operating means,

wherein the lift operating means comprises:

a pair of left and right guide frames having guide grooves formed in a direction perpendicular to a lift direction of the profile;

10 support frames configured to support the guide frames, and facing and spaced apart from each other;

guide channels obliquely formed in the support frames, and configured to provide a moving path of the stopper such that the stopper is raised along an oblique path by the latch when the profile is raised, and the stopper is lowered due to its own weight after the latch passes;

15 the stopper installed between the support frames such that the stopper contacts the latch to move straight upward along the guide channel when the profile moves upward, and the stopper is latched by the latch, when the profile is lowered, to support a lower portion of the latch to raise the profile; and

20 a pair of left and right guide arms configured to slide along the guide grooves formed in the guide frames to be opened or closed.

【Claim 3】

An apparatus for lifting a temporary stand including a profile installed at a side opposite to an outer wall of a structure and having a plurality of latches disposed at

predetermined intervals, comprising:

a pair of left and right guide frames having guide grooves formed in a direction perpendicular to a lift direction of the profile;

support frames configured to support the guide frames, and facing and spaced
5 apart from each other;

guide channels obliquely formed in the support frames, and configured to provide a moving path of a stopper such that the stopper is raised along an oblique path by the latch when the profile is raised, and the stopper is lowered due to its own weight after the latch passes;

10 the stopper installed between the support frames such that the stopper contacts the latch to move straight upward along the guide channel when the profile moves upward, and the stopper is latched by the latch, when the profile is lowered, to support a lower portion of the latch to raise the profile;

a pair of left and right guide arms configured to move along the guide grooves
15 formed in the guide frames to be opened or closed;

a first guide pin connected to the guide arms through the guide grooves formed in the guide frames and that moves straight along the guide grooves formed in the guide frames to move the guide arms; and

a second guide pin connected to the guide arms through the guide grooves
20 formed in the guide frames, configured to slide along the guide grooves formed in the guide frames to move straight, and rotated about the first guide pin, which functions as a rotational center axis, along an oblique arc of the guide grooves to move the guide arms,

wherein the guide arms are opened or closed according to movement of the first guide pin and the second guide pin.

【Claim 4】

An apparatus for lifting a temporary stand including a profile installed at a side opposite to an outer wall of a structure, comprising:

a profile including a plurality of latches disposed in a longitudinal direction
5 thereof;

a pair of upper and lower lift operating means, one of which is fixed to the structure, including a stopper latched by the latch so that at least one of the pair of lift operating means supports a lower side of the latch to raise and lower the profile; and

lift driving means coupled between the upper and lower lift operating means to
10 provide a lift driving force to the lift operating means,

wherein the lift operating means comprises:

a pair of left and right guide frames having guide grooves formed in a direction perpendicular to a lift direction of the profile;

support frames configured to support the guide frames, and facing and spaced
15 apart from each other;

guide channels obliquely formed in the support frames, and configured to provide a moving path of the stopper such that the stopper is raised along an oblique path by the latch when the profile is raised, and the stopper is lowered due to its own weight after the latch passes;

20 the stopper installed between the support frames such that the stopper contacts the latch to move straight upward along the guide channel when the profile moves upward, and the stopper is latched by the latch, when the profile is lowered, to support a lower portion of the latch to raise the profile;

a pair of left and right guide arms configured to move along the guide grooves

formed in the guide frames to be opened or closed;

a first guide pin connected to the guide arms through the guide grooves formed in the guide frames, and configured to slide and move straight along the guide grooves formed in the guide frames to move the guide arms; and

5 a second guide pin connected to the guide arms through the guide grooves formed in the guide frames, configured to slide and move straight along the guide grooves formed in the guide frames, and rotated about the first guide pin, which functions as a rotational center axis, along an oblique arc of the guide grooves to move the guide arms,

10 wherein the guide arms are opened or closed according to movement of the first guide pin and the second guide pin.

【Claim 5】

The apparatus according to claim 2 or 4, further comprising a pair of fixing frames projecting rearward from the support frames to be integrally formed with the support frames,

15 wherein the fixing frames have through-holes through which coupling pins are inserted to fix a lower end or an upper end of the lift driving means inserted between the pair of fixing frames, and the lift operating means is coupled to the lift driving means as the coupling pin is inserted into the through-holes of the support frames in a state in which the lower end or the upper end of the lift driving means is inserted between the pair of support frames.

【Claim 6】

The apparatus according to any one of claims 1 to 4, further comprising a

bracket configured to be fixed to the structure,

wherein the bracket comprises:

a pair of panel frames installed to partially overlap side surfaces of the support frames, and facing and spaced apart from each other; and

5 a connecting frame configured to connect the panel frames to each other,

wherein the support frame and the panel frame are fastened to each other through a coupling fixing pin.

【Claim 7】

The apparatus according to claim 6, wherein through-holes through which the
10 coupling fixing pin is inserted are formed in the support frames and the panel frames,
the coupling fixing pin has a structure in which a protrusion partially protrudes from a
cylindrical rod in a longitudinal direction thereof, the through-hole has a complex
structure of an insertion groove, into which the protrusion is inserted, and a circular
portion, corresponding to the structure of the coupling fixing fin, and when the coupling
15 fixing pin is inserted into the through-hole to be rotated, the coupling fixing pin is
prevented from separating from the through-holes due to the protrusion projecting from
the circular rod.

【Claim 8】

The apparatus according to claim 6, wherein a through-hole configured to fix the
20 bracket to the structure is formed in the connecting frame, and a bolt is inserted through
the through-hole to fix the bracket to the structure.

【Claim 9】

The apparatus according to claim 6, wherein an inclination compensating groove

configured to compensate for an inclination of the support frame to correspond to an inclination of the profile is formed in the panel frame in a direction perpendicular to a longitudinal direction of the profile, a connecting pin is inserted into the inclination compensating groove, and a position of the connecting pin with respect to the longitudinal direction of the inclination compensating groove is controlled to adjust the inclination of the support frame.

【Claim 10】

The apparatus according to claim 6, further comprising an anchor unit installed at a flat slab of the structure,

wherein the bracket is connected to a fixing part configured to be fixed to the anchor unit, and the fixing part partially enters the anchor unit to overlap the anchor unit and is detachably coupled to the anchor unit by a fastening pin passing through the overlapping portion of the fixing part and the anchor unit.

【Claim 11】

The apparatus according to claim 10, wherein the anchor unit has a trench and at least one inclination adjusting groove formed of a through-groove at both sides of the trench, one end of the fixing part has a square pillar structure to be inserted into the trench of the anchor unit, and at least two fastening pins pass through the inclination adjusting groove to be fastened to the square pillar to be inserted into the anchor unit.

【Claim 12】

The apparatus according to claim 10, wherein a screwdriver connected to the fixing part is installed on one end of the anchor unit, and as the screwdriver is rotated, the fixing part moves straight forward and rearward along the inclination adjusting

groove formed in the anchor unit.

【Claim 13】

The apparatus according to any one of claims 1 to 4, further comprising a stopper seating groove formed in an upper end of the guide channel to seat the stopper.

5 【Claim 14】

The apparatus according to any one of claims 1 to 4, wherein the stopper has a circular rod structure and a radius of curvature smaller than that of a seating groove of the latch such that the stopper can stably support a curved lower portion of the latch.

【Claim 15】

10 The apparatus according to any one of claims 1 to 4, wherein the profile has a structure in which a first beam having substantially a '□' shape and a second beam having substantially a reverse '□' shape are opposite and coupled to each other, and the latch is installed at a connecting pin configured to connect the first beam and the second beam.

15 【Claim 16】

The apparatus according to any one of claims 1 to 4, wherein a channel frame configured to guide a flange of the profile is installed at one end of the support frame in a direction facing the profile, an upper portion of the channel frame has an oblique flat plate to guide insertion of the profile when the profile is inserted into the lift operating
20 means from top to bottom, and a lower portion of the oblique flat plate has a vertical flat plate to guide the flange of the profile inserted into the lift operating means.

【Claim 17】

The apparatus according to any one of claims 1 to 4, wherein the guide groove has a through-groove structure including a first guide groove configured to provide a path through which the guide arm moves straight, and a second guide groove configured to provide a path in which the guide arm is rotated along an oblique arc with respect to the first guide groove.

【Claim 18】

The apparatus according to any one of claims 1 to 4, wherein the guide frame comprises:

- 10 a pair of left and right upper guide frames having guide grooves; and
- a pair of left and right lower guide frames installed under the upper guide frames to be spaced apart from each other, and having guide grooves.

【Claim 19】

The apparatus according to claim 18, wherein the guide arm comprises:

- 15 a pair of left and right upper guide arms installed over or under the upper guide frames to partially overlap the upper guide frames;
- a pair of left and right lower guide arms installed over or under the lower guide frames to partially overlap the lower guide frames; and
- a support member configured to connect the upper guide arms and the lower
- 20 guide arms.

【Claim 20】

The apparatus according to claim 19, further comprising:

a first guide pin configured to pass through the guide grooves formed in the upper and lower guide frames to connect the upper guide arm and the lower guide arm, and slide and move straight along the guide grooves formed in the upper and lower guide frames; and

5 a second guide pin configured to pass through the guide grooves formed in the upper and lower guide frames to connect the upper guide arm and the lower guide arm, and slide and move straight along the guide grooves formed in the upper and lower guide frames, and rotated about the first guide pin, which functions as a rotational center axis, along oblique arcs of the guide groove,

10 wherein the upper guide arm and the lower guide arm move along the guide grooves according to movement of the first and second guide pins.

【Claim 21】

The apparatus according to claim 20, wherein the upper guide frame has a step formed at a position in which the second guide pin is positioned when the guide arm is closed, a head portion of the second guide pin is inserted to fix the second guide pin by
15 the step, and when the second guide pin is raised upward, the second guide pin moves along the guide groove.

【Claim 22】

The apparatus according to claim 20, further comprising a resilient member
20 configured to recover the second guide pin downward when the second guide pin is raised upward by an external force,

wherein the second guide pin can move along the guide groove when the second guide pin is raised upward and the second guide pin is fixed when the second guide pin

is not raised.

DEVICE FOR LIFTING TEMPORARY STAND

【ABSTRACT】

Provided is an apparatus for lifting a temporary stand including a profile
5 installed at a side opposite to an outer wall of a structure and having a plurality of
latches disposed at predetermined intervals, including a pair of left and right guide
frames having guide grooves formed in a direction perpendicular to a lift direction of
the profile, support frames configured to support the guide frames, and facing and
spaced apart from each other, guide channels obliquely formed in the support frames,
10 and configured to provide a moving path of a stopper such that the stopper is raised
along an oblique path by the latch when the profile is raised, and the stopper is lowered
due to its own weight after the latch passes, the stopper installed between the support
frames such that the stopper contacts the latch to move straight upward along the guide
channel when the profile moves upward, and the stopper is latched by the latch, when
15 the profile is lowered, to support a lower portion of the latch to raise the profile, and a
pair of left and right guide arms configured to slide along the guide grooves formed in
the guide frames to be opened or closed. Therefore, the temporary stand can be safely
and easily raised and lowered to a desired height position.

Fig. 1