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54 **Sectional scaffolding with motor-driven base und sidemounted elevator.**

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Description

This patent application for an industrial utility model concerns a sectional scaffolding with motor driven base and side elevator.

The invention was designed to facilitate the work of all those bricklayers, electricians, plumbers, painters and other workers who are forced to work at a certain height from the ground.

Currently work of this kind is carried out either with ladders or with the fixed conventional scaffolding commonly available on the market.

US-A-3731758 describes a standard scaffolding whose framework has four upright rods at the four corners on which to fit the four legs of a similar scaffolding in order to realize a tower of the required height consisting of a number of identical modular scaffoldings, stacked on top of one another.

The particular feature of this scaffolding is that it has four fixed wheels at the base of the four upright rods: two of these wheels rotate freely with respect to a vertical axis, the third wheel, which also rotates, is operated by a motor driven steering mechanism, while the last wheel is fixed with respect to its upright rod and driven by an electric motor.

US-A-3422922 describes an elevator consisting of a work platform sliding vertically with respect to a support and guide frame fitted on a motor driven elevator having four wheels, of which two are steering wheels.

Even if the two devices described in the two American patents mentioned can in fact partly facilitate the work of operators who have to work at a certain height from the ground, they can certainly not be considered totally satisfactory.

The main advantage featured by both these devices is that the worker can move in any directions as necessary while remaining at the same height, so that the worker does not have to return to the ground in order to push the scaffolding every time it needs to be moved in order to continue working at the height in question.

In the case of US-A-3731758, the work platform at the top of the scaffolding is fixed, while in the case of US-A-3422922 the work platform slides along vertical guides so that the operator may not only move on the floor, but he may also vary the height from the ground.

Both these devices do not however eliminate the problem that the operator has when he requires work material or tools left on the ground.

In the case of the scaffolding described in US-A-3731758, the operator has to climb down from the scaffolding, pick up what he requires and then climb up the scaffolding again; the same applies for the hoist described in US-A-3422922, with the only advantage being that the operator does not need to climb up and down the scaffolding, but simply

presses the button which operates the motor driving the platform, on which the operator stands, up and down. In the case of the latter, the operator will only need to climb off and on the platform once he has loaded the material from the ground.

The scaffolding according to the invention was designed in order to resolve all the problems and inconveniences - including the one just mentioned - that operators who work at a certain height from the ground encounter, and adds the advantage of a motor driven hoist to the previously mentioned features.

The scaffolding according to the invention consists of sectional modules with a self-driven base (which can certainly not be compared to a real motor driven elevator like that of US-A-3422922) whose movement can be controlled by the operator on the platform at the top of the scaffolding.

The scaffolding according to the invention features a hoist sliding vertically along the side of the scaffolding which can transport persons and loads; obviously this hoist can be operated by the worker at the top of the scaffolding.

It is evident from the above that this scaffolding can be considered extremely practical since not only is it light, versatile and safe to use but also extremely useful, especially for loading and moving operations which can be controlled by a single person without inconvenience or physical effort.

For major clarity the description according to the invention continues with reference to the attached drawings which are intended for illustration purposes rather than in a limiting sense in which:

- figure 1 is a side view of the scaffolding according to the invention;
- figure 2 is a top view of the self-driven base of the scaffolding according to the invention;
- figure 3 is a top view of the platform at the top of the scaffolding according to the invention, with the hoist on the side;
- figure 4 illustrates a view of the connection between the scaffolding upright and one of the sliding trolleys fitted to this hoist platform.

With reference to the attached figures, the scaffolding consists of a series of identical and stackable components (1) having a rectangular surface and constructed with square section pipes, to form a framework having a square plan at the top of which a platform (2) having perimetral railing and a passage area, is fitted.

This framework rests on a base (3), having an identical square plan and fitted with two pairs of wheels opposite to each other, one being the driving pair and the other the steering pair.

The two driving wheels (4) are fitted at the side ends of one side of the square base (3) and connected to each other by means of a shaft (5) to which a geared motor (6) having a horizontal axis transmits the rotation for turning the wheels (4) in both operat-

ing directions, by means of a standard driving chain (7).

In particular a pinion, by means of which the above driving chain (7) is actually connected, is splined next to one of the two driving wheels (4) and along the connecting shaft (5).

In this regard it should be noted that this chain is operated by a gear fitted to the shaft of the geared motor, drawn by an adjustable lining clutch which reduces the tractive force allowing the gear to slide in the case of obstacles when the scaffolding is moved.

The steering wheels (8) positioned opposite to the driving wheels (4) are fitted under the respective side (9) of the base (3), each being fitted on a axial bearing support allowing them to rotate about a vertical axis.

Each of the steering wheels (8) has an arm (10) fitted to the respective base fixing pin (3), the arm being turned inwards to the base structure (3), connected to a transverse bar (11) parallel to the above motor shaft (5).

This bar (11) is connected by means of a rocker lever (12) to a geared motor (13), fitted with a vertical axis allowing the same to translate alternatively on a horizontal plane, and by means of which the two steering wheels (8) are rotated about a vertical axis.

It should be noted in this regard that steering is limited by two mechanical end stops; this prevents the driving wheels operating in this scaffolding with no differential effect, from sliding.

This scaffolding is characterized in that, a platform (14) for transporting objects and people up and down and vice versa, slides vertically along the side of the scaffolding in question.

At the ends of the front of this platform (14), which is fitted with a supporting pipe framework (14a) and a loading surface, there are two pairs of wheels (15) having a horizontal axis, and placed at 90° with respect to each other, which touch and slide along the external sides of an "L" shaped guide square (16) - as illustrated in figure 4 - fitted longitudinally for the full height of the external side of each of the two tubular uprights (17) fitted on the side of the framework along which the platform (14) in question slides.

The vertical movement of this platform (14) is obtained by means of a cable (18) operated by a winch (19) whose drum is operated by a geared motor having a horizontal axis (20); the geared motor (20) and the winch (19) being positioned on the base (3) of the scaffolding on the same side on which the two driving wheels (4) are fitted, and the cable (18) being wound at the top around a transmission pulley (21) fitted at the top end component (2) of the scaffolding, pivoted on a suitably sturdy cross member (22).

Finally it should be pointed out that a "C"-shaped tubular railing (23) delimiting a surface equal to approximately that of the hoist (14) projects horizontally on the side of the base (3) on the framework side

along which the hoist trolley (14) slides; this railing (23) being fitted to prevent operators on the ground from accidentally walking under the hoist (14) and running the risk of being struck by the same during its descent.

The electrical system of the scaffolding according to the invention was purposely omitted from this description since the same is a standard system.

Claims

1. A sectional scaffolding with motor driven base and side elevator, having sectional, stackable components for constructing a framework having a platform (20) fitted at the top having a perimetral railing and a passage area, and resting on a base (3) fitted with two pairs of wheels positioned opposite each other, one pair being the driving wheels (4) and the other the steering wheels (8); the driving wheels (4) being fitted at the side ends of one side of the base (3) and connected to each other by means of a meter shaft (5), the same being operated in both directions by a geared motor (6) through a standard driving chain (7); the steering wheels (8) being fitted by means of axial bearing supports on another side (9) of the base (3) and positioned opposite the driving wheels (4), on whose base (3) fixing pin an arm (10) is fitted, the same being turned inwards to the base (3), and coupled with a transverse bar (11) parallel to the above motor shaft (5), the same transverse bar (11) being connected by means of a rocker lever (12) to a geared motor (13) having a vertical axis, which allows its alternate translation on a horizontal plane, in order to steer the two wheels (8); characterized in that externally on one of the sides of this scaffolding slides a vertical elevator (14) moved by means of a cable (18) which at the bottom is driven by a winch (19) whose drum is driven by a geared motor having a horizontal axis (20) fitted to the above base (3) on the same side on which the driving wheels (4) are fitted, while at the top this cable (18) is wound around a transmission pulley (21) positioned on the top platform (2) of the scaffolding pivoted on a cross member (22).
2. A sectional scaffolding, with motor driven base and side elevator, according to claim 1, characterized in that the elevator (14) is fitted at the side ends of the front with two pairs of wheels (15) having a horizontal axis, and placed at 90° with respect to each other, the same touching and sliding along the external sides of an "L" shaped guide square (16) fitted longitudinally along the full height of the external side of each of the tubular uprights (17) fitted along the side of the fra-

mework along which the hoist (14) slides.

Patentansprüche

1. Gerüst aus zusammensetzbaren Elementen, mit motorisiertem Untergestell und seitlichem Elevator; die zusammensetzbaren Elemente können zur Herstellung eines Gestells aufeinander gesetzt werden, das am oberen Ende eine Plattform (2) mit perimetralen Geländer und Trittfläche besitzt und auf einem Untergestell (3) der gleichen Form aufliegt, das mit zwei entgegengesetzten Räderpaaren ausgestattet ist, von denen eines aus Antriebsrädern (4) und das andere aus Lenkrädern (8) besteht; es ist vorgesehen, daß die Antriebsräder (4) an den seitlichen Enden einer Untergestellseite (3) montiert und miteinander durch eine geeignete Antriebswelle (5) verbunden sind, deren Antrieb durch eine normale Treibkette (7) von einem Getriebemotor (6) in beide Fahrrichtungen erfolgt; weiterhin ist vorgesehen, daß die Lenkräder (8) mittels geeigneten Achsialagern auf einer anderen Seite (9) des Untergestells (3) in entgegengesetzter Position zu den Antriebsrädern (4) montiert sind und daß sie am jeweiligen Zapfen zur Aufhängung an das Untergestell (3) einen kleinen Arm (10) aufweisen, der gegen das Untergestellinnere (3) gerichtet und durch eine parallele Querschiene (11) mit der Antriebswelle (5) verbunden ist, Querschiene (11), die durch einen geeigneten Kipphebel (12) mit einem Getriebemotor mit vertikaler Achse (13) verbunden ist, der die Möglichkeit einer alternativen Bewegung auf einer horizontalen Ebene sichert, um die Lenkung der beiden Räder (8) steuern zu können; dadurch gekennzeichnet, daß außen an den Seiten dieses Gerüsts senkrecht ein Hubkarren (14) läuft, dessen Bewegung durch ein von einer untenliegenden Hebewinde (19) gesteuertes Kabel (18) erzeugt wird, deren Trommel von einem an dem vorgenannten Untergestell (3) angebrachten Getriebemotor mit horizontaler Achse, und zwar an derselben Seite, an der die Antriebsräder (4) montiert sind, angetrieben wird, während sich dieses Kabel (18) oben in einer Umlenkscheibe (21) aufwickelt, die an der oberen Plattform (2) des Gerüsts auf einem geeigneten Querträger (22) angelenkt ist.
2. Gerüst mit zusammensetzbaren Elementen, mit motorisiertem Untergestell und seitlichem Elevator, gemäß Anspruch 1), dadurch gekennzeichnet, daß der Elevator (14) an den jeweiligen seitlichen Enden seiner Vorderseite zwei Räderpaare (15) mit horizontaler Achse besitzt, die in einem 90° Winkel zueinander angeordnet sind und jedes auf den Außenflanken eines "L"-Führungs-

winkels (16) läuft und anschlägt, der längs der gesamten Höhe der Außenflanke eines jeden Rohrständers (17) entlang angebracht ist, die an der Seite des Gestells, an dem der Lastenaufzug (14) läuft, vorgesehen sind.

Revendications

1. Echafaudage par éléments, avec base motorisée et élévateur latéral, du type par éléments empilables destinés à la réalisation d'un châssis englobant à son sommet une plate-forme (2) avec garde-fou périmétral et caillebotis, et s'appuyant sur une base conforme (3) équipée de deux paires opposées de roues, l'une des paires étant composée de roues motrices (4), tandis que l'autre paire de roues pivotantes (8); étant prévu que lesdites roues motrices (4) soient montées sur les extrémités latérales d'un côté de la base (3) et reliées entre elles au moyen d'un arbre moteur (5) dont le mouvement est donné dans les deux sens de marche par un moto-réducteur (6), au moyen d'une normale chaîne de transmission (7); étant aussi prévu que les roues pivotantes (8) soient montées, au moyen de supports-roulements axiaux prévus à cet effet sur l'autre côté (9) de la base (3), en position opposée à celles des roues motrices (4) et qu'elles supportent appliquées à leur respectif pivot d'accrochage à la base (3), un bras (10) tourné vers l'interne de ladite base (3) couplé avec une barre transversale (11) parallèle au susdit arbre moteur (5); ladite barre transversale (11) résultant couplée, au moyen d'un balancier (12) prévu à cet effet, à un moto-réducteur à axe vertical (13) qui assure la possibilité de translation alternative sur un plan horizontal, de manière à pouvoir commander le pivotement des deux roues (8); caractérisé en ce que à l'externe d'un des côtés du susdit échafaudage, il y a un chariot élévateur (14) qui glisse en verticale et dont le déplacement est obtenu au moyen d'un câble (18) qui inférieurement est commandé par un treuil (19) dont le tambour est mis en fonction par un moto-réducteur à axe horizontal (20) monté sur la susdite base (3) du même côté sur lequel sont appliquées les roues motrices (4), tandis que supérieurement, ledit câble (18) s'enroule autour d'une poulie de renvoi (21) située sur la plate-forme du sommet (2) de l'échafaudage, ladite poulie étant pivotée de manière opportune sur une traverse (22).
2. Echafaudage par éléments, avec base motorisée et élévateur latéral, selon la revendication 1), caractérisé en ce que l'élévateur (14) présente, aux respectives extrémités latérales de sa face frontale, deux paires de petites roues (15) ayant axe

horizontal et disposées entre elles à 90°, chacune étant destinée à fonctionner en tant que battement et à glisser sur les côtés externes d'une équerre de glissement en forme de "L" (16), montée longitudinalement sur toute la hauteur du côté externe de chacun des montants tubulaires (17) prévus sur le côté du châssis le long duquel se déplace le monte-charges (14).

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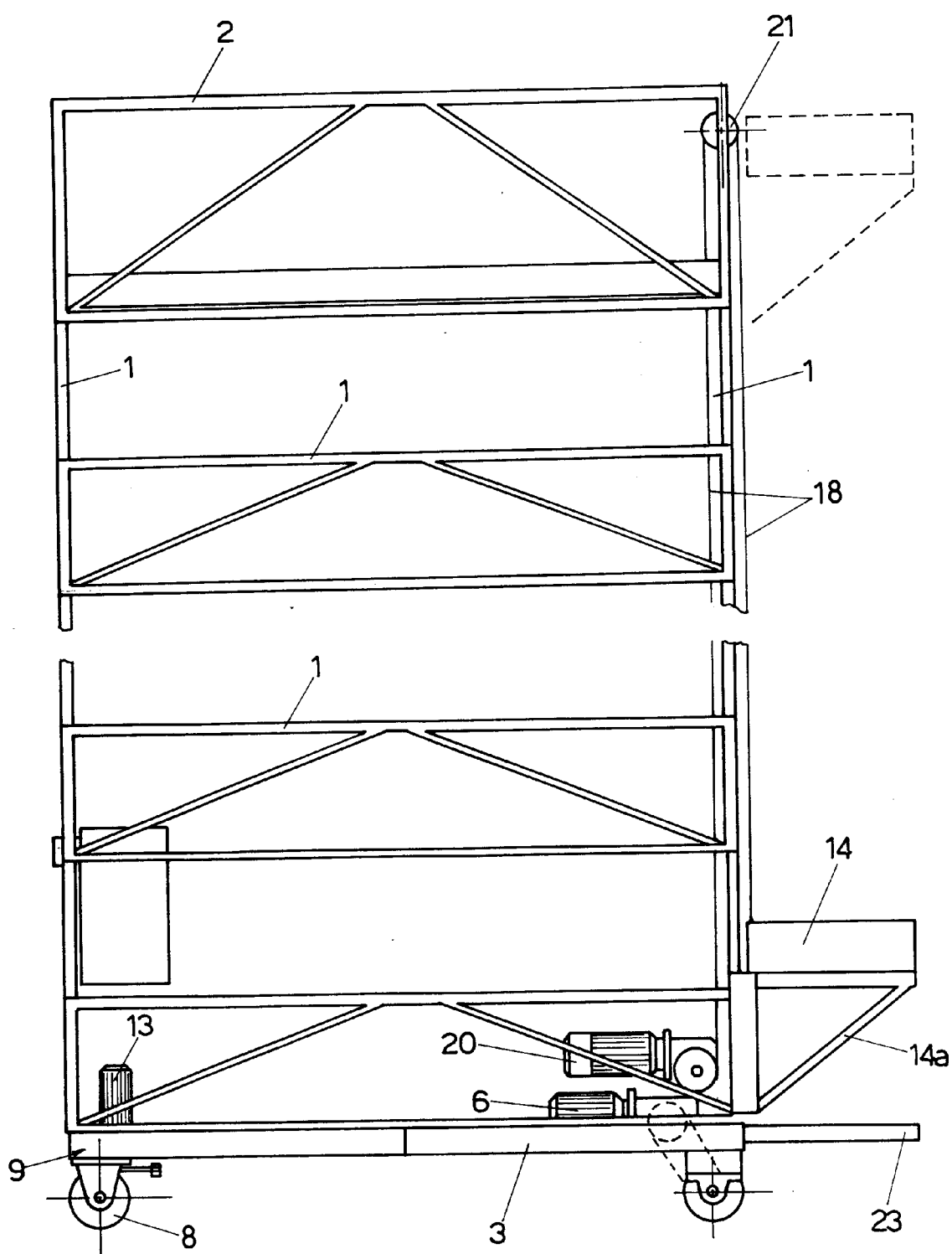


FIG. 1

