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(54) **SCAFFOLDING**

(57) A scaffolding comprises a system of uprights (10) which are mutually connected by ledgers (20) with enclosing of scaffold sections (1,2). Successive scaffold sections (1,2) within a level are provided with an at least substantially continuous scaffold floor (30,40). A first floor part (30) spans a first scaffold section (1) within the level and a second floor part (40) spans a second scaffold section (2). The first floor part (30) makes an angle with

the second floor part (40). Resting therebetween on a support (60,90) is a platform (50,70), which platform (50,70) spans at least for the greater part an intermediate space between the first floor part and the second floor part. The platform (50,70) and the support are configured such that an adjustment of the angle between the first and the second scaffold section is allowed.

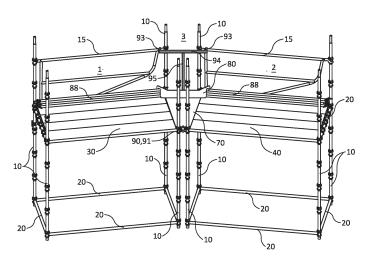


Fig.7

Description

[0001] The present invention relates to a scaffolding comprising a system of uprights which are mutually connected by ledgers with enclosing of scaffold sections, wherein successive scaffold sections within a level are provided with a scaffold floor, a first scaffold section of which comprises a first floor part and a second scaffold section comprises a second floor part.

1

[0002] Scaffolding is applied on large scale as a usually temporary construction with which work can be carried out safely at height on a building, structure or installation. The scaffolding is erected for this purpose at the intended location and assembled mainly from uprights, ledgers lying therebetween and (fall) protection rails. Both the uprights and the ledgers here normally comprise robust metal tube parts, usually of steel or aluminium. The ledgers provide support for floor parts which, where necessary, are arranged in the scaffold sections and normally span the whole scaffold section. A continuous scaffold floor can thus be provided in successive scaffold sections at any desired level. For a satisfactory stability the whole is anchored at one or more locations to the fixed construction of the respective structure. A fitting scaffold construction can thus be erected at the location which extends over the whole part of the structure to be worked on, with successive scaffold sections both laterally and in the height direction from which work can take place safely.

[0003] It is otherwise possible to make a distinction between so-called system scaffolds and non-system scaffolds. In the system scaffolds the uprights and ledgers are provided with mutually co-acting (system) coupling means with which a mutual connection can be made in quick and reliable manner. These coupling means extend at a regular pitch from the uprights and are provided at opposite ends with the ledgers. In non-system scaffolds the connections between uprights and ledgers are realized by means of separate tube couplings. While this is more time-consuming, it does have the advantage that this connection can be realized at practically any position. Different forms (systems) of system scaffold are found in practice and all occurring modalities, i.e. different forms of system coupling and tube coupling, can moreover be combined in an overall scaffolding.

[0004] A straight scaffolding extending for instance along one or more outside walls of a building can thus be provided per se quickly and proficiently. In the case of technical installations however a straight outside wall is rather more the exception than the rule. Here a fitting construction which adequately follows a non-straight contour of the installation is in practice often assembled with great ingenuity. Examples of such an installation are large supply and storage tanks, such as in the case of (petro)chemical installations. However, round or curved roofs and outside walls also occur in practice in buildings, wherein it is desirable that the scaffolding could likewise deviate from a straight line.

[0005] The present invention therefore has for its object, among others, to provide a scaffolding which extends laterally with a continuous scaffold floor while having a curved path at one or more locations.

[0006] In order to achieve the stated object a scaffolding of the type described in the preamble has the feature according to the invention that the first floor part extends in a first floor direction and the second floor part extends in a second floor direction, which second floor direction makes an angle with the first floor direction, that a platform rests on a support between the first floor part and the second floor part, which platform spans at least for the greater part an intermediate space between the first floor part and the second floor part, and that the platform and the support are configured such that an adjustment of the angle between the first and the second floor part is allowed. The first and second scaffold sections, which thus make an angle with each other, hereby define a curvature in the scaffolding which to at least large extent allows a contour of a building, structure or installation to be followed. In order to provide a continuous scaffold floor here, the invention provides a platform which spans a thus created intermediate space between the first and second scaffold sections. The platform is supported here by a support which is configured together with the platform such that a variation in the angle between the first and second scaffold sections can be hereby accommodated without problem. The scaffolding can thus be adapted optimally to a rounding to be followed in the respective structure.

[0007] In order to avoid the possibility of the platform detaching unexpectedly from the scaffolding, a preferred embodiment of the scaffolding according to the invention has the feature that the support provides for sliding locking means which fix the platform vertically relative to the first floor part and the second floor part but which allow lateral adjustment. These locking means extend here from the support, whereby platform and support will form a cohesive, mutually connected whole. The platform is secured here in vertical direction against undesirable release, while a variation of the angle between the first and second scaffold sections nevertheless remains possible in lateral direction.

[0008] In a further embodiment the scaffolding according to the invention is characterized in that platform comprises a floor plate with a plate thickness and lies with said plate thickness substantially flush with the first floor part and the second floor part. Particularly when the floor plate is formed from steel, aluminium or other suitable metal, a small plate thickness of only several millimetres will already suffice to provide sufficient bearing capacity. Because the platform lies with this plate thickness on the adjacent floor parts, a substantially wholly level transition from and to these adjacent floor parts is thus achieved. [0009] In a first particular embodiment the scaffolding according to the invention is characterized in that the support is provided by at least one latch body which is

connected at a proximal end for rotation about a longitu-

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dinal axis to an upright adjacent to the platform, and that the latch body can be brought into a latching co-action with the platform by being rotated about said longitudinal axis and releases the platform by being rotated in opposite direction. The latch body thus provides the platform with both support and locking in exceptionally practical manner. A fixation of the platform is achieved particularly efficiently by moving the latch body in simple manner by rotation from a one position releasing the platform to the latching position.

[0010] A further embodiment of the scaffolding according to the invention has the feature here that the uprights are provided at regular distances with primary coupling means which, for the purpose of erecting the system in a desired transverse direction, are coupled releasably to secondary coupling means provided at opposite ends on the ledgers, that the latch body is provided with secondary coupling means at the proximal end and is connected for rotation about the longitudinal axis to primary coupling means of the upright. In order to connect the latch body a connection has to be made to the system coupling means of such a system scaffold. These allow the desired lateral rotation of the latch body in order to lock the platform or, in the case the scaffolding is dismantled, to once again release the platform.

[0011] A particularly practical embodiment of the scaffolding according to the invention is characterized here in that the platform comprises a floor plate having on a lengthwise side a longitudinal edge part which is folded over a number of times from a back side of the floor plate so as to form successive segments, wherein an outermost segment of the edge part maintains a distance relative to the back side of the floor plate in order to form a cavity, and that the latch body is located in the cavity between the outermost segment of the edge part and the back side of the floor plate in order to lock the floor plate. The folded edge part can for instance be bent twice at right angles so as to thus form the said intermediate space in which the latch body is received. The term folded should otherwise be interpreted broadly here, and should also be understood to mean an extrusion profile which provides the said intermediate space.

[0012] A further particular embodiment of the scaffolding according to the invention has the feature that the support comprises an elongate support body which is connected at a first outer end to adjacent uprights of respectively the first and the second scaffold section and is suspended at an opposite second outer end via a suspension between nearby uprights of respectively the first and the second scaffold section. This embodiment has the advantage that the support body wholly spans the intermediate space and, simply by adjusting a length thereof, also provides a solution for deeper scaffold floors. On a proximal side the support body is coupled directly here to adjacent uprights, while on the opposite side a suspension is provided via which the support body hangs downward for instance from a ledger of the scaffolding lying above and/or is connected to adjacent uprights. This imparts sufficient support and bearing capacity to the platform in substantially all situations. The platform is advantageously shaped here to the intermediate space so that it only overlaps a little with the adjacent floor parts.

[0013] In a preferred embodiment the scaffolding is characterized here in that the suspension comprises an eye through which the opposite outer end of the support body is movable and into which the opposite outer end protrudes. Placing the support body to greater or lesser extent through the eye of the suspension here provides for a certain tolerance in the specific dimension of the transverse span of the intermediate space. It is thus also possible to suffice with only a limited number of standard components to provide an effective support in the case of varying dimensions of the intermediate space.

[0014] In order to be able to realize the support from an underlying level in simple and safe manner, a further particular embodiment of the scaffolding according to the invention has the feature that the suspension comprises a T-rail having on opposite ends thereof a hook member with which the suspension hooks over a ledger of the scaffold section lying above. The support at the position of the intermediate space can thus be easily realized by laying the T-rail with the hook members over the ledger lying above, for instance a railing, of the scaffold section and subsequently connecting the distal end of the support body thereto. For an increased stability a further embodiment has the feature here that the suspension is connected on either side to adjacent uprights via an intermediate ledger. This intermediate ledger imparts a cohesion to the supporting construction, which is thereby exceptionally rigid.

[0015] In a further particular embodiment the scaffolding has the feature according to the invention that the support body comprises a protrusion under which an edge part of the platform is received. The protrusion secures the platform on a first side in vertical direction, while an adjustment of the angle between the first and second scaffold sections nevertheless remains possible.

[0016] In order to provide a protection from falling objects, and thereby also a locking, on an opposite side, a further particular embodiment of the scaffolding according to the invention has the feature that the first floor part and the second floor part are each provided on an exposed side with an upright part, in particular an edging board, with a groove extending in longitudinal direction in at least one of the two upright parts, that the intermediate floor is provided with a further upright part which comprises on opposite outer ends a jaw with which the further upright part drops over the adjacent upright part of the first and second floor parts, that at least one protrusion extends into one of the jaws of the further upright part and is received into the groove of the adjacent upright part of the first or second floor part, and is released therefrom by rotating the further upright part. The upright part in the two scaffold sections is in particular an edging board such as is already often applied to prevent objects

falling. Provided here for the platform is an adapted edging board which can be placed with both jaws over the adjacent edging boards. With a rotating manipulation the at least one protrusion is inserted here into the groove of the respective adjacent edging board, whereby the upright part of the platform anchors therein and thereby also secures the platform. Because the protrusion is movable laterally in the groove, a lateral adjustment of the angle between the first and second scaffold sections remains possible.

[0017] The invention will be further elucidated hereinbelow with reference to several exemplary embodiments and an accompanying drawing. In the drawing:

Figure 1 is a perspective rear view of a first exemplary embodiment of a scaffolding according to the invention;

Figure 2A is a perspective view of a platform as applied in the scaffolding of figure 1;

Figure 2B shows a cross-section of the platform as applied in the scaffolding of figure 1;

Figure 3 is a perspective view of a set of latch bodies as applied in the scaffolding of figure 1;

Figure 4A is a bottom view of the platform and the latch bodies as applied in the scaffolding of figure 1 in a release position of the latch bodies;

Figure 4B is a bottom view of the platform and the latch bodies as applied in the scaffolding of figure 1 in a locked position of the latch bodies;

Figure 5A is a bottom view of the scaffolding of figure
1 with a locked position of the latch bodies
at an angle of zero degrees between a first
and a second scaffold section;

Figure 5B is a bottom view of the scaffolding of figure 1 with a locked position of the latch bodies during an adjustment through angle α between a first and a second scaffold section;

Figure 6 is a perspective view of a platform as applied in the scaffolding of figure 7;

Figure 7 is a perspective rear view of a second exemplary embodiment of a scaffolding according to the invention;

Figure 8A is a perspective view of an edging board as applied in the scaffolding of figure 7;

Figure 8B is a front view of the edging board as applied in the scaffolding of figure 7;

Figure 9 is a perspective front view of the scaffolding of figure 7 during an adjustment through angle α between a first and a second scaffold section;

Figure 10 is a perspective view of a support body as applied in the scaffolding of figure 7;

Figure 11 is a perspective view of a suspension as applied in the scaffolding of figure 7; and

Figure 12 is a top view of the scaffolding of figure 7 at an angle of zero degrees between a first

and a second scaffold section.

[0018] It is otherwise noted here that the figures are purely schematic and not always drawn to (the same) scale. Some dimensions in particular may be exaggerated to greater or lesser extent for the sake of clarity. Corresponding parts are designated in the figures with the same reference numeral.

[0019] Shown in figure is a first exemplary embodiment of a scaffolding according to the invention. It should be noted here that only a few scaffold sections are shown in the figure, but that in practice the shown construction can repeat many times in both vertical and horizontal direction in order to provide a scaffolding which wholly surrounds a structure, such as for instance a storage tank. The scaffolding is erected for this purpose from a system of uprights 10 and ledgers 20 which normally extend transversely between the uprights and mutually connect uprights 10. This embodiment relates to a system scaffold wherein the uprights are provided at regular positions, also referred to as nodes, with primary coupling members and ledgers 20 carry complementary secondary coupling members on their opposite outer ends. In this embodiment the primary coupling members comprise so-called cups of shell parts opening toward each other, one of which is connected fixedly to the uprights and the other can make a small vertical rotation in order to close or open the cup. The secondary coupling members comprise side parts which are shaped to the interior contour of cups and can be received in play-free manner therein after closing of the cup. This system is referred to informally as "cuplok" and is assumed sufficiently known to a person with ordinary skill in the art. In addition to this system there are numerous other systems for system scaffolds wherein the present invention, mutatis mutandis, can likewise be applied.

[0020] Uprights 10 and ledgers 20 of the scaffolding thus enclose a number of scaffold sections, of which a first scaffold section 1 and a second scaffold section 2 are shown in the figure. On an exposed side these scaffold sections are provided with a rail 15, while a floor part 30,40 is arranged therein in order to provide a continuous scaffold floor from which work at height can be carried out safely. As will be apparent from the figure, both scaffold sections 1,2 are not in line with each other but lie at an angle α to each other so as to thus be able to follow a rounding in an outside wall, installation or other structure. This results in an intermediate space 3 between the two scaffold sections.

[0021] According to the invention this intermediate section 3 is provided with a platform 50 which at least for the greater part spans this intermediate space. In this embodiment there is a full span in the form of a floor plate, which is further shown in figures 2A and 2B and which, with outer ends 51 of small plate thickness, makes a substantially flush connection to both adjacent floor parts 30,40. In order to enhance the bearing capacity this floor plate lies on a support in the form of a set of latch bodies

60 as further shown in figure 3 and the operation of which will be elucidated below.

[0022] Latch bodies 60 have on their proximal end a secondary coupling member 61 in accordance with the system in which the latch body is applied. In this case this coupling member comprises a side part as also applied on the outer ends of ledgers 20. Each latch body 60 can thus be received with side part 61 in a cup 11 of an adjacent upright 10, this being shown further enlarged in the detail drawing of figure 1. Floor plate 50 comprises on the adjacent longitudinal side 52 an edge part which is twice bent downward, see figure 2B. The outermost segment 53 thereof thus maintains a distance h1 from a back side of floor plate 50 so as to form a cavity 55 corresponding to a height h2 of the latch bodies. With (bending) stiffness in mind, the opposite edge part 54 is also bent twice.

[0023] The cuplock connection 61 of latch bodies 60 to their respective upright 10 allows a lateral rotation about the longitudinal axis of upright 10. It is hereby possible to swing each of the latch bodies 61 out of a free position, see figure 4A, into the cavity 55 under floor plate 50, see figure 4B, in order to thus enclose edge part 52,53. Latch bodies 60 thus impart not only a support and additional bearing capacity to floor plate 50, but platform 50 is hereby also locked into position. This locking does however still allow a lateral adjustment of the two scaffold sections 1,2 from a completely straight situation, see figure 5A, to an arrangement at an angle α , see figure 5B. The scaffolding is thus adjustable within these limits to a specific rounding of the structure in extremely practical manner.

[0024] A second exemplary embodiment of a scaffolding according to the invention is shown in figure 7. This also relates to a system scaffold on the basis of the above mentioned cuplock system. Correspondent parts are therefore designated with the same reference numeral. Here too only a part of a complete scaffolding is shown, which in practice will normally comprise a plurality of the number of scaffold sections in both vertical direction and horizontal direction in order to span an entire facade or wall. Other than in the exemplary embodiment of figure 1, this relates to a deeper scaffold in that ledgers 20 take a longer form in transverse direction.

[0025] As shown in figure 7, a first scaffold section 1 with a first floor part 30 and a second scaffold section 2 with a second floor part 40 do not (necessarily) lie mutually in line in this case either, but make an angle α with each other, see also figure 9. In order to also provide a floor part in the thereby resulting intermediate space 3, according to the invention a platform is arranged which in this case comprises a flat floor plate 70, see also figure 6. This floor plate is shaped to the (maximum) contour of intermediate space 3 and thus always spans the entire intermediate space. Use is also made in this case of a relatively thin floor plate of steel or aluminium, whereby floor plate 70 lies flush with both adjacent floor parts 30,40 and a level continuous scaffold floor is as it were ob-

tained.

[0026] With a view to a sufficient bearing capacity and an efficient locking of platform 70 in the construction, floor plate 70 rests on a support which is formed here by an elongate support body 90, see also figure 10, in combination with a suspension 95, see figure 11. The support body comprises at a proximal end two side parts 91 which are complementary to cups 11 on the uprights, whereby support body 90 can be secured with these side parts 91 in cups 11 of the adjacent uprights, as shown in the enlargement of figure 9. Extending from support body 90 is a protrusion 99 under which floor plate 70 is received slidably with a recess 72 in order to lock floor plate 70 on this side thereof.

[0027] The opposite distal end 92 of support body 90 is received movably in an eye 96 of suspension 95. The free outer end 92 of the support body here passes through eye 96 and a locking pin or other type of locking can be applied in or on end 92 in order to avoid support body 90 springing out of eye 96 in unintended manner. A protrusion 98 on support body 90 corresponds to a similar opening 75 in floor plate 70, see also figure 6, and extends with an outer end above floor plate 70. A hairpin spring or other type of locking can be applied herein in order to further secure floor plate 70.

[0028] The suspension comprises a T-rail 94 having at the outer end thereof two hooks 93 with which the suspension is suspended from a scaffold section lying above. All components of the suspension, as in the foregoing embodiment, take a robust and strong form, such as in steel or aluminium of sufficient thickness. Floor plate 70 is thus heavily loadable in efficient manner. With a view to a rigid whole, there is furthermore provided at the outer end of suspension 95 a tube coupling 97 in which an additional intermediate ledger 22 is received which is coupled on either side to the adjacent uprights by means of tube clips. T-rail 94 can otherwise also be dispensed with when intermediate ledger 22 is coupled in alternative manner to support body 90, for instance by means of conventional tube couplings and scaffolding tubes. The methods and means herefor are assumed sufficiently known to a person with ordinary skill in the art.

[0029] Both scaffold sections 1,2 are bounded on an exposed side by an upright part in the form of a usual edging board 88, see figure 7. This prevents the possibility of loose objects unintentionally falling from the scaffold floor. Such edging boards are assumed sufficiently known to a person with ordinary skill in the art and are normally given a robust form in steel or aluminium and have a ribbed surface structure between which one or more longitudinal grooves extend over substantially a full length. Use is advantageously made hereof in the present embodiment.

[0030] Likewise provided in the space between the two scaffold sections 1,2 is an upright part in the form of a modified edging board as shown in further detail in figures 8A and 8B. This edging board is formed from aluminium or steel and comprises on either side an obliquely bent

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ear with a jaw 85 therein. This upright part can hereby be placed over the edging boards 88 present in both adjacent scaffold sections. One of the two jaws 85 is provided here with a protrusion 83 which, by rotating upright part 80 relative to the already present edging board 88, can be introduced into a longitudinal groove thereof. Protrusion 83 has sufficient play herein to nevertheless allow placing of the other jaw 85 over the other edging board 88. Protrusion 83 subsequently precludes the possibility of upright part 80 being lifted in unintended manner, and thereby also locks floor plate 70 lying thereunder.

[0031] This locking is also sliding in the sense that protrusion 83 is freely movable laterally in the groove, whereby an adjustment of the angle α between the two scaffold sections 1,2 is possible to a substantially straight situation in which both scaffold sections 1,2 lie in line as shown by way of illustration in figure 12. This embodiment of a deeper scaffolding according to the invention hereby also provides the option of adjusting the angle α to a specific rounding or contour of an outside wall or other upright surface to be worked on.

[0032] Although the invention has been further elucidated above with reference to only several exemplary embodiments, it will be apparent that the invention is by no means limited thereto.

[0033] On the contrary, many variations and embodiments are still possible within the scope of the invention for a person with ordinary skill in the art.

Claims

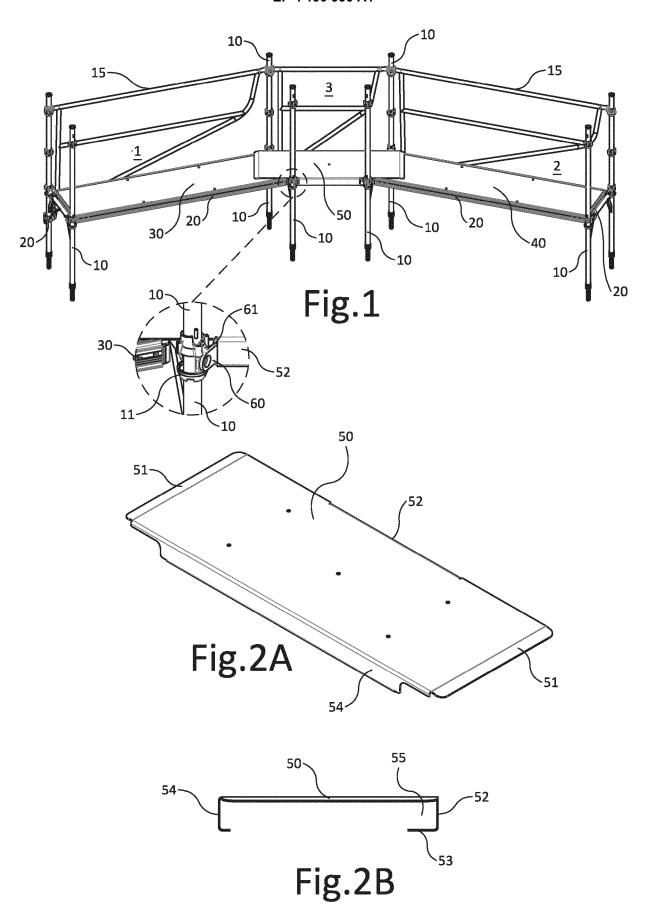
- 1. Scaffolding comprising a system of uprights which are mutually connected by ledgers with enclosing of scaffold sections, wherein successive scaffold sections within a level are provided with a scaffold floor, a first scaffold section of which comprises a first floor part and a second scaffold section comprises a second floor part, characterized in that the first floor part extends in a first floor direction and the second floor part extends in a second floor direction, which second floor direction makes an angle with the first floor direction, that a platform rests on a support between the first floor part and the second floor part, which platform spans at least for the greater part an intermediate space between the first floor part and the second floor part, and that the platform and the support are configured such that an adjustment of the angle between the first and the second floor part is allowed.
- 2. Scaffolding as claimed in claim 1, characterized in that the support is provided by at least one latch body which is connected at a proximal end for rotation about a longitudinal axis to an upright adjacent to the platform, and that the latch body can be brought into a latching co-action with the platform by being rotated about said longitudinal axis and releas-

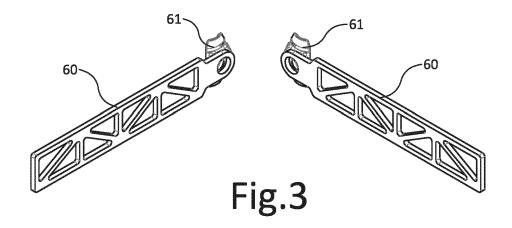
es the platform by being rotated in opposite direction.

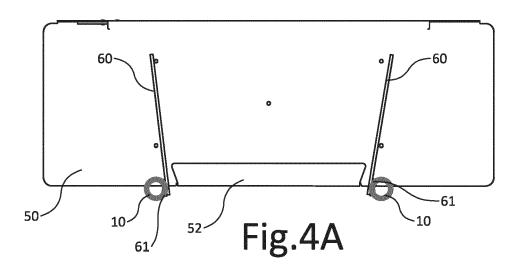
- 3. Scaffolding as claimed in claim 1 or 2, characterized in that the uprights are provided at regular distances with primary coupling means which, for the purpose of erecting the system in a desired transverse direction, are coupled releasably to secondary coupling means provided at opposite ends on the ledgers, that the latch body is provided with secondary coupling means at the proximal end and is connected for rotation about the longitudinal axis to primary coupling means of the upright.
- 4. Scaffolding as claimed in claim 1, 2 or 3, characterized in that the platform comprises a floor plate having on a lengthwise side a longitudinal edge part which is folded over a number of times from a back side of the floor plate so as to form successive segments, wherein an outermost segment of the edge part maintains a distance relative to the back side of the floor plate in order to form a cavity, and that the latch body is located in the cavity between the outermost segment of the edge part and the back side of the floor plate in order to lock the floor plate.
- 5. Scaffolding as claimed in anyone of the preceding claims, characterized in that the support provides for sliding locking means which fix the platform vertically relative to the first floor part and the second floor part but which allow lateral adjustment.
- 6. Scaffolding as claimed in anyone of the preceding claims, characterized in that the platform comprises a floor plate with a plate thickness and lies with said plate thickness substantially flush with the first floor part and the second floor part.
- 7. Scaffolding as claimed in claim 1, characterized in that the support comprises an elongate support body which is connected at a first outer end to adjacent uprights of respectively the first and the second scaffold section and is suspended at an opposite second outer end via a suspension between nearby uprights of respectively the first and the second scaffold section.
- 8. Scaffolding as claimed in claim 7, **characterized in that** the platform is at least substantially shaped to the intermediate space.
- Scaffolding as claimed in claim 7 or 8, characterized in that the suspension comprises an eye through which the opposite outer end of the support body is movable and into which the opposite outer end protrudes.
- **10.** Scaffolding as claimed in claim 7, 8 or 9, **characterized in that** the suspension comprises a T-rail hav-

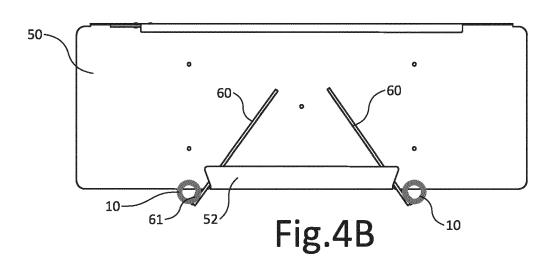
ing on opposite ends thereof a hook member with which the suspension hooks over a ledger lying above.

- **11.** Scaffolding as claimed in one or more of the claims 7 to 10, **characterized in that** the suspension is connected on either side to adjacent uprights via an intermediate ledger.
- **12.** Scaffolding as claimed in one or more of the claims 7 to 11, **characterized in that** the support body comprises a protrusion under which an edge part of the platform is received.
- 13. Scaffolding as claimed in one or more of the claims 7 to 12, **characterized in that** the first floor part and the second floor part are each provided on an exposed side with an upright part, in particular an edging board, with a groove extending in longitudinal direction in at least one of the two upright parts, that the intermediate floor is provided with a further upright part which comprises on opposite outer ends a jaw with which the further upright part drops over the adjacent upright part of the first and second floor parts, that at least one protrusion extends into one of the jaws of the further upright part and is received into the groove of the adjacent upright part of the first or second floor part, and is released therefrom by rotating the further upright part.









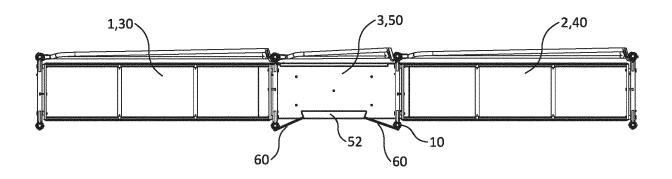


Fig.5A

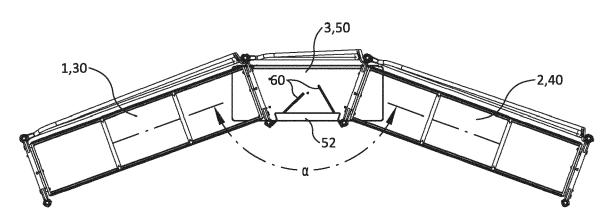


Fig.5B

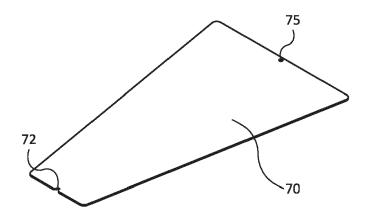


Fig.6

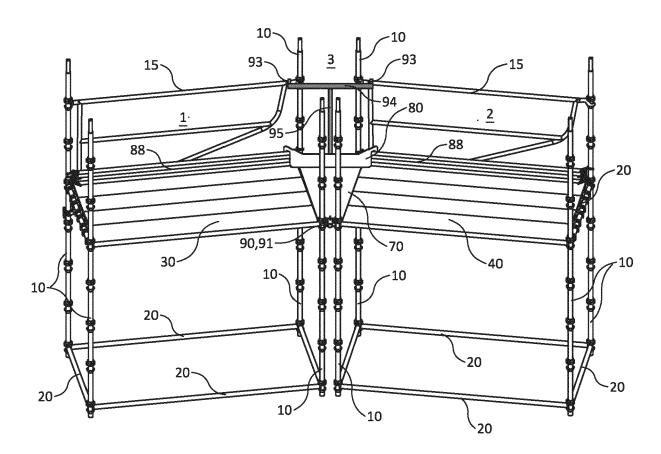
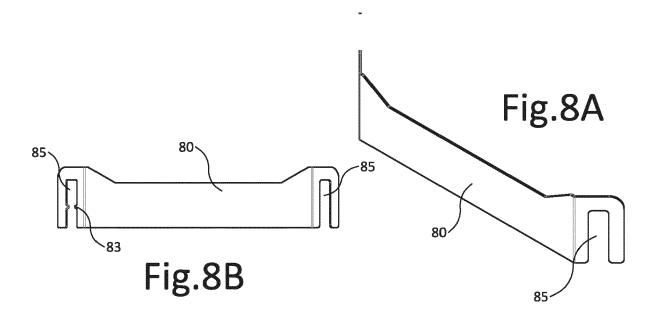
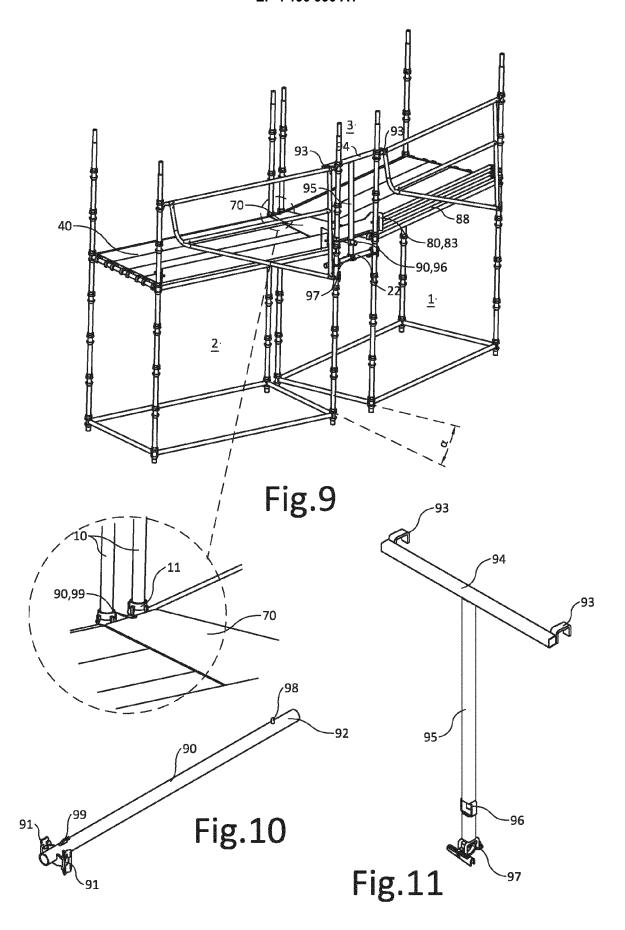


Fig.7





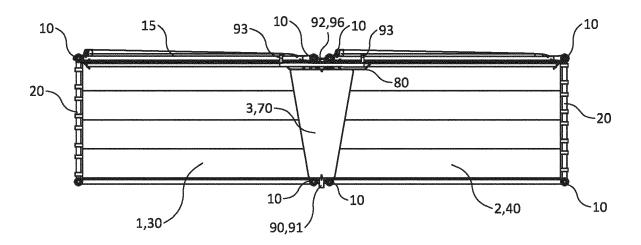


Fig.12



EUROPEAN SEARCH REPORT

Application Number

EP 22 21 5458

	DOCUMENTS CONSIDERED		Relevant	OL ACCIDICATION OF THE
Category	Citation of document with indicatio of relevant passages	п, where арргорнате,	to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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