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(54) Title: ENCLOSURE SYSTEM FOR SCAFFOLDING

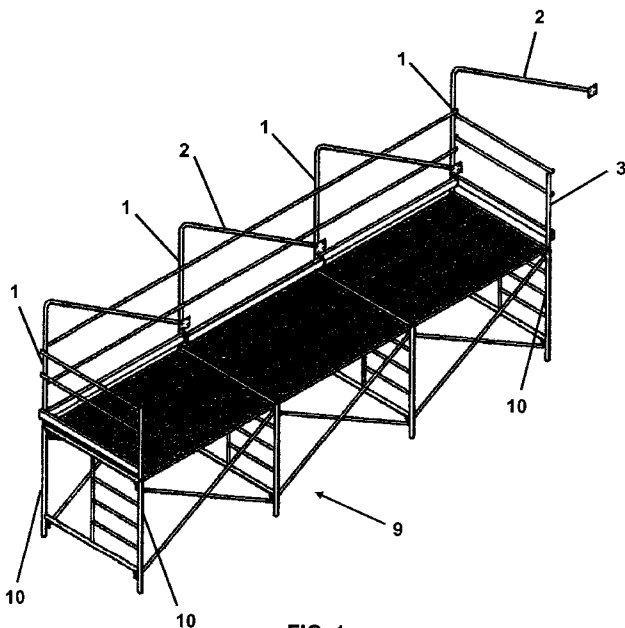


FIG. 1

(57) Abstract: An enclosure system is provided for weatherproofing the work area on a standard scaffold structure adjacent a vertical wall surface and attachment thereto, comprising a framework consisting of a plurality of spaced apart base bars joined to an equal plurality of extension bars, and an overlying weatherproofing layer.



Enclosure System for Scaffolding

Field of Invention

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[0001] The present invention relates to construction scaffolding, and in particular, to a weatherproofing framework structure therefor.

Background

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[0002] Building projects typically require scaffolding to be erected around a walled structure to enable workers to access the building at various height levels to perform work. The workers on the scaffolding and adjacent work area are exposed to adverse weather conditions which limits productivity. Brick and stonework are common examples of construction work that requires scaffolding.

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[0003] Attempts to address the adverse effect of weather conditions include inflatable structures to enclose the scaffold and isolate the internal environment from the weather conditions outside, as disclosed in EP 0948688 B1 for a "Weather Protected System for Mounting on a Scaffolding". Drawbacks of this solution include bulkiness, expense, and the requirement of a power source.

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[0004] Another approach in the prior art is disclosed in WO 1986/003538 for a "Weather Protecting Device for Stands", requiring specialized rolls of weatherproofing material which are attached to the scaffolding by brackets that leave significant weather gaps between adjacent strips of weatherproofing material.

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[0005] The present invention provides an enclosure system that allows for quick and easy installation and set-up of a framework and overlying weatherproofing layer over the work area on a standard scaffold structure without the need for specialized equipment.

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Summary of Invention

[0006] The present invention relates to an enclosure system for weatherproofing the work area on a standard scaffold structure adjacent a vertical wall surface, comprising a framework of spaced apart structural members attached to the scaffolding and an overlying weatherproofing layer over the framework.

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[0007] According to one aspect of the enclosure system, according to the present invention, an enclosure system is provided for weatherproofing the work area on a standard scaffold structure adjacent a vertical wall surface and attachment thereto, comprising a framework consisting of a plurality of spaced apart base bars joined to an equal plurality of extension bars, and an overlying weatherproofing layer. The scaffold structure comprises a plurality of vertical tubes. Each base bar has a length, hollow structural section, and opposing ends, one end being connected to the vertical tube on the scaffold structure by means of a coupler, and the other end being vertically offset from the first end toward the vertical wall surface and connected to the extension bar by means of a first joining structure. Each extension bar has a length, hollow structural section, opposing ends, and two or more pivot joints along the length, one end having a second joining structure complementary to the first joining structure on the base bar and connected thereto, and the other end having a head structure for engaging the vertical

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wall surface; the overlying weatherproofing layer comprises a sheet material overlying and attached to the framework.

Brief Description of Drawings

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[0008] In order that the invention may be more clearly understood, embodiments thereof will now be described in detail by way of example, with reference to the accompanying drawings, in which:

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[0009] Figure 1 is an isometric view of the framework of the enclosure system according to the present invention.

[0010] Figure 2 is a side view of the framework of the enclosure system according to the present invention.

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[0011] Figure 3A is a side view of the base bar.

[0012] Figure 3B is a side view of another embodiment of the base bar.

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[0013] Figure 4A is a side view of the extension bar.

[0014] Figure 4B is a side view of another embodiment of the extension bar.

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[0015] Figure 5 is a sectional view of the hollow structure section, along plane A in Figure 6.

[0016] Figure 6 is a side view of the bottom end of the base bar, the coupler, and the top end of the vertical tube on a standard scaffold structure.

[0017] Figure 7 is an expanded front view of the head structure.

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[0018] Figure 8 is a side view of the end bar.

Detailed Description

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[0019] The enclosure system according to the present invention comprises a framework consisting of a plurality of base bars joined to an equal plurality of extension bars, and an overlying weatherproofing layer. The framework is installed on a standard scaffold structure and is covered by any suitable weatherproofing material, such as a tarpaulin, to protect the workers and work area from weather elements.

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[0020] In a preferred embodiment of the present invention, the enclosure system is installed on the top level work area of a standard scaffold structure **9** above the highest walkboard, as shown in Figures 1 and 2. The framework and the overlying weatherproofing layer covers the work area and adjacent vertical wall surface **28**. The framework consists of structural members made of steel, aluminum, or rigid composite material, which are joined end to end to one another and to the scaffolding. As shown in Figure 5, the structural members have a hollow structural section defining walls **12** and a hollow interior **13**, which may be circular, rectangular, square, or another shape in cross section.

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[0021] The structural members forming the framework consist of a plurality of joined lengths of a base bar **1** and extension bar **2**, which are connected at one end to the standard scaffold structure **9** and abut the vertical wall surface **28** at the other end to form a framework to support the tarpaulin.

[0022] As shown in Figure 3A, the base bar **1** has a bottom end **4** and a vertically offset top end **5**. Preferably the base bar **1** is tubular in cross section and has open ends. The bottom end **4** is structurally connected to an open end of the uppermost vertical tube **10** on the scaffold structure **9** by means of a coupler **14** which is inserted into the end of the vertical tube **10** and bottom end **4** of the base bar **1**. As shown in Figure 6, the coupler **14** has two opposing ends **15** and **16**, is preferably tubular in cross section, has a smaller diameter than the open bottom end **4** of the base bar **1** and vertical tube **10** of the standard scaffold structure **9**, and has a pair of apertures **17** on either side of the coupler **14** near each end **15** and **16**, which align with apertures **6** at the bottom end **4** of the base bar **1** and apertures **11** on the vertical tube **10**. Locking pins are inserted through aligned apertures to structurally connect the base bar **1** to the vertical tube **10** on the scaffolding.

[0023] The base bar **1** may be provided with one or more toeboard brackets **7** at the bottom end **4** to receive a toeboard. The base bar **1** may also be provided with guardrail hooks **8** for attachment of horizontal guardrails at vertical intervals.

[0024] The top end **5** of the base bar **1** is vertically offset from the bottom end **4** of the base bar **1**. Preferably, the top end **5** has an open end to receive the extension

bar **2** within the hollow structural section of the base bar **1** as later described. When joined to the vertical tube **10** on the scaffolding the base bar **1** and extension bar **2** act as one element of the enclosure framework.

5 [0025] As shown in Figure 3B, the top end **5** of the base bar **1** may be a separate top section **1a**. The top section **1a** has a bottom end **4a** which fits within the top end **5b** of a bottom section **1b** of the base bar **1**. Preferably, the top section **1a** and bottom section **1b** are made telescopically adjustable by providing spaced apart apertures **6b** the top end **5b** of the bottom section **1b**, which are slidingly aligned with apertures **6a** at
10 the bottom end **4a** of the top section **1a** and connected thereto by means of a locking pin.

[0026] As shown in Figure 4A, the extension bar **2** has opposing ends **18** and **19**, a length, and a tubular cross section. Preferably, the end **18** is sized to be insertable
15 into the hollow structural section of the top end **5** of the base bar **1**.

[0027] The connection between the base bar **1** and the extension bar **2** is made telescopically adjustable by providing spaced apart apertures **6** at the top end **5** of the base bar **1**, which are slidingly aligned with apertures **26** at the end **18** of the extension
20 bar **2** and connected thereto by means of a locking pin. In this manner, the extension bar **2** is structurally attached to the base bar **1** and is telescopically adjustable to engage the vertical wall surface **28** and thus accommodate separation distance between the scaffolding and the vertical wall surface **28**.

[0028] A head structure **21** is provided at the end **19** of the extension bar **2** to engage the vertical wall surface **28**. Preferably, the head structure **21** has an angled flat surface **22** to effect a flat engagement with the vertical wall surface **28**. The head structure **21** also has a hook **23** for attachment of an overlying weatherproofing layer near the second end **19**.

[0029] As shown in Figure 7, the flat surface **22** of each head structure **21** may be provided with one or more apertures **24** to facilitate attachment to the vertical wall surface **28**. Preferably, the flat surface **22** is generally square and has four apertures **24** near the corners of the flat surface.

[0030] As shown in Figure 4B, the extension bar **2** may have two or more knuckle joints **29**, which serve as pivot joints, along the length of the extension bar **2**. Preferably, one knuckle joint **29** is located between the head structure **21** and one end **19** of the extension bar **2**, and the other is located near the other end **18** of the extension bar **2**. The extension bar **2** may thereby angularly pivot to provide the enclosure system with the flexibility to accommodate a range of installation dimensions, particularly in conjunction with the telescopically adjustable engagement between the extension bar **2** and the base bar **1**. One or more of the knuckle joints **29** may have a stop **30** to prevent the extension bar **2** from pivoting beyond a desired angle in one or both directions.

[0031] As shown in Figure 8, an end bar **3** may be used as part of the enclosure. The end bar **3** is attached to the vertical tube **10** of the scaffolding by a coupler **14** and apertures **27**, as described above for the attachment of the base bar **1**. The end bar **3**

has a bottom end **25** and a top end **26**. Preferably the end bar **3** is tubular in cross section and has open ends. The end bar **3** may have one or more toeboard brackets **7** at the bottom end **25** to receive a toeboard. The end bar **3** may also have guardrail hooks **8** for attachment of scaffolding guardrails at vertical intervals. The inner diameter
5 of the open bottom end **25** of the end bar **3** is sized to accommodate one end **15** of the coupler **14**.

[0032] While various embodiments in accordance with the present invention have been described and illustrated herein, it is understood that the invention is not
10 limited thereto, and is susceptible to numerous changes and modifications as are known to those skilled in the art. Therefore, the invention described herein is not limited to the particular embodiments described and illustrated, and includes all such changes and modifications as are encompassed by the scope of the following claims.

What is claimed is:

1. An enclosure system for weatherproofing a work area on a scaffold structure adjacent a vertical wall surface and attachment thereto, comprising a framework consisting of a plurality of spaced apart base bars joined to an equal plurality of extension bars, and an overlying weatherproofing layer, wherein:

the scaffold structure comprises a plurality of vertical tubes;

10 each base bar has a length, hollow structural section, and opposing ends, one end being connected to a vertical tube on the scaffold structure by means of a coupler, and the other end being vertically offset from the first end toward the vertical wall surface and connected to the extension bar by means of a first joining structure;

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each extension bar has a length, hollow structural section, opposing ends, and two or more pivot joints along the length, one end having a second joining structure complementary to the first joining structure on the base bar and connected thereto, and the other end having a head structure for engaging the vertical wall surface; and

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the overlying weatherproofing layer comprises a sheet material overlying and attached to the framework.

- 25 2. The enclosure system of claim 1, wherein

the first joining structure is an end portion of the base bar having one or more longitudinally spaced apart apertures therethrough;

the second joining structure is an end portion of the extension bar having one or more longitudinally spaced apart apertures therethrough; and

5 the second joining structure is insertable into the hollow structural section of the first joining structure and connected thereto by a pin passing through aligned apertures on the base bar and extension bar.

3. The enclosure system of claim 2, wherein the two or more pivot joints consist of
10 two knuckle joints, and wherein one knuckle joint is located between the head structure and the end of the extension bar and the other knuckle joint is located near the opposing end of the extension bar.

4. The enclosure system of claim 3, further comprising two end bars, each having a
15 length, hollow structural section, and opposing ends, one end being connected to a vertical tube on the scaffold structure by means of a coupler.

5. The enclosure system of claim 4, wherein the base bars and end bars further
20 comprise guardrail hooks and toeboard brackets for attachment of guardrails and toeboards.

6. The enclosure system of claim 5, wherein the two base bars on the ends of the
scaffolding structure each comprise guardrail hooks and toeboard brackets for
attachment of guardrails and toeboards along two edges of the scaffold structure and
25 the remaining base bars and the two end bars comprise guardrail hooks and toeboard

brackets for attachment of guardrails and toeboards along one edge of the scaffold structure.

5 7. The enclosure system of claim 6, wherein the hollow structural section of the base bar, extension bar, and end bar is circular, rectangular, or square.

8. The enclosure system of claim 2, wherein the first joining structure on each base bar and the complementary second joining structure on each extension bar may be structurally attached at any one of a plurality of positions to permit telescoping
10 adjustment of the length of the extension bar that extends beyond the end of the base bar.

9. The enclosure system of claim 8, wherein each extension bar structurally attached to a base bar may be locked in position relative to said base bar.
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10. The enclosure system of claim 9, wherein the first joining structure on each base bar comprises four pairs of apertures across the hollow structural section of each base bar, the complementary second joining structure on each extension bar comprises one pair of apertures across the hollow structural section of each extension bar, and each
20 extension bar structurally attached to a base bar is locked in position by a locking pin inserted through one of the four pairs of apertures in the base bar and the pair of apertures in the extension bar.

11. The enclosure system of claim 1, wherein the extension bar further comprises a hook near the head structure by which the overlying weatherproofing layer is attached to the framework .

5 12. The enclosure system of claim 1, wherein the head structure comprises a flat surface, which is parallel to the vertical wall surface.

13. The enclosure system of claim 12, wherein the head structure further comprises one or more apertures in the flat surface through which the head structure may be
10 attached to the vertical wall surface.

14. The enclosure system of claim 2, wherein each base bar comprises a separate top section and bottom section each having opposing ends, and wherein:

15 a third joining structure is an end portion of the bottom section having one or more longitudinally spaced apart apertures therethrough;

a fourth joining structure is an end portion of the top section having one or more longitudinally spaced apart apertures therethrough; and

20 the fourth joining structure is insertable into the hollow structural section of the third joining structure and connected thereto by a pin passing through aligned apertures on the bottom section and top section.

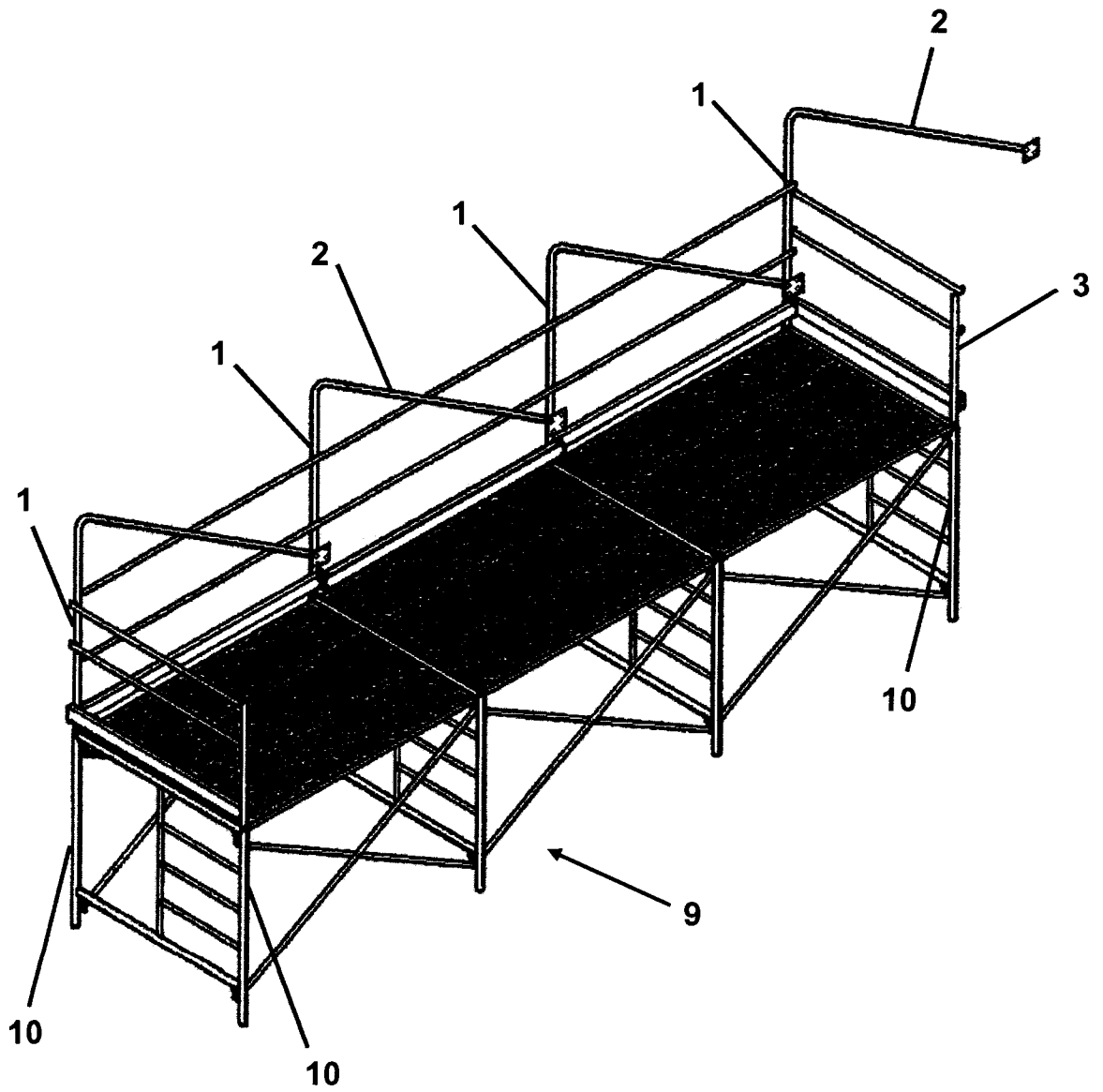


FIG. 1

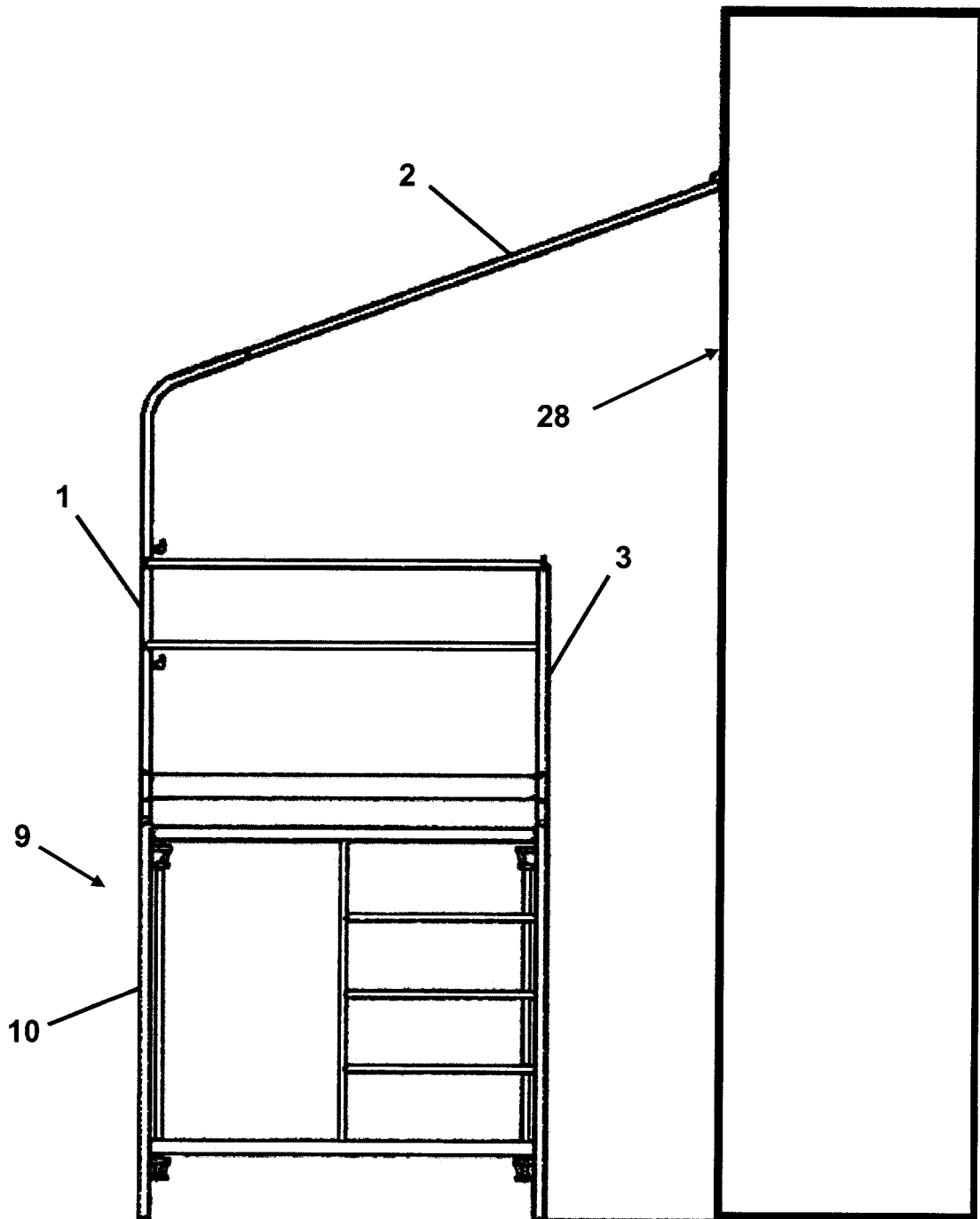


FIG. 2

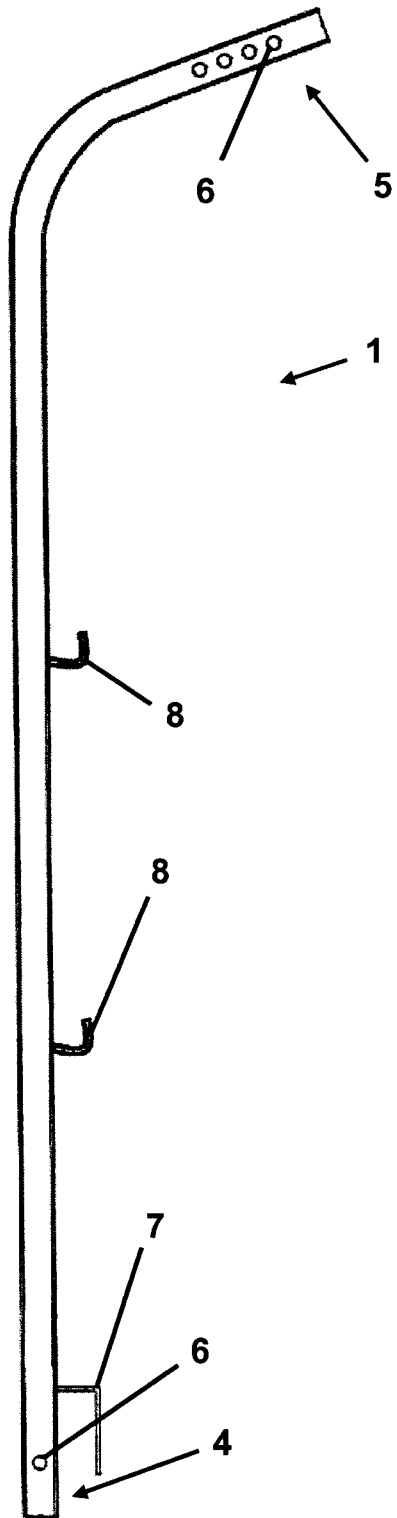


FIG. 3A

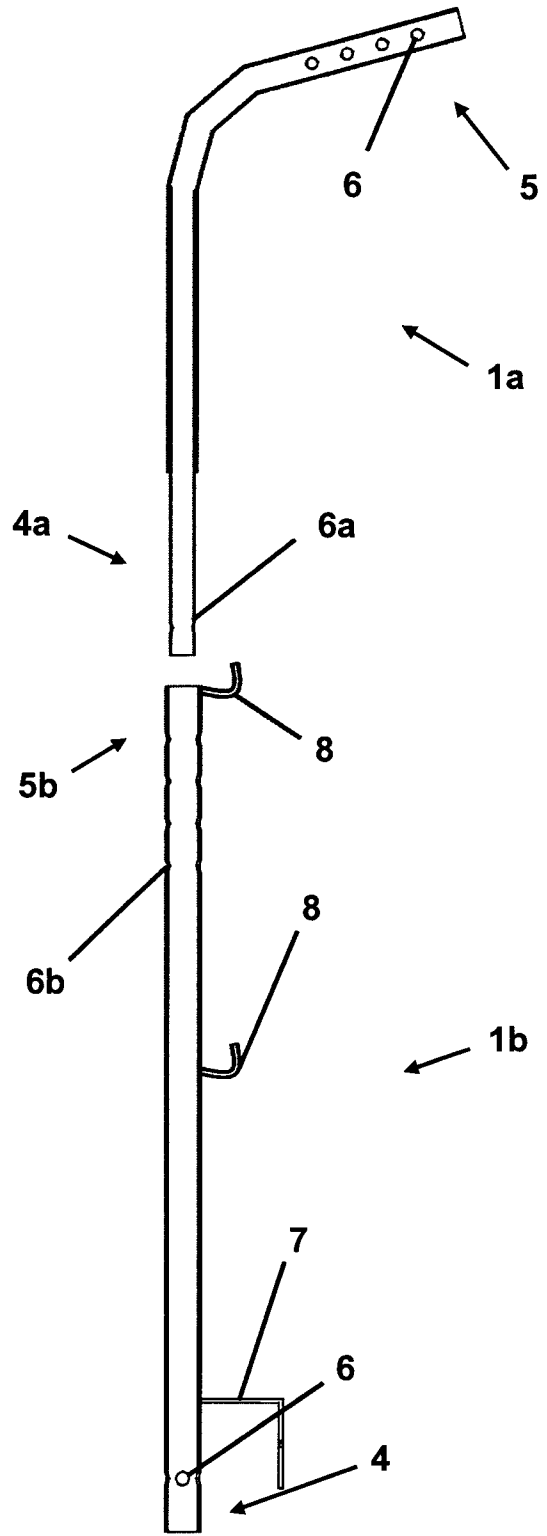


FIG. 3B

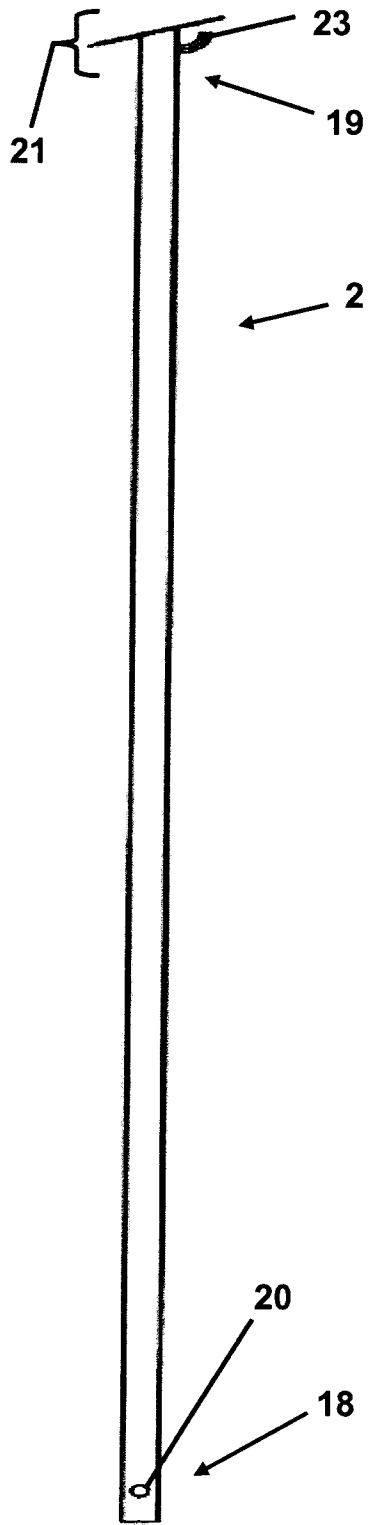


FIG. 4A

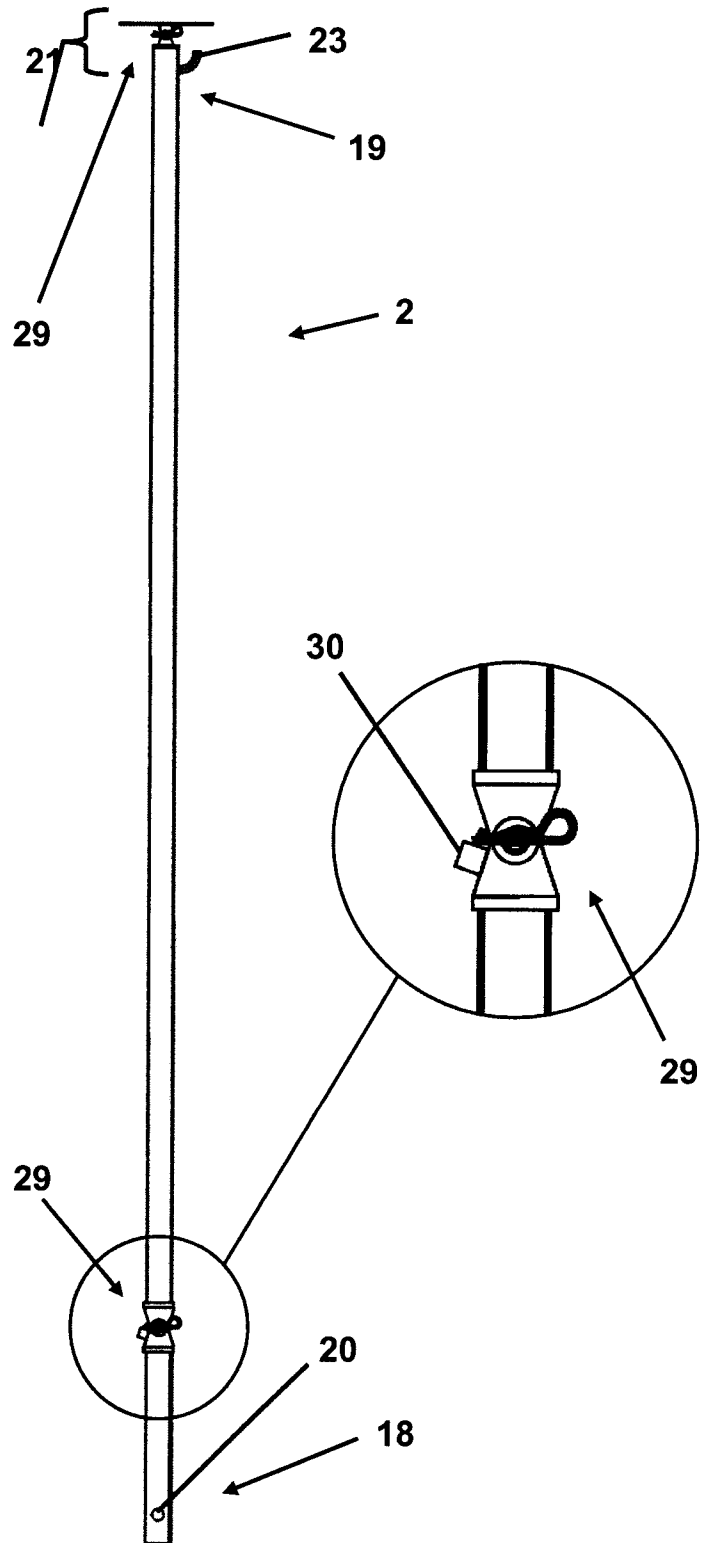


FIG. 4B

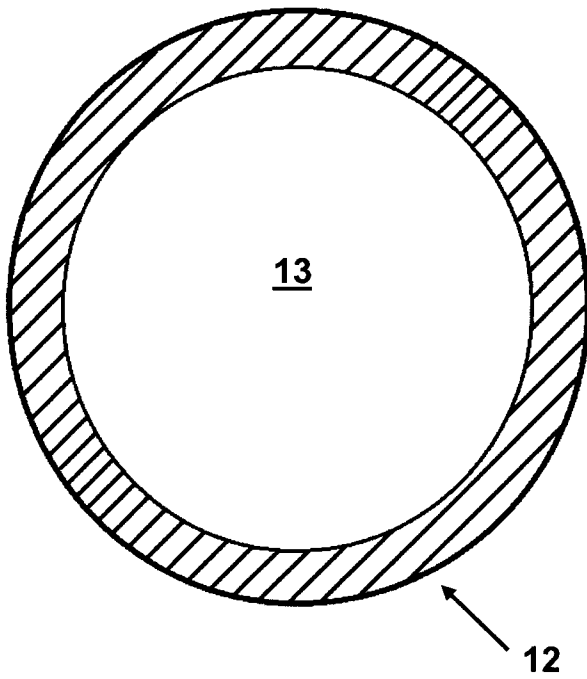


FIG. 5

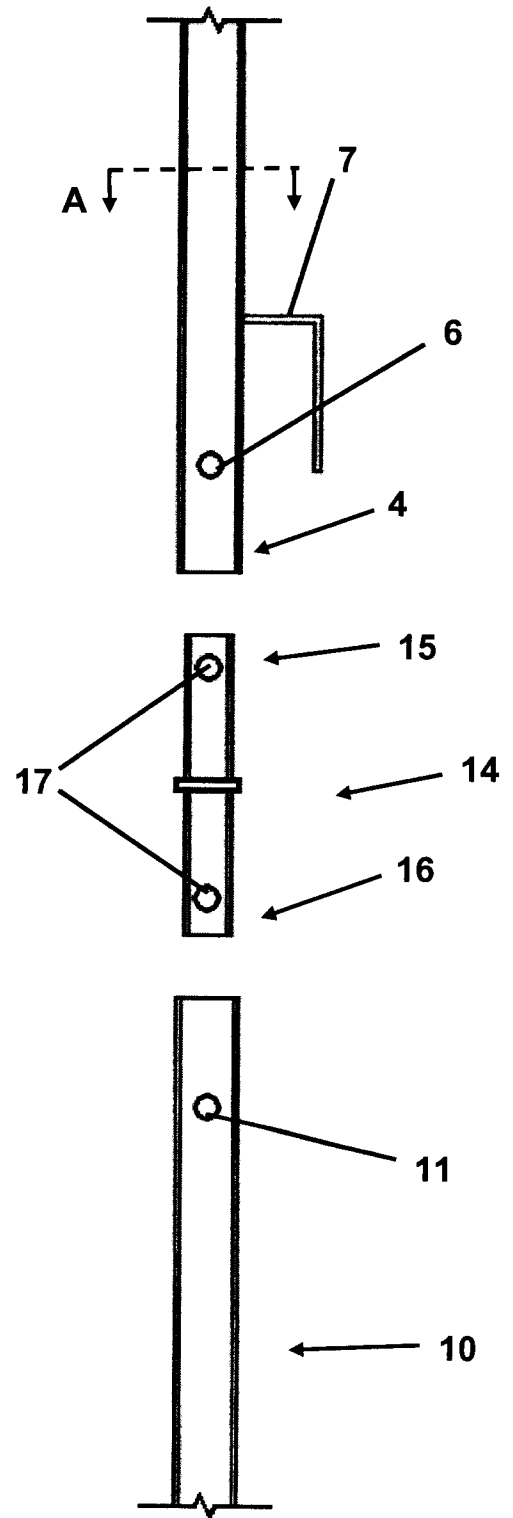


FIG. 6

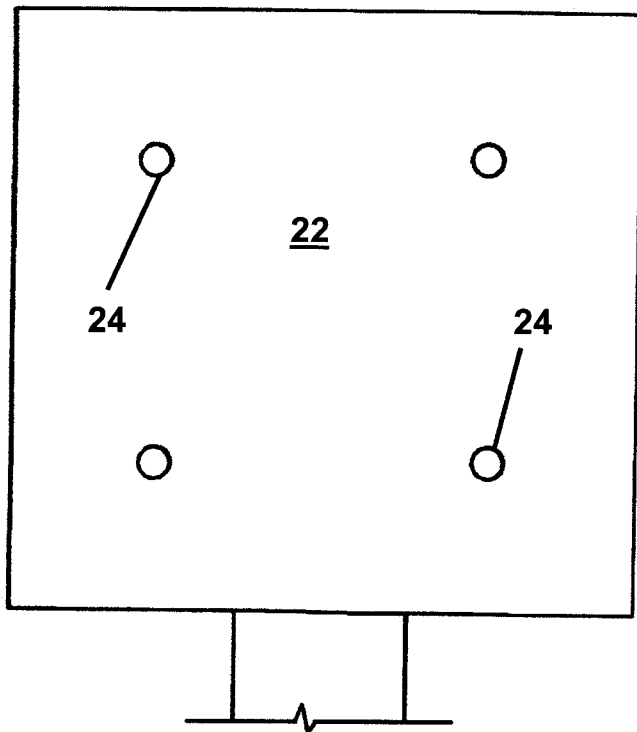


FIG. 7

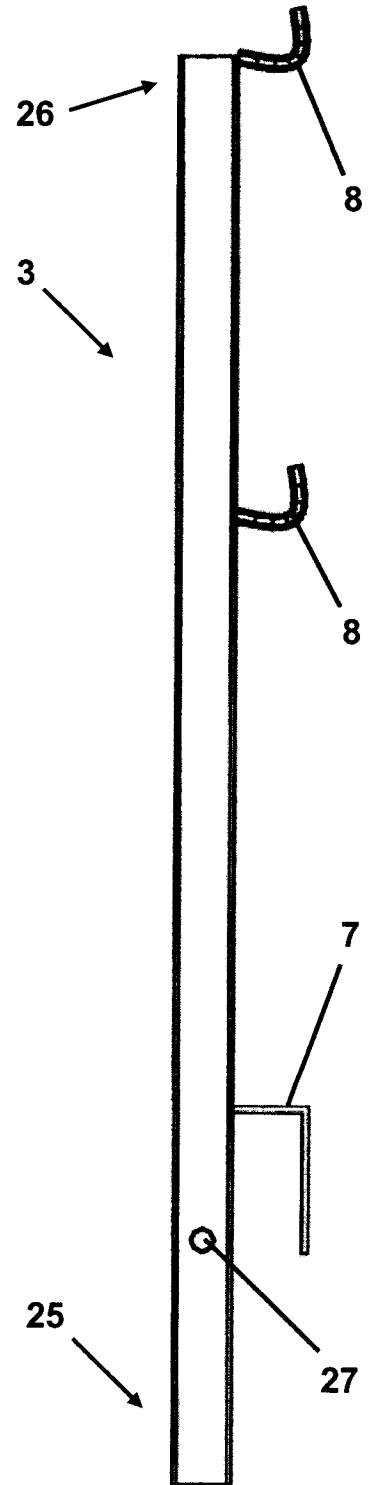


FIG. 8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2015/000405

A. CLASSIFICATION OF SUBJECT MATTER
 IPC: *E04G 5/12* (2006.01), *E04G 21/28* (2006.01), *E04G 5/00* (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC: *E04G 5/12* (2006.01), *E04G 21/28* (2006.01), *E04G 5/00* (2006.01)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)
 Questel-Orbit: scaffold+, weatherproof+, cladding+, shelter,

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US2006175131 (SMITH) 10 August 2006 (10-08-2006)	1

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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Date of the actual completion of the international search
 14 September 2015 (14-09-2015)

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

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Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
US2006175131A1	10 August 2006 (10-08-2006)	None	