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(54) **Construction, method for manufacturing construction and use of construction**

(57) The invention relates to a construction (1), which is lattice-like, and which construction includes a frame, which frame comprises several tubular and/or beam-like support pieces (6, 7, 11) which are directly or indirectly fitted in an elongated frame piece (2), and the frame is fitted with a support structure (15), such as support reinforcement, and which construction (1) is fitted with a meshwork (10), such as a steel meshwork, such that the meshwork is fastened in a subframe (14) and/or the frame and/or the support structure (15), and which subframe comprises at least one tubular and/or beam-like piece (5) which is fitted in the support pieces (6, 7, 11) and/or the frame piece, and which meshwork is coated with sprayed concrete. The invention also relates to a use and a method of the construction.

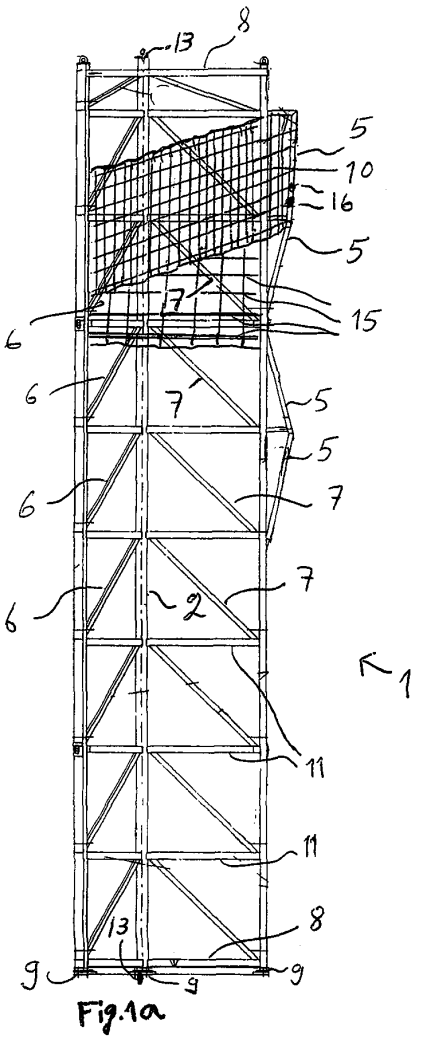

Fig.1a

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Description

Background of invention

[0001] The invention relates to a construction according to the preamble of claim 1. The invention also relates to a method for manufacturing the construction according to the preamble of claim 6. The invention further relates to using the construction according to the invention and the construction manufactured with the method according to the invention.

[0002] Of prior art, several different constructions are known which can be employed e.g. as climbing constructions or support constructions or for some other use.

[0003] A construction is described e.g. in an arrangement presented by specification FR2837397 which depicts a construction, and in more detail a climbing construction, which consists of several laminar parts which are connected with connecting parts to each other, and of which laminar parts are thus formed box-like pieces, and which box-like pieces are then set one on the other. In the arrangement according to the specification, the box-like pieces are coated with concrete the purpose of which is to 'imitate' a rock face.

[0004] Arrangements according to known prior art include some disadvantages. A disadvantage of constructions according to known arrangements is that the coating of the constructions with concrete occurs by means of forms, whereby manufacturing costs rise high and no individual, cost-effective arrangements are provided.

[0005] The object of this invention is to provide a novel kind of an arrangement by means of which it is possible in a simple and effective way to form a construction to be used e.g. as a climbing construction, and which construction can be easily coated with sprayed concrete at the manufacturing site of the construction, without inconvenient joints.

Brief description of invention

[0006] The construction according to the invention is characterised by what is stated in the characterising part of claim 1. The arrangement according to the invention is further characterised by what is stated in claims 2-5. The method according to the invention is characterised by what is stated in the characterising part of method claim 6. The method according to the invention is also characterised by what is stated in the characterising part of method claims 7-10. Using the construction according to the invention and the construction manufactured with the method according to the invention are described in claims 11 and 12.

[0007] The now described arrangement according to the invention provides some considerable advantages when compared to known arrangements. This presented invention accomplishes a novel kind of an arrangement by means of which the disadvantages of known arrangements can be diminished or eliminated, and it provides a construction simple of its structure and easily manufacturable which can be effortlessly installed and coated with sprayed concrete at the desired manufacturing site, and the arrangement according to the invention avoids joints and expensive forms.

Brief description of figures

[0008] The invention will next be described in more detail by means of examples with reference to drawings 1a-3c in which

Fig. 1a	shows a front view of a construction according to the invention;
Fig. 1b	shows a top view of the construction according to the invention;
Figs. 2a-2c	show a top view of some possible different shapes for the construction according to the invention;
Fig. 3a	shows the construction according to the invention which can be rotated in a rotating frame 12; shows the spraying of concrete in the construction, i.e. a meshwork 10;
Fig. 3c	shows a top view of the rotating frame.

Detailed description of invention

[0009] Fig. 1a shows a front view of a construction according to the invention, and the construction 1, which is lattice-like, comprises several tubular and/or beam-like support pieces 6, 7, 11 which are directly or indirectly fitted in an elongated frame piece 2 (which elongated piece can be e.g. a steel pipe or a steel bar), and further the frame is fitted with a support structure 15, such as support reinforcement of steel. The construction 1 is fitted with a meshwork 10, such as a steel meshwork, such that the meshwork is fastened in a subframe 14 and/or the frame and/or the support structure 15, which subframe comprises at least one tubular and/or beam-like piece 5 being substantially elongated, and which tubular and/or beam-like pieces 5 are fitted in the support pieces 6, 7, 11 and/or the frame piece. The support structure 15 is fastened in the invention on top of the meshwork 10, but the support structure can also be fastened beneath the meshwork.

[0010] The purpose of the subframe, i.e. the tubular and/or beam-like pieces 5, is to enable various appearances for the construction, such as shown in Figs. 2a-2c. The tubular and/or beam-like pieces of the subframe can be of different lengths, and they can be fastened at desired points of the construction, and the tubular and/or beam-like pieces forming the subframe can be straight, curved etc.

[0011] In the construction according to the invention, the meshwork 10 is coated with sprayed concrete. The sprayed concrete is supplied on the surface of the meshwork either with dry or wet spraying technique.

[0012] The meshwork 10, the mesh size of which is 1-18 mm, is fastened in the subframe 14 and/or the frame and/or the support structure with suitable fastening pieces 16, but the meshwork can alternatively be fastened by welding or in some other suitable way. The fastening pieces can be e.g. steel nails (e.g. driven by a nail gun), screws or bolts, but the fastening pieces can also be quick-fastening pieces, such as cable ties of metal or some other material.

[0013] The ends of the frame piece 2 include a rotation support, such as a pivot, a shaft or a projection 13, where the frame piece can be supported in order to rotate the frame piece around its longitudinal axis. A foot part, such as a foot ledge, by means of which the construction is supported and fastened in a substantially vertical position, is designated with reference number 9. Reference number 8 designates a topmost support pipe/support bar of the construction which is fastened at the ends of the support pieces 11.

Fig. 1b shows a top view of the construction of Fig. 1a. The support pieces in Fig. 1b are of the same length and symmetrically fitted in the frame piece 2, but the support pieces can also be of different lengths and unsymmetrically fitted in the frame piece 2. In the support pieces 11 is fastened the subframe, i.e. the tubular and/or beam-like pieces 5. The meshwork 10 is fitted on top of the subframe, i.e. the tubular and/or beam-like pieces, and the meshwork is coated with concrete (not shown in the figure). The tubular and/or beam-like pieces can be in a desired way and of desired length fastened in the support pieces 11 or the other parts of the construction, and thus they provide a desired shape for the meshwork when the meshwork is fastened in the subframe, i.e. the tubular and/or beam-like pieces.

Figs. 2a-2c show a top view of some possible different shapes for the construction according to the invention. However, the shapes of the construction are not solely limited to the ones shown in the figure, because it is possible to form the construction of a desired shape, depending on the number and length of the tubular and beam-like pieces and on how they are fastened in the support pieces 11. The tubular and/or beam-like pieces operating as the subframe can also be e.g. of curved, angular etc. shape and their number is not limited, i.e. a desired number of them can be fitted in the support pieces 11 and at desired points of the support pieces.

Fig. 3a shows the construction according to the invention which can be rotated in a rotating frame 12 around the longitudinal axis of the construction, because the ends of the construction include the rotating support 13 where it can be supported on the rotating frame when manufacturing the construction, when e.g. the support reinforcement is fastened in the construction being manufactured, and the meshwork, and when spraying concrete in the meshwork.

Fig. 3b shows the spraying of concrete in the construction, i.e. the meshwork 10. The concrete spray is designated with reference number 16. The spraying of concrete on different sides of the construction 1, in the meshwork 10, is easy to perform as the construction is thus rotatable in the rotating frame. The rotating frame 12 can include a drive, such as e.g. an electric drive or a hydraulic drive, or it is possible to operate it manually e.g. by means of a hoist with which the construction is rotated when it is in the rotating frame. This is not yet shown in the figure.

Fig. 3c shows a top view of the rotating frame.

[0014] The method according to the invention for manufacturing the construction 1 will be described next, with reference to Figs. 1a, 1b and 3b.

[0015] In the method according to the invention, a lattice-like frame is formed of several tubular and/or beam-like support pieces 6, 7 and 11 which are directly or indirectly fitted i.e. fastened in an elongated frame piece 2, which support pieces and/or the frame piece are fitted with a support structure 15, such as support reinforcement. In the frame piece and/or the support pieces is fastened a subframe 14, which subframe comprises at least one tubular and/or beam-like piece 5, and in the subframe 14 and/or the frame and/or the support structure 15 is fastened a meshwork 10, such as a steel meshwork, which meshwork is coated with concrete by spraying concrete in it as dry or wet spraying.

[0016] The construction according to the invention can be rotated in a rotating frame 12 around the longitudinal axis of the construction when manufacturing the construction, when e.g. the support reinforcement is fastened in the construction being manufactured, and the meshwork, and when further spraying concrete in the meshwork.

[0017] The meshwork is fastened in the subframe and/or the frame and/or the support structure with nails, screws or bolts, but it can also be fastened in the subframe and/or the frame and/or the support structure with quick-fastening pieces, such as e.g. cable ties made of metal or some other material. The meshwork can alternatively be fastened in the subframe and/or the frame and/or the support structure by welding.

[0018] It is well known by those skilled in the art that the different embodiments of the invention are not solely limited to the examples described above, and thus they can vary within the scope of the appended claims.

[0019] In the arrangement according to the invention, the different parts of the construction, such as the elon-

gated frame piece or the support pieces, can each consist of one or several pieces, e.g. such that several metal profiles, such as steel bars or steel pipes, are welded or fastened in some other way, e.g. by bolts, together.

[0020] The construction according to the invention can also be fitted with fixed or detachable climbing holds for climbing e.g. such that the climbing holds are fastened in the concrete (sprayed in the meshwork) with bolts, screws or other fastening means. The fastening of the climbing holds can also occur e.g. such that the climbing holds are first fastened in the meshwork or at some other point, such as the support parts, in the construction, and only then the concrete is supplied on the surface of the meshwork.

Claims

1. A construction (1), which is lattice-like, and which construction includes a frame, which frame comprises several tubular and/or beam-like support pieces (6, 7, 11) which are directly or indirectly fitted in an elongated frame piece (2), and the frame is fitted with a support structure (15), such as support reinforcement, **characterised in that** the construction (1) is fitted with a meshwork (10), such as a steel meshwork, such that the meshwork is fastened in a subframe (14) and/or the frame and/or the support structure (15), and which subframe comprises at least one tubular and/or beam-like piece (5) which is fitted in the support pieces (6, 7, 11) and/or the frame piece, and which meshwork, the mesh size of which is 1-18 mm, is coated with sprayed concrete.

2. A construction according to claim 1, **characterised in that** the meshwork (10) is fastened in the subframe (14) and/or the frame and/or the support structure with fastening pieces (16).

3. A construction according to claim 2, **characterised in that** the fastening pieces are nails, screws or bolts.

4. A construction according to claim 2, **characterised in that** the fastening pieces are quick-fastening pieces, such as cable ties.

5. A construction according to claim 1, **characterised in that** the ends of the frame piece (2) include a pivot, a shaft or a projection (13) where the frame piece can be supported in order to rotate the frame piece around its longitudinal axis.

6. A method for manufacturing a construction (1), in which method, forming a lattice-like frame of several tubular and/or beam-like support pieces (6, 7, 11) which are directly or indirectly fitted in an elongated frame piece (2), which support pieces and/or the frame piece are fitted with a support structure (15), such as support reinforcement, **characterised by** fastening in the frame piece and/or the support pieces a subframe (14) which subframe comprises at least one tubular and/or beam-like piece (5), and fastening in the subframe (14) and/or the frame and/or the support structure (15) a meshwork (10), such as a steel meshwork, and coating which meshwork, the mesh size of which is 1-18 mm, with concrete by spraying concrete in it as dry or wet spraying.

7. A method for manufacturing a construction according to claim 6, **characterised by** fastening the meshwork in the subframe and/or the frame and/or the support structure with nails, screws or bolts.

8. A method for manufacturing a construction according to claim 6, **characterised by** fastening the meshwork in the subframe and/or the frame and/or the support structure with quick-fastening pieces, such as cable ties.

9. A method for manufacturing a construction according to claim 6, **characterised by** fastening the meshwork in the subframe and/or the frame and/or the support structure by welding.

10. A method for manufacturing a construction according to claim 6, **characterised by** rotating the construction in order to coat the meshwork (10) with concrete around its longitudinal axis during the spraying of concrete.

11. Using a construction according to any one of claims 1-5 as a climbing construction.

12. Using a construction manufactured with a method according to any one of claims 6-10 as a climbing construction.

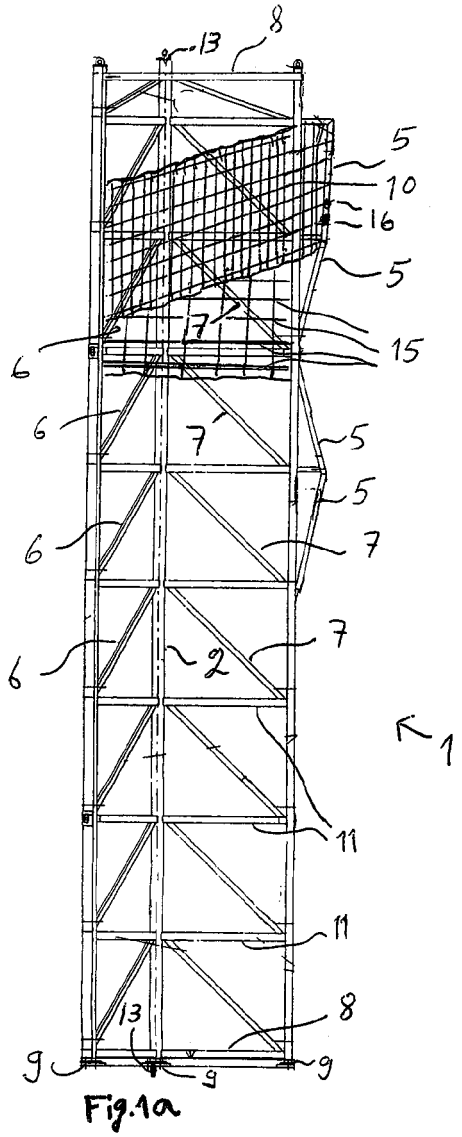
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Fig.1a

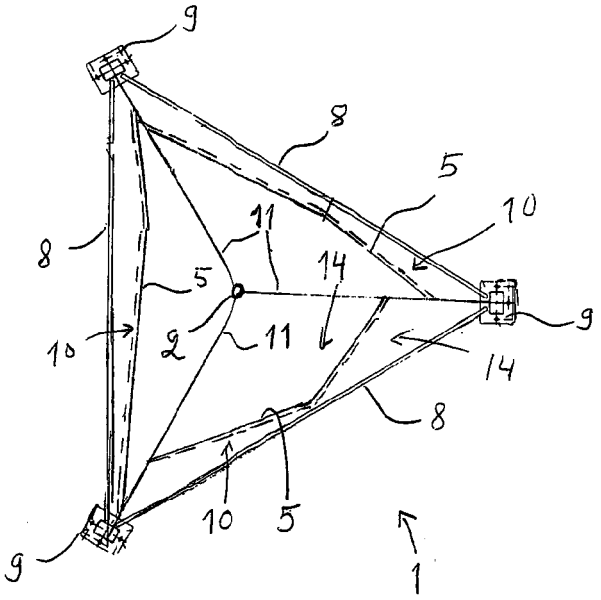
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Fig. 1b.

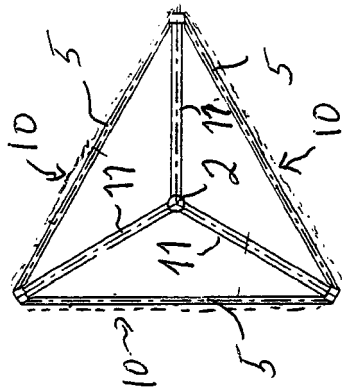


Fig. 2c

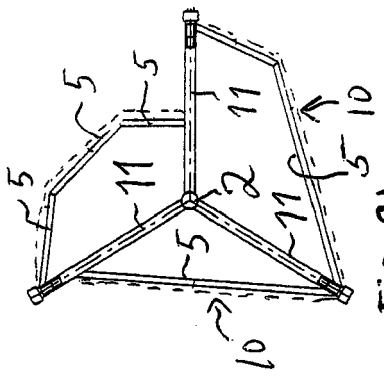


Fig. 2b

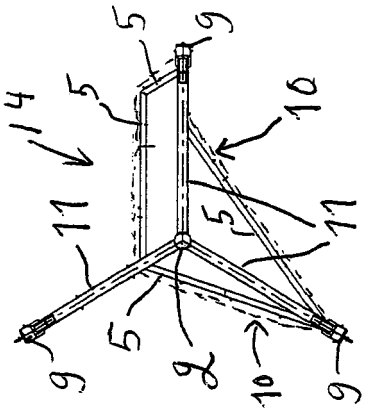


Fig. 2a

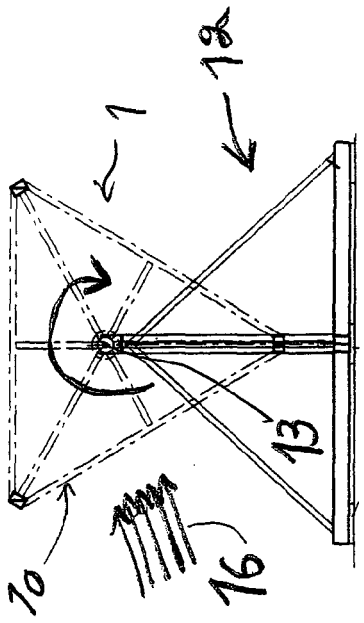
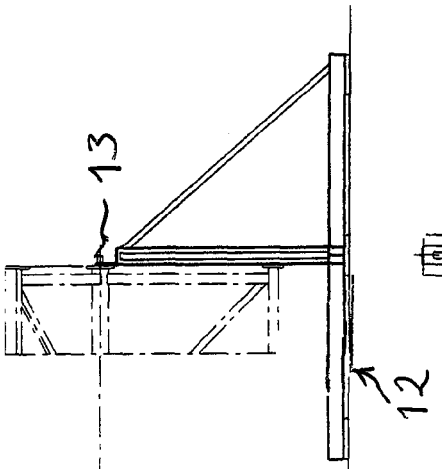


Fig.3b



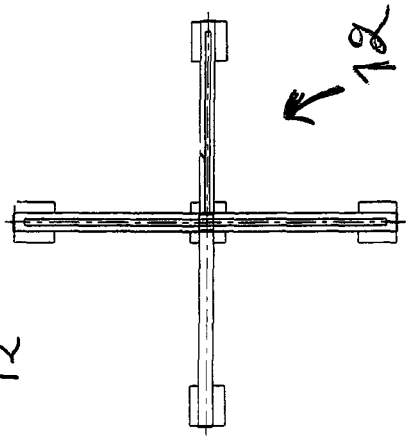


Fig.3c

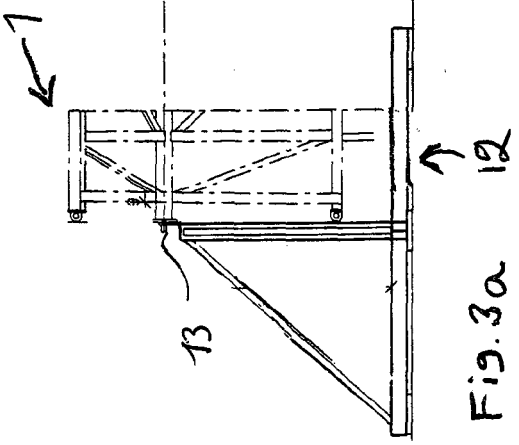


Fig.3a

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EUROPEAN SEARCH REPORT

Application Number
EP 10 17 2722

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2006/258511 A1 (POSTMA NATHAN B [US]) 16 November 2006 (2006-11-16) * paragraph [0025] - paragraph [0031]; figures 2-5 *	1-12	INV. A63B69/00
X	DE 298 01 221 U1 (BRAND & SCHLUTTIG GMBH [DE]) 9 April 1998 (1998-04-09) * page 5, line 10 - page 6, line 5; figures 1,2 *	1,2,6, 11,12	

TECHNICAL FIELDS SEARCHED (IPC)

A63B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	18 January 2011	Jekabsons, Armands

CATEGORY OF CITED DOCUMENTS

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EPO FORM 1503 03.82 (P04C01)

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18-01-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2006258511 A1	16-11-2006	NONE	
DE 29801221 U1	09-04-1998	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- FR 2837397 **[0003]**