(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 366 863 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
29.08.2018 Bulletin 2018/35

(51) Int Cl.:
E04F 15/02 *(2006.01)*

(21) Application number: **18158495.4**

(22) Date of filing: **25.02.2018**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD TN

(30) Priority: **28.02.2017 BE 201700033**

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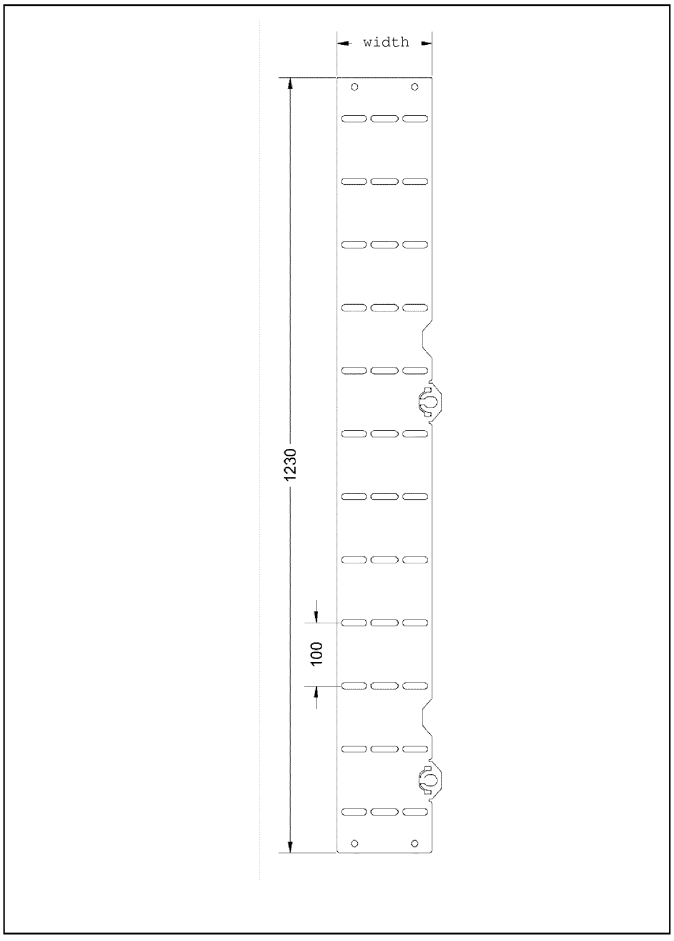
Remarks:
Amended claims in accordance with Rule 137(2) EPC.

(54) **MANUALLY SHAPEABLE TOEBOARD FOR INDUSTRIAL GRATING OR FLOORPLATES**

(57) Manually shapeable toeboard for industrial grating an floorplates: the toeboard is made of metal strips or plates that are provided with openings that make the toe board manually formable in the necessary form of the opening in the floor.

DRAWING 01



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Description

Discipline:

[0001] On industrial floors, toeboards or kick plates should be placed on edges and around openings and field cut penetrations.
further mentioned in the document as toeboards

Introduction:

[0002] Manually shapeable toeboard for industrial grating or floorplates On industrial floors, toeboards or kick plates should be placed on edges and around openings and field cut penetrations.
Such toeboards are often difficult to determine in advance when preparing the floors.
Manufacturing and installing after installation of the floors is labour intensive and often impossible for installations already in service

Short description:

[0003] Manually shapeable toeboard for industrial grating or floorplates:

The toeboard is made of metal strip or plate provided with openings on certain lines perpendicular to the base. These openings form the folding lines.

[0004] The dimensions of these openings are determined on the basis of the desired metal type in combination with the desired thickness and such that the folding of the toeboard on these folding lines can be done manually without special tools.

Detailed description:

[0005] Manually shapeable toeboard for industrial grating or floorplates:

The toeboard is made of metal strip or plate provided with openings on certain lines perpendicular to the base. These openings form the folding lines.

[0006] It is known in the prior art to fold metal sheets by providing perforations in the folding lines which are first signed off and then manually applied by means of manual plasma or drill; closing the form is done by means of welding. My invention provides openings which are applied by a CNC-controlled metalworking machines to produce economically and to arrive at the uniform shape of the openings in the metal toeboard. The form is closed by means of bolt connections. The openings in each part are also designed such that when forming a toeboard consisting of only 1 part the ends are fastened together without welding, but by means of bolts (see drawings 3 & 4)
In the case of toeboards from several parts, these are coupled to each other by means of bolts (see drawing 5)
The number and dimensions of these openings are determined on the basis of the desired metal type in combination with the desired dimensions and thickness and such that the folding of the toeboard on these folding lines can be done manually without special tools. The installation can be carried out with a fastening lip which can also be folded manually to be fixed on the floor using standard fasteners (see DRAWING 01, DRAWING 03, DRAWING 04, DRAWING 05, DRAWING 06 and photo 2)
DRAWING 02 is a photorealistic 3D drawing and shows a simulation of the placement.
It is known in the prior art to confirm by additional supports.
[0007] However, my invention provides that the necessary fastening lips are integrated in the toeboard and formed by manual shaping.

DESCRIPTION A.D.H.V. PROTOTYPES:

[0008]

- Constructed from parts according to DRAWING 01 = drawing of 1 part
- Constructed from steel (carbon and stainless) of thickness 4mm and width 150mm as an example
- Dimensions and design of 1 part according to DRAWING 01 as an example

- Example of a shape with 1 part: DRAWING 03 + DRAWING 04
- Example of a shape with 3 parts: DRAWING 05
- Example in 3D of a random form with 2 parts: DRAWING 06
- Photographs for clarification: photo 1 to 6

CHARACTERIZED BY:

[0009]

- A toeboard consists of 1 part (according to DRAWING 01 and picture 1) or several parts
- Properly enclosing for on-site penetrations
- Very suitable for adjustments
- No welding or grinding work required
- Faster on fiberglass grids
- It is known in the prior art to weld machine-made toeboardes to steel gratings. My invention provides toeboards where no welding is used. As a result, they are also applied to non-metal grating and floor plates and are also placed in environments where welding is not permitted.
- Uniform and finished appearance
- Easy installation:

  - No special tools required
  - To be formed by hand

  - Easy to shape to the opening made in the grating or floor plate
  - Large openings can be bordered by linking multiple parts
  - Small openings can be bordered by partial overlap
  - No hot work permit required
  - No scaffolding required
  - Installs from the top of the grating or floor plate
  - To be clamped on the grating or floor plate using standard fastenings
  - Easy to install
  - Just as fast and easy to remove

    It is known in the prior art to place temporary toeboards on scaffolding floors. However, my invention is applicable as a definitive solution on industrial floors.

    It is known in the prior art to construct a toeboard which is adaptable to the floor opening by coupling different parts (such as flexible parts or parts from other materials or thicknesses).

    My invention, however, only uses the same parts to form a complete toeboard, fitting around each floor opening. No additional parts are therefore required.

    It is known in the prior art to attach the toeboard by making use of the openings in the vertical surface of the toeboard. My invention, however, provides fastening lips which come at right angles to the toeboard during deployment. As a result, the toeboards are stably and flatly attached to the floors by means of standard fasteners

- Material selection depending on environmental influences

  - Choice of the appropriate metal type and / or surface treatment
  - Different dimensions possible according to customer or environment requirements
  - Define dimensions according to choice of metal type and desired strength

• BENEFITS

[0010]

- Safe & effective
- Maintenance free
- Long lifespan
- Offers the protection you want
- Economically

Photos prototypes

[0011]

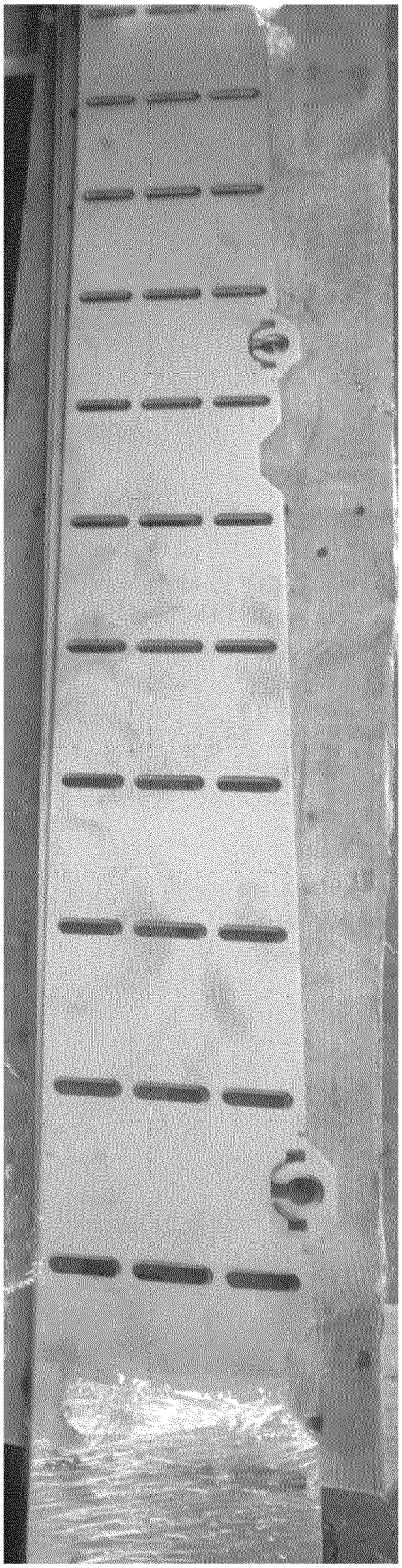


Photo 1: photo of 1 part as described above

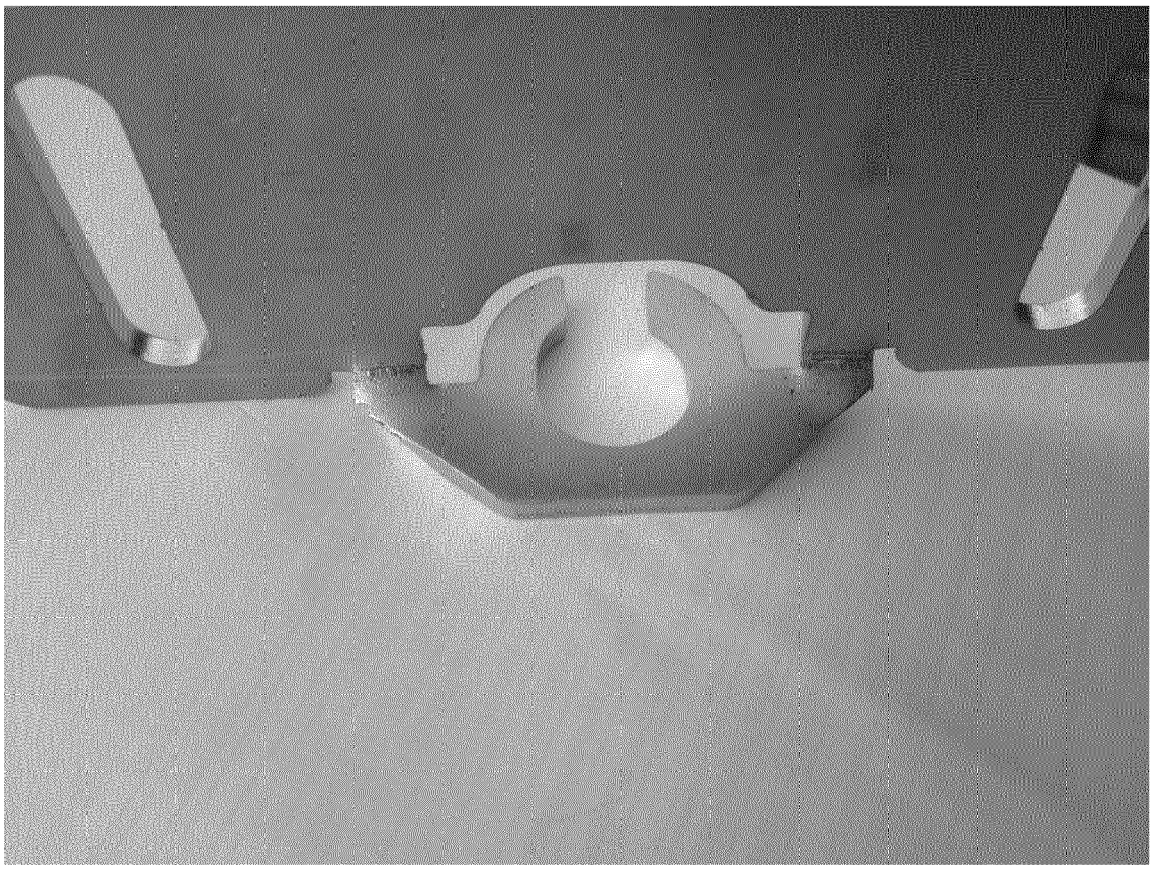


Photo 2: fastening lip

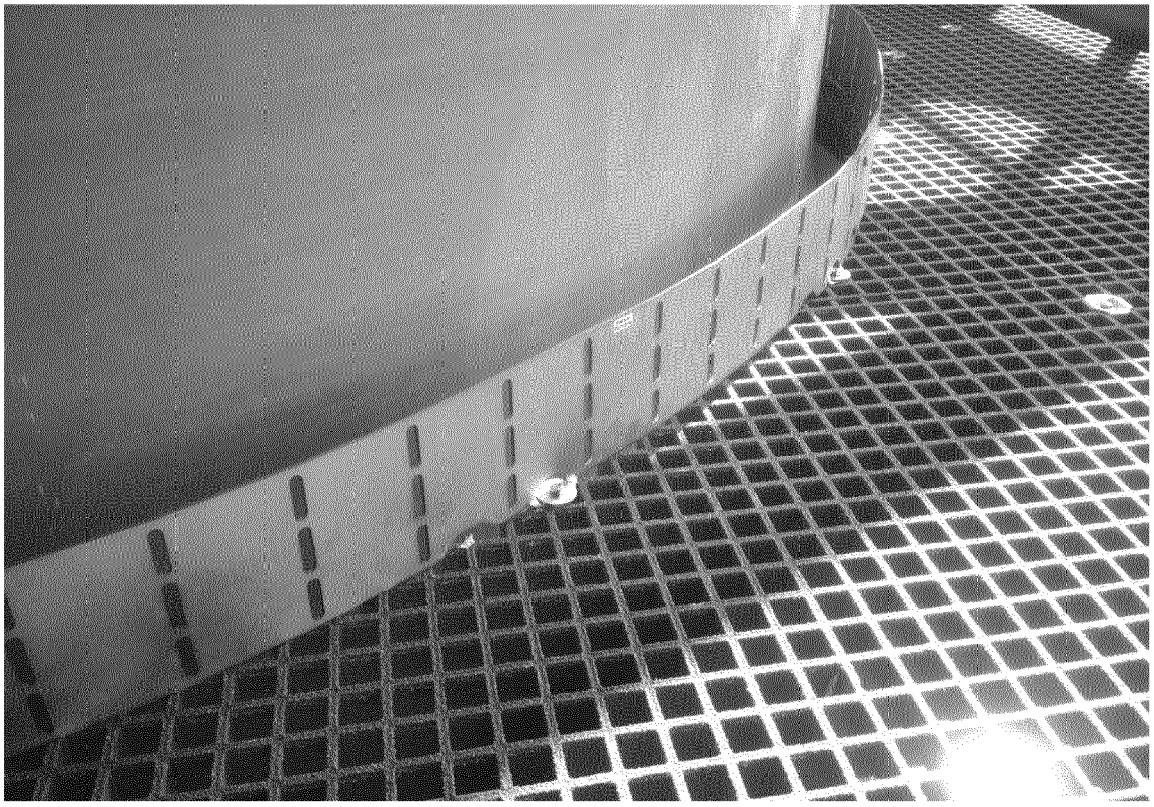


Photo 3: Can be used for large diameters

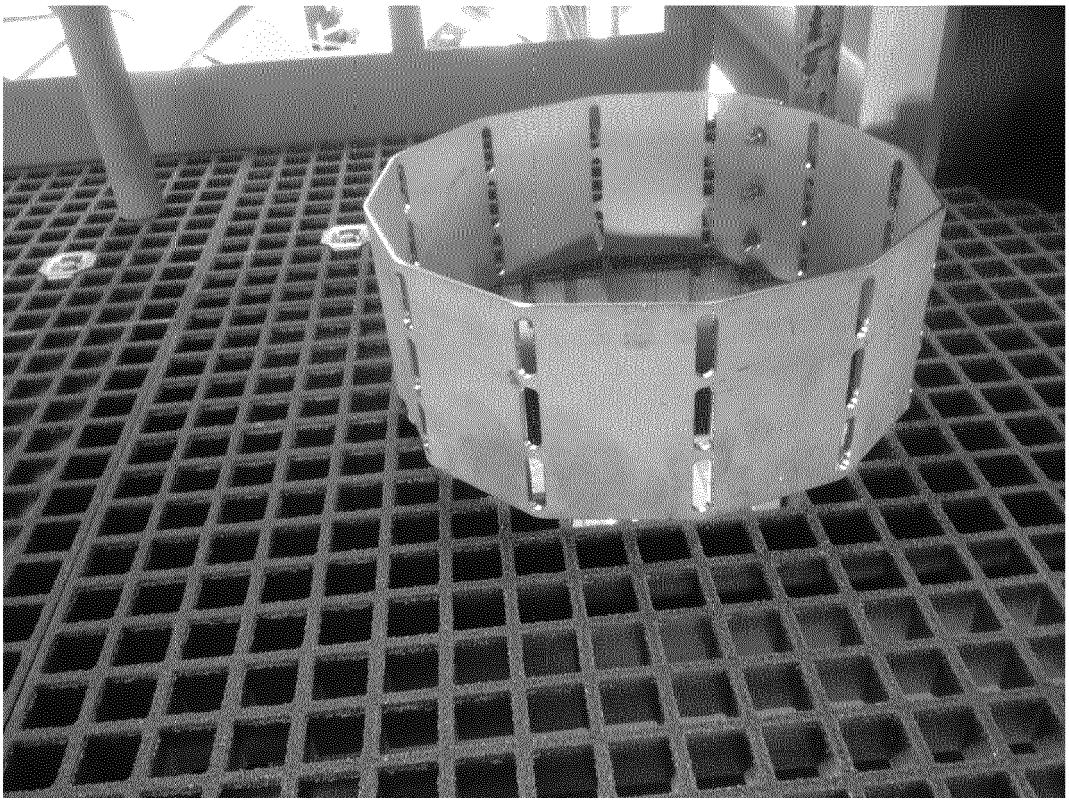


Photo 4: Can be used for small diameters

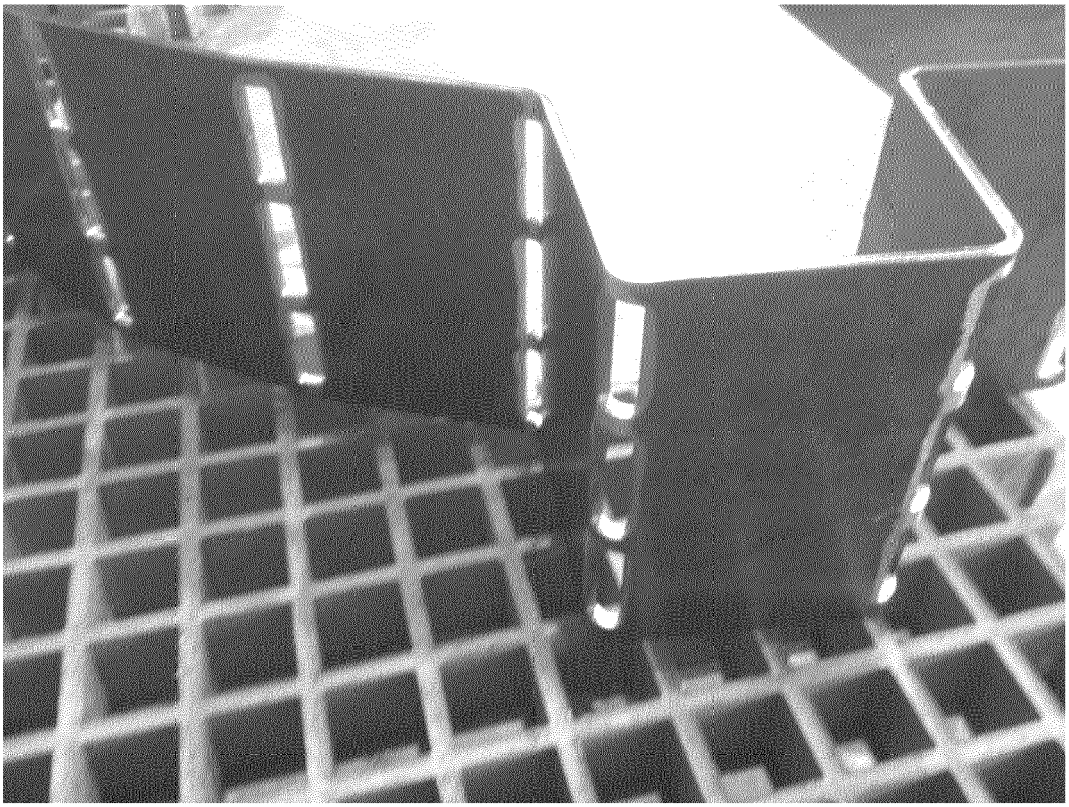


Photo 5: Usable for borders with a random shape

Example of floors

Example of floors where these toeboards can be used

[0012]

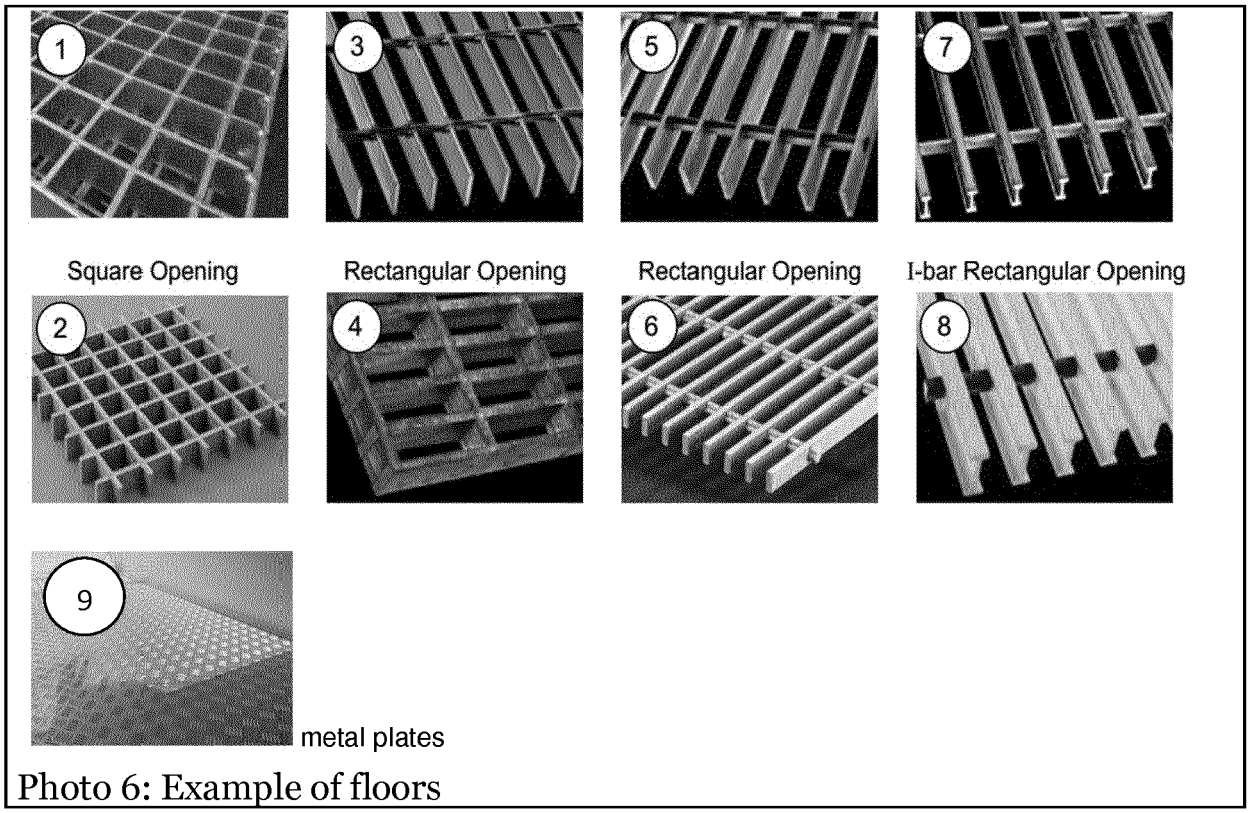


Photo 6: Example of floors

Claims

1. A toeboard for attaching to a industrial grating or floorplates, consisting of a metal strip, provided with openings extending in line over the width of the strip and these openings at a distance from each other, along the length of the strip , and in which these openings form folding lines to fold the strip into the desired shape and in which no use is made of welding works in order to form and install a completely closing border.
   - Dependent claims

2. Manually shapeable toeboard for industrial grating or floorplates, shapeable with the hand, according to claim 1, **characterized by**:

   Construction of 1 part of stainless steel of thickness 2 to 6mm and width 80mm to 200mm.

3. Manually shapeable toeboard for industrial grating or floorplates, shapeable with the hand, according to claim 1, **characterized by**:

   Construction of 1 part of carbon steel of thickness 2 to 6mm and width 80mm to 200mm.

4. Manually shapeable toeboard for industrial grating or floorplates, shapeable with the hand, according to claim 1, **characterized by**:

   Construction of 1 part of aluminum from thickness 2 to 6mm and width 80mm to 200mm.

5. Metal toeboard of claim 1 whereby at least one deformable fastening lip is provided at the underside of the strip to be attached to the grating or floorplates and **characterized in that** the fastening lip is located in the strip between two adjacent lines of openings and the fastening lip of the strip can be folded.

6. A toeboard according to claim 1 and therefore **characterized in that** the strip has a thickness of 4 mm, a length of 1230 and a useful width of 150 mm

7. A toeboard according to claim 1 and **characterized by** the fact that the openings are elongated per folding line and that openings of maximum 85% of the total width are located in line across the width of the strip.

8. Metal toeboard from claim 1 manually folded at angle> 90°

9. Suitable border of openings in floors by partial overlap of multiple parts from claim 1

10. Fixing holes from drawing 1 fit on the elongated openings to obtain firm fastening when overlapping from claim 9

11. Metal toeboard from claim 1 is fixed by means of standard fasteners.

12. Metal toeboard from claim 1 manually shapeable with uniform, straight parts> = 100mm

13. One toeboard or border is always constructed and manually formed by only using the same parts from claim 1, 2, 3, 4 with equal dimensions and metal type per toeboard, coupled and fixed by means of standard fasteners and without adding other items

Amended claims in accordance with Rule 137(2) EPC.

1. A toeboard for attaching to a industrial grating or floorplate **characterized in that**
the toeboard consists of a metal strip, provided with openings extending in a line over the width of the strip and whereby several of these lines are arranged at a distance from each other, along the length of the strip,
and **in that** these several lines with the openings form folding lines to fold the strip into the desired shape and in which no use is made of welding works in order to form and install a completely closing border, and **in that** the toeboard is manually bendable along these folding lines, and **in that** at least one deformable fastening lip is provided at the underside of the strip to be attached to the grating or floorplates, and **in that** the fastening lip is located in the strip between two adjacent lines of openings and the fastening lip of the strip can be folded.

2. Toeboard for industrial grating or floorplates, shapeable with the hand, according to claim 1, **characterized by**: Construction of 1 part of stainless steel of thickness 2 to 6mm and width 80mm to 200mm.

3. Toeboard for industrial grating or floorplates, shapeable with the hand, according to claim 1, **characterized by**: Construction of 1 part of carbon steel of thickness 2 to 6mm and width 80mm to 200mm.

4. Toeboard for industrial grating or floorplates, shapeable with the hand, according to claim 1, **characterized by**: Construction of 1 part of aluminum from thickness 2 to 6mm and width 80mm to 200mm.

5. Instead of deformable fastening lip from claim 1, brackets can be used for fixation

6. A toeboard according to claim 1 and therefore **characterized in that** the strip has a thickness of 4 mm, a length of 1230 and a useful width of 150 mm

7. A toeboard according to claim 1 and **characterized by** the fact that the openings are elongated per folding line and that openings of maximum 85% of the total width are located in line across the width of the strip.

8. Metal toeboard from claim 1 manually folded at angle> 90 °

9. A floor with an opening defining a suitable border **characterized in that** the border contains multiple toeboards according to claim 1, whereby the multiple toeboards partially overlap.

10. Instead of deformable fastening lip from claim 1, brackets can be used

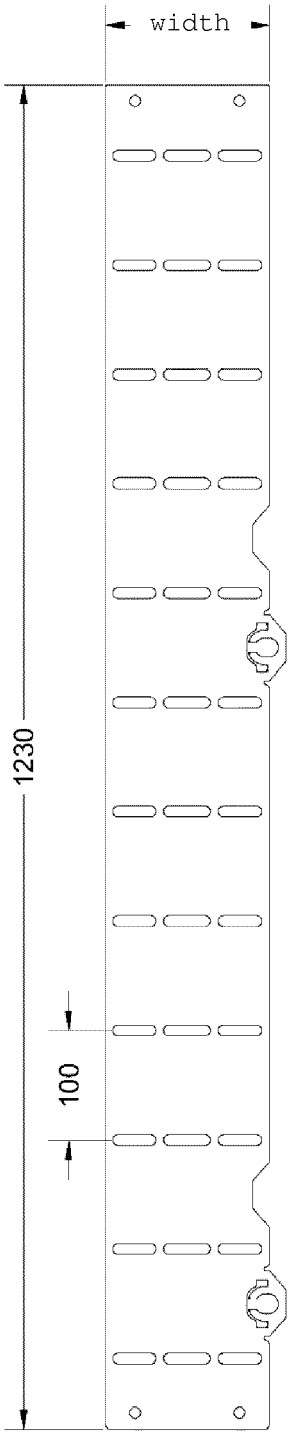
11. Metal toeboard from claim 1 is fixed by means of standard fasteners.

12. Metal toeboard from claim 1 manually shapeable with uniform, straight parts> = 100mm

13. A floor according to claim 9, **characterized in that** the multiple toeboards are always constructed and manually

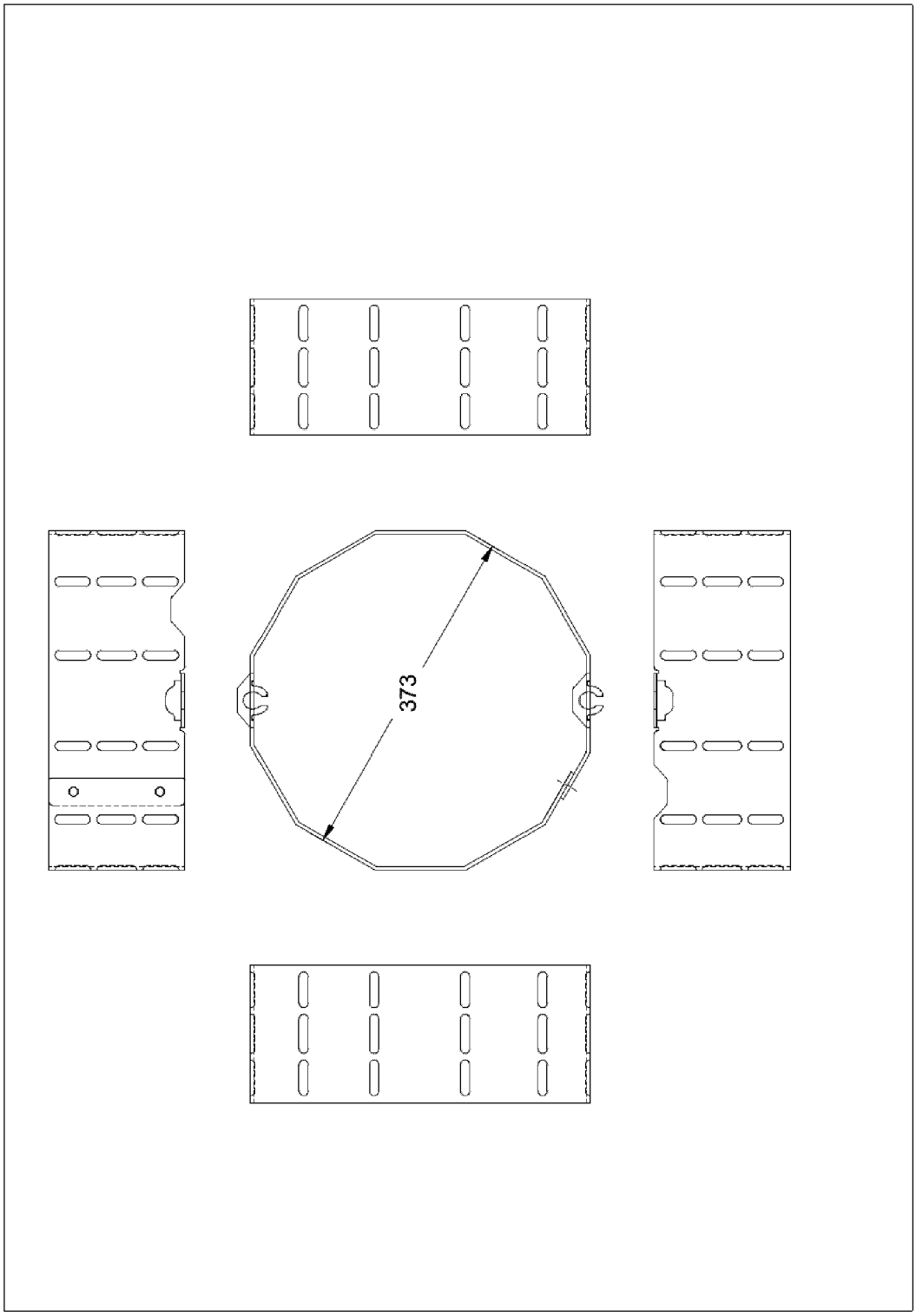
formed by only using the same toeboards from any of the claims 1-4 with equal dimensions and metal type per toeboard, which toeboards are further coupled and fixed by means of standard fasteners and without adding other items.

DRAWING 01



DRAWING 02

DRAWING 03



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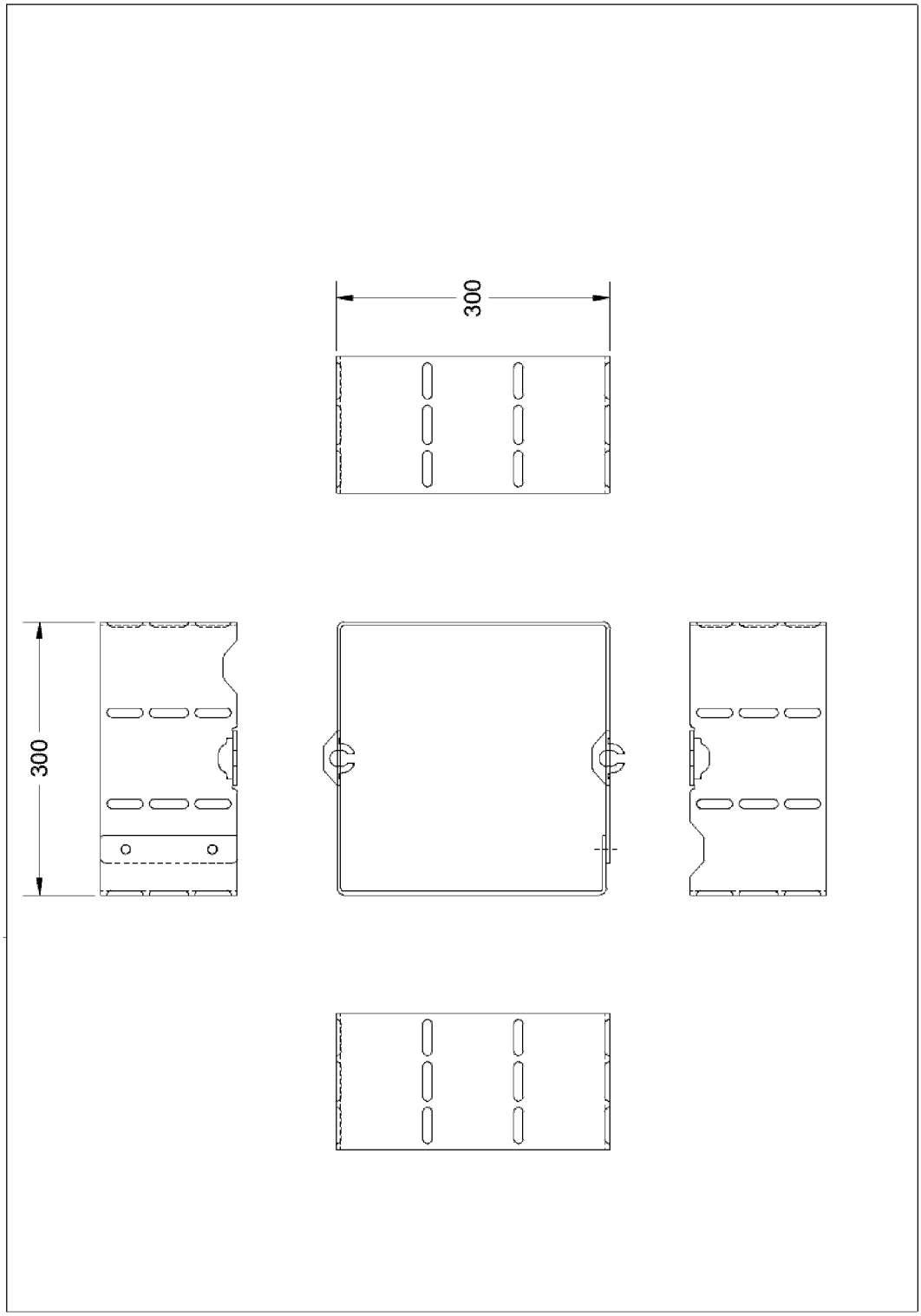
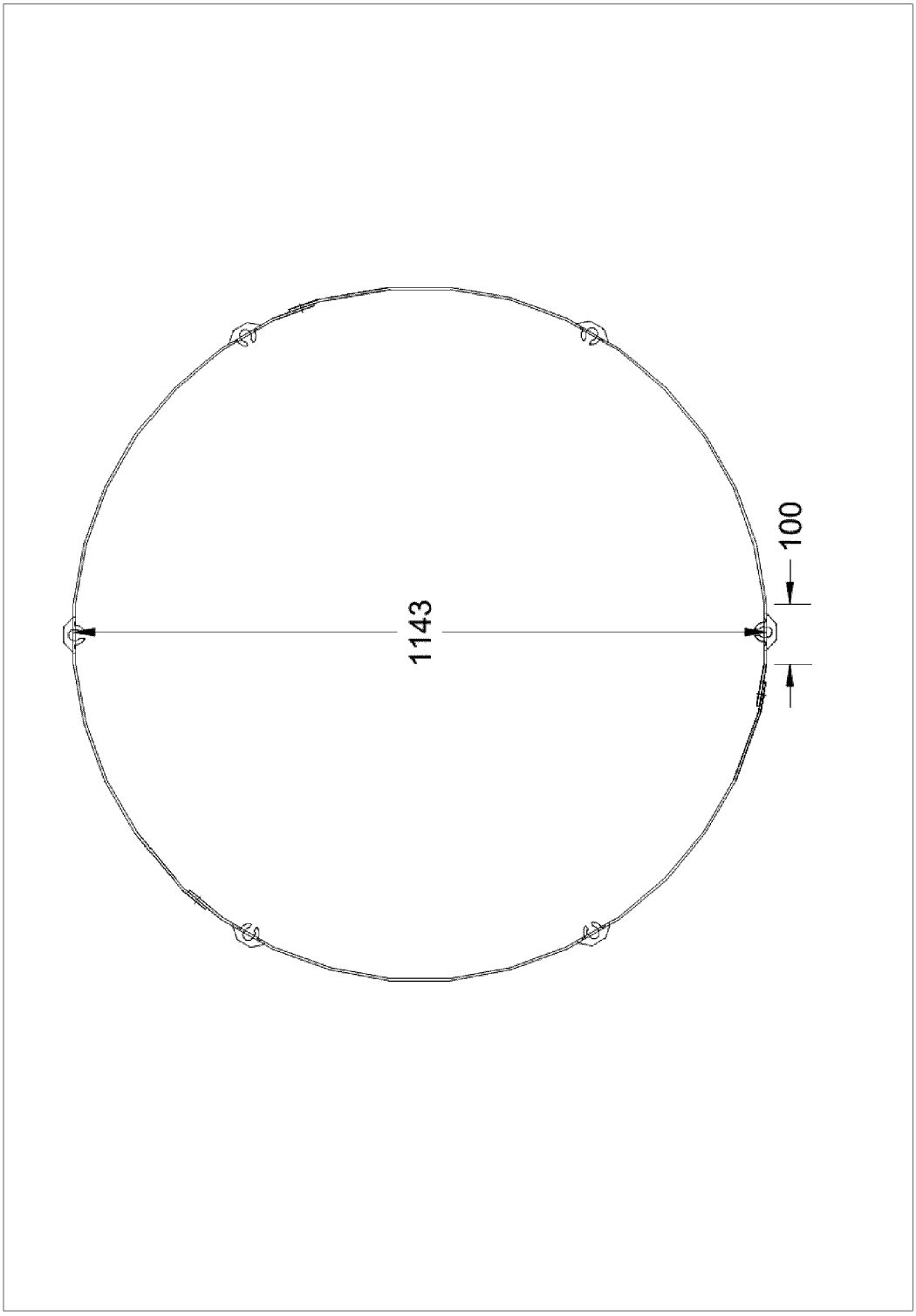
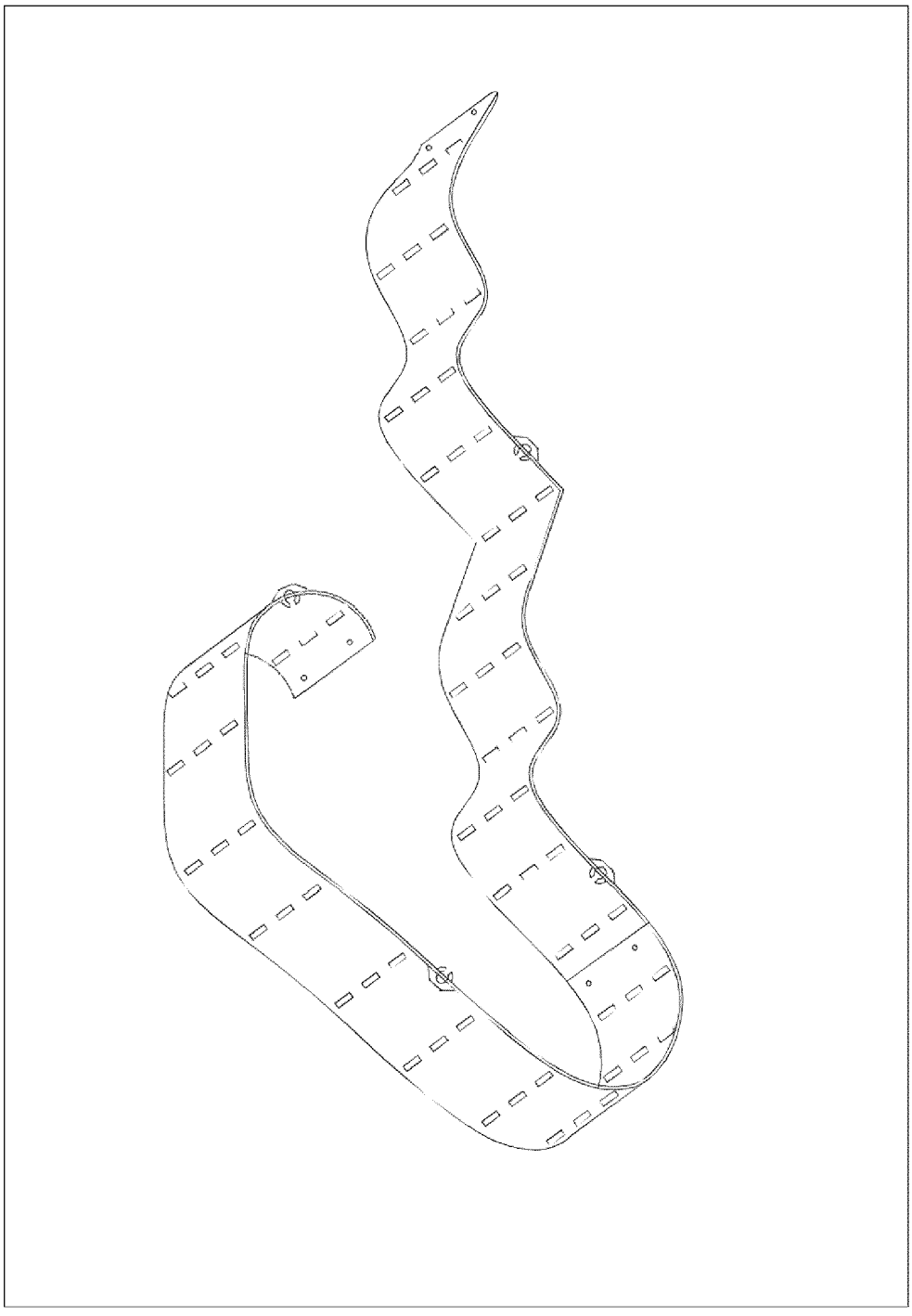


DRAWING 05



DRAWING 06



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EUROPEAN SEARCH REPORT

Application Number
EP 18 15 8495

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	NearSpaceLuke: "Folding Sheet Metal - All", , 20 January 2017 (2017-01-20), pages 1-2, XP055407214, Internet Retrieved from the Internet: URL:https://web.archive.org/web/20170120110454/http://www.instructables.com/id/Folding-Sheet-Metal/ [retrieved on 2017-09-15]	1-4,6-8, 11,12	INV. E04F15/02
A	* First Drawing and Text (first, second and last paragraph); page 1 *	5,9,10, 13	
A	Avk Terwey ET AL: "Gitterroste nach Maß ¦ GitterStar GmbH", , 10 December 2016 (2016-12-10), pages 1-6, XP055407238, Internet Retrieved from the Internet: URL:https://web.archive.org/web/20161210010405/https://www.gitterstar.de/sonderroste-gitterrost-sicherung.html [retrieved on 2017-09-15] * first figure; page 1 *	1-13	
A	WO 2012/021065 A1 (BEERENBERG CORP AS [NO]; BJORDAL JAKOB [NO]; ERDAL RUNE [NO]) 16 February 2012 (2012-02-16) * figures 1-5 *	1-13	
A	US 2 998 094 A (FISHER SIDNEY L) 29 August 1961 (1961-08-29) * figures 1,2 *	1-13	

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TECHNICAL FIELDS SEARCHED (IPC)
E04G
E04F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	29 May 2018	Baumgärtel, Tim

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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T : theory or principle underlying the invention
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D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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EUROPEAN SEARCH REPORT

Application Number
EP 18 15 8495

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	JP H11 123458 A (MEIJI NAT IND) 11 May 1999 (1999-05-11) * abstract; figures 1,2 * -----	1-13	

TECHNICAL FIELDS SEARCHED (IPC)

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	29 May 2018	Baumgärtel, Tim

CATEGORY OF CITED DOCUMENTS

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A : technological background
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 18 15 8495

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29-05-2018

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82