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(54) **SUPPORT FRAME**

STÜTZRAHMEN

CADRE SUPPORT

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## Description

### BACKGROUND OF THE INVENTION

**[0001]** The invention relates to a support frame according to the preamble of claim 1, and especially to a support frame for supporting and/or fastening wall, floor, or roof structures, the support frame comprising first and second flange parts that extend in the longitudinal direction of the support frame, and a web extending between them. The invention also relates to a method according to the preamble of claim 9, and especially to a method for manufacturing a support frame for supporting and/or fastening wall structures, the support frame comprising first and second flange parts that extend in the longitudinal direction of the support frame, and a web extending between them.

**[0002]** In the wall structures and especially the partition wall structures of buildings, support frames, or what are known as partition wall frames, are used to serve as supports for the wall structure and to which parts of the wall structure are fastened. Horizontal support frames, or horizontal bars, are conventionally fastened to the wall and/or floor and/or roof structures, and vertical support frames, or vertical bars, are further fastened to extend between the horizontal bars mounted to the roof and floor. Support frames generally have a U- or C-shaped cross-section so that the vertical bar can be set perpendicularly inside the support frame. If necessary, the support frame may also be arranged to receive insulation wool that may extend between the horizontal bars mounted to the roof and floor and between adjacent vertical bars. Wall plates and/or surface plates or other parts of the wall structure can also be fastened to the support frames, whereby the support frames form the body of the wall and provide the wall structure with its rigidity. In addition, support frames are used in roof and floor structures of buildings (roofs, floors, and base floors) as horizontal support structures. US 5,661,881 A discloses such a support frame.

**[0003]** A problem with the prior-art support frames is that their material consumption is high, and this is the largest single cost in the manufacture of conventional support frames. In the prior art, attempts have been made to reduce material costs by embossing, for instance, but material savings cannot be endlessly achieved with embossing. In addition, in these known solutions, the problem is caused by the fact that support frames of many sizes are needed for different wall, floor and roof structures, which means that it is necessary to manufacture several different support frames. This means that for different construction sites, it is necessary to always have different support frames in store and the manufacturing apparatuses also need to be occasionally adjusted to suit the manufacture of different support frames.

### BRIEF DESCRIPTION OF THE INVENTION

**[0004]** It is thus an object of the invention to provide a support frame and a method for manufacturing a support frame in such a manner that the above-mentioned problems are solved. The object of the invention is achieved with a support frame according to claim 1. The object of the invention is further achieved with a method according to claim 9.

**[0005]** Preferred embodiments of the invention are disclosed in the dependent claims.

**[0006]** The invention is based on providing the support frame of the invention for wall, roof and floor structures by joining together two elongated plates. Brackets that extend outward from the surface of the plate have been provided in the plates by cutting and bending. In other words, cuts have been made to the plates which make it possible to bend the parts defined by the cuts away from the surface of the plate, thus forming an opening in the surface of the plate. The support frame is formed by joining together two such plates with brackets provided therein as described above. The plates are joined together by fastening together the brackets of the plates that are placed against each other, whereby the brackets that have been fastened together extend between the plates. In the support frame thus obtained, the plates form the flange parts of the support frame and the joined brackets form the web extending between the flange parts.

**[0007]** The support frame of the invention provides the advantage that it saves material in comparison with the prior-art support frames, because the web part of the support frame is formed by cutting and bending the flange parts. The flange parts of the thus formed support frame have holes and the web is made up of consecutive bridge-like parts fastened together and formed as stated above by cutting and bending the flange parts. This way, the flange parts and web are not completely uniform plate-like parts of the support frame, but contain openings, whereby material is saved. Further, the brackets cut and bent from opposite elongated plates in accordance with the invention can be set to overlap to a desired extent when they are fastened to each other, whereby this overlap makes it possible to adjust the width of the support frame. The width of the support frame can also be adjusted by altering the angle at which the brackets extend from the plates. Since it is possible to adjust the width of the support frame during manufacturing, the same elongated plates or the same raw material sheeting can be used, whereby the manufacturing process can be simplified and costs saved.

### BRIEF DESCRIPTION OF THE FIGURES

**[0008]** The invention will now be described in greater detail by means of preferred embodiments and with reference to the attached drawings, in which

Figure 1 shows a schematic view of a plate part of an embodiment of the invention,

Figure 2 shows a schematic side view of a support frame of the present invention, and

Figure 3 shows a schematic top view of the support frame according to Figure 2.

## DETAILED DESCRIPTION OF THE INVENTION

**[0009]** Figure 1 shows a partial view of an elongated plate part 4 used in manufacturing a support frame according to the present invention for wall, roof and floor structures. Two of these plate parts 4 are used in manufacturing the support frame by joining them together. The plate part 4 is preferably made of sheet metal with a thickness of 0.5 to 1 mm, for instance. To increase its rigidity, the plate part 4 may be embossed in a desired manner and with a desired pattern. According to Figure 1, the plate part 4 is profiled to increase its rigidity. In the case of Figure 1, the profiling is done by providing folds 10 on the longitudinal edges of the plate part 4. It is also possible to profile only one longitudinal edge of the plate part 4. It should be noted that the profiling may be performed in a desired manner such that the resulting profiled plate part 4 has a desired shape and rigidity properties. The width of such a plate part 4 may be 40 to 60 mm, for instance, and the depth obtained by profiling may be approximately 5 to 10 mm. In length, the plate parts 4 may be as required in each case.

**[0010]** As shown in Figure 1, areas 6 are cut into the plate part 4 which are, however, not entirely separated from the plate part 4, but the cuts 9 are made in such a manner that the area 6 defined by the cuts is still attached to the plate part 4 on one of its edges or at one or more points. The cuts may be made by any known method. The cut area 6 may be rectangular as shown in Figure 1, or square, oblong elongated strip-like, curved, semicircular, semielliptical, or of any other shape in such a manner that the cut area 6 is at least at one point or on one side at least partly attached to the plate part 4. The cuts 9 are preferably provided on the straight surface part of the profiled plate part 4. Thus, the cut areas 6 are provided in such a manner that they may be bent in relation to the rest of the plate part 4, whereby they extend leaf-like outward from the surface of the plate part 4. The cut areas 6 are provided in the plate part 4 consecutively in its longitudinal direction as shown in Figure 1. For the formation of the support frame, there are two or more of these cut areas in each plate part. Adjacent or consecutive cut areas 6 are cut in Figure 1 in such a manner that they may be bent in different directions in relation to the plate part 4. In other words, the top cut part in Figure 1 is bendable upward, because it is still attached to the plate part 4 at its top edge, and the bottom cut part is bendable downward, because it is still attached to the plate part 4 at its bottom edge. Adjacent or consecutive cut parts may also be identical, in which case they are bendable in the same direction in relation to the plate part 4. It should also be noted that preferably all cut areas 6 of the plate part are similar in shape and dimensions, but in special cases at least some of them may also be different. For instance, every second consecutive cut area may be similar. Alternatively, the cut areas may be provided such that they may be bent sideways to the right or left, whereby they are attached to the plate part from either side edge. Adjacent cut areas may then also be attached to the plate part at different side edges, in which case they may be bent in different directions.

**[0011]** It should be noted that the cuts can also be made at the edges of the plate parts 4, in which case notchings form at the edges when the cut areas are bent away from the plate part. Such cuts provided at the edges may be formed at one or both edges of the plate part.

**[0012]** Consecutive or adjacent cut areas 6 are preferably provided at a predefined distance from each other in such a manner that a uniform neck 12 is formed between them. This neck 12 forms a screw area to which a wall plate and/or surface plate to be fastened to the plate part or support frame can be screwed or otherwise fastened.

**[0013]** The support frame comprises flange parts extending in its longitudinal direction and a web extending between the flange parts. Figure 2 shows a support frame 2 according to the present invention, which is provided by joining together two plate parts 4 according to Figure 1. In other words, the support frame 2 is made up of two elongated plate parts 4 and 5 that are joined together. The plate parts 4 and 5 preferably extend parallel in the longitudinal direction of the support frame 2 in such a manner that the straight surface parts of the plate parts 4 and 5 are essentially parallel, whereby they form the flange parts of the support frame 2. In accordance with Figure 2, the areas cut into the first plate part 4 are bent to extend outward from the surface of the plate part 4 so as to form brackets 6. In a similar manner, the areas cut into the second plate part 5 are bent to extend outward from the surface of the plate part so as to form brackets 7. The brackets 6 and 7 are herein referred to as fastening brackets 6 and 7. In the manner stated above, the fastening brackets 6, 7 are formed correspondingly by cutting and bending the plate parts 4, 5, whereby openings corresponding to the fastening brackets 6, 7 remain in the plate parts 4, 5 after bending.

**[0014]** The fastening brackets 6, 7 may be bent to a required angle in relation to the plate parts 4, 5, whereby the angle between the plate part 4, 5 and the fastening bracket therein may for instance be 90° to 20°, preferably 45° to 90°. Typically, all fastening brackets 6, 7 of the plate part 4, 5 extend from the plate part 4, 5 at the same angle. The angle between consecutive or adjacent fastening brackets 6, 7 and the plate part may be the same even though the consecutive or adjacent fastening brackets were bent into different directions in relation to the plate part 4, 5 in the manner described above. In some embodiments, the consecutive or adjacent fastening brackets 6, 7 may also extend outward from the plate part 4, 5 at different angles.

**[0015]** According to Figure 2, the support frame 2 is provided by joining together two above-mentioned plate parts 4, 5 that comprise fastening brackets 6, 7. This is

done by fastening the first fastening brackets 6 of the first plate part 4 to the second fastening brackets 7 of the second plate part 5 in such a manner that the joined first and second fastening brackets 6, 7 extend between the first and second plate parts 4, 5. The first fastening brackets 6 of the first plate part 4 preferably extend at the same angle from the first plate part 4 as the second fastening brackets 7 of the second plate part 5 extend from the second plate part 5. Thus, the first and second fastening brackets 6, 7 are parallel between the first and second plate parts 4, 5 and they may be set to overlap as shown in Figure 2.

**[0016]** Alternatively, it is possible to join together two plate parts in which the cut areas may be bent sideways in relation to the longitudinal direction of the plate parts to form a web. The cut and bent fastening brackets may then extend between opposite plates from diagonal plate edges or close thereto. Consecutive joined fastening brackets extend transverse to each other to provide a lattice structure, or parallel in which case the fastening brackets of both plate parts extend in the same direction. The cut and bent fastening brackets may also extend from opposite edges to opposite plate parts or close thereto, whereby a sheath-like structure may be formed when consecutive joined fastening brackets are provided at the edges of the plate parts or close thereto. When joining two plate parts together, these sideways bent cut areas may be fastened to each other to form a web. This way, the cut areas of opposite plate parts may extend diagonally in relation to the plate parts to form a web with a lattice structure, when the cuts in the second plate part are made in the same way. Similarly, the cuts that have been made consecutively on the plate part edges and bent may be fastened to each other to form a web.

**[0017]** The first and second fastening brackets 6, 7 are, as shown in Figure 2, set to overlap and fastened to each other with fastening means 8. The fastening means 8 may be rivets, screws, or other corresponding mechanical fastening means. Alternatively, the first and second fastening brackets 6, 7 may be fastened to each other by welding using laser, for instance.

**[0018]** The thus obtained support frame 2 of the invention is made up of first and second plate parts 4, 5 that form the flange parts of the support frame 2, and joined first and second fastening brackets 6, 7 that form the web of the support frame 2. In other words, the web of the support frame 2 is formed by cutting strips from the flange parts and bending the strips to extend from the flange parts, the strips being further fastened to corresponding strips of the opposite flange part. The web is then formed of the material of the flange parts, in which case the flange parts have openings that correspond to the strips cut and bent from the flange parts. The web is thus made up of consecutive bent and joined fastening brackets 6, 7 of opposite plate parts 4, 5, and the fastening together of these brackets join the plate parts 4, 5 together. Thus, the web of the support frame 2 is formed of a cellular structure, and the web is no longer a uniform plate, but a structure made up of consecutive plate-like bridges connecting the first and second plate parts 4, 5 to each other. The web is thus not uniform, but comprises openings between the fastening brackets 7, 6. The obtained support frame 2 thus has openings in both the flange parts and web, whereby material is saved. In other words, the web of the support frame 2 is formed from the flange parts or plate parts by cutting and bending.

**[0019]** Figure 2 also shows that the arrangement of the invention makes it possible to adjust the width D of the support frame 2 by means of the fastening brackets 6, 7. Firstly, the width of the support frame 2 can be influenced by adjusting the bending angle of the fastening brackets 6, 7 in relation to the plate parts 4, 5. The smaller the angle of the fastening brackets 6, 7 in relation to the plate parts is, the narrower a support frame 2 can be made by fastening the fastening brackets 6, 7 of the opposite plate parts to each other. The widest width of the support frame 2 can in turn be achieved by bending the fastening brackets 6, 7 to a 90° angle in relation to the plate parts 4, 5. Another possible way of altering the width of the support plate 2 is to vary the overlap of the fastening brackets 6, 7 to be fastened to each other. In other words, the longer the overlap of the fastening brackets 6 and 7 is, the smaller is the width D of the support frame 2. On the other hand, the smaller the overlap of the fastening brackets 6, 7 is, the wider is the support frame 2. This way, similar plate parts can be made into very different support frames with different widths as necessary.

**[0020]** Figure 3 shows the embodiment of Figures 1 and 2 from the top. Figure 3 shows that the first and second plate parts 4, 5 are fastened to each other with the fastening brackets 6, 7. The first fastening brackets 6 are cut into the first plate part and bent to extend outward from the first plate part 4. Correspondingly, the second fastening brackets 7 are cut into the second plate part 5 and bent to extend outward from the second plate part 5. The first and second fastening brackets 6, 7 are set to overlap in such a manner that they extend a predefined distance on top of each other. In Figure 3, the second fastening brackets 7 are set on top of the first fastening brackets 6. These overlapping fastening brackets 6, 7 are then fastened to each other with rivets 8. In Figure 3, the longitudinal edges of the first and second plate parts 4, 5 are profiled to increase the rigidity of the plate parts 4, 5.

**[0021]** When manufacturing the support frames 2 of the invention for wall, roof and floor structures, elongated even plate parts 4, 5 are first provided and cut into suitable dimensions. After this, the plate parts 4, 5 are profiled by roll forming, for instance. After profiling, fastening brackets 6, 7 are cut into the plate parts 4, 5 and then bent to extend outward from the plate parts 4, 5. Next, the fastening brackets 6, 7 of the two plate parts 4, 5 are fastened to each other to form the support frame 2. It should be noted that the above-mentioned steps may also be performed in some other alternative order, and they may also be performed consecutively or in part simultaneous-

ly in one manufacturing apparatus. In addition, it is possible to utilize a manufacturing apparatus that can be brought to and used at the site, which means that it is not necessary to transport the finished support frames to the site, but they can be manufactured there as necessary and with the required dimensions.

**[0022]** It is obvious to a person skilled in the art that as technology advances, the basic idea of the invention can be implemented in many different ways. The invention and its embodiments are thus not restricted to the above examples, but may vary within the scope of the claims.

## Claims

1. A support frame (2) for supporting and/or fastening wall, roof and floor structures, the support frame (2) being made of sheet metal and comprising two opposing flange parts joined together with a web part, the two opposing flange parts being made of first and second elongated plate parts (4, 5), the first elongated plate part (4) being provided with two or more leaf-like first fastening brackets (6) extending from the surface of the first elongated plate part (4) and the second elongated plate part (5) is provided with two or more leaf-like second fastening brackets (7) extending from the surface of the second elongated plate part (5), **characterised in that** the first and second fastening brackets (6, 7) are provided by cutting and bending such that they form openings to the surface of the first and second elongated plate parts (4, 5), and that first and second fastening brackets (6, 7) are fastened to each other overlappingly such that they extend between the first and second elongated plate parts (4, 5) to form the web part of the support frame.

2. A support frame (2) as claimed in claim 1, **characterised in that** the fastening brackets (6, 7) are provided in the plate parts (4, 5) consecutively in the longitudinal direction of the plate parts (4, 5).

3. A support frame (2) as claimed in claim 1 or 2, **characterised in that** at least one of the plate parts (4, 5) is profiled to increase its rigidity.

4. A support frame (2) as claimed in claim 3, **characterised in that** the profiling is provided on one or both longitudinal edges of the plate part (4, 5).

5. A support frame (2) as claimed in any one of preceding claims 1 to 4, **characterised in that** the fastening brackets (6, 7) are leaf-like, strip-like, rectangular, and/or curved.

6. A support frame (2) as claimed in any one of preceding claims 1 to 5, **characterised in that** the fastening brackets (6, 7) of the plate parts (4, 5) are fastened to each other mechanically.

7. A support frame (2) as claimed in claim 6, **characterised in that** the fastening brackets (6, 7) of the plate parts (4, 5) are fastened to each other with rivets, screws, or welds.

8. A support frame (2) as claimed in any one of preceding claims 1 to 7, **characterised in that** the fastening brackets (6, 7) extend from the plate parts (4, 5) perpendicular or at an angle to the surface of the plate parts (4,5).

9. A method for manufacturing a support frame for supporting and/or fastening wall, roof and floor structures, the support frame being made of sheet metal and comprising a first and second opposing flange part extending in the longitudinal direction of the support frame and a web extending between the first and second flange parts, the method comprising

   - providing a first elongated plate part and a second elongated plate part;
   - forming two or more leaf-like first fastening brackets to the surface of the first elongated plate part by cutting and bending such that the first fastening brackets extend from the surface of the first elongated plate part, and forming two or more leaf-like second fastening brackets to the surface of the second elongated plate part by cutting and bending such that second fastening brackets extend from the surface of the second elongated plate part;

   **characterised by** forming the first and second fastening brackets by cutting and bending such that they form openings to the surface of the first and second elongated plate parts, and fastening first and second fastening brackets to each other overlappingly such that they extend between the first and second elongated plate parts to form the web part of the support frame.

10. A method as claimed in claim 9, **characterised in that** the fastening brackets are provided in the plate parts consecutively in the longitudinal direction of the plate parts.

11. A method as claimed in claim 9 or 10, **characterised in that** the method also comprises profiling of at least one of the plate parts to increase its rigidity.

12. A method as claimed in claim 11, **characterised in that** the profiling is done before the fastening brackets are formed.

13. A method as claimed in claim 11 or 12, **characterised in that** the profiling is done on one or both lon-

gitudinal edges.

**14.** A method as claimed in any one of preceding claims 9 to 13, **characterised in that** the fastening brackets are cut from the plate parts and bent to extend outward from them.

**15.** A method as claimed in any one of preceding claims 9 to 14, **characterised in that** the fastening brackets are made leaf-like, strip-like, rectangular, and/or curved.

**16.** A method as claimed in any one of preceding claims 9 to 15, **characterised in that** the fastening brackets of the plate parts are fastened to each other mechanically.

**17.** A method as claimed in claim 16, **characterised in that** the fastening brackets of the plate parts are fastened to each other with rivets, screws, or welds.

**18.** A method as claimed in any one of preceding claims 9 to 17, **characterised in that** fastening brackets are made to extend from the plate parts perpendicular or at an angle to the surface of the plate parts.

**Patentansprüche**

**1.** Stützrahmen (2) zum stützen und/oder befestigen von Wand-, Dach- und Fussbodenstrukturen, wobei der Stützrahmen (2) aus einem Metallblech hergestellt ist und zwei gegenüberstehenden Flanschteile umfasst, die miteinander durch einen Netzteil verbunden sind, wobei die zwei gegenüberstehenden Flanschteile aus einem ersten und zweiten länglichen Plattenteilen hergestellt sind (4, 5), wobei der erste längliche Plattenteil (4) mit zwei oder mehreren blattartigen ersten Befestigungsträgern (6) versehen ist, die sich von der Oberfläche des ersten länglichen Plattenteils (4) erstrecken, und der zweite längliche Plattenteil (5) mit zwei oder mehreren blattartigen zweiten Befestigungsträgern (7) versehen ist, die sich von der Oberfläche des zweiten länglichen Plattenteils (5) erstrecken, **dadurch gekennzeichnet, dass** die ersten und zweiten Befestigungsträger (6, 7) derart durch schneiden und biegen gebildet sind, dass sie Öffnungen in der Oberfläche der ersten und zweiten länglichen Plattenteile (4,5) bilden, und dass die ersten und zweiten Befestigungsträger (6, 7) derart sich überlappend miteinander befestigt sind, dass sie sich zwischen den ersten und zweiten länglichen Plattenteilen (4, 5) erstrecken und dabei den Netzteil des Stützrahmens bilden.

**2.** Stützrahmen (2) nach Anspruch 1, **dadurch gekennzeichnet, dass** die Befestigungsträger (6, 7) in den Plattenteilen (4, 5) aufeinanderfolgend in Längsrichtung der Plattenteile (4, 5) bereitgestellt sind.

**3.** Stützrahmen (2) nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** mindestens einer der Plattenteile (4, 5) mit einem Profil versehen ist, um seine Steifigkeit zu erhöhen.

**4.** Stützrahmen (2) nach Anspruch 3, **dadurch gekennzeichnet, dass** das Profil auf einer oder beiden Längskanten des Plattenteils (4, 5) gebildet ist.

**5.** Stützrahmen (2) nach einem der Ansprüche 1-4, **dadurch gekennzeichnet, dass** die Befestigungsträger (6, 7) blattartig, streifenartig, rechteckig und/oder bogenförmig sind.

**6.** Stützrahmen (2) nach einem der Ansprüche 1-5, **dadurch gekennzeichnet, dass** die Befestigungsträger (6, 7) der Plattenteile (4, 5) miteinander mechanisch befestigt sind.

**7.** Stützrahmen (2) nach Anspruch 6, **dadurch gekennzeichnet, dass** die Befestigungsträger (6, 7) der Plattenteile (4, 5) miteinander mit Nieten, Schrauben oder Schweissnahten befestigt sind.

**8.** Stützrahmen (2) nach einem der Ansprüche 1-7, **dadurch gekennzeichnet, dass** sich die Befestigungsträger (6, 7) von den Plattenteilen (4, 5) aus senkrecht oder in einer Winkel zu der Oberfläche der Plattenteile (4, 5) erstrecken.

**9.** Verfahren zur Herstellung eines Stützrahmens zum stützen und/oder befestigen von Wand-, Dach- und Fussbodenstrukturen, wobei der Stützrahmen aus einem Metallblech hergestellt ist und einen ersten und zweiten gegenüberstehenden, sich in Längesrichtung des Stützrahmens erstreckenden Flanschteile und ein sich zwischen dem ersten und zweiten Flanschteil erstreckenden Netz umfasst, wobei das Verfahren die folgenden Schritte aufweist:

- Bereitstellung des ersten und zweiten länglichen Plattenteils,
- Bilden von zwei oder mehreren blattartigen ersten Befestigungsträgern auf der Oberfläche des ersten länglichen Plattenteils derart durch Schneiden und Biegen, dass sich die ersten Befestigungsträger von der Oberfläche des ersten länglichen Plattenteils erstrecken, und Bilden von zwei oder mehreren blattartigen zweiten Befestigungsträgern auf der Oberfläche des zweiten länglichen Plattenteils derart durch Schneiden und Biegen, dass sich die zweiten Befestigungsträger von der Oberfläche des zweiten länglichen Plattenteils erstrecken, **dadurch ge-**

**kennzeichnet, dass** die ersten und zweiten Befestigungsträger derart durch schneiden und biegen gebildet werden, dass sie Öffnungen in der Oberfläche der ersten und zweiten länglichen Plattenteile bilden, und dass die ersten und zweiten Befestigungsträger derart sich überlappend miteinander befestigt werden, dass sie sich zwischen den ersten und zweiten länglichen Plattenteilen erstrecken und dabei den Netzteil des Stützrahmens bilden.

**10.** Verfahren nach Anspruch 9, **dadurch gekennzeichnet, dass** die Befestigungsträger in den Plattenteilen aufeinanderfolgend in Längsrichtung der Plattenteile bereitgestellt sind.

**11.** Verfahren nach Anspruch 9 oder 10, **dadurch gekennzeichnet, dass** das Verfahren auch die Bindung von Profilen an mindestens einen der Plattenteile aufweist, um seine Steifigkeit zu erhöhen.

**12.** Verfahren nach Anspruch 11, **dadurch gekennzeichnet, dass** die Bindung von Profilen vor der Bildung der Befestigungsträger durchgeführt wird.

**13.** Verfahren nach Anspruch 11 oder 12, **dadurch gekennzeichnet, dass** das Profil auf einer oder beiden Längskanten gebildet wird.

**14.** Verfahren nach einem der Ansprüche 9-13, **dadurch gekennzeichnet, dass** die Befestigungsträger von den Plattenteilen geschnitten und derart gebogen sind, dass sie sich von den Plattenteilen auswärts erstrecken.

**15.** Verfahren nach einem der Ansprüche 9-14, **dadurch gekennzeichnet, dass** die Befestigungsträger in einer blattartigen, streifenartigen, rechteckigen und/oder bogenförmigen Form gebildet sind.

**16.** Verfahren nach einem der Ansprüche 9-15, **dadurch gekennzeichnet, dass** die Befestigungsträger der Plattenteile miteinander mechanisch befestigt sind.

**17.** Verfahren nach Anspruch 16, **dadurch gekennzeichnet, dass** die Befestigungsträger der Plattenteile miteinander mit Nieten, Schrauben oder Schweissnahten befestigt sind.

**18.** Verfahren nach einem der Ansprüche 9-17, **dadurch gekennzeichnet, dass** die Befestigungsträger derart gebildet sind, dass sie sich von den Plattenteilen aus senkrecht oder in einer Winkel zu der Oberfläche der Plattenteile erstrecken.

**Revendications**

**1.** Cadre de support (2) pour le support et/ou la fixation des structures de mur, toit et sol, ledir cadre de support (2) étant fait en une feuille de métal et comprenant deux pièces de collerette opposées, jointes l'une à l'autre par une pièce de réseau, ces deux pièces de collerette opposées étant faites d'un première et deuxième pièce de plaque allongée (4, 5), la première pièce de plaque allongée (4) étant fourni avec deux ou plusieurs premiers supports de fixation (6) ayant la forme d'une feuille, qui s'étendent de la surface de la première pièce de plaque (4) allongée, et la deuxième pièce de plaque allongée (5) étant fourni avec deux ou plusieurs deuxièmes supports de fixation (7) ayant la forme d'une feuille, qui s'étendent de la surface de la deuxième pièce de plaque (4) allongée, charactérisé en ce que les premiers et deuxièmes supports de fixation (6, 7) sont fournis par le coupage et la courbure de manière à former des ouvertures dans la surface des premières et deuxièmes pièces de plaque allongées (4, 5), et que les premiers et deuxièmes supports de fixation (6, 7) sont attachés l'un à l'autre en chevauchement et de manière à s'étendre entre la première et deuxième pièce de plaque (4, 5) pour former la pièce de réseau du cadre de support.

**2.** Cadre de support (2) selon la revendication 1, charactérisé en ce que les supports de fixation (6, 7) sont fournis dans les pièces de plaque (4, 5) consécutivement dans la diréction longitudinale des pièces de plaque (4, 5).

**3.** Cadre de support (2) selon la revendication 1 ou 2, charactérisé en ce qu'au moins une des pièces de plaque (4, 5) est fourni avec un profil pour augmenter sa rigidité.

**4.** Cadre de support (2) selon la revendication 3, charactérisé en ce que le profil est fourni sur une ou les deux bords longitudinaux de la pièce de plaque (4, 5).

**5.** Cadre de support (2) selon l'une des revendications 1 à 4 précédentes, charactérisé en ce que les supports de fixation (6, 7) ont la forme d'une feuille, bande, rectangulaire et/ou courbée.

**6.** Cadre de support (2) selon l'une des revendications 1 à 5 précédentes, charactérisé en ce que les supports de fixation (6, 7) des pièces de plaque (4, 5) sont attachées l'un à l'autre méchaniquement.

**7.** Cadre de support (2) selon la revendication 6, charactérisé en ce que les supports de fixation (6, 7) des pièces de plaque (4, 5) sont attachées l'un à l'autre avec des rivets, vis ou soudures.

**8.** Cadre de support (2) selon l'une des revendications 1 à 7 précédentes, charactérisé en ce que les supports de fixation (6, 7) s'étendent à partir des pièces de plaque (4, 5) perpendiculairement ou en un angle relatif à la surface des pièces de plaque (4, 5).

**9.** Méthode de production d'un cadre de support pour le support et/ou la fixation des structures de mur, toit et sol, ledir cadre de support étant fait en une feuille de métal et comprenant une première et deuxième pièce de collerette opposée, qui s'étendent dans la direction longitudinale du cadre de support, et une pièce de réseau, qui s'étend entre la première et deuxième pièce de collerette opposée, la méthode comprenant

- l'approvisionnement la première pièce de plaque (4) allongée et la deuxième pièce de plaque allongée (5);
- formation des deux ou plusieurs premiers supports de fixation ayant la forme d'une feuille sur la surface de la première pièce de plaque allongée par coupage et courbure de manière à faire les premiers supports de fixation s'étendre de la surface de la première pièce de plaque allongée, et formation des deux ou plusieurs deuxièmes supports de fixation ayant la forme d'une feuille sur la surface de la deuxième pièce de plaque allongée par coupage et courbure de manière à faire les deuxièmes supports de fixation s'étendre de la surface de la deuxième pièce de plaque allongée;

charactérisée en ce que les premiers et deuxièmes supports de fixation sont formés par coupage et courbure de manière à former des ouvertures dans la surface des premières et deuxièmes pièces de plaque allongées, et que les premiers et deuxièmes supports de fixation sont attachés l'un à l'autre en chevauchement et de manière à les faire s'étendre entre la première et deuxième pièce de plaque pour former la pièce de réseau du cadre de support.

**10.** Méthode selon la revendication 9, charactérisée en ce que les supports de fixation sont fournis dans les pièces de plaque consécutivement dans la diréction longitudinale des pièces de plaque.

**11.** Méthode selon la revendication 9 ou 10, charactérisée en ce que la méthode comprend aussi la formation d'un profil à au moins l'une des pièces de plaque pour augmenter sa rigidité.

**12.** Méthode selon la revendication 11, charactérisée en ce que le profil est formé avant la formation des supports de fixation.

**13.** Méthode selon la revendication 11 ou 12, charactérisée en ce que le profil est formé sur une ou les deux bords longitudinaux.

**14.** Méthode selon l'une des revendications 9 à 13 précédentes, charactérisée en ce que les supports de fixation sont coupés à partir des pièces de plaque et courbés de manière à les faire s'étendre vers l'extérieur.

**15.** Méthode selon l'une des revendications 9 à 14 précédentes, charactérisée en ce que les supports de fixation (6, 7) sont faites à la forme d'une feuille, bande, rectangulaire et/ou courbée.

**16.** Méthode selon l'une des revendications 9 à 15 précédentes, charactérisée en ce que les supports de fixation des pièces de plaque sont attachées l'un à l'autre méchaniquement.

**17.** Méthode selon la revendication 16, charactérisée en ce que les supports de fixation des pièces de plaque sont attachées l'un à l'autre avec des rivets, vis ou soudures.

**18.** Méthode selon l'une des revendications 1 à 17 précédentes, charactérisée en ce que les supports de fixation sont faites de manière à les faire s'étendre à partir des pièces de plaque perpendiculairement ou en un angle relatif à la surface des pièces de plaque.

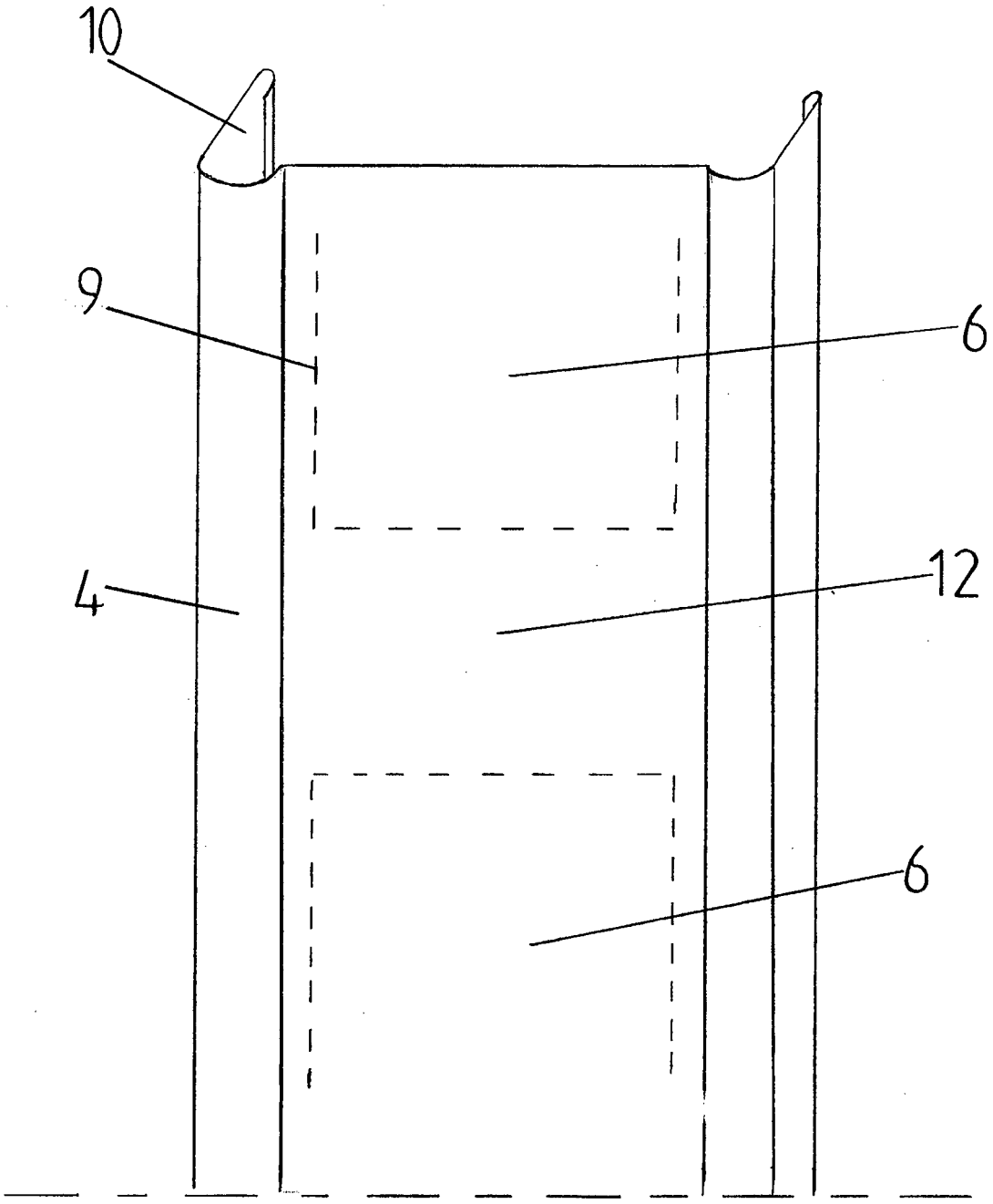


FIG.1

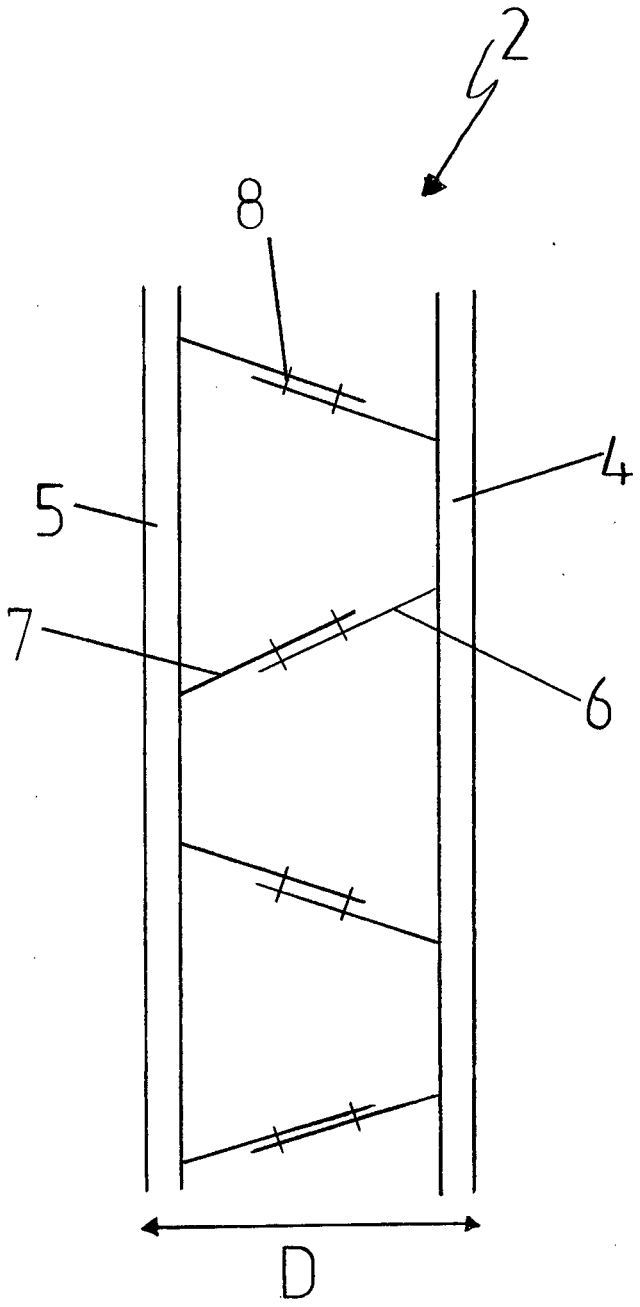


FIG. 2

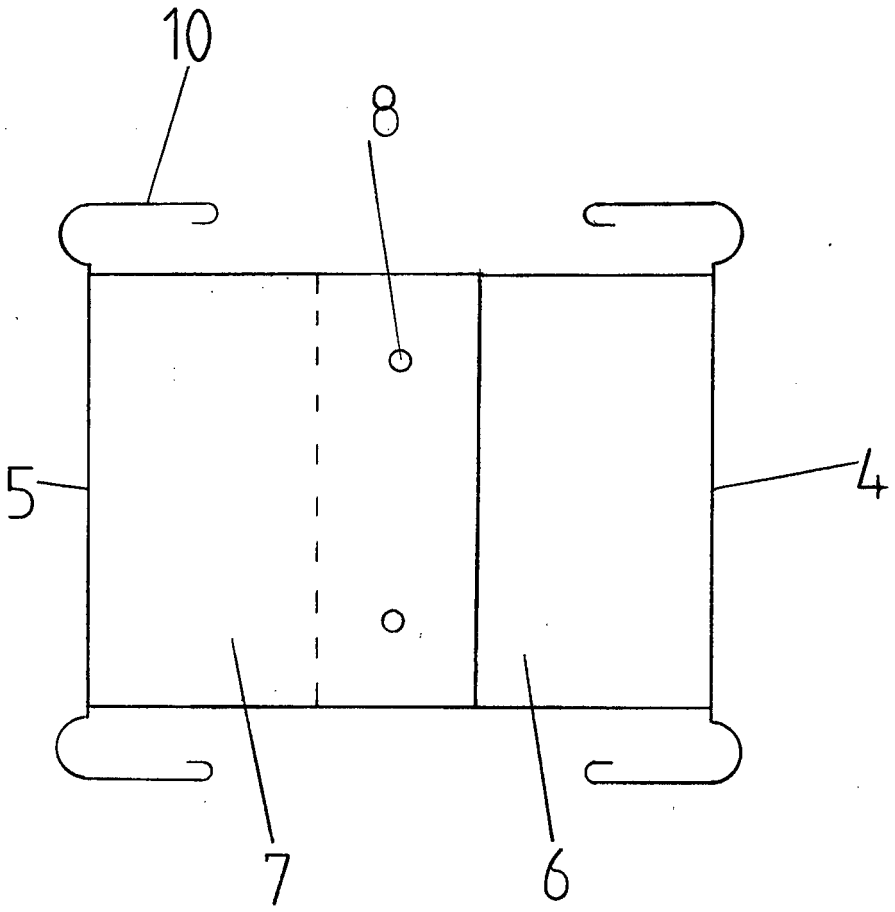


FIG. 3

## REFERENCES CITED IN THE DESCRIPTION

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### Patent documents cited in the description


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