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(54) **Titre : PROCEDE DE COUVERTURE DE TOIT AVEC DES ELEMENTS DE COUVERTURE DE TOIT (FEUILLES DE TYPE
TUILE)**

(54) **Title: METHOD OF ROOF COVERING WITH ROOF COVERING ELEMENTS (TILE-LIKE SHEETS)**

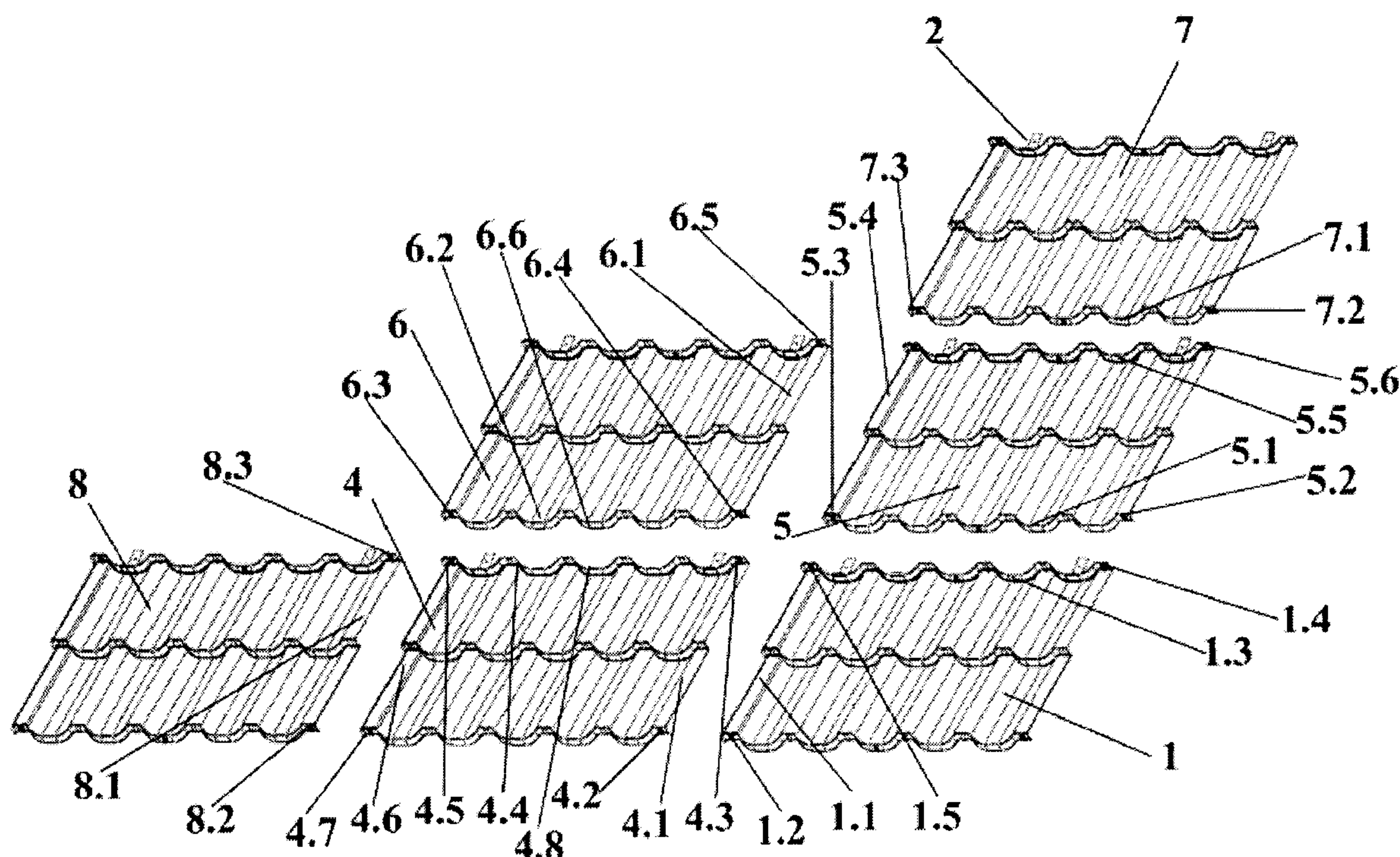


Fig.1

(57) **Abrégé/Abstract:**

Method of a roof covering with roof covering elements (tile-like sheets), in which the lower transversal step has got fixing sunken embossing well-fitting to the bend of the upper transversal step of an adjacent roof covering element placed over the former one, performed according to fixed procedure, preferably with use of prefabricated assembling embossments and holes, exploiting

(57) Abrégé(suite)/Abstract(continued):

embossments at a corner of the roof covering element and an element fixed to a roof with mounting device at one end and its the other end clamps an edge of the roof covering element to the roofing characterised in that the left edge (1.1) of an initial sheet (1) stabilized by fastening with at least one screw to a roof batten (3) is covered by the right edge (4.1) of the second sheet (4). The sheets are mounted by a screw placed through the right lower assembling hole (4.2) of the second sheet (4) and the left lower assembling hole (1.2) of the initial sheet (1). Then the second sheet (4) is stabilized by mounting at least of one screw to a roof batten (3). The lower edge (5.1) of the third sheet (5) is put onto the upper edge (1.3) the initial sheet (1). These sheets are mounted by a screw placed through the right lower assembling hole (5.2) of the third sheet (5) and the right upper assembling hole (1.4) of the initial sheet (1) and at the same time, the left lower assembling hole (5.3) of the third sheet (5) appears over the right upper assembling hole (4.3) of the second sheet (4). Then the right edge (6.1) of the fourth sheet (6) is put onto the left edge (5.4) of the third sheet (5), whilst the lower edge (6.2) of the fourth sheet (6) is placed onto the upper edge (4.4) of the second sheet (4). The fourth (6) and the second (4) sheets are mounted by a screw applied through, preferably, the middle lower assembling hole (6.6) of the fourth sheet (6) and through the middle upper assembling hole (4.8) of the second sheet (4). The junction comprised of corners of four sheets is mounted with a screw applied through the right lower assembling hole (6.4) of the fourth sheet (6), the left lower assembling hole (5.3) of the third sheet (5), the right upper assembling hole (4.3) of the second sheet (4) and through the left upper assembling hole (1.5) of the initial sheet (1). Every time, the bend (5.7) or (6.7) - preferably straight - of the lower edge end (5.1) or (6.2) of a sheet put onto a covered one, is placed in a semicircular deflection (1.6) or (4.9) of the sheet to be covered.

ABSTRACT

Method of a roof covering with roof covering elements (tile-like sheets), in which the lower transversal step has got fixing sunken embossing well-fitting to the bend of the upper transversal step of an adjacent roof covering element placed over the former one, performed according to fixed procedure, preferably with use of prefabricated assembling embossments and holes, exploiting embossments at a corner of the roof covering element and an element fixed to a roof with mounting device at one end and its the other end clamps an edge of the roof covering element to the roofing characterised in that the left edge (1.1) of an initial sheet (1) stabilized by fastening with at least one screw to a roof batten (3) is covered by the right edge (4.1) of the second sheet (4). The sheets are mounted by a screw placed through the right lower assembling hole (4.2) of the second sheet (4) and the left lower assembling hole (1.2) of the initial sheet (1). Then the second sheet (4) is stabilized by mounting at least of one screw to a roof batten (3). The lower edge (5.1) of the third sheet (5) is put onto the upper edge (1.3) the initial sheet (1). These sheets are mounted by a screw placed through the right lower assembling hole (5.2) of the third sheet (5) and the right upper assembling hole (1.4) of the initial sheet (1). and at the same time, the left lower assembling hole (5.3) of the third sheet (5) appears over the right upper assembling hole (4.3) of the second sheet (4). Then the right edge (6.1) of the fourth sheet (6) is put onto the left edge (5.4) of the third sheet (5), whilst the lower edge (6.2) of the fourth sheet (6) is placed onto the upper edge (4.4) of the second sheet (4). The fourth (6) and the second (4) sheets are mounted by a screw applied through, preferably, the middle lower assembling hole (6.6) of the fourth sheet (6) and through the middle upper assembling hole (4.8) of the second sheet (4). The junction comprised of corners of four sheets is mounted with a screw applied through the right lower assembling hole (6.4) of the fourth sheet (6), the left lower assembling hole (5.3). of the third sheet (5), the right upper assembling hole (4.3) of the second sheet (4) and through the left upper assembling hole (1.5) of the initial sheet (1). Every time, the bend (5.7) or (6.7) – preferably straight – of the lower edge end (5.1) or (6.2) of a sheet put onto a covered one, is placed in a semicircular deflection (1.6) or (4.9) of the sheet to be covered.

Fig. 1 (5 claims)

Method of roof covering with roof covering elements (tile-like sheets)

The present invention relates to a method of a roof covering with roof covering elements (tile-like sheets).

A roof cladding element and method for manufacturing roof cladding elements is known from the US patent description no. US7690169B2. The roof cladding element has been manufactured
5 of profiled plate material. Such manufactured elements are adjacently and in succession mountable such that the edges of a roof cladding element will be placed a distance overlapping with the edges of adjacent roof cladding elements. At least one corner of a roof cladding material has got recess reaching partly lower than the lower surface of the element.

A roof cladding element with a hidden fastening, in which a lower transversal step has got a
10 fastening nest adjusted to Z-shaped recess of the upper transversal step of an adjacent roof cladding element placed over the previous one, is known from the international patent application no. WO2006018472A1.

From Polish patent description no. PL206210 there is also known a fastening device comprising a strip member of comparatively short length and a securing means for securing to
15 the roof covering free edge of a manually deformable flashing skirt characterized by the strip member at one end is secured to the roof covering with the securing means, while the other end is pressed down the free edge of the flashing skirt against the roof covering.

There is known from the Polish patent application no. P403087 a roof covering element (tile-like sheet) equipped with a cramp, characterized by that a plane of the roof covering element endings
20 at wave-like embossing of the surface of the upper edge has got at least one incision, preferably done in a part without assembling hole and preferably of rectangle shape, in which there is applied the cramp. Incision width is bigger than cramp width.

Method of a roof covering with roof covering elements (tile-like sheets) according to this invention characterises in that the left edge of an initial sheet stabilized by fastening with at least
25 one screw to a roof batten is covered by the right edge of the second sheet and the sheets are mounted by a screw placed through the right lower assembling hole of the second sheet and the left lower assembling hole of the initial sheet. Now, the second sheet is stabilized by mounting at least of one screw to a roof batten. Thereafter, the lower edge of the third sheet is put on the upper edge the initial sheet, and these sheets are mounted by a screw placed through the right

lower assembling hole of the third sheet and the right upper assembling hole of the initial sheet. At the same time, the left lower assembling hole of the third sheet appears over the right upper assembling hole of the second sheet. Now, the right edge of the fourth sheet is put onto the left edge of the third sheet, whilst the lower edge of the fourth sheet is placed onto the upper edge of the second sheet. The fourth and the second sheets are mounted by a screw applied through middle lower assembling hole of the fourth sheet and through, preferably, the middle upper assembling hole of the second sheet. Next, a junction comprised of corners of four sheets is mounted with a screw applied through the right lower assembling hole of the fourth sheet, the left lower assembling hole of the third sheet, the right upper assembling hole of the second sheet and through the left upper assembling hole of the initial sheet. Every time, a bend – preferably straight – of the lower edge end of a sheet put onto a covered one, is placed in a semicircular deflection of the sheet to be covered.

The lower edge of a following sheet is placed onto the upper edge of the third sheet, and these sheets are mounted with a screw applied through the right lower assembling hole of the following sheet and through the right upper assembling hole of the third sheet.

Simultaneously, the left lower assembling hole of the following sheet appears over the right upper assembling hole of the fourth sheet. Every time, a bend – preferably straight – of the lower edge end of the following sheet is placed in a semicircular deflection of the third sheet to be covered. Further mounting of sheets is according to the aforementioned assembling procedure, in which the following sheet is to be considered as the third one.

The right edge of a next sheet is placed onto the left edge of the second sheet and these sheets are mounted with a screw applied through the right lower assembling hole of the next sheet and through the left lower assembling hole of the second sheet. Simultaneously, the right upper assembling hole of the next sheet appears over the left upper assembling hole of the second sheet and under the left lower assembling hole of the fourth sheet. Further mounting of sheets is according to the aforementioned assembling procedure, in which the next sheet is to be considered as the second one.

In other version of the invention, an initial sheet or the second sheet or the third sheet or the fourth sheet or the following sheet or the next sheet is fixed with at least one cramp to a roof batten.

Every time the bend edge of a cramp is placed in a semicircular deflection of the initial sheet or in a semicircular deflection of the second sheet or in a semicircular deflection of the third sheet or in a semicircular deflection of the fourth sheet or in a semicircular deflection of the following sheet or in a semicircular deflection of the next sheet.

5 Method of a roof covering with roof covering elements (tile-like sheets) according to this invention provides ideal mounting of all sheets during easy and quick assembly. There is no need for extra fitting of sheets, as every sheet can be applied in any place. The roof covering can be performed in any direction: upwards and to left or right from the bottom, or downwards and to left or right from the top. If needed, the method of a roof covering according to this invention
10 enables easy replacement of damaged part of a roof by dismantling only the sheets nearest to the damaged piece.

The roof done according to this invention enables free dropping down of condensed water and free air circulation, what results in lower risk of corrosion.

The subject of the invention is presented in exemplary embodiments in drawings on which
15 Fig. 1 illustrates an axonometric view of separate mounted sheets, Fig. 2 shows cross-section of mounting with a cramp, Fig. presents cross-section of a place where edges of following sheets are mounted.

Method of a roof covering with roof covering elements (tile-like sheets) according to this invention characterises in that the left edge 1.1 of an initial sheet 1 stabilized by fastening with at
20 least one screw to a roof batten 3 is covered by the right edge 4.1 of the second sheet 4. The sheets are mounted by a screw placed through the right lower assembling hole 4.2 of the second sheet 4 and the left lower assembling hole 1.2 of the initial sheet. The second sheet 4 is stabilized by mounting at least of one screw to a roof batten 3. Thereafter, the lower edge 5.1 of the third sheet 5 is put on the upper edge 1.3 the initial sheet 1, and these sheets are mounted by a screw
25 placed through the right lower assembling hole 5.2 of the third sheet 5 and the right upper assembling hole 1.4 of the initial sheet 1. At the same time, the left lower assembling hole 5.3 of the third sheet 5 appears over the right upper assembling hole 4.3 of the second sheet 4. Now, the right edge 6.1 of the fourth sheet 6 is put onto the left edge 5.4 of the third sheet 5, whilst the lower edge 6.2 of the fourth sheet 6 is placed onto the upper edge 4.4 of the second sheet 4, and
30 the fourth 6 and the second 4 sheets are mounted by a screw applied through, preferably, the middle lower assembling hole 6.6 of the fourth sheet 6 and through the middle upper assembling

hole 4.8 of the second sheet 4. Next, a junction comprised of corners of four sheets is mounted with a screw applied through the right lower assembling hole 6.4 of the fourth sheet 6, the left lower assembling hole 5.3. of the third sheet 5, the right upper assembling hole 4.3 of the second sheet 4 and through the left upper assembling hole 1.5 of the initial sheet 1. Every time, a bend 5.7 or 6.7 – preferably straight – of the lower edge end 5.1 or 6.2 of a sheet put onto a covered one, is placed in a semicircular deflection 1.6 or 4.9 of the sheet to be covered. The lower edge 7.1 of a following sheet 7 is placed onto the upper edge 5.5 of the third sheet 5, and these sheets are mounted with a screw applied through the right lower assembling hole 7.2 of the following sheet 7 and through the right upper assembling hole 5.6 of the third sheet 5. Simultaneously, the left lower assembling hole 7.3 of the following sheet 7 appears over the right upper assembling hole 6.5 of the fourth sheet 6. Every time, a bend 7.4 – preferably straight – of the lower edge end 7.1 of the following sheet 7 is placed in a semicircular deflection 5.8 of the third sheet 5 to be covered. Further mounting of sheets is according to the aforementioned assembling procedure, in which the following sheet 7 is to be considered as the third one 5. The right edge 8.1 of a next sheet 8 is placed onto the left edge 4.6 of the second sheet 4 and these sheets are mounted with a screw applied through the right lower assembling hole 8.2 of the next sheet 8 and through the left lower assembling hole 4.7 of the second sheet 4. Simultaneously, the right upper assembling hole 8.3 of the next sheet 8 appears over the left upper assembling hole 4.5 of the second sheet 4 and under the left lower assembling hole 6.3 of the fourth sheet 6. Further mounting of sheets is according to the aforementioned assembling procedure, in which the next sheet 8 is to be considered as the second one 4.

In other version of the invention, an initial sheet 1 or the second sheet 4 or the third sheet 5 or the fourth sheet 6 or the following sheet 7 or the next sheet 8 is fixed with at least one cramp 2 to a roof batten 3.

Every time the bend edge 2.1 of a cramp 2 is placed in a semicircular deflection 1.6 of the initial sheet 1 or in a semicircular deflection 4.9 of the second sheet 4 or in a semicircular deflection 5.8 of the third sheet 5 or in a semicircular deflection 6.8 of the fourth sheet 6 or in a semicircular deflection 7.5 of the following sheet 7 or in a semicircular deflection 8.4 of the next sheet 8.

A LIST OF SYMBOLS ON DRAWINGS

1. initial sheet

1.1. left edge of the initial sheet

1.2. left lower assembling hole of the initial sheet

1.3. upper edge of the initial sheet

1.4. right upper assembling hole of the initial sheet

1.5. left upper assembling hole of the initial sheet

1.6. semicircular deflection of the initial sheet

2. cramp

2.1. bend edge

3. roof batten

4. the second sheet

4.1. left edge of the second sheet

4.2. left lower assembling hole of the second sheet

4.3. right lower assembling hole of the second sheet

4.4. upper edge of the second sheet

4.5. left upper assembling hole of the second sheet

4.6. left edge of the second sheet

4.7. left lower assembling hole of the second sheet

4.8. middle upper assembling hole

4.9. semicircular deflection of the second sheet

5. the third sheet

5.1. lower edge of the third sheet

5.2. right lower assembling hole of the third sheet

5.3 left lower assembling hole of the third sheet

5.4 left edge of the third sheet

5.5. upper edge of the third sheet

5.6. right upper assembling hole of the third sheet

5.7. straight bend of the third sheet

5.8. semicircular deflection of the third sheet

6. the fourth sheet

6.1. right edge of the fourth sheet

6.2. lower edge of the fourth sheet

6.3. left lower assembling hole of the fourth sheet

6.4. right lower assembling hole of the fourth sheet

6.5. right upper assembling hole of the fourth sheet

6.6. middle lower assembling hole of the fourth sheet

6.7. straight bend of the fourth sheet

6.8. semicircular deflection of the fourth sheet

7. following sheet

- 7.1. lower edge of the following sheet
- 7.2. right lower assembling hole of the following sheet
- 7.3. left lower assembling hole of the following sheet
- 7.4. straight bend of the following sheet
- 7.5. semicircular deflection of the following sheet
- 8. next sheet
 - 8.1. right edge of the next sheet
 - 8.2. right lower assembling hole of the next sheet
 - 8.3. right upper assembling hole of the next sheet
 - 8.4. semicircular deflection of the next sheet

PATENT CLAIMS

1. Method of a roof covering with roof covering elements (tile-like sheets), in which the lower transversal step has got fixing sunken embossing well-fitting to the bend of the upper transversal step of an adjacent roof covering element placed over the former one, performed according to fixed procedure, preferably with use of prefabricated assembling embossments and holes, exploiting embossments at a corner of the roof covering element and an element fixed to a roof with mounting device at one end and its other end clamps an edge of the roof covering element to the roofing **characterised in that** the left edge (1.1) of an initial sheet (1) stabilized by fastening with at least one screw to a roof batten (3) is covered by the right edge (4.1) of the second sheet (4), and the sheets are mounted by a screw placed through the right lower assembling hole (4.2) of the second sheet (4) and the left lower assembling hole (1.2) of the initial sheet (1); then the second sheet (4) is stabilized by mounting at least of one screw to a roof batten (3); thereafter, the lower edge (5.1) of the third sheet (5) is put onto the upper edge (1.3) the initial sheet (1), and these sheets are mounted by a screw placed through the right lower assembling hole (5.2) of the third sheet (5) and the right upper assembling hole (1.4) of the initial sheet (1) and at the same time, the left lower assembling hole (5.3) of the third sheet (5) appears over the right upper assembling hole (4.3) of the second sheet (4), then the right edge (6.1) of the fourth sheet (6) is put onto the left edge (5.4) of the third sheet (5), whilst the lower edge (6.2) of the fourth sheet (6) is placed onto the upper edge (4.4) of the second sheet (4), and the fourth (6) and the second (4) sheets are mounted by a screw applied through, preferably, the middle lower assembling hole (6.6) of the fourth sheet (6) and through the middle upper assembling hole (4.8) of the second sheet (4); thereafter a junction comprised of corners of four sheets is mounted with a screw applied through the right lower assembling hole (6.4) of the fourth sheet (6), the left lower assembling hole (5.3) of the third sheet (5), the right upper assembling hole (4.3) of the second sheet (4) and through the left upper assembling hole (1.5) of the initial sheet (1); every time, a bend (5.7) or (6.7) – preferably straight – of the lower edge end (5.1) or (6.2) of a sheet put onto a covered one, is placed in a semicircular deflection (1.6) or (4.9) of the sheet to be covered.
2. Method of a roof covering according to the Claim 1 **characterised in that** the lower edge (7.1) of a following sheet (7) is placed onto the upper edge (5.5) of the third sheet (5),

and these sheets are mounted with a screw applied through the right lower assembling hole (7.2) of the following sheet (7) and through the right upper assembling hole (5.6) of the third sheet (5) and simultaneously the left lower assembling hole (7.3) of the following sheet (7) appears over the right upper assembling hole (6.5) of the fourth sheet (6); every time, a bend (7.4) – preferably straight – of the lower edge end (7.1) of the following sheet (7) is placed in a semicircular deflection (5.8) of the third sheet (5) to be covered; thereafter mounting of sheets is according to the aforementioned assembling procedure, in which the following sheet (7) is to be considered as the third one (5).

3. Method of a roof covering according to the Claim 1 **characterised in that** the right edge (8.1) of a next sheet (8) is placed onto the left edge (4.6) of the second sheet (4) and these sheets are mounted with a screw applied through the right lower assembling hole (8.2) of the next sheet (8) and through the left lower assembling hole (4.7) of the second sheet (4) and simultaneously the right upper assembling hole (8.3) of the next sheet (8) appears over the left upper assembling hole (4.5) of the second sheet (4) and under the left lower assembling hole (6.3) of the fourth sheet (6); thereafter mounting of sheets is according to the aforementioned assembling procedure, in which the next sheet (8) is to be considered as the second one (4).

4. Method of a roof covering according to the Claim 1, 2, 3 **characterised in that** the initial sheet (1) or the second sheet (4) or the third sheet (5) or the fourth sheet (6) or the following sheet (7) or the next sheet (8) is fixed with at least one cramp (2) to a roof batten (3).

5. Method of a roof covering according to the Claim 4 **characterised in that** every time the bend edge (2.1) of a cramp (2) is placed in a semicircular deflection (1.6) of the initial sheet (1) or in a semicircular deflection (4.9) of the second sheet (4) or in a semicircular deflection (5.8) of the third sheet (5) or in a semicircular deflection (6.8) of the fourth sheet (6) or in a semicircular deflection (7.5) of the following sheet (7) or in a semicircular deflection (8.4) of the next sheet (8).

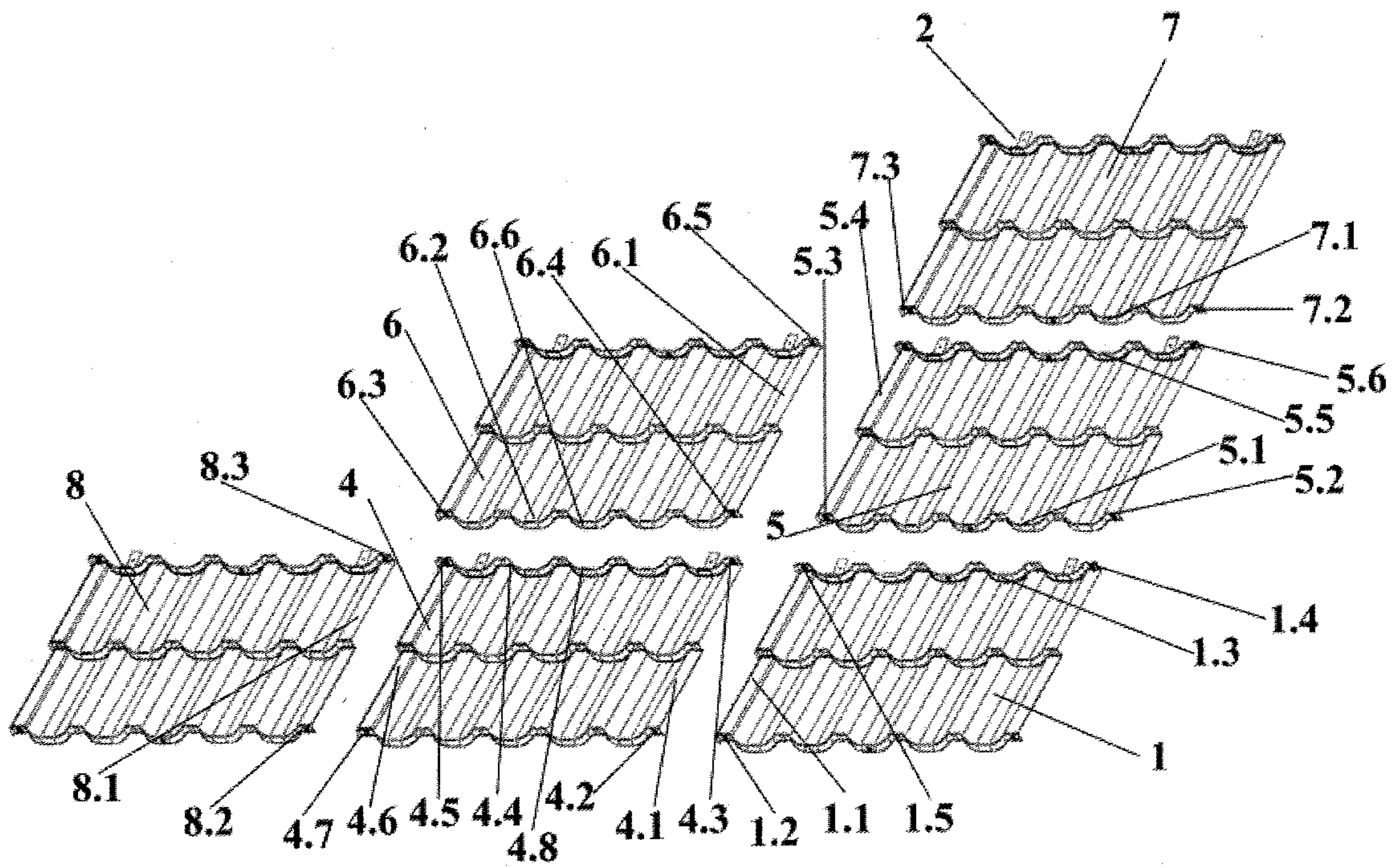


Fig.1

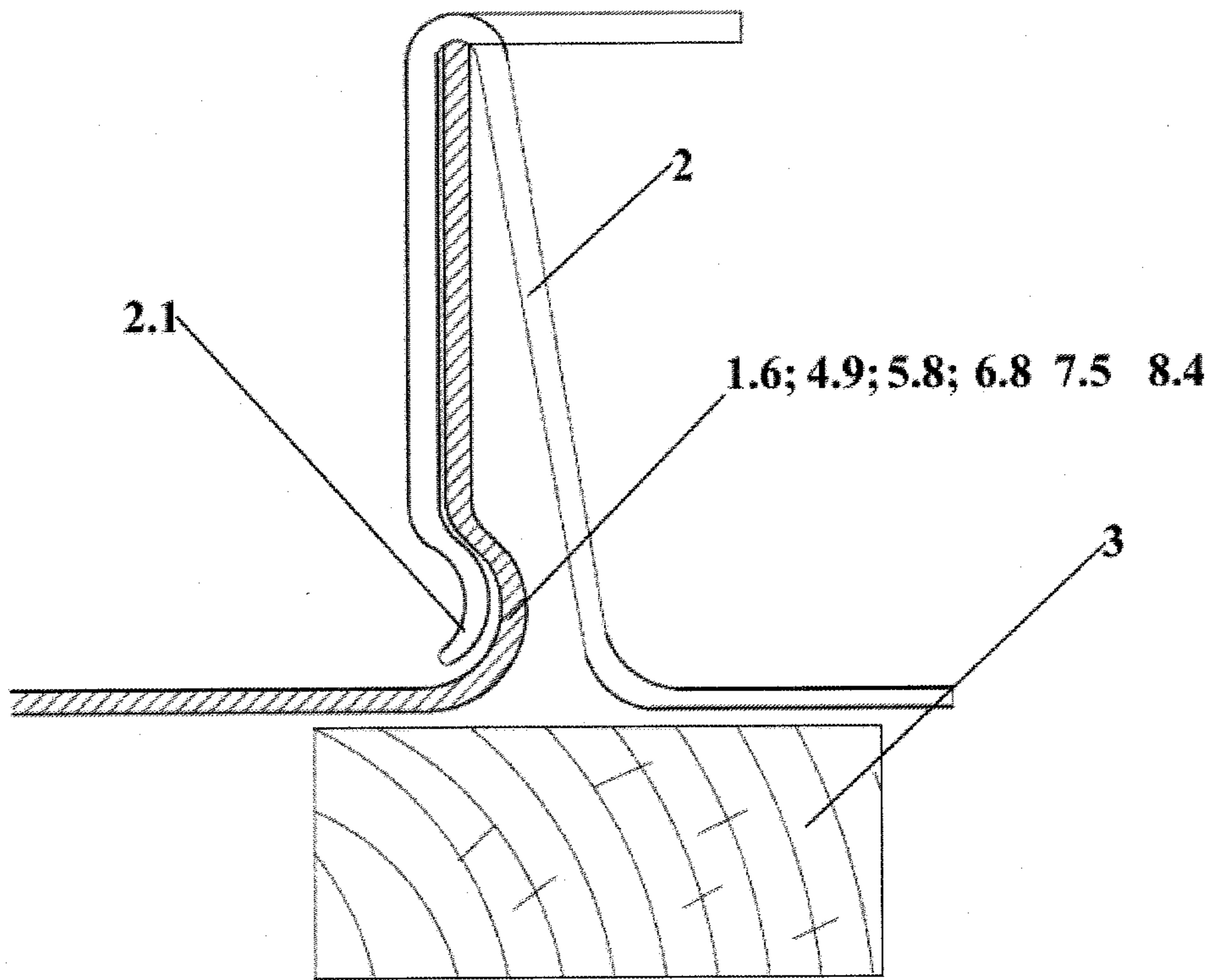


Fig. 2

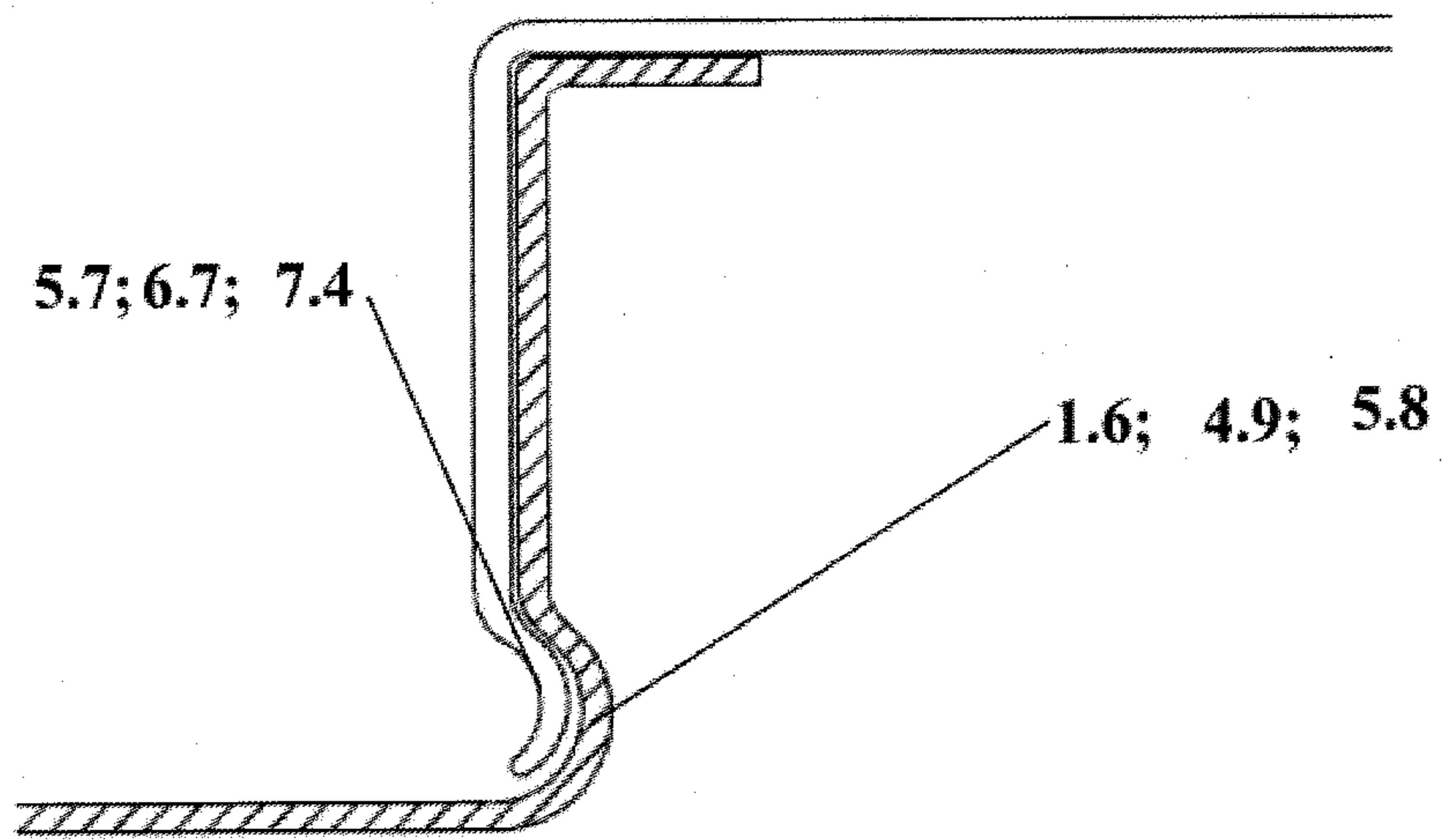


Fig. 3

A LIST OF SYMBOLS ON DRAWINGS

1. initial sheet

1.1. left edge of the initial sheet

1.2. left lower assembling hole of the initial sheet

1.3. upper edge of the initial sheet

1.4. right upper assembling hole of the initial sheet

1.5. left upper assembling hole of the initial sheet

1.6. semicircular deflection of the initial sheet

2. cramp

2.1. bend edge

3. roof batten

4. the second sheet

4.1. left edge of the second sheet

4.2. left lower assembling hole of the second sheet

4.3. right lower assembling hole of the second sheet

4.4. upper edge of the second sheet

4.5. left upper assembling hole of the second sheet

4.6. left edge of the second sheet

4.7. left lower assembling hole of the second sheet

4.8. middle upper assembling hole

4.9. semicircular deflection of the second sheet

5. the third sheet

5.1. lower edge of the third sheet

5.2. right lower assembling hole of the third sheet

5.3 left lower assembling hole of the third sheet

5.4 left edge of the third sheet

5.5. upper edge of the third sheet

5.6. right upper assembling hole of the third sheet

5.7. straight bend of the third sheet

5.8. semicircular deflection of the third sheet

6. the fourth sheet

6.1. right edge of the fourth sheet

6.2. lower edge of the fourth sheet

6.3. left lower assembling hole of the fourth sheet

6.4. right lower assembling hole of the fourth sheet

6.5. right upper assembling hole of the fourth sheet

6.6. middle lower assembling hole of the fourth sheet

6.7. straight bend of the fourth sheet

6.8. semicircular deflection of the fourth sheet

7. following sheet

7.1. lower edge of the following sheet

7.2. right lower assembling hole of the following sheet

7.3. left lower assembling hole of the following sheet

7.4. straight bend of the following sheet

7.5. semicircular deflection of the following sheet

8. next sheet

8.1. right edge of the next sheet

8.2. right lower assembling hole of the next sheet

8.3. right upper assembling hole of the next sheet

8.4. semicircular deflection of the next sheet

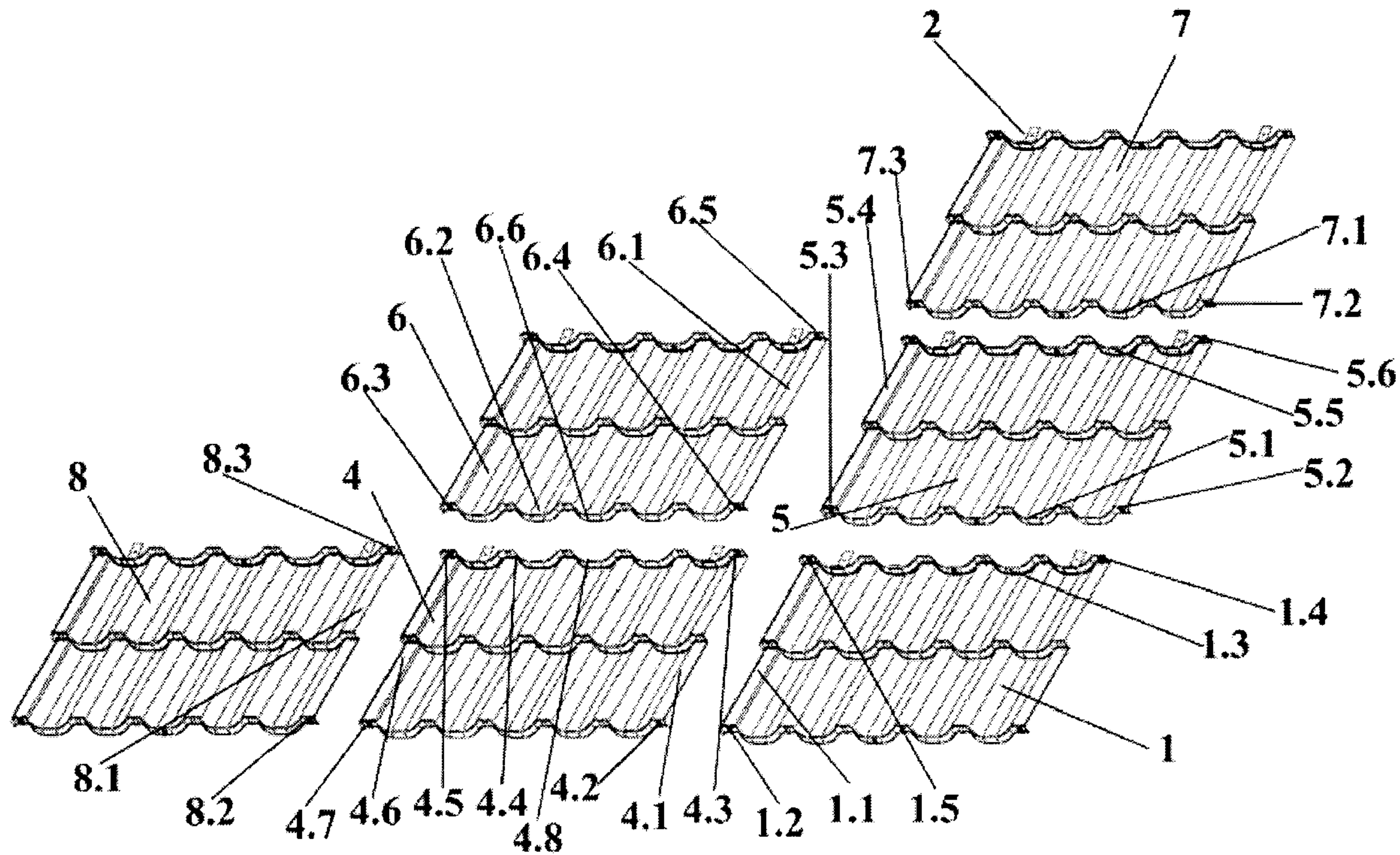


Fig.1