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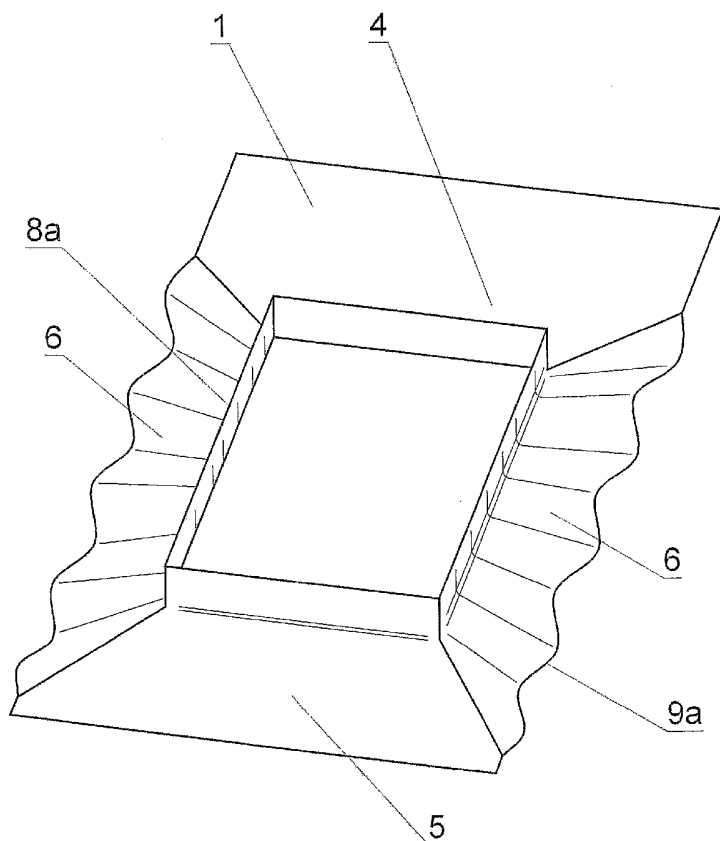
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[Continued on next page]

(54) Title: COLLAR CONNECTING A ROOF PENETRATING CONSTRUCTION WITH THE SUB-ROOFING STRUCTURE



(57) Abstract: The collar connecting a building structure penetrating the roof with the sub-roofing structure of the roof is made of any flexible, water resistant material and has the shape of a frame surrounding the structure set on the roof. The collar has an internal edge with constant length, adjusted to the building structure in question, which enables connecting the collar to the external perimeter of the building structure. The collar consists of elements, preferably joined together to constitute a closed perimeter, with the elements which are laid askew against the battens constitute strips of a curved surface, preferably a ruled surface, which are limited at the inner side of the collar by straight edge, and at the external side by a space curve. The collar, upon connecting it by its inner edge with the external perimeter of the building structure set on the roof, spreads freely on the external surface of the sub-roofing structure of the roof, grasping the protruding roof battens and adhering, between the battens, to the surface of the external diaphragm.

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- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*
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Collar connecting a roof penetrating construction
with the sub-roofing structure

The subject of the invention is a collar connecting a roof penetrating building construction of any type with the sub-roofing structure, e.g. the roof window frame with the external diaphragm sealing off the deeper layers of the sub-roofing structure from atmospheric effects.

A collar for leak-proof connection of roof penetrating building structures with the external weather-protecting diaphragm and with the roof battens set on the diaphragm is known from the patent application WO 99/02799. The collar consists of four elements connected together having an inner edge fastened to the external surface of the element of the building structure which penetrates the roof and an external edge grasping the roof battens and resting on the diaphragm between the battens.

The elements of the collar are made of sections of a flexible and water resistant material. These elements which are to be set crosswise on the battens are longer than the building structure to which they are to be connected and are doubled down, e.g. in form of folds, in order to adjust the length of inner edge to the perimeter of the building structure for which the collar is intended. Upon setting the inner edge of the collar along the external perimeter of the building structure, the folds on the side of the external edge are spread out, so as to include the battens laying above the external diaphragm, and adjoin the diaphragm between the battens.

The side elements of the collar bent into folds are secured by the manufacturer against spreading or unfolding by gluing two paper strips of which one is glued along the inner edge of collar element, in this way stabilizing the length of the inner edge of the collar, while the second paper strip is glued at some distance from the external edge, securing the folds from spreading at the time of shipment and installing the collar. Upon connecting the inner edge of the collar to the building structure, the second paper strip is to be ripped so as to enable the folds to spread out freely on the side of the external perimeter of the collar.

The inner edge of the collar, secured by the glued paper strip, is not adequately strong. Damaging the paper strip on shipment or assembly and spreading of the folds makes the collar unsuitable and requires repeated, manual arranging of the folds when connecting the collar with the building structure set on the roof. Making a collar with folding side elements or ones bent in another way to adjust their length to the length of building structure elements with which they are to be connected, requires additional time and manual work, as well as using expensive folding devices.

The object of the invention is to provide a collar sealing the connection of the building structure penetrating the roof with the sub-roofing structure of roof, which is reliable at the time of assembly and adequately fulfills its purpose, the inner edge of the collar having a constant length, equal to the external perimeter of the building structure, while its external edge enables adherence of the external boundary of the collar to the sub-roofing structure of various height, which collar can be easily manufactured and not requiring any expensive folding device.

The collar, according the invention, is made of any flexible waterproof material and has the form of a frame surrounding the structure resting on the roof. The collar has an inner edge with fixed length, fitting the given building structure, the edge enabling connection of the collar with the external perimeter of the structure. The collar consists of elements, preferably connected to form a closed perimeter, of which these elements which are at right angles to the battens are strips of a curved surface, preferably a ruled one, limited at the inner side of the collar by a straight edge, and at the outer side by a space curve. The collar, upon connecting its inner edge with the external perimeter of the structure resting on the roof, spreads freely on the external surface of the sub-roofing structure of the roof, enclosing the roof battens to which it is fastened and adhering to the external surface of the diaphragm between the battens.

The elements of the collar laid in parallel to the roof battens consist usually of known flat strips of various width, limited on their length by parallel sides of various length but having a common axis of symmetry, while the shorter sides

consist of three segments, the two external ones being at right angles to the longitudinal sides and connected by an oblique segment. The segments constituting a right angle with the shorter longitudinal side are that part of the collar, which adheres to the building structure penetrating the roof.

The elements of the collar laying under an angle relatively to the battens are strips consisting of one or several parts connected together lengthwise, while each part is limited on the two opposing sides by arcs, preferably concentric ones. The radiuses of the arcs are adjusted so, that the length of inner edge of that collar element fits the length of side of the structure with which the element is to be connected along a straight line, and the external side of that collar element can freely adhere to the external diaphragm and to the upper and side surfaces of the battens laid on the diaphragm. The length of the external edge depends of the thickness of the roof counter battens and battens, but is suffices usually that the external edge of that element is by 40 % longer than the internal edge.

All elements of the collar are permanently connected together by known means along parts of the shorter sides, i.e. along the straight segment at the inner side of the collar and the oblique segment.

The elements of the collar made according the invention, which are laid at an angle against the battens can constitute a supplement to the assembly collar known from the utility model PL-Y1-57604, consisting of U-shaped upper and bottom elements. The elements made according the invention shall be slid by one end under the upper element of the assembly collar, and the opposite end being laid on the lower element of the assembly collar.

The collar according the invention is shown as an example in the drawings, of which Fig. 1 depicts the collar elements before connecting them together into a closed perimeter, Fig. 2 shows the collar laid on the roof window frame and adhering to the sub-roofing structure, and Fig. 3 presents the form of the collar assumed by it when set on the window frame.

The collar 1, connecting the window frame 2 of the roof window with the external diaphragm 3 of the sub-roofing structure, consists of the elements 4, 5, and 6, connected together to form a closed perimeter.

The upper element 4 and the lower element 5, which are parallel to the battens 7, are flat strips of various width limited lengthwise by parallel sides of different length but with a common symmetry axis, while their shorter sides consist each of three segments, respectively a, b, and c in the element 4, and a, b, and c' in the element 5, the outermost segments a, as well as c and c', are orthogonal to the longitudinal sides and are connected by an oblique segment b. The segment a constitutes the height of the grip adhering to the window frame 2, and the segment c is longer than the segment c'.

The side elements 6 of the collar 1, laid at right angles to the battens 7, have the shape of segment of a ring, the length of inner arc 8 of which is equal to the length of the side element of the window frame 2, and the external arc 9 is by 40 % longer. The shorter sides of the elements 6 consist of the segments a and b, identical with the segments a and b of elements 4 and 5. The elements 4, 5 and 6 are permanently connected together along the segments a and b, forming a closed perimeter.

Upon connecting the inner edge of the collar 1 with the external perimeter of the window frame 2 along a straight line, the internal arc 8 of the element 6 becomes a straight line 8a and the surface of the element 6 automatically becomes corrugated so, that its external arc 9 forms a space curve 9a, which enables adhering of the external edge of the collar 1 to the upper and side surfaces of the battens 7 and to the external diaphragm 3 between the battens 7.

Claims

1. Collar connecting a roof penetrating building construction of any type with the sub-roofing structure, said collar made of any flexible and waterproof material, having the shape of a frame surrounding the building structure set on the roof, consisting of elements, preferably permanently connected together, and having an internal edge making it possible to connect the collar with the external perimeter of the building structure, characterized in that the elements /6/ laid at an angle against the battens /7/, consist of strips of a curved surface, limited at the inner side of the collar /1/ by a straight edge /8a/, and on the external side be a space curve /9a/.
2. Collar according to claim 1, characterized in that the curved surface of the elements /6/ of the collar /1/ is a ruled surface.
3. Collar according to claims 1 and 2 characterized in that the elements /6/ of the collar /1/ laid at an angle against the battens /7/ constitute one or several ring segments connected together lengthwise.
4. Collar according to claim 1 characterized in that the external edge /9/ of the elements /6/ of the collar /1/ laid at an angle versus the battens /7/ is longer by at least 40 % than the internal edge /8/.

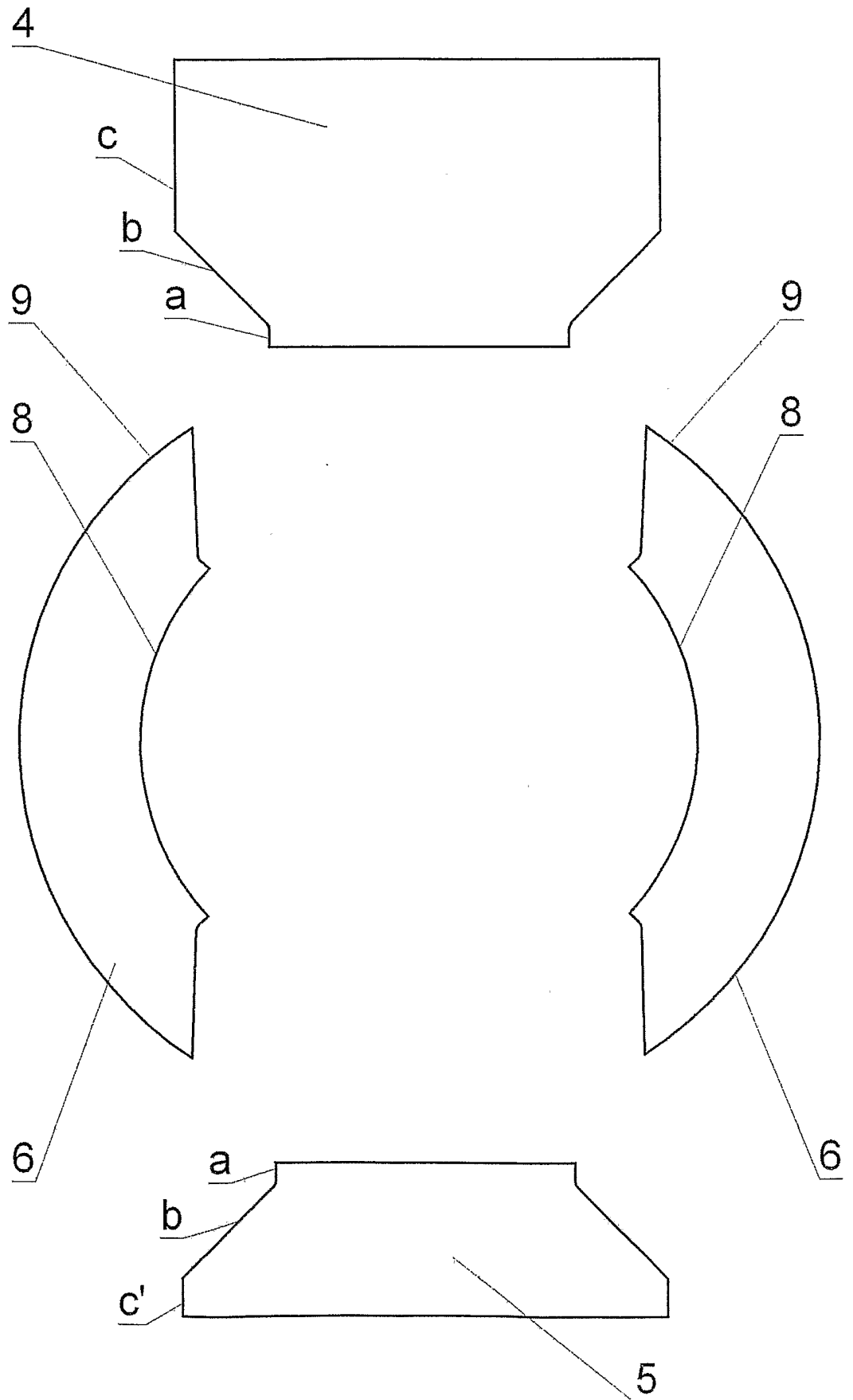


Fig. 1

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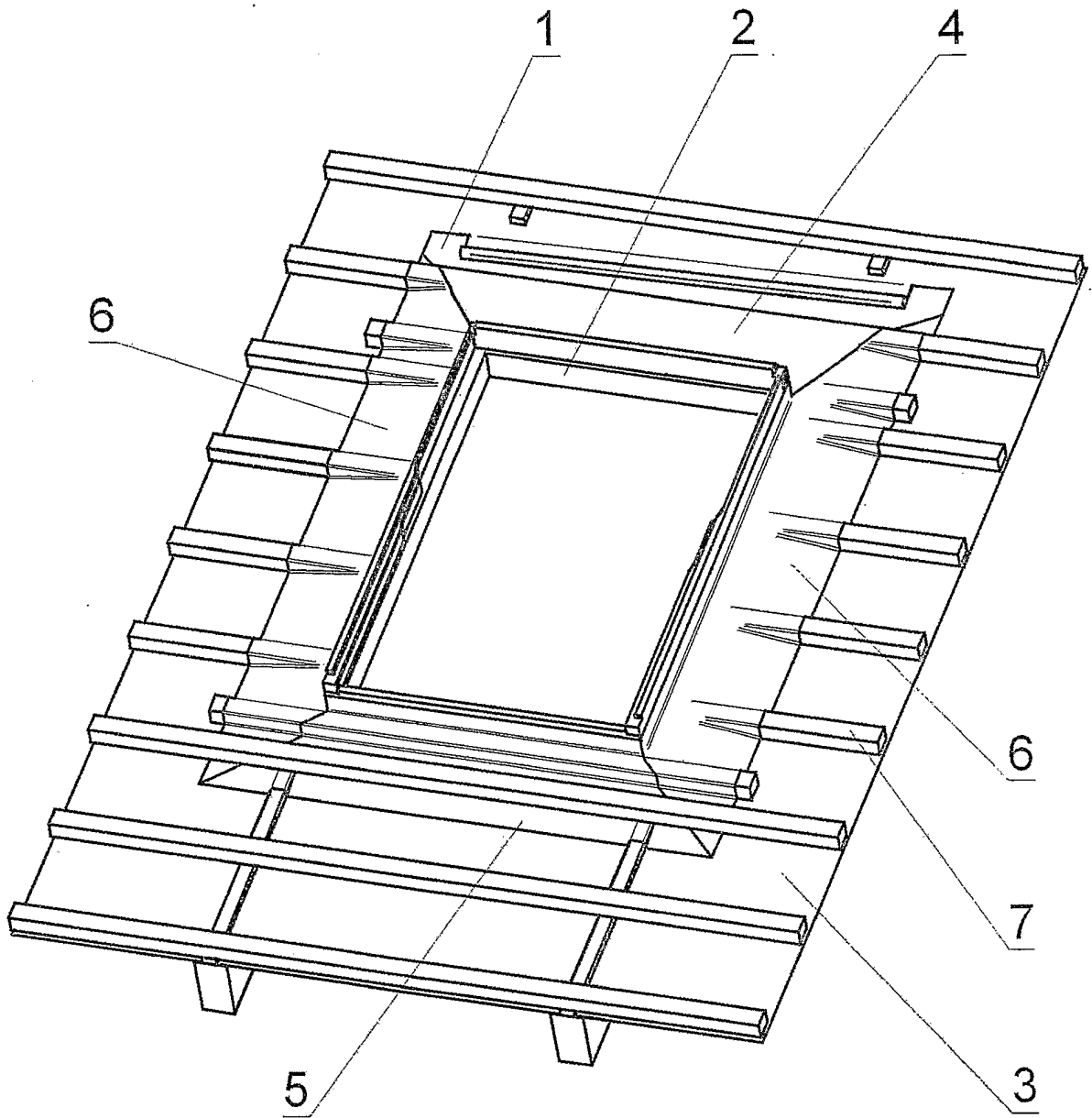


Fig. 2

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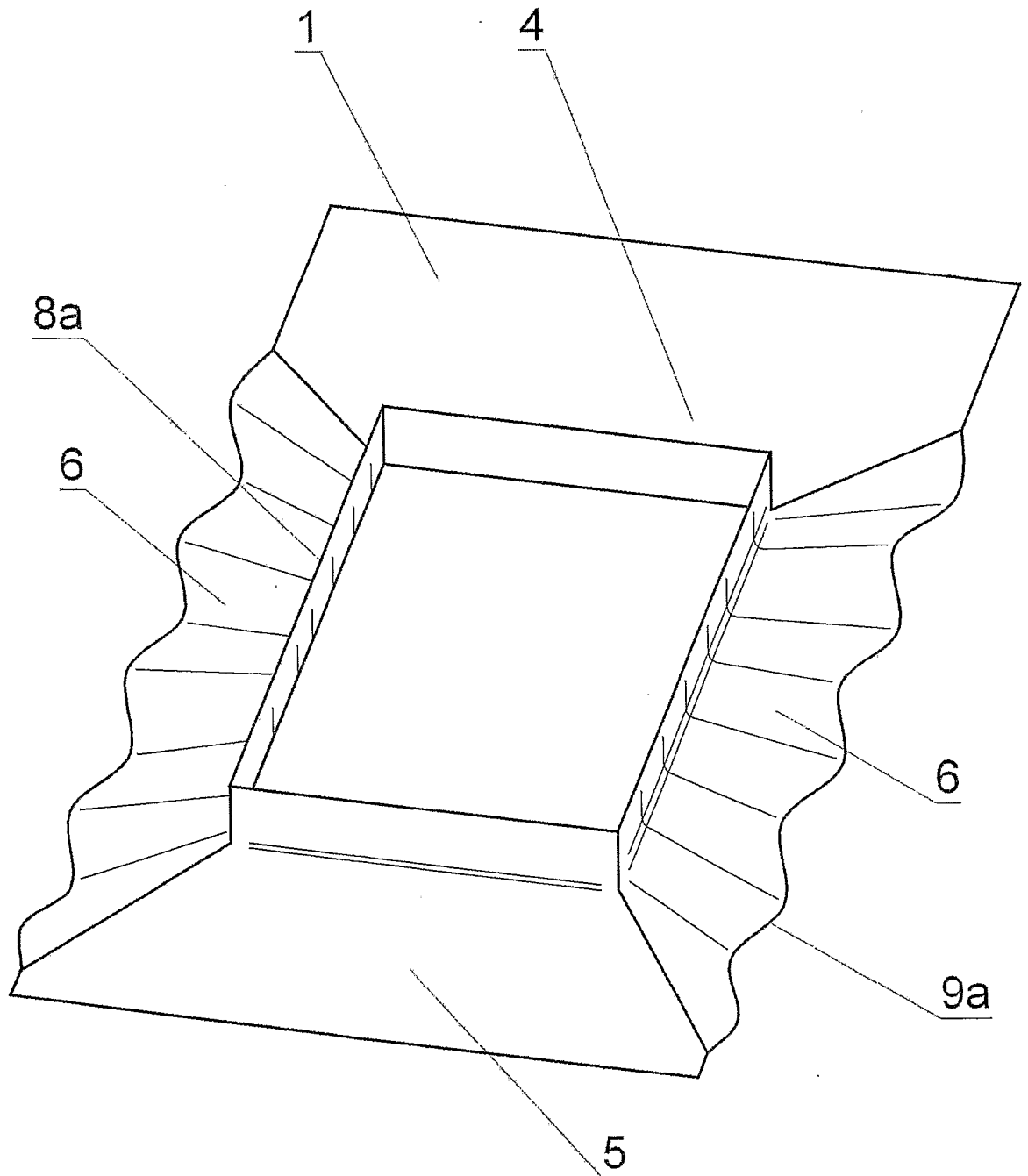


Fig. 3

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
INV. E04D13/147

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols).
E04D

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of Box C.

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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