

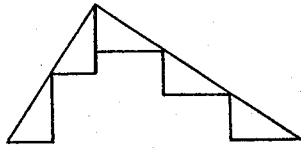
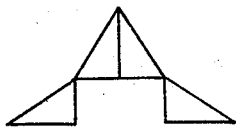
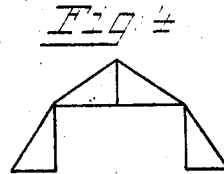
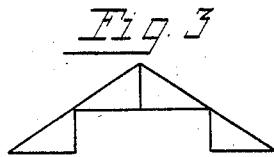
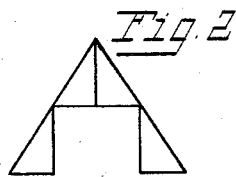
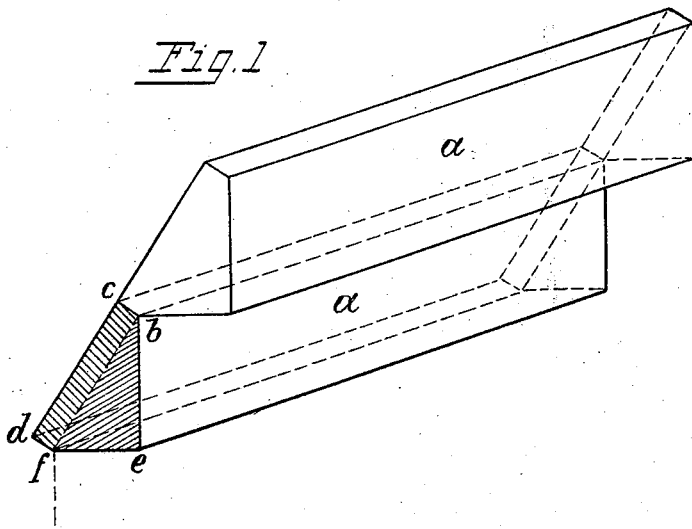
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ROOF TILE BEAM FOR TOY STRUCTURES

Filed Aug. 10, 1923



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ROOF-TILE BEAM FOR TOY STRUCTURES.

Application filed August 10, 1923, Serial No. 656,718; and in Germany December 27, 1922.

The present invention refers to a roof-tile beam for boxes of bricks for toy building purposes, which has a double object, namely to act both as covering and as frame for the roof.

For the attainment of this object, the roof-tile beam according to the present invention is given the form of a pentagonal prism, of which the section is composed of a right-angled triangle and of a rectangle or rhomboid joining on to the hypotenuse of said right-angled triangle. The triangular part here fulfills the constructive function, by providing the necessary statical firmness for the rectangular part, which latter forms the roof covering or outer skin and therefore has a merely decorative function.

Figs. 1 to 7 of the accompanying drawing show one form of the roof-tile beam according to the present invention. The section of the beam is here composed of a right-angled triangle, of which the sides containing the right-angle are of different lengths, and of a rectangle joining on to the hypotenuse of the right-angled triangle. For the sake of clarity, the two composite parts of the beam section are distinguished by different cross-sectioning in Fig. 1.

Fig. 1 is a perspective view of two roof-tile beams, whilst Figs. 2 to 7 show diagrammatically, how different forms of roofs can be built with these roof-tile beams.

Fig. 2 shows a steep roof, Fig. 3 a low roof, Fig. 4 a mansard or curb roof, Fig. 5 a hipped roof, Fig. 6 a shed roof, and Fig. 7 a shed roof consisting of a single roof-tile beam, in which latter case the beam has the effect of resting on its hypotenuse.

These diagrammatic views as shown in Figures 2 to 7, are merely generally representative of types of roofs, but they do not represent the exact contours of such types of roofs which may be constructed with my blocks in that they do not show the small notches due to the angles formed by the sides $b-c$ and $d-f$ which are adjacent but not parallel to each other.

The roof-tile beam (a) has a section composed of a right-angled triangle $b e f$ and a rectangle $b c d f$ joining on to the hypotenuse of the triangle, the two sides of the triangle enclosing the right angle having lengths equal to the lengths of two adjoining sides of the section of a normal rectangularly shaped building stone of the box

of bricks. If the latter are of equal length, that is to say, if the stone has a square section, then the two sides of the triangle containing the right angle will also be equal to one another.

The rectangle $b c d f$ joining on to the triangular section eliminates all acute angles in the section of the beam; such acute angles or sharp edges are difficult to form out of stone-like material for instance, and are very liable to become injured or broken, and also do not permit of an uninterrupted joining together of the roof-tile beams to a closed surface. The surface of the roof-tile forming the roof covering is thus bounded by right-angled edges.

Neither the triangle nor the rectangle composing the section of the beam would alone fulfill the above requirements. The roof-tiles heretofore known have been formed by the diagonal division of a square or rectangle, in which case two such triangular sections will always together occupy the area of said square or rectangle. This was necessary, in order that the sides of the triangle containing the right angle should correspond with the sides of the building stones of the box of bricks. However, none of the materials used for toy building stones permit the corners formed by the two hypotenuse angles $b f e$ and $f b e$ in Fig. 1 to be made so sharp, that the lengths of the sides enclosing the right-angle practically correspond with the side lengths of the appertaining free-stone elements. The sharp corners will be blunted or broken, which results in the disadvantage, that a gaping aperture ensues between the individual roof tiles; so that the underlying construction of the roof shows through the roof covering.

On the other hand, sharp corners must in any case be avoided, since they would be a source of danger for the children using the box of bricks, and further no material is tough enough to prevent the corners from breaking. The roof covering alone is also unserviceable, since it cannot be brought into organic connection with the right angle step top of the gable walls. Such a roof covering would have no support; and for this purpose it would be necessary to provide other auxiliary constructions, which result in a considerable complication of the whole system. In the case of a box of bricks such auxiliary constructive pieces would

necessarily have to be made of a material foreign to the system. All these disadvantages are eliminated by the use of the roof-tile beam according to the present invention, as shown in Fig. 1.

The sides e , f and e , b of the roof-tile beam correspond to the length of the building stone sides on which they rest, irrespective of the material used in the manufacture of the bricks and beams.

The acute angles of the triangle have been converted into obtuse angles d , f , e and c , b , e by uniting two sectional elements.

Two adjoining roof-tiles connect with their short sides b , c and f , d and thus conceal the interior entirely from view. By this means a homogeneous roof covering is attained. The otherwise necessary internal constructions or framework for the roof can be done away with altogether and the roof-tile beam may be laid without intermediate support from one gable wall to the other. If the span exceeds the limit prescribed by the strength of the section, one or more tie-beams must be inserted.

The sides e , f and e , b enclosing the right angle afford an excellent rest-surface for the roof-tile and correspond exactly to the horizontal and vertical sides of the steps forming the upper part of the gable walls.

The length of the roof-tile beam (a) is always a multiple of a certain common quantity, which forms the fundamental unit of the box-of-bricks system. If these roof-tiles are placed on the horizontally and vertically bounded step-like tops of the gable walls, which latter are built with the building stones of the box of bricks, it will always be possible to achieve a closed inclined roof surface of any desired extent. The roof-tiles can be used in two positions, according to whether the building stones are laid on their broad or their narrow sides.

In this manner it is possible to build roofs of different inclinations and shape as shown in Figs. 2-7.

In order that the different lengths of roof beam should not mar the appearance of the outer surface of the roof, the outside surfaces of the beams can be provided with sham or blind joints, equidistant and parallel to each other. These blind joints may also be arranged cross-wise. In any case

they serve to divide the outer surface of the roof into a number of equal sized elements.

A considerable advantage of the roof-tile beam according to the present invention as compared with the roof-tiles hitherto used in toy boxes of bricks is found in the fact that it can be carried without intermediate support from one gable wall to the other, without requiring any internal constructive elements. The section of the roof-tile is therefore constructively and statically utilised and the roof-tile beam fulfills a double function, namely:

1. It forms the outer roof covering, and
2. It performs the function of the roof frame or roof construction.

In the case of large roof surfaces the roof-tile beam extends from one tie piece to the next, so that it is here only necessary to add these tie pieces to the outer walls at certain distances.

With the roof-tile sections hitherto known and used in boxes of bricks the above described constructional utilization has not been possible, since the elimination of the structure underlying the individual roof-tiles would cause a gaping aperture to appear at the longitudinal joints of the roof-tiles, which completely mars the appearance of a closed roof surface. The roof tile according to the present invention therefore fulfills not only a decorative purpose, but has also a constructional function in consequence of its peculiar sectional form and of its sectional dimensions corresponding to the building stones, and also in consequence of its longitudinal dimension compared with this stone.

What I claim as my invention and desire to secure by Letters Patent, is:

A toy building block roof comprising a plurality of bars conforming to the length of the roof, said bars each presenting in cross section an unequal sided right angle triangle with a parallelogram on the hypotenuse of the triangle, and said bars being arranged so that the sides of the parallelogram constitute the thrust surfaces of the roof.

In testimony whereof I hereunto affix my signature.

OTTO H. STRUB.