A. LEHNER.

TOY BUILDING FOR THE REPRODUCTION OF IRON TECHNICAL CONSTRUCTIONS.

APPLICATION FILED MAR. 17, 1913.

1,103,781. Patented July 14, 1914.

Fig. 1.

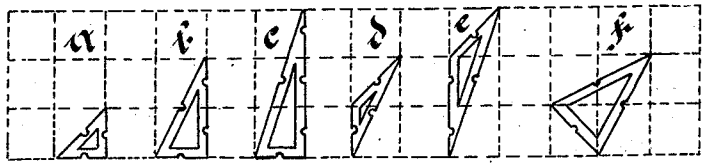

Fig. 2.

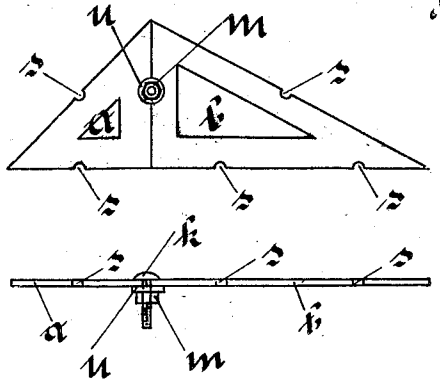

Fig. 3.

Witnesses.
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UNITED STATES PATENT OFFICE.

ALFRED LEHNER, OF KELSTERBACH-ON-THE-MAIN, GERMANY.

TOY-BUILDING FOR THE REPRODUCTION OF IRON TECHNICAL CONSTRUCTIONS.

1,103,781. Specification of Letters Patent. Patented July 14, 1914.

Application filed March 17, 1913. Serial No. 754,978.

To all whom it may concern:

Be it known that I, ALFRED LEHNER, a citizen of the German Empire, residing at Kelsterbach-on-the-Main, Hesse, Germany, have invented certain new and useful Improvements in Toy-Building for the Reproduction of Iron Technical Constructions; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of this invention is to work out upon a geometrical principle, a simple system for utilizing triangles for toy building. These triangles, are preferably metal and constructed with stamped out centers in order to give lightness thereto. The triangular frames when in use are placed side by side to form surfaces in accordance with certain geometric rules and are then joined together in a manner as will be hereinafter described.

In the accompanying drawings which form a part of this specification, Figure 1 represents a plan view of a set of triangles constructed according to my invention; Fig. 2 a detail plan view of two triangles showing the manner of joining them; Fig. 3 a vertical side elevation of Fig. 2.

A. Right-angled triangles.—1. One side 5 cm. long, second side 5 cm. long, third side equal to the diagonal of a square of 5 cm. (Fig. 1^a). 2. One side 5 cm. long, second side 10 cm. long, third side equal to the diagonal of the rectangle of 5x10 cm. (Fig. 1^b). 3. One side 5 cm. long, second side 15 cm. long, third side equal to the diagonal of a rectangle 5x15 cm. (Fig. 1^c).

B. Oblique-angled triangles.—1. One side 5 cm. long, second side equal to the diagonal of a square of 5 cm., third equal to the diagonal of the rectangle 5x10 cm. (Fig. 1^d). 2. One side equal to 10 cm., second side equal to the diagonal of the rectangle 5x15 cm., third side equal to the diagonal of a square of 5 cm. (Fig. 1^e). 3. One side equal to the diagonal of the square of 5 cm., second side equal to the diagonal of the rectangle 5x10 cm., third side equal to the diagonal of the rectangle 5x10 cm. (Fig. 1^f).

Other units can be used in place of or to complete those already named. The length of the unit is, for instance, 5 cm., but may be longer or shorter. The triangles are preferably made of metal plates of suitable thickness. For the production of closed surfaces such as houses, halls, wagons, they can be of solid construction, but for the production of lattice-like constructions such as bridges, cranes, etc., they are used as triangular frames, a triangle similar in shape to the outer one being cut out of the interior.

In order to join the triangles, half-circular indentures *s* are made on the boundary lines in the middle of the side units as well as in the middle of the diagonal sides, as seen in Figs. 2 and 3. When the triangles are put together in a correct geometrical manner, one of the half-circular holes of a triangle meets another of the adjoining triangle, and makes a round closed hole. The shaft of a small screw is introduced (sidewise) into this hole, furnished with a head *k*, an underlying plate or washer *u* placed thereon and a concave faced nut *m* screwed thereon. On tightening the bolt, both sides of the triangle between the head and the underlying plate are pressed tightly together, and the two triangles are thus so tightly joined that they can only be forcibly separated. To loosen them, a slight backward screwing of the nut only is necessary, without having to screw the latter quite out. In spite of the limitation owing to the geometrical system used, the variation in the combinations is extremely great. The principal methods of construction may be suitably executed with these triangles, and then joined with the supports and angles. Many different kinds of devices can be built such as halls, bridges, rotary cranes, wagons, movable platforms, lifts, etc. The construction is characterized by a great degree of stability and surface efficiency, since all parts of a surface lie in the same plane, while the joining up of the different forms of triangles is simple and quick.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A unit for toy building, consisting of a triangular body having incisions in its sides, substantially as and for the purpose described.

2. A unit for toy building, consisting of a triangular frame, having a plurality of semicircular incisions in its sides substantially as and for the purpose described.

3. A device of the character described, consisting of a triangular body having a plurality of semicircular incisions in its

sides, together with means for uniting said triangle to a second triangle having similar incisions, substantially as described.

4. A device of the character described, consisting of a triangular body, having a symmetrical triangular opening therein, a plurality of semicircular incisions in its outer sides, together with means for uniting said triangle to a second triangle having similar incisions, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

DR. ALFRED LEHNER.

Witnesses:

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