CONSTRUCTIONAL TOY
Reidar Viken, Kongsvinger, Norway
Application November 7, 1955, Serial No. 545,496
Claims priority, application Norway May 2, 1955
1 Claim. (Cl. 46—30)

This invention relates to improvements in a constructional toy which comprises a plurality of skeleton-like frames composed of flexible material.

Previously known kits for building toy models have been composed of a great number of different building elements from simple building blocks to the most complicated stamped metallic parts.

This invention involves the disadvantage that the metal parts are so rigid that a limited number of models which can be built is limited by the limited possibilities of shaping each metal part. Bending of such parts ultimately will cause breakage of the parts which then will be destroyed or rendered useless.

Further, models built by means of this type of building kit have to be assembled by using small bolts and nuts which easily may be lost.

Common building blocks, for example of wood, are further associated with the disadvantage that they can not be connected, so that a complete model can not be moved but must be dismantled when the play is ended.

It has also been proposed to provide building elements in the shape of small bricks which are intended to be brick-laid by means of ordinary cement or mortar, but it will then only be possible to build one single model from each kit, and the building elements can not be taken apart and reused.

A building element somewhat between ordinary toy building blocks and the above mentioned miniature bricks are small blocks e. g. of plastic which are provided with lugs or projections on one side and corresponding recesses on the other side, so that the blocks may be held in position relative to each other when they are laid as brick, but with such blocks it is impossible to build curved surfaces or structures.

A feature common to all the known toy building elements is that they are rigid, whereby as mentioned above the number of models that can be built is very limited.

The object of the present invention is to provide a building element of the kind described, in which all the above mentioned disadvantages are eliminated in that the element may be bent, in that a number of elements may be attached to each other in a great number of ways according to choice, and in that the use of small bolts and nuts or other separate coupling elements is eliminated.

This is in accordance with the invention achieved by making the building element of a flexible material, for example, plastic, and by providing the element with suitably arranged buttons preferably designed as small pegs or headed pins and with button holes or peg-receiving openings the size of which corresponds to the buttons or pegs.

It is advantageous to arrange the buttons and button holes symmetrically about the center of the element and preferably at the corners of the element, and to avoid giving the built models a too heavy and compact appearance the building element is made as a grid structure or skeleton-like frame.

In many cases it will be necessary to couple two elements together in such a manner that one corner of one element is coupled on to the top side of the succeeding element, while another corner of the first mentioned element is coupled on to the other side of the succeeding element, and the invention therefore also has for its object to provide a possibility for such a connection.

In accordance with the invention this is achieved in that the edges of the element are lying well within the lines through the centers of the buttons and button holes.

To strengthen the joints between the buttons and button holes the invention further consists in an improvement in same, obtained by providing the buttons at their free ends with an enlarged portion or head of greater diameter, thereby forming a lateral expansion which is adapted to cooperate with a corresponding contraction approximately in the middle of the button holes, and a good joint is thereby obtained between the different parts.

The invention thus consists in a constructional toy as a building element, and the invention is mainly characterized in that the elements of the toy are made of flexible material as plastic or the like, and each of the elements is alternately provided with button holes and buttons, so that a number of elements easily may be buttoned together for building models of all kinds.

A further feature of the invention consists in that the buttons and button holes are arranged symmetrically about the center of the element, and at the corners of the element, and in addition the element is shaped as a rectangle and a grid or skeleton structure.

Another main feature of the invention consists in that at least two of the opposing sides or edges of the building element extend along or inside lines through the centers of the buttons and button holes.

Further the invention consists in that the buttons have an enlargement at the free end and in that the button holes have a contraction approximately at the middle.

An embodiment of the invention will be more closely described in the following with reference to the accompanying drawing in which:

Fig. 1 is a perspective view of a building element in accordance with the invention.

Fig. 2 is a diagrammatical view of a sphere constructed from elements in accordance with the invention.

Fig. 3 is a building element of mainly the same shape as the building element in Fig. 1.

Fig. 4 is a section through a button hole in accordance with the invention.

Fig. 5 illustrates the design of a button in accordance with the invention and

Fig. 6 shows the button of one element buttoned together with the button hole in a succeeding element.

The building element consists as shown in Fig. 1 in accordance with the invention of a suitably designed grid or skeleton structure 1 of flexible material. The grid or skeleton structure may be given any chosen shape, but it will have to be of such shape as to exert a stiffening action on the sides or edges of the element.

The element is provided with buttons 2 which in the example shown are in the form of headed pins or pegs and are arranged at two diagonally opposing corners, and the two other corners of the element are provided with button holes 3 adapted to co-operate with the buttons 2 in such a manner that they may be forced tightly on to corresponding buttons on the other elements, which are used for building the toy model.

The size of the element is of no importance for the invention, but a width of 34 inch and a length twice as large has proved itself to be well suited for the purpose.

By making the elements of a flexible and strong material as for example plastic, it will be possible to build
models which also comprise curved surfaces, and this possibility has not previously existed. As an example, Fig. 2 illustrates a spherical model constructed from a number of elements of the kind shown in Fig. 1.

To enable the elements to be buttoned or coupled together in any manner in which two corners of one element are buttoned on to the succeeding element above and under same respectively the four sides 5, 6, 7, 8 of the element (see Fig. 3) are according to the invention retracted so far that they will not extend beyond the lines through buttons or button holes 9. One line through the centers is indicated by the dotted line 10 and at the right end of the element shown on Fig. 3 buttoning of one part of the succeeding element 11 in the manner made possible by the present construction of a building element is diagrammatically indicated. Actually, the buttons and button holes therefor are provided in lugs or ears extending from the corners of the element.

The elements may of course also be buttoned together with all of one side positioned on one side of the succeeding element.

To enable the buttons and button holes to be less affected by wear and to enable the same to join strongly together, the button holes 12 on Fig. 4, which preferably are positioned at two diagonally opposite corners, are provided with a contraction 13 approximately half way down, and as shown on Fig. 5 the buttons, which preferably are positioned at the two other opposed corners, are provided with an enlargement or head 14 at the free end of the button, and this enlargement will, as shown in Fig. 6 by buttoning together two elements, be positioned outside the contraction 13 of the button hole 12, and the enlargement 14 will therefore secure the button in the button hole.

As will be clearly seen in Fig. 4, the button hole 12 converges inwardly from the opposite faces of the element 1 to a half-way point from said faces. This arrangement not only permits of a snap-action engagement between the button and button hole, but enables the button to be inserted in the hole from either side of the element.

The embodiment shown will only serve to illustrate the invention and is not to be regarded in a limiting sense, as other embodiments will fall within the scope of the invention, such embodiments being, for example, elements provided with buttons or pegs on both sides with the design of the grid structure made up from triangular or square sections or the like. If necessary the building element may have a greater length, but its length should preferably under any condition be a digital multiple of the width of the element.

I claim:

In a constructional toy, an erectional element consisting of a skeleton-like rectangular frame composed of a flexible plastic material, said frame being normally flat but being capable of flexure or curvature, the frame being provided at each of its corners with a projecting ear, diagonally opposite ears having holes extending through them and the other ears having integrally formed projecting pins, the edges of the element being so disposed relative to lines through the centers of the pins and holes as to be in substantially abutting relation with corresponding edges of an adjacent element having its ears concentrically placed respectively above and below the ears of the first element with connected elements lying in substantially the same plane.

References Cited in the file of this patent

UNITED STATES PATENTS

1,779,826 Potter Oct. 28, 1930
2,061,510 Drumpelmann Nov. 17, 1936
2,402,926 Miesen May 20, 1941
2,649,803 Andre Aug. 25, 1953
2,712,200 Dearling July 5, 1955

FOREIGN PATENTS

149,916 Great Britain May 5, 1921
1,072,167 France Mar. 10, 1954