UNITED STATES PATENT OFFICE

2,422,217

KNOCKDOWN TOY HOUSE

Mary F. Barnes, Honolulu, Territory of Hawaii
Application December 24, 1942, Serial No. 469,993

8 Claims. (Cl. 46—19)

1 This invention relates to a knockdown toy house, and has for one of its objects a toy house construction that may be assembled and disassembled by a relatively young child without injury to the elements that go into the assembly, and which elements are adapted to be assembled in different arrangements for different types of buildings, or for buildings having different appearances.

Another object of the invention is a knockdown toy house construction that is relatively rigid and sturdy when the house is set up, and which house is made up of elements that are economical to manufacture, simple, and that do not necessarily require the use of special implements for assembling and disassembling the same, although a relatively light wooden or plastic mallet may be employed by the child in connecting and disconnecting some of the elements without injury to the latter, thereby adding to the amusement of the child.

Other objects and advantages will appear in the description and drawings.

Briefly described, the house of this invention is made up of various simple elements that may be assembled with little difficulty by a normal child of say, about five years of age. In providing a knockdown house suitable for assembly and disassembly by a child of such age, it is essential that the structural elements employed have some complexity in order to compel the child to exercise its ingenuity in assembling the elements, and the elements should be so formed as to enable the child to rearrange the same for making modifications in the structure. However, the use of nails or the like, that form their own holes is obviously undesirable since the elements would soon become destroyed after being used several times.

The construction I provide, of which the drawings herein are illustrative, is simple, rugged, and practically indestructible irrespective of how many times the building and variations thereof may be formed by the assembly and disassembly of the elements.

In the drawings,

Fig. 1 is a perspective view of one form of building in assembled relation.

Fig. 2 is a perspective view of the roof structure on a portion of the building shown in Fig. 1.

Fig. 2A is an elevational view of one type of panel that may be used on the roof structure, if desired.

Fig. 3 is a vertical sectional view through the building of Fig. 1.

Fig. 4 is a plan view of part of the wall retaining frame elements used in the building, with the elements separated to show their individual construction.

Fig. 5 is a fragmentary plan view of one corner of the building of Fig. 1.

Fig. 6 is an enlarged plan view (partly in section) of a single room building similar to one of the rooms of Fig. 1, with the roof and floor removed to better illustrate the construction.

Fig. 7 is a fragmentary sectional view taken along line 1—1 of Fig. 1 showing the porch construction.

Fig. 8 is a fragmentary sectional view of a roof structure different from that of Fig. 1.

Fig. 9 is a fragmentary sectional view taken along line 9—9 of Fig. 8.

Fig. 10 is an elevational view of one of the elements used in forming the roof of the building shown in Fig. 8.

The upper left hand room shown in Fig. 1, will first be described in detail, since this portion of the building generally comprises a basic unitary structure suitable for use by itself in forming a one room house, the only difference between said room and the one therebelow being in external decoration of one or more of the walls, and the provision of a porch in the lower room. Similar elements in the building will be similarly numbered in the various figures.

The room or building unit above noted is preferably square, having four side walls 1, 2, 3, 4 (Fig. 6). Along the lower edges of each wall 1, 3, and on the inner side thereof, is secured a strip 5 each of which terminates at its ends at points spaced from the vertical edges of each wall a distance substantially equal to the thickness of walls 2 or 4. Walls 1, 3 being in opposed relation for forming two opposite sides of the room, the strips 5 are also in opposed relation, and at the opposite ends of each strip are pegs 6, such as dowel pins. The pegs 6 on corresponding ends of the opposed strips 5 project toward each other and are adapted to frictionally and removably fit in openings formed in the opposite ends of strips 7 that are secured to walls 2, 4 along the lower edges of the latter.

The strips 1 are sufficiently shorter than strips 5, so that the vertical edges of walls 2, 4 will substantially adjoin the edges of walls 1, 3 when the strips 5, 7 are removably secured together by pegs 6.

The pegs 6 may, of course, be carried at the ends of strips 1 to fit in openings in the sides of strips 5, or the pegs may frictionally fit in co-
axial openings in the adjacent ends of strips 5, 7. if desired, without the exercise of invention, but it is preferable that the pegs be secured to one or the other of the strips against accidental removal, thereby as to reduce the likelihood of their being lost, and to facilitate the connecting of the strips by very young children.

Around the upper marginal portions of the side walls is a rectangular frame made up of frame members 8, 9, 10, 11 (Fig. 6). Each of these members is provided with an opening in one of its ends and a pin or peg projecting from its opposite end, each of the openings being adapted to receive one of the pegs sufficiently snug to hold adjacent members together against accidental separation, while permitting separation upon forcibly pulling them apart in direction axially of the pegs.

The frame members 8, 10 (Fig. 6) are longer than the side walls against which they are adapted to be positioned, and the peg 12 on each of said members projects laterally from the end portion thereof that projects outwardly of the side wall, and the opening 13 in each member is in the projecting end opposite the end carrying the peg.

The other two side frame members 9, 11 each have a peg 14 projecting axially thereof from one end and an axially disposed opening 15 formed in the opposite end. These members 9, 11 extend between the ends of members 8, 10 and pegs 12 frictionally fit in openings 15, while pegs 14 frictionally fit in openings 13, thus forming the rectangular frame when the pegs are so fitted in the openings.

The length of each member 9, 11 is such that the frame formed by fitting pegs 12, 14 in openings 15, 13, respectively, will fit against the outer marginal portions of walls 1 to 4 when the latter are detected together by fitting the peg 6 on strips 5 in the openings in the ends of strips 7, as has been described.

The frame formed by members 8, 9 to 11 is removable to the walls 1 to 4 in a position in which said members project slightly above the upper edges of said walls by means of pegs 16. Each of the walls 1 to 4 has an opening 17 (Fig. 6) formed therein adjacent its upper edge and midway between its vertical side edges, and each of the members 8 to 11 has a cylindrical recess formed in its inner side midway between its ends that is adapted to register with one of the openings 17. Each peg 16 is adapted to be inserted through one of said openings 17 from inside the space enclosed by walls 1 to 4, and into the recess 18 in registration with such opening. These pegs frictionally engage the sides of the openings and the sides of the recesses, thereby securing each of the frame members against the side adjacent thereto and at the same time supporting the frame with its upper edge elevated above the upper edges of the side walls.

Pegs 16 preferably are flattened at their ends projecting into the space enclosed by the walls 1 to 4, as indicated in Fig. 6, so as to facilitate grasping said pegs by the fingers of the hand for twisting the same in order to insure a light frictional fit of their respective ends in the openings 17 and recesses 18, and to facilitate pulling the may be removed from the roof and disposed for use as a furred enclosure on the ground associated with the building. Its adaptability to various other arrangements according to the ingenuity of the child is obvious, since the four corner posts form by blocks 21, together with the grooved sides of the latter and the panels 23 or 24, or the like, will suggest many possibilities to the child.

The walls 1 to 4 may, of course, be provided with openings 25 of any desired shape and size, if desired, or they may be solid, and whether solid or provided with openings, any desired surface decoration may be placed thereon without invention.

The foregoing is illustrative of one complete building unit, since the upper left hand room on the building shown in Fig. 1 may be positioned, as a unit, on the ground to form a complete building in itself. No need is seen for showing such single unit apart from the remainder of the structure shown in Fig. 1, since such unit is obvious.

The complete assembly shown in Figs. 1 and 2 are illustrative of a building formed from a plurality of the individual units, and clearly shows the coaction that exists between the particular structural features of the elements embodied in the single unit form of building to provide for the more complicated and larger building. The elements employed in the building of Fig. 1 are described for the upper left hand unit that are the same will be similarly numbered.

In the complete assembly shown in Fig. 1, three building units are employed, but all of the elements described for one unit are not necessary to the larger building. The number of units that
may be combined is unlimited, since two, four, or a dozen or more may be used, with different shaped floor plans, and different numbers of stories high.

In the two story building where only two building units are employed, it is seen that the lower edges of the side walls of the upper unit may be placed on the upper edges of the side walls of the lower unit, and the corresponding walls of the upper and lower units will be supported by the upwardly projecting upper sides of frame members 8 to 11 in co-planar relation. Of course, the roof structure, made up of the member 19, blocks 21 and panels 23, is removed from the lower unit of the pair so that the upper unit may be supported on the upper edges of the lower unit.

Where only a two story building, having a floor plan of only one unit is used, the frame members 8 to 11 are identical on the upper and lower units. The lower unit, in this case, as seen in Fig. 1, may have a door opening 26 cut therein, if desired, and a porch may be provided.

Where such porch is used, it preferably comprises a pair of rectangular posts 27, 28 (Fig. 7), each provided with a laterally projecting peg 29 on one side adapted to frictionally engage in openings formed in the side wall 30 at opposite sides of the lower end of door opening 26. The opposed sides of posts 27, 28 are formed with recesses respectively adapted to frictionally receive one of pegs 31 therein, and which pegs 31 project axially from opposite ends of a strip 32 that forms the floor of the porch or step below the door opening 26.

Where a third unit is added to a two story house of two units to increase the floor plan of the building by one unit, as shown in Fig. 1, the shorter frame members 9, 11 of a pair of said units are placed in axial alignment along the forward and rear sides of the lower units, and two only of the members 8, 10 are at the ends of the lower story, thus an elongated, vertical frame encloses both of the lower units and the adjacent walls of the units of the lower story will be together as seen in Fig. 3. This same arrangement would occur where a four unit house were formed with two units on each floor. The provision of a peg and peg openings at opposite ends of the frame members 9, 11 makes this structure possible. In Fig. 4 the arrangement is clearly shown. In the three unit building of Figs. 1 and 3 it is seen that the roof structure described for one unit may be provided on top of any exposed unit, such as the right hand unit of the first story seen in Fig. 1, as well as on the upper unit of the second story.

In each unit, a floor comprising a rectangular sheet 33 may be removably supported on the strips 5, 7, as seen in Fig. 3. The manner in which the frame members 8 to 11 are supported on walls 1 to 4 by means of pegs and peg-receiving openings in the frame members, and by pegs 16, provides for the modification of the roof of any unit of a building, as best seen in Figs. 8 to 10.

To make a gable roof, I provide a pair of triangular, relatively thin sheets 35 (Fig. 10), each having openings 36 at opposite ends of the base edge adjacent thereto and a single opening 37 intermediate the ends of said edge and adjacent thereto. These end openings 36 will register with the recesses 13, 15 at the ends of members 8, 10 while central opening 37 in each sheet will register with one of the central recesses 16 in said members. In assembling the frame, lower edge of each sheet 35 is placed at opposite side walls of the house so that the openings 36 and 37 will register with recesses 13, 15 and 16. The pegs 12, 14 and 16 will pass through the openings in sheets 35 to hold the sheets in upwardly projecting opposed relation, and a pair of roof members 38, hinged together at 39 may then be laid on the upper edges of said sheets to form the gable roof with overhanging eaves as seen in Fig. 8.

In the building construction above described, it is important to note that the openings for the various pegs are pre-formed and that the pegs are of wood, or of any suitable composition material that will provide sufficient frictional resistance when in the openings or recesses to prevent accidental withdrawal, but which may be withdrawn by relatively slight force. Wood or composition material may be used throughout, and except for the pegs 16, it is preferable that the other pegs be secured to the elements with which they are associated, such as strips 5, 7 or frame members 8 to 11 or corner posts 21, or to the porch posts 27, 28 and strip 32, as herein described.

The claims are intended to cover such modifications of the structure disclosed in the drawings that come within the scope of the invention, and the said drawings are not intended to be restrictive of the invention but are merely illustrative of a preferred form thereof.

Having described my invention, I claim:

1. A knockdown toy building comprising a pair of rectangular room units each comprising four, vertical lateral walls of sheet material; said pair of units being in side by side relation with one of the walls of each unit being in substantially opposed engaging relation; a central vertical frame having elongated side members extending in external wall engaging relation around both of said units along the upper edges of the walls thereof other than the said pair of opposed walls thereby securing said units together; said frame comprising a plurality of elongated frame members each secured to the wall adjacent thereto, means at the adjacent ends of each adjacent pair of said members for detachably securing them together; and a frame within the area enclosed by the four walls of each unit adjacent the lower ends of such walls securing the said lower ends of each unit in assembled relation; said last mentioned frame comprising an elongated strip extending horizontally along the lower edge of the wall of each unit and carried by each of such walls; and means at the adjacent ends of the adjacent pairs of the said strips in each unit for detachably securing the said adjacent pairs together.

2. A knockdown toy building comprising a plurality of pairs of rectangular room units of substantially equal size and shape; each of said units comprising four, vertical, lateral walls of sheet material; one pair of said units being in substantially opposed relation with their corresponding walls in co-planar relation and a second pair of said units being side by side with one of the corresponding sized wall of each in opposed, engaging relation; a plurality of rectangular, horizontally disposed frames; a first of said frames enclosing the upper ends of vertical lateral walls of the upper unit of said one pair thereof securing the upper ends of the walls of said one pair against outward movement; a second of said frames enclosing the upper ends of the walls of both of the said second pair of said units; three
sides of said second frame extending in overlapping relation to three of the sides of the upper unit of the superposed pair for holding said upper unit in said superposed relation to the unit therebelow; means detachably securing said first frame to the walls of the uppermost of said pair of superposed units; means detachably securing the said second frame to the outwardly exposed walls of the said second pair of units; other rectangular frames, one each of which is enclosed by the four walls of each of the said plurality of units adjacent the lower end of each unit; means securing each of the said rectangular frames to the walls of each unit enclosing the same; said first frame, second frame and said other frames each comprising elongated strips; and means detachably connecting adjacent pairs of strips at each corner of each of said frames together.

3. A knockdown toy building unit having sides comprising four, vertical, lateral walls of sheet material; a flat, horizontal, rectangular roof supported along each of its edges on the upper edges of said walls respectively; a peg carried by said roof adjacent each of the corners thereof projecting downwardly from the under side of said roof and into engagement with the adjacent portions of each pair of adjacent walls forming the sides of said unit for limiting inward movement of said walls; an upstanding post on said roof adjacent its corners and panels extending along each of the edges of said roof supported at their lateral ends by said posts.

4. In a construction as defined in claim 3, said roof being formed with an opening adjacent each corner thereof in which one of said pegs is frictionally fitted; and each of said posts being secured to the upper end of each of said pegs.

5. In a construction as defined in claim 3, each of said posts being a block formed with a pair of vertical grooves opening outwardly at right angles to each other, and the adjacent ends of adjacent pairs of said panels being slidably supported in the said grooves in said posts.

6. A knockdown toy building comprising a pair of separable ground floor rooms each having lateral side walls and one of the side walls of each room being in opposed parallel surface-engaging relationship, a centrally open frame enclosed within the side walls of each room adjacent the lower edges of said side walls, each frame being formed of elongated horizontally extending frame members respectively secured to each side wall and detachably secured together at their ends, means on said frame members for detachably securing them together at their ends, and an outside frame enclosing said pair of rooms, means securing said latter frame to said side walls of said pair of rooms adjacent the upper edges of said side walls thereof exclusive of the said opposed pair of said side walls.

7. A knockdown toy building comprising a pair of separable ground floor rooms each having lateral side walls and one of the side walls of each room being in opposed parallel surface-engaging relationship, a centrally open frame enclosed within the side walls of each room adjacent the lower edges of said side walls, each frame being formed of elongated horizontally extending frame members respectively secured to each side wall and detachably secured together at their ends, means on said frame members for detachably securing them together at their ends, and an outside frame enclosing said pair of rooms, means securing said latter frame to said side walls of said pair of rooms adjacent the upper edges of said side walls thereof exclusive of the said opposed pair of said side walls.

MARY F. BARNES.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>97,840</td>
<td>Waters</td>
<td>Dec. 14, 1869</td>
</tr>
<tr>
<td>390,296</td>
<td>Haldemann</td>
<td>Oct. 2, 1888</td>
</tr>
<tr>
<td>1,344,451</td>
<td>Richard</td>
<td>June 22, 1920</td>
</tr>
<tr>
<td>1,754,990</td>
<td>Allen</td>
<td>Apr. 15, 1930</td>
</tr>
<tr>
<td>1,800,628</td>
<td>Heeter</td>
<td>Apr. 14, 1931</td>
</tr>
<tr>
<td>1,870,978</td>
<td>Wolfe</td>
<td>Aug. 9, 1932</td>
</tr>
<tr>
<td>1,577,223</td>
<td>Dolle</td>
<td>Mar. 33, 1926</td>
</tr>
<tr>
<td>282,965</td>
<td>Dorin</td>
<td>Aug. 14, 1888</td>
</tr>
<tr>
<td>1,954,666</td>
<td>Warren</td>
<td>July 16, 1918</td>
</tr>
<tr>
<td>1,272,383</td>
<td>Levis</td>
<td>Apr. 18, 1876</td>
</tr>
<tr>
<td>176,144</td>
<td>McDougall</td>
<td>Apr. 30, 1929</td>
</tr>
<tr>
<td>1,711,286</td>
<td>Sawin</td>
<td>June 14, 1932</td>
</tr>
<tr>
<td>1,862,609</td>
<td>Shaw</td>
<td>June 14, 1932</td>
</tr>
</tbody>
</table>