United States Patent

[11] **3,577,671**

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[54] **CONSTRUCTION KITS FOR TOYS AND MODELS**
14 Claims, 3 Drawing Figs.

[52] **U.S. Cl.** **46/16**
[51] **Int. Cl.** **A63h 33/00**
[50] **Field of Search** 46/16, 17, 25, 23, 31

[56] **References Cited**

UNITED STATES PATENTS

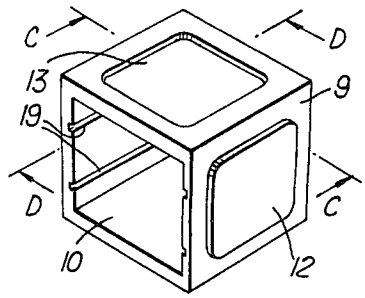
349,646	9/1886	Grigg	46/25
1,084,597	1/1914	Anft	46/25
2,278,894	4/1942	Paulson	46/25
2,861,388	11/1958	Fauaretto	46/16
3,148,477	9/1964	Bjorn et al.	46/25

FOREIGN PATENTS

694,198	9/1964	Canada	46/16

Primary Examiner—Louis G. Mancene
Assistant Examiner—D. L. Weinhold
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ABSTRACT: A construction kit for toys comprises a plurality of components for fitting together in various ways. One component is in the form of a hollow cube open on one, and only one face, having projections on some faces and recesses on the other faces, adapted for frictional interengagement. Half-cube components may be provided for sliding into said cubic components. Other components comprise a flat sheet with upstanding projections, and a flat sheet with recesses, adapted for engagement respectively with recesses and projections of cubic components: a like flat sheet with integral guide or rail means: and a like flat plate with legs extending perpendicular thereto.



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SHEET 1 OF 6

Fig.1.

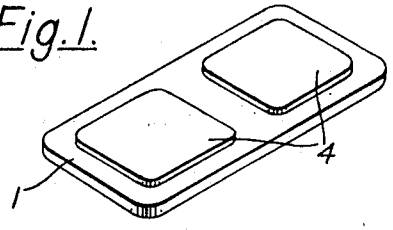


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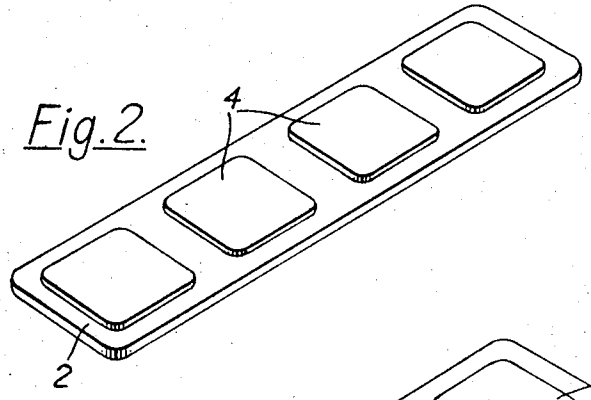


Fig.3.

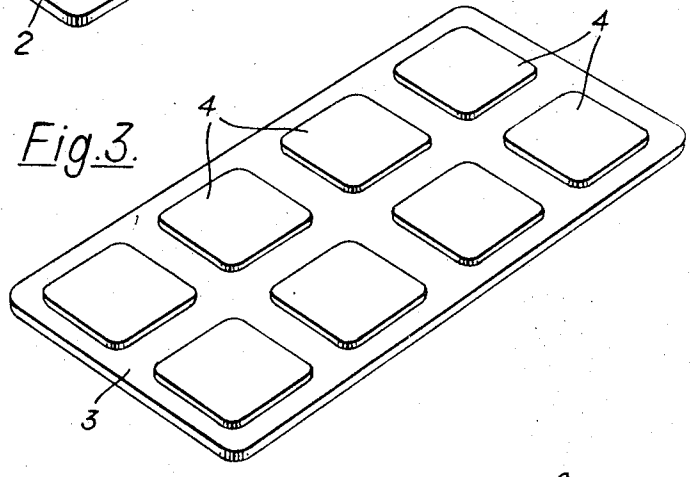
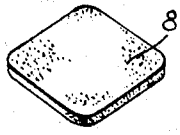


Fig.5.



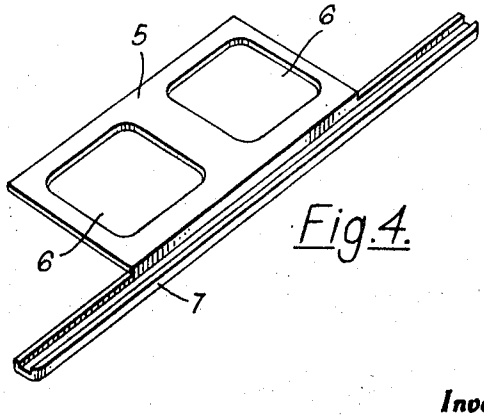


Fig.4.

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Fig.6.

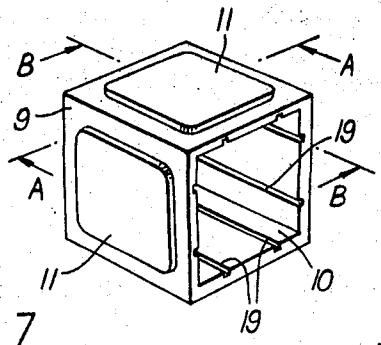


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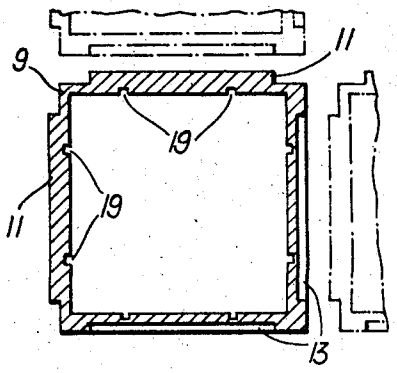


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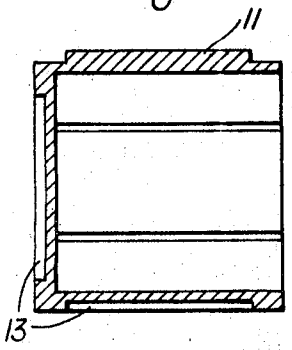


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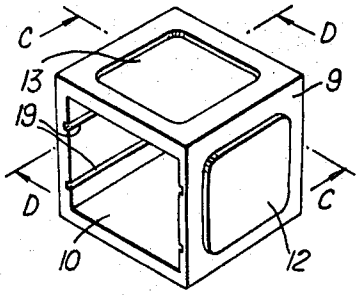


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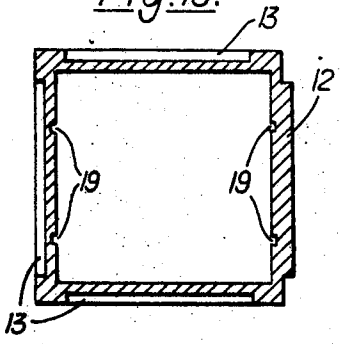
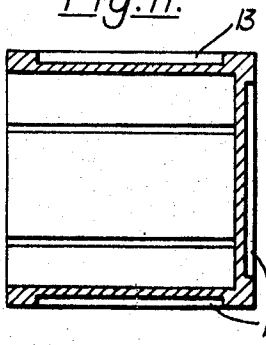


Fig.11.



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Fig. 12.

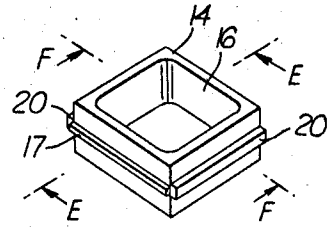


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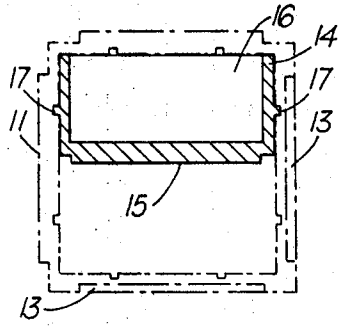


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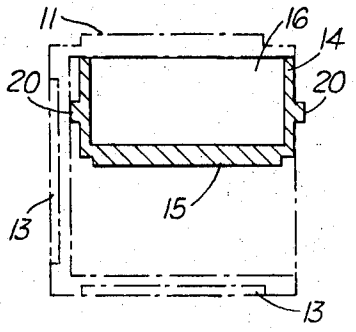


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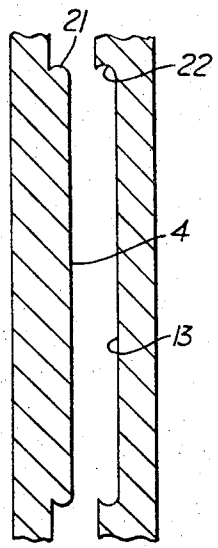
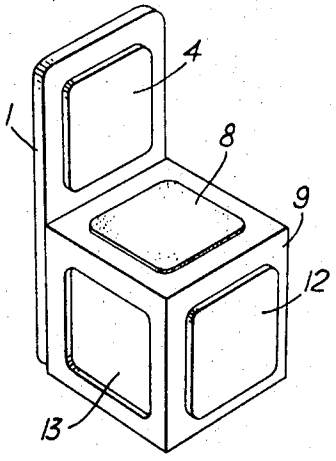
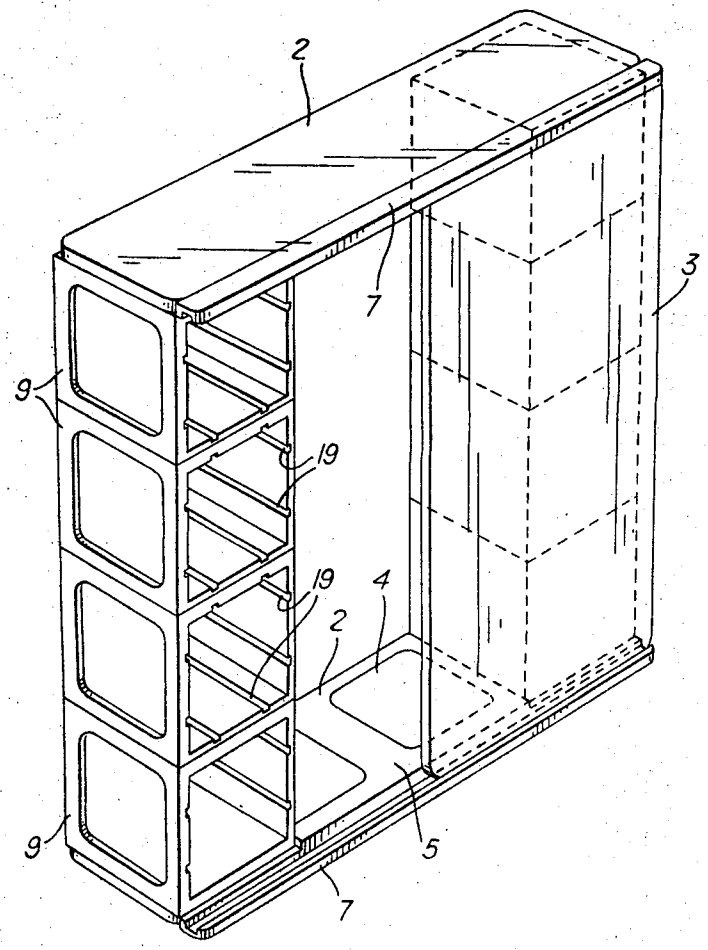


Fig. 15.



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Fig. 16.



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Fig. 18.

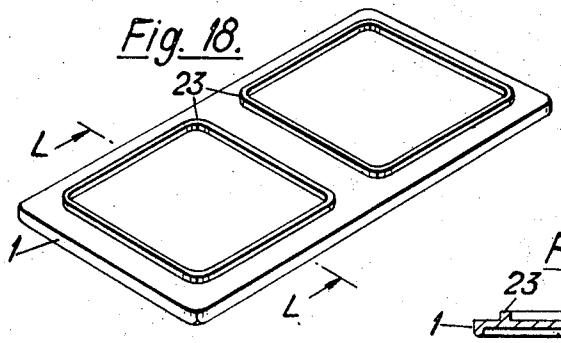


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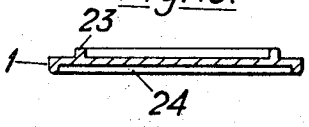


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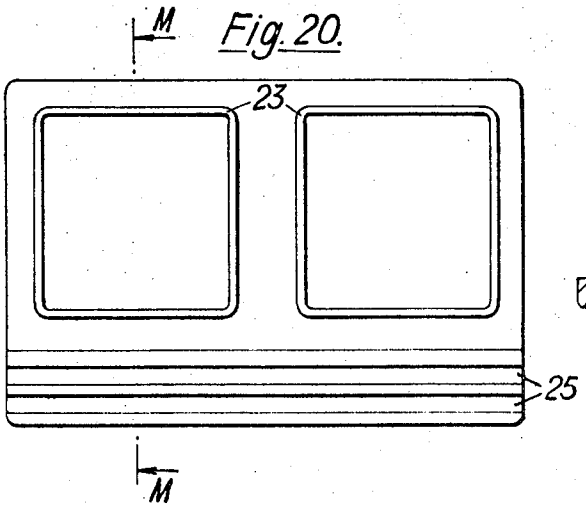


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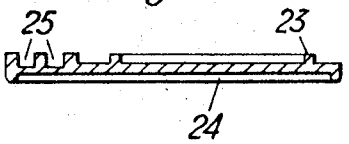


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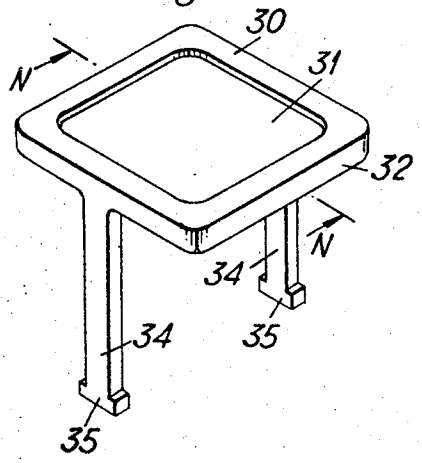


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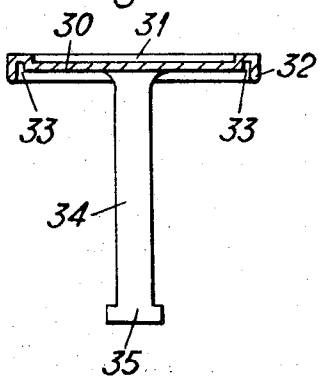
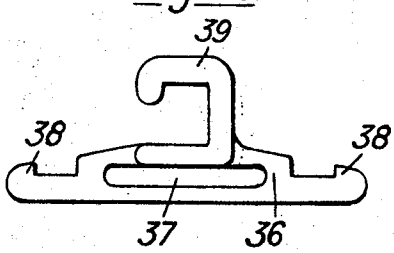


Fig. 30.



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Fig. 22.

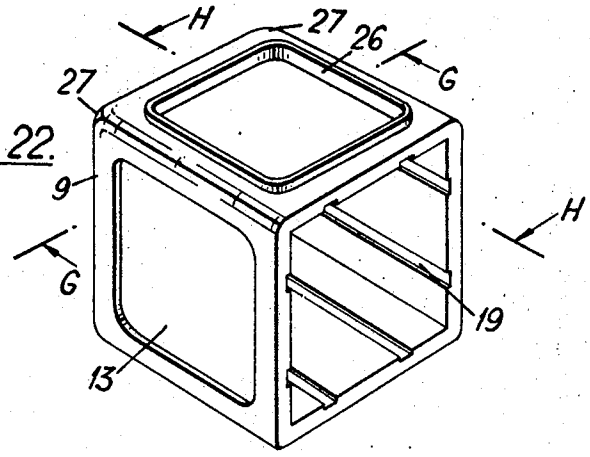


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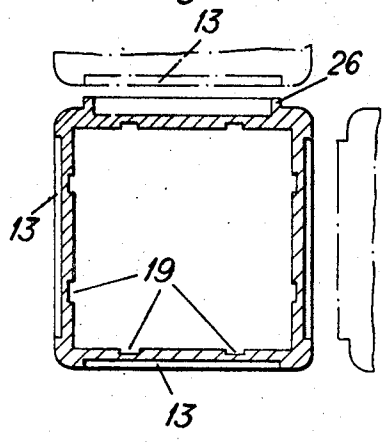


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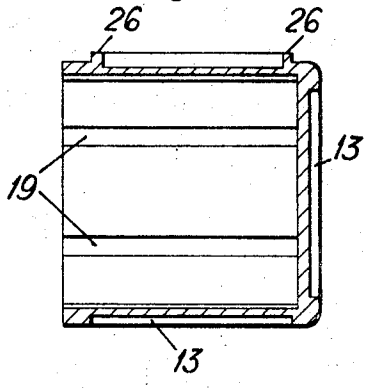


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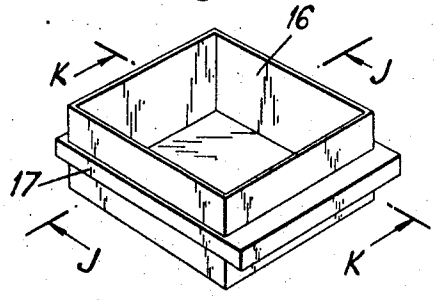


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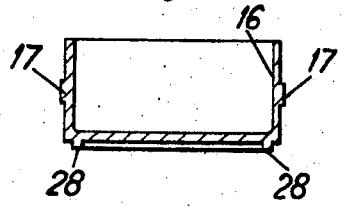
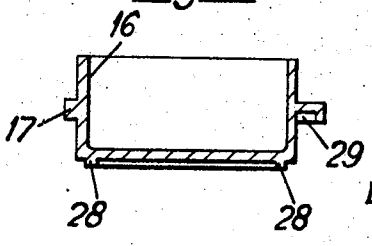


Fig. 27.



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CONSTRUCTION KITS FOR TOYS AND MODELS

This invention relates to construction kits for toys and models, and more especially to kits comprising components adapted to be fitted together in various ways in order to form items of furniture, e.g., for a doll's house.

The invention consists in a construction kit for toys or models comprising unit components each having at least one substantially flat face, and on each of one or more substantially flat faces an upstanding projection suitable for engagement in a corresponding recess of another component when being assembled together in a toy or model.

Some components may be in the form of hollow cubes preferably open at one face. Other components may comprise flat sheets of material. On one or more external face of a cube component and/or on one or more selected areas of a flat-sheet component may be provided an upstanding projection. In the open end of a cubic component, and/or in one or more outer wall surfaces of a cubic component, and/or in a flat-sheet component may be formed a hole or recess shaped and dimensioned to receive a projection of another component as a friction fit. A projection may be in the form of a shallow plinth upstanding from its supporting surface. When on the face of a cubic component this plinth may be of substantially the same shape as the cube face, i.e., substantially square (but preferably with rounded corners) but of smaller dimensions, located centrally of the cube face to form a stepped "platform" surrounded by an annular area of the cut face. One or more other faces of the cube may be formed with one or more recesses of the same shape, to receive the "plinth" projection of a cooperating component. Flat-sheet components may have "plinth" projections and/or recesses of similar size and shape. The components are preferably of modular form, i.e., in dimensions of a selected unit or multiples thereof, to facilitate engagement and cooperation in various ways. Other grooved components may be provided to allow components to be assembled in slidable relationship, e.g., representing drawers, or slidable doors.

The invention will be clearly understood from the following description of one form (given however, merely by way of example) which it may assume, and this description will be more readily followed by reference to the accompanying drawings wherein:

FIGS. 1—5 represent in perspective five different flat-sheet components of a construction kit in accordance with the invention.

FIG. 6 represents in perspective one form of cubic component of a kit in accordance with the invention.

FIG. 7 and 8 represent side sectional views respectively in the planes A–A and B–B of FIG. 6.

FIG. 9 represents another form of cubic component of a kit in accordance with the invention.

FIGS. 10 and 11 represent side sectional views respectively in the planes C–C and D–D of FIG. 9.

FIG. 12 represents in perspective another spacer component of a kit in accordance with the invention.

FIGS. 13 and 14 represent side sectional views respectively in the planes E–E and F–F of FIG. 12.

FIGS. 15 and 16 represent in perspective two forms of toy or model which may be built from components such as shown in FIGS. 1—14.

FIG. 17 represents in enlarged sectional view a modified detail which may be incorporated in components of a kit in accordance with the invention.

FIG. 18 represents in perspective a modified form of flat-sheet component in accordance with the invention.

FIG. 19 represents a section along the line L–L of FIG. 18.

FIGS. 20 and 21 represent in plan and cross-sectional views respectively, another modified form of flat-sheet component, the section of FIG. 21 being taken along the line M–M of FIG. 20.

FIG. 22 represents in perspective a modified form of cubic component in accordance with the invention.

FIGS. 23 and 24 represent sectional elevations in the planes G–G and H–H respectively of FIG. 22.

FIG. 25 represents in perspective a modified form of spacer component.

FIGS. 26 and 27 represent side sections in the planes J–J and K–K respectively of FIG. 25.

FIG. 28 represents in perspective a rail component in accordance with the invention.

FIG. 29 represents a side section in the plane N–N of FIG. 28.

FIG. 30 represents in front view a hanger unit in accordance with the invention.

In carrying the invention into effect in one convenient manner, as shown in FIGS. 1—17 of the aforesaid drawings, a construction kit for toys or models may comprise different forms of flat-sheet components such as shown in FIGS. 1—5. A complete kit may comprise a plurality of each component up to any desired number. Each of the components shown in FIGS. 1—3 comprises a flat rectangular base with rounded corners and upstanding projections. The components are of modular construction, i.e., dimensioned in a selected unit or multiples of the selected unit. In FIG. 1 the base 1 is of unit width and twice unit length: in FIG. 2 the base 2 is of unit width and four-unit length: and in FIG. 3 the base 3 is of two-unit width and four-unit length. Other components of single, or selected multiple-unit dimensions may be adopted.

Each base 1, 2 or 3 has a plurality of upstanding projections 4. Each projection is on the form of a shallow square upstanding plinth or platform, with rounded corners, and each side is less than one unit long, say three-quarters of a unit. These projections are located in equispaced positions on the respective bases so that each projection is located centrally on an area of the base which is one unit square.

The component shown in FIG. 4 (which may be referred to as a rail component) comprises a flat rectangular base 5 measuring one unit by two units, having equispaced apertures 6 of size and shape to receive a projection 4 as a friction fit. At one side of the base 5 is provided a grooved or channeled rail or strip 7 projecting beyond each end of the base.

The component shown in FIG. 5 comprises a square 8 with rounded corners, dimensioned to fit into a recess or aperture such as 6, and is made of spongy or resilient material, e.g., foamed plastics material.

A construction kit in accordance with the invention may also comprise any desired number of each of one or more cubic components of which two different forms are shown in FIGS. 6—8 and FIGS. 9—11 respectively. Each component comprises a hollow cube 9 at one face 10, and of unit length along each side. The component shown in FIGS. 6—8 has on each of any two outer faces an upstanding projection substantially identical with the projection 4 shown in FIGS. 1—3. In the component illustrated in FIG. 6 these two projections are on two neighboring faces each adjacent to the open mouth 10 of the cube. In the component shown in FIGS. 9—11 only one face of the cube—(in the form illustrated a face adjacent to the open mouth of the cube)—is formed with a projection 12 similar to a projection 11. The remaining faces of the cubes 9 are formed with a recess 13 of dimensions to receive a projection 4 or 11 or 12 as a friction fit, located centrally on the cube face. The projection 11, 12 and the recesses 13 allow components to be fitted together face to face as indicated in dotted lines in FIG. 7.

A spacer component 14 (of which any desired number may be included in a kit in accordance with the invention) is illustrated in FIGS. 12—14. This is also of cubic form but dimensioned to fit inside a cube 9, and of about half the depth of the inner space of a cube 9. Beneath its base the component 14 has a square projection 15 (similar to projection 11, 12 of the cubes 9) suitable to fit into a recess 13 and the open mouth 16 of the component 14 is dimensioned to receive a projection 15 as a sliding or friction fit.

Examples of toys or models which may be built from the above-described components are illustrated in FIGS. 15 and 16. As seen from FIG. 15 a representation of a chair can be formed by inserting one of the projections 4 of a flat sheet

component 1 into the open mouth of a cube 9 which has a projection 12 externally on the wall opposite to the open mouth. A "cushion" component 8 is inserted in recess 13 on the top face of the cube to form a seat behind which the component 1 rises as the chair back.

A representation of a wardrobe, e.g., for a doll's house, is shown in FIG. 16. A component 2 (FIG. 2) forms a base, and on the upstanding projections 4 at each end is mounted a column of four cubic components 6, interengaged by their respective projections and recesses, with all the open mouths of the cubes in the front of the column. Another component 2 forms the "roof" of the model, being invented so that its end projections can be engaged in the recesses of the uppermost cubes 9 of the two columns. The apertures 6 of a component 5 (FIG. 4) are fitted on to the middle projections 4 of the base 2, with the rail or bar 7 in front of the model. It will be noted that the rail 7 is connected to the flat sheet 5 to stand somewhat below the plane of the sheet, so that when the unit 5 is fitted to the base the rail is aligned with the front edge of the base sheet 2. Another component 5, inverted, is fitted to the middle projections on the undersurface of the "roof," so that a downturned grooved rail 7 is also provided at the front edge of the "roof." Two components 3 (FIG. 3) are slidably inserted into the upper and lower rails 7 from an end or each end, with their plane surfaces outside, and when so fitted these form slidable doors for the model wardrobe.

In the wardrobe model spacer components 14 (FIG. 12) may be fitted as drawers. For this purpose the sidewalls of the components 14 may be formed or fitted with ribs 17 and one or both pairs of opposite internal or external walls of one or more cubic components 9 may be provided with slots 19 to be slidably engaged by the ribs 18 when the components 14 are inserted as drawers in the cubes 9. Since the spacer components 14 are half the depth of a cube, two such units can be inserted one above the other, as drawers, in each cube, and slots 19 may be provided in suitable positions accordingly. At the same level as the side ribs 19 a component 14 may at its front and rear surfaces be formed with rather thicker transverse bars 20, of which the rear bar serves as a stop against the inner cube wall to locate the "drawer" therein, while the outer bar serves as a handle for the drawer.

The spacer components 14 may be used for other purposes. For example by placing such a component on top of each of two-spaced cubes 9, and fitting on top a component 2 or 3 inverted, there is formed a table located at a suitable height above the seat level of a chair such as shown in FIG. 15.

In FIGS. 18—29 of the drawings herewith are illustrated modified forms of components in accordance with the invention, which may be included in a construction kit.

FIGS. 18 and 19 represent a flat-sheet component formed with a base 1 substantially identical with that shown in FIG. 1, but in place of the upstanding plinth or platform projections 4 shown in FIGS. 1 and 4, there are provided upwardly projecting ribs 23 of external shape and dimensions similar to those of projections 4. It will be noted from FIG. 19 that the base 1 may be recessed on the underside, as at 24.

In a modified form of this component, shown in FIGS. 20 and 21, the base 1 is widened to have a strip zone extending from one side, in which zone are formed parallel slots 25.

FIGS. 22, 23 and 24 illustrate a modified form of the cubic component shown in FIGS. 6—8. Here also the plinth 11 of FIGS. 6—8 is replaced by an upstanding square-shaped rib 26. Save that the corners of the block are rounded or radiussed, as at 27, the component shown in FIGS. 22—24 is otherwise substantially identical with that described above with reference to FIGS. 6—8.

In FIGS. 25—27 is shown a modified form of the spacer and drawer component shown in FIGS. 12—14. The shallow boxlike portion remains substantially unaltered, but the solid projection 15 underneath its base is replaced by a rib 28 of like external shape and dimensions, and on one side the projecting rib 17 is widened, and grooved underneath, as at 29, FIG. 27 or solid and ungrooved. When this component is used as a slidable drawer in a cubic component (FIG. 14) this extended grooved rib projects beyond the cubic component as a handle or grip for the drawer.

A "rail" component shown in FIGS. 28 and 29 comprises a flat square sheet 30, with radiussed corners, recessed at 31, on one side and having on the other side edge flanges 32 forming a dished undersurface on the sheet. This surface may have grooves 33 at its sides, adjacent to the flanges 32. From midpoint of opposite sides of this sheet integral arms 34 project at right angles to the sheet, and terminate in T-shaped ends 35.

A "hanger" component in accordance with the invention shown in FIG. 30 comprises a rigid strip 36 longitudinally slotted at 37, and hooked at 38 at each end, with a C-shaped supporting limb 39 attached to it to stand up above the midpoint at one side of the strip.

The components described above may be formed of any suitable material, e.g., wood such as balsa wood, or moulded plastics, and in any desired color or colors. To hold components together reliance may be placed upon the friction and/or resilience of the interfitting projections and recesses, but if desired (and especially for moulded components) the edges of the projections and recesses may be shaped to provide some degree of interlocking, e.g., by providing a convex cylindrical edge 22 for a projection 4, and a concave cylindrical edge in a recess 13, as shown in FIG. 17.

From the above description it will be seen that the invention provides a useful kit of components for toy or model building, e.g., for doll's furniture, but it should be understood that the invention is not limited solely to the details of the form described above which may be modified, in order to meet various conditions and requirements encountered without departing from the scope of the invention.

I claim:

1. A construction kit for toys or models comprising a plurality of like hollow cubic components, each open at one, and only one, face, while externally on at least one other face is provided a projection of less height than the thickness of the component wall, and on each of the remaining faces is provided a shallow recess of depth substantially equal to the height of said projection, said projection and recesses being of common shape and size, in order that a projection of one component may make frictional engagement with any recess of another like component.

2. A construction kit according to claim 1 wherein one face of said component is provided with a projection, and each of the remaining faces with a recess.

3. A construction kit according to claim 1 wherein two faces of a component are provided with said projections and each of the remaining three faces with a recess.

4. A construction kit according to claim 1 wherein two adjacent faces are provided with said projections.

5. A construction kit according to claim 1 wherein each of said projections comprises a substantially square plinth upstanding from a component face.

6. A construction kit according to claim 1 wherein the edges of said projections and said recesses are shaped for interlocking.

7. A construction kit according to claim 1 wherein each of said projections comprises a substantially square rib upstanding from a component face.

8. A construction kit according to claim 1 comprising a plurality of additional components each comprising a half-cube shaped and dimensioned for sliding fit into any one of said cubic components.

9. A construction kit according to claim 1 wherein each cubic component is provided internally with slots extending substantially perpendicular to the plane of the open face of the component, said kit comprising a plurality of additional components each of half-cubic shape, dimensioned for sliding fit into a cubic component, and having at two opposite sides projecting ribs adapted to engage slidably in said internal slots of said cubic components.

10. A construction kit according to claim 1 comprising an additic nal component in the form of a substantially flat sheet provided with upstanding projections on one face each shaped and dimensioned for frictional engagement in a recess of a cubic component.

11. A construction kit according to claim 1 comprising an additional component in the form of a substantially flat rectangular sheet provided with recesses each shaped and dimensioned for frictional engagement with a projection of a cubic member.

12. A construction kit according to claim 1 comprising an additional component in the form of a substantially flat rectangular sheet provided with recesses each shaped and dimensioned for frictional engagement with a projection of a cubic member, and slotted guide means integral with, and extending along one side of, said sheet.

13. A construction kit according to claim 1 comprising an additional component in the form of a substantially square flat sheet formed on its upper face with a recess shaped and dimensioned for frictional engagement with a projection of a cubic component, and having rigid integral legs on opposite edges of said sheet, downwards from the undersurface of said sheet and substantially perpendicular to the plane of the sheet.

14. A construction kit according to claim 1 wherein the components are moulded from plastics material having some degree of resilience to assist releasable functional interlocking of components.