United States Patent

Geymeier

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[54] **BLOCK SET**

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[52] **U.S. Cl.** **46/25**

[51] **Int. Cl.** **A63h 33/08**

[58] **Field of Search** 46/16, 17, 18, 25; 211/42

[56] **References Cited**

UNITED STATES PATENTS

3,318,453 5/1967 Cavanagh 211/42

3,449,857 6/1969 Christopher 46/16

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[57] **ABSTRACT**

A block set having a plurality of individual units, each unit consisting of two identically proportioned U-shaped elements joined together at one leg of each element so that the exterior dimensions of the unit are in the form of a cube.

5 Claims, 4 Drawing Figures

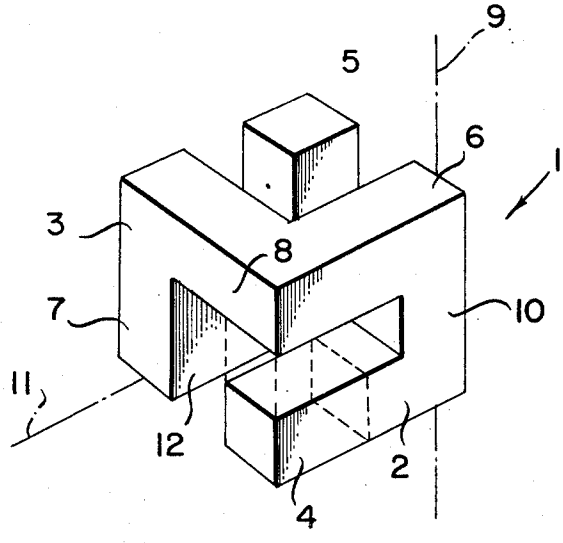


Fig. 1

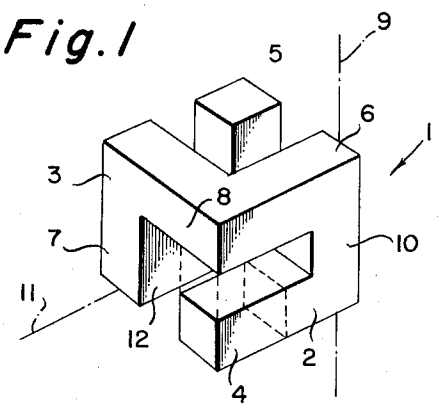
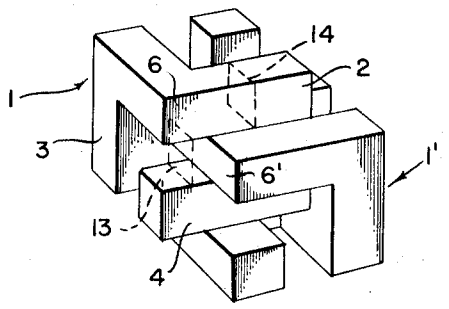


Fig. 2



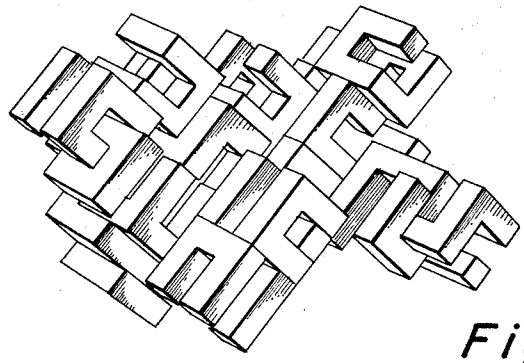


Fig. 3

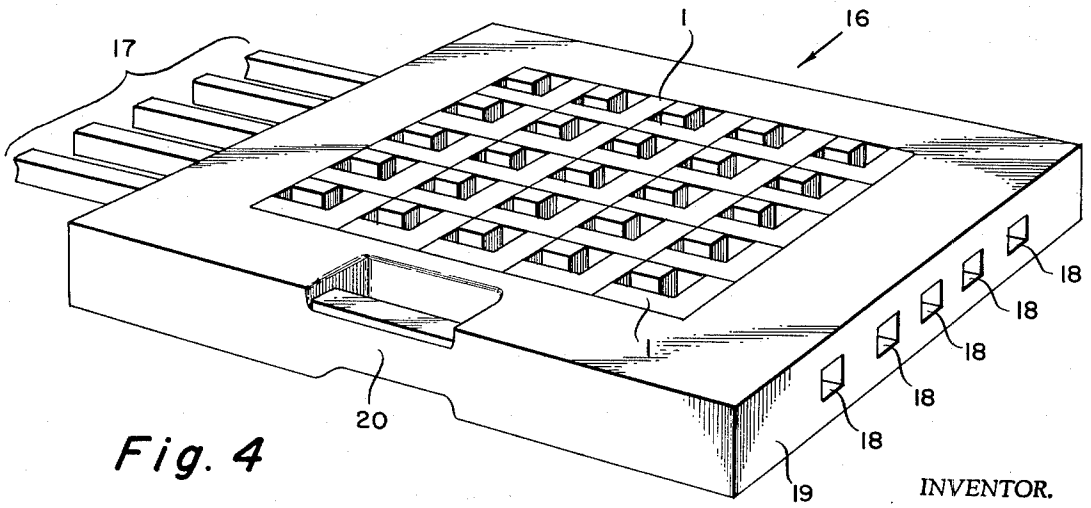


Fig. 4

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BLOCK SET

The present invention pertains to a novel structure of modular building units of the block type used to construct a variety of architectural models and forms. Such building units are provided in sets containing a plurality of individual units and are used for both amusement and educational purposes.

More specifically, this invention is characterized by the provision of building units having a structure that permits an individual to securely interfit the units of the set to form a great variety of structural designs.

Some modular block building sets of the prior art have utilized connecting elements such as pins or clips to hold the blocks in a desired relationship. Such elements detract from the overall appearance of the finished structure and are frequently misplaced or damaged during use. This is especially true with children.

Other prior art building block sets provide in the structure of the block itself an arrangement of projections and cooperating grooves or channels whereby one block unit may be attached to an adjacent unit by inserting the projections of one block into the grooves of another. In the construction of such blocks, it has been found that the usefulness of the projections is short-lived as they either become worn so as to preclude good registration with the grooves or they are easily broken off of the block because of their exposed relation to the block's surface.

Still other block sets have made use of special surface coverings which are mutually cohesive when pressed together, while others have resorted to the use of magnets embedded in or below the surface of the blocks. All of these structures have the disadvantage, however, of requiring the dismantling of an assembled form should it become necessary to move it about, particularly with regard to structural forms of large dimensions.

An embodiment of the present invention obviates the difficulties described above by providing a set of block units which include no external projections or grooves for receiving the projections, but are so structured as to provide an unusually large number of interconnections which are securely formed without the use of discrete securing devices so that an assembled design may be more easily transported as a unit from one location to another.

The invention comprises the provision of a plurality of discrete units constituting a set. All of the units are of identical configuration which is advantageous from the point of view of manufacturing expense.

An individual unit comprises in completed form a substantially cubical structure in terms of the volume of space occupied by the unit's exterior dimensions. The basic element of an individual unit, from a geometrical standpoint, can be considered as a rectangular block of square cross-section having smooth, planar surfaces. It is, of course, solely for the purpose of descriptive clarity that reference is made to a basic rectangular element, as will be seen presently.

Each unit consists of six of the basic rectangular block elements all of which have identical dimensions. Two of the sides of a unit are spaced from each other and lie in parallel planes and each is formed by joining together three of the rectangular blocks in the shape of the letter U. The two sides are oriented relative to each other such that the longitudinal axis of the rectangular block forming the closed end of the U-shaped pattern of one side extends transversely of the longitudinal axis of the corresponding block in the U-shaped pattern of the other side in spaced parallel planes. These two sides are maintained in this relation by a connecting block of identical cross-sectional area as the rectangular elements and is attached to the end of one leg of one side and to the opposite leg of the other side. The opposing parallel surfaces of the two U-shaped patterns are separated by their connecting element a distance equal to the width of the rectangular block elements. It is also necessary that the space between the two legs of each of the U-shaped patterns be of the same volume as one of the basic rectangular block elements.

From the foregoing, it will be seen that when a section of one unit is positioned between sections of another unit, angular rotation of one unit with respect to the other is prevented and secure interlocking of the units can be obtained by a readily apparent disposition of the units.

Accordingly, one of the principal objects of this invention is to provide a set of building units having a simple and attractive appearance and capable of economical construction.

Another object of this invention is to provide a building block structure such that the individual block units can be easily and securely interfitted together in the formation of a great variety of structural models.

A further object is to provide a block structure that will permit movement of an assembled form without requiring dismantling of the form.

Another object of this invention is to provide a set of building block units which can be compactly stored and transported.

Additional objects and advantages of the present invention will be apparent or demonstrated in the following description in which reference is directed to the accompanying drawings.

In the drawings, like numerals refer to like elements designated in this specification wherein:

FIG. **1** is a perspective view of an individual block unit of this invention;

FIG. **2** is a perspective view showing two units interfitted;

FIG. **3** is a perspective view of a plurality of units in one form of assembled relation; and

FIG. **4** is a perspective view of a container carrying case for a set of units of this invention.

With reference to FIG. **1** of the drawings, there is shown an embodiment of an individual unit **1** of this invention which consists of a first U-shaped portion **2** and an identically dimensioned second U-shaped portion **3**. Each of these portions **2** and **3** have free leg members **4** and **5** and connected leg members **6** and **7**, joined by connecting or bridging element **8** to maintain a fairly precise spacial relation and particular orientation between the U-shaped portions **2** and **3**.

The U-shaped portions **2** and **3** are oriented with respect to each other such that the longitudinal axis **9** of the closed end section **10** of U-shaped portion **2** extends transversely with respect to the longitudinal axis **11** of the closed end section **12** of U-shaped portion **3** in spaced, parallel planes. All of the sections of the unit **1** have the same square cross-sectional area and are so formed that the surfaces of the unit **1** are smooth.

Referring to FIG. **2**, there is shown two units **1** and **1'** in interlocking relation. It is necessary for a secure interfitting that the spaces between the two U-shaped portions **2** and **3** of each unit as well as the space between the leg members **4** and **6** of each U-shaped portion be gauged precisely enough to receive the section of another unit **1'** of the set without allowing the interfitted sections to wobble or rotate with respect to each other. This is accomplished by forming each U-shaped portion of a unit **1** with a cross-sectional area **13** between the leg members **4** and **6** equal to the cross sectional area **14** of the leg members. Similarly, the area **15** between the U-shaped portions **2** and **3** is the same as cross-sectional area **14**.

It is to be noted in FIG. **2** that rotation of the U-shaped portion **2** about leg member **6'** is prevented because of the fact that the flat surfaces are in contact in more than one plane.

FIG. **3** shows an arrangement of a plurality of units of this invention in an angled orientation with respect to the horizontal. By properly interlocking the units of this invention in a manner shown in FIG. **2**, such assemblages can easily be moved about without disturbing the assembled form.

In FIG. **4** there is shown a carrying case **16** which is of simple construction and utilizes the structure of the units **1** to achieve a compact arrangement. Suitably dimensioned rods **17** are provided which pass through apertures **18** located in the walls **19** of the case **16**. The rods **17** are disposed between the leg members of each U-shaped portion **2** and **3** of the units to retain the units in the case **16**. A hand grip **20** is provided along one edge of the case.

The materials used in forming the building units of this invention will naturally depend on the uses to which the set is to be put. When provided as an amusement toy for children, for example, the units may be formed entirely of plastic. Should one desire to use the set for the display of architectural or ornamental models, forming the units entirely in one piece of aluminum will present an attractive and durable arrangement.

From the above, it will be seen that the present invention provides a new and unusual block set so formed as to be capable of a great number of striking arrangements due to the unique manner in which the individual units are interfitted together. It should be understood that the structure set forth is intended as a preferred illustration which is limited only by the appended claims.

What is claimed is:

1. In a set of building units, a plurality of interfitting units, each of said units comprising

a first U-shaped member having first and second legs and a base all in a first common plane,

a second U-shaped member having the same dimensions as the first U-shaped member and having first and second legs and a base in a second common plane parallel to and spaced from said first common plane,

a connecting element extending in a direction transverse to said common planes and between the free ends of the first leg of said first U-shaped member and the second leg of said second U-shaped member, the longitudinal axis of said base of said first U-shaped member extending transversely to the longitudinal axis of the base of said second U-shaped member in said respective parallel common planes, and the base of said first U-shaped member and the first leg of said second U-shaped member lying in a plane transverse to said parallel common planes.

2. A set of building units as in claim 1 wherein the legs of each U-shaped member are spaced from each other a distance equal to the cross-sectional dimension of said legs whereby the U-shaped portion of one unit is positionable between the legs of another unit.

3. A set of building units as in claim 1 wherein the legs of said first and second U-shaped members are square in cross-section.

4. A set of building units as in claim 3 wherein the connecting element of each unit is square in cross-section and equal to the cross-sectional dimension of said legs.

5. A set of building units as in claim 1 wherein the exterior dimensions of each of said units form a cube.

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