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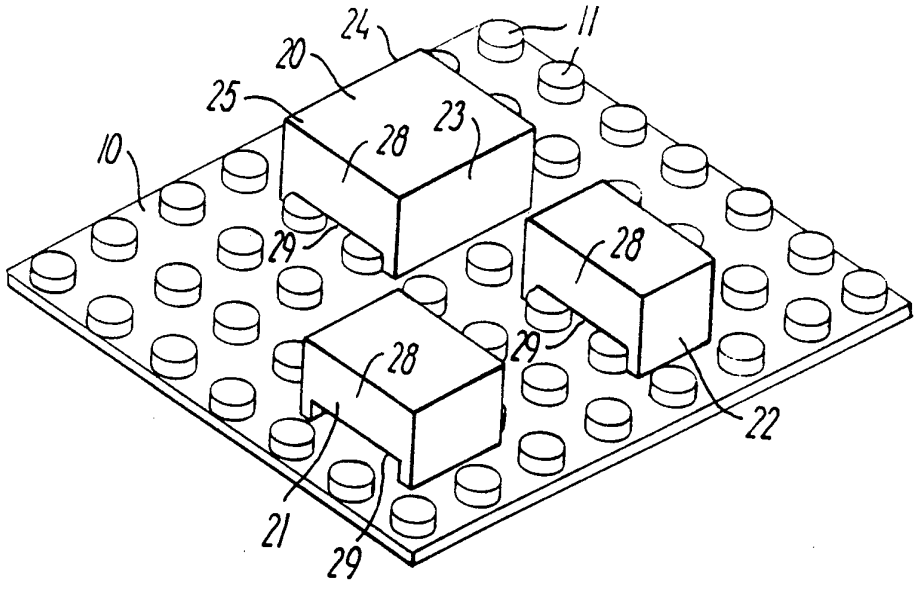
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(54) Title: A BUILDING SET WITH INTERCONNECTIBLE ELEMENTS



(57) Abstract

A building set with elements which are interconnectible by means of complementary, primary and secondary coupling means in a one- or two-dimensional periodical modular pattern, and which can be interconnected in at least one direction in fractions of modular steps, because the walls of the building elements perpendicular to said direction have recesses to receive projecting coupling means on other elements.

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A building set with interconnectible elements

The invention concerns a building set with elements which are interconnectible by means of projecting, primary coupling means arranged in a one- or two-dimensional, periodical modular pattern and complementary, secondary coupling means, there being box-shaped elements whose secondary coupling means in at least one direction have a modular distance which is a fraction 1/n, n being an integer, of the modular distance of the primary coupling means.

Such building sets are known as toys, but are also used in planning boards and the building of text signs, where box-shaped elements with e.g. text or symbols are built on an elongate building plate by means of the coupling means.

Such building sets are known where all the lower edges of the side walls of the box-shaped elements extend contiguously. Such building sets are of the known type where two elements can be built on top of each other so that the primary coupling means of the interconnected elements are located above and in extension of each other. Furthermore, in these known building sets the elements can be interconnected to a limited extent in half modular steps in said direction, which means that the primary coupling means of the interconnected elements are not located above each other, but halfway between each other in said direction. The limitation is that in the assembly in half modular steps the walls of the top element, which extend perpendicularly to said direction, will have to be positioned precisely at the location where the primary coupling means of the lower building element are present. Such interconnection is therefore possible only if the walls of the upper building element perpendicular to said direction are present outside the lower building element. This means that

it is not possible to build a smaller building element on top of a larger one in half modular steps.

The object of the invention is to provide a building set where this is possible.

This object is achieved by a building set as defined in the characterizing portion of the claim. An element from the building set can hereby be built on top of another element from the building set, not only in whole modular steps, but also in fractions of a modular step in a specific direction. This enables interconnection in a larger number of mutual positions resulting in greater flexibility.

The invention will be explained more fully below with reference to the drawing, which shows a preferred embodiment, and in which

fig. 1 is a perspective view of a building set according to the invention,

fig. 2 is a horizontal section through a building set according to the invention,

fig. 3 is a side view of a building set according to the invention, and

fig. 4 shows an element from a building set according to the invention.

Fig. 1 shows a building plate 10 in the form of a plate-shaped element, which has cylindrical projections 11 arranged equidistantly in rows perpendicular to each other to provide a two-dimensional periodical modular pattern. A module is defined as the periodical distance between adja-

cent projections 11 in the direction of each of the rows. The cylindrical projections 11 constitute primary coupling means, and the box-shaped building elements 20, 21 and 22 having secondary coupling means complementary to the primary coupling means 11 are arranged on the building plate 10 such that the secondary coupling means of the building elements, which will be described below, cooperate with the primary coupling means 11.

Fig. 4 shows the building element 20 inverted, thereby making its interior visible. The building element 20 has two parallel walls 23, 24 which extend downwardly from the upper side 25 of the building element. Each of the inner sides of the walls 23, 24 has four vertically extending ribs 26 of rounded shape.

Fig. 2 shows how the building element 20, which is shown here in horizontal section, is arranged on the building plate 10. The parallel walls 23, 24 are arranged so as to span and be in contact with opposed sides of their respective rows of primary coupling means 11 on the building plate 10, and each of the ribs on the inner sides of the walls 23, 24 is in contact precisely with a cylindrical projection 11. In fig. 1 the building plate 20 is arranged on the building plate 10 such that the walls 23, 24 are in contact with the building plate 10.

The building plate 20 has two other, mutually parallel walls 27, 28 which are perpendicular to the walls 23, 24. The walls 27, 28 have a smaller heigth than the walls 23, 24 and do not extend as far down from the upper side 25 of the element as the walls 23 and 24. An opening or recess 29 is defined hereby. It will be seen in fig. 1 that the building element 20 is arranged such that two cylindrical projections 11 are present in the recess 29.

Fig. 2 shows two identical building elements 22a and 22b on the building plate 10. These building elements have half the width of the building element 20 and thus have only two ribs 26 on the inner sides of the vertical walls. In the building element 22a both ribs 26 on each of the vertical walls are in contact with one and the same cylindrical projection 11, such a cylindrical projection being arranged between the two ribs 26 on the same wall.

The building element 22b is arranged on the building plate 10 such that there is no cylindrical projection 11 on the building plate 10 between two ribs 26. The element 22b is arranged on the building plate 10 such that all four cylindrical projections 11 with which the element 22b are in contact are present in respective recesses 29 in the walls 28.

It will be seen that the ribs 26 are arranged in half modular steps on the inner sides of the respective walls, and owing to the recesses 29 it is possible to arrange the building elements in half modular steps on the building plate 10.

Each of the building elements 22, 22a and 22b has a width of precisely one module, and the element 21 has a width of one and a half modules, while the element 20 has a width of two modules. Each of these elements can be arranged on the building plate 10 in half modular steps defined by the ribs 26, which serve as secondary coupling means together with the respective walls.

Fig. 3 shows a building element 20 on the building plate 10, and it will be seen how the recess 29 can precisely accommodate two primary coupling means 11 on the building plate 11. The figure moreover shows the ribs 26 on respective ones of the walls 23, 24.

Each of the box-shaped building elements may be provided with primary coupling means on the upper side, and two such coupling means 11' are shown in dotted line in fig. 3.

The ribs 26 are shown here with a periodical distance which is half a module; but this distance can also be selected to be 1/3, 1/4, etc.

The invention is used as a toy building set, but may also be used for planning boards where the building plate 10 is placed on a wall, and the building elements 20, 21 and 22 may then have different colours, or their plane surfaces may be provided with symbols or letters so that texts or signs may be built on the building plate 10.

The invention then makes it possible to select building elements of a width which is adapted to the width of the individual letters to a greater degree than before, where it was only possible to select building elements of widths in whole modular steps. With the invention it is now possible to select building elements of widths in half modular steps. This enables greater flexibility, better utilization of space as well as the building of texts of a more harmoneous appearance.

Patent Claim:

A building set with box-shaped building elements (20, 22, 22a, 22b) with hollow bottoms, said building elements being interconnectible by means of projecting, primary coupling studs (11, 11') arranged in a one- or two-dimensional periodical modular pattern on the upper sides of the elements, and complementary, secondary coupling means in the bottom and comprising projecting ribs (26) on one of the walls of the building element or on at least two parallel walls (23, 24), said ribs (26) being arranged periodically and at a modular distance which is a fraction 1/n, n being an integer greater than 1, of the modular distance of the primary coupling means (11, 11'), characterized in that the walls (27, 28) of the elements, which are perpendicular to the walls (23, 24) having ribs (26), have recesses in the edges (29) toward the bottom, said recesses having a heigth and a width which correspond at least to the heigth and width, respectively, of the primary coupling studs (11, 11').

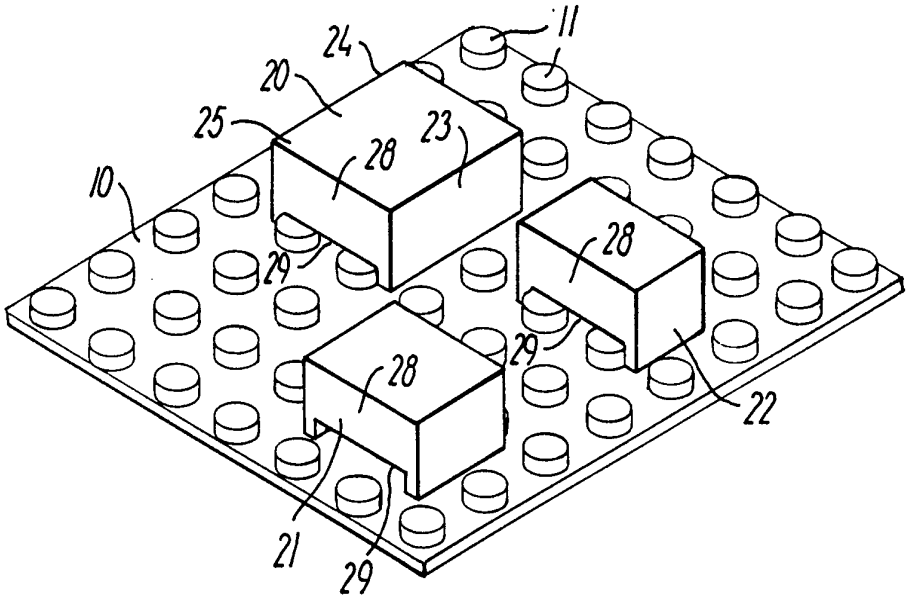


FIG. 1

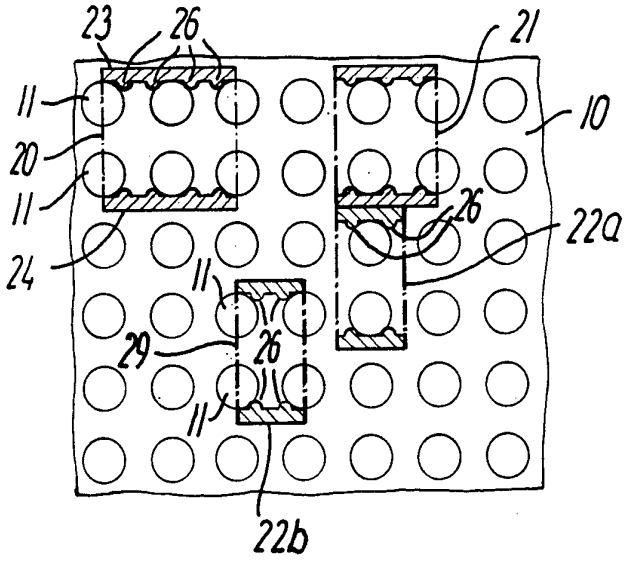


FIG. 2

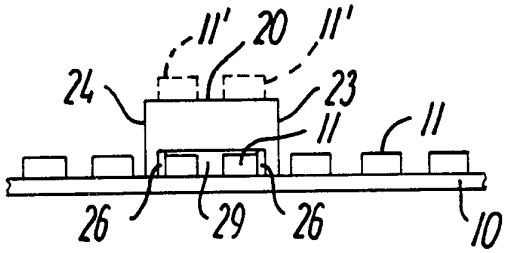


FIG. 3

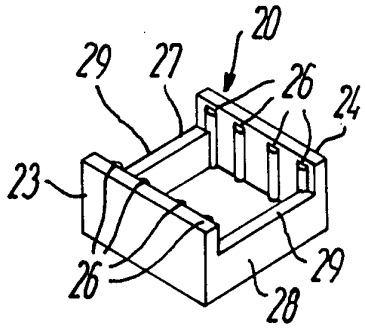


FIG. 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/DK 93/00271

A. CLASSIFICATION OF SUBJECT MATTER

IPC5: A63H 33/08
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC5: A63H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	NO, C, 96094 (GODTFRED KIRK CHRISTIANSEN), 16 May 1960 (16.05.60), see figures 9-12 and page 5 left-hand column, last 7 lines, right-hand column lines 1-26	1
X	GB, A, 2136700 (HORNBY HOBBIES LIMITED), 26 Sept 1984 (26.09.84), see abstract and figure 2, detail b;	1
A	DK, B, 140821 (INTERLEGO A/S), 26 November 1979 (26.11.79), see claim 1 and detail 4 of the figure	1

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE, B, 1140500 (KURT SCHIFFLER), 29 November 1962 (29.11.62), see column 2, lines 25-28; figure 3	1

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INTERNATIONAL SEARCH REPORT

Information on patent family members

01/10/93

International application No.
PCT/DK 93/00271

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
NO-C- 96094	16/05/60	NONE	
GB-A- 2136700	26/09/84	NONE	
DK-B- 140821	26/11/79	NONE	
DE-B- 1140500	29/11/62	NONE	