

PATENT SPECIFICATION

(11)

1 585 436

1 585 436

- (21) Application No. 14882/78 (22) Filed 15 April 1978 (19)
(44) Complete Specification published 4 March 1981
(51) INT. CL.³ A63H 33/08 33/10,
(52) Index at acceptance
A6S 6C1B 6D 6E2



(54) IMPROVEMENTS IN OR RELATING TO BUILDING BLOCKS

(71) I, LIN WEN-PIN, a Citizen of Taiwan, Republic of China, of 30, Chien-Yung Street, Taichung City, Taiwan, Republic of China, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to building blocks.

More particularly, the invention relates to a set of building blocks which may be easily interconnected in forming various assembled toys.

An important object of the present invention is to provide a set of building blocks which can be used by children in assembling imaginatively any toy resembling one of a variety of items or objects, and enables the assembled toy to be easily changed into another form of toy without disassembling all of the assembled building blocks from each other.

Another object of the present invention is to provide a set of building blocks which can be used in assembling a toy having a smooth figure.

Preferably, the set of building blocks can make a "pop" sound when they are disassembled or disconnected from each other so that it may increase the interest of children.

According to the invention, a set of building blocks comprises a cubic block having a hollow square connecting face and five plane square connecting faces; a right-angle-triangle block having a hollow square connecting face, a plane square connecting face, and an inclined plane rectangular face; a quadrant block having a hollow square connecting face, a plane square connecting face, and an arcuate face; a coved block having a hollow square connecting face, a plane square face and a coved face; and a plurality of cylindrical connectors; each said square connecting faces of said blocks having the same size in length of the edges thereof, each said hollow square connecting faces of said blocks having a cylindrical plug located centrally thereof, and each said plane square connecting faces of said blocks, except said coved block,

having a mating socket located centrally thereof for receiving the cylindrical plug of another block, or one of the cylindrical connectors, whereby said blocks can be rotated relatively to each other when they are assembled.

Also, according to this invention, a set of building blocks comprises a cubic block having a cylindrical plug provided on a face and each of the remaining faces being provided with a socket to accept the cylindrical plug of another block; a right-angle-triangle block having two equal-sized square faces, one of the square faces being provided with a cylindrical plug and the other one being provided with a socket to accept the cylindrical plug of another block, and an inclined rectangular plane face; a quadrant block having two equal-sized square faces, one of the square faces being provided with a cylindrical plug and the other one being provided with a socket to accept the cylindrical plug of another block, and an arcuate face; and a coved block having two equal-sized square faces, one of the square faces being provided with a cylindrical plug to fit into a socket of another block, and a coved face.

In the accompanying drawings, which show, by way of example, a set of building blocks constructed in accordance with the invention:—

Figure 1 is a perspective view of a cubic block constructed in accordance with the present invention;

Figure 2 is also a perspective view of the cubic block shown in Figure 1 but in an opposite position showing a vacant space formed therein;

Figure 3 is a transverse sectional view, taken along the line I—I, Figure 1, of the cubic block shown in Figure 1;

Figure 4 is a perspective view of a right-angle-triangle block constructed in accordance with the present invention;

Figure 5 is a transverse sectional view, taken along the line II—II, Figure 4, of the right-angle-triangle block shown in Figure 4;

Figure 6 is a perspective view of a coved block constructed in accordance with the

present invention;

Figure 7 is a transverse sectional view, taken along the line III—III, Figure 6, of the coved block shown in Figure 6;

5 Figure 8 is a perspective view of a quadrant block constructed in accordance with the present invention;

Figure 9 is a transverse sectional view, taken along the line IV—IV, Figure 8, of the quadrant block shown in Figure 8;

10 Figure 10 is a perspective view of a cylindrical connector constructed in accordance with the present invention;

Figure 11 is a transverse sectional view, taken along the line V—V, Figure 10, of the cylindrical connector shown in Figure 10;

15 Figure 12 is a perspective view of an assembled object formed by four quadrant blocks constructed in accordance with the present invention;

20 Figure 13 is a perspective view of another assembled object formed by the same quadrant blocks shown in Figure 12 to illustrate that if the child wants to change the assembled object into another form, he only needs to rotate separately the blocks without disassembling the assembled blocks from each other; and

30 Figure 14 is a perspective view of a further assembled object formed by the same quadrant blocks shown in Figure 12 to illustrate that the assembling of blocks constructed in accordance with the present invention, can be of great versatility.

35 The building blocks are preferably made of acrylonitrile butadiene styrene or other plastics.

Referring to Figures 1 to 3 of the drawings, there is shown therein a cubic block 1 constructed in accordance with the present invention. The cubic block 1 is provided with a hollow square connecting face 20 having a cylindrical plug 2 thereon and five plane square connecting faces 21 each having a mating socket 3 therein to accept the cylindrical plug 2 of another block, therefore, the cubic block 1 becomes a basic assembly member for interconnecting in three dimensions with other blocks. The cylindrical plug 2 has a central hollow portion 6 extending into the cubic block 1. As shown in Figure 2, there are four ribs 4 connecting the upper inner sides, of walls having the plane faces 21 adjacent to the hollow square connecting face 20, with the lower outer surface of the cylindrical plug 2 so as to increase the strength of the plane faces 21 of said cubic block 1. Furthermore, said cubic block 1 may be provided with several small recesses 5 on the plane face opposite to the hollow square connecting face 20 for preventing irregular shrinkage of said cubic block in an injection moulding operation, in other words, for obtaining a uniform surface of said cubic block 1.

Referring to Figures 4, 5, 8 and 9, which show perspective and transverse sectional views of a right-angle-triangle block 7 and a quadrant block 9 constructed in accordance with the present invention, the right-angle-triangle block 7 and the quadrant block 9 are each provided with a hollow square connecting face 20 having a cylindrical plug 2, and a plane square connecting face 21 having a mating socket 3 to accept a cylindrical plug 2 of another block. The lengths of the edges of the square connecting faces 20, 21 of said blocks are all the same, in other words, both the hollow square connecting faces 20 and the plane square connecting faces 21 of said right-angle-triangle block 7 and said quadrant block 9 are equal to the faces 20, 21 of said cubic block 1 in size. In a similar way, as hereinbefore described, the plane square connecting face 21 of each of the blocks 7, 9 may also be provided with a small recess 5 extending thereinto; the cylindrical plugs 2 of the blocks 7, 9 are also provided with a central hollow portion 6 extending into the inner portion thereof; and there are four ribs 4 connecting the upper inner side, of walls having the faces adjacent to the hollow square connecting face 20, with the outer surface of the cylindrical plug 2.

Turning to Figures 6 and 7, there is shown therein a coved block 8 constructed in accordance with the present invention. The coved block 8 is provided with a hollow square connecting face 20 having a cylindrical plug 2 located centrally thereof, a plane square face 12, and a coved face 13. The hollow square connecting face 20 and the plane square face 12 of said coved block 8 are equal to that of said cubic, right-angle-triangle and quadrant blocks in size. In a similar way, as hereinbefore described, the cylindrical plug 2 of said coved block 8 has a central hollow portion 6 extending into the inner portion thereof, and there are three ribs 4 respectively connecting to the outer surface of the cylindrical plug 2 upper inner sides of the wall having the face 12 and of two walls at right angles to said wall having the face 12.

Since the size of the square connecting faces 20, 21 of said blocks 1, 7, 8 and 9 are all the same, the cylindrical plugs 2 of the said blocks and the mating sockets 3 of the blocks 1, 7 and 9 are located centrally on the respective hollow square and plane square connecting faces thereof, and the cylindrical plugs and the sockets are circular in cross-section, whereby, as shown in Figures 12, 13 and 14, the blocks can be rotated relatively to each other, when they are assembled, in forming any imaginative toy resembling one of a variety of items or objects.

The outer diameter of a cylindrical connector 10 is, as shown in Figures 10 and 11, equal to that of the cylindrical plugs 2 of said blocks, and the length of the cylindrical

connector 10 is generally twice the depth of the mating sockets of the blocks 1, 7 and 9. Therefore, two blocks may also be assembled together by a cylindrical connector 10 instead of a cylindrical plug 2 thereof.

Further, since a part of air in a socket 3 of a block will be compressed into the central hollow portion 6 of the cylindrical plug 2 of another block when they are assembled together by engaging said plug into said socket, the more the space in the central hollow portion 6, the bigger a "pop" sound will occur when the blocks are disassembled from each other.

As hereinbefore indicated, the blocks may be connected with each other by forcing the cylindrical plug of one into a mating socket of another, or forcing a cylindrical connector into mating sockets of two blocks.

It is of course, within the scope of the invention to make the blocks of the same or different colours to further excite children's interest in building objects of various kinds.

WHAT I CLAIM IS:—

1. A set of building blocks comprising a cubic block having a hollow square connecting face and five plane square connecting faces; a right-angle-triangle block having a hollow square connecting face, a plane square connecting face, and an inclined plane rectangular face; a quadrant block having a hollow square connecting face, a plane square connecting face, and an arcuate face; a coved block having a hollow square connecting face, a plane square face and a coved face; and a plurality of cylindrical connectors; each said square connecting faces of said blocks having the same size in length of the edges thereof, each said hollow square connecting faces of said blocks having a cylindrical plug located centrally thereof, and each said plane square connecting faces of said blocks, except said coved block, having a mating socket located centrally thereof for receiving the cylindrical plug of another block or one of the cylindrical connectors, whereby said blocks can be rotated relatively to each other when they are assembled.

2. A set of building blocks according to claim 1, wherein each said cylindrical plug has a central hollow portion extending into the respective block, while the depth of said hollow portion is relatively longer than that of said mating sockets whereby a "pop" sound will be heard when said blocks are disassembled from each other.

3. A set of building blocks according to claim 1, wherein said cylindrical plugs and said mating sockets are circular in cross-section.

4. A set of building blocks according to claim 1, wherein each of said blocks is made of acrylonitrile butadiene styrene.

5. A set of building blocks comprising a cubic block having a cylindrical plug provided on a face and each of the remaining faces being provided with a socket to accept the cylindrical plug of another block; a right-angle-triangle block having two equal-sized square faces, one of the square faces being provided with a cylindrical plug and the other one being provided with a socket to accept the cylindrical plug of another block, and an inclined rectangular plane face; a quadrant block having two equal-sized square faces, one of the square faces being provided with a cylindrical plug and the other one being provided with a socket to accept the cylindrical plug of another block, and an arcuate face; and a coved block having two equal-sized square faces, one of the square faces being provided with a cylindrical plug to fit into a socket of another block, and a coved face.

6. A set of building blocks substantially as hereinbefore described with reference to Figures 1 to 11 of the accompanying drawings.

H. N. & W. S. SKERRETT,
Chartered Patent Agents,
Rutland House,
148, Edmund Street,
Birmingham B3 2LQ.
Agents for the Applicant.

Printed for Her Majesty's Stationery Office by Burgess & Son
(Abingdon) Ltd.—1981. Published at The Patent Office,
25 Southampton Buildings, London, WC2A 1AY,
from which copies may be obtained.



(2)

3

1,585,436

3

connector 10 is generally twice the depth of the mating sockets of the blocks 1, 7 and 9. Therefore, two blocks may also be assembled together by a cylindrical connector 10 instead of a cylindrical plug 2 thereof.

Further, since a part of air in a socket 3 of a block will be compressed into the central hollow portion 6 of the cylindrical plug 2 of another block when they are assembled together by engaging said plug into said socket, the more the space in the central hollow portion 6, the bigger a "pop" sound will occur when the blocks are disassembled from each other.

As hereinbefore indicated, the blocks may be connected with each other by forcing the cylindrical plug of one into a mating socket of another, or forcing a cylindrical connector into mating sockets of two blocks.

It is of course, within the scope of the invention to make the blocks of the same or different colours to further excite children's interest in building objects of various kinds.

WHAT I CLAIM IS:—

1. A set of building blocks comprising a cubic block having a hollow square connecting face and five plane square connecting faces; a right-angle-triangle block having a hollow square connecting face, a plane square connecting face, and an inclined plane rectangular face; a quadrant block having a hollow square connecting face, a plane square connecting face, and an arcuate face; a coved block having a hollow square connecting face, a plane square face and a coved face; and a plurality of cylindrical connectors; each said square connecting faces of said blocks having the same size in length of the edges thereof, each said hollow square connecting faces of said blocks having a cylindrical plug located centrally thereof, and each said plane square connecting faces of said blocks, except said coved block, having a mating socket located centrally thereof for receiving the cylindrical plug of another block or one of the cylindrical connectors, whereby said blocks can be rotated relatively to each other when they are assembled.

2. A set of building blocks according to claim 1, wherein each said cylindrical plug has a central hollow portion extending into the respective block, while the depth of said hollow portion is relatively longer than that of said mating sockets whereby a "pop" sound will be heard when said blocks are disassembled from each other.

3. A set of building blocks according to claim 1, wherein said cylindrical plugs and said mating sockets are circular in cross-section.

4. A set of building blocks according to claim 1, wherein each of said blocks is made of acrylonitrile butadiene styrene.

5. A set of building blocks comprising a cubic block having a cylindrical plug provided on a face and each of the remaining faces being provided with a socket to accept the cylindrical plug of another block; a right-angle-triangle block having two equal-sized square faces, one of the square faces being provided with a cylindrical plug and the other one being provided with a socket to accept the cylindrical plug of another block, and an inclined rectangular plane face; a quadrant block having two equal-sized square faces, one of the square faces being provided with a cylindrical plug and the other one being provided with a socket to accept the cylindrical plug of another block, and an arcuate face; and a coved block having two equal-sized square faces, one of the square faces being provided with a cylindrical plug to fit into a socket of another block, and a coved face.

6. A set of building blocks substantially as hereinbefore described with reference to Figures 1 to 11 of the accompanying drawings.

H. N. & W. S. SKERRETT,
Chartered Patent Agents,
Rutland House,
148, Edmund Street,
Birmingham B3 2LQ.
Agents for the Applicant.

Printed for Her Majesty's Stationery Office by Burgess & Son
(Abingdon) Ltd.—1981. Published at The Patent Office,
25 Southampton Buildings, London, WC2A 1AY,
from which copies may be obtained.