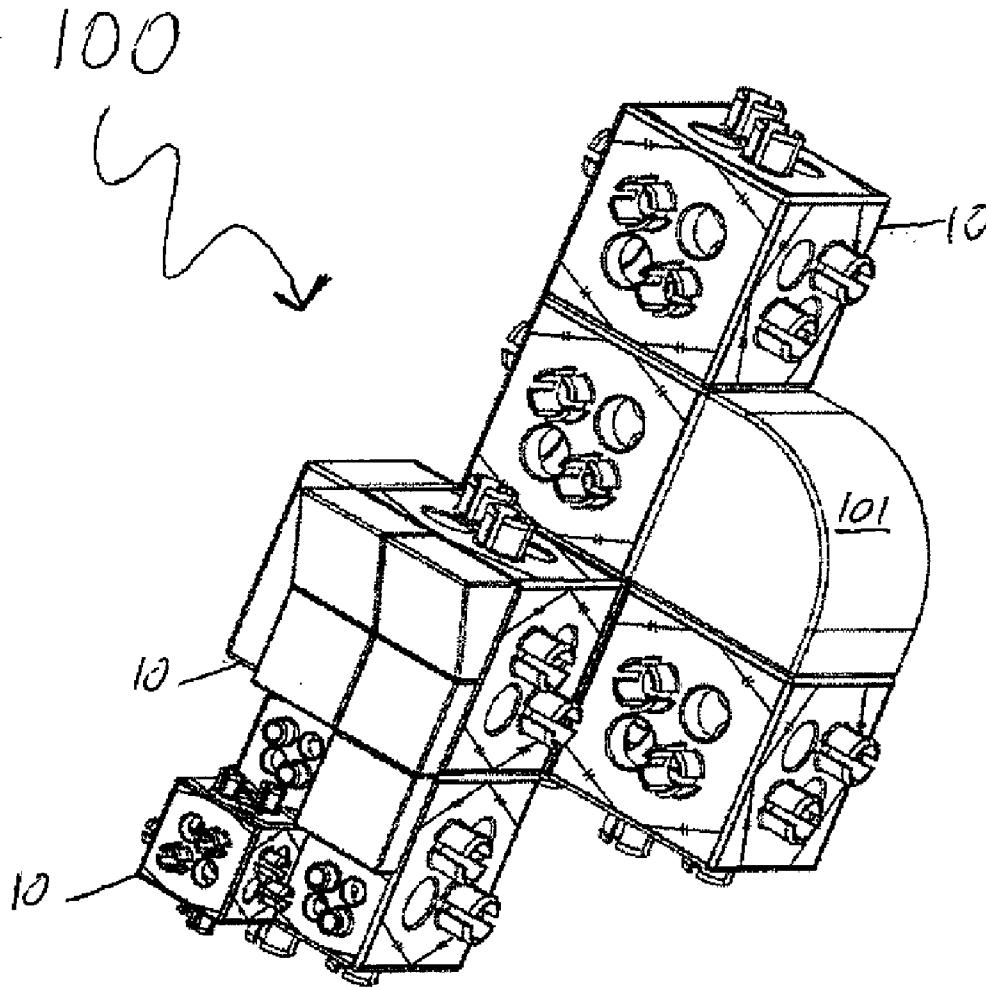




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Petillo(10) **Pub. No.: US 2014/0308872 A1**(43) **Pub. Date: Oct. 16, 2014**(54) **TOY BUILDING BLOCKS**(71) Applicant: **William Patrick Petillo**, Portland, OR
(US)(72) Inventor: **William Patrick Petillo**, Portland, OR
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A63H 33/08 (2006.01)(52) **U.S. Cl.**CPC **A63H 33/08** (2013.01)USPC **446/127**(57) **ABSTRACT**

A toy block adapted to be interconnected, the block includes one or more block faces having an outer surface intended for abutment against an outer surface of a corresponding toy block, connector holes, connector pegs, and the connector pegs frictionally engage the connector holes of a corresponding block and the connectors pegs of the corresponding block frictionally engage the connector holes of the toy block.



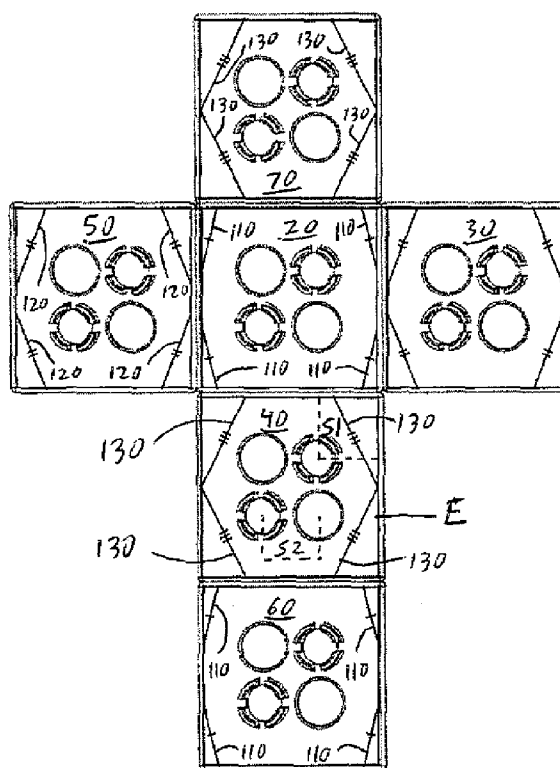


FIG. 3

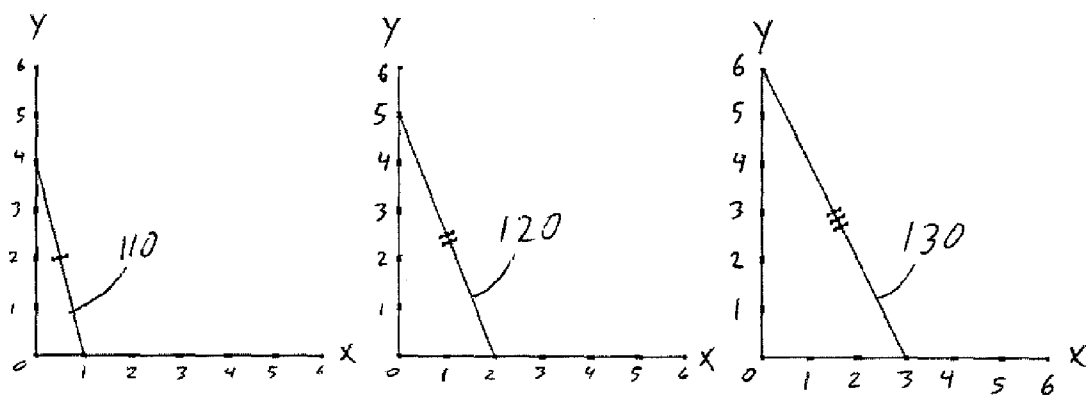


FIG 3A

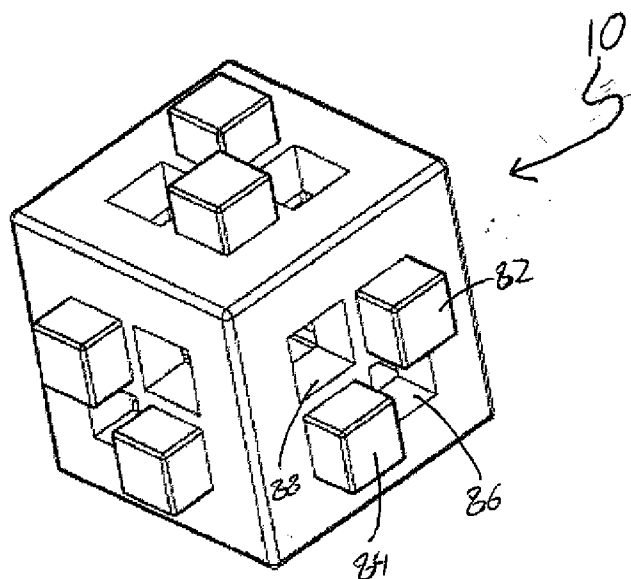


FIG. 4

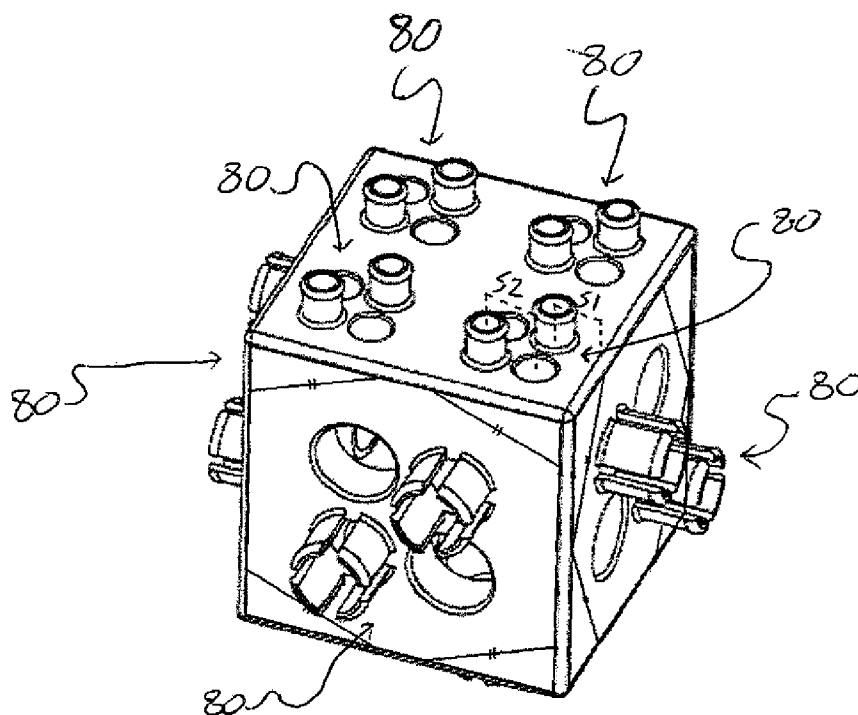


FIG. 5

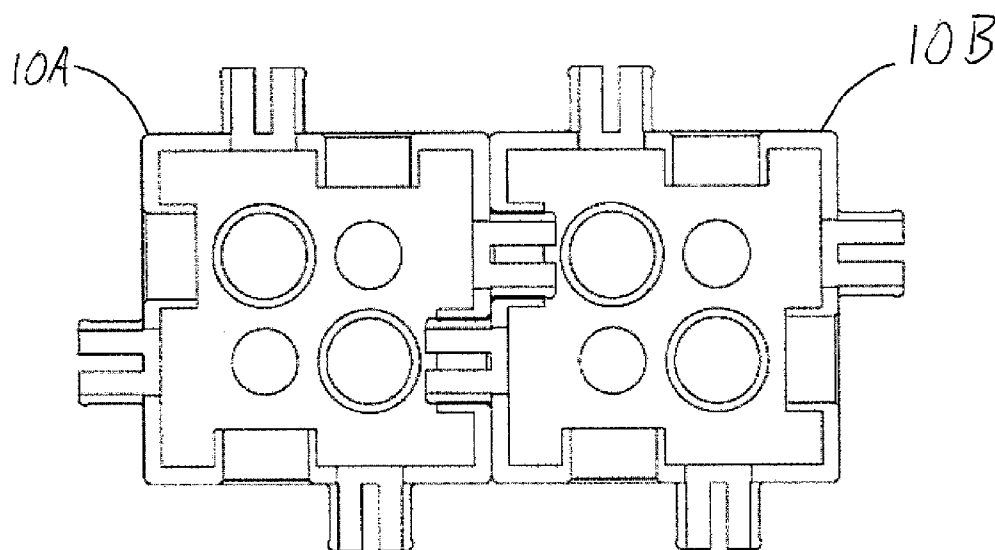


FIG. 6

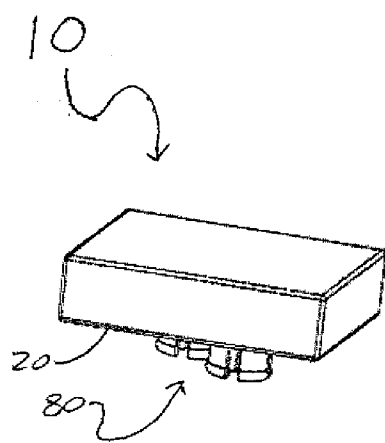


FIG. 7

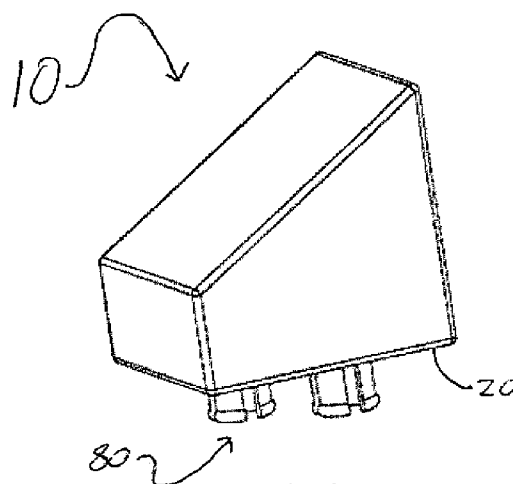


FIG. 8

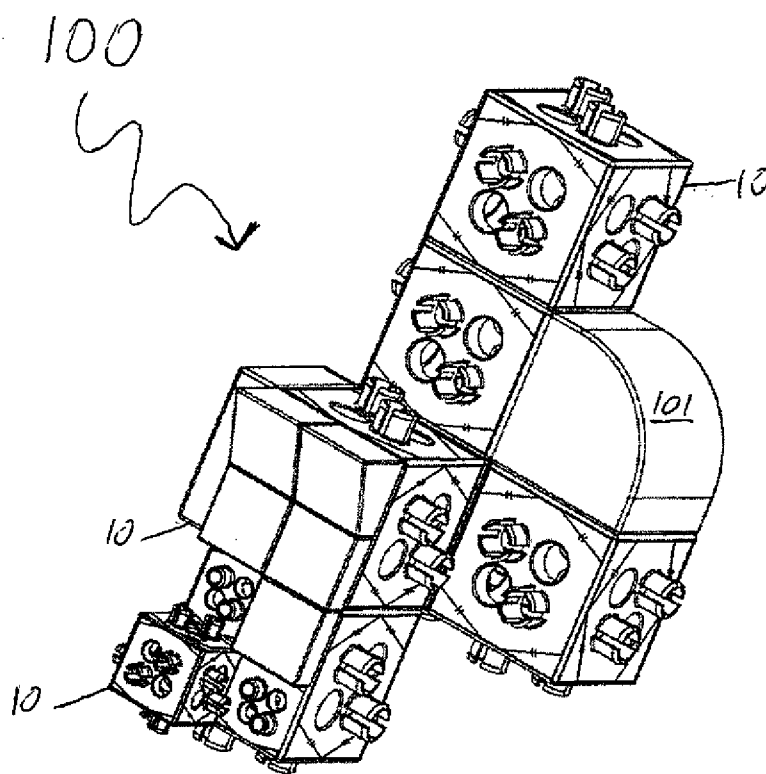


FIG. 9

TOY BUILDING BLOCKS

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims the benefit of U.S. Provisional Patent Application No. 61/622,837, filed on Apr. 11, 2012 and entitled “Toy Building Blocks,” which is herein incorporated by reference in its entirety.

BACKGROUND

[0002] 1. Field of the Invention

[0003] The present invention relates to building blocks for modular construction. More particularly, the present invention relates to toy building blocks which are releasable and connectable.

[0004] 2. Description of the Prior Art

[0005] Modular building blocks are useful for building a variety of static structures, including scale-modeled structures which are built for entertainment and educational purposes.

[0006] Toy building blocks and building block sets typically have male coupling components and female receiving components. Often, one surface of the block is dedicated to the male coupling components while the female coupling components are fashioned on a separate surface of the block. Consequently, such blocks are connected to one another in a stacking fashion where, for example, a bottom surface, having the female components, frictionally engages with a top surface, having the male components. There may be limits, however, as to what type of static structure can be built when using this stacking fashion. The stacking fashion method also necessitates a type of platform in which to build from so that the static structure can stand erect.

[0007] Building blocks relevant to this disclosure are discussed in the following U.S. Patents, which are hereby incorporated by reference: U.S. Pat. Nos. 4,606,732; 4,676,762; 5,000,713; 5,644,387; and 7,988,516.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Many aspects of the present invention can be better understood with reference to the following drawings. The components in the drawings are not necessarily to scale, emphasis instead being placed upon clearly illustrating the principles of the present invention. Moreover, in the drawings, like reference numerals designate corresponding parts throughout the several views.

[0009] FIG. 1 is a top perspective view of an exemplary toy block, according to the teaching of the present invention.

[0010] FIG. 2 is a top perspective view of an exemplary face of the toy block shown in FIG. 1.

[0011] FIG. 3 is a top planar view of a foldout diagram of the toy block shown in FIG. 1.

[0012] FIG. 3A is a graph of the displacement indicia lines of the block shown in FIG. 3.

[0013] FIG. 4 is a top rotational perspective view of an exemplary toy block, according to the teaching of the present invention.

[0014] FIG. 5 is a top perspective view of an exemplary toy block, according to the teaching of the present invention.

[0015] FIG. 6 is a side plan, cross-sectional view of two interconnected toy blocks shown in FIG. 1.

[0016] FIG. 7 is a side perspective view of an exemplary toy block according to the teaching of the present invention.

[0017] FIG. 8 is a side perspective view of an exemplary toy block according to the teaching of the present invention.

[0018] FIG. 9 is a rotational perspective view of a set of toy blocks interconnected in an exemplary configuration according to the teaching of the present invention.

DETAILED DESCRIPTION

[0019] Non-limiting embodiments of the present invention utilize construction components that are especially suited to construct modular static structures from varying interconnections.

[0020] Referring to the drawings, wherein like reference numerals represent like parts throughout the various drawing figures, FIG. 1 is directed to a toy building block 10. The polyhedron toy block 10 with multiple faces 20, 30, 40, 50, 60, and 70 (only faces 20, 30, and 60 are viewable in FIG. 1) includes a coupling region 80 which is made up of a pair of connector pegs 82, 84 and a pair of connector holes 86, 88. Faces 20, 30, 40, 50, 60, and 70 can also be void of a coupling region or regions 80 to provide a flat surface or a finished-face surface that cannot be coupled to another toy block 10. (See FIGS. 7-9). In FIG. 1, toy block 10 further includes an abutment region 90, as shown on faces 20, 30, and 60.

[0021] With continuing reference to FIG. 1, toy block 10 can be a convex polyhedron or a cube-shaped block with six quadrilateral faces 20, 30, 40, 50, 60, and 70 (only faces 20, 30, and 60 are viewable in FIG. 1). Complete views of coupling regions 80, which include a pair of connector pegs 82, 84 and a pair of connector holes 86, 88 are shown on faces 20, 30, and 60, in FIG. 1.

[0022] Toy blocks 10 may be composed of any rigid and resilient material such as, but not limited to, acrylonitrile butadiene styrene (ABS). Other materials that may be used include, but are not limited to, injection molded plastic and nylon. The structure of the block 10 may be solid, hollow, partially hollow, and/or may include a skeleton support structure or internal scaffolding (not shown). Blocks 10 may be of any color, combination of colors, or transparent. By way of a non-limiting example, toy building blocks 10 are conveniently sized as 1 cubic inch, 2 cubic inches, and 4 cubic inches.

[0023] Referring to FIG. 2, face 20 is shown with coupling region 80. By way of a non-limiting example, coupling region 80 includes connector pegs 82 and 84, as well as connector holes 86 and 88. The pair of pegs 82 and 84 is positioned along the diagonal line D1 of face 20. The pair of holes 86 and 88 is positioned along diagonal line D2, while the coupling surface 80 is fashioned in a radial orientation from an imaginary center point (not shown) on the toy block's 10 surface 20 in FIG. 2. When the coupling surface 80 is located in the center of face 20, 30, 40, 50, 60, and 70, an abutment region 90 is formed around the coupling surface 80, for adjacent contact with the abutment region 90 of another, corresponding toy block 10.

[0024] With continuing reference to FIG. 2, in a non-limiting example, each peg 82, 84 can be a hollow cylinder divided into four equal peg segments P1, P2, P3, and P4. Each of the peg segments P1, P2, P3, and P4 can include a corresponding lip portion L1, L2, L3, and L4.

[0025] In FIG. 2, each connector hole 86, 88 includes a bevel edge B for frictional engagement with the peg segments' (P1, P2, P3, and P4) lip portions (L1, L2, L3, and L4).

[0026] Referring to FIG. 3, all six quadrilateral faces 20, 30, 40, 50, 60, and 70 of the toy block in FIG. 1 are shown with

coupling surfaces **80**. With respect to a two cubic inch sized toy block **10**, segment **S1** has a length of 0.75 inches, as measured from the center point (not shown) of the peg **82, 84** to the edge **E** of the block **10**. Segment **S2**, from the center point (not shown) of each connector peg **82, 84** to each connector hole **86, 88** measures 0.50 inches.

[0027] With reference to FIG. 3A and continuing reference to FIG. 3, displacement indicia lines **110, 120** and **130** are drawn in a set of X,Y coordinate graphs. Each of the graphs is composed of a horizontal X axis with six evenly spaced points and a vertical Y axis with six evenly spaced points. Indicia lines **110** are each crossed by a single perpendicular line at the midpoint, run from point (0,4) to point (1,0) on the leftmost graph, and connects all perpendicular edges on faces **20** and **60**. Indicia lines **120** are each crossed by two perpendicular lines at or nearby the midpoint, run from point (0,5) to point (2,0) on the central graph, and connect all perpendicular edges on faces **30** and **50**. Indicia lines **130** are each crossed by three perpendicular lines at or nearby the midpoint, run from point (0,6) to point (3,0) on the rightmost graph, and connect all perpendicular edges on faces **40** and **70**. The leftmost graph is equivalent to a scale representation of the bottom half of the left edge, the left half of the bottom edge, and the bottom left indicia line of face **20** and **60**. The central graph is equivalent to a scale representation of the bottom half of the left edge, the left half of the bottom edge, and the bottom left indicia line of face **30** and **50**. The rightmost graph is equivalent to a scale representation of the bottom half of the left edge, the left half of the bottom edge, and the bottom left indicia line of face **40** and **70**.

[0028] Referring to FIG. 4, a non-limiting example of a coupling region **80** is illustrated. The pair of connector pegs **82, 84** and the pair of connector holes **86, 88** are cubic shaped, while still complementing one another such that the connector holes **86, 88** receive the connector pegs **82, 84**. It will be appreciated by those of ordinary skill that both the pegs **82, 84** and the holes **86, 88** can take on other non-circular and alternate shapes for providing frictional engagement.

[0029] As illustrated in FIG. 5, toy block **10** includes face **20** with four sets of coupling regions **80**. In this configuration of FIG. 5 with four coupling regions **80** on a two cubic inch block, the coupling regions **80** are sized such that segment **S1** has a length of 0.35 inches, as measured from the center point (not shown) of the peg **82, 84** to the edge **E** of the block **10**. Segment **S2**, from the center point (not shown) of each connector peg **82, 84** to each connector hole **86, 88** measures 0.30 inches.

[0030] With reference to FIG. 6, two interconnected toy blocks **10A** and **10B** are shown. When the connector peg **82, 84** of block **10A** corresponds to the connector holes **86, 88** of block **10B**, and vice-a-versa an audible stimulation, such as a "click," is produced, affirming frictional engagement between the two blocks **10A** and **10B**.

[0031] As illustrated in FIGS. 7 and 8, blocks **10** may have only one face **20** with a coupling region or regions **80**. All other faces on such blocks are flat. FIG. 7 is cuboid. FIG. 8 contains a face that is sloped in relation to the face which has a coupling region **80**, and two sides that are trapezoidal in shape. These finished-face type blocks **10** can be used to form the outer surface of the to-be-built static structure (See also FIG. 9).

[0032] In FIG. 9, block set **100** includes toy blocks **10** interconnected to provide an exemplary static structure. Block set **100** exemplifies the following blocks: blocks **10**

with a diameter of two inches on each edge; blocks **10** with a diameter of one inch on each edge; blocks **10** with only one coupling region **80** and a diameter of two inches; blocks **10** with only one coupling region **80** and a diameter of one inch that are cuboid; blocks **10** with only one coupling region **80** and a diameter of one inch that have a sloped surface; blocks **10** with only one coupling region **80**, a diameter of two inches along each straight edge, and a seventh face that is curved **101**; and blocks **10** with a diameter of two inches on each edge and four coupling regions **80** on one face **20**.

[0033] From the foregoing description it will be apparent that modifications can be made to the toy block **10** and block set **100** without departing from the teachings of the invention.

[0034] The instant invention may be embodied in other forms or carried out in other ways without departing from the spirit or essential characteristics thereof. The present disclosure is therefore to be considered as in all respects illustrative and not restrictive, the scope of the invention being indicated by the appended claims, and all equivalency are intended to be embraced therein. One of ordinary skill in the art would be able to recognize equivalent embodiments of the instant invention and be able to practice such embodiments using the teaching of the instant disclosure and only routine experimentation.

What is claimed is:

1. A toy block adapted to be interconnected, the block comprising:

one or more block faces having an outer surface intended for abutment against an outer surface of a corresponding toy block; the block face further comprising:

plural holes;

plural pegs for frictional engagement into the holes of the corresponding toy block;

wherein at least two pegs on the block face are engaged to at least two holes of the corresponding block, and at least two pegs of the corresponding block are engaged to at least two holes of the block face.

2. The toy block of claim 1, further comprising: a pair of holes and a pair of pegs, each hole disposed on a diagonal line of the block face and each peg disposed on a second diagonal line of the block face.

3. The toy block of claim 2, wherein the diagonal line of the block face separates each of the pair of pegs such that each peg is the mirror image of the complimentary peg of the pair.

4. The toy block of claim 2, wherein the second diagonal line of the second block face separates each of the pair of holes such that each hole is the mirror image of the complimentary hole of the pair.

5. The toy block of claim 1, wherein the plural holes and plural pegs are cylindrical.

6. The toy block of claim 1, further comprising: two pair of holes and two pair of pegs, each pair of holes disposed on a diagonal line of the block face and each pair of pegs disposed on a second diagonal line of the block face.

7. The toy block of claim 1, wherein the one or more block faces having an outer surface are flat.

8. The toy block of claim 1, wherein the one or more block faces having an outer surface are intended to become the outer surface of a static structure.

9. A set of toy blocks adapted to be interconnected, the blocks comprising:

a first quadrilateral block face having an outer surface intended for abutment against an outer surface of a face of a first corresponding toy block;

a second quadrilateral block face having an outer surface intended for abutment against an outer surface of a face of a second corresponding toy block;

a third quadrilateral block face having an outer surface intended for abutment against an outer surface of a face of a third corresponding toy block;

a fourth quadrilateral block face having an outer surface intended for abutment against an outer surface of a face of a fourth corresponding toy block;

a fifth quadrilateral block face having an outer surface intended for abutment against an outer surface of a face of a fifth corresponding toy block;

a sixth quadrilateral block face having an outer surface intended for abutment against an outer surface of a face of a sixth corresponding toy block;

the first, second, third, fourth, fifth and sixth block faces, each further comprising:

a pair of holes;

a pair of pegs for frictional engagement into a pair of holes of one of the first, second, third, fourth, fifth or sixth corresponding toy blocks;

wherein each of the pair of pegs on each of the first, second, third, fourth, fifth and sixth block faces are engaged with a pair of holes of a face of the first, second, third, fourth, fifth and sixth corresponding block, and a pair of pegs of the face of the first, second, third, fourth, fifth and sixth corresponding blocks are engaged to the pair of holes of the first, second, third, fourth, fifth and sixth block faces;

wherein the set of toy blocks further comprising:

indicia lines displaced on each of the faces.

10. The set of toy blocks of claim 9, wherein the indicia lines are grouped into three sets of lines comprising: a first set

displaced on the first and the fifth faces, a second set displaced on the second and the fourth faces, and a third set displaced the third and the sixth faces.

11. The set of toy blocks of claim 10, wherein the first set of indicia lines for the first and fifth faces of the toy block corresponds to the first set of indicia lines for the first and fifth faces of the corresponding toy blocks.

12. The set of toy blocks of claim 10, wherein the second set of indicia lines for the second and fourth faces of the toy block correspond to the second set of indicia lines for the second and fourth faces of the corresponding toy blocks.

13. The set of toy blocks of claim 10, wherein the third set of indicia lines for the third and sixth faces of the toy block correspond to the third set of indicia lines for the third and sixth faces of the corresponding toy blocks.

14. The apparatus of claim 11, wherein the first set of indicia lines connect a point that is located one twelfth the length of an edge of a block from a corner of the block to a point that is four twelfths the length of the nearest perpendicular edge of a block from said corner.

15. The apparatus of claim 12, wherein the second set of indicia lines connect a point that is located two twelfths the length of an edge of a block from a corner of the block to a point that is five twelfths the length of the nearest perpendicular edge of a block from said corner.

16. The apparatus of claim 13, wherein the third set of indicia lines connect a point that is located three twelfths the length of an edge of a block from a corner of the block to a point that is six twelfths the length of the nearest perpendicular edge of a block from said corner.

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