

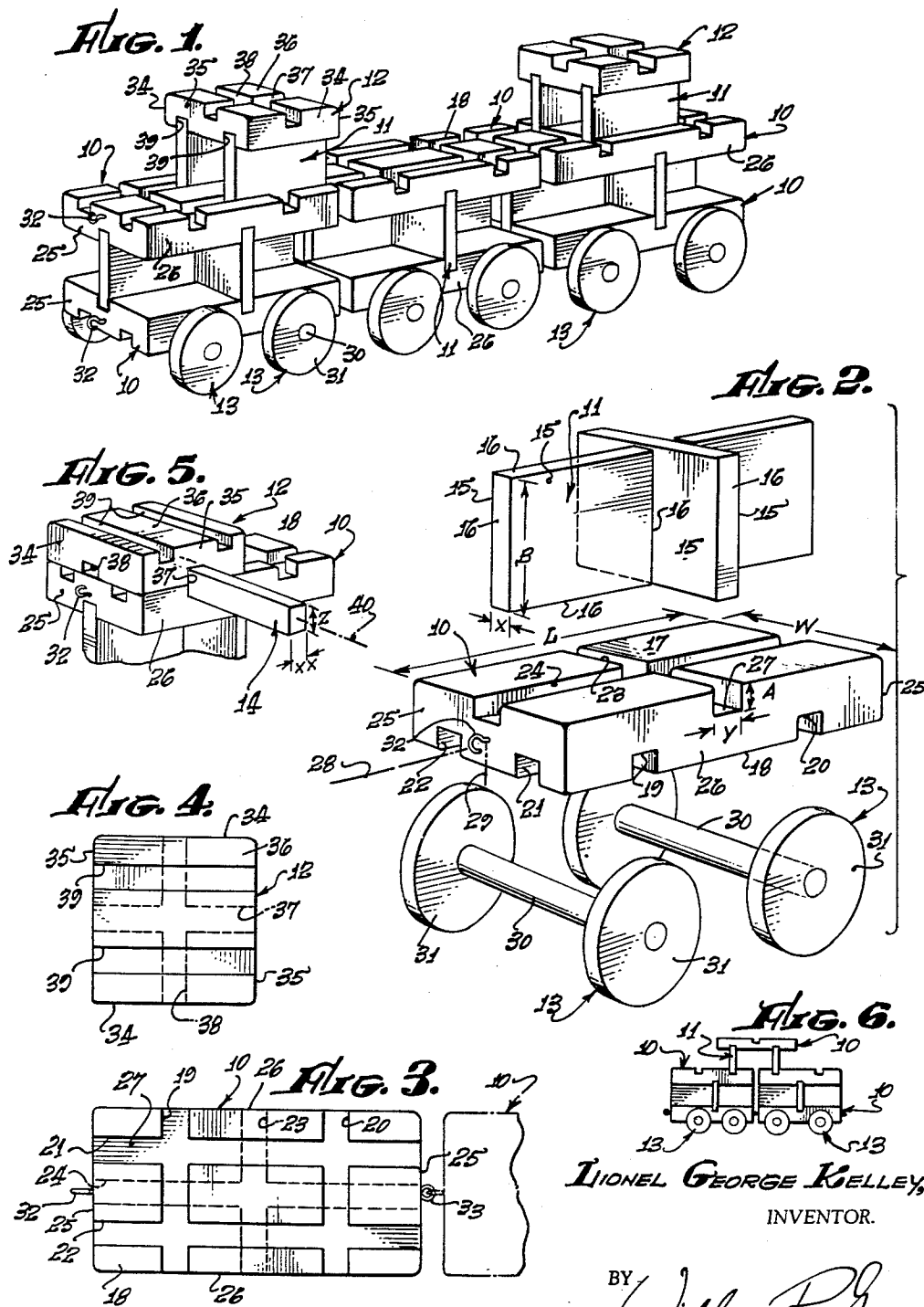
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TOY BLOCK SET

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TOY BLOCK SET

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This invention relates to a unique set of toy blocks and other building elements to be used by children in building different types of toy structures.

The general object of the invention is to provide a novel set of building elements which allow very great versatility in the formation of numerous different structures, and yet which require only a few different types of basic elements. These basic parts can be very easily arranged to form structures resembling buildings of different types, as well as railroad cars and other wheeled moving assemblies, and the like. In actual use, these toys have proven extremely fascinating and entertaining to children.

Structurally, a set of parts embodying the invention may include a first group of blocks each having grooves formed in two of its opposite surfaces, and a second group of blocks having edge portions adapted to be received in different ones of the grooves in a manner allowing the desired versatility of building arrangements. The grooves at one side of the first blocks may include two essentially parallel grooves which in one arrangement (with the two grooves facing down) can receive axles of a pair of wheel units, to movably mount one of the first blocks in the manner of a railroad car or the like. The other side of the first block preferably has a groove extending essentially parallel to the two first mentioned grooves, with another groove extending at an angle thereto (desirably perpendicularly), with the result that blocks of the second type can be fitted in and supported by these mutually perpendicular grooves, in standing positions capable of supporting additional blocks of both types in numerous different overall structures. Preferably, the first mentioned sides of the first blocks contain additional grooves extending perpendicular to the wheel mounting grooves, and for best results the lengths of the various grooves on both sides have certain later-to-be-discussed dimensional relationships to the dimensions of the coacting second type of block, to allow for maximum versatility of arrangement. Also, there may be provided certain other types of blocks which are shaped in unique manners to interfit effectively with and supplement the above discussed blocks.

The above and other features and objects of the present invention will be better understood from the following detailed description of the typical embodiment illustrated in the accompanying drawing in which:

Fig. 1 shows a number of blocks and wheel units constructed in accordance with the invention and assembled in one possible arrangement, to form a structure resembling a three car railroad train;

Fig. 2 is an enlarged exploded representation of certain of the blocks and wheel units shown in Fig. 1;

Fig. 3 is a plan view of one of the large main blocks shown in Fig. 1;

Fig. 4 is a view showing the underside of one of the top blocks in the Fig. 1 arrangement;

Fig. 5 is a perspective view representing fragmentarily another arrangement of the blocks; and

Fig. 6 shows still another arrangement of the various blocks.

Referring first to Fig. 1, a set of blocks (and wheel units) constructed in accordance with the invention includes a number of main relatively large blocks 10, a number of smaller square blocks 11, several additional blocks 12, and a number of wheel units 13. Also, this set may include a few elongated blocks such as the one represented at 14 in Fig. 5. As an example, a set might include 10 of the blocks 10, 20 of the blocks 11, 5 of the blocks 12, 10 wheel assemblies 13, and 5 of the blocks 14. These various parts are of course to be sold together as a set in a suitable box or other container.

To describe first the relatively simple square blocks 11, each of these blocks may be defined as having two square opposite side surfaces 15, which are spaced apart a distance X (see Fig. 2) and are desirably planar and parallel. Each block 11 is of uniform square cross section through its entire thickness X, to thus present four edge surfaces 16 extending perpendicular to surfaces 15 and defining together a square. The length of each of the edge surfaces 16 of block 11 is preferably at least several times as great as the thickness dimension X of the block.

The blocks 10 are desirably of rectangular configuration, having two planar parallel spaced rectangular opposite surfaces 17 and 18, whose planar configuration may be interrupted only at the locations of a number of grooves 19, 20, 21, 22, 23 and 24. Each block 10 also has a pair of parallel transverse planar opposite end walls 25, and a pair of parallel longitudinally extending planar opposite side walls 26. Walls 25 and 26 desirably are rectangular and extend perpendicular to each other and to surfaces 17 and 18.

All of the various grooves 19 through 24 which are formed in surfaces 17 and 18 of blocks 10 should be of the same width Y (see Fig. 2), which width is slightly greater than the thickness dimension X of blocks 11, to allow any of the four edge portions of one of the blocks 11 to fit snugly within any of the various grooves 19 through 24. The grooves 19 through 24 may be of rectangular cross section, uniform throughout the length of each groove, to provide inner walls 27 within the grooves extending parallel to surfaces 17 and 18 for engaging and positioning edge surfaces 16 of blocks 11. The two grooves 19 and 20 are formed in surface 18, and extend essentially and preferably exactly parallel to each other and directly transversely of the longitudinal axis 28 of block 10. The two grooves 21 and 22 are also formed in surface 18 of block 10, but extend essentially and perpendicular to and intersecting grooves 19 and 20. Grooves 21 and 22 are spaced apart, and are spaced equal distances from, but at opposite sides of, the transversely central point 29 of block 10.

The groove 23 is formed in surface 17 of block 10, and desirably extends directly transversely of the longitudinal axis 28 of the block and therefore parallel to grooves 19 and 20 in the opposite surface of the block. Groove 24 in surface 17 may extend parallel to axis 28, and therefore perpendicular to groove 23. Groove 24 is preferably located at the center of the transverse extent of block 10, while groove 23 is located at the center of the longitudinal extent or length of block 10. The two grooves 19 and 20 are offset longitudinally of the block equal distances from center groove 27, but in opposite longitudinal directions therefrom.

Each of the wheel units 13 includes an elongated cylindrical shaft or axle 30, rigidly carrying a pair of wheels 31 at opposite ends of the shaft. The shaft 30 is of a diameter approximately equal to but slightly smaller than the width Y of the various grooves 19 through 24, so that shaft 30 may be received and rotatably journaled within either of the grooves 19 or 20 or

perhaps groove 23. Also, the shaft 30 is long enough so that when it is received within one of the grooves 19, 20 or 23, the wheels 31 are received at opposite sides of block 10, and are free to turn with shaft 30 while engaging a supporting surface to movably mount the associated block 10 as a mock vehicle. Two such wheel units 13 received within the two grooves 19 and 20 of a block 10 will mount that block 10 in a horizontally extending position.

Each of the blocks 10 may be provided at the transverse center of one of its end surfaces 25 with a metal hook element 32, and at the transverse center of the opposite end wall 25 with a metal eye element 33, so that the hook 32 of one block may be connected into the eye 33 of another block when the two blocks are in longitudinal alignment, to form an interconnected series of cars. To allow interconnection of elements 32 and 33, one of these, typically hook 32, may lie in a plane essentially parallel to surfaces 26, while the other element (eye 33) lies in a perpendicular plane which is parallel to surfaces 17 and 18.

The blocks 12 may be defined as having a pair of mutually parallel planar opposite side surfaces 34 spaced in correspondence with the spacing of surfaces 26 of block 10, and also having a second pair of spaced parallel planar side surfaces 35 similarly spaced in correspondence with surfaces 26. Surfaces 34 of course extend perpendicular to surfaces 35, and all of these surfaces extend perpendicular to a pair of square oppositely directed surfaces 36 which are parallel and may be spaced in correspondence with surfaces 17 and 18 of block 10. One of the surfaces 36 contains a pair of preferably mutually perpendicular intersecting grooves 37 and 38 extending parallel to surfaces 34 and 35 respectively. The other surface 36 contains two parallel spaced grooves 39 extending parallel to groove 37 and therefore to surfaces 34. Each of the grooves 37 through 39 has the same cross section as grooves 19 through 24 of block 10, to snugly receive and hold any of the four edge portions of any of the square blocks 11.

Each of the blocks 14 (Fig. 5) is relatively long (say about twice the width dimension W of block 10) in the direction of the longitudinal axis 40 of block 14. Transversely of this longitudinal axis, block 14 may be of rectangular configuration, having a width XX corresponding to the width X of block 11, and having a dimension Z equalling twice the depth A of each of the grooves 19, 20, 21, 22, 23, 24, 37, 38 and 39.

In order to allow for a maximum of different arrangements of the relatively few basic elements utilized in the present block set, it is desirable that the dimensioning of blocks 10 and 12 have a certain predetermined relationship to the dimensioning of the square connector blocks 11. More specifically, maximum versatility is attained if the blocks 10 and 12 have the following relationship to the length B of each of the edges 16 of blocks 11. In the first place, the width dimension W of block 10, and therefore the lengths of surfaces 34 and 35 of block 12 should be approximately the same as dimension B on blocks 11 (W typically being slightly greater than B). Also, the distances from each end surface 25 to groove 23 should be approximately equal to distance B, so that the overall length dimension L of block 10 is approximately twice as great as its width W. In addition, the spacing between grooves 19 and 20, of block 10, should be approximately equal to dimension B; and the spacing between the groove 19 of one block 10 and the groove 20 of the other block 10, when these two blocks are interconnected by their hook and eye elements 32 and 33, is also approximately equal to the dimension B (see Fig. 6). As will be apparent, such dimensioning of the various grooves and blocks results in the formation of a large number of different grooves or groove portions whose lengths are approximately equal to dimen-

sion B, and are therefore adapted to receive edges of blocks 11 with the blocks 11 extending along approximately the entire length of each of these various grooves and groove portions. For instance, an edge of one of the blocks 11 will extend along substantially the entire length of each of the grooves 19, 20, 23, 37, 38 and 39, and also along substantially the entire length of the portions of grooves 21 and 22 which are received between grooves 19 and 20.

To now describe the manner of use of the illustrated blocks and wheel units, it is noted that a first arrangement may be made in a manner of Fig. 1 in which three interconnected train cars are formed. Each of these cars includes one of the blocks 10 positioned over and movably mounted by a pair of the wheel units 13, with the shafts 30 of the wheel units received within downwardly facing grooves 19 and 20 of blocks 10. Successive blocks 10 of the different cars are detachably interconnected by interfitting engagement of their hook and eye elements 32 and 33. At the upper side of each of the blocks 10, there may be positioned a first one of the blocks 11 having its lower edge portion received within the transverse groove 23 of block 10, and with two additional blocks 11 being received within groove 24 forwardly and rearwardly of the transverse or first mentioned block 11. This forms a very rigid supporting structure on which an additional upper block 10 may be mounted on each of the cars, by reception of the upper ends of the three blocks 11 within grooves 23 and 24 of the upper block (which upper block is inverted from the position of the lower block 10). To form a structure giving the appearance of the rear cab structure of the engine of the train, two additional blocks 11 may be positioned in the upwardly facing grooves 21 and 22 of the upper block 10 of the leading car, with one of the smaller blocks 12 being mounted on the top of these blocks 11 by reception of the blocks 11 within grooves 39. This structure is positioned at the rear of the car to give the appearance of an engine cab. In the case of the last car in the train, a similar structure formed of two blocks 11 and one block 12 may be utilized, but may be positioned between the two transverse grooves 19 and 20 of the associated block 10 to give the appearance of the central upwardly projecting portion of a caboose. As will be apparent, the same type of structure may be built upwardly to higher levels to form more complicated arrangements of almost infinite variety. Also, the wheel units 13 may be left off the structure, to form an arrangement giving the appearance of a building or the like.

Referring now to Fig. 5, the elongated box 14 may be utilized for locking together in fixed position one of the blocks 10 and a superimposed block 12, with block 14 having its upper and lower halves received within two opposed grooves of the blocks 10 and 12. Also, the end of the block 14 may be allowed to project outwardly, to give the appearance of a gun projecting from a turret.

Fig. 6 shows an arrangement including two of the cars of Fig. 1, but with an upper structure including two blocks 11 received within grooves 19 and 20 of two adjacent cars, so that an upper block 12 may be mounted on these blocks 11 to extend between and interconnect the two cars. The upper edges of blocks 11 in this case are received within the downwardly facing grooves 19 and 20 of the upper block 10, which grooves are spaced substantially exactly in correspondence with the grooves within which the lower edges of the two blocks 11 are received, by virtue of the positioning of the grooves 19 and 20 on blocks 10 in the precise manner previously discussed.

I claim:

1. A toy block set including a pair of first blocks of essentially rectangular configuration each having a pair of oppositely facing essentially rectangular surfaces having length and width dimensions, each of said first blocks

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having two spaced essentially parallel grooves formed in one of said surfaces and extending in the direction of said width dimension, each block having third and fourth grooves formed in the opposite surface thereof and extending at an angle to one another, a pair of wheel assemblies each including an axle removably received and confined in one of said first two grooves of one of said first blocks with those grooves facing downwardly, each of said wheel assemblies also including a pair of wheels carried at opposite ends of said axle and received at opposite sides of said one of the first blocks to movably mount it on said wheel assemblies, and a plurality of second blocks which are thin and lie in essentially vertical planes and have lower edges fitting closely in said third and fourth grooves of said one first block, said second blocks projecting upwardly from said one first block and having upper edges projecting into and fitting closely within said third and fourth grooves of the other of said first blocks to thereby support it in upwardly spaced relation to said one first block.

2. A toy block set as recited in claim 1, in which said length dimensions of said rectangular surfaces are approximately twice as great as said width dimensions, said first blocks having thickness dimensions between said rectangular surfaces which are smaller than said length and width dimensions.

3. A toy block set as recited in claim 1, in which said third groove is located essentially between and disposed essentially parallel to said first two grooves, said fourth groove extending essentially perpendicular to and essentially crossing said third groove and extending in the direction of said length dimension.

4. A toy block set as recited in claim 1, in which each of said second blocks is essentially square and each of its four edges has a length corresponding substantially to the width of said first blocks and to the spacing between said first two grooves.

5. A toy block set as recited in claim 1, in which said third and fourth grooves extend substantially directly longitudinally and transversely respectively of said first blocks and are located at substantially the center of said width and length dimensions respectively, said first two grooves being spaced from the opposite ends of the first blocks distances equal to approximately one-fourth of the distance between said two ends.

6. A toy block set as recited in claim 1, in which there are a plurality of block assemblies each including a pair of said first blocks, a pair of said wheel assemblies and a plurality of said second blocks interfitting as defined, and there being detachably interfitting connectors on opposite ends of said first blocks adapted to connect a plurality of said block assemblies in end to end relation to pull one behind the other with said wheel assemblies movably mounting the blocks.

7. A toy block set as recited in claim 1, in which there are two spaced longitudinal grooves formed in said one of said rectangular surfaces of each of said first blocks and of a width to receive and position edges of said second blocks.

8. A toy block set as recited in claim 1, including an additional number of said second blocks projecting upwardly from the upper side of said other of the first blocks and having lower edges received in said first two grooves thereof, and a third block shaped essentially the same as said first blocks except that said length dimension is only about one-half the length of said first blocks, said third block having said four grooves formed therein and having upper edges of said additional second blocks received in some of said grooves to support said third block at a location spaced above said other of the first blocks.

9. A toy block set including a pair of first blocks of essentially rectangular configuration each having a pair

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of oppositely facing essentially rectangular surfaces having length and width dimensions, said length dimensions being approximately twice as great as said width dimensions, said first blocks having thickness dimensions between said surfaces which are smaller than said length and width dimensions, each of said first blocks having two spaced essentially parallel grooves formed in one of said surfaces and extending in the direction of said width dimension, each block having a third groove formed in the opposite surface between the locations of and essentially parallel to said first two grooves, each block having a fourth groove in said opposite surface extending essentially perpendicular to and essentially crossing said third groove and extending in the direction of said length dimension, a pair of wheel assemblies each including an axle removably received and confined in one of said first two grooves of one of said first blocks with those grooves facing downwardly, each of said wheel assemblies also including a pair of wheels carried at opposite ends of said axle and received at opposite sides of said one of the first blocks to movably mount it on said wheel assemblies, and a plurality of essentially square second blocks which are thin and lie in essentially vertical planes and have lower edges fitting closely in said third and fourth grooves of said one first block, said second blocks projecting upwardly from said one first block and having upper edges projecting into and fitting closely within said third and fourth grooves of the other of said first blocks to thereby support it in upwardly spaced relation to said one first block.

10. A toy block set as recited in claim 9, in which there are three of said second blocks, one extending transversely of said first blocks and having its edges received in said third groove of each of said first blocks, the other two of said second blocks extending longitudinally of said first blocks and being received in said fourth groove at locations in front of and behind the third groove respectively.

11. A toy block set as recited in claim 10, in which there are two spaced longitudinal grooves formed in said one of said rectangular surfaces of each of said first blocks and of a width to receive and position edges of said second blocks.

12. A toy block set as recited in claim 10, in which there are a plurality of block assemblies each including a pair of said first blocks, a pair of said wheel assemblies, and three of said second blocks interfitting as defined, and there being detachably interfitting connectors on opposite ends of said first blocks adapted to connect a plurality of said block assemblies in end to end relation to pull one behind the other with said wheel assemblies movably mounting the blocks.

13. A toy block set as recited in claim 1, in which there are three of said second blocks, one extending transversely of said first blocks and having its edges received in said third groove of each of said first blocks, the other two of said second blocks extending longitudinally of said first blocks and being received in said fourth groove at locations in front of and behind the third groove respectively.

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