

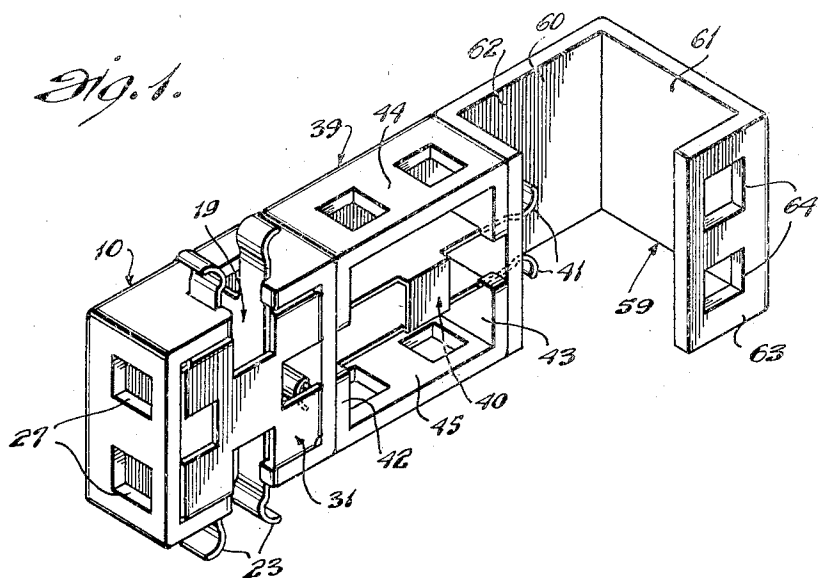
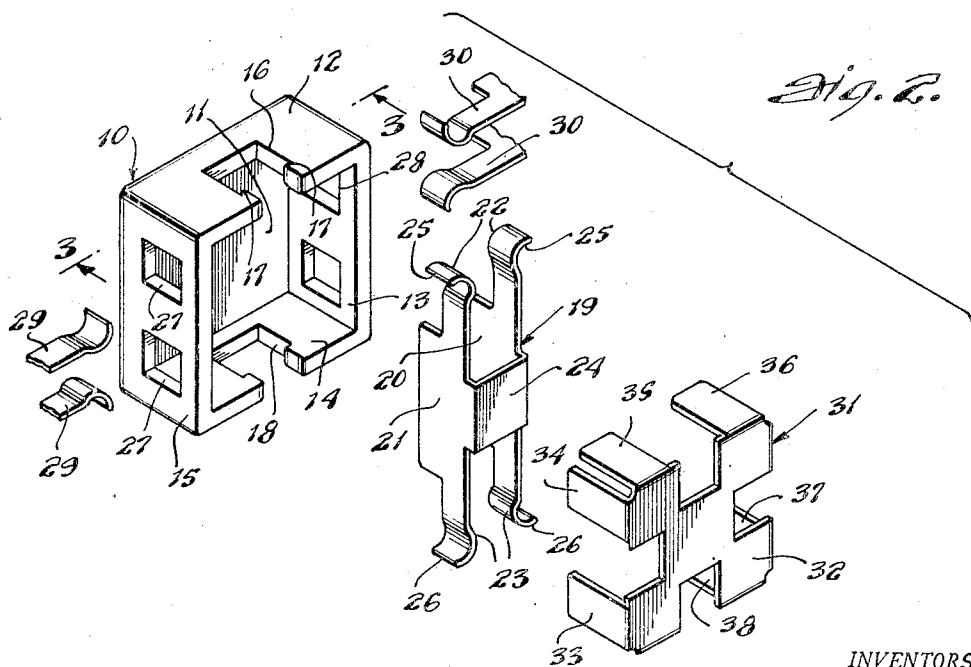
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L. HOFFMAN ET AL
TOY CONSTRUCTION UNIT

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2 Sheets-Sheet 1



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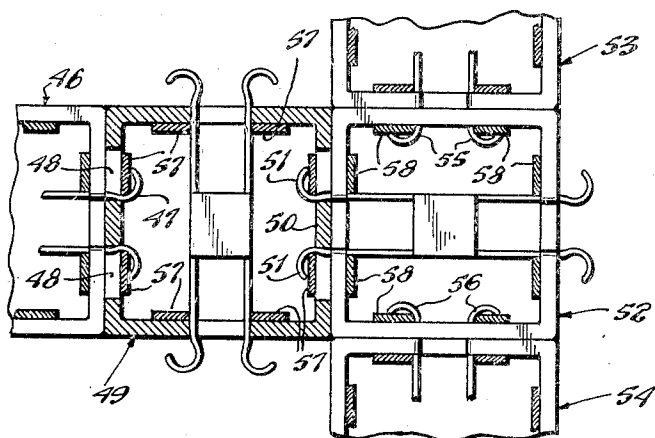


Fig. 3.

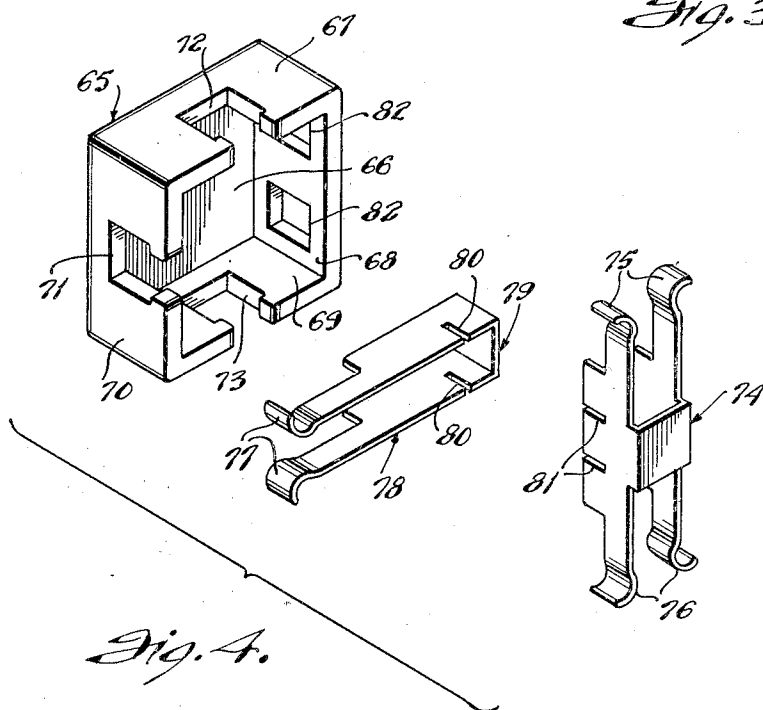


Fig. 4.

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TOY CONSTRUCTION UNIT

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Our present invention relates generally to toy construction sets.

A general object of the invention is to provide certain improvements in the type of set which consists essentially of a plurality of block-units adapted to be interconnected in abutting relationship to form wall structures.

A set of the present improved character is intended primarily for use by the hobbyist, to produce walled structures which are usually intended to be left in assembled condition. In this way, miniature models of various types of buildings and other walled structures may be created.

One of the features of the present invention resides in the provision of a special means for interlocking the basic blocks in such secure fashion that the resultant composite wall structure is staunch and rugged.

The basic unit of the set is a hollow block having a rectangular base wall and upstanding side walls. It is preferably composed of metal, or equivalent rigid material, and the base wall is preferably square in contour. From each of one pair of opposite side walls there projects a connection finger whose size and shape conforms to a predetermined standard. In at least one other side wall of the block there is an aperture whose size and disposition is such as to adapt it to receive a connection finger (projecting from another block of the set) which conforms to said predetermined standard.

In the preferred embodiment of the invention, the projecting connection fingers are arranged in pairs, and the apertures which receive these fingers are also arranged in corresponding pairs. The fingers are preferably formed on the opposite ends of an elongated connection element which rests within the hollow block so that its opposite ends project through suitably-formed cut-outs in opposite side walls of the block.

The firm interlocking of the blocks is achieved by forming hooks at the terminal ends of the projecting fingers, and by providing a keeper element for each block which is insertable into the block and which engages in locking relation with the hooks of any connection fingers which project into the block.

Other novel features of the invention reside in the construction and arrangement of auxiliary elements, such as corner pieces, which conform in size and character to the basic nature of the interconnection system, thereby making it possible for the user to arrange the several units of the set in a large variety of ways to produce desired structures. So far as the basic block units

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are concerned, they are arranged in abutting relationship with the base walls arranged substantially in a single plane, to form a wall structure of desired extent. By assembling such wall structures with one another, enclosures may be created, to simulate buildings, castles, and the like.

We achieve the foregoing general objects and advantages, and such other objects and advantages as may hereinafter appear or be pointed out, in the manner illustratively exemplified in the accompanying drawings in which:

Fig. 1 is a perspective view, from the rear, of two illustrative blocks, and a corner element, shown in assembled relation;

Fig. 2 is an exploded view of the parts entering into the foremost block unit shown in Fig. 1;

Fig. 3 is a plan view of a series of interconnected blocks, viewed from the rear, one of the blocks being shown in cross-section, substantially along a plane indicated at 3—3 in Fig. 2; and

Fig. 4 is an exploded view showing some of the parts entering into a block of slightly modified structure.

The basic elements are best illustrated in Fig. 2, in which we have shown a hollow block 10 provided with a rectangular (preferably square) base wall 11, and upstanding side walls 12, 13, 14 and 15. This block may be composed of metal or other rigid material.

In the side wall 12 the block is provided with a cut-out 16 which is centrally disposed, and which extends to the free edge of the side wall 12, as shown. The cut-out is somewhat narrower adjacent the free edge of the side wall 12 so that a pair of shoulders 17 are provided.

A correspondingly positioned and shaped cut-out 18 is formed in the opposite side wall 14.

The cut-outs 16 and 18 are adapted to accommodate the oppositely projecting ends of an elongated connection element 19. This element is composed of relatively thin metal or the like. It consists essentially of a pair of parallel spaced strips 20 and 21, wider at the mid-portion than at opposite ends. There is thus formed at one end of the elongated element 19 a pair of spaced fingers 22, while a similar set of spaced fingers 23 are formed at the opposite end. The strips 20 and 21 are joined at the center by a part 24.

The material of the element 19 is such that the fingers 22 are springy, and are deflectable toward and away from each other. The same springiness exists in connection with the pair of fingers 23. Each finger has a hooked end, and the hooks are so arranged that they face in opposite directions

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for each pair of fingers. Thus, the hooked terminals 25 of the fingers 22 face laterally away from each other, and the hooked terminals 26 of the fingers 23 face laterally away from each other.

The connection element 19 is introduced into the block 10 from the rear or open end of the block. The entrance width of the cut-out 16 is slightly narrower than the normal spacing between the fingers 22, and the same condition exists in connection with the cut-out 18 and the fingers 23. To introduce the fingers 22 into the cut-out 16, they must be momentarily deflected toward each other. When released, they are locked in position by the shoulders 17. The fingers 23 are introduced into the cut-out 18 in the same way, and are similarly held in position. With the two parts 10 and 19 thus assembled, the hollow block may be said to have a pair of opposite side walls (12 and 14), from each of which a pair of connection fingers projects. Thus, projecting from the wall 12 is the pair of hooked fingers 22, and projecting from the wall 14 is the pair of hooked fingers 23.

Each pair of connection fingers has a size and shape which conforms to a predetermined standard. And in at least one other side wall of the block 10, there is a pair of apertures whose size and disposition is such as to adapt them to receive a pair of connection fingers (projecting from another block of the set) conforming to said standard. In Fig. 2 we have shown the side wall 15 of the block 10 provided with a pair of apertures 27, and the side wall 13 has been shown with a similar pair of apertures 28. The apertures 27 are adapted to receive a pair of springy hooked fingers 29 (projecting from another block) and the apertures 28 are adapted to receive a pair of hooked fingers 30 (projecting from still another block of the set, shown at 39 in Fig. 1). The fingers of each pair may be slightly rounded toward each other, as shown, and this causes them to snap into engagement with the apertures into which they are introduced. Thus, when the fingers 29 enter the apertures 27, they are momentarily deflected away from each other until the block which carries them (not shown) abuts against the wall 15 of the block 10, whereupon the fingers 29 snap back into their normal spacing. The same snapping action takes place when the fingers 30 are introduced into the apertures 28.

At 31 we have shown a keeper element which constitutes an important part of the present invention. This element is introduced into the hollow block 10 after the block has been interconnected with adjacent blocks. The element 31 consists of a flat wall 32 adapted to lie parallel to the base wall 11 of the block, and to substantially seal the open end of the block. At each of its corners, the flat wall 32 is provided with a pair of flanges arranged at right angles to the wall 32. Six of the eight flanges are visible in Fig. 2, and are designated by the reference numerals 33-38. In the association of elements shown in Fig. 2, the flanges 33 and 34 position themselves behind the apertured side wall 15 of the block 10, and interlock with the hooked ends of the fingers 29. Similarly, the flange 37, and the corresponding flange adjacent to the one designated 36, lie behind the apertured wall 13 of the block 10 and interlock with the hooked terminals of the fingers 30. The other flanges of the element 31 fulfill no interlocking function.

In Fig. 1, the block unit which is closest to the observer consists of the three elements 10, 19 and 31 in assembled relation. The assembly is shown

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in association with a second similar hollow block 39. This block carries a connection element 40 having the pair of spaced fingers 30 at one end (see Fig. 2) and having a similar set of fingers 41 at the opposite end. The fingers 30 project through a cut-out in the side wall 42 of the block 39, and the fingers 41 project from a cut-out in the opposite side wall 43. In each of the side walls 44 and 45 there is a pair of apertures adapted to receive a pair of fingers conforming to the predetermined standard. In assembling the parts it will be noticed that the wall 42 of the block 39 is brought into abutment with the wall 13 of the block 10. The wall 42 is the one from which the pair of fingers 30 project, and the wall 13 is the one provided with the corresponding pair of apertures 28. In similar fashion, a multiplicity of blocks can be arranged in abutting side-by-side relationship, the base walls lying in a plane to form a composite wall structure, the other walls of the blocks being arranged in a disposition which interlocks each pair of projecting fingers with a pair of apertures in the adjacent block. This relationship of parts is best shown in Fig. 3. In this figure, a block 46 is provided with a pair of fingers 47 projecting through the apertures 48 formed in a side wall of a block 49. Through the apertures in the opposite side wall 50 project the fingers 51, which are carried by the block 52. This block, in turn, is shown in interlocked engagement with blocks 53 and 54, the block 53 being provided with fingers 55, and the block 54 being provided with fingers 56.

At 57 we have shown the locking flanges of the keeper element which fits into the block 49. Two of them are in engagement with the hooked ends of the fingers 47, and the opposite pair are in engagement with the hooked ends of the fingers 51. At 58 we have shown the locking flanges of the keeper element which is carried by the block 52. One pair is shown in interlocked relation to the fingers 55, and another pair in interlocked relation with the fingers 56. In similar fashion, the keeper elements of the several blocks interengage with corresponding fingers projecting into the blocks, and thus the entire composite wall structure is held together in a rugged and relatively permanent fashion.

As a corner element, we prefer to employ a construction such as that shown at 59 in Fig. 1. The element 59 is made of the same stock as that of the several basic blocks, and it is provided with the angularly disposed walls 60 and 61, and the end flanges 62 and 63. In each of the end flanges there is a pair of apertures such as those shown at 64 in Fig. 1. These apertures correspond to the standard apertures in the basic blocks, such as those shown at 27 and 28 (see Fig. 2). Thus, in Fig. 1, the apertures in the flange 62 are adapted to receive the fingers 41 of the adjacent block 39.

Under certain circumstances, it may be desirable that one of the basic blocks be provided with projecting fingers on three of its sides. To accomplish this objective, a modified block such as that shown at 65, is employed (see Fig. 4). This block has a base wall 66, and upstanding side walls 67, 68, 69 and 70. It is identical in every respect with the block shown at 10 in Fig. 2, except that the wall 70 is provided with a cut-out 71, whereas the corresponding wall 15 in Fig. 2 is provided with a pair of apertures 27.

The cut-out 71 is identical with the cut-outs 72 and 73 formed in the walls 67 and 69, respectively. These cut-outs 72 and 73 are adapted to

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receive the opposite ends 75 and 76 of the connection element 74. The cut-out 71 is adapted to receive the end 77 of an auxiliary connection element 78 arranged at right angles to the element 74. This element consists of a pair of parallel spaced strips joined at their rear ends, as at 79. Slots 80 are adapted to interengage with slots 81 formed on one of the strips of the connection element 74, so that the elements 79 and 74 may be interlocked to form a composite connection element having three pairs of fingers (75, 76 and 77).

It will be understood that the fingers 77 have a size and shape conforming to the predetermined standard, so that they may be introduced into any pair of apertures such as those shown at 27 and 28, in Fig. 2, at 64 in Fig. 1, at 43 in Fig. 3, and at 82 in Fig. 4.

Other elements to be used with the construction set will readily suggest themselves to those skilled in the art. By an adherence to the standard shape and disposition of the projecting fingers, and of the apertures which receive them, structures of any desired elaborate composite character may be created.

In general, it will be understood that those skilled in the art will be able to make changes in the details herein described and illustrated, without necessarily departing from the spirit and scope of the invention as expressed in the appended claims.

Having thus described our invention and illustrated its use, what we claim as new and desire to secure by Letters Patent is:

1. A block of square shape adapted for abutment on four sides by similar blocks to build a structure comprising a plurality of tiers of interlocked blocks, said block having a square base which constitutes the facade of said structure, the block being open opposite said base, one pair of parallel sides having aligned, centrally disposed apertures, a one-piece connector fabricated of sheet metal to present a pair of parallel strips having outwardly turned fingers at each end, said strips being dimensioned for snug reception in said block with their said fingers projecting through said apertures, said apertures being open at the free edges of the block sides to facilitate insertion of said one-piece connector in the block opening, said apertures having shoulders to present parallel recesses equal in dimension to the width of said connector fingers, so that the fingers will spring in said parallel recesses to lock the connector in the block, the other pair of parallel block sides having aligned apertures disposed in position to receive fingers like those aforementioned and which project from an abutting block, the outwardly turned fingers cooperating with the edges of the apertures of the first mentioned block to lock in position in said apertures, said strips of the connector holding the

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fingers in position within the block for said locking operation to an abutting block.

2. The combination according to claim 1 wherein said connector fingers are hook-shaped where they enter the abutting block, further provided with a plate for closing said block opening, said plate having depending flanges symmetrically disposed so that said flanges will position themselves behind opposed apertured side walls and interlock with the hooked ends of the fingers engaged through the apertures therein, irrespective of the said strip of the connector holding the fingers in position within the block for said locking operation.

3. The combination according to claim 2 wherein said plate has cutouts at each edge to permit grasping the plate for removal, the web of the connector between its said pair of strips being cut away at both ends to clear said plate cutouts.

4. A block of square shape adapted for abutment on four sides by similar blocks to build a wall comprising a plurality of interlocked tiers of interlocked blocks, said block having a square base which constitutes the facade of said wall, the block being open opposite said base, one pair of parallel sides having aligned, centrally disposed apertures, a double connector fabricated of sheet metal to present a pair of parallel strips having outwardly-turned fingers at each end, said strips being dimensioned for snug reception in said block with their said fingers projecting through said apertures, said apertures being open at the free edges of the block sides to facilitate insertion of said double connector in the block opening, said apertures having shoulders to present parallel recesses equal in dimension to the width of said connector fingers, so that the fingers will spring in said parallel recesses to lock the connector in the block, one of the other pair of parallel sides of the block having a similar aperture, a single connector fabricated of sheet metal to form a U presenting a pair of outwardly-turned fingers, the sides of said U-shaped connector and one of the strips of the double connector having engaging slits whereby the single connector is positioned transversely to the double connector with its said pair of fingers projecting through the last-said aperture.

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