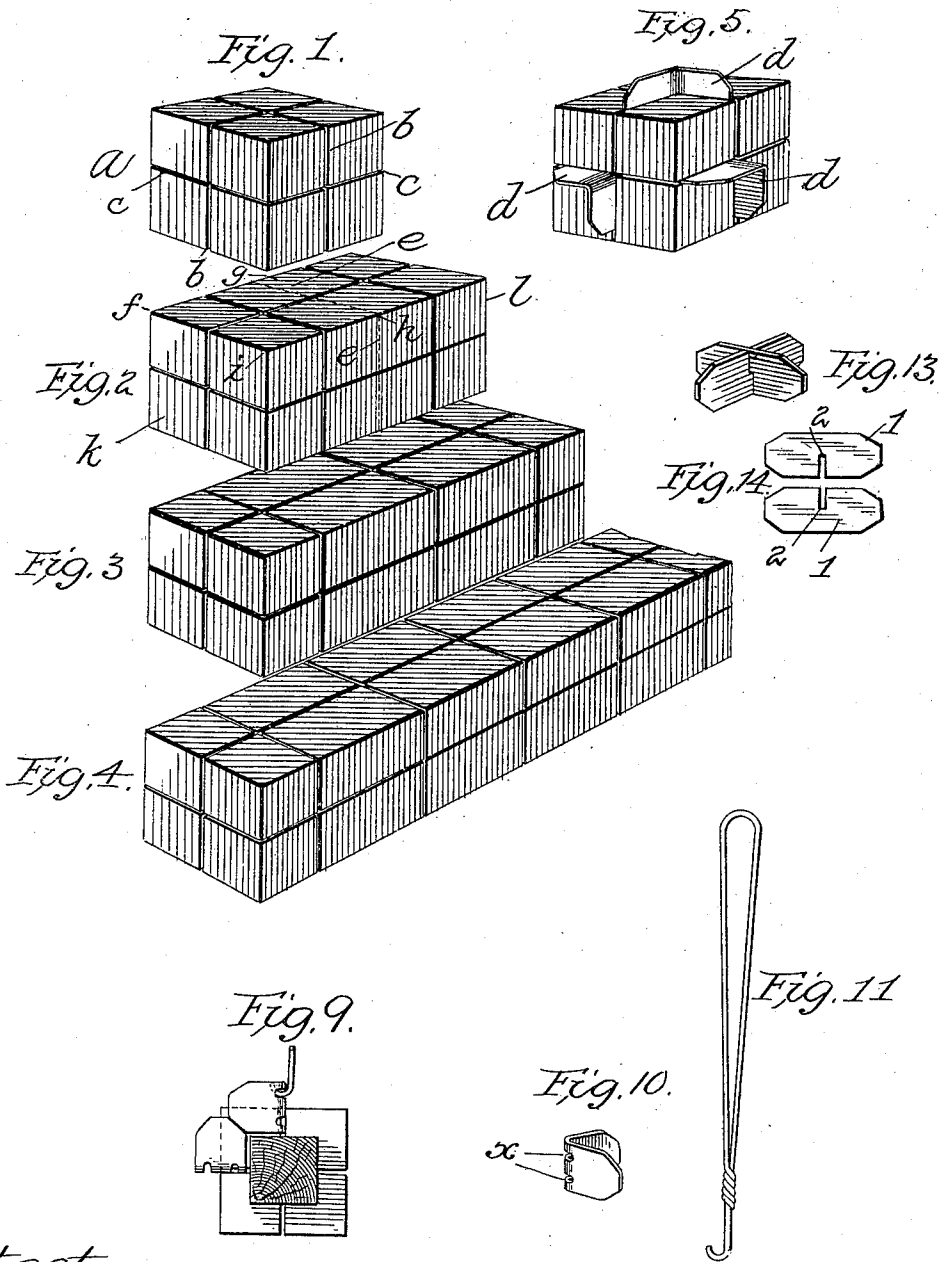


E. A. FALLER.  
TOY BUILDING BLOCK.

(Application filed Nov. 26, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

Fig. 6.

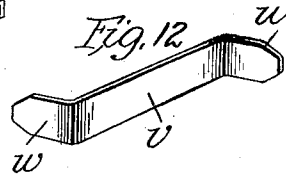
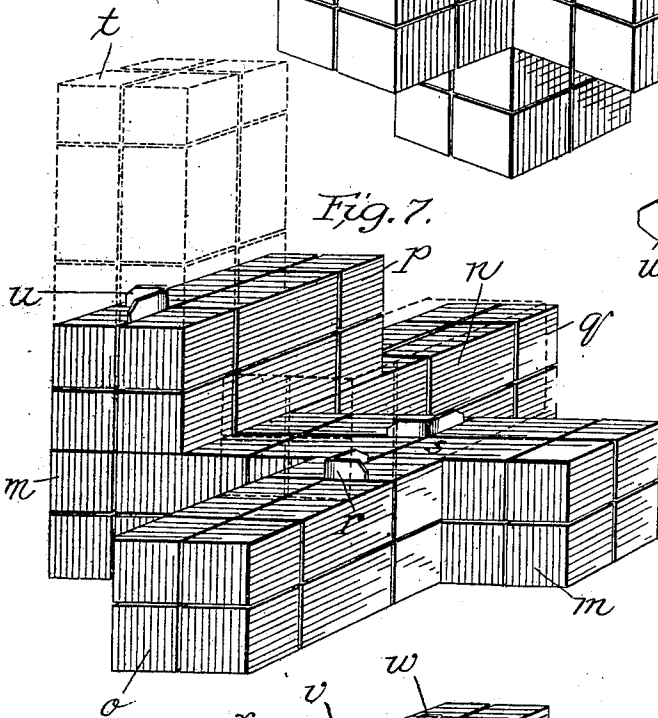
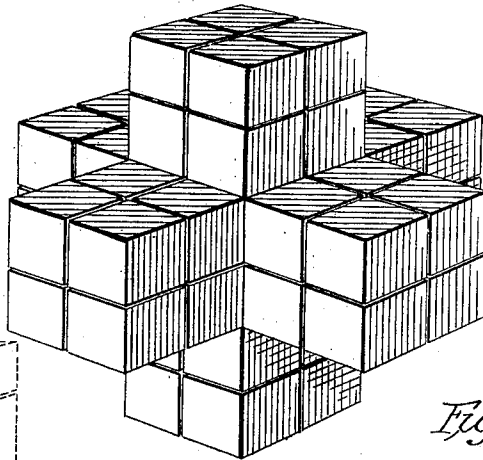
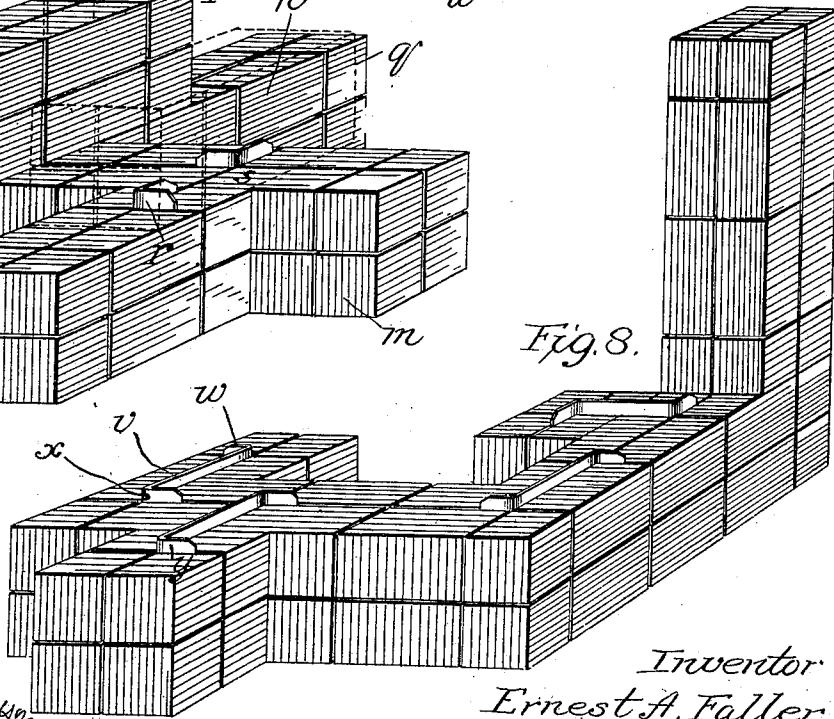


Fig. 8.



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# UNITED STATES PATENT OFFICE.

ERNEST AUGUST FALLER, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF  
ONE-HALF TO JAMES W. CHISHOLM, OF SAME PLACE.

## TOY BUILDING-BLOCK.

SPECIFICATION forming part of Letters Patent No. 669,029, dated February 26, 1901.

Application filed November 26, 1900. Serial No. 37,792. (No model.)

*To all whom it may concern:*

Be it known that I, ERNEST AUGUST FALLER, a citizen of the German Empire, residing at San Francisco, California, have invented certain new and useful Improvements in Toy Building-Blocks, of which the following is a specification.

It is the object of my invention to provide building-blocks each piece of which will have a plurality of like unit surfaces or spaces covering the area thereof, each unit-surface being provided with means whereby another piece may be attached thereto. This principle I carry out with unit-pieces and with what I term for convenience in distinguishing the blocks from each other "composite" pieces, the latter being of such elongated form as would be produced by connecting together a plurality of unit-pieces.

My invention includes a plurality of unit and composite pieces, each having its surface provided with like unit-spaces adjoining one another, and independent key means, whereby any piece may be attached to any unit-space of another piece.

My invention includes a composite building-piece of elongated form rectangular in cross-section, such as would be produced by a plurality of these units connected together, each unit-surface or square inch of surface on said composite or elongated block being adapted to receive another piece or block. This composite piece, which may be said for convenience of description to be formed by a series of connected cubical units, is provided with a groove extending longitudinally and centrally of each side or face and with a series of lateral grooves extending across each face and centrally of the unit portions or spaces. This composite piece is also formed with cross-grooves at its ends. By my construction it is possible to place as many units or blocks upon each face of the elongated or composite piece as there are unit-surfaces thereon.

I aim to provide building-blocks of such a form that each single piece can be entirely covered by other pieces, as many of the latter being employed as there are unit-spaces on the sides or faces of the single piece and each

of said unit-spaces having provision for the attachment of the other pieces.

I aim to provide means for locking the pieces of the blocks together, so that the said pieces will be held against movement on each other in any direction.

I aim to provide a novel form of key or lock adapted to fit in the grooves of the blocks, said lock or key being preferably of right-angular form to fit at the crossing of the grooves.

In the drawings, Figure 1 represents in perspective one of the units of my building-blocks. Fig. 2 represents one of the pieces of my building-blocks of such elongated form as would be made by connecting together two units, this being what I term a "composite" block, though made in one piece. Figs. 3 and 4 are views similar to Fig. 2, showing pieces as though made up of three and four connected units, respectively. Fig. 5 is a perspective view of a unit with a key inserted in its several faces ready to receive on each face a separate unit or block. Fig. 6 is a perspective view illustrating the plurality of pieces or units attached to the unit-block, said block having one of the pieces attached to each of its sides or faces. Fig. 7 is a perspective view showing the formation of a corner of the building or structure and illustrating also how the pieces forming said corner can be locked or keyed together against pulling apart by the use of an additional piece or block, represented in dotted lines. Fig. 8 is a view similar to Fig. 6, illustrating a double key for locking pieces together against pulling apart, this form of double key avoiding the use of the additional block of Fig. 7. Fig. 9 is a cross-sectional view of one of the unit-pieces, showing the arrangement of the locking-keys. Fig. 10 is a perspective view of one of the keys, and Fig. 11 is a view of an implement for removing the key from the groove. Fig. 12 is a view of a double form of key. Figs. 13 and 14 are views of a different form of key.

The unit of my building-blocks is illustrated in Fig. 1. This consists of a cube  $a$ , having on each of its faces two grooves  $b c$ , extending diametrically and crossing each other at right angles at the center of the face. The unit is thus a symmetrical body, each

face being alike in all respects to the other faces.

As shown in Fig. 5, the grooves  $b c$  are adapted to receive keys  $d$ , which are preferably formed of metal of a right-angular shape, the limbs of the keys being adapted to fit closely within the grooves and to be held therein by frictional contact with the walls of the same.

Fig. 6 represents a group of pieces or blocks interlocked, said group being formed by securing a piece or block to each face of a unit, such as illustrated in Fig. 5, by means of the keys  $d$  fitting into the grooves of the contacting or opposing faces of the pieces. All the pieces in this group, including the foundation or central piece, which is hidden by those attached to its sides, are of identical construction, and this group is made up, therefore, of a plurality of units. Obviously other units may be attached to the exposed faces of the attached pieces or units of this figure, and this group may thus be extended or built up indefinitely.

Fig. 2 illustrates one of the composite pieces of my building-blocks of such elongated form as would result from two units such as shown in Fig. 1 being connected together or formed in one piece. These two units are separated by the imaginary line  $e$ , (shown dotted in this figure,) and it will be seen that each unit surface or square—as, for instance, that bounded by the lines  $f g h i$ —is provided with the cross-grooves before described, and each unit-surface therefore is adapted to receive thereon another one of the pieces, whether this be a unit-piece, such as shown in Fig. 1, or a composite piece, such as shown in Figs. 2, 3, and 4. This composite piece has its end faces  $k l$  provided with the cross-grooves similar to the unit-face described and adapted to receive pieces in a manner similar to that mentioned above. It will be seen that the composite piece will receive as many blocks or pieces on each face as there are square units thereon. In the present case we will suppose that the cross-sectional area of the composite piece is one square inch. Then it will be seen that the composite piece of Fig. 2 will receive on each side face two additional pieces and also one piece on each of its end faces, each side of the composite piece having an area equal to the faces of two units, or two square inches, while the end face has an area of one square inch. I do not, of course, limit myself to the area of one inch as the unit. The composite piece, it will therefore be seen, is of elongated rectangular cross-sectional shape, each face being provided with a longitudinal centrally-arranged groove and a plurality of lateral intersecting grooves, one for each unit space or surface. The unit-surfaces adjoin each other and cover the whole area of the block.

Referring to Fig. 7, it will be seen how a corner may be formed by interlocking the

blocks. This corner formation may be made at either end of a composite piece and upon either face of said end portion, or it can be made at any one of a number of intermediate points on each face of the block. In this figure the composite piece  $m$  has joined thereto at its end the piece  $n$  to make a square corner, a key being used to attach these two pieces, and at an intermediate point on the piece  $m$  a second piece  $o$  is shown as being secured thereto, a key (not shown) being used for this purpose also. These two pieces  $n$  and  $o$  will be held by their keys against movement on the piece  $m$  in any direction, and they will be held against a direct separating movement therefrom when additional blocks or pieces are built onto the structure. For instance, the piece  $n$  will be prevented from separating from the piece  $m$  by a piece or block  $p$ , extending across the joint between the pieces  $m$  and  $n$  and keyed to each of them. I show in this figure in dotted lines a piece  $q$  as connecting and locking the piece  $o$  with the piece  $m$  against separating movement, the keys for accomplishing this being represented at  $r$  and  $s$ . I show also in this figure in dotted lines how a composite piece  $t$  can be secured by its end face to the structure, said piece being set on end upon the piece  $p$  and held by the key  $u$ . This key engages the cross-groove in the end face of the piece  $t$ .

As shown in Fig. 8, a double form of key  $v$  may be used having a limb  $w$  at each end bent at right angles to the main portion. These limbs may extend in the same direction, as shown at  $y$  in Fig. 8, or in opposite directions, as shown in Figs. 7 and 12. This double key will accomplish the combined purposes of the keys in Fig. 7 and of the additional blocks  $t$  and  $q$ —that is to say, these double keys will prevent both the separating movement of the blocks or pieces and the movement of one piece on the other.

As before stated, the keys or locks are of such size to fit closely the kerfs or grooves in the blocks, but not so tight as to prevent them being removable by a slight pull from the fingers. In order to more readily remove these keys, however, they may be provided with holes  $x$  to receive the hook of an implement (shown in Fig. 11) by which the keys may be quickly withdrawn from the grooves.

I do not wish to limit myself to the keys of right-angular form with the limbs or locking parts thereof connected, as these limbs may be separated, one being placed in one groove and the other arranged at right angles thereto in another groove; but I prefer to form the two limbs or sections of the keys in one piece.

In Figs. 13 and 14 I show a key of cross form. This I preferably make of two flat pieces 1, each of which is provided with a notch 2 in its edge, whereby the pieces may be interlocked in the form of a cross.

I show the composite piece in Figs. 2, 3,

and 4 as made of a single integral elongated block; but it will be understood that composite pieces may also be formed by a number of unit-pieces permanently connected together to form a single block. In either case the dimensions of the composite piece are the same.

The grooves of the blocks give the appearance of stone or brickwork in the completed structure.

It will be seen that the kerfs or grooves run into each other or are continuous. The longitudinal kerfs or grooves are formed by running the strip from which the blocks are formed past a saw, and after each side of the strip is thus grooved longitudinally and the strip separated into blocks these can be placed side by side and the transverse grooves cut, and after all sides are thus transversely grooved the blocks can be turned up on end and grooved. The grooves on each face form continuations of grooves on the other faces.

As shown in Fig. 9, I form the keys with beveled ends or edges at 3. This is for the purpose of allowing two keys to be placed directly adjacent to each other in the same groove. This figure illustrates the feature of making the grooves continuous around the block and crossing the other continuous grooves, which extend at right angles thereto.

I claim—

1. In building-blocks, a composite piece of elongated shape forming a multiple of a unit-piece and having longitudinal and transverse grooves in its side face crossing each other and adapted to receive and hold a key removably, substantially as described.

2. In building-blocks, a composite piece of elongated form having a plurality of unit-surfaces and having longitudinal and transverse grooves in its side face, there being one transverse groove for each unit-surface arranged centrally thereof, substantially as described.

3. In building-blocks, a piece of elongated form integral from end to end having a rectangular cross-section of the dimensions of a unit-surface, said block forming a multiple of a unit-piece and having grooves crossing each other, substantially as described.

4. In building-blocks, a piece of elongated form having its superficial area composed of a plurality of like unit-surfaces each unit-space on its side provided with intersecting grooves substantially as described.

5. A building-block of elongated shape forming a multiple of a unit-block having a single cross-groove in its end face and a plurality of cross-grooves in its side faces, said cross-grooves in each side being formed by a single longitudinal groove extending cen-

trally of the side and transverse grooves substantially as described.

6. In combination in building-blocks, a unit-piece of cubical form having grooves on each face extending at angles to each other and a composite piece of elongated form, rectangular in cross-section, said piece being equal in size to a series of units to provide unit-spaces on its sides and having a plurality of angularly-arranged grooves at each unit-receiving space and also at its ends, substantially as described.

7. In combination in building-blocks, with the pieces having the grooves extending at angles to each other, a key having correspondingly angularly arranged limbs, each limb being of a height to project from the face of the piece to enter the meeting face of the adjacent piece, substantially as described.

8. In combination in building-blocks with the pieces having the cross-grooves, a key having integral limbs extending at angles to each other corresponding to the angular relation of the grooves to fit into the said grooves, each limb being of a height to project from the groove and enter the groove in the meeting face of the adjacent piece, substantially as described.

9. In combination with the blocks having grooves extending continuously around the block, a key having its ends reduced or beveled.

10. In building-blocks, a piece of elongated form having a cross-section of the dimensions of a unit-surface, said block forming a multiple of a unit-piece and having upon each unit-surface provision for the attachment of another piece thereto, substantially as described.

11. In building-blocks, the pieces, and key means comprising angularly-arranged limbs for securing them together by extending between their contacting faces, said key means being independent of the pieces and being arranged to prevent movement of one piece on another in any direction, substantially as described.

12. In combination with the grooved pieces, a key having a main portion and angularly-extending limbs at the ends of the said main portion, said key projecting up from the face of the block to enter the groove in the meeting face of the block to be attached thereto.

In testimony whereof I affix my signature in presence of two witnesses.

ERNEST AUGUST FALLER.

Witnesses:

JAMES W. CHISHOLM,  
WM. S. MCCARTHY.