June 20, 1944. R. G. KAPING 2,351,768

BUILDING AND BUILDING BLOCK THEREFOR

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Fig. 1.

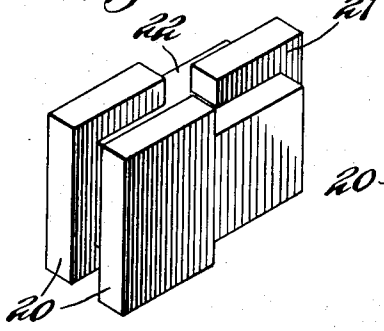


Fig. 2.

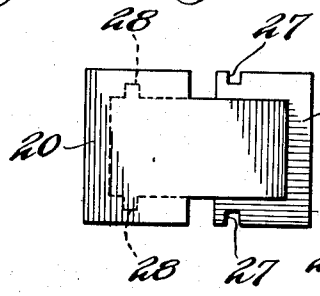


Fig. 3.

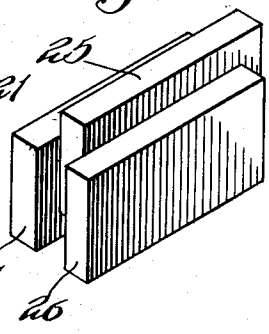


Fig. 4.

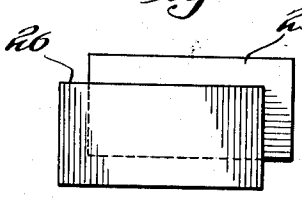


Fig. 5.

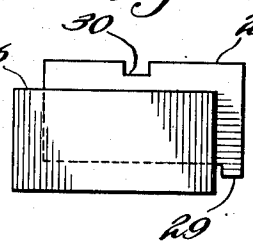


Fig. 6.

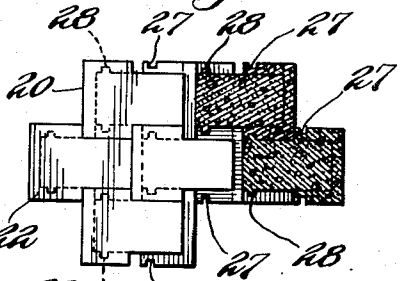


Fig. 7.

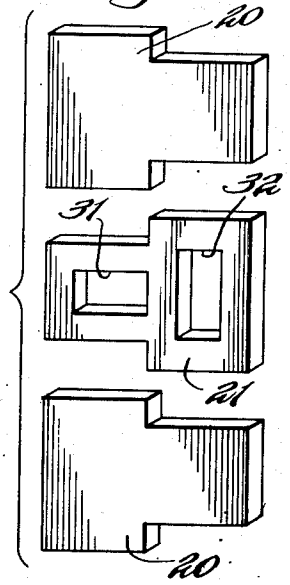


Fig. 8.

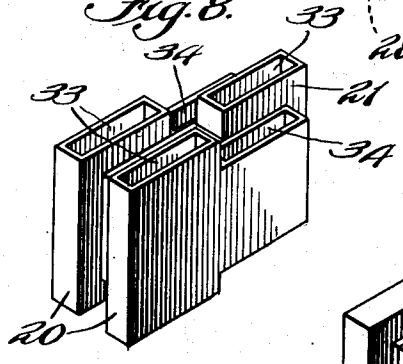


Fig. 9.

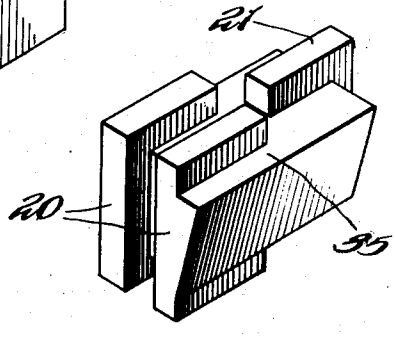
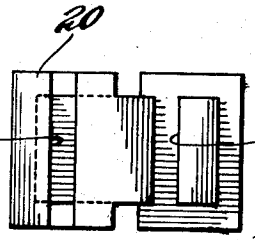


Fig. 10.



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Fig. 11.

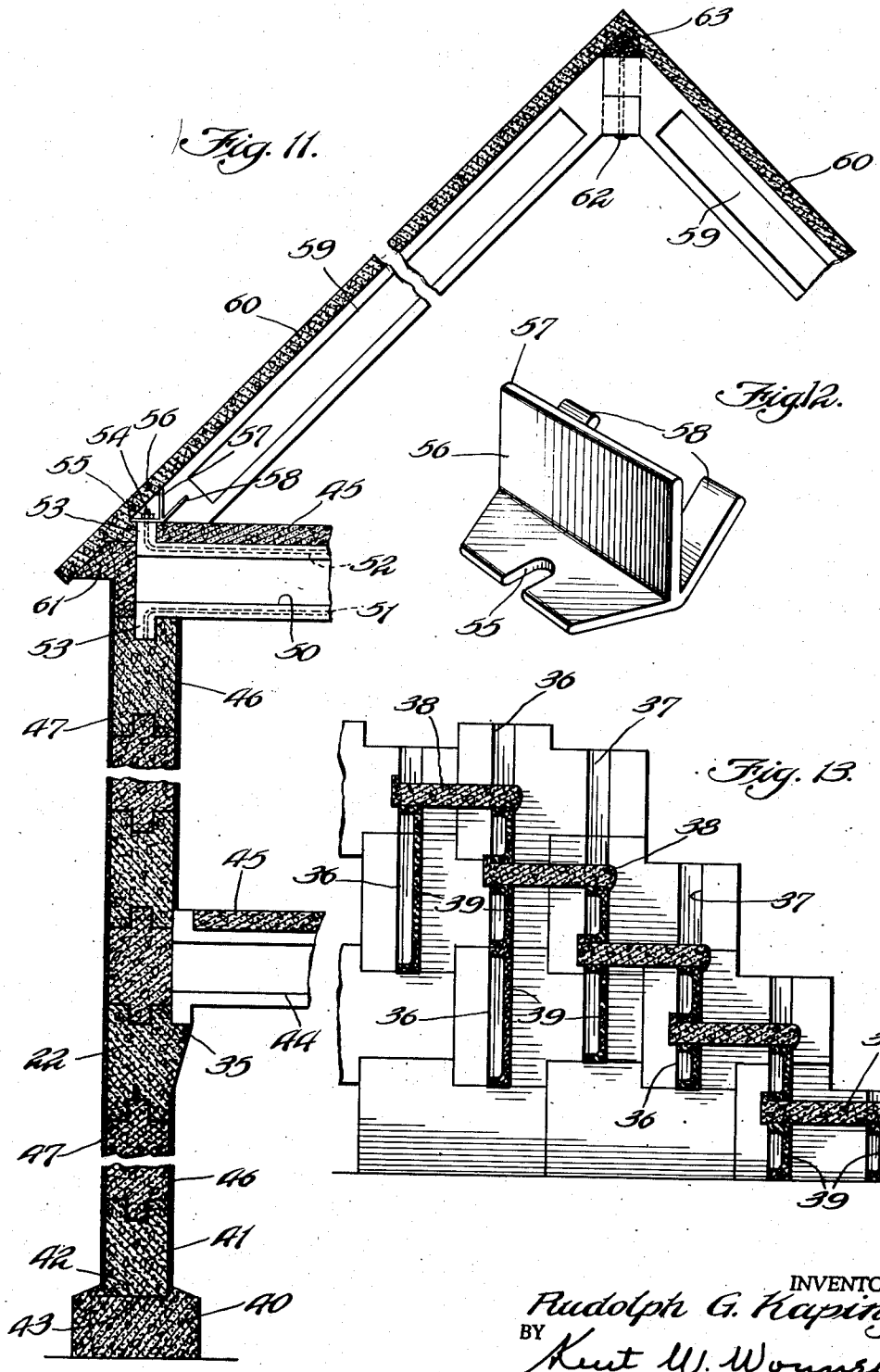


Fig. 12.

Fig. 13.

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Patented June 20, 1944

2,351,768

UNITED STATES PATENT OFFICE

2,351,768

BUILDING AND BUILDING BLOCK THEREFOR

Rudolph G. Kaping, Libertyville, Ill.

Application July 29, 1940, Serial No. 348,159

11 Claims. (Cl. 72—38)

This invention relates in general to an interlocking self-spacing and self-aligning building block adapted to be laid up in a wall without mortar.

An important object of the invention is in the provision of a pre-cast block comprising three sections, together forming a unitary structure.

A further object of the invention is in the provision of a unitary building block having a plurality of interlocking sections adapted to position the blocks in layers in tiers or courses without expert labor, thereby saving time and expense in building.

A further object of the invention is in the provision of a block wall in which a bond is created between the various blocks by plastering both exterior sides, but omitting mortar between the blocks of each course and of adjacent courses.

A still further object of the invention is in the provision of a pre-cast block having sections with enclosed air spaces, with air spaces which connect with those of adjacent blocks, with slots and grooves for the attachment of connecting parts, and with tongues, recesses and saddles for interlocking the blocks and for providing supports for floor joists and the like, all as a unitary part of an interlocking building block structure.

Other objects of the invention will appear in the specification and will be apparent from the accompanying drawings in which

Fig. 1 is a perspective of a building block in accordance with this invention;

Fig. 2 is a side elevation of a similar block having interlocking tongues and grooves;

Fig. 3 is a perspective of a modified form of block having rectangular side faces;

Fig. 4 is a side elevation of the block of Fig. 3;

Fig. 5 shows the block of Fig. 4 with an interlocking tongue and an interlocking groove;

Fig. 6 is a side elevation partially in the section, showing the portion of a wall laid up in courses using the interlocking block as shown in Fig. 2;

Fig. 7 is a composite figure showing the three main sections of a block as shown in Fig. 1;

Fig. 8 is a perspective of a block as shown in Fig. 1 with hollow tile recesses;

Fig. 9 is a perspective of block as shown in Fig. 1 with a projecting joist saddle at one side;

Fig. 10 is a side elevation of a block having vertical grooves in one face to provide vertical supports as for stair risers;

Fig. 11 shows a section of a building wall and composed of interlocking blocks composed of three main sections and having a coating of plaster on the exterior of both sides of the wall;

Fig. 12 is a perspective of a joist and rafter connecting wall plate;

Fig. 13 shows means for supporting stair-risers in vertically slotted blocks.

This invention relates to an all cement house in which the walls and partitions consisting of interlocking blocks, are laid up from the basement floor level to the height of the first floor level where pre-cast joists are put in place and a cement floor is cast over the joists. The walls which consist of interlocking and self-aligning blocks may be provided with reinforcing rods placed in vertical position through connecting openings in the blocks and connected to the ends of the joists. Additional walls and floors are laid in the same manner and a flat or inclined roof may be built at the top, the rafters being preformed and even the roof may be cast thereon if desired. The walls, both inside and out are plastered directly upon the surfaces of the blocks thereby avoiding all necessity to metal or other laths and if desired, a hollow block or section may be provided for insulating purposes.

Referring now more particularly to the drawings, each block is preferably made up of three or more substantially parallel courses or sections as shown more clearly in Fig. 7, comprising two outer sections **20** and an inner section **21** which may be cast or formed separately, but the three sections joined together into one block before said sections have set, forming a composite unitary structure or block **22** as shown in Fig. 1. In the preferred form of block, the end of one section is larger in its rectangular dimensions than the other end, but it is also contemplated that three rectangular sections **24**, **25** and **26** may be combined to form a unitary block as shown in Fig. 3, the center section being offset with respect to but parallel with the sides of the two outer sections.

In order to make the blocks interlocking, self-spacing and self-aligning, the opposite heads of the sections as shown more clearly in Fig. 2, may be formed or provided with upper and lower notches **27** in the head of the central section and upper and lower tongues **28** corresponding thereto at the reduced end of the central section.

In the form shown by Fig. 5, a single tongue or projection **29** is provided at one end of the central section **25** and corresponding recess **30** is provided at the opposite or upper side of this section. In either of these forms as shown by Figs. 2 and 5, the positions of the inter-engag-

ing tongues and recesses may be reversed, but as shown, the tongues are protected and thus are not so easily broken or damaged.

In laying up a wall of these blocks as shown in Fig. 6, the interlocking tongues and grooves are positioned to support the blocks in successive courses, the blocks of one course being staggered with respect to the blocks of the adjacent courses, and the blocks fitting closely together and being supported by each other in all of the three connected sections forming each block. The blocks are suitably sized so that they fit together without any material cracks or crevices between them, the arrangement being such that the blocks fit readily together so that common laborers may be used for erecting a wall without requiring the services of a bricklayer or mason.

For lightness and insulation, the central section **21** may be formed transverse, openings **31** and **32** extending entirely through the section which are covered by the two outer sections **20** when the unit is hardened or set. It is also contemplated that all of the sections may be formed with hollow tile recesses **33** and **34** as shown in Fig. 3 for particular types of construction, thus adding insulating value and providing a block which is lighter and has vertical connecting recesses extending throughout the wall.

For building purposes, it is also customary to provide certain block variations which are incorporated as a part of the block, such for example, as a saddle **35**, cast integrally with and projecting from one side of the block as shown in Fig. 9 adapted to form a ledge for supporting floor joists or other members required in building. It is even contemplated that blocks of this type may be utilized in building a stairway by providing the blocks with vertical grooves **36** and **37** extending in or through one of the side sections of a block as shown more clearly in Figs. 10 and 13. By providing opposite side walls spaced apart the length of steps **38**, risers **39** may be inserted in the opposite grooves **36** and **37** for supporting the stair-treads in successive overlapping relation, the openings above the stairs in each of the side walls being suitably filled or plastered after the stairs and risers are placed in position.

In erecting a house wall or partition as shown more clearly in Fig. 11, a footing or foundation block **40** is positioned at the lowest level and a course of starting blocks **41** are laid thereon. The starting blocks usually differ from the regular building blocks in having a flat or level bottom **42** and if the footing is made of blocks, a recess **43** is provided at the top for seating the starting blocks therein.

After the wall is built up to the desired level, a course or number of saddle blocks (Fig. 9) are inserted upon which the extremity of a pre-cast joist **44** is supported. A cement or other floor **45** may be laid or cast upon the joists and the walls extended for another or other floors in the same manner.

When the wall or partition is finished or as it is being erected, no mortar is necessary between the blocks or courses, but a single coat **46** and an outer coat **47** of cement or plaster is applied in a single layer or in layers which serves to form an outside or water-proof coating, and an inside wall finished as well as to hold the blocks together to maintain the wall in proper condition and to seal or enclose air spaces in the wall for insulation thereof.

At the top of the building, or for a roof support, a pre-cast floor joist **50** has reinforcing bars **51** and **52**, the ends of which are turned oppositely in a head **53** at each end of the joist, the head being adapted to overlap one side section of a block and to engage in a recess in the central or intermediate section of the block. One of the reinforcing bars may be extended beyond the head and provided with a threaded extremity **54**, adapted to engage a notch **55** in an angular end plate **56** and to be held in engagement therewith by a nut **55**. This end plate may extend along one side of the wall or a single plate may be provided for each floor joist. Extending upwardly is a wall or abutment **57** and angular lugs or projections **58** adapted to engage the end of a pre-cast rafter **59** which is supported at the ridge of the roof by engaging a similar end of an opposite joist, the ends being overlapped and a fastening rod **62** inserted through them, and a ridge member **63** applied over the top or between the upper ends of the joined rafters.

A cement roof **60** may be applied over the joists and to finish the edge of the roof with an overhang, a cornice block **61** may be applied to the upper edge of the wall below the roof.

With this construction, an entire house or other building may be quickly and easily erected with a minimum of skilled labor by means of the pre-cast blocks, joists and other parts, the walls both inside and out are plastered and finished for water-proofing and to provide an interior wall coating, and even the floors and roof may be cast in plates on the joists and rafters as set up.

Provisions for doors, windows and other openings are made special sills, lintels and frames may be cast to fit the openings. It may also be necessary to provide partial or broken sections of the blocks in completing a wall or partition, but as it is the intention to apply plaster or cement to both sides of the wall, any small crevices or irregular shapes are covered so that they are not objectionable. By forming a stairway within the building as above set forth, the entire building is substantially fireproof.

While the blocks as described, are particularly intended for rectangular shapes, the same idea of making them in sections and connecting the sections together may be incorporated for circular or arcuate blocks, and houses and buildings of various kinds and designs may be built therefrom without departing from the spirit and scope of the invention.

I claim:

1. A building block comprising a plurality of connected rectangular sections, each section having one end larger than the other, and the ends of adjacent sections being reversely disposed in each block so that the larger ends project beyond the other ends at three edges thereof, and the intermediate sections being provided with transverse perforations which are covered by the outer sections, thus providing a lighter and insulating block.

2. A building block comprising a plurality of rectangular sections connected together, each section having one end larger than the other, and the larger ends being disposed reversely and projecting beyond the adjacent smaller ends at three edges thereof to provide projections at the top, ends, and bottom of the block, and the larger and smaller portion of each section each having a vertical bore therethrough for alignment with similar bores of adjacent blocks to provide a communicating air space.

3. A building wall comprising a plurality of

blocks, each block having a plurality of connected vertical rectangular sections each having one end larger than the other alternately reversed endwise and the larger ends overlapping the adjacent smaller ends at three edges thereof and thereby forming interengaging projections and recesses for adjacent blocks above, below and at both ends thereof, for aligning and positioning the blocks with respect to each other in the wall, and means comprising an outer plaster coating, covering the exposed faces and joints of the blocks for binding the wall together.

4. A building wall comprising a plurality of rectangular blocks, each having connected sections with one end larger than the other and reversely disposed to provide projections overlapping the adjacent smaller ends at three edges so that both ends of the block provide in all four edges of the block for engaging, positioning and aligning the blocks alternately in layers in forming a wall, and a plaster bond for each face in the wall extending over and covering the joints at the faces of the wall, but not extending between the interengaging edges of the blocks.

5. In a building wall, a plurality of rectanglar blocks each having connected sections with one end larger than the other and reversely disposed to provide projections beyond the adjacent smaller ends at its three exposed edges for engaging adjacent blocks at upper, lower sides and both ends thereof, locking means comprising a notch and projection on each block for interengaging with a corresponding projection and notch of an adjacent upper or lower block for positioning each in staggered relation with respect to the other, and a finished coating applied to the outer face of the wall and not to the interengaging edges between the blocks for holding the blocks together and protecting the wall.

6. A building block comprising a plurality of united parallel sections, each section having a rectangular portion at one end larger than that at the other, and the adjacent sections being reversed endwise and disposed to provide projections extending beyond the smaller portion of the adjacent section at three edges for engagement by adjacent blocks at the four edges.

7. A building block comprising a plurality of connected adjacent rectangular sections, each section having one end larger in its rectangular dimensions than the other end, and adjacent sections having the larger ends alternately disposed and overlapping the adjacent smaller end at three edges to provide projections for engaging adjacent blocks at the top, bottom and both ends of the block.

8. A building block comprising a plurality of connected rectangular sections, each section having one end larger than the other and adjacent sections having the larger ends reversely disposed and overlapping the adjacent smaller section at the three outer edges, leaving an intermediate transverse slot at the top and bottom between the larger ends, the edges being adapted for engaging and positioning the section projections of similar adjacent blocks at the four edges.

9. A building block comprising a plurality of rectangular sections combined to form a unitary block, each section having a large and a smaller end, adjacent sections being reversed endwise with respect to each other and the larger ends overlapping the adjacent smaller end at three edges to provide engaging projections at the top, bottom and both ends of each block, and a notch and projection at the top and bottom of each block for interlocking with and positioning corresponding blocks in adjacent tiers.

10. A building block comprising a plurality of joined rectangular sections connected together to form a unitary block, each section having one end larger than the other, and the sections being alternately reversed endwise in the block, the larger ends overlapping the adjacent smaller ends at three edges and the larger ends of adjacent sections terminating at a distance from each other at the center, leaving an open transverse notch between them at the top and bottom, and means at the top and bottom of each block for engaging corresponding means in adjacent upper and lower courses for relatively positioning the blocks in staggered relation therein.

11. A building block comprising a plurality of united rectangular sections, each section having one end larger than the other and adjacent sections being reversely disposed endwise so that the larger ends of adjacent sections project beyond the smaller ends at top and bottom and aso at the ends and terminate short of each other at the center, leaving a transverse slot between the larger ends in the top and bottom, each slot having a width the same as the amount of overlap at the ends of the sections, said slots being flush at the bottoms with said smaller ends and also providing space for seating portions of larger ends of block sections in adjacent upper and lower courses for positioning the block in staggered relation to them.

RUDOLPH G. KAPING.