Oct. 25, 1938. J. E. LOUCKS 2,134,637

WALL CONSTRUCTION

Filed Sept. 15, 1937 2 Sheets-Sheet 1

Fig. 1.

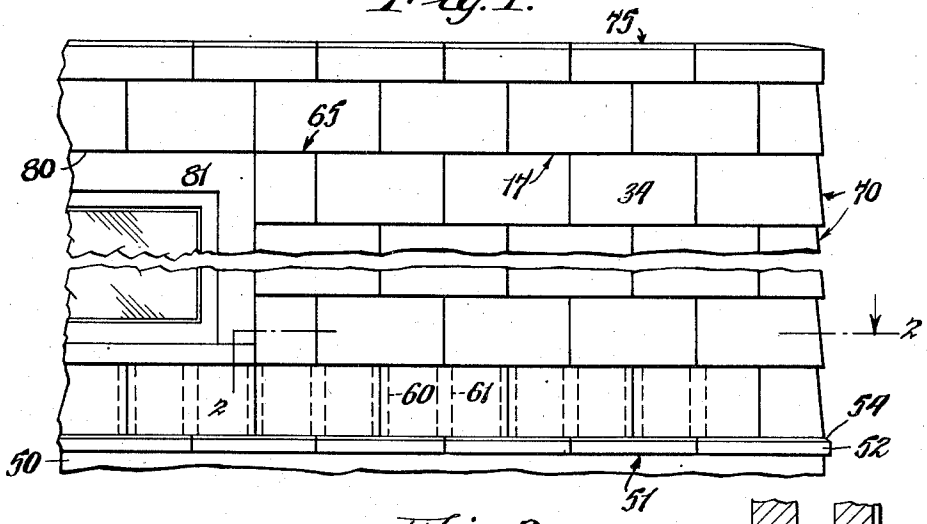


Fig. 2.

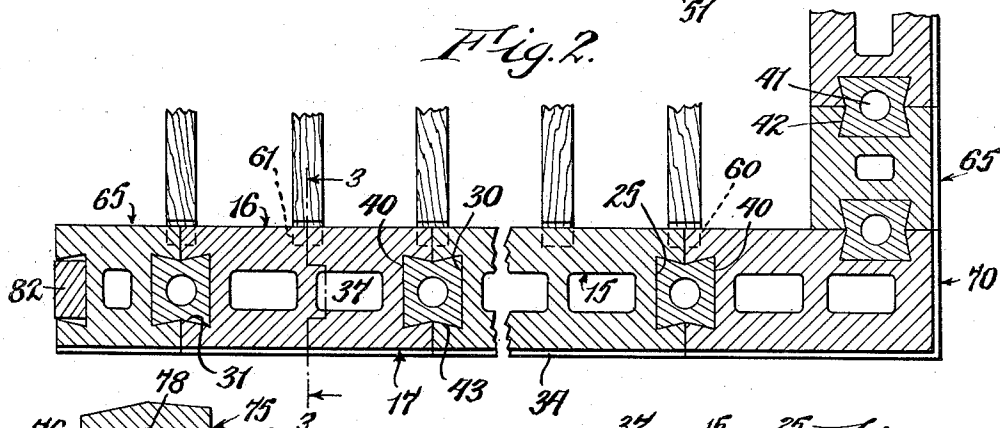


Fig. 3.

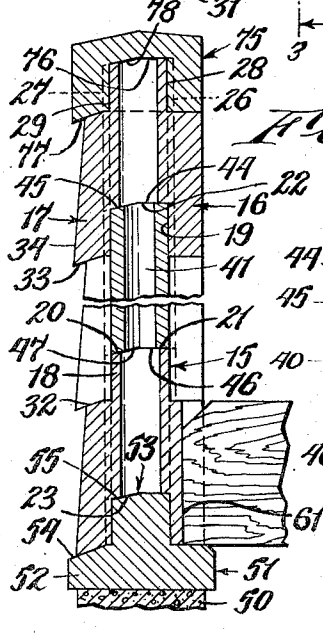


Fig. 4.

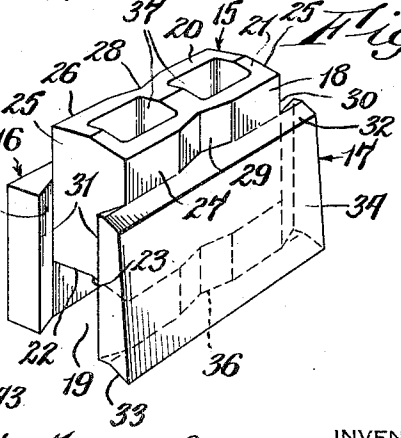
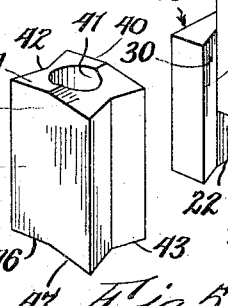


Fig. 5.



INVENTOR
James E. Loucks
BY
Popp and Popp
ATTORNEYS

Oct. 25, 1938. J. E. LOUCKS 2,134,637

WALL CONSTRUCTION

Filed Sept. 15, 1937 2 Sheets-Sheet 2

Fig. 6.

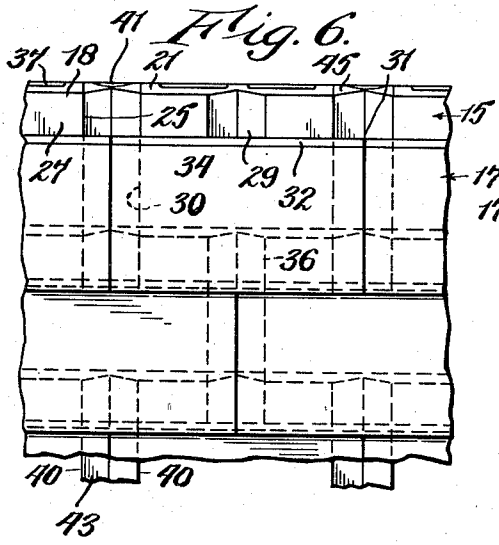


Fig. 7.

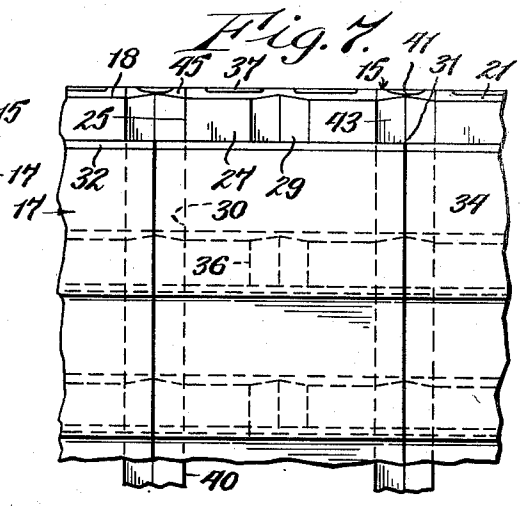


Fig. 8.

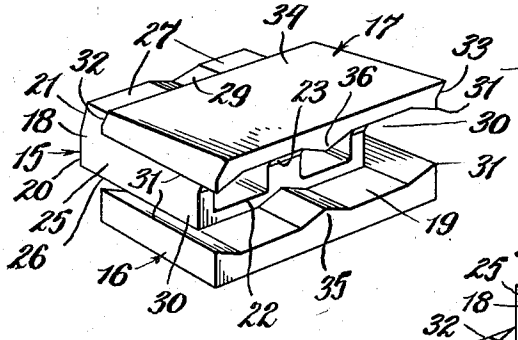
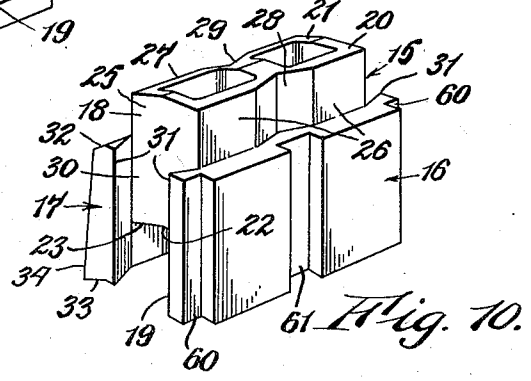


Fig. 10.



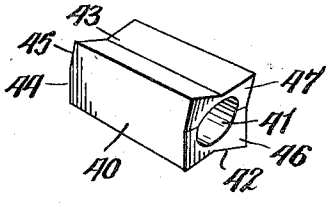


Fig. 9.

INVENTOR
James E. Loucks
BY
Popp and Popp
ATTORNEYS

Patented Oct. 25, 1938 2,134,637

UNITED STATES PATENT OFFICE

2,134,637

WALL CONSTRUCTION

James E. Loucks, Muncy, Pa., assignor to Marjorie H. Loucks, Muncy, Pa.

Application September 15, 1937, Serial No. 163,977

10 Claims. (Cl. 72—41)

This invention relates to a building block for use in constructing buildings such as houses, garages, walls and commercial structures and more particularly to an interlocking and self-aligning block which can be set up with or without the use of cement. It will also be understood that the invention can be embodied in toy building blocks for the amusement and education of children.

One of the objects of this invention is to provide such a block in which each block, as it is set up, is self-aligning with the blocks forming the walls already laid and does not require the insertion of an aligning piece to accomplish this purpose.

Another object of the present invention is to provide such a wall which can be laid up with or without the use of cement and is rigid and weather tight when laid up dry, this also making the block particularly adaptable in the construction of transparent or translucent walls.

Another object of the invention is to provide such a block which upon being placed is automatically interlocked and aligned with the preceding course already laid and in which each block is interlocked with the block alongside by means of a key. However, the insertion of this key is not necessary to align the blocks.

Another object of the invention is to provide an interlocking block which employs separate precast concrete keys for effecting the interlocking between blocks of the same course, which keys permit the blocks to be laid up either in break joint relation with one another or one above the other.

Another object of the invention is to make the keys of the same material as the blocks, such as Portland cement, and in which each key interlocks with the blocks of two courses, thereby adding to the rigidity and strength of the structure. By using such material the key blocks are made comparatively large and the keyways can be used for the insertion of window frames and the like in window openings.

Another object of the invention is to produce a structure which can be made in any desired form with a very small number of different types of blocks and with a single standard type of key block, thereby minimizing the variety of pieces which have to be ordered by the builder and the cost of producing the blocks and keys.

Another object of the invention is to provide an interlocking block and key having vertical holes for reducing the weight of the same and also for providing a wall having lower thermal conductivity.

Another object of the invention is to provide a block and key in which each can be provided with an exterior water shedding slope so that any water entering the wall is repelled.

Another object is to provide a wall construction in which the blocks are so keyed together that the blocks can be placed over openings, such as windows, and used to support superincumbent weight without the provision of lintels of special design.

Another object is to provide such a wall which can be put up with a minimum amount of plastic cement and which can be produced in any desired architectural form, such as in imitation of clapboard siding, the interlocking means being entirely concealed within the wall after the blocks have been laid up.

In the accompanying drawings:

Fig. 1 is a fragmentary side elevation of a corner of a building built up of blocks made in accordance with my invention.

Fig. 2 is a horizontal section, taken on line 2—2, Fig. 1.

Fig. 3 is a vertical section, taken on line 3—3, Fig. 2.

Fig. 4 is a perspective view of the principal form of building block.

Fig. 5 is a perspective view of the key block.

Fig. 6 is a view similar to Fig. 1 showing the manner in which the blocks are laid up in break joint relation.

Fig. 7 is a fragmentary view similar to Fig. 6 showing the manner in which the blocks are laid up in non-break joint relation.

Fig. 8 is a perspective view of the block shown in Fig. 4 showing the same laid on its side.

Fig. 9 is a perspective view of the key block shown in Fig. 5 and showing the same laid on its side.

Fig. 10 is a view similar to Fig. 5 showing a modified form of block for use in providing chases in the wall for the reception of joists.

The building shown in Fig. 1 is principally composed of the building blocks shown in Fig. 4, these being interlocked to one another by the key blocks shown in Fig. 5. The block shown in Fig. 4 can be cast of Portland cement or any other suitable material such as glass, tile, clay, etc., and is cast as a single unitary structure and includes a central portion 15 which is formed integrally with side plates 16 and 17. The central body portion 15 is off-set upwardly relative to the side plates 16 and 17 so as to form an upward

central extension 18 at the top of the block and a channel 19 at the bottom of the block. The upper face of the upward extension 18 is divided into a flat or horizontal portion 20 and an inclined or beveled portion 21, these two portions being about equal in area. The underface of the vertically offset portion 15 is also formed in a corresponding manner, this underface being formed to provide an inner horizontal face 22 and an outer inclined face 23, the face 23 being disposed parallel with the face 21 and being of the same area. The upward offset central portion 18 is of generally rectangular form in horizontal section having vertical end faces 25, an inner vertical face 26 which meets the horizontal face 20 and an outer vertical face 27 which meets the beveled face 21. At the center of the block the inner face of the upward extension of the central portion 15 is provided with a groove 28 which extends vertically upward from the inner plate 16 and is of shallow V-shaped form. Similarly, the outer face 27 is provided with a companion shallow V-shaped groove 29.

The front and rear plates 16 and 17 are longer than the central portion 15 so as to form vertical grooves 30 at the opposite ends of the block. These plates are of the same length and the extending ends of the plates are widened, as indicated at 31, so as to make the grooves 30 of dovetail form. The upper and lower faces of the inner plate 16 are flat and horizontally disposed while the upper face of the outer plate 17 is beveled, as indicated at 32, and its underface 33 is undercut. Where an exterior wall is being erected, the outer face 34 of the outer plate 17 is also preferably disposed at an angle to the vertical, this plate being wider at its base than at its top so as to provide a downward and outward slope for the exterior face of the blocks when set in position. It will be understood that for interior partitions, the opposite faces of the blocks would preferably be made parallel. A shallow V-shaped tongue 35 extends outwardly from the outer face of the inner plate 16, this tongue extending vertically and being of the same size and form as the V-shaped groove 28 in the upwardly offset portion 15 of the block. A similar shallow vertical V-shaped tongue 36 is provided on the front plate 17 in opposed relation to the tongue 35 is of the same form and size as the groove 29 in the upwardly offset portion 15.

In order to reduce the weight of the blocks they are preferably made hollow. For this purpose the upwardly offset central portion 15 of each of the blocks is provided with a pair of vertically extending openings 37.

The blocks are interlocked with one another by the key blocks shown in Fig. 4. These key blocks are preferably made of the same material as the blocks and are provided with opposite flat faces 40 which are of the same dimensions as the end faces 25 of the upwardly offset portion 18 of the blocks shown in Fig. 4. To reduce the weight of the key blocks and also to reduce their thermal conductivity each key block is preferably provided with a central vertical passage 41. The rear face of each key block is indented to form a shallow V groove 42 which extends the full height of the key block and the outer face of each key block is similarly indented, as indicated at 43 so that the key block, in horizontal section, is of hour glass form. These grooves 42 and 43 are of such form that the key block can be interfitted either with the dovetail grooves 30 at the ends of the blocks shown in Fig. 4 or with the tongues 35 and 36. The upper face of each key block is formed to provide a flat inner portion 44 and a beveled outer portion 45 and the underface of each key block is similarly formed to provide a flat inner portion 46 and an inclined outer portion 47, these portions being so provided that the key blocks interfit when laid one on top of the other and also interfit with the upper and lower faces of the upwardly offset portion 15 of the block shown in Fig. 4.

The walls of the building shown in Fig. 1 are shown as being laid upon a foundation 50 on which are laid base blocks indicated generally at 51. Each of these base blocks has a broad base 52 which rests on the foundation 50 and is provided with an upward extension 53. The upward extensions 53 are formed to interfit with the channels 19 of the blocks shown in Fig. 4, having for this purpose vertical grooves (not shown) for the reception of the tongues 35 and 36 and the lips 31. The outer part of the base 52 is also beveled as indicated at 54 to interfit with the bevels 53 of the block shown in Fig. 4 and the upward extension 53 is beveled on the outer part of its upper face, as indicated at 55 to interfit with the bevels 23 of the upwardly offset central portion 15 of the block shown in Fig. 4.

Where steel or wooden joists are supported by walls made of blocks in accordance with my invention the blocks are preferably provided with chases 60 and 61 in their inner vertical faces. Such a block is illustrated in Fig. 10 and since in other respects this block is identical with the block shown in Fig. 4 the same reference numerals have been employed.

Where the blocks forming the wall of the building are laid up in break joint relation half blocks are required. Such half blocks are illustrated at 65 and are identical with the whole block shown in Fig. 4 with such modifications as are necessitated by the reduced size of the blocks. Similarly at the corners of the building a special form of corner block illustrated at 70 are required. Such corner blocks when used in exterior walls have two weather faces which are inclined and the keyways for the reception of the key blocks shown in Fig. 5 are provided in the other two faces instead of in the opposite end faces as with the form of block shown in Fig. 4.

The top of the wall can be capped with cap stones 75. Such cap stones are formed to fit over the upward extensions 18 of the type of block shown in Fig. 4 and the upper ends of the key blocks shown in Fig. 5 and for this purpose are channeled as indicated at 76 and in this channel are provided with vertical tongues which fit into the grooves 28, 29, 42 and 43 of the blocks shown in Figs. 4 and 5. The cap stones are also beveled as indicated at 77 to fit the bevels 32 of the blocks shown in Fig. 4 and are likewise beveled as indicated at 78 to fit the bevels 21 and 45 of the blocks shown in Figs. 4 and 5.

Where a window is provided in the wall an opening 80 is left in the wall and the window frame 81 is placed in this opening. By the use of the special form of key block shown it is unnecessary to provide special lintels over window openings of normal span, even when a load is carried by the span.

It will be noted that with the form of block shown the vertical channels 30 can be used for supporting the window frame, these channels forming continuous vertical channels at opposite sides of the window opening 80 in which a wooden

filler 82 can be placed and to which the window frame 81 can be nailed. It will be understood that where metal window frames are employed the wall can be built up around the window frames so that the frames are disposed directly in the vertical channels at the sides of the window opening thereby eliminating the necessity of the filler pieces 82.

A wall built up of blocks and made in accordance with my invention can be set up with mortar or can be set up dry and in either event will be weather tight. In building a wall, such as the exterior wall of a building, the base blocks 51 are first set along the foundation 50, the upward extensions 53 of these base blocks forming a continuous parapet which is vertically grooved or indented at intervals to fit into the channels 19. If joists are to be placed on the base blocks 51 the first course of blocks will be of the form shown in Fig. 10, such blocks being provided with chases 60 and 61 in their inner faces. In other respects these blocks are the same as the form of block of which the building is principally composed the side plates 16 and 17 having inwardly projecting tongues 35 and 36 which fit into the channels of the ridge formed by the upward extensions 53 of the base blocks 51 and the dovetail ends 31 of these plates likewise fitting into these grooves. Either while the blocks are being set up or after a row of blocks has been completed the blocks are locked end to end by the key blocks shown in Fig. 5. These are inserted in the adjacent end channels 30 of each pair of blocks, the grooves 42 and 43 interfitting with the dovetail extensions 31 of these blocks. When the first course of blocks and key blocks has been completed the upward extensions 18 of these blocks, together with the key blocks shown in Fig. 5, as with the base blocks 51, form a continuous parapet indented, at regular intervals, along its outer side by the grooves 29 and 43 and along its inner side by the grooves 28 and 42. It will therefore be seen that the next course of blocks and key blocks can be laid up on the first course in the same manner as upon the base blocks 51, the building being built up, course by course, until completed. The top of the wall so built up can be finished by the cap stones 75, these cap stones being channeled and having tongues which fit into the grooves 28, 29, 42, 43 of the uppermost course of the blocks and the keys shown in Figs. 4 and 5.

It will be seen that by this construction the blocks can be laid up either in break joint relation, as illustrated in Fig. 6, or with the joints intersecting one another, as illustrated in Fig. 7. It will also be understood that at the corners of the building the corner blocks 70 are employed, these being the same as the principal form of block except that adjacent sides are formed to provide an exterior finish and the opposite sides are provided with the dovetail grooves to receive the key blocks as illustrated in Fig. 2. It will also be understood that where necessary the half blocks 65 are employed, these half blocks being the same as the whole blocks except for the necessary modifications incident to the reduction in size.

Where openings, such as the window opening 80 shown in Fig. 1 are provided the unused channels 30 at the ends of the whole and half blocks forming this opening can be employed to anchor the window frame as illustrated at the extreme left of Fig. 2.

From the foregoing it is apparent that the present invention provides a building block in which each block as it is laid, is self-aligning with the blocks forming the wall already laid and does not require the insertion of an aligning piece to accomplish this purpose. Further the blocks can be laid up without the use of cement and are water shedding when laid, this facilitating the use of the blocks in low cost garages and the like and also rendering the block particularly adaptable for the construction of translucent or transparent walls. Further the blocks are readily joined together by the keys shown in Fig. 5 which are of substantial size and made of the same material as the blocks themselves and can be readily inserted. Each key also interlocks four blocks thereby interlocking the blocks of two courses.

It will further be seen that only a small number of different types of blocks are necessary, the keys all being the same and the only blocks other than the standard whole and half blocks which are required being the corner blocks, the base blocks and the cap stones. Furthermore by the provision of the vertical passages through the blocks a wall construction is provided which has low thermal conductivity and the blocks are light in weight.

I claim as my invention:

1. A self supporting wall, comprising a plurality of blocks, each of said blocks comprising a pair of rectangular side plates and an integral substantially rectangular central portion which is offset upwardly relative to said side plates to form a lateral extension of substantial height at one side of said block and a channel at its opposite side, the sides of said extension which are parallel with said side plates being substantially vertically disposed and the extension of one block interfitting with the channel of another block, the vertical sides of said extensions insuring the vertical and horizontal alinement of said blocks.

2. A self supporting wall, comprising a plurality of blocks, each of said blocks comprising a pair of rectangular side plates and an integral substantially rectangular central portion which is offset upwardly relative to said side plates a distance equal to at least one-quarter the height of said side plates to form an upward extension of substantial height and a correspondingly deep channel in the underside of the block, the extension of one block fitting into the channel of another block and their vertical extent insuring the alinement of said blocks both vertically and horizontally.

3. A self supporting wall, comprising a plurality of blocks, each of said blocks comprising a pair of side plates and an integral central portion which is offset upwardly relative to said side plates a distance equal to at least one-quarter the height of said side plates to form an upward extension of substantial height at the top of said block and a channel in its under side, the sides of said extension which are parallel with said side plates being substantially vertically disposed and the extension of one block fitting into the channel of another block in a plurality of positions whereby said blocks can be laid up in break joint relation or with their joint lines intersecting one another and the vertical extent of said extensions and their vertical sides insuring the vertical and horizontal alinement of said blocks.

4. A self supporting wall, comprising a plurality of blocks, each of said blocks comprising a pair of relatively thick rectangular side plates and an integral substantially rectangular central portion which is offset relative to said side plates to

form a lateral extension at one side of said block and a channel at its opposite side, the extension of one block interfitting with the channel of another block and said extension having a passage extending therethrough parallel with said side plate to reduce its weight and thermal conductivity, said passage extending from one side of said extension to its opposite side and providing relatively thin walls therefor, whereby said side plates provide the major load supporting members of said block.

5. A self supporting wall, comprising a plurality of blocks, each of said blocks comprising a pair of relatively thick side plates and an integral central portion which is offset relative to said side plates a distance equal to at least one-quarter the height of said side plates to form a lateral extension at one side of said block of substantial height and a correspondingly deep channel at its opposite side, the extension of one block fitting into the channel of another block in a plurality of positions whereby said blocks can be laid up in break joint relation or with their joint lines intersecting one another and the vertical extent of said extensions insuring the alinement of said blocks both vertically and horizontally and said extension being provided with a vertical passage extending therethrough to reduce the weight and thermal conductivity of the block, said passage extending from one side of said extension to its opposite side and providing relatively thin walls therefor, whereby said side plates provide the major load supporting members of said block.

6. A self supporting wall, comprising a plurality of blocks, each of said blocks having a central integral portion offset vertically to provide an upward extension of substantial height and a corresponding recess in its opposite side, said extension of one block fitting into the recess of another block, said central portion being also shorter than the length of the block to provide a pair of vertical external grooves and a key block made of the same material as said first blocks and fitting into the corresponding grooves of adjacent blocks and interlocking the same.

7. A self supporting wall, comprising a plurality of blocks, each of said blocks having an integral portion of reduced size extending vertically therefrom and a recess in its opposite side, said extending portion of one block fitting into the recess of another block, said block being provided with a pair of vertical external grooves and a key block fitting into the corresponding grooves of adjacent blocks and interlocking the same, said blocks and key blocks being provided with vertical passages extending therethrough to reduce the weight and thermal conductivity of the blocks and wall.

8. A self supporting wall, comprising a plurality of blocks, each of said blocks comprising a pair of side plates and an integral central portion which is offset vertically relative to said side plates to form a vertical extension and a corresponding channel in the opposite side of the block, the extension of one block fitting into the channel of another block, and said offset portions being shorter in a longitudinal direction than said side plates to form groves at the ends of the block and key blocks fitting into the corresponding grooves of adjacent blocks and interlocking the same, said key blocks being of substantially the same height as said offset portions.

9. A self supporting wall, comprising a plurality of blocks, each of said blocks comprising a pair of side plates and an integral central portion which is offset vertically relative to said side plates to form a vertical extension and a corresponding channel in the opposite side of the block, the extension of one bock fitting into the channel of another block, and said offset portion being shorter in a horizontal direction than said side plates and the adjacent vertical edges of said side plates being thickened to form dovetail grooves at the ends of the block and vertically grooved key blocks of substantially the same height as said offset portion fitting into the corresponding dovetail grooves of adjacent blocks and interlocking the same.

10. A self supporting wall, comprising a plurality of blocks, each of said blocks comprising a pair of side plates and an integral central portion which is offset upwardly relative to said side plates to form an upward extension and a corresponding channel in the underside of the block, the extension of one block fitting into the channel of another block and the upper and lower faces of said offset portion being beveled to provide a water shedding joint between said blocks, and said offset portion being shorter in a horizontal direction than said side plates and the adjacent vertical edges of said side plates being thickened to form vertical dovetail grooves at the ends of the block and verticaly grooved key blocks of substantially the same height as said offset portion fitting into the corresponding dovetail grooves of adjacent blocks and interlocking the same, the upper and lower faces of said key blocks being beveled to form a continuation of the upper and lower faces of said offset portions.

JAMES E. LOUCKS.