May 16, 1939. E. E. SLICK 2,158,089

BUILDING BLOCK

Filed Jan. 9, 1937 2 Sheets-Sheet 1

Fig.1.

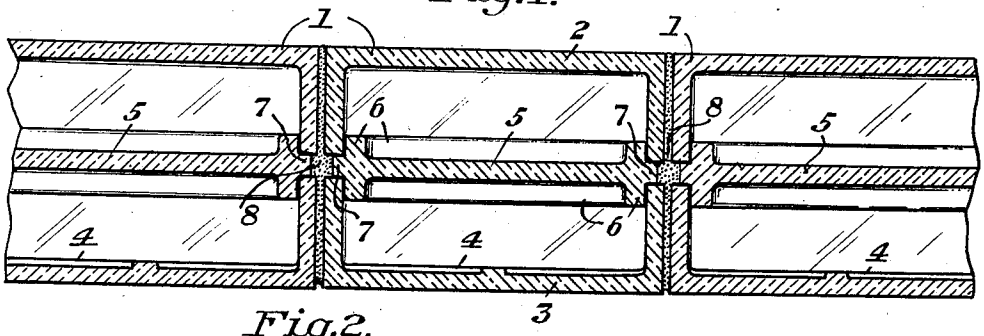


Fig.2.

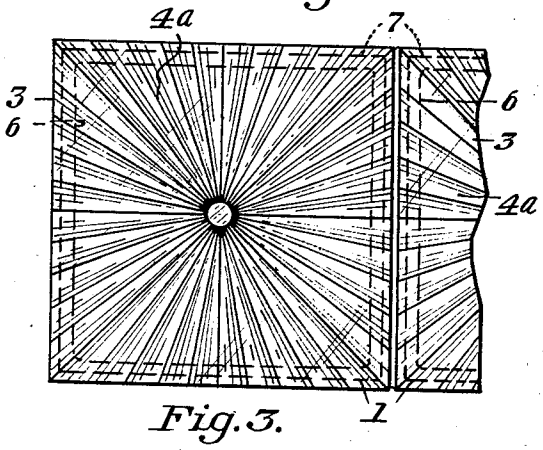


Fig.3.

Fig.4.

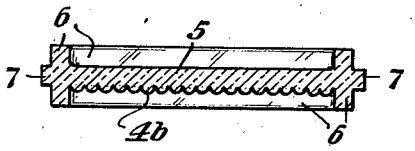


Fig.5.

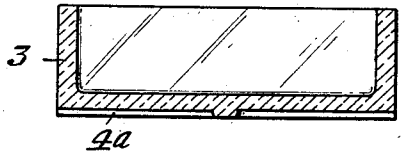
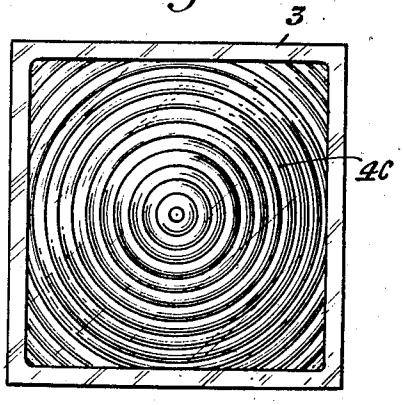


Fig.6.



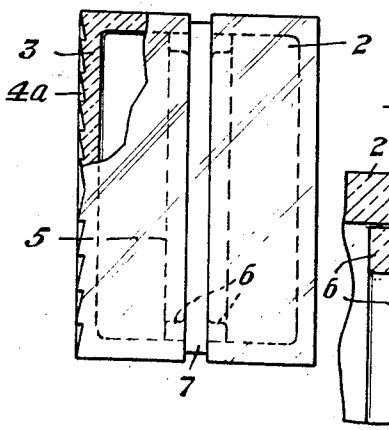
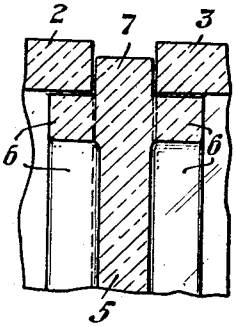


Fig.7.



INVENTOR
Edwin E. Slick
By
Thomas G. Miller
His attorney

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Fig. 8.

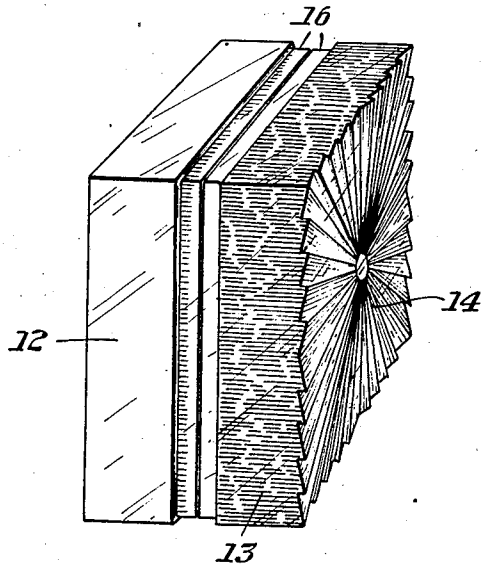


Fig. 9.

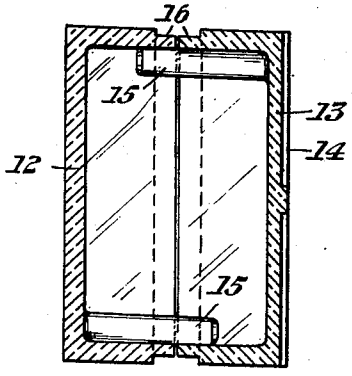


Fig. 10.

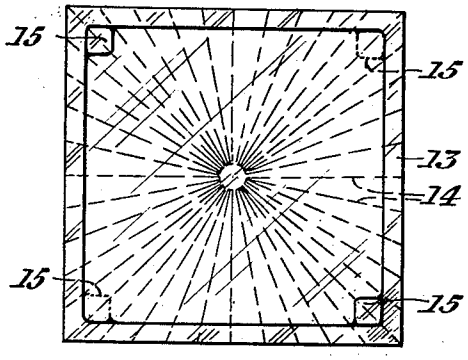
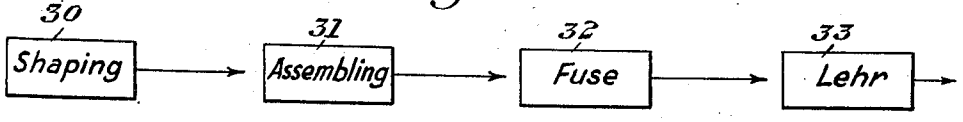


Fig. 11.



INVENTOR
Edwin E. Slick
By
Thomas G. Miller
His attorney

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UNITED STATES PATENT OFFICE

2,158,089

BUILDING BLOCK

Edwin E. Slick, Pittsburgh, Pa.

Application January 9, 1937, Serial No. 119,785

18 Claims. (Cl. 72—41)

This invention pertains to improved forms of building blocks or bricks and to procedure for making and/or assembling them.

Building block may be made from vitreous, ceramic, or other suitable materials. At the present time, building blocks are made by two methods. In one case, suitable plastic or viscous material is blown into a shape, in the other case, the material is pressed into a shape. The first-mentioned method is very expensive, does not produce a uniform product, and makes impossible the utilization of desired structural features.

The second-mentioned method is more generally employed at the present time; however, in making hollow block in this manner, it is necessary to employ some form of pressing device which must be easily removed from the molds without spoiling the shape.

I have found that blocks made in accordance with present day standards do not properly distribute and resist strains, pressures, etc., to which they are subjected; and also, that they are not sufficiently adherent at points of stress, strain, etc.

And, it has been an object of my invention to provide a simplified and/or more effective type of building block construction.

It has been another object of my invention to provide new and improved procedure for making building blocks, bricks, etc.

A further object has been to devise a new and improved form of building block construction.

A further object has been to provide novel procedure for combining separately-formed parts into a block product.

A still further object of my invention has been to devise a building block whose sections will have a true adherence with respect to each other and/or whose parts will be attached and located in such a manner that a desired force distribution will be obtained.

These and many other objects of my invention will appear to those skilled in the art from the description thereof, the drawings, and the appended claims.

In the drawings:

Figure 1 is a horizontal plan showing a sectional view through a building wall employing blocks constructed in accordance with my invention;

Figure 2 is a front view in elevation of the building block construction shown in Figure 1, but having a configuration on the outside of instead of on the inside surface of its side face. The aligned relationship of the configuration of adjacent blocks is also illustrated in this figure;

Figure 3 is an end view in elevation, partially in section, of the embodiment of my invention shown in Figure 2;

Figure 4 is a cross sectional view of a partition member, such as shown in Figure 1, but having a configuration on its surface;

Figure 5 is a cross sectional view of a part or section of the block of Figure 2;

Figure 6 is a front view in elevation of a building block having a modified form of inside face design;

Figure 7 is an enlarged sectional detail taken through the walls of a block such as shown in Figure 1;

Figure 8 is a perspective view in elevation of a modified embodiment of my invention;

Figure 9 is an end sectional view in elevation of a block such as shown in Figure 8;

Figure 10 is an inverted plan view of the block of Figure 8; and

Figure 11 is a diagrammatic illustration of a preferred procedure employed in making the blocks of my invention.

In carrying out my invention, I preferably form the parts of a building block from suitable molten, plastic, or viscous materials, and then place the parts in position or alignment while they are still hot from the shaping operation. I then preferably heat the adjacent or abutting edges of the parts and fuse them together to provide a physically and/or molecularly adherent and cohesive product. In this manner, I am able to provide a block or brick having desired structural features in an inexpensive and efficient manner by utilizing heat of the shaping operation, and thus, minimizing the application of fusing heat in accomplishing the fusing operation. That is, sections or parts are fused together while they still have at least a part of their shaping heat.

I preferably shape the individual parts or sections of each block which are to be combined together into a composite whole in such a manner that suitable aligning, positioning, or locking portions are provided that will position the parts in the desired relationship during the fusing operation. This simplifies centering and also eliminates mechanical devices for holding the parts in position.

I preferably fuse the parts or sections together as soon as possible after they leave their mold or molds. There is little possibility of cracking of the parts or deforming of the shape or of the surfaces, and a very satisfactory and practical form of product is produced. I contemplate locating and attaching the parts in such a manner

that suitable force distribution and column action will be obtained when the blocks are employed in building constructions.

After the parts of the block have been suitably secured in the manner explained above, I then preferably anneal the unitary or composite product. Thus, any stresses or strains are neutralized or equalized throughout the entire body of the product and its quality improved. Further, since the fusing operation is such that the edges being secured are actually adherent for their full length or depth, and since there is what amounts to an actual molecular relationship between the fused parts or edges, the annealing operation can be accomplished without causing the edges to break away or crack.

Figure 11 somewhat diagrammatically represents the procedure above outlined. The numeral 30 represents a suitable shaping machine or device which is preferably of the press type; the numeral 31 represents the assembly or aligning step by which the parts are suitably positioned while hot; the numeral 32 represents the actual fusing operation which may be accomplished by the use of gas jets or other suitable means directly upon the edges; and the numeral 33 represents an annealing lehr, which in effect tempers the product and equalizes any strains which may exist therein. It should be noted that the fusing and annealing operations 32 and 33 may be accomplished when the block is in one position.

Although I have particularly in mind the manufacture of building blocks or brick from vitreous material, such as molten glass, it will be understood by those skilled in the art that the invention is also applicable to plastics, ceramic materials, etc., and especially so where the parts of the product are separately formed and are fused together into an adherent whole. It will also be apparent that the illustrated embodiments of my invention may be manufactured or made from any suitable materials, and that the novel structural features and mounting relationships are new as applied to any form of building block or brick.

In Figure 1, I have shown a section through a wall constructed in accordance with an embodiment of my invention. This wall is built up of blocks 1. Each block 1 has substantially similar front and rear side members 3 and 2 respectively, which have somewhat of a cup-like or angular form. That is, each side member 2 or 3 has a substantially planar face that at each end terminates in inwardly-extending angle-portions which serve as half end portions of the block. The two separately-formed end portions are positioned in an adjacent but spaced edge-to-edge relationship with respect to each other by means of a longitudinally extending partition member 5; the members 2 and 3 are positioned with their mouths open to each other.

The partition member 5 is provided at each end with a spacer portion 7 which abuts the edges of the end portions of members 2 and 3, but which is preferably shorter in depth than such edges. This, in effect, provides a locking groove or indentation extending substantially centrally along the ends of the block, and preferably, around the perimeter of the block. Shoulder portions 6 also extend outwardly from opposite sides of the partition 5 and abut against inside edges of the members 2 and 3, and in cooperation with the spacer portions 7, lock the half-end portions in position with respect to each other and with respect to the partition member 5 and simplify the assembly.

The partition member 5 preferably extends the full depth or vertical width of the block 1 to form a double chamber or air space. It is so positioned, located, and attached that a three-column instead of a two-column effect is produced. When mounted vertically, it acts as a column for the ends, sides, and top and bottom faces of the block. The result is that the block is substantially twice as strong as an ordinary partitioned block and its column action is increased substantially 33%.

By reason of the central indentation or grooved portion provided in each block 1, cementitious or other attaching material 8 placed between the blocks will be locked in position and will in effect lock the blocks in position. For this reason, a high physical adherence between the cement and the surface of the blocks is less important; and, the blocks are keyed together by means of the cementitious material. I have also employed a high fusion point tar or asphaltic preparation with good results. Such a type of material or preparation is advantageous in that it is flexible or yieldable in nature and insulates each block with respect to adjacent blocks. This, of course, permits the glass block to expand and contract under temperature changes without causing chipping and cracking of the block and without spoiling a joint between the block and an adjacent block.

I may provide pebbled and roughened attaching surfaces having sand particles imbedded therein by either sandblasting one or more faces of the block while still hot from the shaping operation, or by placing sand in the mold and then pressing the shape. I also contemplate applying crushed colored glass and/or other suitable substances in either manner to a face of the block to make it semi-transparent or translucent.

Figure 7 is an enlarged showing of the relationship between the partition member 5 and the body portions 2 and 3 of the block. Since these three parts are preferably fused together in the manner outlined above, each part can be made in the desired form without restriction, since it is formed separately and later combined with other parts to provide the desired product.

It will be apparent to those skilled in the art that since glass and similar materials are normally transparent, it will be in many cases desirable to provide some means for deflecting the light rays in such a manner that objects within the building will not be visible from the outside. That is, the block is preferably made semi-transparent or even translucent so that it will admit light for the building but will not subject the occupants to scrutiny.

In Figure 1, I show a star-like prismatic face 4 formed on the inside of the front body member 3. The design is the same as that shown in Figure 2; however, in Figure 2, the design, designated as 4*a*, has been applied to the outside surface of the member 3. Figure 2 also illustrates how the prismatic face of the designs of adjacent blocks may be aligned to provide a pleasing effect.

In Figure 3, I have shown a composite block 1 having the prismatic design 4*a* on its outer surface. It will be noted that the steps or indentations of the prism reverse at the middle of the face.

In Figure 4, I have shown a pebble-like surface 4*b* applied to the partition member 5, and in Fig-

ure 6, I have shown a series of concentric circles 4c upon the inner side of the body member 3.

From the above description, it will appear that any suitable form of prismatic or light diffracting surface may be provided and that such design may be applied to the inside or outside faces of the front and/or back members, to the partition members, or to all of them.

In Figures 8, 9, and 10, I have shown another embodiment of my invention. Cup-like body members 12 and 13 are provided which are preferably cut out, offset, or grooved adjacent their abutting edges 16 to provide a key for the cementitious or other material, and which are also provided with diagonally-opposite lug members 15. The lugs 15 are preferably positioned adjacent at least two diagonally-opposite corners of the body members and may extend from one of the members 13 or 12, or from both of them. The lugs 15, in effect, align the body portions 12 and 13 and take the place of the portions 6 and 7 of the partition member 5 of the embodiment of my invention shown in Figures 1–7, inclusive. The numeral 14 indicates any suitable form of surface design which may be similar to that described in connection with the embodiments of my invention shown in Figures 1–4, inclusive.

In the block of Figure 8, I have shown the front cup or section 13 with a non-limpid, semi-transparent, or translucent glass body. It may be colored, opaque, opal-like or milky in appearance. This may be accomplished by providing a suitable emulsion in the glass batch or while the parts are being pressed into shape. This will in many cases eliminate the need for light-diffracting special designs on the surfaces of the members. Of course, various colors and/or effects can be produced by using different materials or by using impure sand, etc. The block may also be etched by a suitable material, such as an acid. I contemplate making the entire block as well as any of its parts semi-transparent, and if desired, colored.

It will be apparent to those skilled in the art that the principles of my invention may be embodied in other suitable forms or structures, and that the novel procedures herein set forth may be employed for making any suitable form of building block, and further, that additions, substitutions, omissions, and/or combinations thereof may be made without departing from the spirit and scope of my invention as indicated by the appended claims.

I claim:

1. In a substantially hollow building block of vitreous or other suitable fusible material, a pair of substantially cup-like portions having their adjacent edges in a substantially edge-to-edge relationship, portions independent of said edges extending from at least one of said cup-like portions and cooperating with the other of the pair of said cup-like portions for holding them in position with respect to each other, said pair of portions being molecularly adherent with respect to each other.

2. In a substantially hollow building block of vitreous, ceramic, or other suitable material, a pair of hollow members having mouths, said members being placed with their mouths in an open relationship with respect to each other, and an additional member holding said members in an aligned relationship with respect to each other, said holding member having means for providing a keyway for cementitious material employed to position one block with respect to an adjacent block.

3. In a substantially hollow building block of vitreous ceramic, or other suitable material, a pair of face members, portions positioning said face members in a spaced relationship with respect to each other, a partition member extending in a spaced relationship with respect to said face members and separating the block into two compartments, said partition member cooperating with said spaced portions and spacing their edges with respect to each other.

4. In a substantially hollow building block of vitreous or other suitable fusible material, a pair of vertically extending side members, each of said side members having end portions in substantial alignment with end portions of the other of said members, and means in addition of such end portions extending from one of said members to the other of said members and holding them in position with respect to each other.

5. In a substantially hollow building block of vitreous or other suitable fusible material, a pair of face members, each of said face members having a pair of end portions extending therefrom and cooperating with end portions of the other of said members, and means in addition of such end portions locking the end portions of said face members in a substantially edge-to-edge relationship with respect to each other.

6. In a substantially hollow building block of vitreous or other suitable fusible material, a pair of cup-like members in an edge-to-edge relationship, a partition member extending between said cup-like members and being in substantial alignment with adjacent edges of said pair of members, said partition member being fused to said edges to provide a unitary structure.

7. In a substantially hollow building block of vitreous or other suitable fusible material, a pair of substantially rectangular open-mouth sidewall members, a substantially rectangular face and partition member, and a member cooperatively associated with said members for holding them in a desired relationship with respect to each other.

8. In a substantially hollow building block of vitreous, ceramic, or other suitable material, side and end wall portions, a groove formed in and extending about said side and end wall portions, said groove providing a space for locking it in position with respect to adjacent blocks, and means arranged inwardly of and beyond the walls of the block the block to hold its portions in an aligned relation with respect to each other.

9. In a substantially hollow buliding block of vitreous or other suitable fusible material, a pair of substantially open-mouth sections, said sections being placed in an open and substantially aligned relationship with respect to each other, a partition member positioned and located within the mouths of said sections, said sections and said partition member being securely adherent with respect to each other and forming a composite block construction, and a locking groove located in the perimeter of said composite block.

10. In a substantially hollow building block of vitreous, ceramic, or other suitable material, at least two cup-shaped portions, and a substantially centrally located partition and aligning portion cooperating with said cup-shaped portions, said partition being constructed and arranged to divide said cup-shaped portions into at least two air spaces within the building block, said partition having portions for aligning adja-

cent edges of said cup-shaped portions with respect to each other.

11. In a substantially hollow building block of vitreous, ceramic, or other suitable material, at least two or more cup-shaped portions, and a substantially centrally located partition and aligning portion cooperating with said cup-shaped portions and forming at least two air spaces within the building block, said block being shaped to form a substantially-centrally-located bonding material locking groove.

12. In a substantially hollow building block of vitreous or other suitable fusible material, at least two cup-like sections having an open mouth relationship with respect to each other, lugs extending along the inside surface of the wall of the sections for centering the cups with respect to each other, and a locking groove for receiving the material for bonding adjacent blocks with respect to each other.

13. In a building construction, a pair of glass blocks or similar members positioned in a side-by-side relationship and in substantial alignment with each other, and a bituminous composition interposed between adjacent sides of said blocks and cementing them together so that said blocks will be insulated and non-breakably held in position.

14. In a substantially hollow building block of vitreous, ceramic, or other suitable material, a pair of hollow members having mouths, said members being placed with their mouths in an open relationship with respect to each other, and means located inwardly of the wall thickness of said pair of members and adjacent to mouth edges of said pair of members, said means being arranged to hold said members in an aligned relationship with respect to each other, said members having portions providing a keyway for cementitious material employed to position one block with respect to an adjacent block.

15. In a substantially hollow building block of vitreous, ceramic, or other suitable material, a pair of shaped members having open-mouth portions, said open-mouth portions having a substantially aligned-relation with respect to each other, and a spacer member extending along adjacent surface portions of said open-mouth portions of said pair, said spacer member having a spacer portion extending between adjacent open-mouth portions of said pair and spacing them with respect to each other, said spacer member having shoulder portions for aligning adjacent portions of said pair with respect to each other and with respect to said spacer portion.

16. In a substantially hollow building block of vitreous or other suitable fusible material, a pair of shaped members having open-mouth portions, said open-mouth portions having a substantially aligned relationship with respect to each other, lugs extending along inner side wall portions of at least one of said pair and extending outwardly beyond the open-mouth portion thereof into the open-mouth portion of the other member of the pair to abut against and to align inner side wall portions of the other member of the pair with respect thereto.

17. In a substantially hollow building block of vitreous or other suitable fusible material, sidewall portions, end portions, a partition member extending across between at least one pair of said portions, said portions and said partition member being molecularly adherent with respect to each other and providing a unitary construction.

18. In a substantially hollow building block of vitreous or other suitable fusible material, sidewall portions, end-wall portions, top and bottom faces, a partition member extending across between at least one pair of said portions, said partition member being molecularly adherent with respect to said portions across which it extends and also being molecularly adherent with respect to said faces and providing a unitary construction.

EDWIN E. SLICK.