July 13, 1937. T. O. RAAD 2,086,989

BUILDING BRICK

Filed Nov. 11, 1936

Fig. 1.

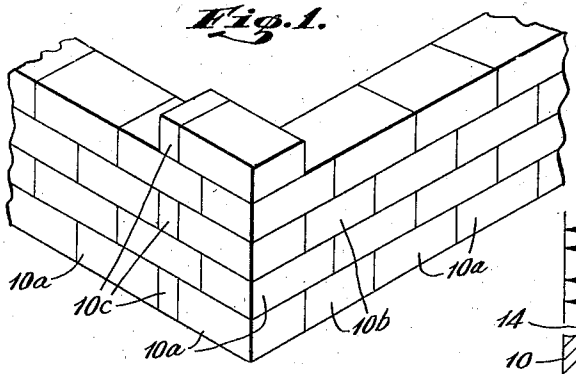


Fig. 2.

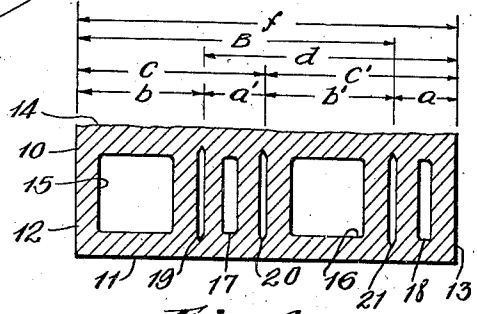


Fig. 3.

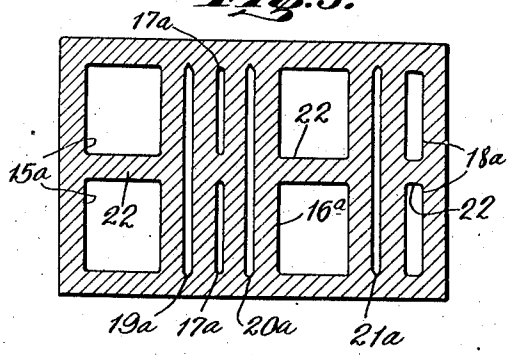


Fig. 4.

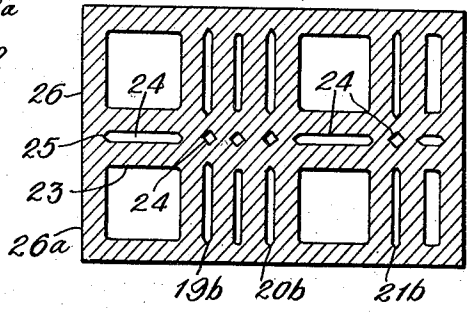


Fig. 5

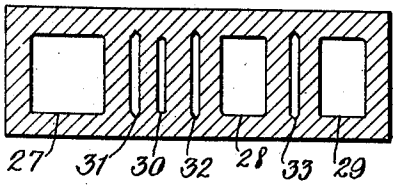


Fig. 6.

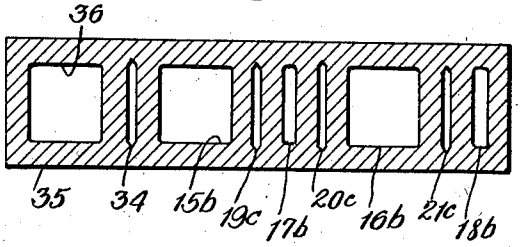
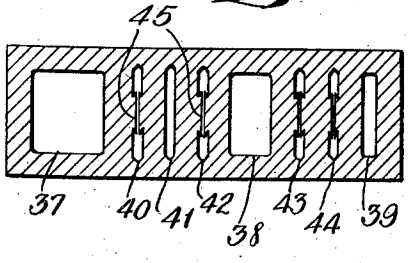


Fig. 7.



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Patented July 13, 1937 2,086,989

UNITED STATES PATENT OFFICE

2,086,989

BUILDING BRICK

Thomas O. Raad, New York, N. Y.

Application November 11, 1936, Serial No. 110,220

7 Claims. (Cl. 72—41)

This invention relates to building bricks of the hollow or load bearing type or what also may be termed tiling, which will have many uses, but is primarily adapted for use in the construction of a complete wall or as an outer facing brick, block or tile; and the object of the invention is to provide a brick of the class described which is molded, cast or otherwise formed into a multiple cell or chambered unit having cleavages so spaced or arranged thereon as to subdivide the unit into brick sections or parts of at least two different dimensions transversely or across the cells or chambers of the brick or longitudinally of the length of the brick, said cleavages being arranged vertically on the brick; a further object being to provide a brick of the class described wherein the unit may be subdivided into brick sections of three or more different dimensions, thereby adapting a single brick unit to the fulfillment of the construction of a complete wall or wall facing without the necessity of utilizing specially constructed bricks of the corner, half-closure and full-closure types as well as other special bricks; a further object being to provide a multiple or parallel section unit which may be subdivided centrally and longitudinally thereof in addition to the first named subdivisions, thus adapting the unit to the formation of bricks of irregular contour and suitable for use as jamb bricks and the like; a further object being to provide a brick of the class described wherein a regular or running bond may be maintained or wherein any desired bonding may be provided without the necessity of utilizing any other brick or brick section than those provided in the complete brick unit; a still further object being to provide a brick unit of the class described, three side surfaces of which may be finished in any desired manner adapting them to the finish of the resulting wall to be formed and wherein the other surface may be scored or otherwise formed to provide means for anchoring or adhering the same to an inner wall surface or the application of a surface facing thereto, such for example as plastering; and with these and other objects in view, the invention consists in a building brick or brick unit of the class and for the purpose specified, which is simple in construction, efficient in use, and which is constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views and in which:

Fig. 1 is a perspective view of one corner portion of a wall, diagrammatically illustrating one method of utilizing one form of brick unit in the construction of a wall.

Fig. 2 is a plan view of one form of brick unit which I employ.

Fig. 3 is a view similar to Fig. 2 showing a dual or multiple brick unit similar to that shown in Fig. 2.

Fig. 4 is a view similar to Fig. 3 showing another form of the dual or multiple unit.

Fig. 5 is a view similar to Fig. 2 showing a different arrangement of subdivision of a brick unit into brick sections.

Fig. 6 is a view similar to Figs. 2 and 5, showing a further modification as applied to a brick of greater length; and,

Fig. 7 is a view similar to Figs. 2, 5 and 6 showing a further modification.

It is known in the art to provide hollow bricks, blocks or tile for use as a back-up brick construction for walls. With such known bricks, it has been necessary and the custom to provide numerous special bricks in order to properly finish the wall construction and to register with the conventional facing brick courses employed, which practice has brought about considerable inconvenience in the handling and piling of the respective and varied bricks to facilitate selection thereof on a job, and oftentimes has caused delay in construction by reason of the fact that certain required sizes or types were not available on the job because of improper deliveries.

My improved building brick adapts itself for use in the construction of a building wall or as an outer facing brick for a complete wall structure, depending entirely upon the architect's requirements or desires, and further eliminates the many difficulties now experienced in providing one unit brick which is capable of being subdivided into brick sections which will fulfill all requirements in the construction of a wall or wall facing and wherein no waste will be experienced, and further, wherein the question of supply of required sizes is eliminated as each unit adapts itself to all sizes.

In Fig. 2 of the drawing, I have shown at **10** a brick unit having a smooth or suitable finish surface or face **11** and correspondingly finished side surfaces **12** and **13** and an inner scored or otherwise formed surface **14**, the latter being so made as to adapt it to the distinct uses for which the brick is intended. This will be varied or modi-

fied when the unit is used as a facing brick or as a complete wall brick. The brick **10** is divided into two vertical chambers or passages **15** and **16** of substantially the same size and preferably rectangular in cross sectional form and two narrow chambers or passages **17** and **18**. The brick is also kerfed at longitudinally spaced points **19**, **20** and **21**, at which points, the brick is made hollow to form cleavages facilitating subdivision of the brick at the points **19**, **20** and **21**. The brick **10** as shown in Fig. 2 may be of any desired length which is designated by the reference dimension character *f* in said figure. For example, we will assume that this dimension is 12''. This brick may be of any desired height, but is preferably 5'' in height to be equivalent to the two standard brick courses, but may be made of any number of brick courses high, depending entirely upon the requirements. The width or depth of the brick may be of any desired dimension, or, in the example shown, would be of a 2'', 4'', 6'' or 8'' dimension depending upon the particular use of the brick and the requirements therefor.

The subdivisions of the brick unit **10** into separate brick sections along the lines **19**, **20** and **21** facilitates the subdivision of this unit into a number of different brick sections. For example, by subdividing the unit on the line **21**, two bricks of the dimensions *a* and B will be formed. In the example illustrated in Fig. 2, the dimension *a* would be 2'' and the dimension B would be 10''. By subdividing the brick unit on the line **20**, the unit may be divided into two similar brick sections *c*, *c'*, both of which would be 6'' long. By subdividing the unit at the point **19**, the unit will be divided into two sections *b* and *d*, the section *b* being 4'' and the section *d* 8''. The unit may be divided at all of the points **19**, **20** and **21**, which would divide the brick unit into sections *b*, 4''; *a'*, 2''; *b'*, 4''; *a* 2''. At this time, it will be noted that in making any one brick in the brick unit to divide the same into two sections, the two sections thus produced will each have two finished surfaces **11**, **12**—**13**.

To clearly demonstrate one of the many uses of bricks made according to my invention, I have diagrammatically illustrated at Fig. 1 of the drawing, the corner portion of a wall, which, for example, is constructed from bricks similar to that shown in Fig. 2 of the drawing, of, for example, a 12'' length, an 8'' width or depth and a 5'' height. The lower corner brick **10***a* will be of full size as is also the brick **10***a* arranged directly above the first named brick, the lower brick being arranged with its long outer surface extending to the left in Fig. 1, whereas the next adjacent brick has its long surface extending to the right. To provide a symmetric bonding of the brick extending from the corner of the wall as indicated in Fig. 1, a brick **10***b* of 10'' length will extend to the right of the lower brick **10***a*, whereas the 2'' brick **10***c* cut from the unit from which the brick **10***b* is formed is placed to the left of the lower brick **10***a*. Arranged next to or to the right of the brick **10***b* is another complete brick unit **10***a*, and this will continue through the length of the wall extending to the right until another corner of the wall is reached. In like manner, brick units **10***a* will extend to the left of the brick **10***c* and every alternate row in the height of the wall will be of the same arrangement of brick as is indicated by the references **10***b* and **10***c* in Fig. 1 of the drawing. The intervening rows will include complete brick units **10***a*.

It will be understood at this time that different methods may be employed in the subdivision of the brick units in forming the corner construction, and the illustration in Fig. 1 of the drawing is only one of many possible arrangements. However, a perfect bonding will be provided between the several bricks, and a symmetric arrangement will be provided throughout the wall structure except at or adjacent the corner portions thereof. With the arrangement described, no losses will be experienced by reason of the fact that the 10'' and 2'' sections **10***b* and **10***c* constitute parts of complete brick units.

For purposes of simplification in the illustration, the chambers or passages of the bricks as diagrammatically illustrated in Fig. 1 of the drawing are not shown. However, these chambers or passages are arranged vertically in the bricks, and furthermore, as these are varied or may be of a varied construction as indicated in Figs. 3 to 7 inclusive, the arrangement of the chambers or compartments would naturally vary in the resulting wall structure, and Fig. 1 is intended to represent one manner of utilizing any of the brick units herein more specifically described.

In Fig. 3 of the drawing, I have shown a slight modification of the unit **10** shown in Fig. 2 which consists simply in dividing the several chambers or compartments into dual chambers or compartments **15***a*, **16***a*, **17***a* and **18***a* by a connecting web **22** which extends centrally and longitudinally through the brick unit. This web is subdivided or broken only at the points **19***a*, **20***a* and **21***a* where the cleavage passages are formed. This type of construction is adaptable to brick units of wider dimensions such as 8'', 10'' and 12'' widths, and especially when employed in the construction of a complete wall structure where sufficient load bearing requirements will be provided.

In Fig. 4 of the drawing, I have shown a slight modification of the construction shown in Fig. 3 which simply consists in providing a continuous web **23** which is of greater width than the web **22** and is provided with passages or openings **24** arranged and spaced longitudinally thereof forming cleavage passages facilitating the subdivision of the brick unit along the line indicated by the kerf **25** into two longitudinal brick sections **26**, **26***a*. It is understood, however, that the unit or the separate sections **26**, **26***a* thereof may be broken up into the other brick sections as in the construction shown in Fig. 1, as well as with the construction shown in Fig. 3 or both. In other words, one or two corners of the complete unit shown in Fig. 4 may be removed. At this time it will also be apparent that all surfaces of the unit shown in Fig. 4 may be smooth or finished in any desired manner, or one surface thereof may be scored or otherwise formed similar to the surface **14** in Fig. 2. This also applies to the construction shown in Fig. 3 of the drawing.

The subdivision of the brick shown in Fig. 4 at the points **19***b*, **20***b* and **21***b* is not continuous through the brick unit as in Fig. 3, but registers with some of the cleavage passages or openings **24** arranged in the web **23**. The brick shown in Fig. 4 will have still greater load bearing properties, and therefore, would be suitable for use in the construction of relatively large thick walls.

In Fig. 5 of the drawing, I have shown a modification of the construction shown in Fig. 3 primarily as to dimensions in the subdivision of the block unit. With this construction, I employ three large chambers or passages **27**, **28** and **29** and a narrow passage **30** arranged between the

passages 27 and 28. The cleavage subdivisions are indicated at the points 31, 32 and 33, which, instead of dividing the brick unit into combination of two and four brick sections as in Fig. 2, will divide the same into a 4", 2", 3", 3" combination, the 4" containing the passage 27; the 2" the passage 30; and the two 3" sections containing the passages 28 and 29. This brick unit may be of a 5" or other course height, but would preferably be made of odd sized thicknesses or depths, for example, 3", 5", 7" and 9" depths. In this connection, it will also appear that if desired, the brick section including the chamber 28 may be 1" in length, in which event, the brick section containing the chamber 29 would be 5" in length. These combinations all make up a complete 12" length of the brick unit. With the construction shown in Fig. 5, the brick unit may be divided into the several ways indicated in Fig. 2 of the drawing by the reference dimensions *a*, *a'*, *B*, *b*, *b'*, *c*, *c'*, *d*.

In Fig. 6 of the drawing, I have shown my invention applied to a brick unit of greater length, such for example as 16" in length. This unit differentiates from that shown in Fig. 1 simply in adding from the point indicated at the cleavage 34 a brick section 35 containing a chamber or passage 36 which section is 4" in length. In other words, the chambers 15*b*, 16*b*, 17*b* and 18*b* are the same as those shown in Fig. 2, and the same cleavage subdivisions at 19*c*, 20*c* and 21*c* are provided. This type of brick unit will increase the number of subdivisions which can be made or provided, in other words, three 4" brick sections may be formed from the single brick unit in addition to two 2" sections, and the other increased subdivisions will be apparent.

The construction shown in Fig. 7 of the drawing differs from that shown in Fig. 5 as well as the other figures in providing narrow 1" sections which will increase the number of sections that can be removed from a single unit and also adapted it to odd and even dimensioned brick sizes. This unit is provided with three differently sized chambers or compartments 37, 38 and 39 and with cleavage subdivisions 40, 41, 42, 43 and 44 all of which, with the exception of the cleavage 41, include central dove-tailed anchor portions 45. These anchor portions may be included with the construction shown in the other figures, and serve primarily to increase the anchoring or bonding of the brick or block to the cement and to each other, and also to increase the load bearing properties of the brick.

To illustrate one arrangement of dimensions of the brick unit shown in Fig. 7, the brick section formed by severing the unit at the point 40 may be 4" in length, and between the points 40—41, 41—42 and 43—44, the brick sections may be 1" in length, and between the points 42—43 3" in length, and between the point 44 and the other end of the brick 2" in length, thus making a total of 12". The dimensions would vary in bricks of different overall dimensions. However, with the dimensions given, in addition to the 2", 4", 6", 8" and 10" brick section sizes, I may also form brick sections of the 1", 3", 5", 7" and 9" sizes. To illustrate the latter in some degree, the distance between the left hand end of the brick and the point 43 will be 9", whereas the distance between the right hand end of the brick and the point 41 will be 7", leaving 5" from the point 41 to the left end of the brick.

The type of brick shown in Fig. 7 may be found useful in many types of wall constructions, especially where odd and even brick sections are desirable. However, the use of the brick units shown in Figs. 2, 5 and 6 will probably be more practical and desirable in ordinary cases. At this time, it will also be apparent that the brick units shown in Figs. 5, 6 and 7 may be constructed in the dual type as disclosed in Figs. 3 and 4, and the illustration of such types of bricks has been omitted in order to simplify the illustration, as it is quite apparent from the disclosure in Figs. 3 and 4 how the dual structure is applicable to the structures shown in Figs. 5, 6 and 7.

The bricks, blocks or tiles may be composed of any desired material, such for example, as clay, terra cotta, concrete, cinder and other types, the material employed governing the use for which the brick is intended or in satisfying specification requirements of architects in the construction of any particular type or kind of building or wall structure thereof.

While hollow chambers or compartments are preferable in at least part of the brick unit structure, which chambers preferably open through the top and bottom edges thereof, it is also apparent, especially from a consideration of Fig. 7, that part of the removed sections may be of a solid structure.

It is also preferred that the voids at the cleavage points are to be approximately equal to the width of the mortar joint, thus producing the proper finish between the bricks in erecting a wall. The various cross webs employed in the brick, which subdivide one chamber from another, also provide means for grasping and handling the brick in laying a wall.

In the use of my improved brick units, the transverse walls, that is to say, the walls extending between the front and rear surfaces of the brick will be arranged in common vertical alinement throughout the several laid brick units or sections thereof in establishing the standard or conventional bonding, thus maintaining the desirable load bearing properties throughout the wall structure.

While I have set forth in the foregoing specification dimensions of even figures, fractions thereof may also be employed and this rests primarily with the specification requirements of the builder or architect. It is preferred, however, that in standardizing the sale and use of bricks made according to my invention, they will preferably be produced in the standard scales of dimensions herein indicated and the other types of blocks would be considered of special construction.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A building brick unit comprising a hollow body of predetermined length, width and heighth, said body having side and end walls and intermediate cross webs defining a plurality of longitudinally spaced and vertically extending chambers, one side wall and both end walls of said body having outer surfaces which are finished throughout, at least two of said chambers being of different cross sectional shape and size, said body having cleavage passages arranged intermediate said spaced chambers, and said passages extending into at least one of said side walls a greater distance than said chambers to form vertically arranged freely breaking points where the cleavage passages are arranged with-

out defacing the finished outer surface of said side wall.

2. A building brick unit comprising a hollow body of predetermined length, width and heighth, said body having side and end walls and intermediate cross webs defining a plurality of longitudinally spaced and vertically extending chambers, one side wall and both end walls of said body having outer surfaces which are finished throughout, at least two of said chambers being of different cross sectional shape and size, said body having cleavage passages arranged intermediate said spaced chambers, said passages extending into at least one of said side walls a greater distance than said chambers to form vertically arranged freely breaking points where the cleavage passages are arranged without defacing the finished outer surface of said side wall, said body being adapted to be sub-divided into two or more brick sections having two or more different lengths, and means extending longitudinally and vertically of said block for dividing said chambers into separate compartments arranged in each brick section.

3. A building brick unit comprising a hollow body of predetermined length, width and heighth, said body having side and end walls and intermediate cross webs defining a plurality of longitudinally spaced and vertically extending chambers, one side wall and both end walls of said body having outer surfaces which are finished throughout, at least two of said chambers being of different cross sectional shape and size, said body having cleavage passages arranged intermediate said spaced chambers, said passages extending into at least one of said side walls a greater distance than said chambers to form vertically arranged freely breaking points where the cleavage passages are arranged without defacing the finished outer surface of said side wall, and means involving a longitudinal web and longitudinal cleavage in said web for subdividing said brick unit longitudinally thereof.

4. A building brick unit comprising a hollow body of predetermined length, width and heighth, said body having side and end walls and intermediate cross webs defining a plurality of longitudinally spaced and vertically extending chambers, one side wall and both end walls of said body having outer surfaces which are finished throughout, at least two of said chambers being of different cross sectional shape and size, said body having cleavage passages arranged intermediate said spaced chambers, said passages extending into at least one of said side walls a greater distance than said chambers to form vertically arranged freely breaking points where the cleavage passages are arranged without defacing the finished outer surface of said side wall, said body being adapted to be sub-divided into two or more brick sections having two or more different lengths, and the lengths of the brick sections of said unit being in multiples of two inches.

5. A building brick unit comprising a hollow body of predetermined length, width and heighth, said body having side and end walls and intermediate cross webs defining a plurality of longitudinally spaced and vertically extending chambers, one side wall and both end walls of said body having outer surfaces which are finished throughout, at least two of said chambers being of different cross sectional shape and size, said body having cleavage passages arranged intermediate said spaced chambers, said passages extending into at least one of said side walls a greater distance than said chambers to form vertically arranged freely breaking points where the cleavage passages are arranged without defacing the finished outer surface of said side wall, said body being adapted to be sub-divided into two or more brick sections having two or more different lengths, and the lengths of predetermined brick sections of said unit being in multiples of odd numbers.

6. An outer facing or finish wall building brick unit for use in the construction of a complete wall or wall facing without the use of independent or special bricks in maintaining proper bonding between the respective brick units or sections thereof in the construction of a wall, said unit having side and end walls and intermediate cross webs defining a plurality of longitudinally spaced and vertically extending chambers, the outer surfaces of the end walls and one side wall of said unit being finished throughout, at least two of the chambers of said unit being of different cross sectional shape and size, and said unit having intermediate said chambers, vertically extending openings permitting division of said unit transversely at said openings into brick sections of different dimensions adapting the same to the construction of a complete wall in a predetermined bonding arrangement.

7. An outer facing or finish wall building brick unit for use in the construction of a complete wall or wall facing without the use of independent or special bricks in maintaining proper bonding between the respective brick units or sections thereof in the construction of a wall, said unit having side and end walls and intermediate cross webs defining a plurality of longitudinally spaced and vertically extending chambers, the outer surfaces of the end walls and one side wall of said unit being finished throughout, at least two of the chambers of said unit being of different cross sectional shape and size and said unit having intermediate said chambers, vertically extending openings permitting division of said unit transversely at said openings into brick sections of different dimensions adapting the same to the construction of a complete wall in a predetermined bonding arrangement, and said sections having a longitudinal web with longitudinal apertures therein to provide division of said unit longitudinally thereof into other brick sections.

THOMAS O. RAAD.