Nov. 28, 1967 W. A. CURCI 3,354,592

FRANGIBLE MASONRY UNIT

Filed June 8, 1965

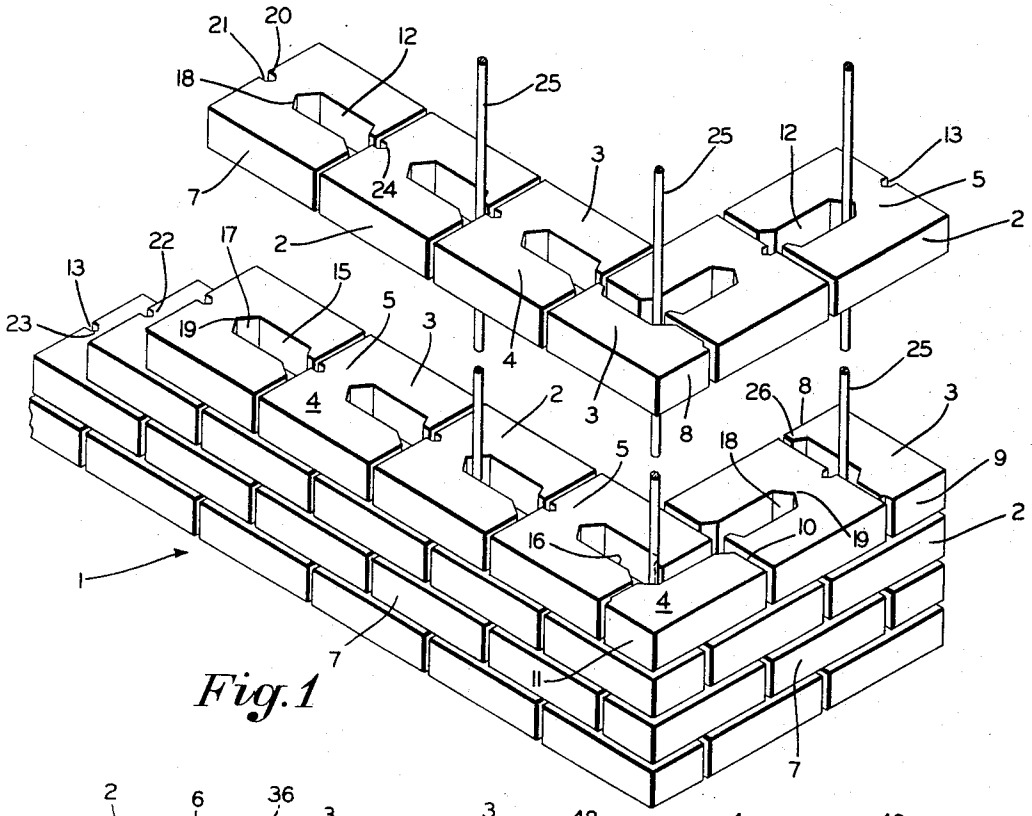


Fig. 1

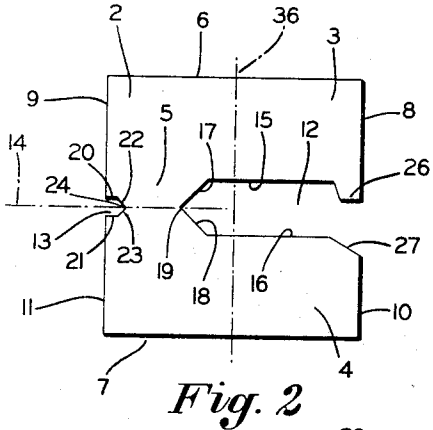


Fig. 2

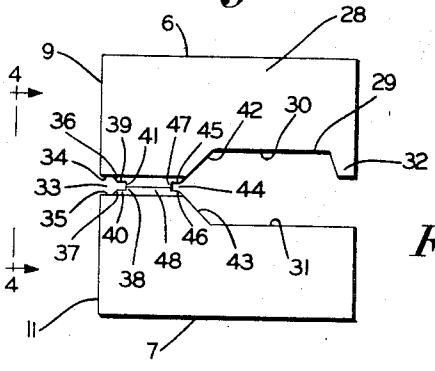


Fig. 3

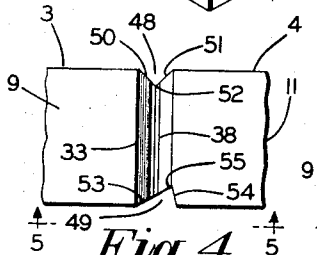


Fig. 4

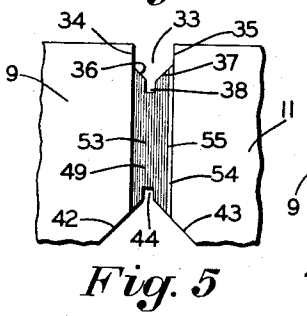


Fig. 5

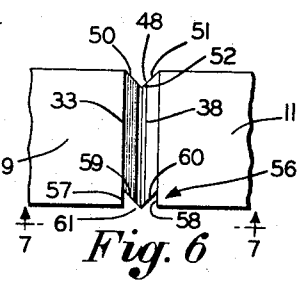


Fig. 6

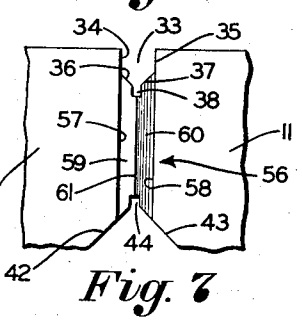


Fig. 7

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FRANGIBLE MASONRY UNIT

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ABSTRACT OF THE DISCLOSURE

A full wall width through-the-wall masonry building block generally U-shaped in cross section permitting the enclosure without block fracture of vertical reinforcement, conduits, pipes and other constructional members, and capable of fracture into half sections at least one of which has a side and two end surfaces simulating a conventional brick whereby only one type of block which may be an extruded shape is required for general purpose masonry construction. The block also may have special top and bottom surface formations preventing moisture from flowing from the outside to the inside surfaces of a wall erected with the blocks.

This invention relates to a masonry unit to be used in most instances as a full width or "through-the-wall" unit in wall construction. More particularly, it pertains to a U-shaped masonry block which may be used wholly or partially as needed, and is particularly useful in contemporary bearing wall construction.

Full width or through-the-wall masonry wall units or bricks with various configurations have been used for specific purposes from time to time. A disadvantage of most such prior units has been that they have certain limitations for general purpose use in masonry construction. One problem involved with most prior units has been that they have required not only one basic unit but also one or more additional complementary units to provide a finished structure.

Associated with the foregoing has been the problem of obtaining general acceptance of units of a special shape other than the basic rectangular brick or concrete block having the ornamental appearance of conventional brick. The conventional shapes have been adhered to because of the economic difficulties and inflexible adaptation of full wall width products composed of clay or cementitious material. Where, however, a single wall unit is used wholly or in part for any wall structure, many advantages are obtained.

It has been found that a single through-the-wall masonry unit may be provided and that it may be extruded or molded from concrete, clay, or other cementitious material in the same manner as brick or concrete block. Its unique shape permits the enclosure of vertical reinforcements, electrical conduits, pipes, and other constructional items within the core of the unit without the necessity of cutting the unit or the item enclosed during installation. At the same time a running bond is maintained between the courses of units such as in a conventional brick wall.

Another advantage is a highly satisfactory through-bond without the use of metal ties or special bonding courses. Moreover, the units when combined in a wall provide excellent heat and noise insulation qualities because of a dead air space or cavity at the core of the unit.

In addition, although one basic shape is provided, its particular configuration is readily adapted to alteration, i.e. easy field cutting as required for a particular installation. The unit may be separated into half portions of conventional brick size by striking the unit with a sharp blow

at a specific location to obtain a clean break through the unit.

It has been found that the difficulties of prior wall constructions may be overcome by providing a U-shaped wall unit which is usable either in its entirety or in smaller and separate brick portions, composed of frangible masonry material, and having a reduced neck portion through which the unit may be broken into separate brick portions as needed.

Accordingly, it is a general object of this invention to provide a masonry unit which avoids the difficulties, disadvantages, and limitations of prior wall units and accomplishes in one unique unit many advantages and economics in construction over conventional units.

It is another object of this invention to provide a masonry unit which is composed of frangible masonry material which may be readily broken for use in smaller unit portions.

It is another object of this invention to provide a masonry unit having a particular configuration which is adapted to easy fracture of the unit into two half portions.

It is another object of this invention to provide a masonry unit having a configuration which is easily broken into two half portions and which maintains a basic ornamental appearance of single brick units.

It is another object of this invention to provide a masonry unit having groove means for preventing moisture from flowing from the outside to the inside surface of a wall.

It is another object of this invention to provide a masonry unit which will accomplish many of the desirable features of a standard cavity wall construction such as insulation, incorporation of constructional items, finished appearance on both sides, minimal moisture penetration, and other advantages as herein explained, in one full width unit.

Finally, it is an object of this invention to provide a masonry unit which accomplishes the foregoing desiderata in an inexpensive manner.

These and other objects and advantages apparent to those skilled in the art from the following description and claims may be obtained, the stated results achieved and described difficulties overcome by the discoveries, principles, apparatus, parts, combinations, subcombinations and elements which comprise the present invention, the nature of which is set forth in the following statement, preferred embodiments of which—illustrative of the best mode in which applicant has contemplated applying the principles—is set forth in the following description, and which are particularly and distinctly pointed out and set forth in the appended claims forming part hereof.

The nature of the improved masonry wall unit of the present invention may be stated in general terms as including a U-shaped member having two half portions and one transverse neck portion extending therebetween, the half portions and neck portion forming a deep groove extending from one end surface and forming a relatively shallow groove extending from the other end surface, the grooves being aligned on an axis substantially centrally spaced between the outer side surfaces of the unit, and the inner end of each groove having converging walls forming tapered notches on opposite sides of the neck portion which notches are aligned on the groove axis.

Referring to the drawings forming a part hereof in which embodiments are shown by way of example:

FIG. 1 is a schematic view showing the manner in which courses of masonry wall units are placed in position;

FIG. 2 is a plan view of the unit shown in FIG. 1;

FIG. 3 is a plan view of the unit shown in FIG. 2;

FIG. 4 is an enlarged fragmentary elevational view of another form of the unit taken on the line 4—4 of FIG. 3;

FIG. 5 is a bottom plan view of the unit shown in FIG. 4;

FIG. 6 is an enlarged fragmentary elevational view of another form of the unit; and

FIG. 7 is a bottom plan view of the unit taken on the line 7—7 of FIG. 6.

Similar numerals refer to similar parts throughout the several views of the drawings.

For clarity, no mortar is shown in the joints between the units shown in FIG. 1.

A masonry wall is generally indicated at **1** in FIG. 1. It includes a plurality of masonry units, blocks or bricks **2** which are preferably composed of clay, concrete, or other cementitious material. Each unit **2** may have outer dimensions to simulate individual bricks as used in a brick wall.

Each unit **2** has a body generally U-shaped in horizontal section or configuration composed of substantially two half units or portions **3** and **4** as well as an intermediate or necked portion **5** (FIG. 2) extending transversely between the portions **3** and **4**. The unit **2** is an overall square or rectangular member having top and bottom surfaces and opposite side surfaces **6** and **7**. The half portion **3** includes opposite end surface portions **8** and **9** and the half portion **4** includes opposite end surface portions **10** and **11**. A deep groove or recess **12** defines the U-shape and extends inwardly from the end surfaces **8** and **10** toward end surfaces **9** and **11** beyond a centerline **36** of the unit. The recess **12** has an outer open end and an inner end, and the open end of recess **12** divides the right end surface (viewing FIG. 2) into spaced apart first and second end portions **8** and **10**. A shallow groove **13** extends inwardly from the end surfaces **9** and **11** toward the groove or recess **12**. The grooves **12** and **13** are aligned on an axis **14** which is centrally spaced between and parallel with the outer side surfaces **6** and **7**. The shallow groove **13** divides the left end surface (viewing FIG. 2) into spaced apart third and fourth end portions **9** and **11** which respectively are opposite the first and second end portions **8** and **10**. As shown, the width of the recess **12** between the opposed parallel surfaces **15** and **16** is greater than the width of the shallow groove **13**.

The deep groove **12** is bounded by opposed parallel surfaces **15** and **16** as well as a pair of inclined surfaces **17** and **18** which taper inwardly from surfaces **15** and **16** toward each other and toward the end portions **9** and **11** to form a V-notch having an apex **19**. The opposed parallel surfaces **15** and **16** are located as shown on either side of the axis **14** and are parallel with each other and with the axis **14**. Likewise, the shallow groove **13** is bounded by opposed parallel surfaces **20** and **21** as well as inclined surfaces **22** and **23** which taper inwardly to form a V-notch having an apex **24**. The apices **19** and **24** are located on the axis **14** which extends through the center of the necked portion **5**. The purpose of the inclined surfaces **17**, **18**, **22**, and **23** forming the respective apices **19** and **24** is to provide a minimum body between the half portions **3** and **4**, whereby the half portions may be separated on the axis **14** by a sharp blow. Any fracture extending across the necked portion **5** will extend between the apices **19** and **24**. Thus, the breaking plane is controlled and two units of similar appearance are provided for use at corners.

As shown in FIG. 1 the units **2** may be assembled in such a way that the outer end of the groove **12** is placed in an unexposed position abutting the end of an adjacent unit. The resulting wall has the appearance of a wall of double brick thickness. The outer open end of the groove **12** facilitates the placement of the units **2** in place where elongated members **25** such as reinforcing rods, pipes, or conduits are disposed within the wall. The outer open end

of the groove **12** permits placement of a unit around such members.

At the corner or end of a wall every other course requires a half unit **3** or **4** as shown in FIG. 1. The half portion **3** includes a flange **26** which extends between the top and bottom surfaces of the block or body and defines part of the first end portion **8** of the half portion **3**. Thus, the flange **26** provides a reduced opening for the open end of the recess **12** between the spaced first and second end portions **8** and **10** which collectively form one end surface of the block **2**. The half portion **4** is cut away to provide a beveled edge **27** which enlarges the mouth of the groove **12** adjacent the flange **26** to permit the placement of units **2** around a member **25**. By providing the flange **26**, the end surface **8** has a width equal to that of the end surface **9** which is preferably equal to 3⅝". Accordingly, the half unit **3** is used between courses of complete units **2** at the end of the wall as shown in FIG. 1 where opposite end surfaces **8** and **9** are exposed; and the side surface and end portions **8** and **9** of the half block portion **3** simulate the side and two ends of a conventional brick as shown in FIG. 1.

The half portion **4**, having an end surface **10** which is shorter than the end surface **11**, may be used at a corner of the wall (FIG. 1) with the end surface **10** unexposed. The preferred over-all dimensions of the unit **2** is 7⅝" along the side surface **6** and **7**, and 3⅝" along the end surfaces **8**, **9**, and **11**, which dimensions correspond to the dimensions of a conventional brick. The preferred width of groove **13** is ⅜" so that the total width of the unit equals the length of 7⅝".

When the units are assembled to form a wall, as shown in FIG. 1, mortar is placed between the units. The shallow grooves **13** have a width (between the surfaces **20** and **21**) comparable to the spacing existing between conventional bricks when placed together. When the shallow grooves **13** are exposed, sufficient mortar is placed in the grooves to cover the V-notch formed by the inclined surfaces **22** and **23** to convey the appearance of a mortared joint.

When the half unit **3** is used, as shown in FIG. 1, the flange **26** covers the groove **12** with mortar placed between the end of the flange and the next adjacent unit **2**.

Another form **28** of the unit is shown in FIG. 3. It is similar to the unit **2** except that no beveled edge, similar to the edge **27** (FIG. 2), is provided. Such an edge is unnecessary where a groove **29** having a width greater than that of groove **12** is provided. The groove **29** having groove walls **30** and **31** is wider than the groove **15** so that the spacing between a flange **32** and the wall **31** permits placement of a unit around a rod **25** as shown in FIG. 1.

As shown in FIG. 3 the unit **28** has a shallow groove **33** aligned with the deep groove **29**. The groove **33** is bounded by opposing surfaces **34** and **35** as well as by upwardly inclined end walls **36** and **37**, all of which extend vertically between the top and bottom surfaces of the unit. In addition the groove **33** includes a notch **38** which is preferably centrally disposed with respect to the axis of the groove **33** and bounded by oppositely disposed side walls **39** and **40**, and an end wall **41**.

The end of the deep groove **29** is bounded by upwardly inclined end walls **42** and **43** and is provided with a notch **44** which is bounded by opposing side walls **45** and **46**, and an end wall **47**. The notches **38** and **44** are preferably of similar dimension and are preferably 1/16" wide between the side walls **37** and **38**, and **45** and **46**.

In addition to the grooves **29** and **33** and the notches **38** and **44**, the unit **28** is provided with V-shaped channels or grooves **48** and **49** (FIG. 4), which extend across the neck portion between the grooves **29** and **33**. Thus, the groove **48** includes downwardly and inwardly inclined walls **50** and **51** which form an apex **52** in a vertical plane passing through the longitudinal axis of the unit **28**. Likewise, the groove **49** is formed by inwardly inclined walls **53** and **54** which form an apex **55** which is off-center of the

plane passing through the axis of the unit **28**. Thus, the wall **53** has a smaller angle of inclination than that of the wall **54** to the bottom surface of the unit.

Another form of the bottom groove is generally indicated at **56** in FIGS. 6 and 7. The groove **56** is a generally M-shaped member having opposite side walls **57** and **58** as well as downwardly and inwardly inclined walls **59** and **60**. The walls **59** and **60** intersect at an apex **61** which is preferably aligned with the bottom surface of the unit. The apex **61** is also preferably disposed in a vertical plane below the apex **52** of the top groove **48**. Any water draining from the upper surface to the lower surface of the unit through the grooves **29** and **33** or the notches **38** and **44** flows to the edge of the apex **61** from which it ultimately drips to a lower brick or unit. Thus, water entering from an outside surface is prevented by the grooves **48** and **56** from crossing the entire unit to the inner wall surface. Similarly, any water draining from the upper surface of the brick unit of FIGS. 4 and 5 to the bottom surface through grooves **38** and **44** flows to the bottom groove **49** and along the small angle inclined surface **53** of the groove **49** by surface tension to the bottom surface of the unit and thence to the inside surface of the outside wythe.

The masonry unit of the present invention includes a face key, notch, or groove which solves problems inherent in prior masonry wall units by providing for easy breaking of a unit into two half portions, providing a finished corner appearance at the edge or end of a brick wall, and provides for aesthetic or decorative use where the key notch is exposed and results in a conventional staggered appearance.

An important feature of the units **2** and **28** is their unique shape which permits the incorporation of vertical reinforcement, electrical conduit, pipes, or other items within the core of the unit without field cutting. At the same time, a running bond is maintained between the courses. Other features of the unit include an excellent through bond without the use of metal ties or special bonding courses, heat and noise insulation space at the center, the easy adaptability of the unit; and the provision of one basic unit which satisfies substantially any detail condition without the necessity of providing special shapes as is presently common in masonry construction. Moreover, the unit is well adapted as a door and window jamb unit. By stacking it vertically in a soldier course over window, door, or other openings, it will fit neatly over the upstanding legs of a double angle lintel. In summary, this masonry unit performs a new function because a complete wall of units is laid up in an entirely different manner and, as a whole, possesses different structural features from the conventional masonry units.

In the foregoing description certain terms have been used brevity, clearness and understanding, but no unnecessary limitations are to be implied therefrom beyond the requirements of the prior art, because such words are used for descriptive purposes herein and are intended to be broadly construed.

Moreover, the embodiments of the improved construction illustrated and described herein are by way of example, and the scope of the present invention is not limited to the exact details of construction.

Having now described the invention or discovery, the construction, the operation, and use of preferred embodiments thereof, and the advantageous, new and useful results obtained thereby; the new and useful construction, and reasonable mechanical equivalents thereof obvious to those skilled in the art, are set forth in the appended claims.

What is claimed is:

1. A full wall width masonry block adapted to enclose vertical reinforcements, electrical conduits, pipes and constructional members without cutting the block during installation and adapted to be separated by a sharp blow into half portions of conventional brick size; the block comprising a masonry body generally U-shaped in horizontal section having top and bottom surfaces and rectangularly arranged opposite side and end surfaces; the U-shape being defined by a recess, having an open end and an inner end, formed in the body extending from one end surface toward the other end surface along an axis midway between and parallel with the block side surfaces; the open end of the recess dividing said one end surface into first and second end portions spaced apart by said open recess end; the recess having opposed surfaces located on either side of said axis and parallel with each other and with said axis; the body having a flange extending between the top and bottom body surfaces and defining part of said first end portion, thereby providing a reduced opening for the open recess end between said spaced first and second end portions; the inner end of said recess having surface portions tapering from said opposed parallel surfaces toward each other and toward the other end surface; there being a shallow groove formed inward in the body from said other end surface extending between the top and bottom body surfaces along said axis and toward said recess; said shallow groove dividing said other end surface into third and fourth end portions respectively opposite said first and second end portions; said first end portion defined in part by said flange having a width equal to that of the third end portion; and the recess having a width between said opposed parallel surfaces greater than the width of the shallow groove; whereby when the body is severed into half portions by fracture between the top and bottom surfaces and between the groove and recess, one of the half portions is defined by a side surface and said first and third end portions simulating the side and two ends of a conventional brick.

2. Block constructon as defined in claim **1** in which the body is formed with a beveled edge at the open end of the recess opposite the flange and extending between one of the parallel recess surfaces and said second end portion.

3. Block construction as defined in claim **1** in which a first channel is formed in the top surface and the second channel is formed in the bottom surface of the block, and each channel extends between the recess and shallow groove, and in which the surfaces of said channels are inclined inwardly toward each other along said axis from the respective top and bottom surfaces.

4. Block construction as defined in claim **3** in which the inner end of the recess formed by the tapering surface portions form an apex aligned with the shallow groove, and in which the walls of at least one of the channels form an apex, and in which the channel apex is offset from the apex of the recess.

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