April 21, 1959 H. F. ZAGRAY 2,882,715

INTERLOCKING BUILDING BLOCK

Filed March 14, 1956 2 Sheets-Sheet 1

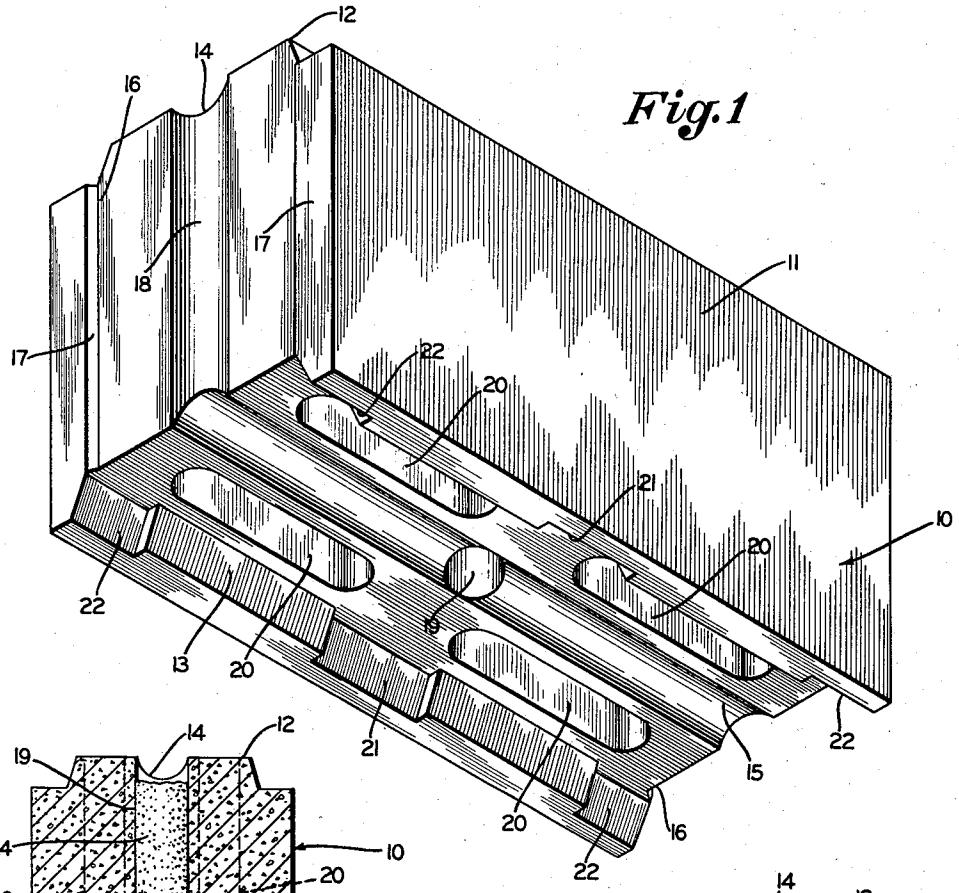


Fig. 1

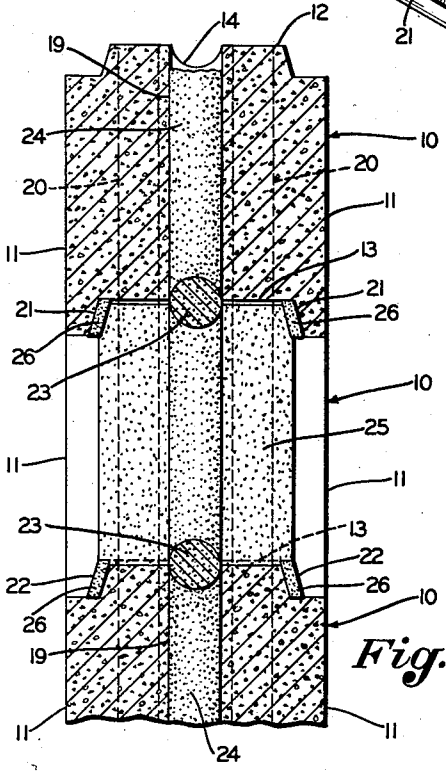


Fig. 3

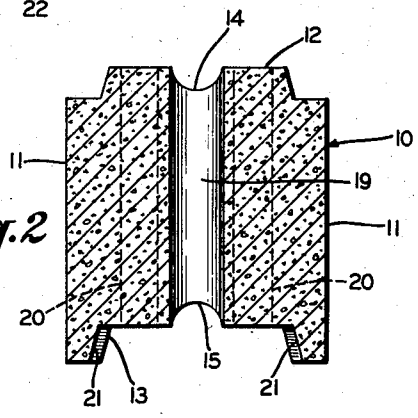


Fig. 2

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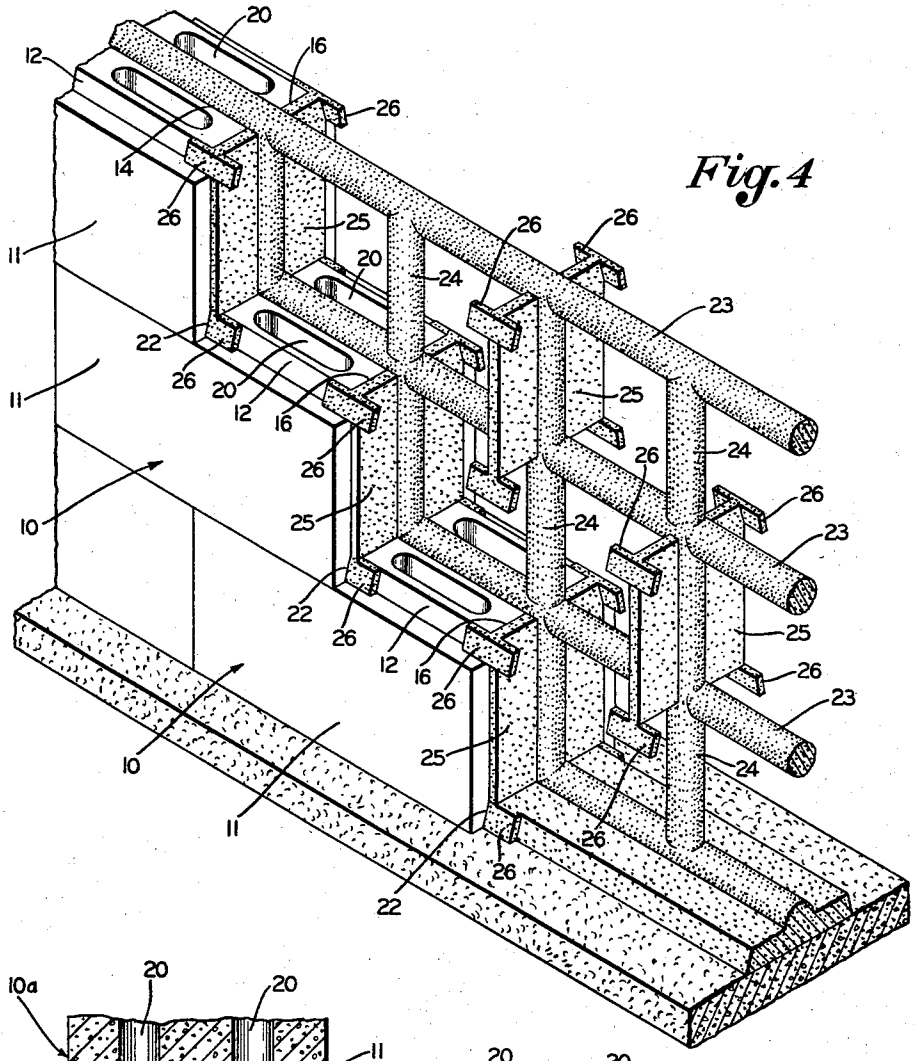


Fig. 4

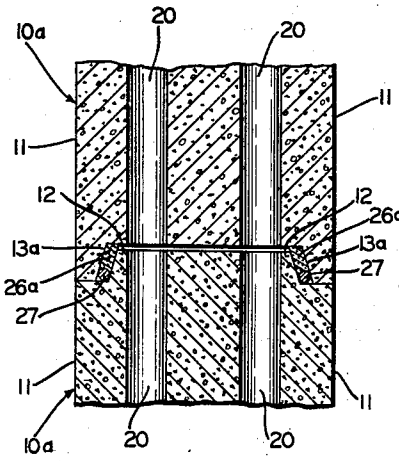


Fig. 5

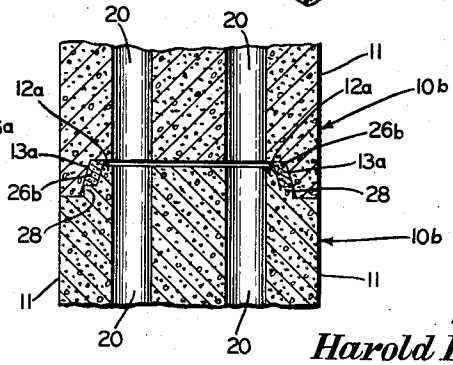


Fig. 6

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2,882,715

INTERLOCKING BUILDING BLOCK

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Application March 14, 1956, Serial No. 571,504

4 Claims. (Cl. 72—29)

The invention relates to building blocks formed of concrete or the like, for the construction of buildings, walls and similar masonry structures, and more particularly to certain improvements in building blocks of the general type disclosed in my prior Patents No. 2,634,602, dated April 14, 1953, and No. 2,696,102, dated December 7, 1954.

Building blocks of this general type are adapted to be laid up in the manner of a dry wall, and are provided with interior openings and grooves, registering with each other, to form a network of vertical and horizontal mortar spaces entirely within the wall for receiving grout or the like after the wall has been laid up, forcing a network of grout entirely within the wall for bonding the blocks together, with no mortar joints appearing from the exterior of the wall.

Such building blocks have been used in considerable quantities for the construction of various types of buildings and masonry structures, and have proven very satisfactory in providing exceedingly strong, moisture-tight walls. It will be obvious from an examination of my prior patents, above referred to, that the network of grout which binds the blocks together is located almost entirely through the central portion of the wall, the only portions of the grout network which extend toward opposite sides of the wall being the transverse joints between abutting vertical ends of the blocks in each course.

I have found that a wall constructed of such building blocks can be materially strengthened by providing additional mortar spaces in the block adjacent to opposite sides thereof and communicating with the interior grooves and openings in the block, so as to extend the network of grout into said additional mortar spaces adjacent to opposite sides of the wall.

It is therefore an object of the invention to provide a building block of the type referred to, having interior openings and grooves adapted to register with each other when the block is laid up with similar blocks in a wall, and having additional mortar spaces extending longitudinally within the block near opposite sides thereof and communicating with said interior openings and grooves, whereby grout poured into said interior openings and grooves will flow into the additional mortar spaces near the sides of the block.

Another object is to provide a building block having a longitudinal rib on its upper face of a width slightly less than the width of a block and a corresponding longitudinal recess in its lower face, vertical transverse recesses in each end of the block with central vertical grooves therein, central longitudinal grooves in the rib and longitudinal recess communicating at their ends with the vertical grooves, a central vertical opening communicating with the longitudinal grooves, and longitudinal mortar spaces in said longitudinal recess and communicating with the vertical transverse recesses in the ends of the block.

A further object is to provide such a building block in which these longitudinal mortar spaces are located at

each end of the longitudinal recess and at an intermediate point therein.

A still further object is to provide such a building block in which these longitudinal mortar spaces extend the entire length of the longitudinal recesses in the block, so as to provide additional mortar joints near each side of the wall.

Another object is to provide a building block having such continuous mortar spaces near each side thereof, and projections upon each side of the rib adapted to extend into these continuous mortar spaces for properly aligning the block laterally upon similar blocks in laying up a wall.

The above objects together with others which will be apparent from the drawings and following description, or which may be later pointed out, may be attained by constructing the improved building block in the manner hereinafter described in detail and illustrated in the accompanying drawings, showing preferred embodiments of the invention, in which;

Fig. 1 is a perspective view of a building block embodying the invention, looking up at the under side of the block and showing the additional mortar spaces formed in the longitudinal recess near opposite sides of the block;

Fig. 2 is a transverse sectional view through the central portion of the block shown in Fig. 1;

Fig. 3 is a transverse sectional view through a portion of a wall constructed of the improved building blocks, showing the manner in which the additional mortar spaces near the sides of the block provide additional mortar joints near each side of the wall, in the grout network within the wall.

Fig. 4 is a perspective view of a portion of a masonry wall constructed of the improved building blocks, a portion of the blocks being removed to show the network of grout located within the wall;

Fig. 5 is a vertical sectional view through portions of two blocks, showing a modification of the invention; and

Fig. 6 is a similar view showing another modification.

Referring now more particularly to the embodiments of the invention shown in the drawings, in which similar numerals refer to similar parts throughout, the improved building block is of the type shown in Fig. 1, the block being indicated generally at **10**.

Opposite side surfaces **11** of the block are flat and of rectangular shape and size customary in concrete building blocks. A rib **12**, of a width slightly less than the width of the block, is formed on the upper side of the block and is longitudinally coextensive therewith. This rib is shown as tapering slightly upward as is usual in building blocks of this type.

A similar longitudinal recess **13** is formed in the under surface of the block, to receive the ribs **12** of similar blocks when a wall is constructed therefrom, as shown in Figs. 3 and 4. Both the rib **12** and recess **13** are preferably slightly tapered as shown in the drawings. Centrally located, longitudinal grooves **14** and **15** respectively are formed in the rib **12** and in the recess **13**.

Each end of the block is provided with a transverse vertical recess **16**, extending from top to bottom of the block between the vertical flanges **17**, which are extensions of the side surface **11**. A central vertical groove **18** is formed in each recess **16** and communicates at its upper and lower ends with the longitudinal grooves **14** and **15** respectively. A central vertical aperture **19** is located entirely through the block from top to bottom, communicating at opposite ends with the upper and lower longitudinal grooves **14** and **15** respectively.

The usual cored openings **20** are formed in the block for providing circulation of air through a wall built of

such blocks. These air openings are located on each side of the longitudinal center of the block, so as not to communicate with the network of mortar spaces provided by the horizontal and vertical grooves and central aperture above described.

The block as thus described is the general type of block disclosed in my prior patents above referred to. When such blocks are laid up in a masonry wall, the longitudinal and vertical grooves, central vertical apertures and transverse vertical recesses in the several blocks form a continuous network of intercommunicating mortar spaces entirely within the wall.

When grout is poured into this network of mortar spaces it forms a continuous network of bonding mortar located entirely within the wall for bonding the blocks together with no mortar joints visible from the exterior of the wall. This network of bonding mortar is located entirely through the center of the wall, except at the abutting ends of adjacent blocks in each course where the transverse vertical recesses in the ends of the blocks provide relatively narrow flat mortar spaces extending toward opposite sides of the wall. However, there are no mortar spaces extending longitudinally near the sides of the wall.

I have found that the wall may be greatly increased in strength by providing additional mortar spaces in the blocks, extending longitudinally through the wall near opposite sides thereof, and communicating with the network of mortar spaces above referred to.

For this purpose I have found it advantageous to provide longitudinally disposed mortar spaces in each side of the longitudinal recesses in the lower side of the blocks, these longitudinally disposed mortar spaces being so located that they will communicate with the transverse vertical recesses in the ends of adjacent blocks, when laid up in a wall. This provides longitudinal mortar near opposite sides of the wall, connected to the continuous network of bonding mortar within the wall, materially strengthening the wall.

In carrying out the invention, longitudinally disposed mortar spaces **21** and **22** are formed in opposite sides of the longitudinal recess **13** of each block, at the center and at opposite ends thereof, respectively.

The mortar spaces **22**, at the ends of the block, communicate with the transverse vertical recesses **16** at the ends of the block, and, when a plurality of such blocks are laid up in a wall, the central mortar spaces **21** of each block will communicate with the transverse vertical mortar spaces formed by the transverse vertical recesses **16** of the adjacent blocks in the next upper course.

It will thus be obvious that when a wall is laid up of such blocks, and grout is poured into the communicating network of mortar spaces thus formed, filling the mortar spaces with a continuous network of bonding mortar, which extends horizontally and vertically throughout the longitudinal center of the wall, with flat transverse vertical portions at intervals and longitudinally disposed portions connected thereto and located near each side of the wall.

This feature is clearly shown in Fig. 4, in which is illustrated a portion of a masonry wall constructed of the improved building blocks, some of the blocks being removed from the wall to disclose the network of bonding mortar formed within the wall. As shown in this view, this network comprises the horizontal cylindrical portions **23**, formed in the horizontal grooves **14** and **15** in the upper and lower sides of the blocks, the vertical cylindrical portions **24** formed in the vertical central openings **19** of the blocks, the flat transverse vertical portions **25** formed in the transverse vertical recesses **16** in the ends of the blocks, and the attached longitudinally disposed portions **26** located near opposite sides of the wall and formed in the mortar spaces **21** and **22** in opposite sides of the horizontal recesses **13** in the lower sides of the blocks.

These longitudinally disposed portions **26** of the bonding mortar, located throughout the wall near opposite sides thereof, assist considerably in bonding horizontal courses of the blocks tightly together in the wall, materially strengthening and reinforcing the wall at these points, thus producing a stronger wall structure.

Instead of locating these longitudinal mortar spaces at intervals along each side of the lower horizontal recess of the block, they may be coextensive with said recess, so as to provide continuous longitudinal mortar joints near each side of the wall.

This may be accomplished by considerably increasing the width of the horizontal recess in the bottom of the block **10***a*, as indicated at **13***a* in Fig. 5, whereby this recess is of considerably greater width than the width of the top rib **12**. Thus a continuous longitudinally disposed mortar space is formed between the ribs **12** and recesses **13***a* of superimposed blocks **10***a*, to form the continuous longitudinally disposed portions **26***a* of the bonding mortar.

Rods, shims or the like, as indicated at **27** in Fig. 5, may be located within the recess **13***a* on each side of the rib **12**, for the purpose of lining up the blocks laterally in the wall.

A further modification is shown in Fig. 6, in which the lower horizontal recess **13***a* may be the same as shown in Fig. 5, and the rib **12***a* on the top of the block **10***b* is provided with shoulders or projections **28** adapted to substantially contact the walls of the recess **13***a* of the next upper block in a wall, so as to properly align the blocks laterally within the wall. The continuous longitudinally disposed portions **26***b* of the bonding mortar are formed within the recesses **13***a*.

In the foregoing description, certain terms have been used for 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.

I claim:

1. A rectangularly shaped masonry building block including a pair of opposite sides, a pair of opposite upper and lower longitudinal faces and a pair of opposite vertical end faces transverse of said sides and said longitudinal faces, a longitudinal rib formed on the upper of said longitudinal faces, said rib being of a width only slightly less than the width of the block and having a substantially flat top surface and a correspondingly shaped longitudinal recess formed in the lower of said longitudinal faces, said recess having side walls of slightly greater height than the height of said rib, there being a longitudinal centrally located groove in the rib and a correspondingly shaped central groove in the recess, flanges on each transverse end face of the block, said flanges extending substantially from one of said longitudinal faces to the other and each flange having a surface thereof coplaner with a side of the block, said flanges defining a transverse vertical recess in each transverse end face of the block, there being a centrally disposed vertical groove in each transverse end face of the block, said centrally disposed grooves communicating at their ends with said longitudinal grooves, a central opening extending through the block in substantially parallel relation

with said opposite sides and opposite transverse end faces and communicating at its ends with the central portions of said longitudinal grooves, and longitudinally disposed mortar spaces formed in opposite end portions of each of said opposite side walls of said longitudinal recess and, each of said mortar spaces being substantially co-extensive in height with the side walls of the recess and terminating with an open end in the face of one of said flanges and thereby communicating with one of said transverse vertical recesses.

2. A rectangularly shaped masonry building block including a pair of opposite sides, a pair of opposite upper and lower longitudinal faces and a pair of opposite vertical end faces transverse of said sides and said longitudinal faces, a longitudinal rib formed on the upper of said longitudinal faces, said rib being of a width only slightly less than the width of the block and having a substantially flat top surface and a correspondingly shaped longitudinal recess formed in the lower of said longitudinal faces said recess having side walls of slightly greater height than the height of said rib, there being a longitudinal centrally located groove in the rib and a correspondingly shaped central groove in the recess, flanges on each transverse end face of the block, said flanges extending substantially from one of said longitudinal faces to the other and each flange having a surface thereof coplaner with a side of the block, said flanges defining a transverse vertical recess in each transverse end face of the block, there being a centrally disposed vertical groove in each transverse end face of the block, said centrally disposed grooves communicating at their ends with said longitudinal grooves, a central opening extending through the block in substantially parallel relation with said opposite sides and opposite end faces and communicating at its ends with the central portions of said longitudinal grooves, and longitudinally disposed mortar spaces formed in opposite end portions and in the center of each of said opposite side walls of said longitudinal recess, each of said mortar spaces being substantially coextensive in height with the side walls of the recess, each of the end longitudinal mortar spaces terminating with an open end in the face of one of said flanges and thereby communicating with one of said vertical transverse recesses.

3. A wall formed of superposed courses of rectangularly shaped masonry building blocks, each block being of the construction described in claim 1, the blocks in each course having the flanges of the transverse end faces in abutting engagement with the centrally disposed grooves of the opposite transverse end faces in opposed relation so as to form wide, flat, transverse mortar spaces of slightly less width than the block with central enlarged

portions formed partly in each transverse end face of the block and in alignment with the central openings of the blocks in adjacent courses, the blocks of each course being seated on the upper longitudinal faces of the blocks in the next lower course with the longitudinal ribs projecting up into the longitudinal recesses to form central longitudinal mortar spaces including the opposed longitudinal grooves of the adjacent faces of the courses, and an intercommunicating network of mortar in all of the longitudinal centrally located grooves, transverse mortar spaces, longitudinally disposed mortar spaces in opposite side walls of the longitudinal recesses and central openings in the blocks, whereby longitudinally disposed portions of said intercommunicating network of mortar are provided within said wall adjacent to opposite sides thereof.

4. A wall formed of superposed courses of rectangularly shaped masonry building blocks, each block being of the construction described in claim 2, the blocks in each course having the flanges of the transverse end faces in abutting engagement with the centrally disposed grooves of the opposite transverse end faces in opposed relation so as to form wide, flat, transverse mortar spaces of slightly less width than the block with central enlarged portions formed partly in each transverse end face of the block and in alignment with the central openings of the blocks in adjacent courses, the blocks of each course being seated on the upper longitudinal faces of the blocks in the next lower course with the longitudinal ribs projecting up into the longitudinal recesses to form central longitudinal mortar spaces including the opposed longitudinal grooves of the adjacent faces of the courses, and an intercommunicating network of mortar in all of the longitudinal centrally located grooves, transverse mortar spaces, longitudinally disposed mortar spaces in opposite side walls of the longitudinal recesses and central openings in the blocks, whereby longitudinally disposed portions of said intercommunicating network of mortar are provided within said wall adjacent to opposite sides thereof.

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