

May 9, 1967

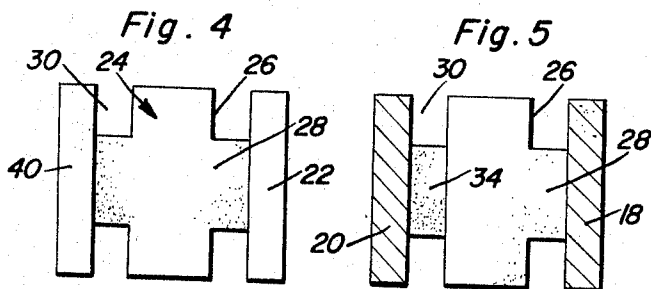
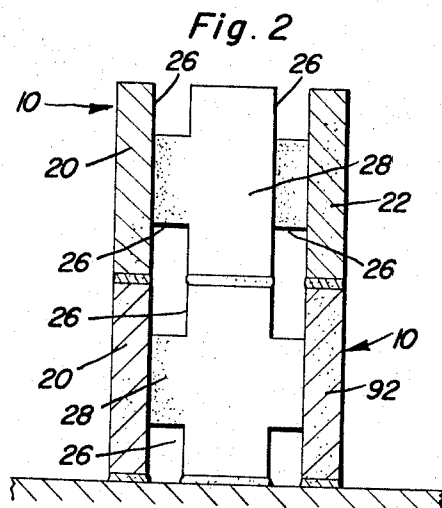
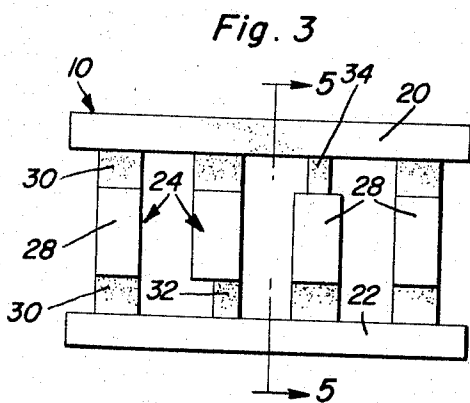
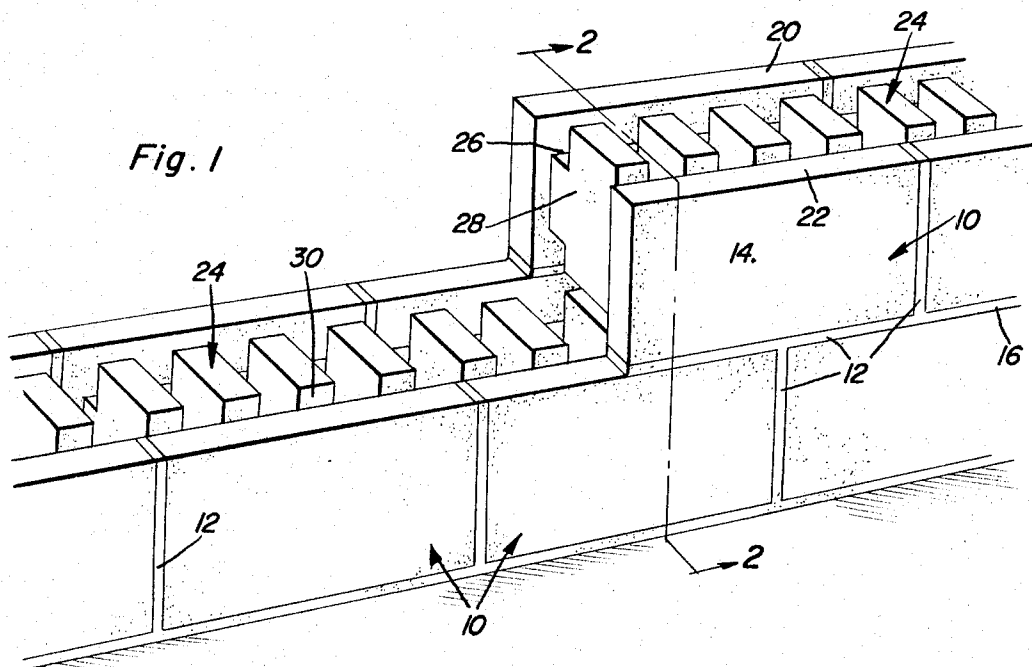
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3,318,062

PRECAST INSULATING MASONRY UNIT AND INSULATING FILLER

Filed March 26, 1964

2 Sheets-Sheet 1



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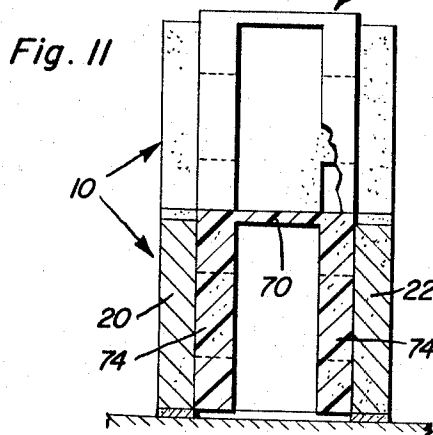
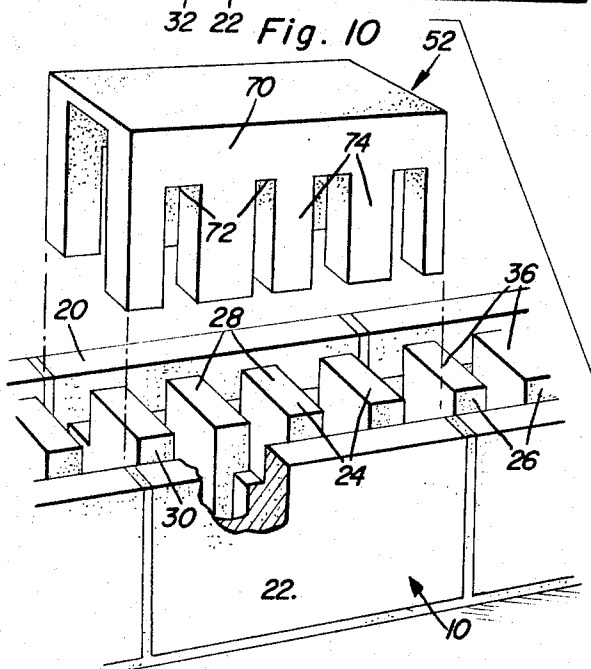
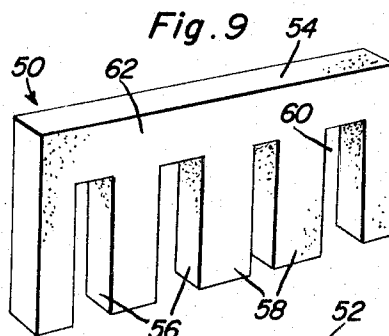
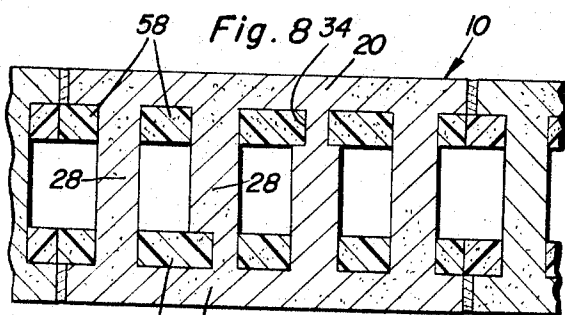
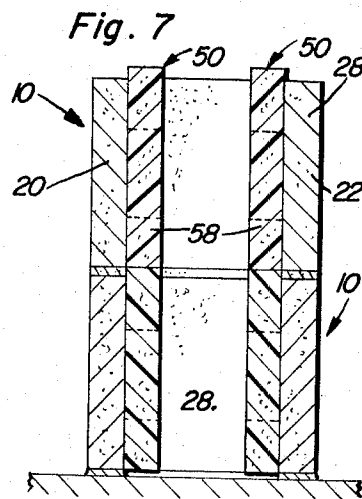
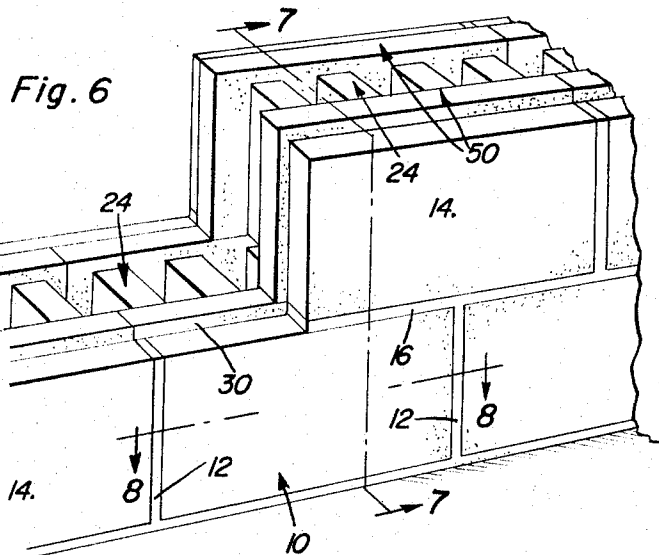
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PRECAST INSULATING MASONRY UNIT AND INSULATING FILLER

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2 Sheets-Sheet 2



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PRECAST INSULATING MASONRY UNIT AND INSULATING FILLER

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10 Claims. (Cl. 52-309)

This application is a continuation-in-part of my co-pending application Ser. No. 145,689, filed Oct. 17, 1961, and now abandoned, for Precast Masonry Units.

This invention comprises a novel and useful precast insulating masonry unit and more particularly pertains to building blocks of the precast concrete type and which are adapted to be arranged in courses in the construction of walls for buildings and the like together with a preformed insulating filler insert for use with such building blocks.

The primary object of the present invention is to provide an insulating filler unit especially adapted for insertion into a precast masonry building block unit which, when so inserted, will greatly increase the heat insulating properties of the building block and of a wall or other structure formed therefrom.

A further and more specific object of the invention is to provide a masonry block unit construction of the prefabricated type together with insulating filler insert block specifically adapted for use therewith which will greatly reduce the problems of handling, transportation and storage of the insulating units and will facilitate the insertion of the insulating units into the precast masonry blocks as the latter are assembled into a wall or other structure.

A further object of the invention is to provide a precast masonry building block and a masonry building block structure which, while affording substantially the same supporting surface areas upon the top and bottom faces of the blocks, shall greatly reduce and minimize the effective cross-sectional area in the thermal path of flow through one side of the block to the other.

A further object of the invention is to provide a precast masonry building block in accordance with the foregoing objects in which two solid side walls of the block shall be connected together by transverse partitions of such character and of such varying cross sectional areas as to effect an effective heat transfer path through the partitions from one side of the block to the other at a greatly reduced rate as compared to conventional partitions between the side walls of a building block.

Yet another object of the invention is to provide a building block in accordance with the preceding objects which while reducing to a minimum the flow of heat from one side of the block to the other will permit full and uninterrupted flow of air vertically of the block and it will also enable flow of air longitudinally of the block for ventilation purposes.

And a final important object of the invention to be specifically enumerated herein resides in the construction of a preformed insulating insert block specifically adapted for use with a building block and wherein the insulating block is so shaped as to have projections thereof readily receivable in an interengaging and interlocking manner in the chambers and spaces of a hollow building block.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

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FIGURE 1 is a perspective view of a portion of masonry construction in which an embodiment of a prefabricated masonry block in accordance with this invention is employed to form courses of a building construction;

FIGURE 2 is a view in vertical transverse section taken substantially upon the plane indicated by section line 2-2 of FIGURE 1 and showing the relationship of the blocks in two courses of the masonry construction;

FIGURE 3 is a top plan view of a building block of the type shown in FIGURES 1 and 2;

FIGURE 4 is an end elevational view of the block of FIGURES 1-3;

FIGURE 5 is a view in vertical transverse cross-section taken substantially upon the plane indicated by section line 5-5 of FIGURE 3 and showing in particular the configuration of a suitable form of webs or partitions extending between the side walls of the building block of FIGURES 1-4;

FIGURE 6 is a view similar to FIGURE 1 but showing the building block construction of FIGURE 1 provided with insulating insert filler blocks in accordance with this invention;

FIGURE 7 is a view in vertical transverse section taken substantially upon a plane indicated by section line 7-7 of FIGURE 6;

FIGURE 8 is a horizontal sectional view taken substantially upon the plane indicated by section line 8-8 of FIGURE 6 and showing the horizontal cross-sectional shape of a portion of the insert fillers;

FIGURE 9 is a perspective view of one of the insert fillers employed in the embodiment of FIGURES 6-8;

FIGURE 10 is an exploded perspective view of a portion of a masonry construction employing the precast masonry building block unit of FIGURES 1 and 6 and showing a modified construction of filler insert which may be employed therewith; and

FIGURE 11 is a view in vertical transverse section through the modified construction of FIGURE 10 and showing an upper course of the building block in elevation and the lower course in vertical section with the filler insert of FIGURE 10 employed therewith.

FIGURES 1-5 are similar to and embody the same principles of the precast hollow masonry building block shown in FIGURES 5-8 of my above-identified copending application, while FIGURES 6-11 show the same type of building block but with the novel insulating filler block insert of this invention applied thereto.

It is now standardized construction in fabrication of precast masonry building blocks to form in the building block structure passages or changes so designed that when the blocks are assembled into courses and into building structures having a plurality of such courses, the openings in the blocks will communicate with each other whereby to provide continuous vertical and/or longitudinal extending passages throughout the construction for purposes of ventilation, the running of cable or conduits and the like. It is well known that the rate of heat flow through masonry blocks is proportional to the cross-sectional area of the partitions or materials which extend between the two side walls of the block as between the inner and outer walls of a building structure. Acting upon this principle, it is a fundamental aim and purpose of this invention to provide a precast masonry building block construction such that the effective cross-sectional area of the transverse partitions or materials of the block from side wall to side wall thereof shall be sharply reduced thereby lessening the rate of heat flow therebetween and thus providing a thermally insulating block, while maintaining sufficient material and surface area upon the top and bottom sides of the block, and sufficient cross-sectional area of the transverse partition and por-

tions of the block to satisfactorily respond to the requirement for structural strength.

Disclosed in FIGURES 1 and 6 is an embodiment of a precast masonry building unit, each unit being indicated by the numeral 10, these units or building blocks being disposed and joined in end to end relation as by cement or mortar joints 12 therebetween to provide longitudinally extending courses 14 of a masonry construction such as a wall or the like, overlapping courses being joined as by the cement or mortar joint 16 therebetween and with the blocks of one course being staggered in overlapping relation with respect to those in an adjacent course.

In the building block unit 10 it will be observed that there are provided a pair of parallel continuous side walls 20 and 22 which are rigidly and securely connected together by transverse webs or partitions indicated generally by the numeral 24. As will be observed from a consideration of FIGURES 1, 2, 4 and 5, the upper and lower surfaces of the side walls and of the webs terminate in parallel coplanar relation so that the block provides flat planar top and bottom surfaces thus facilitating joining of the course and providing adequate bearing surface area to support the loads being placed upon the block.

If the webs or partitions 24 were of uniform height and thickness from one side wall to the other of the block, the effective path of flow through the blocks from side to side would be the cross-sectional area of the web from top to bottom thereof. For a web of a given thickness and height, there would result a maximum rate of heat flow with thus the minimum thermal insulating effect.

In accordance with this invention, and as set forth in my prior copending application, effective path of heat flow through the web from side to side of the block is reduced materially by providing a notch or recess or a series of notches or recesses extending vertically into the block from either the top or bottom face thereof, or both, if desired, and further reducing the thickness of a portion of the web, preferably that portion of the web which receives the vertical recess or notch. For convenience of illustration, the web 24 is thus shown provided with notches 26 at each of its four corners together with the main or body portion 28 which extends the full thickness of the web and is of a maximum thickness of the web, and which extends vertically the entire distance from the top to the bottom of the surface of the block. However, this main web portion is connected by an integrally formed web portion 30 which is of reduced dimension as regards the height of the web. As a result thereof, in the form illustrated, there are provided four longitudinally extending channels defined by the four notches at the corners of each of the partitions 24 which serve for the passage of conduits, cables or the like therethrough and also, except when they are closed by the filler block insert as set forth hereinafter, as longitudinally extending ventilating passages through the block structure.

It will be noted that the partitions 28 as previously mentioned are provided with the notches 26 in each of the four corners thereof. The partitions are thus cruciform in shape and may be of uniform thickness. However, in order to reduce the effective path of heat flow from one wall of the block to the other through the partitions, it is preferred, as set forth in my above-identified copending application, to vary the thickness of the partitions 28 preferably by reducing the thickness of some of the connecting arms at the sides thereof. Thus, as shown in FIGURE 3, one or more of the partitions may be reduced in thickness to form a narrowed end or terminal portion 32 by which the partition is connected to the adjacent side wall. This reduced thickness may result in a web disposed at one side of and coplanar with one face of the partition. Other of the partitions may have reduced thickness portions as at 34 which may be centrally located with respect to the front and back faces of the partition.

It is within the purview of this invention to provide

various arrangements of reduced thickness portions of the partitions for this purpose.

Reference is now made to FIGURES 6-11 which disclose the same structure of building block and building structure, with the block structure being provided with the same reference numeral as were used in connection with FIGURES 1-5. However, this arrangement employs an additional element in the form of prefabricated insulating filler blocks or inserts, two forms of which are shown at 60 and 62 respectively in FIGURES 9 and 10. In the case of the insert 50, the plate-like element is provided consisting of a body 54 of any suitable insulating material such as a foamed polystyrene plastic or the like. Preferably the insert is molded or prefabricated and the course will be of a configuration to any particular block desired. The body 54 has notches 56 in its lower portion providing depending fingers or projections 58, the upper end of the notches providing a bottom wall 60. There is thus defined an elongated rib-like upper portion 62 which is of sufficient size to lie in the longitudinally aligned upper notches 26 which define the longitudinal channels 30 so as to be substantially flush with the top planar surface of the block. Alternatively, these rib-like portions 62 may project slightly thereabove in the manner shown in FIGURES 7 and 11 so as to form keying ribs to engage in corresponding longitudinal channels of the block immediately thereabove. In addition, the endmost finger 58 may project beyond the end of the block to likewise provide a keying rib for engaging the end of the adjacent block as suggested in FIGURE 6.

Alternatively, the top and end surfaces of the inserts may be flush and coplanar with the ends and top of the block, and it will thus be noted from consideration of FIGURE 8 in conjunction with FIGURE 7 that the longitudinal channels 30 are thus completely filled as well as the vertical spaces adjacent thereto between the crossed partitions, thus leaving the central space of the partitions to define vertically extending channels through the block for ventilation, purposes of laying conduits and cables and the like. In this arrangement it will be observed that two such filler blocks are used for each building block, one disposed on each side thereof.

It will be further appreciated that various other configurations of hollow building blocks having cross partitions therein may have appropriately shaped insulation filler inserts applied thereto. This results in greatly increasing the thermal insulating effect of the block itself and also serves as a vapor barrier and the like.

A modified construction is shown in FIGURES 10 and 11. In this instance, the block 52 has a top plate-like body 70 with the vertically extending notches 72 therein which thus define the plurality of depending fingers or projections 74. The configuration is such that the entire insert block 52 may be placed and engaged within the spaces and passages of the masonry block 10 in order to substantially completely fill such spaces. This may result in the top surface of the body extending slightly above the planar surface of the block as shown in FIGURE 11. Alternatively, however, the top surfaces of the partitions 24 and particularly of the web portions 28 thereof may be somewhat downwardly recessed as shown in FIGURE 10 to accommodate the thickness of the body portion 70 so that the top surface of the block and the side walls 20, 22 may be coplanar.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A preformed filler insert for a preformed hollow

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masonry block of the type including upstanding side walls joined by longitudinally spaced upstanding transverse partitions defining upwardly opening recesses therebetween, said partitions having notches in the top surfaces thereof, said filler insert comprising a one-piece elongated and generally horizontal body of a heat insulating material having an upper longitudinal portion receivable in said notches and depending vertical portions receivable in said recesses.

2. The combination of claim 1 wherein said filler insert is a preformed body of foamed plastic.

3. The combination of claim 1 wherein said filler insert has portions adapted to project beyond the surface of the masonry block in which it is received for keying engagement with an adjacent block.

4. The combination of claim 1 wherein said filler insert consists of a plate-like body having a rib along its upper marginal edge portion including said upper longitudinal portions, said notches being longitudinally aligned and defining a longitudinal passage through said block, said rib being adapted to be received entirely within said longitudinal passage, said rib and depending vertical portions being of uniform thickness.

5. The combination of claim 1 wherein each of said partitions includes a pair of upwardly opening recesses, a pair of said filler inserts, each of said inserts having its upper longitudinal portion disposed within the corresponding set of notches.

6. The combination of claim 5 wherein said partitions, intermediate the pair of notches formed in each, terminate a spaced distance below the upper edges of the side walls of the block, said filler inserts being integrally formed and joined by an integral web portion extending between the upper longitudinal portions of said inserts and overlying the portions of said partitions disposed between the notches formed in each partition.

7. An insulating block comprising a preformed monolithic hollow masonry block having a pair of upstanding side walls connected by a plurality of upstanding, longitudinally spaced and transversely extending partitions defining upwardly opening recesses therebetween, said partitions including upwardly opening notches providing a longitudinal passage through said block, a one-piece elongated and generally horizontal filler of a heat insulating and preformed material including an upper longitudinal portion received in and extending between said notches and depending portions spaced longitudinally along said upper longitudinal portion and received in said recesses.

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8. The combination of claim 7 wherein said partitions each include a pair of notches, the latter defining a pair of longitudinal passages through said block, a pair of said filler inserts having their upper longitudinal portions disposed in said passages, said inserts being of plate-like configurations and being disposed in spaced side-by-side relation in said masonry block.

9. An insulated building block comprising a preformed monolithic hollow masonry block having a pair of upstanding side walls connected by a plurality of upstanding, longitudinally spaced and transversely extending partitions defining upwardly opening recesses therebetween, portions of each of said partitions terminating upwardly a spaced distance below the upper edges of said side walls and defining a longitudinal passage through said block, a one-piece elongated and generally horizontal filler of heat insulating and preformed material, said filler including an upper longitudinal portion extending through said passage and depending portions spaced longitudinally along said longitudinal portion and received in said recesses.

10. The combination of claim 9 wherein the portions of at least one of said partitions over which said longitudinal portion extends is reduced in transverse thickness, the depending portion of said insert opposing said reduced thickness portion of said one partition completely filling the longitudinal extent of the corresponding recess.

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Disclaimer

3,318,062.—*Paul R. Grants*, Roselle Park, N.J. PRECAST INSULATING MASONRY UNIT AND INSULATING FILLER, Patent dated May 9, 1967. Disclaimer filed Oct. 24, 1972, by the inventor. Hereby enters this disclaimer to claims 1-4, 7 and 9 of said patent. [*Official Gazette May 1, 1973.*]