

- [54] **INSULATED BLOCK**  
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[21] Appl. No.: **398,142**

**Related U.S. Application Data**

- [63] Continuation of Ser. No. 134,163, April 15, 1971,  
abandoned.  
[52] U.S. Cl. .... **52/125; 52/405**  
[51] Int. Cl. .... **E04b 1/88**  
[58] Field of Search .... 52/98-100,  
52/309, 404, 405, 406, 407, 606, 396;  
138/89; 220/24 R

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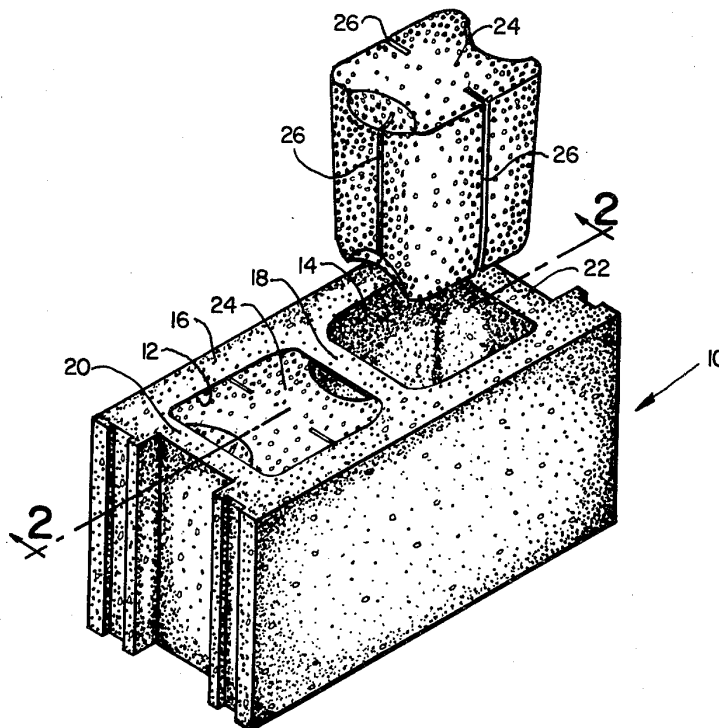
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[57] **ABSTRACT**

A preformed masonry building block having a preformed insulating insert disposed in the cavity therein. The inserts are of molded expandable polystyrene or the like and are characterized by cut-away portions for finger access to marginal walls of the block cavities and by elongated vertical openings in the inserts for enhanced cross sectional compressibility. The cross-sectional dimensions of the blocks vary substantially requiring such insert compressibility. In one form, an insert has a four-sided shape with an elongated slot in each side, in another an integral flange across the bottom of the insert closes a through internal vertical passageway. In a third form, right angularly arranged slots extend downwardly from a top portion of the insert and terminate short of the bottom and side walls. A further form of the insert includes side walls which are serrated viewed in cross section and a pair of vertical openings separated by a flange and closed at the bottom. In still another form, a through opening extends over a major cross sectional portion of the dimension of the insert.

**14 Claims, 13 Drawing Figures**



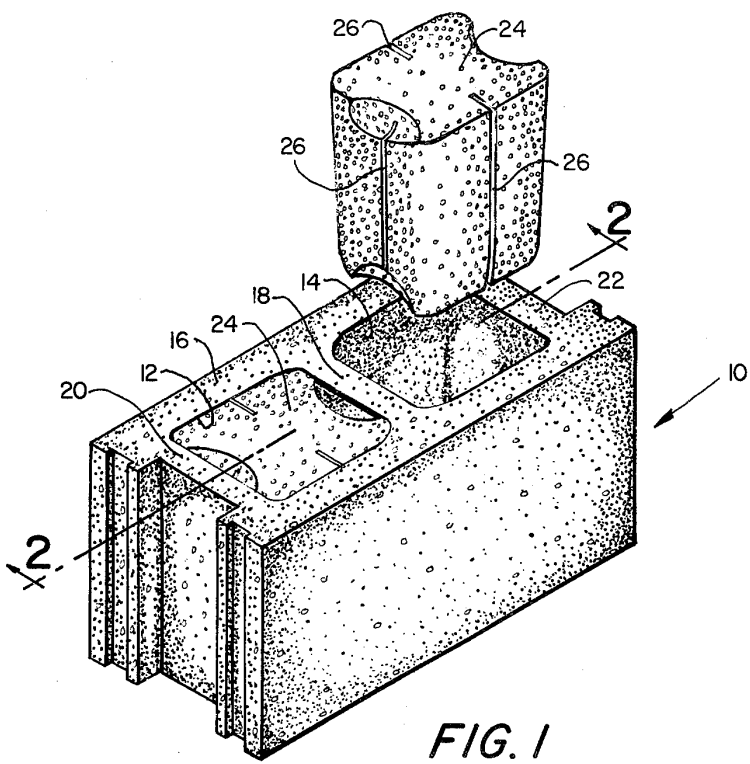


FIG. 1

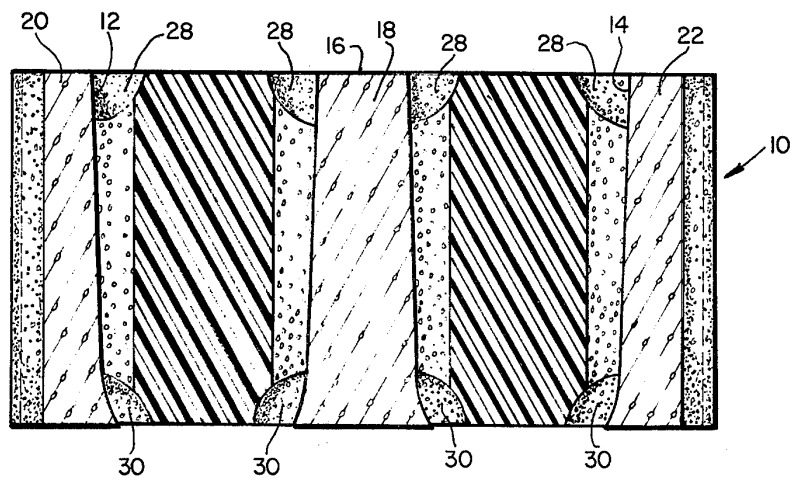


FIG. 2

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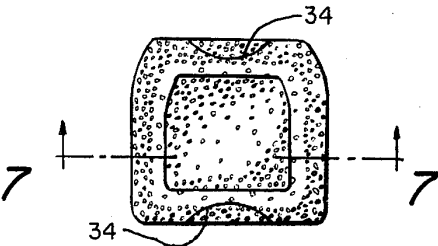


FIG. 6

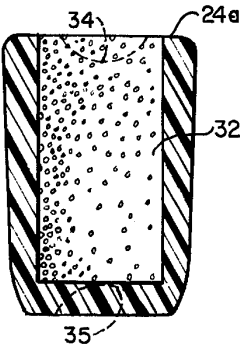


FIG. 7

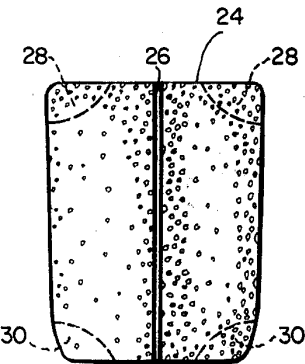


FIG. 3

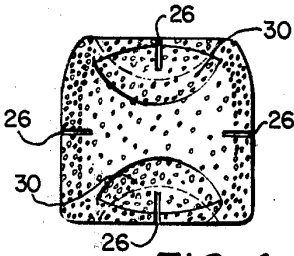


FIG. 4

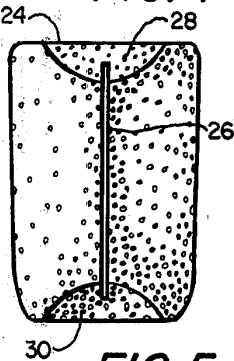


FIG. 5

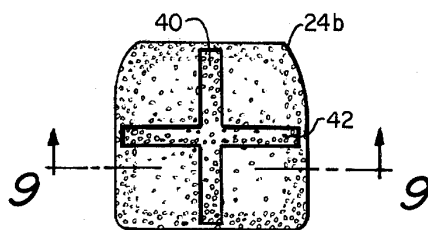


FIG. 8

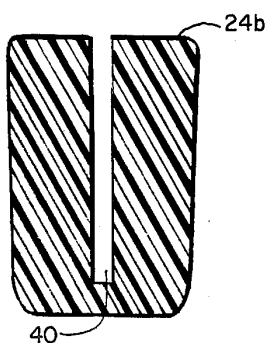


FIG. 9

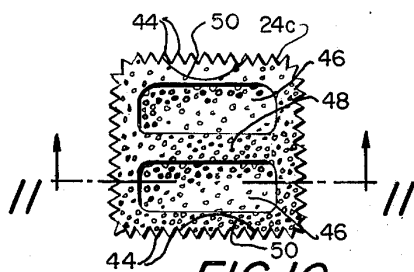


FIG. 10

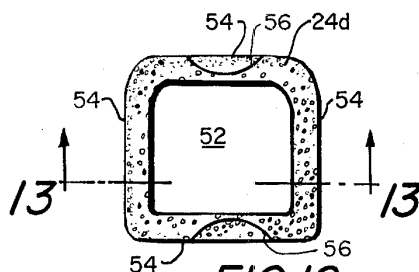


FIG. 12

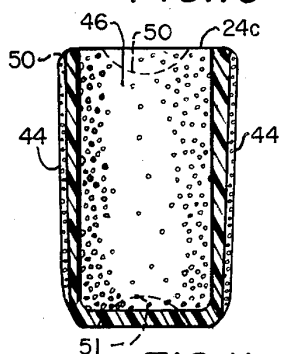


FIG. 11

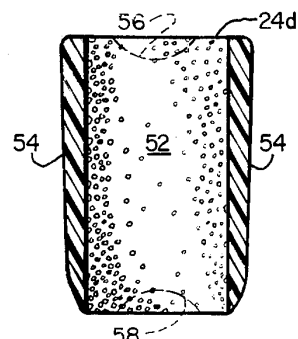


FIG. 13

**INSULATED BLOCK**

This is a continuation of application Ser. No. 134,163, filed Apr. 15, 1971 and now abandoned.

**BACKGROUND OF THE INVENTION**

Various attempts have been made toward the insulation of masonry building blocks. Insulation has been introduced insitu after several courses or a full wall of blocks have been secured in position. The molding of insulation directly within the cavities of blocks has been attempted. Even the manufacture of special blocks having elongated and interconnected openings for receiving slab-like insulation extending through several blocks has been resorted to in an attempt to overcome difficulties in the convenient and efficient introduction of insulation.

**SUMMARY OF THE INVENTION**

It is the general object of the present invention to provide a preformed building block of concrete or the like and a preformed insulating insert therefor, the insert being adapted for a high degree of ease and convenience in assembly with blocks having cavities with dimensional variations over a substantial range, and the insert being further characterized by a substantial degree of cross-sectional compressibility and a configuration accommodating ready finger access to marginal wall portions of the block cavities.

**BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is a perspective view illustrating a masonry building block having a pair of similar cavities with an insulating insert disposed within one of said cavities and a similar insert arranged above the other cavity for downward entry into the cavity.

FIG. 2 is a vertical section taken generally as indicated at 2—2 in FIG. 1 but showing both inserts disposed in the corresponding block cavities.

FIG. 3 is an elevational view of a first form of insert in accordance with the present invention.

FIG. 4 is a top view of the insert of FIG. 3.

FIG. 5 is a second elevational view of the insert of FIGS. 3 and 4.

FIG. 6 is a top view of a second insulating insert in accordance with the invention.

FIG. 7 is a vertical section taken generally as indicated at 7—7 in FIG. 6.

FIG. 8 is a bottom view of the third form of insulating insert in accordance with the invention.

FIG. 9 is a vertical section taken generally as indicated at 9—9 in FIG. 8.

FIG. 10 is a top view of a fourth form of insulating insert in accordance with the invention.

FIG. 11 is a vertical section taken generally as indicated at 11—11 in FIG. 10.

FIG. 12 is a top view of a fifth form of insulating insert in accordance with the invention.

FIG. 13 is a vertical sectional view taken generally as indicated at 13—13 in FIG. 12.

**PREFERRED EMBODIMENTS OF THE PRESENT INVENTION**

Directional and geometrical terms such as "top", "bottom", "downwardly", "horizontal", "vertical", etc. are used freely hereinbelow but it is to be understood that such terminology is employed for convenience of description only and is not to be regarded as

in any way limiting the invention in the specification or in the claims which follow.

Referring particularly to FIGS. 1 and 2, it will be observed that a building block indicated generally at 10 is of a conventional type. The present invention contemplates building blocks of concrete or the like and is in no way limited to blocks of any particular configuration or material.

The building block 10 illustrated is generally rectangular in form with first and second identical cavities 12 and 14 each of which opens through an external surface which may be a top surface 16 of the block and which extends downwardly therefrom a substantial distance and throughout the vertical dimension of the block. The building block is preformed in a conventional manner and a flange 18 is formed between the cavities 12 and 14, outer vertical surfaces of the flange forming portions of marginal walls of the cavities 12, 14. End flanges 20, 22 are similar to the flange or cross member 18 and it will be apparent that the block can be readily lifted and manipulated by a workman engaging the center flange 18 and/or the flanges 20, 22 at upper portions, finger access from above thus being essential. Similarly, finger access to the flanges from below should be provided for when the blocks are handled in an attitude inverted from that shown, the latter attitude being conventional during construction while the former prevails during block manufacture.

The cavities 12, 14 taper gradually inwardly and downwardly as shown during block manufacture and the cores employed in molding the building blocks may of course vary somewhat in dimension particularly as wear occurs on outer surfaces thereof. Thus, the cross-sectional configurations or dimensions of the cavities 12, 14 are subject to variation over a significant range. Such variation may occur from block to block and even from cavity to cavity within a block.

First and second or left and right-hand insulating inserts 24, 24 in FIGS. 1 and 2 are formed of a lightweight foraminous, albeit perhaps internally only, heat insulating and fire retardant material. Vertical fire stop operation, and a substantial degree of resistance to sound and moisture transmission are also provided for with molded expanded polystyrene presently a preferred material. The inserts are preformed in such configuration as to enter and substantially fit the cavities in the building blocks and a substantial degree of cross-sectional compressibility is provided for in the inserts whereby a condition of slight compression exists when the insert is entered in its cavity. Thus, a firm engagement of the external surface of the inserts occurs with the cavity wall irrespective of the aforesaid dimensional variations in cavities and the inserts are frictionally retained within the cavities against accidental or unintended displacement. Sufficient lateral or cross-sectional compressibility for this purpose is deemed an important feature of the present invention, such compressibility being achieved both through the nature of the materials selected for the insert and the physical configurations of the inserts as described hereinbelow.

A second important consideration in insert configuration resides in the provision of at least a part of each end portion of each insert which resides adjacent external surfaces of a building block and which is substantially removed from the surface whereby to provide for finger access to an adjacent marginal wall of a cavity

wall, lifting and manipulation of the blocks thus being provided for.

With regard particularly to the lateral or cross-sectional compressibility of the inserts, attention is invited to the provision of at least one elongated opening in the inserts and, more particularly, in the case of the inserts 24, 24 the slots 26, 26 are referred to. The insert 24 takes a four-sided configuration viewed in cross section and the elongated opening mentioned takes the form of the slots 26, 26, one each disposed in a side wall of the insert, facing outwardly and extending throughout the length of the side wall to enhance insert compressibility.

As will be apparent, a mere reduction in overall length of an insert can be employed to provide for finger access to the marginal walls of the cavities 12 and 14, but in the FIG. 1 and 2 insert embodiment, and as more fully illustrated in FIGS. 3, 4, and 5, generally crescent-shaped or partially spherical cut-away portions are provided at 28, 28. The cut-away portions 28, 28 are preferably provided as illustrated at opposing upper portions of the inserts and similar cut-away portions 30, 30 at lower end portions of the inserts.

In FIGS. 6 and 7, an insert 24a forming a second embodiment of the invention is generally four-sided, viewed in cross section, and is provided with a large internal opening 32. The opening 32 extends throughout a major portion of the cross section of the insert and terminates short of the bottom surface of the insert and short of the side surfaces thereof. Crescent-shaped or partially spherical cut-aways are preferably provided at 34, 34 and at 35, 35. With the insert 24a, a desirable degree of lateral or cross-sectional compressibility is achieved together with an extremely light weight and a significant savings in material. The closed bottom portion provides a vertical fire stop and with the block inserted in a wall or the like, water collection thereabove is minimized.

In FIGS. 8 and 9, a further embodiment of the invention is shown in the form of insert 24b which is generally four-sided in cross sectional configuration and which has a pair of right angularly arranged slots 40, 42 which extend downwardly from the top portion thereof and which terminate short of the bottom surface of the insert and short of the side surfaces thereof. If desired, the insert 24b may also be provided with cut-away portions at the top or, as shown, the insert may be regarded as of reduced length or foreshortened construction providing ample open space at the top and bottom of the cavity for finger access. The FIGS. 8 and 9 insert provides a substantial degree of cross sectional compressibility for efficient retention in cavities of various cross-sectional dimensions and effects a significant material savings. The said insert, together with those described above, also provides a form of "fire block" in that no vertical through space is encountered with such insert disposed firmly in the cavities of a plurality of blocks in a partial or completed wall.

In FIGS. 10 and 11, there is illustrated an insert 24c having a plurality of longitudinally extending openings along its external side surface. The said openings take the form of the grooves or notches between serrations 44, 44 formed by a continuous undulating configuration of the insert side wall. The insert 24c has an internal opening 46 disposed on each side of a central flange 48 and closed at the bottom and cut-aways are preferably provided for finger entry as at 50, 50 and 51, 51.

In FIGS. 12 and 13, a final embodiment of the invention is illustrated in the form of an insert 24d of generally four-sided configuration viewed in cross section and with a large through opening 52. The opening 52 provides for a substantial savings in material and relatively thin walls are provided at 54, 54 for a substantial degree of cross-sectional compressibility. Cut-away portions are preferably provided at 56, 56 and 58, 58.

Any one of the foregoing embodiments may be employed in the preforming of inserts for introduction to cavities in masonry building blocks or the like. As will be apparent, a substantial degree of nonuniformity in cavity dimensions is accommodated with the inserts of the present invention. Interference with manipulation of the blocks during block manufacture and subsequent construction is wholly avoided with the use of finger access openings for workmen handling the blocks and assembled inserts, and efficient insulation, fire retardation, together with retardation of sound and moisture transmission is accomplished with the use of the inserts in a wall or other structure formed with the insulated blocks. Assembly of blocks and inserts can be accomplished with a high degree of ease and convenience and at economic advantage with the aforesaid features of lateral or cross-sectional insert compressibility.

I claim:

1. The combination comprising a preformed building block of concrete and a preformed insulating insert therefor, said block having an external surface and at least one cavity opening through said surface and extending downwardly a substantial distance therefrom, the cross sectional configuration and dimensions of said cavity being subject to variation within a significant range, said insulating insert being of a light weight foraminous heat insulating and fire retardant material and having an external configuration adapted to enter and substantially fit said cavity in said block, said insert configuration being such that at least a part of an upper portion of the insert adjacent said external surface of the block at a marginal wall of the cavity is disposed substantially downwardly from said surface with the insert entered in said cavity whereby to provide for downward finger access to said marginal wall, and said insert having at least one vertically extending opening so as to be cross sectionally compressible to a degree accommodating said cross sectional variation in said cavity and providing for a slight compression and sufficiently firm engagement of the insert external surface with said cavity wall irrespective of said dimensional variations whereby to frictionally retain the insert in the cavity.

2. The combination comprising a preformed building block and an insulating insert therefor as set forth in claim 1 wherein two similar cavities are formed in and through said block and extend downwardly from said external surface thereof.

3. The combination comprising a preformed building block and an insulating insert therefor as set forth in claim 2 wherein said two cavities are spaced apart by a vertical center flange, wherein two similar insulating inserts are provided respectively for entry in said cavities, and wherein said upper portions of the inserts which are disposed downwardly from said surface comprise cut-away sections, said cut-away sections at upper portions being arranged on opposing sides of said flange for convenient finger access and gripping from above.

4. The combination comprising a preformed building block and insulating inserts therefor as set forth in claim 3 wherein each of said cut-away sections is at least partially circular in configuration, and wherein each of said cavities tapers gradually inwardly and downwardly with the respective inserts of corresponding configuration.

5. The combination comprising a preformed building block and an insulating insert therefor as set forth in claim 1 wherein said cavity extends through said block, wherein said external surface is a top surface, and wherein at least a part of a lower portion of said insert at a marginal wall of the cavity is disposed substantially upwardly from a block lower surface to provide for finger access to said marginal wall.

6. The combination comprising a preformed building block and an insulating insert therefor as set forth in claim 1 wherein a plurality of vertically extending openings are provided in said insert, each of said openings extending throughout the length of the insert and opening outwardly from the external side surface thereof.

7. The combination comprising a preformed building block and an insulating insert therefor as set forth in claim 6 wherein said insert is of generally four-sided configuration viewed in cross section with said openings taking the form of an elongated slot on each of said sides of the insert.

8. The combination comprising a preformed building block and an insulating insert therefor as set forth in claim 6 wherein the side surfaces of said insert take the form of a continuous undulating configuration to provide vertically elongated serrations throughout the length of said side surfaces.

9. The combination comprising a preformed building block and an insulating insert therefor as set forth in claim 8 wherein said cavity extends through said block, wherein said external surface is a top surface, and

wherein at least a part of a lower portion of said insert at a marginal wall of the cavity is disposed substantially upwardly from a block lower surface to provide for finger access to said marginal wall.

10. The combination comprising a preformed building block and an insulating insert therefor as set forth in claim 9 wherein said insert is hollow and opens upwardly with an integral flange formed across the bottom and closing the lower end thereof.

11. The combination comprising a preformed building block and an insulating insert therefor as set forth in claim 1 wherein said insert takes on a generally four-sided configuration viewed in cross section, wherein said upper portion of the insert which is disposed downwardly from said surface comprises a partially spherical cut-away section, and wherein each of said sides has a vertically elongated slot extending throughout the length thereof.

12. The combination comprising a preformed building block and an insulating insert therefor as set forth in claim 1 wherein said vertically extending opening comprises at least one elongated internal slot opening upwardly and terminating short of the bottom surface of the insert.

13. The combination comprising a preformed building block and an insulating insert therefor as set forth in claim 12 wherein two vertically elongated slots are provided and arranged at right angles with respect to each other, each of said slots terminating short of the bottom surface of the insert and short of the side surfaces thereof.

14. The combination comprising a preformed building block and an insulating insert therefor as set forth in claim 1 wherein said vertically extending opening comprises an enlarged vertically extending opening disposed internally and open at each end thereof.

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