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E. R. HARRAP

2,140,226

BUILDING BLOCK

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Fig. 1.

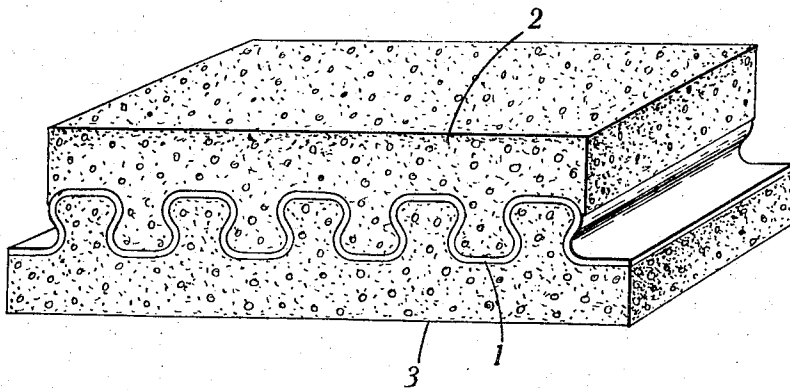


Fig. 2.

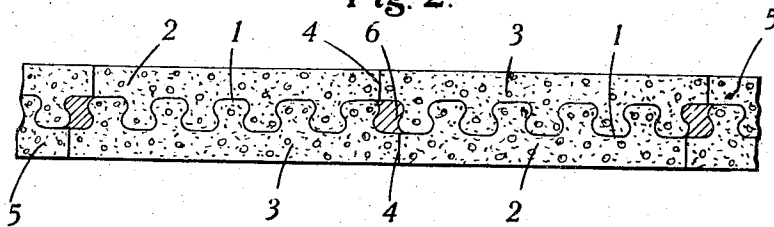


Fig. 3.

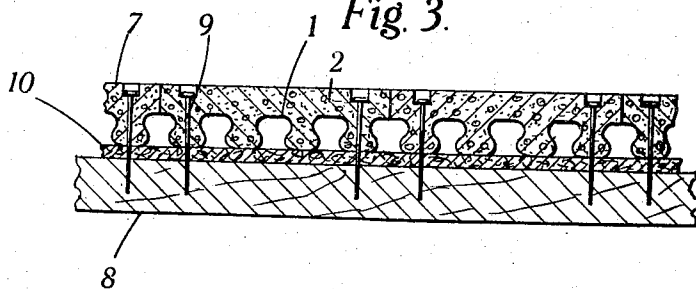
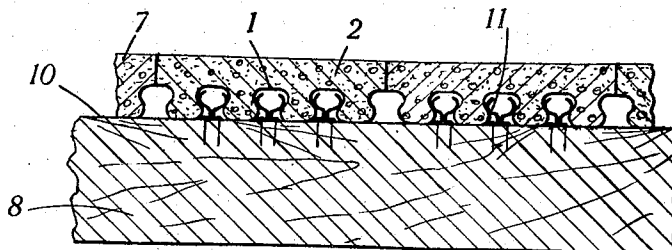


Fig. 4



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BUILDING BLOCK

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4 Claims. (Cl. 72-38)

This invention relates to building blocks. An important object of the invention is to provide a light rigid block having excellent acoustic properties, and therefore particularly well adapted for the production of partition walls.

A further object of the invention is to provide a block which will absorb sound to a large extent within itself and also prevent any residual sound from passing through to the next room.

Other objects of the invention are to manufacture such blocks by a very simple process and to provide improved methods of forming such blocks into walls.

In proceeding according to the invention I key a porous mineral facing, which preferably takes the form of porous cement, to an impermeable sheet capable of preventing the passage of sound to a substantial extent. The construction of my improved blocks depends largely upon whether they are intended primarily for preventing sound passing through a wall or for acoustic absorption.

In order that a clearer understanding of the present invention may be had attention is directed to the accompanying sheet of drawings in which—

Fig. 1 is a perspective view of a block resting on one of its side faces.

Fig. 2 is a horizontal sectional view of a section of a wall built of the units shown in Fig. 1.

Fig. 3 illustrates in section the manner of attaching modified units for greater acoustic absorption.

Fig. 4 illustrates a modified manner of securing the units shown in Fig. 3.

The blocks for both absorbing and preventing the transmission of sound may be rectangular overall, but preferably only their faces are rectangular, each end being formed with a projecting step that is less than half the thickness of the block so that one face is longer than another. In building a wall the blocks are arranged so that the steps in adjacent blocks overlap and form spaces in the middle of the wall which are filled with mortar. One such block is shown by way of example in Figure 1 of the accompanying drawing. It consists of an asbestos cement sheet 1 of alternating dove-tail shape symmetrically arranged between two facings 2 and 3 of porous cement. These porous cement facings present rectangular faces, but the 2 is stopped short of the ends, in the manner shown, so as to form two steps 4 and 5. As an illustration of the size of such a block, the larger face may be 19 x 9 inches, the block may be 4 inches thick and the asbestos cement sheet may be 1/4 inch thick. In order to

build a wall the blocks are arranged in the manner shown in Figure 2 of the accompanying drawing, which is a plan view. It will be seen that the steps 4 of adjacent blocks overlap and that the space between them is filled with mortar 6. It will also be seen that the arrangement both ensures that the asbestos cement layer is continuous through the wall and adds rigidity to the wall.

In the block shown in Figure 1 the asbestos cement sheet 1 is symmetrically arranged within the block and thus the transmission of sound is prevented to the same extent in both directions. The sound is absorbed to a large extent within the porous cement facings and at the same time any residual sound is prevented by the asbestos cement sheet from passing through the wall, or at least is reduced in amount so that such blocks serve not only to reduce the noise produced in a room, but also serve to prevent the noise being transmitted through a partition wall to the next room, or at least to reduce the amount that is transmitted.

It will be observed that the depth of the porous cement from the face or back of the block to the sheet varies continuously along the block and thus the block can absorb sound to practically the same extent whatever the frequency of the sound.

The exposed surfaces of the block may be rendered with cement or plaster to provide a smooth finish, and the porous cement forms a very good key for such a finish.

When the blocks are intended primarily or to a large extent for acoustic absorption they may be made and fixed in the way shown in Figure 3. The blocks illustrated consist of asbestos cement sheets 1 having porous cement 7 keyed to one face only, and the ends of the blocks are not formed with steps as are the other blocks. The blocks are secured to a support 8 by nails or screws, such as the nails shown at 9, through felt 10. Figure 4 of the accompanying drawing shows an arrangement in which resilient metal clips 11 are fixed to the support 8 and engage in the corrugations of the blocks.

It will be observed that the blocks shown in Figures 3 and 4 are free to move slightly as a whole, with the result that the development of resonance is prevented or reduced.

It is within the invention to employ, say, a sinusoidal sheet and to secure the porous cement or the like to it on one or both sides by means of keys integral with or fixed to the sheet, but it is preferred so to shape the sheet that when porous cement is poured on to it in a liquid con-

dition it is automatically keyed to it on setting by virtue of the shape of the sheet, as is the case for example in the blocks illustrated.

5 A further feature of the invention is concerned with the method of manufacture of such blocks. It is in practice very difficult to cast porous cement to exact dimensions. According to the invention, blocks of porous cement are cast in any shape that is convenient and then are broken
10 up into small pieces which are used as aggregate in the production of the porous material in the blocks described above. Thus this porous material preferably consists of small pieces of porous cement bound together by ordinary cement.

15 The blocks not only possess good acoustic properties, but are fireproof and unaffected by water, in that they do not warp or sag when wetted. Moreover, the use of a non-porous sheet enables the blocks to carry compression loads far greater
20 than normal porous blocks.

I claim:

1. A wall made from a supporting structure, a plurality of building blocks each consisting of an impermeable sheet capable of preventing the
25 passage of sound to a substantial extent, said sheet having a porous mineral facing keyed to one side, and resilient means interposed between the unfaced sides of said blocks and said structure.

2. A generally rectangular block for wall construction comprising a substantially rigid impermeable sheet of plastic insulating material bent back and forth to provide a plurality of dovetailing loops adapted to extend vertically
5 when the block is positioned, and a porous mineral facing permanently keyed to said dovetailing loops.

3. A generally rectangular block for wall construction comprising a substantially rigid impermeable sheet of asbestos and cement bent back and forth to provide a plurality of dovetailing loops adapted to extend vertically when the block is positioned, and a porous mineral facing permanently keyed to said dovetailing loops on each
10 side thereof. 15

4. A generally rectangular block for wall construction having a height greater than its thickness and a length greater than its height comprising a substantially rigid impermeable sheet
20 of asbestos and cement bent back and forth to provide a plurality of dovetailing loops adapted to extend vertically when the block is positioned, and a porous mineral facing permanently keyed to said dovetailing loops on each side thereof. 25
one side of said block being longer than the other and extending beyond each end thereof.

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