METHOD OF MAKING HOLLOW BLOCKS

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This invention relates to the manufacture of blocks and it has particular relation to methods of making internally screened hollow blocks.

This invention constitutes a continuation in part of the invention in my co-pending application, Serial No. 281,813, filed June 29, 1939.

One object of the invention is to provide improvements in the manufacture of hollow blocks of vitreous or other fusible material and having light diffusing structure therein.

Another object of the invention is to provide improvements in methods of making glass building blocks having colored fusible diffusing or screening medium disposed therein.

Another object of the invention is to provide an improved method of closing hollow fusible blocks with light diffusing medium therein.

Another object of the invention is to provide an improved method of fusing edges of block sections in connection with fusible screening or light diffusing material which is fused with said edges.

Another object of the invention is to provide improvements in the formation of facing walls of a vitreous building block.

In one form of the invention, companion sections of fusible material, which can be cupped or otherwise shaped, are manufactured by molding them in conventional types of molds and their edges are subjected to fusing heat by means of suitable burners or other heating medium. A transparent or translucent sheet of fusible material serving as an interior partial or total screening medium is disposed between the edges of the sections which are then brought together while remaining at fusing temperature and the edges of the sections, together with the sheet are fused into an integral or bonded seam or connection. The screen remains traversing the interior of the block thus formed and provides for diffusing or screening, or decorating the interior portions of the block.

An important feature of the invention involves the manufacture of building blocks of the type in which companion sections of substantially cup-shape are pressed from fusible material, such as vitreous substances, or the like, which can be reduced to plastic form and then hardened. The completed block is hollow and includes facing walls which are provided with light diffusing elements, such as a glass wool or glass fiber sheet pressed into or fused against an inner face of the unit.

In the drawings:

Fig. 1 is a vertical section of a mold and plunger in their operative position for molding a body of fusible material; Fig. 2 is a side elevation of a hollow building block; Fig. 3 is a fragmentary cross section, on a larger scale, of a wall portion of a building block having a sheet of material pressed thereon; Fig. 4 is a plan of a sheet of glass wool or fusible fibrous material; Fig. 5 is a vertical section of a form of building block having a fusible light diffusing sheet therein; Fig. 6 is a fragmentary elevation of a pair of block sections held in an apparatus for assembling them, portions of the apparatus being shown in cross section; Fig. 7 is a vertical section of another form of hollow block; Fig. 8 is a fragmentary cross section of a sheet of screening material employed in making the blocks; and Fig. 9 is a vertical section of a building block similar to that shown in Fig. 2, and in which another form of screening is employed.

In practicing the invention, a body 20 of fusible or plastic material, such as glass, is reduced to plastic state by heating and is placed in a mold 21 which includes a lower base section 23 and a removable upper section 24 combined therewith to form a molding chamber 25. Suitable interfitting flanges 26 and 27 formed on the mold sections provide for proper centering thereof relative to each other.

A fluid-operated piston 30 is rigidly connected to a plunger 31 which is slidably operable in a cylinder 33 by means of fluid supplied to and exhausted from conduits 34 and 35 connected to the cylinder above and below the piston in a conventional manner. The plunger, which has a fluted or corrugated lower surface 36 for decorative purposes, can thus be forced into the mold, and then removed therefrom after the body of material 20 has been formed.

After the plastic material has been molded into the form of a cup-shaped block section 37, it will be noted that a horizontal wall 38 (Figs. 1 and 3) will have been formed in which inner ribs or projections 39 define a fluted or corrugated surface.

While the body of material is still plastic, the plunger 31 is withdrawn from the section 37 and a screen or sheet 40 of glass fibers is pressed against the fluted wall. The heat of the wall is of such intensity as to insure fusing of the sheet thereto without destroying the fibrous character of the sheet. The plunger is also used to press the fibrous sheet into fused relation to the section wall and into the same ribbed or corrugated shape as such wall. It is, of course, to be under-
stood that a plunger without a ribbed face could be employed if desired.

A pair of the cup-shaped block sections 37 which are assembled to form a hollow block 45 molded as described or otherwise formed, are then so positioned that their rims or marginal edges 46 are adapted to be aligned in opposed registering relation. The lower section is centered in a predetermined position by means of raised abutments 47 rigidly mounted upon a supporting platform 50 upon which the lower section rests.

The upper block section 37 is supported by means of a holder 52 having resilient hooked portions 53 which engage corners of the upper block section. This holder is rigidly mounted upon the lower end of a plunger 55 which includes a piston 56 carried upon its upper end. A suitable fluid containing cylinder 57 receives the piston slidably therein and is mounted upon an overhead support 58. Fluid under pressure can be supplied into the cylinder alternately on opposite sides of the piston through conduits 60 and 61 for the purpose of vertically operating the plunger and thereby bringing the edges or rims 46 together in registering relation.

It is to be understood that this apparatus is merely an illustrative example and that other apparatus can be employed for bringing the sections 37 together; for example, an apparatus such as the type shown in United States Patent No. 2,034,925, issued March 30, 1936.

A gas supplying conduit 65 having a swivel connection 66 therein is supported upon the platform 50 and is provided with a gas burner 67 in which a series of openings 68 are distributed along areas facing the areas of the opposed rims 46 of the block sections. The burners are so arranged that jets of flame can be placed upon the rims of both sections until they are heated to fusing temperature. The burner can then be swung about the swivel connection 66 away from the block sections to the broken line position shown in Fig. 6. Then a screen or sheet of the fusible material 48, such as glass, paper, or other, or a series of vitreous strands, glass fabric matting, or the like, is placed between the fusible rims 46. This screen can be in the form of matted or woven fibers, or the fibers can be treated with a binder to cause them to adhere to one another, or they may be subjected to preliminary fusing to hold them in matted form. As shown in Fig. 6, the screen can be placed and supported upon the lower rim 46, and the plunger is then operated to press the rims toward each other against the screen 40 which is fused therebetween. During this operation the edges of the screen are burned off about the outer edges of the rims and form with the latter a relatively uniform seam 69 (Fig. 5) which extends peripherally around the block to define the junction of the sections 37 and to provide the completed hollow block.

The supply of fluid through the conduits 60 and 61 can be so controlled as to arrest movement of the upper section 37 just prior to contact of the rims and thus permit heated air from the interior of the sections to escape and to prevent building up pressure in the entrapped air which is subjected to heat. If the rims were brought together rapidly, the heated and expanding air would not be permitted to escape sufficiently fast to prevent objectionable pressure. If desired the edge of one of the rims 46 can be notched to insure proper venting of air which might otherwise be entrapped under pressure between the sections until the edges are fully pressed against each other, at the completion of which the notch is closed.

If the screen 40 are subjected to fusing temperature under ordinary conditions, it should be expected that marring thereof would result, but experiments have shown that the screen 40 is not marred by the method of operation described and that a clear and unmarred screen or partition is fused in proper position transversely of the chamber inside the hollow block.

Under certain conditions, it may be desirable to assemble the screen directly with only one of the sections of the block 45. For example, one section can be omitted and the screen 40 fused to the rim 46 to provide a fibrous wall on one side of the single section block. This type of assembly can be used as a unit or assembled with like blocks to form units having partitions.

In the form of block 90 shown in Fig. 7, the assembly of sections 82 and 83 can be accomplished in substantially the same manner as that described above. In this arrangement only one hollow section 82 is provided and the section 83 can be composed of a flat plate or slab which has its marginal or rim portions 84 formed together into a contact with the fibrous fusible screen 85 disposed upon marginal rim portions 86 of the section 82 to form an integral peripheral seam 87 extending entirely around the block. A ribbed or fluted plunger can be employed in the manner described with reference to Figs. 1 and 2 to press and fuse opposing surfaces of the screen and inner wall of the hollow block section 83.

Referring to Fig. 9, a fusible block 90 comprises cupped sections formed in the same manner as those shown in Figs. 1 and 2. However, the screen 91 can be employed in the form of a fusible vitreous fabric, or plurality of interwoven strands 91 of fusible or vitreous material. It is to be understood that the matter of whether the weave of the fabric is relatively open or fine is one of choice. Also, certain of the strands 91 can be colored for adding decorative effects. It is to be understood that one or more of the screens 40 can be assembled in the block in the manner specified, or a combination of screens shown in Figs. 4 and 9 can be so assembled in the block.

In each of the forms of fiber glass or mat shown it is possible to provide colors of desired shades by spraying colored vitreous material thereon; e. g., vitreous enamel powder or pigment in a spraying vehicle, such as alcohol and water. The spraying operation covers and impregnates the mat with the desired color and after proper drying the mat or screen is fused into position according to methods described above. The sprayed coloring material is fused into the screen to produce a permanent color and the colored portions extend through the seams joining the block sections, except in case of the screen applied against an inner wall according to the showing in Fig. 3. The powdered colored enamel, the screen or mat and the contacting portions of the block section are thus all fused into a unitary structure.

Although more than one form of the invention has been shown and described in detail, it will be apparent to those skilled in the art that the invention is not so limited, but that various changes can be made therein without departing from the spirit of the invention or from the scope of the appended claims.
I claim:

1. A method of making a vitreous block which comprises forming a pair of cup-shaped fusible members, heating the rims of the cup-shaped members to fusing temperature, coating a screen of fibrous material with fusible vitreous enamel, interposing the coated screen between the rims of the members, and pressing the fused rims of the members toward each other against the screen to fuse the rims, the vitreous enamel, and the screen to form a partition between the cup-shaped members.

2. A method of making a hollow vitreous block which comprises positioning edge portions of a vitreous cup-shaped member in opposed relation to the edge portions of a vitreous closure member, coating vitreous strands with a finely divided vitreous material, interposing the coated strands between said edge portions in traversing relation to the hollow of the cup-shaped member, fusing the finely divided vitreous material to the vitreous strands, and bonding extremities of the coated strands between the edges of said members to form a fluid-tight structure.

3. A method of making a hollow vitreous block having two cup-shaped members normally disposed with their rims in opposed relation, the steps which comprise impregnating vitreous matting with colored vitreous enamel, fusing the rims to each other with the matting also fused therebetween to form a partition in said block, fusing the vitreous enamel to the matting partition inside the block in conjunction with the rim-fusing operation and forming a homogeneous seam at the junction of the rims and matting to close the block.

4. A method of making a hollow building block having two non-metallic, cup-shaped fusible members normally disposed with their rims in opposed relation, the steps which comprise applying fusible material in a liquid vehicle to a non-metallic fusible matting, drying the matting and said material thereon, fusing the non-metallic fusible matting between the members and to the rims thereof to form a matting partition inside the block and forming a homogeneous seam at the junction of the rims and matting to close the block.

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