Feb. 28, 1933. F. R. HIGLEY 1,899,091

SHEATHING FOR METAL BUILDING STRUCTURE

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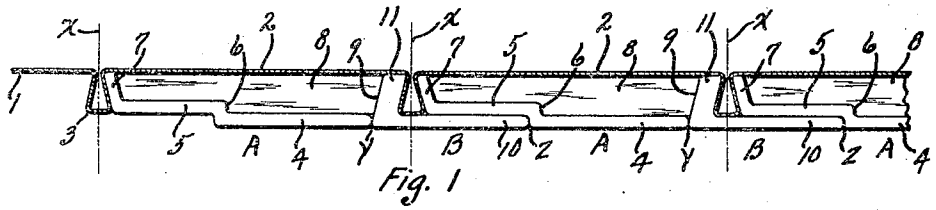


Fig. 1

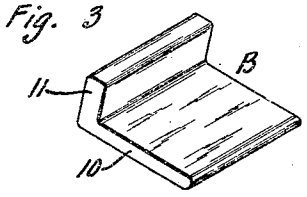


Fig. 3

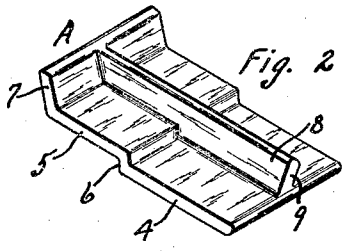


Fig. 2

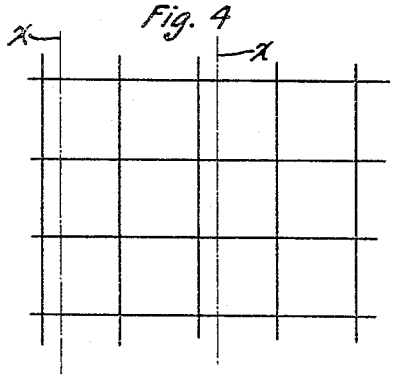


Fig. 4

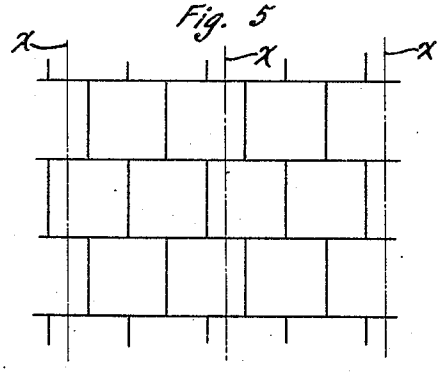


Fig. 5

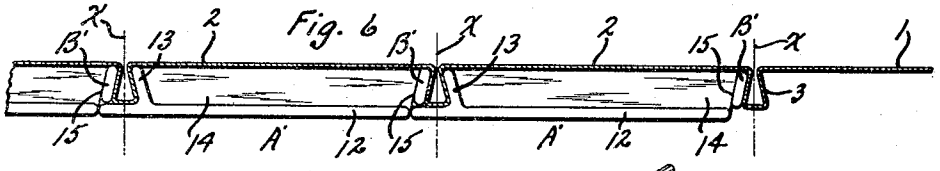


Fig. 6

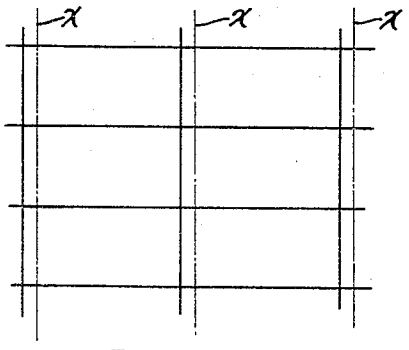


Fig. 8

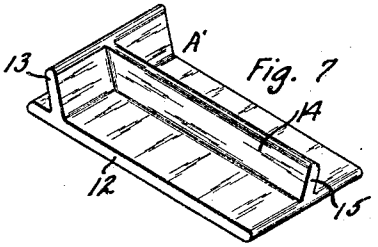


Fig. 7

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UNITED STATES PATENT OFFICE

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SHEATHING FOR METAL BUILDING STRUCTURE

Application filed February 26, 1931. Serial No. 518,381.

This invention relates to sheathing for metal building structures.

More particularly the invention contemplates a metal wall structure of the type known as "Holorib" and comprising a member of sheet metal bent to provide a metal wall having parallel dovetails projecting from one side thereof, the wall being thus of a single thickness of metal, having a plurality of panels in a plane, with integral dovetails between panels to form hollow stiffening ribs and a ceramic or other non-metallic sheathing for the metal on the rib side of the wall, and comprising blocks secured by interlocking engagement with the dovetails, so as to be self supporting upon the wall metal.

The wall will thus comprise an assembly of a number of non-metallic blocks secured with a metallic member, upon one side of the latter so that one face of the wall will be of metal interrupted only at the ribs; and the other face will be of the material of the blocks, interrupted only by joints therebetween. The two faces of the wall will be spaced, with a hollow therebetween of width equal to the projecting dimension of the ribs.

The object of the invention is to provide blocks for the purpose described yet of simple and inexpensive form. A further object is to provide ribs upon the blocks for preventing circulation in the space between the described metallic and non-metallic face of the wall. Still a further object is to so proportion and arrange the blocks that their sheathing face portions may be presented in the assembly either in staggered relation as to simulate a masonry construction, or in aligned relation as to form a pattern of squares. Another object is to provide that the blocks will give maximum fire protection, particularly to the ribs.

It is obvious that the wall under consideration may be either a vertical or side wall, or a horizontal floor or ceiling wall, and the invention embraces a form of block equally adaptable to either arrangement.

The exact nature of the invention together with further objects and advantages thereof will be apparent from the following description taken in connection with the accompanying drawing, in which Figs. 1–5 inclusive are illustrative of one form of the invention and Figs. 6–8 inclusive show another form. More particularly, Fig. 1 is a typical section through a wall including the metal and its described sheathing; Figs. 2 and 3 are perspective views of the two forms of blocks employed for sheathing; Figs. 4 and 5 show facing patterns optionally obtainable with the same blocks; Fig. 6 is a section corresponding to that of Fig. 1; Fig. 7 is a perspective view of the principal block employed in construction of Fig. 6; and Fig. 8 illustrates a facing pattern obtainable with the blocks of Figs. 6 and 7.

With reference now to the drawing and particularly to Figs. 1 to 5 thereof, the metal of the wall is a single sheet 1 bent as indicated to form a plurality of panels 2 in a plane, with hollow ribs 3 of dovetail section projecting upon one side of the plane between the panels 2, the ribs 3 being located upon equally spaced center lines X.

Two forms of coacting blocks are employed which may hereinafter be referred to as A and B forms respectively. The A form shown in Fig. 2 comprises a rectangular face panel 4, another panel 5 parallel with the panel 4 but offset therefrom as at 6, an end panel 7 extending from the panel 5 at an angle corresponding with that of the sides of the ribs 3 of the metal wall, and a rib 8. The rib 8 is joined with the panels 4, 5 and 7 of the A block as indicated. Its height from the facing panel 4 is that of the metal ribs 3 beyond the plane of the metal panel 2. The end 9 of the rib 8 is disposed at the angle of the panel 7, and thus of the ribs 3. The offset 6 is such that when the A block is positioned as in Fig. 1, the face of the panel 5 will lie in the plane of the extremities of the ribs 3. The panels 4, 5 and 7 are of uniform width as is the A block therefor. The overall length of the A block is such that the block may be inserted between an adjacent pair of ribs 3 so that the edge of the block rib 9 may bear against the back of one of the metal panels 2.

The B block shown in Fig. 3 has a face panel 10 of width corresponding to that of the A block and of length such that together with the length of the face panel 4 of the A block it will equal the unit spacing between the ribs 3 of the metal wall. A key member 11 extends from one end of the panel 10 at an angle equal to that of the sides of the ribs 3. The thickness of the member 11 is such that when an A block is positioned as in Fig. 1 to provide a clearance between the end 9 of its rib 8 and the opposite side of the adjacent metal rib 3, the member 11 will fill this clearance opening.

The manner of assembly will be apparent from Fig. 1 where, starting from right to left, an A block is first positioned as indicated, with its panel 7 abutting one of the sides of the corresponding rib 3. A B block is next added by inserting its key member 11 at the right end of the A block, the panel 10 of the B member extending to the right overlying the panel 5 of the A block previously laid, and also the intervening rib 3. It will be apparent that when a course is laid, a surface of the block material is presented beyond the extremities of the ribs 3, interrupted only by joints between face panels of the blocks. Thus a double wall is formed having one face of metal comprising the panels 2 and the other face of the material of the blocks. These faces are spaced, the completed wall having a thickness greater than the depth of the ribs 3.

It will be noted that each rib is protected on all sides throughout its length by a thickness of the block material. Further, there is but one joint in the block material along each rib, and that protected by the ample overlap between panel 5 of the A block and panel 10 of the B block. Thus if the blocks are of fire resisting properties such as of ceramic, lithic or like materials, the metal of the wall is protected against heat as from a fire upon the block side of the wall.

Preferably the proportions are such that the joint Y between blocks at the base of the key member 11 of the B block, is spaced from the center line X of the adjacent rib 3, one eighth of the unit rib spacing; while the joint Z at the other end of the panel 10 of the B block with the adjacent A block panel 4, is three times as far from the same center line X. Where this is true the length of the panel 4 of the A block is the same as that of the panel 10 of the B block. Thus if all courses are laid the same, the block surface will present a square pattern as in Fig. 4. But provided the blocks are reversed in every other course, a staggered pattern as in Fig. 5 may be produced with the same blocks. With either arrangement the ribs 8 of the A blocks provide transverse partitions through the hollow of the complete wall to prevent circulation of air therethrough in the direction of the ribs 3 which latter of course prevent circulation in the direction of the block ribs 8. Thus a cellular wall is had with all of the well known resulting thermal advantages.

With reference now to the showing of Figs. 6–8 inclusive, the metal wall 1 is the same as before. The A′ block, however, shown in Fig. 7 has a face panel 12 of length equal to the unit spacing of the ribs 3 and rectangular, of any convenient width. Upstanding from the panel 12 near one end thereof is a panel 13 disposed at the angle of the sides of the ribs 3. A rib 14 joins the panels 12 and 13 extending along the former and terminating at 15 at the angle of the ribs 3. The A′ block of Fig. 7 may thus be positioned against the metal wall as indicated in Fig. 6 with one of the metal ribs 3 received in the crotch provided in the A block by the panel 13; and providing at its opposite end a clearance between the end 15 of the rib 14 and the adjacent metal rib 3.

The B′ block of this form need merely be a solid generally rectangular block of length equal to the width of the A′ block.

Assembly here will proceed from left to right Fig. 6. Between each pair of metal ribs 3 and A′ block is first positioned as shown, thereafter a B′ block inserted to key its A′ block. The next A′ block extends below the B′ block just laid to hold it in place, and its B′ block is in turn thereafter similarly secured. Thus a rectangular non-staggered pattern is had as indicated in Fig. 8, the block face of the wall in a course, being interrupted here by only one joint instead of two as in the form of Figs. 1–5. Here again, however, each rib 3 is protected throughout its length on all sides by a thickness of the material of the blocks. The ribs 14 of the A′ blocks of course serve in exactly the same manner as the ribs 8 of the A blocks of the other form.

It will be apparent that the original metal walls may be laid horizontally as to provide a floor or vertically to provide side walls in building structure and the assembly of the blocks may be made thereon with equal facility in either event. Likewise, once laid the blocks are positively keyed into position and self-maintained in the assembly. Thus, mortar or its equivalent may be in some cases unnecessary. Bituminous or other plastic mortar substitute may nicely be used, being applied as the blocks are laid where the completed wall is to have flexibility well beyond that of the usual masonry construction.

What I claim is:

1. A building wall comprising a member of sheet metal bent to provide a metal wall having parallel dovetails projecting from one side thereof, and non-metallic blocks secured with said metal member by interlocking engagement with said dovetails, said blocks comprising A and B blocks of different design each having a portion engaging one side of

said dovetail, and being there held by a block of the other design.

2. A building wall comprising a member of sheet metal bent to provide a metal wall having parallel dovetails projecting from one side thereof, and non-metallic blocks secured with said metal member by interlocking engagement with said dovetails, said blocks comprising A and B blocks having face portions disposed in a plane removed from that of said wall beyond said dovetails and adapted to provide a sheathing surface for said metal, one of said block types being longer than the other transversely of said dovetails, and including a strengthening rib extending transversely thereof to prevent air circulation within the wall in the direction of said dovetails.

3. A building wall comprising a member of sheet metal bent to provide a metal wall having parallel dovetails projecting from one side thereof, and a pair of non-metallic blocks adapted to be secured with said metal member by interlocking engagement between an adjacent pair of said dovetails, one of said blocks having an end portion adapted to be positioned in the corner at the base of one of said dovetails, and having its opposite end portion arranged to cooperate with the other dovetail to provide a groove having parallel walls, and the other block comprising a tongue adapted for insertion into said groove as a key to maintain the assembly.

4. A building wall comprising a member of sheet metal bent to provide a metal wall having equally spaced parallel dovetails projecting from one side thereof, and non-metallic blocks secured with said metal member by interlocking engagement with said dovetails, said blocks comprising A and B blocks having face portions disposed in a plane removed from that of said wall beyond said dovetails, and having their face portions offset with respect to their interlocking portions whereby the blocks may be laid so that the joints between their face portions will be staggered.

In testimony whereof I hereby affix my signature.

FRANK R. HIGLEY.