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CONCRETE WALL CONSTRUCTION

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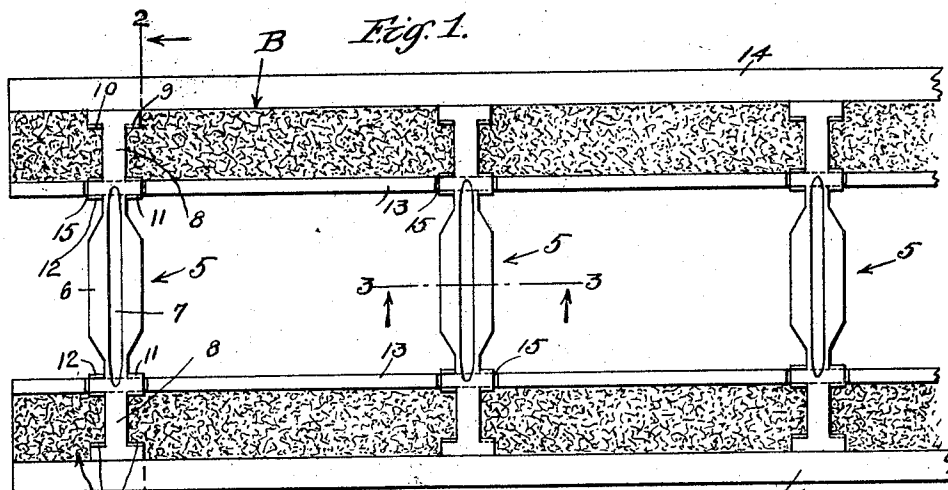


Fig. 2.

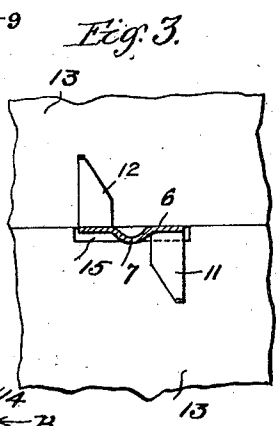
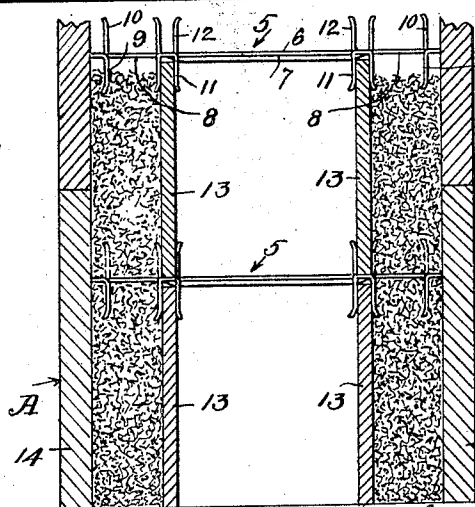
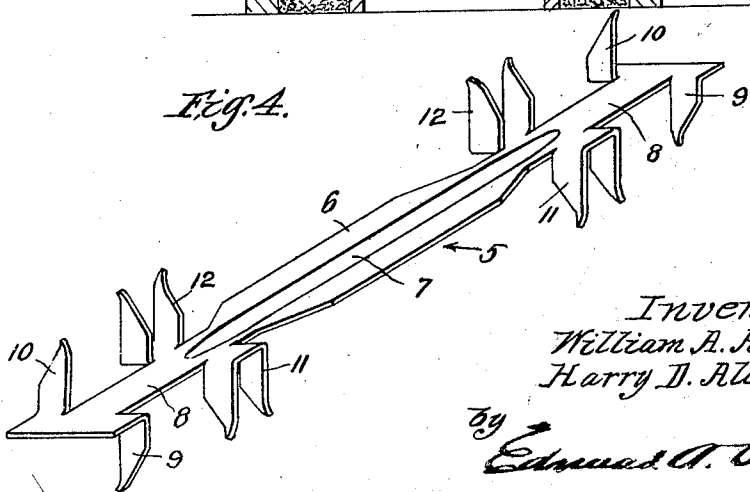


Fig. 3.

Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## CONCRETE WALL CONSTRUCTION.

Application filed April 12, 1921. Serial No. 460,698.

*To all whom it may concern:*

Be it known that we, WILLIAM A. ALEXANDER and HARRY D. ALEXANDER, both citizens of the United States, residing in Los Angeles, county of Los Angeles, State of California, have invented new and useful Improvements in Concrete Wall Constructions, of which the following is a specification.

Our invention involves a novel hollow concrete building wall construction, the essential feature of the invention residing in the means of tying or bonding the outer and inner wall sections together with a moisture proof bonding device, whereby moisture or frost will not be transmitted from one wall to the other.

Our invention also involves a peculiar form of metallic bonding device, designed to permanently maintain in position an insulating sheathing on the oppositely disposed faces of the inner and outer wall sections.

Other objects and advantages of our construction will be apparent in the following description, reference being had to the accompanying drawings forming a part thereof, in which:

Fig. 1 is a plan view of a section of a wall constructed in accordance with our invention.

Fig. 2 is a cross section of a portion of a wall taken on line 2—2 of Fig. 1, looking in the direction indicated by the arrows thereon.

Fig. 3 is a cross sectional view taken through one of the bonding devices on line 3—3 of Fig. 1 of the drawings, looking in the direction indicated by the arrows thereon.

Fig. 4 is a perspective view of one of our metallic bonding devices.

Heretofore it has been found to be impracticable to construct hollow concrete building walls, mainly for the reason that it was impossible to withdraw sections of the mold forms from the hollow wall spaces after the forms had been poured, and further, to leave the form sections within the hollow space together with their supporting means would entail a great deal of expense.

By means of our improved construction hollow concrete walls may be readily erected at a minimum expense, and in fact at no greater expense than a solid wall, as by our method that portion of the mold supporting

forms within the hollow space formed in the wall is left therein to form a sheathing of insulating material for the oppositely disposed faces of the wall sections.

Referring more particularly to the drawings, A designates the outer section and B the inner section of a hollow concrete wall construction. These two sections, A and B, are tied together by means of a plurality of metallic tying or bonding devices 5, more particularly illustrated in Fig. 4 of the drawings.

Bonding devices 5 are preferably formed of stamped metal, and each consists of a flat body member 6, having a centrally disposed reinforcing rib 7 extending the length thereof. The extreme ends 8 of the body member 6 are provided on each side thereof with downwardly and upwardly extending prongs 9 and 10, designed for the purpose of preventing any longitudinal or lateral movement of the bonding or tying devices 5 when the same are embedded in the wall sections.

Formed on members 5, and at a distance from their ends corresponding to the thickness of either of sections A or B of the wall sections, are a plurality of pairs of downwardly and upwardly extending prongs 11 and 12. These pairs of prongs are for the purpose of engaging and supporting the oppositely disposed sections 13 of the concrete mold forms in position on the oppositely disposed faces of the concrete wall sections, as best illustrated in Fig. 2 of the drawings.

We preferably employ in the construction of these form sections 13 wooden sheathing about  $\frac{3}{8}$  of an inch in thickness, so that when the concrete is poured into the form, formed by the sheathing sections 13 and the exterior walls 14, it will only be necessary to remove the walls 14 and their bracing from the hollow finished wall, the sections 13 forming an insulating sheathing, tending to prevent moisture or frost from being transmitted from the finished wall section A to the wall section B.

By employing thin sheathing sections 13 for the mold forms as heretofore explained, the cost of all such sheathing is reduced to the minimum, especially in view of the fact that such sheathing performs an important function in the wall construction, as heretofore explained.

In erecting our improved concrete wall construction the footings are first formed in

the ground on which the wall is to be erected, in the usual well known manner, and then the sheathing sections 13 are erected on the ground as well as the exterior walls 14, the last named walls being properly braced, and then a number of metallic bonding devices 5 are placed at suitable intervals the entire length of the wall, the pair of prongs 11 on each member engaging the upper edges of the horizontally disposed sheathing sections 13, as best shown in Fig. 2 of the drawings, the ends 8 of the bonding devices 5 projecting beyond the exterior faces of sheathing 13, and engaging the wall sections A and B when formed, as clearly shown in Figs. 1 and 2 of the drawings.

The pairs of prongs 11 of the bonding devices 5 serve to rigidly maintain the sheathing sections 13 the proper distance apart. Other sheathing sections 13 are then placed in position until the desired height of wall has been attained, the upwardly extending prongs 12 of the bonding devices engaging said sections in the same manner as prongs 11.

After the concrete has been poured into the mold form sections and has set sufficiently so that the forms may be removed, the form members 14 and their bracing are removed, leaving the sheathing sections 13 on the oppositely disposed faces of the wall sections so formed for the purpose of insulating and protecting the inner wall section B from any dampness or moisture that may settle in the outer wall section A by reason of its exposure to the elements.

By forming the bonding devices 5 of galvanized sheet metal all danger of dampness being communicated from the outer wall section A to the inner wall section B is obviated, as it is well known that metal is not a good conductor of moisture.

In order that the adjacent edges of sheathing sections 13 will contact when erected, at each point where the bonding members extend across the edges of the sheathing sections we have formed recesses 15, as best shown in Fig. 3 of the drawings, these recesses corresponding in depth to the thickness of the body member 6 of the bonding devices 5.

From the foregoing description it will be apparent that we have provided a method of erecting a hollow concrete wall which will

have all the advantages of a hollow brick or tile wall construction, but at a reduced cost, the inner member of the wall remaining at all times perfectly dry and sanitary.

The hollow space formed by the wall sections A and B may be utilized for soil and drainage pipes, and electric construction, with the same facility as walls formed of other and more expensive materials.

What we claim is:

1. A wall bonding device, comprising a body member formed of a single metal strip provided adjacent each of its ends with wall embedding means, and clamping means formed on said member between the wall embedding means for supporting and permanently maintaining in position sheets of insulating material.

2. In a wall bonding device, comprising a body member formed of a single metal strip provided adjacent its ends with wall embedding prongs, and pairs of prongs formed on said body member between said wall embedding prongs for supporting and maintaining in position sheets of insulating material.

3. In a wall bonding device, comprising a body member provided adjacent its ends with wall embedding prongs, two pair of insulating sheet engaging prongs formed on said body member between said wall engaging prongs, each pair of prongs projecting in an opposite direction from said body member, said prongs adapted to engage the edges of insulating sheets to maintain and support the same in position on a wall surface.

4. A metallic bonding device, comprising an elongated metallic member provided on each of its ends with a pair of wall engaging prongs, the prongs at each of said ends projecting in directions opposite to each other, said prongs adapted to prevent a shifting movement of the metallic bonding device when in place in the wall construction, and two pair of prongs formed on said bonding member adjacent each of its ends, said pairs of prongs adapted to engage and permanently support wall insulating sheets.

In witness that we claim the foregoing we have hereunto subscribed our names this 23d day of March 1921.

WILLIAM A. ALEXANDER.  
HARRY D. ALEXANDER.