May 19, 1942. M. A. JORSCH 2,283,257

WALL INSULATION

Filed Feb. 20, 1939 2 Sheets-Sheet 1

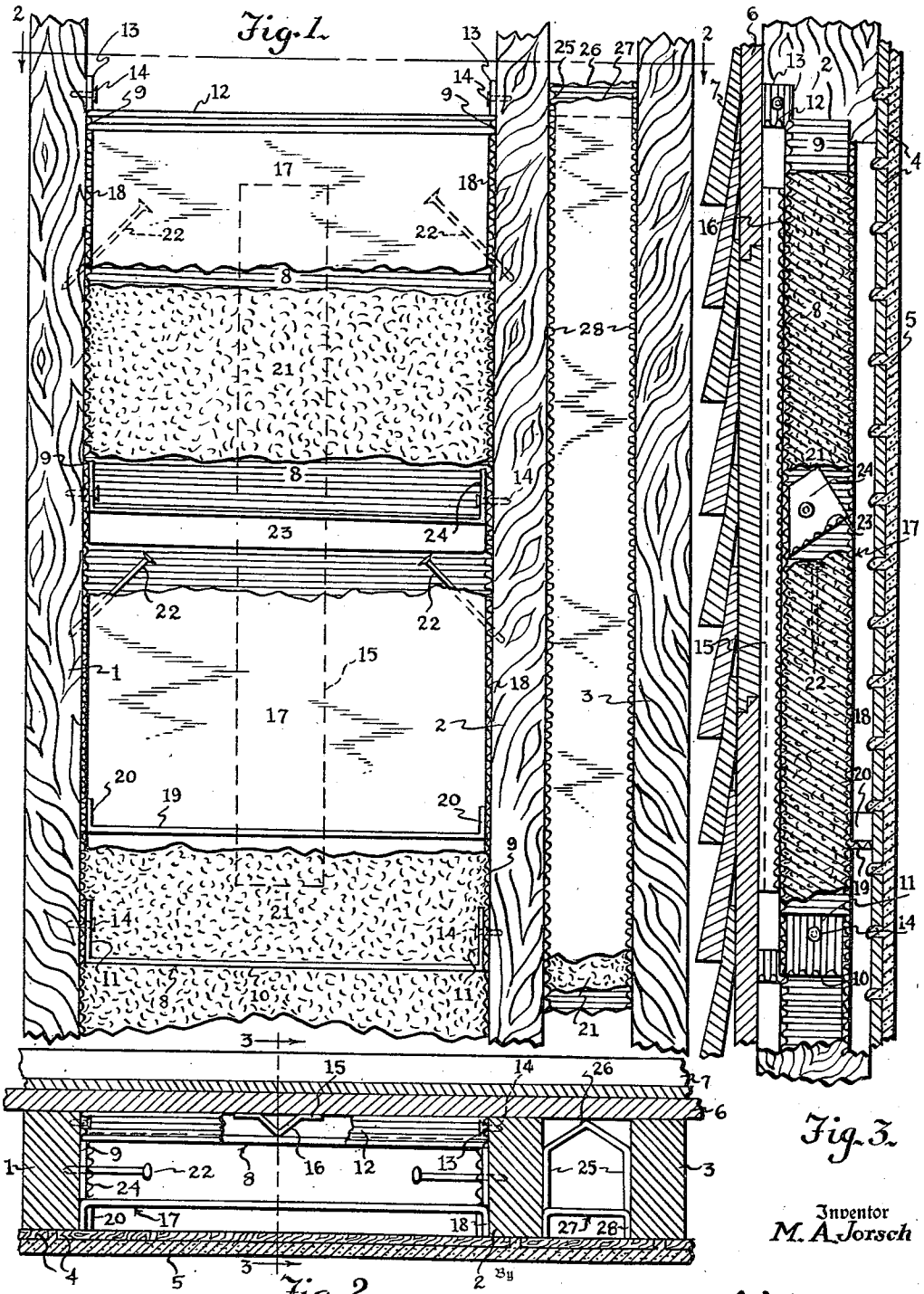

Fig. 1.

Fig. 2.

Fig. 3.

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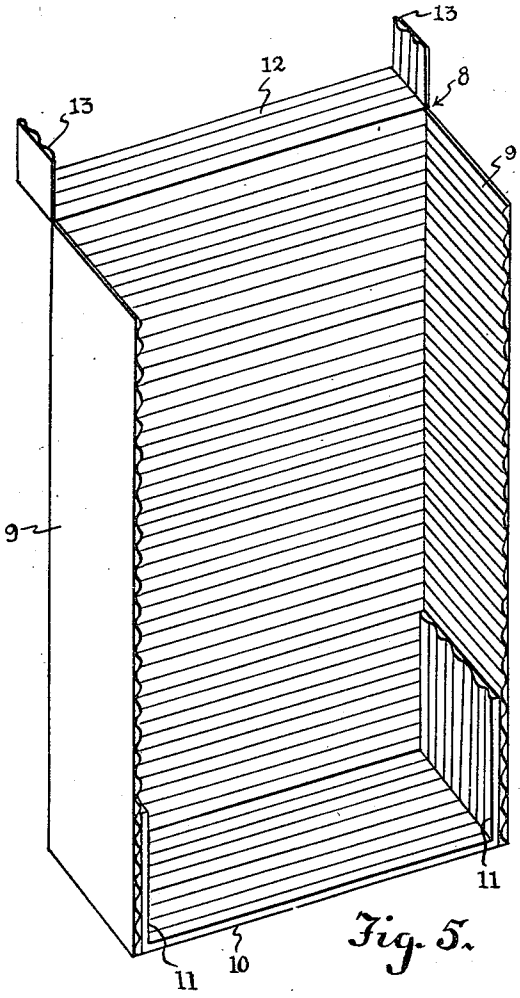
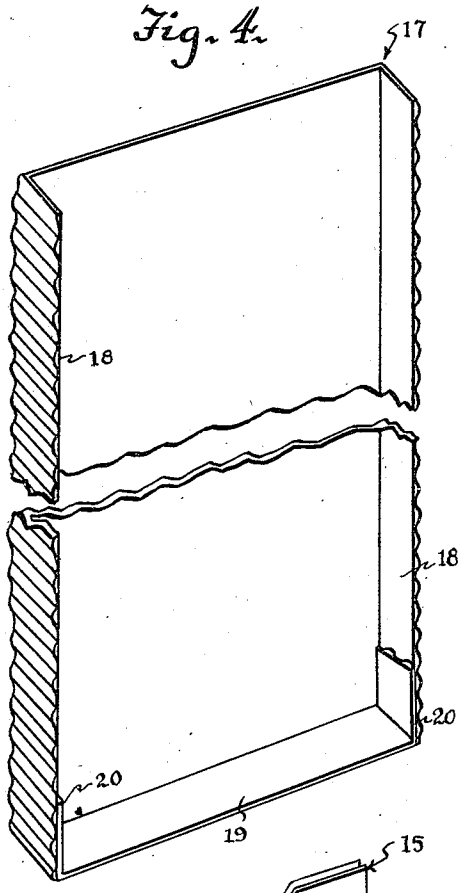


Fig. 5.

Fig. 4.



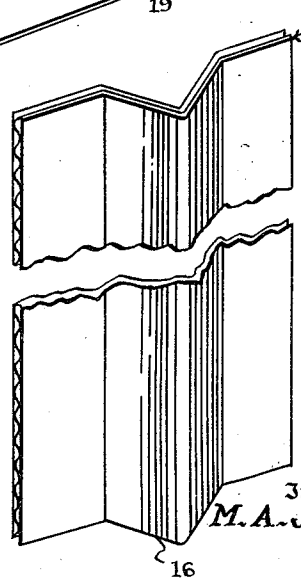
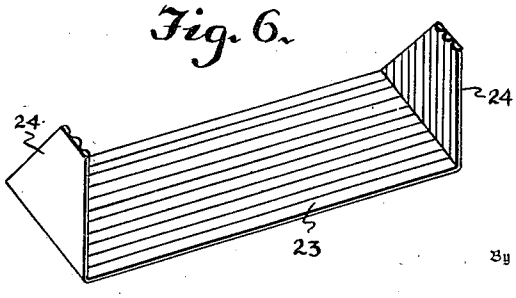


Fig. 7.

Fig. 6.



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WALL INSULATION

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Application February 20, 1939, Serial No. 257,433

6 Claims. (Cl. 20—4)

This invention relates to wall insulation and particularly insulation for occupying the spaces between the upright studs of a wall.

An object is to employ a highly effective combination of fibrous packing material with cellular sheets of fiber board for wall insulating purposes.

Another object is to pack fibrous insulation within a wall against a horizontally corrugated face of a cellular sheet or sheets, so that the corrugations offer a considerable resistance to settling of the fibrous packing.

A further object is to employ cellular wall board to form a chamber within a wall to receive a fibrous insulating packing and to form dead air spaces at the inner and outer sides of such chamber.

A further object is to so arrange inner and outer sheets of cellular fiber board within a wall as to form a chamber between such sheets and also form dead air spaces between the sheets and inner and outer coverings of the wall.

These and various other objects are attained by the construction hereinafter described and illustrated in the accompanying drawings, wherein:

Fig. 1 is a fragmentary interior elevational view of a wall to which the improved insulation is applied, omitting lath and plaster, and breaking away certain portions.

Fig. 2 is a cross sectional view of the same, taken on the line 2—2 of Fig. 1.

Fig. 3 is a vertical sectional view of the same taken on the line 3—3 of Fig. 2.

Fig. 4 is a perspective view of one of the auxiliary fiber board sheets employed.

Fig. 5 is a perspective view of one of the main fiber board sheets.

Fig. 6 is a perspective view of a fiber board sheet serving to form a horizontal partition within the wall.

Fig. 7 is a perspective view of a fiber board spacer element.

In these views, the reference characters 1, 2, and 3 designate upright studs incorporated in a wall, the studs 1 and 2 being represented as occupying a standardized spaced relation and the studs 2 and 3 having such a lesser spacing as is frequently necessary. To the inner faces of the studs is secured a suitable covering, as for example laths 4 engaged by the usual coating of plaster 5. To the outer faces of the studs is secured a suitable covering such as sheathing 6 serving as a backing for siding 7.

Fitted between the studs 1 and 2 are vertically elongated, horizontally corrugated sheets 8 of fiber board, which are vertically scored and bent to form marginal flanges 9, projecting inwardly from said sheets at opposite margins thereof and engaging the studs 1 and 2. The bottom of each sheet 8 is similarly inwardly flanged as indicated at 10, and tongues 11 formed at the junctures of the flanges 9 and 10 are upwardly bent to lie against the flanges 9. The upper marginal portion of each sheet 8 is flanged outwardly, as indicated at 12 to bear against the sheathing 6 and the ends of such portion are upwardly bent to form tongues 13 bearing against the studs 1 and 2. The sheets 8 are secured to the studs at suitable points by brads 14, certain of which serve also to hold the tongues 11 and 13 in their described positions. At the junctures of the sheets 8, both the flanges 9 and main bodies of the sheets snugly engage each other.

To assure a desired spacing of the sheets 8 from the sheathing 6, it is preferred to tack or otherwise secure spacing strips 15 to the sheathing in centrally opposed relation to said sheets, said strips being scored and bent to form vertically elongated, V-shaped projections 16 which form seats for the sheets 8.

The flanges 9 and 10 are set back from the inner faces of the studs 1 and 2, and seating against such flanges between the inner portions of said studs is a horizontally corrugated sheet 17 of fiber board, scored and bent along its lateral and bottom margins to form vertical flanges 18 and a horizontal flange 19 which project inwardly to a substantially flush relation with the inner faces of the studs so as to engage or at least closely approach the inner covering 4, 5, when applied. Tongues 20, which are formed at the junctures of the vertical and horizontal flanges 17 and 19 are preferably upwardly bent to bear against the vertical flanges.

It is of importance that the sheets 8 and 17 are both formed of single-faced corrugated board, and that the unfaced horizontally corrugated faces of said sheets are arranged to define the sides of chambers formed between said sheets 8 and 17.

The chambers between the sheets 8 and 17 are filled with a packing of light material of heat insulating character and productive of numerous dead air interstices, such as the matted mineral wool indicated at 21. Engagement of this filling by the horizontal corrugations of the sheets 8, the flanges 9 of such sheets, and the sheets 17 offer a considerable resistance to settling of said packing. Further resistance to such settling may be created by driving nails 22 partially into the studs 1 and 2 at suitable points, such nails extending from the studs some distance into the packing 21.

In case it is desired to render the height of the chambers which receive the insulating mass 21 less than the length of the sheets 8, partitioning strips 23 of corrugated fiber board may be inserted, one thereof being shown, such strip

being equal in width to the flanges 9 and 10 and having upwardly bent end portions 24 which lie against the flanges 9, and are tacked or otherwise secured to the studs through said flanges. It will be noted that the strip 23 inclines upwardly at approximately forty-five degrees as it extends from the sheet 8, its resistance to sagging under load of the superposed packing 21 being thus materially increased. The end portions 24 are of a triangular form (see Fig. 6) so that they have edges which may bear vertically against the sheet 8, in establishing the inclined position of the strip.

Between studs such at 2 and 3 which are spaced apart considerably less than the standard distance, there are inserted, in end-to-end relation, vertically elongated, horizontally corrugated, single-faced, substantially U-shaped sheets 25, the connecting portions 26 of which are approximately V-shaped and disposed against the sheathing 6, so as to form dead air spaces in proximity to the sheathing. Said sheets terminate short of the inner faces of the studs, similarly to the flanges 9 and 10 and vertically elongated strips 27 of horizontally corrugated, single-faced board are fitted between the inner ends of the studs 2 and 3, seating against the sheets 25, such strips being scored lengthwise and marginally bent to form opposed flanges 28 projecting to and terminating substantailly flush with the inner faces of said studs. The sheets 25 and strips 27 form a chamber receiving a packing 21 of insulating material, as previously described, and the corrugated faces of said sheets and strips strongly resist settling of such packing.

Preferably all of the described corrugated sheets or elements will be treated with creosote or some other suitable chemical to materially increase their resistance to moisture.

The described construction, by combining the heat insulating properties of cellular fiber board and a fibrous mass of packing, very effectively resists the transmission of heat through a wall. The materials are inexpensive and the construction is such as to permit quite rapid installation of the insulation.

The use of mineral wool and similar loose fibrous packings has occasionally been criticized on the grounds that moisture will deposit on such packing and be retained thereby in case air within the wall space is sufficiently humidified. The described construction minimizes the possibility of any such deposit by substantially preventing access of humidified air to the fibrous packing.

An important function is exercised by the spacing elements 15, 16 since in absence of said elements, considerable care would be necessary in inserting the packing 21 to avoid bowing the sheets 8 toward the sheathing so as to reduce the dead air space between such sheets and sheathing. It is to be noted in this connection that the tongues 13 also exercise a spacer function in maintaining the lower ends of the sheets 8 a proper distance from the sheathing.

The invention is presented as including all such modifications and changes as come within the scope of the following claims.

What I claim is:

1. In a wall insulation, the combination with spaced upright studs and inner and outer coverings for the studs, a fiber board spacer element secured to one of the coverings between the studs and elongated approximately vertically and bent to form an air passage within and extending the full length of the element, a sheet of cellular fiber board extending between the studs and engaging said spacer element, fastening means connecting said sheet to each of the studs, and a packing of loose insulating material between said studs and held by said sheet in a desired spaced relation to the covering carrying said spacer.

2. In a wall insulation, the combination with spaced upright studs and inner and outer coverings for the studs, a sheet of cellular fiber board extending between the studs in spaced relation to one of said coverings, a cellular fiber board spacer element interposed between the last mentioned covering and said sheet, and fixedly secured to one thereof, and spaced from the studs, and bent to form an air passage within and extending the full length of the element fastening means connecting said sheet to each of the studs, and a packing of loose insulating material between the studs, held by said sheet in a desired spaced relation to the covering engaged by the spacer element.

3. In a wall insulation, the combination with spaced upright studs and a covering for such studs, of a plurality of sheets of cellular fiber board, fitted between the studs, one above another and similarly spaced from the covering, to form a substantially dead air space between the sheets and covering, one end of each sheet being flanged to engage the covering and exercise a spacer function, and each such flange being formed with a pair of tongues projecting toward the sheet adjoining the flanged end in proximity to the studs, the other end of each sheet seating in a direction transverse thereto against the flange and tongue edges of an adjoining sheet, whereby the sheets are properly spaced from the covering at both ends of said sheets.

4. In a wall insulation as set forth in claim 3, a pair of flanges formed on the lateral margins of each of said sheets, projecting away from said covering and engaging the studs, and means securing the last mentioned flanges to the studs.

5. In a wall insulation, the combination with spaced upright studs and inner and outer coverings for such studs, two spaced sheets of cellular fiber board extending between the studs, and respectively opposed to and spaced from the respective coverings, a packing of loose insulating material approximately filling the space between said sheets, flanges formed at the lateral margins of one of said sheets securing such sheet to the studs and spacing such sheet from the other sheet, means spacing the mid portion of said flanged sheet from the covering opposed to such sheet, and flanges on the lateral margins of the other sheet spacing it from the other covering.

6. In a wall insulation, the combination with spaced upright studs and inner and outer coverings for such studs, two spaced sheets of cellular fiber board extending between the studs, and respectively opposed to and spaced from the respective coverings, flanges formed at the lateral margins of one of said sheets securing such sheet to the studs and spacing such sheet from the other sheet, means spacing the mid portion of said flanged sheet from the covering opposed to such sheet, and flanges on the lateral margins of the other sheet spacing it from the other covering.

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