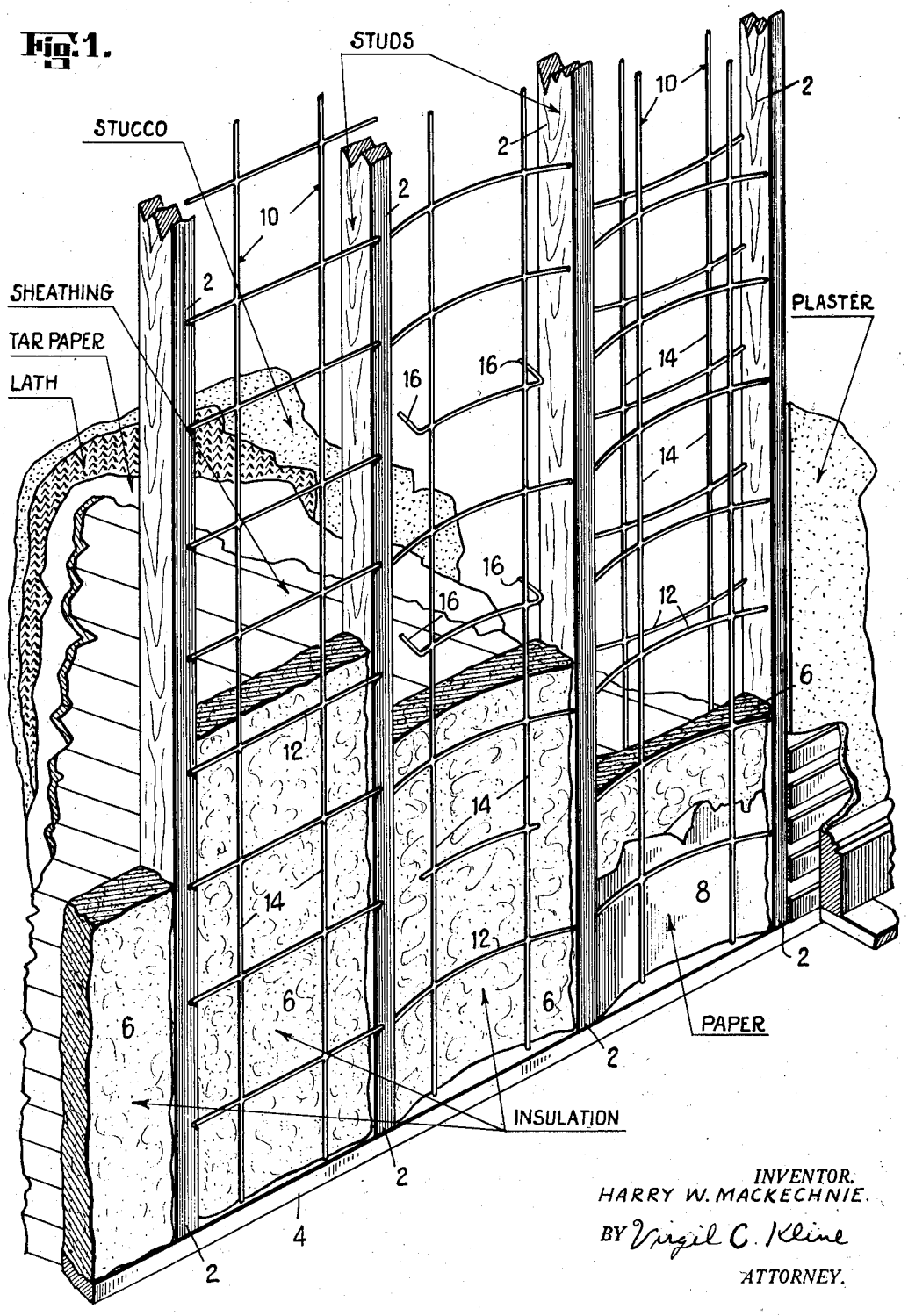
April 22, 1941. H. W. MacKECHNIE 2,239,394

INSULATED STRUCTURE

Filed March 15, 1937 3 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

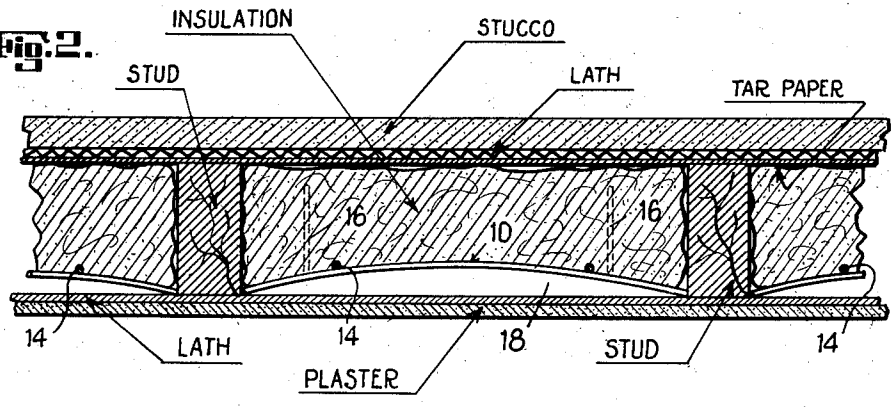
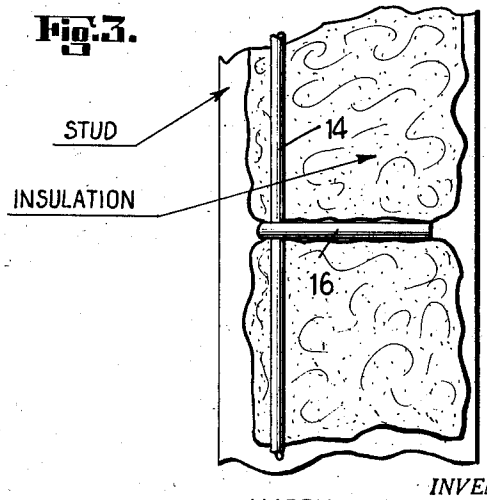


Fig. 3.



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Fig. 4.

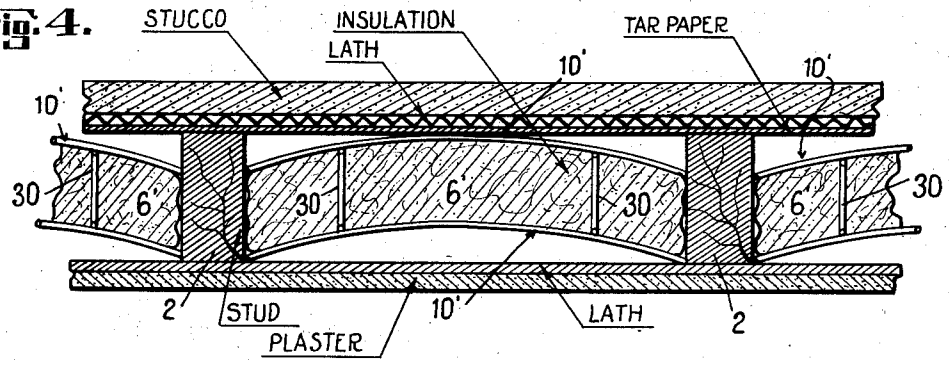


Fig. 5.

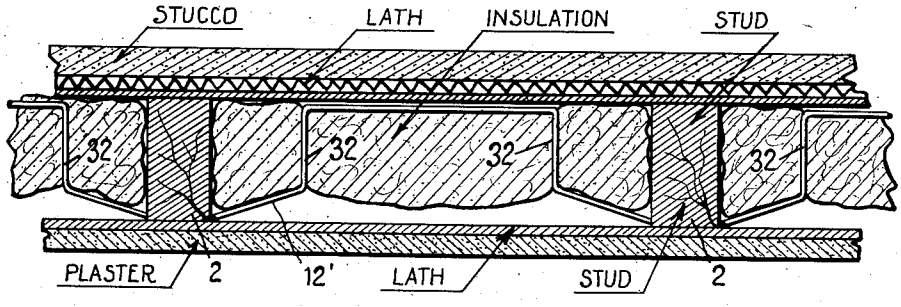
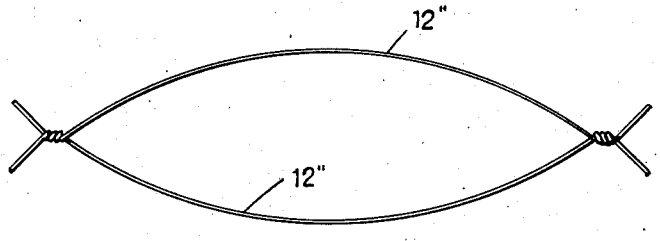


Fig. 6.



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UNITED STATES PATENT OFFICE

2,239,394

INSULATED STRUCTURE

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Application March 15, 1937, Serial No. 130,806

7 Claims. (Cl. 20—4)

The present invention relates to insulated building structures. More specifically, it relates to building structures which include insulating material in the walls thereof, and to devices for supporting and maintaining the insulating material in proper position within a building structure.

It is an object of this invention to provide a device for supporting and maintaining insulating materials, such as fibrous insulating batts, in position between building members, such as studs, joists, and rafters. Such insulating materials can be made sufficiently rigid to be self-supporting when installed, but when unusually light materials are used it is frequently desirable to support the material in position to prevent any possibility of its sagging or settling and thereby disrupting the insulating layer or area. Also, when it is desired to provide an unusually rigid structure, some additional supporting means may be required even when the insulating material is of such a nature as to be self-supporting.

It is a further object of this invention to provide a supporting device for insulating material which is itself self-supporting and requires no additional fastening devices. The supporting device of the present invention is also capable of being economically manufactured, rapidly installed, and applied in a number of different ways to meet the various exigencies frequently encountered during the installation of insulating material in building structures.

Further objects and advantages of this invention, if not specifically pointed out, will be apparent to those skilled in the art when recourse is had to the following detailed description of what is now considered to be the preferred embodiments of the invention.

In the drawings:

Fig. 1 is a fragmentary perspective view of a building wall embodying the features of the present invention;

Fig. 2 is a horizontal cross sectional view of a building wall of the type illustrated in Fig. 1;

Fig. 3 is a fragmentary view illustrating certain features of the invention shown in Fig. 1 on a larger scale, and

Figs. 4, 5, and 6 illustrate three different modifications of the insulating material support.

Referring to Fig. 1, wall supporting members 2, such as the usual studs, are supported on a sill 4. The studs 2 support the usual exterior wall formed of sheathing, tar paper, lath, and stucco, and the usual interior wall formed of lath and plaster. The particular exterior and interior walls shown are for the purpose of illustration only, and these walls may be replaced by any conventional constructions. For example, the exterior wall may comprise brick veneer, stone veneer, or any of the other well-known exterior finishes. Likewise, the interior wall may be formed of asbestos-cement material, plaster board, other composition boards, or any of the other well-known interior finishes.

Insulating material 6 is positioned within the space defined by the studs and the exterior and interior surface forming materials. This insulating material may be any of the well-known materials usually used for building or other structure insulation, such as mineral wool, wood fibres, or animal fibres. The insulating material 6 is usually manufactured in the form of thick sheets or batts, of a width about equal to or slightly greater than the usual distance between building studs and of a length which varies in accordance with the height of the wall for which it is intended. The insulating material 6 may be uncovered or may be provided with the conventional paper or cloth backing 8 on one or both sides. The insulating material 6 is usually of such a nature and is made of such thickness that it can be expanded or fluffed out to completely fill the space between the exterior and interior surface forming means, or it can be compressed to fill only a portion of that space, as might be desired.

An insulating material supporting and position-maintaining device 10 is formed by connecting lateral, self-suporting, rod-like members 12 to lineal rod-like members 14. The cross members 12 may be connected to the members 14 in any convenient way as by welding or by looping the members 12 around the members 14 or vice versa.

The members 12 are made so that their length will exceed the distance between successive studs as erected in accordance with normal building practices. The members 14 may be made in any desired length but will usually be made of great length and the finished product will usually be formed into rolls for transportation to the point of installation. The members 12 are formed of a material, such as iron or steel, which will enable them to be resilient but easily bent or arched to retain themselves in position. The members 12, as well as the members 14, may be cut to the proper length during installation by a workman with conventional wire-cutting pliers, or the devices 10 may be sized at the factory and shipped flat to the point of installation.

When installing the insulating material sup-

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porting device, a length sufficient to reach from top to bottom, or from side to side of the insulating area, as the case may be, is cut from the roll and placed against opposite studs, or other supporting members, and against the insulation material previously positioned between the studs. If the lengths of the members 12 are greater than desired, they may be varied by cutting the desired amount off one end of each of these members. The supporting device is then finally positioned by arching and wedging each member 12 in succession between opposite studs so that the members 12 and 14 lightly contact and indent the insulating material and thereby support and retain it in position. The degree of arching of the members 12 can be accurately controlled by varying the lengths of these members, so that the insulating material may be compressed to any extent desired.

The device 10 may be placed on only one side of the insulating material as shown at the left of Fig. 1 or, if an unusually strong installation is required at a certain position or throughout the wall, a device 10 may be placed on each face of the insulating material as shown at the right of Fig. 1. When two devices 10 are used, one device would be installed prior to the application of the insulating material and the other after the insulating material has been placed between the studs and against the previously installed supporting device.

In cases where a very rigid support is desired, portions of some of the members 12 may be bent as shown at 16 in Figs. 1 and 2, and these bent portions caused to penetrate the insulating material for a sufficient distance to firmly grip and provide vertical support for the same. The members 12 may be bent during fabrication of the supporting device or may be bent during installation, and any number of these members may be bent, depending on the desires of the designer of the particular wall structure. In Fig. 1 every other one of the members 12 has been shown as being so bent, but it is to be understood that a greater or lesser number may be so bent.

The distance between successive members 12 may be varied as desired. For example, when very weak or non-coherent insulating material is used, the members 12 will be placed much closer together than when relatively rigid and strong insulating material is used. Likewise, the members 14 may be varied as to number under the same considerations. When the insulating material is very strong, a single one of the members 14 only may be used, and when the insulating material is relatively weak, several of the members 14 may be used.

While for the purpose of explanation the supporting devices 10 have been illustrated as applied to vertical walls, it is to be understood that the devices 10 are particularly applicable to horizontal, or other non-vertical installations of insulating material, as for instance, in the ceilings of buildings or under roofs, etc. It has been very difficult formerly to apply insulating material in a horizontal position and give it proper support without greatly increasing the cost of installation. By the use of the present invention, insulating material may be properly supported in a horizontal position with a negligible increase in the installation expense.

A modified form of the insulating material supporting device is shown in Fig. 4. In this particular modification, the supporting devices 10' are permanently secured to the insulating batts 6' as by passing wires 30 through the batt at suitable intervals and around the supporting members 10'. In this modification, each batt has a supporting device 10' permanently connected to one or both faces, and the batt and supporting device or devices are installed as a unit.

In the modification shown in Fig. 5, the supporting device comprises a resilient member 12', which consists of a substantially U-shaped wire having legs 32 which are thrust through the batt from one side and are turned outwardly at the point where they emerge from the opposite side of the batt. In this manner the batt is securely gripped by the supporting device and is held rigidly in position when the member 12' is arched or bent and wedged between opposite studs 2.

The modification illustrated in Fig. 6 comprises two members 12'' twisted together or otherwise joined near their extremities. This modified form of the insulating material supporting device is likewise arched and wedged between adjacent stud members and forced lightly into contact with an insulating batt to retain the same in position.

The supporting device of the present invention provides efficient vertical support for insulating material because the cross members, in all of the modifications, slightly indent the insulating material, and the supporting device provides sufficient lateral support for the batt, since the members or wires 12 and 14 contact the insulating batt over its side face.

Throughout this specification and the appended claims, the term "wall" is used to designate vertical, horizontal and oblique partitions or building enclosures which usually comprise some supporting members to which backing or wall surface forming material is secured.

The foregoing details have been given for the purpose of explaining the present preferred forms of the invention and are not to be considered as limiting the invention, since it may take many physical forms and is to be defined only by the scope of the following claims.

What I claim is:

1. A device for fastening insulating material in sheet or batt form in selected vertical position in a frame, comprising vertical members, horizontal members connected to said vertical members, some of said horizontal members being resilient and of greater length than the distance between opposite portions of said frame, so that said vertical members, when positioned in contact with a side face of said material, with said resilient members arched and wedged between said opposite frame portions, are enabled to wedge said material in position, said arched members acting to indent said material sufficiently to vertically support the same, and others of said horizontal members being bent at their extremities so as to penetrate said material and provide additional vertical support for the material.

2. A device for fastening material in sheet or batt form in selected vertical position in a frame, comprising vertical members, horizontal members connected to said vertical members, some of said horizontal members being resilient and of greater length than the distance between opposite portions of said frame, so that said vertical members, when positioned in contact with a side face of said material, with said resilient members arched and wedged between said opposite frame portions, are enabled to wedge said material in position,

and others of said horizontal members being bent so as to penetrate said material and provide vertical support for the material.

3. A batt support comprising a plurality of approximately parallel, substantially rectilinear members, a plurality of approximately parallel, substantially rectilinear members positioned laterally of and connected to said first named members, some of said second named members being substantially lineal throughout their extent and others having portions turned at substantially right angles to the plane of said first named members.

4. A device for retaining sheets or batts of insulating material in position between opposite frame members and a backing surface, comprising a reticulated member having elements extending substantially in the same direction as the frame members and elements positioned in substantially the same plane as and connected to the first named elements and extending substantially laterally thereof, some of said last named elements being bent at an angle to the plane of the elements to form projections for engaging and vertically supporting the batts, and other of said last named elements being resilient and of greater length than the distance between the frame members so as to be arched when wedged laterally between the frame members to fasten the reticulated member in position and lightly clamp the batts in position.

5. A wall structure comprising spaced vertical members, wall surface forming material adjacent said members, insulating material disposed within the space defined by said members and said wall surface forming material, a reticulated member disposed between said members, said reticulated member comprising members extending substantially vertically, and horizontal members connected to said vertically extending members, some of said horizontal members being formed of resilient material, being of greater length than the distance between said vertical wall members, and being arched and wedged between said vertical wall members and into contact with said insulating material to support and space the same from said wall surface forming material over an area extending substantially from the top to the bottom of said insulating material, others of said horizontal members being bent at substantially right angles so as to penetrate and further support said insulating material.

6. A building structure comprising spaced, substantially upright supporting members, insulating material disposed within the space defined by said supporting members, spaced, self-supporting, resilient, rod-like members, each of greater length than the distance between adjacent supporting members, arched and wedged between adjacent supporting members and including central portions compressing and indenting a face of said insulating material, said rod-like members acting to support the insulating material in position.

7. A building structure comprising spaced, substantially upright supporting members, insulating material disposed between said supporting members, a reticulated member positioned against a face of said insulating material and comprising resilient rod-like elements, each of greater length than the distance between adjacent supporting members and arched and wedged between such adjacent supporting members and including central portions compressing and indenting a face of the insulating material to support the same.

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