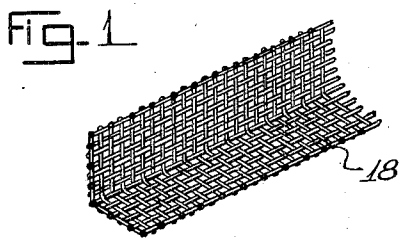
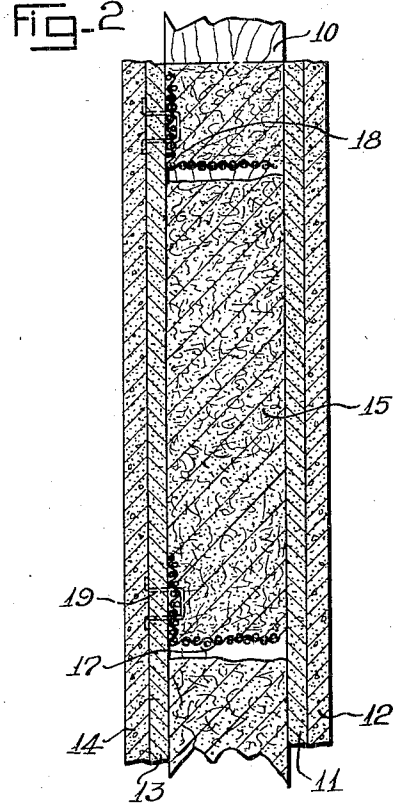
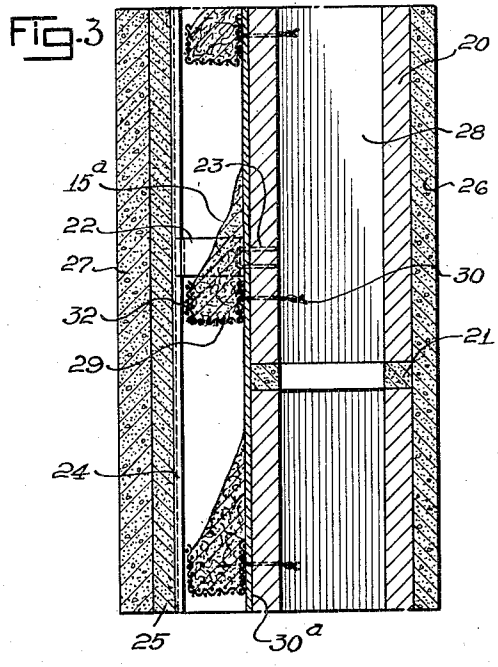
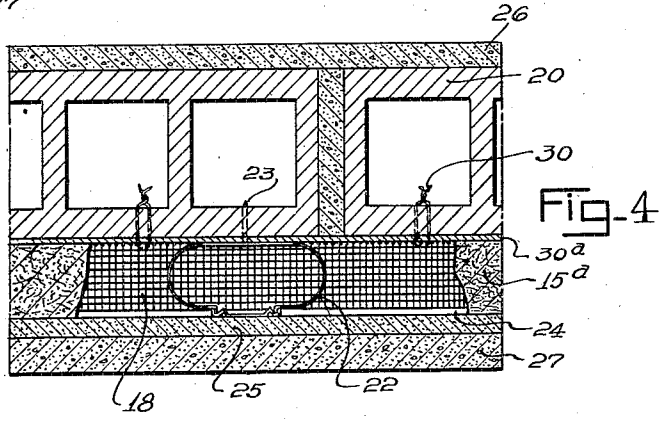
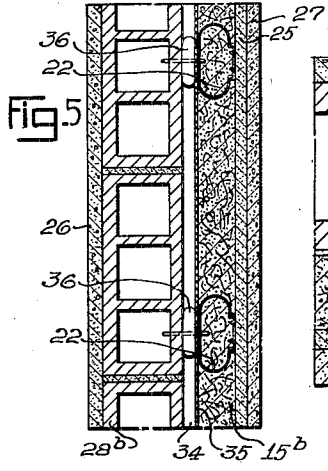


Dec. 30, 1930.

B. E. BALDUF
BUILDING INSULATION
Filed Oct. 21, 1929

1,786,732



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BUILDING INSULATION

Application filed October 21, 1929. Serial No. 401,165.

This invention relates to a sound and heatproof construction and has reference more particularly to a soundproof construction in which a low density filling material is used to fill the spaces in the wall.

In my Patent No. 1,723,989 issued August 13th, 1929, I have described a new, low density, fluffy, insulating material composed of a comminuted mixture of hydrated or partially hydrated gypsum and vegetable fiber. This filling material is used as an insulator against heat and sound, and is especially adapted for use in my soundproof construction more fully described in my pending application Serial No. 297,614, filed August 6th, 1928 in which spring clips are used to separate wall panels, said clips and the adjoining wall space being filled with the fluffy insulating material commonly sold under the trade mark Thermofill.

I have now found that when the walls of the soundproof structure are eight feet in height or greater; such as that in broadcasting studios with walls as high as 25 feet, the insulating filling material near the bottom of the wall packs down due to the weight of the material above it so that the density of same is increased and its sound and heat insulating qualities therefore decreased. Furthermore, in a high wall the filling material tends to settle down after a period of time and leaves a vacancy at the top of the wall which is uninsulated.

An object of this invention therefore, is to provide means for supporting the filling material at different heights inside the wall so as to prevent the material from packing together to a higher density near the bottom of the wall.

Another object of the invention is to provide a means of supporting the filling material in a wall so that its sound and heat insulating efficiency will be high at every wall height; also to improve sound and heatproof wall constructions in other respects hereinafter specified and claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which

Fig. 1 is a perspective view of my improved retaining shelf for insulated walls,

Fig. 2 is a sectional elevation of a wall constructed largely for heat insulation in which my improved retaining shelf is used,

Fig. 3 is a sectional elevation of a modified form of wall constructed primarily for sound insulation in which spring slips are used for connecting the wall panels.

Fig. 4 is a sectional plan view of the wall shown in Fig. 3, and Fig. 5 is a still further modified form of sound insulating construction.

The simplest form of wall construction is shown in Fig. 2 and is intended primarily for heat insulation. In this wall, studs 10 are spaced at regular intervals, such as 16" centers in the usual way, and plasterboards 11 are secured to the inner edges of said studs by nailing or the like. A plaster layer 12 is then applied to the plasterboard 11 in the usual way. Sheathing plasterboards 13 are secured to the opposite edges of the studs 10 by nailing or the like, and an outer layer of stucco 14 is applied to the sheathing boards 13. If desired both layers 12 and 14 may be of interior plaster or other decorative finish, such as plastic paint, or any other type of panel may be attached to the studs 10 for forming the walls of a room.

The space between the plasterboards 11 and 13 is preferably filled with a light, fluffy insulating material for the purpose of preventing the transference of heat or sound through the wall. The preferred form of filling material is that described in my Patent No. 1,723,989, and consists of a mixture of paper fibres and hydrated gypsum. This insulating composition may contain 8% to 25% by weight of paper fiber and the density of the composition may vary from 10 pounds to 35 pounds per cubic foot, the lighter densities being preferable. This particular composition is advantageous to use since it is highly fire resistant due to the high content of chemically combined water in the gypsum and also because the composition has the least tendency to settle to a material having a higher density.

In order to further reduce the settling of

the filling material, I provide at predetermined intervals, a series of shelves 17 which preferably consist of screen wire 18 bent at an angle, one of the legs of the angle being secured to one of the plasterboards 11 or 13, such as by a wire 19. Any other type of shelf may be used, such as a wooden cleat if desired, the main purpose of the shelf being to divide the insulating material up into a series of independent bodies whose height is not sufficient to cause densification of the material at the bottom of the column.

In the sound insulating construction shown in Figs. 3 and 4, a tile wall 20 is shown, the tiles preferably being made of gypsum and being connected together at their ends by grouting material, such as mortar 21. Spring clips 22, such as that disclosed in my co-pending application, Serial No. 297,614, filed September 6, 1928, are then connected to the walls of tiles 20, as by staples 23. These spring clips 22 are preferably U-shaped in plan as shown in Fig. 4 and the outer ends of the clips are connected to a steel runner 24. Plasterboards 25 are secured to the runner 24, as by wiring not shown, or if desired a wooden strip may be substituted for the runner 24 in which case the plasterboards 25 will be attached to the wooden strips by nailing. A stucco surface 26 may be applied to the outer wall of tile 20 and a plaster coating 27 applied to the plasterboard 25 for finishing the interior of a room. It should be understood that any type of resilient, yielding clip may be used instead of the spring clip 22 shown, the principal object of same being to provide a cushioning means for absorbing the vibrations of the plasterboard 25 due to the impingement of sound waves on the plaster layer 27, thus preventing sound from passing through the entire wall structure.

In the wall constructions shown in Figs. 3 and 4, a modified form of screen wire shelves 29 may be used and these may be attached to the walls of tiles 20 by means of wires 30, a layer of paper 30a being preferably provided between the shelves 29 and tiles 28. Each shelf 29 is preferably positioned somewhat below a row of spring clips 22 so that the filling material 15a never settles below the spring clips but always partly surrounds them thus preventing molecular transmission of the sound through the metal of the clip by absorbing same. The filling material 15a does not completely fill the spaces of the wall but is segregated in bodies, each of which serves to damp any reverberation of sound waves in the wall space by drum action. An upstanding flange 32 is formed on the shelf 29 and spaced apart from the runner 24 and panel 25, thus preventing direct contact of the filler 15a and the transmission of sounds through said filler. In the soundproof walls shown in Figs. 3 and 4, the light and fluffy filling ma-

terial also prevents any drum action in the spaces of the wall and thus helps to increase the sound insulating efficiency of the structure. In actual practice, the shelves may be spaced apart at vertical heights of 2 to 8 feet depending on the nature of the job.

In the construction shown in Fig. 5, a space 34 is provided between the tile wall 28b and a sheet of paper 35. This space is maintained by spacing strips 36 made of wood or plasterboard. The filling material 15b is thus kept out of direct contact with tile wall 28b by the resilient paper 35, thus preventing transmission of sound.

I would state in conclusion that, while the illustrated examples constitute a practical embodiment of my invention, I do not wish to limit myself precisely to these details, since manifestly, the same may be considerably varied without departing from the spirit of the invention as defined in the appended claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In an insulating wall construction, a pair of spaced, substantially parallel wall panels, cushioning means for connecting such panels together, a low density filling material in the space between said wall panels and shelves between said wall panels adapted to divide said filling material up into a plurality of independent bodies of material to prevent the settling thereof.

2. In an insulating wall construction a pair of wall panels in spaced parallel relation, spring clips connecting said panels, a low density filling material between said panels, and shelves at predetermined intervals between said panels, and adapted to divide the insulating material up into a plurality of independent bodies.

3. In an insulating wall construction, a tile wall panel, metallic spring clips attached to said tile panel, a second wall panel secured to said spring clips in spaced, parallel relation to said tile panels, metallic woven shelves secured to one of said panels in the space between said panels, and a low density filling material supported by said shelves in the space between said panels so that said filling material is divided up into a plurality of independent bodies, to prevent the settling thereof.

BRUNO E. BALDUF.