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METAL PLASTER BASE

Filed June 25, 1936

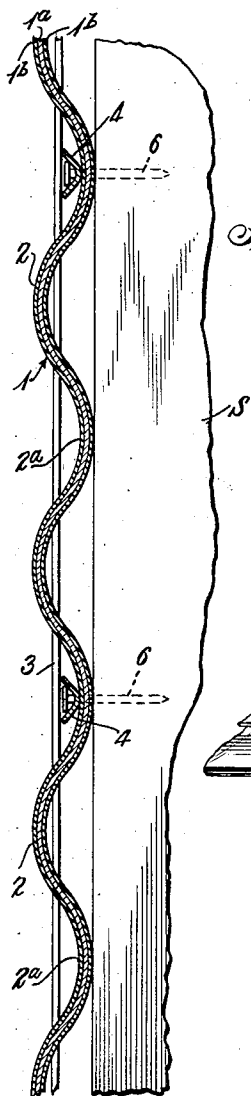


Fig. 1.

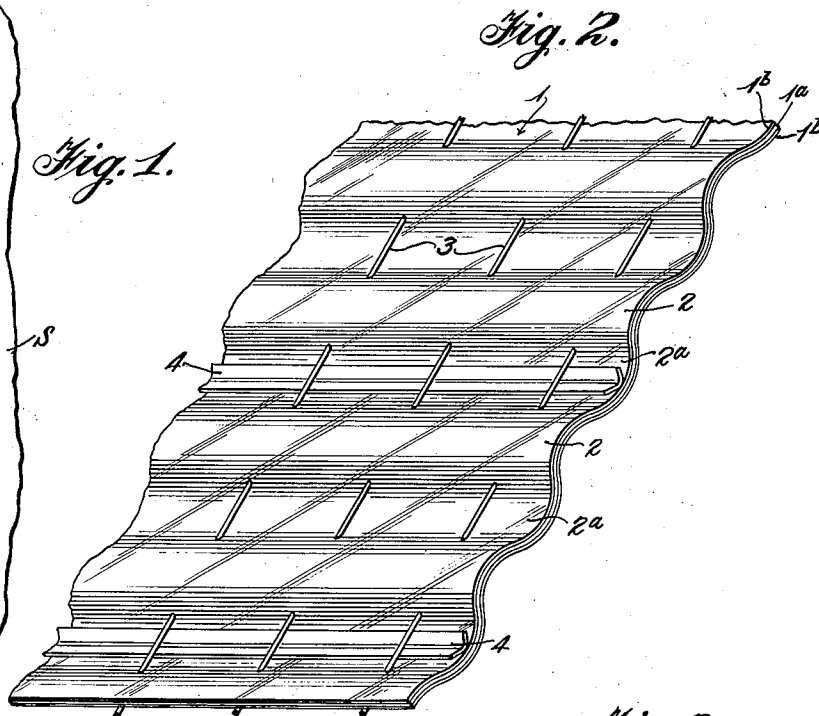


Fig. 2.

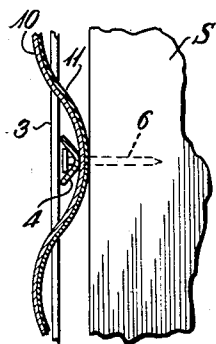


Fig. 3.

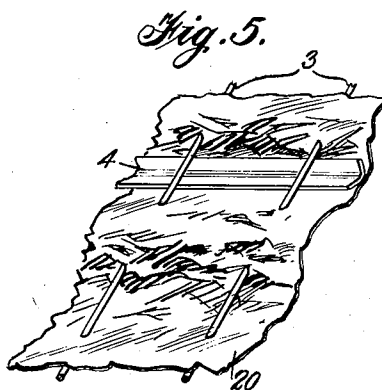


Fig. 4.

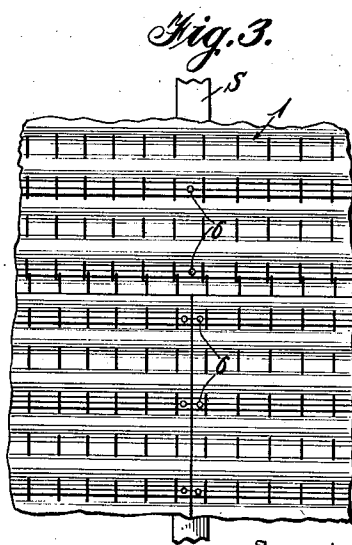


Fig. 5.

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UNITED STATES PATENT OFFICE

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METAL PLASTER BASE

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Application June 25, 1936, Serial No. 87,311

11 Claims. (Cl. 72-116)

This invention relates to plaster bases designed for use in wall and partition construction in buildings as a substitute for wood and metal lath. This general type of plaster base having a bright metal facing upon one of its sides serving as a heat-reflective medium is described in my application Serial No. 734,270, filed July 9, 1934.

An important object of my invention is to provide a plaster base which advantageously may be of the general character disclosed in the aforementioned application comprising a backing sheet of thin metal having reinforcing wires woven therethrough at spaced intervals in one direction of the sheet and overlying spaced stiffening ribs extending in another direction, and ordinarily at right angles to the wires, thus providing a plaster base of all-metal or of substantially all-metal construction which possesses advantages over plaster bases as now constructed in which the backing sheet is composed of paper or other fibrous stock.

Another object of the invention is to provide a plaster base of the above character in which the backing sheet is composed of a thin readily-bendable metal, such as aluminum, which presents a heat reflective surface upon one of its sides or in which the backing sheet comprises a plurality of layers including a foundation layer and a bright heat-reflective surfacing layer so that when the plaster base is incorporated in a building with its reflective surface disposed toward the hollow space of the wall it serves as an excellent heat insulating medium. In those cases where the backing sheet is made up of different layers of metal, I prefer to utilize zinc as the foundation layer and aluminum foil as the reflective layer, the zinc lending reinforcement to the aluminum foil and being more resistant to corrosion by plaster having an alkaline reaction which is applied directly to the uncovered face of the zinc foundation layer. In some cases, however, the plaster employed in wall and partition construction is more or less acidic in nature so that in the preferred form of my invention I propose to cover the foundation layer, when of zinc or other metal subject to attack by dilute acids, with a protective layer of material, for example aluminum foil, which is impervious to such acids. In this way the bright heat-reflecting surface of aluminum foil disposed toward the hollow wall space of the building is protected against deterioration by the components of the plaster by two superposed layers of metal which maintain the foil out of contact with the plaster and enables the foil to permanently retain its bright metallic luster.

An all-metal plaster base constructed in ac-

cordance with my invention is fireproof, impervious to moisture, and resistant to the attack of destructive insects, in addition to possessing other advantages as will be apparent from the following detailed description of a preferred embodiment of the invention when considered in connection with the annexed sheet of drawing in which:

Figure 1 is a vertical cross-sectional view through a portion of a plaster base attached to the studding of a building preparatory to having a layer of plaster applied thereover;

Figure 2 is a fragmentary perspective view of the plaster base of Fig. 1 viewed from its outer or plaster-receiving side;

Figure 3 illustrates one manner in which the sections of the plaster base may be associated in their attachment to the studding;

Figure 4 is a cross-sectional view corresponding to that of Fig. 1 of a modified form of plaster base; and

Figure 5 is a fragmentary perspective view of a portion of still another form of plaster base.

The plaster base shown in Fig. 1 consists of a backing sheet 1 of relatively thin metal bent into undulated form so as to provide a series of parallel hills or ridges 2 separated by intervening valleys 2a. The backing sheet 1 may be of laminated construction comprising a foundation layer 1a of zinc having the thickness and pliability of heavy metal foil, the opposite sides of which are faced with sheets 1b of bright aluminum foil adhesively or otherwise secured to the foundation layer.

Stitched through the backing sheet so as to intersect the hills and bridge the valleys thereof is a series of parallel wires 3 terminating even with one of the edges of the backing sheet and overhanging its opposite edge for a sufficient distance to engage the face of an adjacent sheet. Located below the reinforcing wires and extending along the bottoms of certain of the valleys of the backing sheet are stiffening ribs 4. These ribs are made of sheet metal bent into channel shape and have their outwardly flared sides welded at their tops to the reinforcing wires. The ribs extend from edge to edge of the sheet and crosswise of the reinforcing wires thus serving to rigidify the backing sheet in a direction at right angles to the reinforcing wires besides preventing crushing of the sheet.

In the construction of either the exterior or the inner partition walls of a building the individual sections of the plaster base are associated with the studding of a building in the manner illustrated in Fig. 3 with the surface of bright metal

foil 1b disposed toward the hollow space of the wall and with the ribs 4 presented upon the outer face of the plaster board. By means of nails 6 passing through the bottoms of the ribs 4 into the studs S sections are secured in place edge-to-edge in vertically staggered relation with the hills and valleys extending horizontally and the extended portions of the reinforcing wires of one sheet overlapping the margin of an adjacent sheet. After all the sheets have been secured in place, a coating of plaster or stucco is applied to the outer surfaces of the sheets in the usual manner as with metal lath.

If the plaster is acidic in nature, the aluminum foil which is passive to most acids in the dilute state in which they are ordinarily present, forms a protective covering for the zinc foundation layer which is more sensitive to such acids. On the other hand, if the plaster is of the usual alkaline character, the layer of aluminum foil, if incapable of resisting the corrosive action of such plaster, is reinforced by the zinc foundation layer which is unaffected by compositions of basic reaction. This marks a substantial improvement over plaster bases as heretofore constructed in which the backing sheet is of fibrous material which readily disintegrates after continued exposure to the acidic or alkaline constituents of the plaster.

In view of the closeness of the metals aluminum and zinc in the activity scale, deterioration due to electrolysis is reduced to a minimum.

In Fig. 4 is shown a slightly modified form of plaster base which corresponds in all substantial respects to that just described but instead of having the bright metal foil applied to both sides of the foundation layer 10, the foil 11 is applied to only one of its sides.

Another form of the invention is illustrated in Fig. 5 in which the backing sheet 20 consists of a sheet of relatively heavy foil, preferably of some bright metal such as aluminum, supported upon a framework comprising the reinforcing wires 3 and stiffening ribs 4, in the manner described in connection with the embodiment of Fig. 1, but characterized by the fact that this foil is crumpled to increase its surface area and to provide a multitude of small pockets. These pockets serve to retain a layer of "dead" air adjacent that surface of the backing sheet which is directed toward the hollow wall space and this further enhances the value of the plaster board as a heat insulating medium.

It will be apparent that a plaster base constructed in accordance with the invention is particularly useful in the erection of the outer walls of a building because of the impervious and non-absorbent nature of the metal backing sheet which maintains the interior of the building dry regardless of the humidity prevailing in the outside atmosphere. Furthermore the metal forming the backing sheet does not rapidly deteriorate so that the plaster base may be stored for long periods of time in either wet or dry climates without affecting its utility. The utilization of metal as the backing sheet is desirable also for the reason that it avoids the necessity of treating the sheet, such as is sometimes required in the case of paper stock, to increase its strength and to render it fireproof. By reason of the high heat conductivity of metal, as compared with paper, danger of fire from overheating, as for example in the vicinity of chimneys and fireplaces, is obviated. Thus the metal backing sheet serves to conduct away the heat from locally

overheated areas of the wall which otherwise might result in the spontaneous combustion of surrounding material.

Since the emissivity of a bright metal is very low the metal backing sheet preferably will be provided with a heat-reflective surface in order to reduce transfer of heat through the walls by radiation. Nevertheless it is within the purview of my invention to utilize the metal, either coated or uncoated, in its natural unpolished state. Nor is it necessary that the backing sheet be composed of a plurality of superposed sheets of metal, but instead a coating of metal or enamel may be applied thereto, as by painting, spraying or dipping. Or a bright polish may be imparted mechanically to the side of the sheet which is designed to face the dead air space of the wall.

It is obvious that other changes in structure and design may be made in the forms of plaster base described above without departing from the spirit of my invention. While it is contemplated that the plaster base described above will ordinarily be employed as a support for plaster, stucco or similar plastic materials applied to one of its faces, the invention is not limited to such use and the material may be employed solely for its insulating effect without having a plastic covering applied thereto. The term "plaster base" is therefore employed simply for convenience to designate the product of the invention and not to restrict the scope of the invention to any particular purpose.

I claim:

1. A plaster backing comprising a framework of reinforcing elements disposed transversely of each other and a sheet of thin metal only and lacking any appreciable inherent rigidity affixed to and supported upon said framework, said sheet presenting a highly polished reflective surface.

2. A plaster backing comprising a framework of metal reinforcing elements disposed transversely of each other and a sheet of thin metal only and lacking any appreciable inherent rigidity, interwoven with and supported upon said framework, said sheet presenting a highly polished reflective surface.

3. A plaster backing comprising a framework of parallel spaced reinforcing wires and a plurality of ribs extending crosswise of the reinforcing wires and an undulated sheet of thin, readily-bendable metal only supported upon the framework, said metal sheet being intersected by the reinforcing wires and extending back and forth upon opposite sides of said reinforcing wires, said metal sheet presenting a highly polished reflective surface upon its side opposite to that overlain by the ribs.

4. A plaster base comprising a sheet, of thin laminated metal only, reinforcing wires woven at intervals through the sheet to impart an undulatory form thereto and stiffening ribs composed of sheet metal located between the reinforcing wires and the sheet and united with the reinforcing wires, said metal sheet presenting a highly polished reflective surface upon its side opposite that overlain by the stiffening ribs.

5. A plaster base comprising a sheet of thin, readily-bendable metal, reinforcing wires woven at intervals through the sheet and stiffening ribs located between the reinforcing wires and the metal sheet, said metal sheet presenting a bright heat-reflective surface upon its side opposite to that overlain by the stiffening ribs.

6. A plaster reinforcing base comprising a sheet

of thin, readily-bendable metal, reinforcing wires woven at intervals through the sheet and stiffening ribs located between the reinforcing wires and the metal sheet, said metal sheet having a coating of acid-resistant metal applied to one of its sides.

7. A plaster reinforcing base comprising a sheet of thin, readily-bendable metal, reinforcing wires woven at intervals through the sheet and metal channel-shaped stiffening ribs located between the reinforcing wires and the metal sheet and welded to the reinforcing wires, said metal sheet comprising a foundation layer and a surface layer of different metals.

8. A plaster reinforcing base comprising a sheet of thin, readily-bendable metal, reinforcing wires woven at intervals through the sheet and stiffening ribs located between the reinforcing wires and the metal sheet, said metal sheet comprising a layer of zinc and a layer of aluminum.

9. A plaster base comprising a sheet of thin, readily-bendable metal, reinforcing wires woven

at intervals through the sheet and stiffening ribs located between the reinforcing wires and the metal sheet, said sheet being composed of a metal which is relatively resistant to corrosion by compositions having a basic reaction.

10. A plaster base comprising a sheet of thin, readily-bendable metal, reinforcing wires woven at intervals through the sheet and stiffening ribs located between the reinforcing wires and the metal sheet, said metal sheet being crumpled to provide a multitude of small air pockets upon its surface.

11. A plaster base comprising a sheet of thin, relatively bendable metal, reinforcing wires woven at intervals through the sheet and stiffening located between the reinforcing wires and the metal sheet, said metal sheet being composed of a layer of zinc and a layer of reflective aluminum secured together in face-to-face engagement and forming opposite surfaces of the sheet.

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