Oct. 20, 1931. D. B. ARNOLD 1,828,351

INSULATING METAL LATH

Filed Aug. 22, 1928

Fig. 1

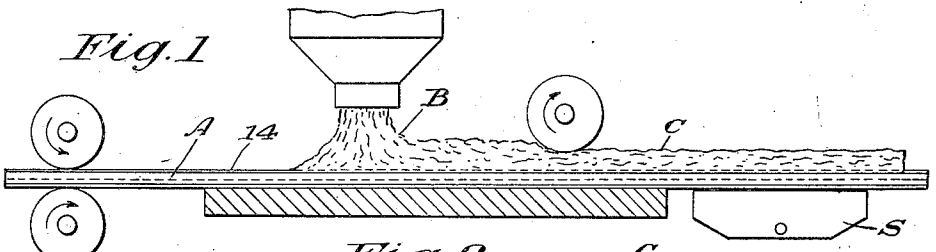


Fig. 2

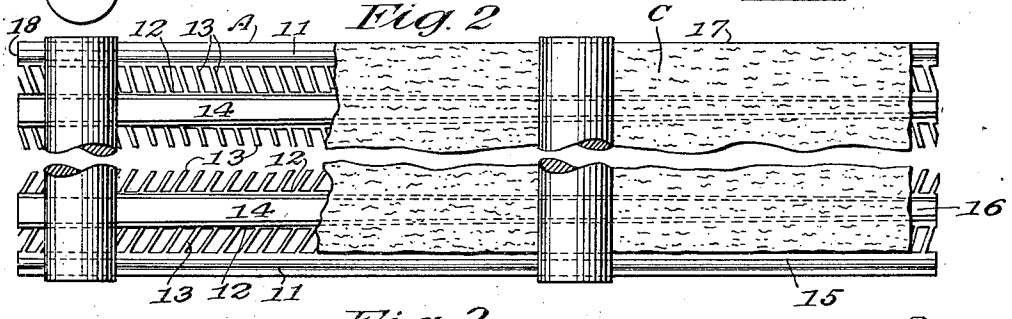


Fig. 3

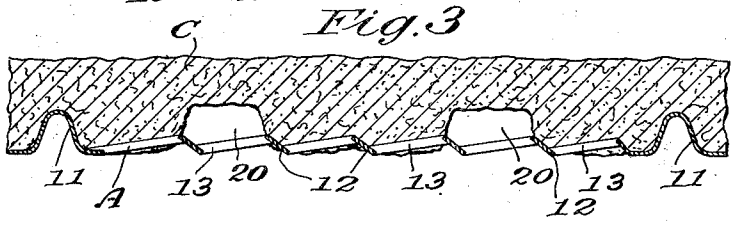
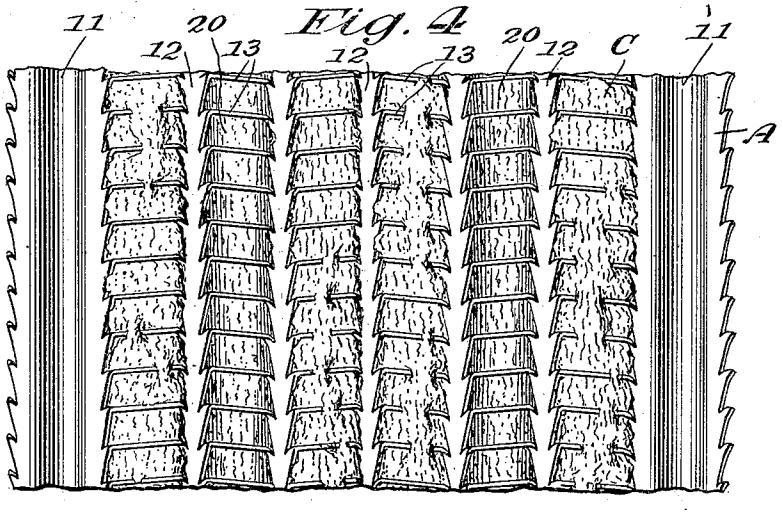


Fig. 4



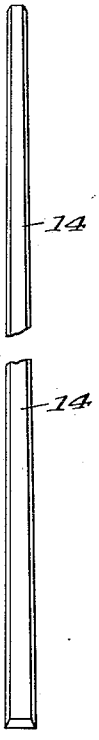
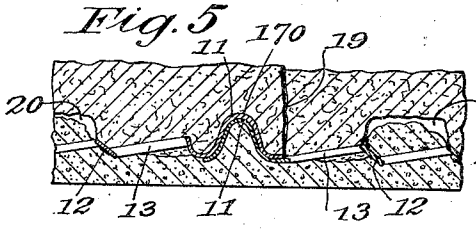


Fig. 6

Fig. 5



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UNITED STATES PATENT OFFICE

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INSULATING METAL LATH

Application filed August 22, 1928. Serial No. 301,192.

My invention has for its object a metal lath covered on one side with a fibrous mass having heat and sound insulating qualities, the whole being intended to afford a backing and support for plaster, as well as an insulation for the building.

Heretofore it has been proposed to employ fibrous material of various kinds as a backing for plaster to reduce the transmission of heat and consequently to make the house in which it is used warmer. It has also been proposed to cover certain portions of metal lath with fibrous material to prevent the plaster being pushed through the meshes of the expanded metal and falling down inside and thus being wasted.

My present invention provides a combined metal lath and light porous insulating blanket which serves also as a plaster saver by reducing the amount of plaster required. Nevertheless the material provided in my present invention affords a perfect bond between the plaster and the metal lath with the expenditure of a minimum amount of plaster. My invention also includes a method of manufacturing the material to produce a light porous material having heat and sound insulating qualities in a high degree.

In the preferred form of my invention I also construct the material so that the edges of the metal lath of adjacent sheets overlap, and where possible the edge ribs are interlocked, if ribbed lath is used, while the edges of the fibrous blanket butt against each other so that a smooth even surface of the insulating blanket results and by the overlapping of the lath additional strength and stiffness is given to the plastered wall.

Referring now to the drawings:

Fig. 1 is a longitudinal section of the essential elements of a machine illustrating the method of manufacturing the material embodying my invention.

Fig. 2 is a fragmentary plan view of the machine shown in Fig. 1.

Fig. 3 is a transverse section on a larger scale of a piece of material embodying my invention.

Fig. 4 is a plan view of the material shown in Fig. 3.

Fig. 5 is a detail showing the construction at the edge of the sheet and the plaster coat, as well as the manner in which the ribbed edges of the sheets are overlapped to produce a butt joint of the insulating material and a smooth surface on the insulating backing.

Fig. 6 is a detail showing one of the groove forming members employed in practicing the method of manufacturing the material which is described herein.

The general construction of the finished material will best be understood by referring to Figs. 3 and 4. At A is shown a portion of a sheet of metal lath which may be of any well known construction, but is preferably of the ribbed type having longitudinal ribs 11, 11. These ribs are connected by a reticulated portion conveniently formed by slitting and expanding metal in a well known manner. In the form shown in the drawings there are intermediate ribs 12, 12 connected by strands 13, the whole forming what is known in the trade as rib lath, of one well-known pattern. In the form shown in the drawings the strands 13 are inclined to the plane of the sheet as shown particularly in Fig. 3. This type of expanded metal lath is advantageous in connection with the manufacture of the material embodying my invention because it has the necessary rigidity, this being afforded by the U-shaped ribs 11 and the mesh surface is of such a character that the fibrous material with which it is backed readily and strongly adheres to it. The metal lath A of whatever kind is chosen is covered on one side by a thick coating or blanket of fibrous material which is preferably made of a dry paper fibre pulp which may or may not be treated with water proofing, fire proofing or adhesive materials. I find in practice that excellent results may be obtained by the use of dry paper fibre with or without fire proofing treatment.

In manufacturing the material embodying my invention I pass the sheets of metal lath through a machine, the movement being preferably lengthwise of the ribs. On the meshed surface, in suitable locations I lay groove forming members 14 one of which is shown in Fig. 6. These groove forming

members are preferably of the shape shown being slightly tapering. Their spacing sidewise on the sheet is determined somewhat by the character of the metal lath employed and somewhat by the use to which the finished product is to be put. In practice I find it desirable to space them somewhat uniformly across the sheet. As the sheet of metal lath A travels through the machine, one or more heavy layers of paper pulp mixed with or suspended in water are deposited on the metal lath and on the groove forming members 14. The water is removed or extracted from the pulp in such a way as to leave the fibres loose and the material light and porous, so that the heat insulating qualities are not diminished. This is preferably done by means of suction which extracts the water without compressing the fibres. In the drawings, I have shown a suction box S for this purpose. The layer of pulp which is designated B is thick enough to make a thick layer C of the dry fibre in the finished material so as to give to the finished material the necessary heat insulating qualities. The layer of fibrous material covers over the groove forming members 14 and over the exposed parts of the remainder of the sheet of metal lath except on two edges as will be explained hereafter. The fibres mat together around the strands of the metal lath and to each other sufficiently so that the insulating blanket is well tied to the strands of the metal lath. The under surface of the sheet is left in a rough condition with portions of the strands of the expanded metal exposed and other portions embedded or partly embedded in the fibrous material. The groove forming members 14 are then withdrawn lengthwise from the position shown in Figs. 1 and 2, this being facilitated by the tapering shape of the groove forming members. This leaves, what are conveniently termed closed or confined grooves, between the metal lath and the fibrous material.

In practice and where rib lath is employed I leave one longitudinal and one transverse edge of the sheet bare as shown at 15 and 16 in Fig. 2 and cover the other two edges 17 and 18 in that figure. This makes it possible to overlap the rib on one sheet with the rib on the next sheet as shown at 170 in Fig. 5, and also the edge 16 of one sheet with the edge 18 of the next, while at the same time the side edges of the fibrous material of the two sheets will butt against each other as shown at 19 in Fig. 5, thus giving a continuous surface on the blanket side of the sheet.

The material is fastened in place on the studding or furring in the ordinary way and plaster is applied in the ordinary manner. Over those portions of the material where there are no confined grooves, or over the whole surface, if grooves are not employed, the plaster penetrates the small interstices and depressions in the exposed portions of the fibrous material and the spaces about the exposed parts of the strands and forms bonds which are generally sufficient to hold the plaster in place but when the confined grooves are employed a much better bond is produced. In this case the plaster enters the confined grooves 20, 20 passing through and beyond the strands of the metal lath, and reunites in the grooves. The plaster in the grooves forms plaster ribs which give added strength and stiffness to the wall. As the grooves are closed, the plaster cannot run through and drop down behind the wall, nor can more plaster pass the metal lath than is necessary to fill the grooves and form proper bonds. This forms a strongest possible bond and at the same time requires the use of a minimum of plaster.

What I claim is:

1. A process of making building material which comprises laying upon a sheet of metal lath, groove forming members, placing on the sheet semi-liquid fibrous pulp, and withdrawing the groove forming members to form grooves between the fibrous material and the metal lath.

2. The process of making building material which comprises forming on one side of a sheet of metal lath a layer of semi-liquid fibrous pulp, forming spaces between the fibrous pulp and lath, and extracting water from the pulp by means which leaves the resulting layer of dry fibre in a light porous condition.

3. The process of making building material which comprises forming on one side of a sheet of metal lath a layer of semi-liquid fibrous pulp and finishing the layer by extracting from the pulp the water contained therein by suction so that the resulting layer will be in a light porous condition.

4. The process of making building material which comprises forming on one side of a sheet of metal lath a light porous layer of fibres by depositing thereon a semi-liquid fibrous pulp and finishing the layer by drying the pulp while the fibres are in their loose deposited condition.

In testimony whereof I affix my signature.

DAVID B. ARNOLD.