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SOUND DEADENING AND HEAT INSULATING MATERIAL
AND METHOD OF MAKING THE SAME
Filed March 11, 1929

Fig. 1.

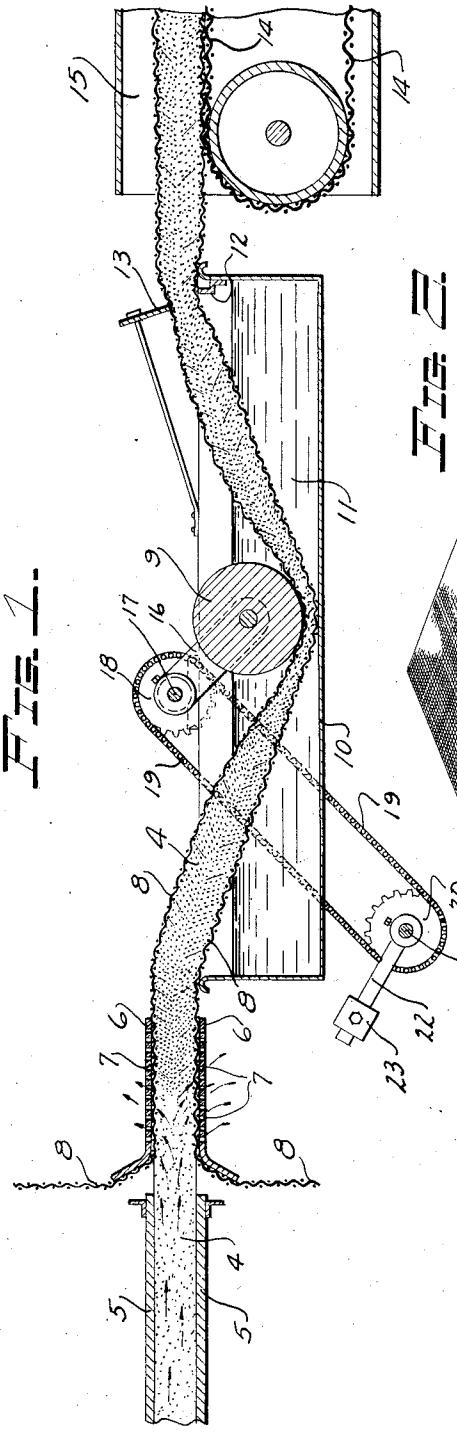
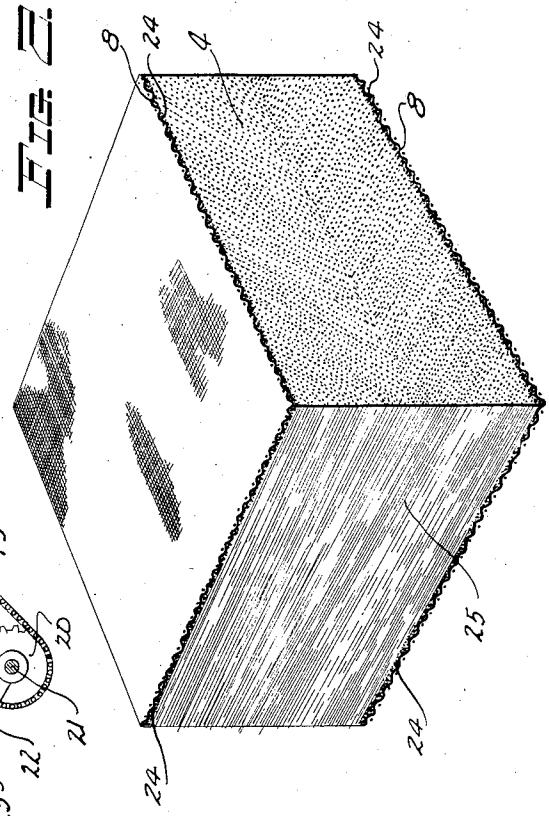


Fig. 2.



Inventors
Harvey B. Lindsay
Arthur L. Clements

By
Charles A. French
Attorneys

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UNITED STATES PATENT OFFICE

HARVEY B. LINDSAY, OF EVANSTON, AND ARTHUR L. CLEMENTS, OF CHICAGO, ILLINOIS, ASSIGNORS TO DRY-ZERO CORPORATION, OF WILMINGTON, DELAWARE, A CORPORATION OF DELAWARE

SOUND DEADENING AND HEAT INSULATING MATERIAL AND METHOD OF MAKING THE SAME

Application filed March 11, 1929. Serial No. 346,003.

The invention relates to sound deadening and/or heat insulating material and a method of making the same.

Heretofore, where ceiba fibres, generally called kapok, have been used for sound deadening or heat insulating purposes the only way of forming them into a product that could be handled readily was to enclose a bat of such fibres within an outer covering in the form of a blanket in which the covering was stitched to the bat. Such a product and the method of making the same is described in United States Letters Patent No. 1,679,251, dated July 31, 1928, and No. 1,584,386, dated May 11, 1926. While it is not broadly new to attach coverings to fibrous material, in the present instance the usual practice of merely coating the material with adhesive could not be followed owing to the resistance of ceiba fibres to moisture penetration. The attachment of the covering to the bat has, however, been accomplished in the present instance by subjecting the bat, while immersed in the sizing, to pressure and then allowing it to expand while still submerged, thereby causing a suction effect, which sufficiently coats the surface of the bat adjacent the covering to enable the same to adhere thereto. Furthermore, according to the present invention the bat of ceiba fibres, such as kapok, is formed with the fibres extending from end to end in generally the same direction, thereby producing a layer of fibrous material having a definite grain to which bat reinforcing layers of fabric, preferably muslin, are secured by the method hereinafter described.

The invention further consists in the several features hereinafter more particularly described and pointed out in the claims at the conclusion hereof.

In the drawings Fig. 1 is a vertical sectional view through an apparatus used in carrying out the method embodying the invention.

Fig. 2 is a perspective view of a block of the new sound deadening and insulating material.

Referring to the drawings and also having reference to the prior patents above noted, the bat 4 of ceiba fibres, with the greater portion thereof arranged to extend from end to end in same direction of the bat, is moved through the channel plates 5 and thence through a former, including top and bottom plates 6 provided with air release openings 7, between top and bottom coverings 8, preferably of a strong fabric, such as muslin.

Passing out of the formers the bat and its covering are pulled down under a heavy roller 9 into a tank 10 containing a bath 11 of sizing, perferably silicate of soda, then between a pair of doctors 12 and 13 and out onto a travelling screen conveyor 14 which runs through a long dryer 15, a part of which is shown. After drying, the finished material is cut into sizes suitable for use.

The heavy roller 9 is carried at its ends on arms 16, one being shown. Each arm 16 is in turn secured to a shaft 17 suitably journalled in the frame of the apparatus and carrying a sprocket 18 connected by a chain 19 to a sprocket 20 on a shaft 21. An arm 22 associated with the shaft 21 has a weight 23 adjustably mounted thereon which acts to partially counter-balance the weight of the roller 9. By adjusting the weight 23 relative to the arm 22 the pressure on the bat can be varied to suit the required pressure for the thickness of the bat being run.

By means of the roller 9 the light fibres of the bat which are potentially adverse to taking on moisture are forced down below the surface of the sizing bath and the pressure exerted by the roller squeezes out the air naturally in it and as the pressure is released and the bat expands a suction is set up so that a certain amount of the sizing is drawn in and surrounds the fibres immediately in contact with the outer coverings and causes them to adhere to said coverings.

Passing out of the bath the covered bat is drawn between the doctors or scrapers 12 and 13, one of which may be mounted for suitable adjustment to the different thicknesses of material, which scrape off the surplus sizing or silicate of soda and at the same time force the outer fibres into closer contact with the coverings, cementing them together. In practice the sizing 24 provides a layer of cemented fibres and fabric about one-thirty-sec-

ond of an inch thick and when the material thus formed is dried it may be readily cut into the desired form and will retain its block or slablike formation, as shown in Fig. 2, wherein it is noted that the majority of the fibres 25 forming the bat extend from end to end in one direction of the layer.

While the silicate of soda serves to stiffen the coverings, said coverings are still in a sufficiently pliable condition so that they may be readily worked and so that they will operate efficiently in service.

What we claim as our invention is:

1. As a new article of manufacture, material of the character described comprising a bat of non-absorptive fibres consisting principally of ceiba fibres, the majority of which extend from end to end generally in the same direction, and a fabric covering for said bat impregnated with silicate of soda which also coats the bat to form an adhesive securing said covering to the bat, the bat itself not being penetrated by said adhesive.

2. As a new article of manufacture, material of the character described comprising a bat of ceiba fibres having an endwise disposed formation, fabric coverings for said bat, and sizing impregnating said coverings to stiffen the same and form an adhesive coating between the bat and said coverings, the bat itself not being penetrated by said adhesive.

3. That step in the method of forming a sound deadening and insulating material which consists in immersing a bat containing ceiba fibres in a bath of sizing between outer coverings of impregnable material and forcing air out of said bat and subsequently allowing said bat to expand while immersed to enable said fibres to take on said sizing adjacent said coverings whereby said bat receives an adhesive coating for securing said coverings to it.

4. The method of forming a sound deadening and insulating material which consists in immersing a bat containing ceiba fibres in a bath of sizing between outer coverings of impregnable material and forcing air out of said bat and subsequently allowing said bat to expand while immersed to enable said fibres to take on said sizing adjacent said coverings, scraping off the excess sizing and forcing the fibres into closer contact with said coverings, then drying the treated material.

In testimony whereof, we affix our signatures.

HARVEY B. LINDSAY.
ARTHUR L. CLEMENTS.