

A. WORTHINGTON.
INSULATING MATERIAL OR CONSTRUCTION.
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Patented Jan. 18, 1921.

Fig. 1.

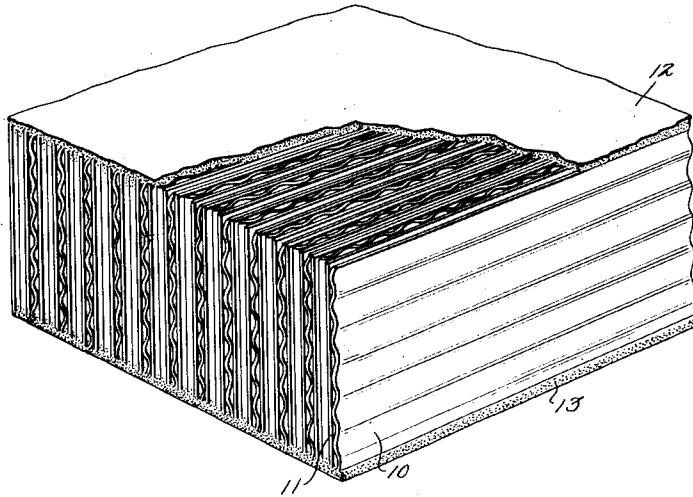


Fig. 2.

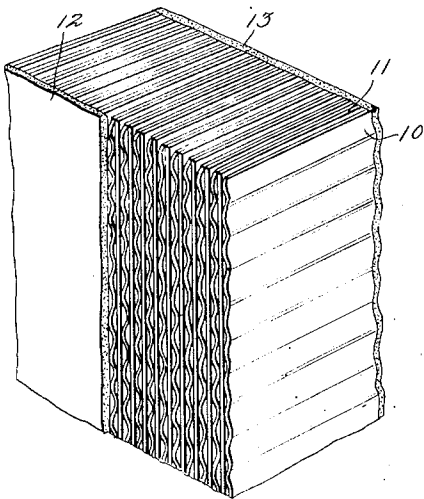
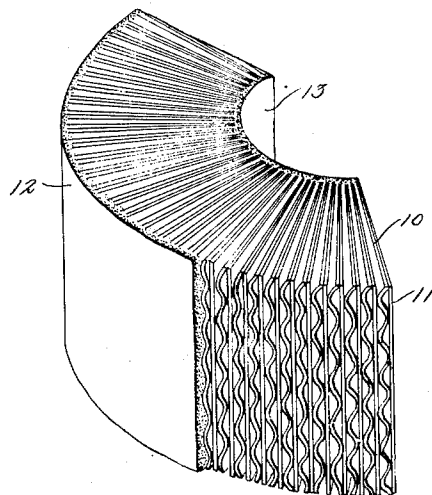


Fig. 3.



WITNESSES

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INSULATING MATERIAL OR CONSTRUCTION.

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To all whom it may concern:

Be it known that I, AMASA WORTHINGTON, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented new and Improved Insulating Materials or Constructions, of which the following is a full, clear, and exact description.

This invention relates to insulating materials or packings such as are commonly used in connection with steam boilers or other analogous appliances.

Among the objects of the invention is to provide an insulating material of maximum cheapness as well as efficiency, considering the strength or power to resist crushing strains or blows.

A still further object is to provide an insulating material embodying a maximum number of air cells or spaces with respect to the body of the structure tending to resist crushing or distortion.

With the foregoing and other objects in view the invention consists in the arrangement and combination of parts hereinafter described and claimed, and while the invention is not restricted to the exact details of construction disclosed or suggested herein, still for the purpose of illustrating a practical embodiment thereof reference is had to the accompanying drawings, in which like reference characters designate the same parts in the several views, and in which—

Figure 1 is a perspective view of a fragment of insulating material showing one embodiment of my invention.

Fig. 2 is a detail perspective view of a modified form of the same invention.

Fig. 3 is a perspective view of a further modification.

Referring now more specifically to the drawings I show my improvement as being composed essentially of a multiplicity of layers or plies that may be called fillers, such plies being composed preferably of sheets of corrugated material which for the sake of this explanation may be said to be similar to sheets of ordinary packing boards, each corrugated sheet having attached to one side thereof a plane or flat facing strip. The corrugated sheets are indicated at 10 and the facing strips at 11. These two members 10 and 11 may be secured together as by pasting or otherwise, or they may be free depending upon the nature

of the stock from which the fillers are cut or other conditions.

As indicated in Fig. 1 the fillers are arranged with the corrugations of adjacent corrugated members 10 disposed at right angles to one another, but from the other figures it will be obvious that they may be arranged otherwise than as shown in Fig. 1, and yet provide for ample air spaces between the binding members 12 and 13 which are shown herein as being parallel and composed of any suitable plastic material such as asbestos or other fireproof cement, compositions of clay, or the like. More specifically the fillers are cut from any suitable stock into widths corresponding to the ultimate free space between the binders 12 and 13, with respect to those fillers whose corrugations extend parallel to the binders, and the alternate fillers are cut in short lengths corresponding to said free space between the binders, with respect to those fillers whose corrugations are perpendicular to the binders. The latter mentioned fillers obviously are much stronger and stiffer for the resistance of crushing strains or shocks imparted to either of the binders than if the fillers were arranged in any other form or position.

Fig. 2 exemplifies that arrangement in which the corrugated strips are all arranged endwise or perpendicular with respect to the binders 12 and 13 and consequently the fillers as thus arranged possess the maximum stiffness.

In designing this improvement for use as insulating material for steam pipes or other cylindrical bodies the structure is made preferably as shown in Fig. 3 in which the binders 12 and 13 are arranged in concentric circular arcs and parallel to each other as already set forth. The fillers 10 are all shown in this instance as being perpendicular to the binders, and hence radial with respect to the axis of curvature of the structure. Obviously for the convenience of manipulation this construction of insulation may be made of any suitable dimensions and with respect to the cylindrical form of Fig. 3 for application to steam pipes or the like the insulation is made preferably of arc shaped segments.

In the manufacture of this insulation I apply a layer of plastic material to constitute one of the binders 12 and 13 upon a smooth surface either flat or curved accord-

ing to the ultimate design of the material, and while the binder thus applied is still plastic I apply the fillers edgewise directly to the plastic binder, the fillers being previously cut to desired widths or lengths, then while the fillers are held in the position just stated the remaining binder ply is then applied by spreading the same in plastic condition on the edges of the fillers remote from the first binder. After these binders become hard or dry the insulating material is completed and the fillers and the binders make a substantially rigid plate of material capable of resisting heat as well as an enormous amount of pressure.

The corrugations of the filler members determine the position of the air spaces or cells, and it will be noted that in the preferred forms of the invention said corrugations and air cells are arranged perpendicular to the surfaces of contact and radiation and hence the corrugations are parallel to the direction of radiation and radial of that form of the device adapted for cylindrical surfaces. It is especially noteworthy that the corrugated members possess the maximum strength or stiffness to resist

crushing strains or impacts in the direction that is most useful, or in other words since the principal corrugations are perpendicular to the exterior surface of the material, any force applied against said surface would be resisted by the corrugated material with the greatest advantage.

I claim:

1. The herein described insulation comprising spaced binders of plastic material and fillers arranged between the binders, said fillers comprising plies of corrugated sheet material, the edges of the fillers being secured rigidly to the binders and having the corrugations arranged perpendicular thereto, the binders being arranged in concentric curves.

2. The herein described insulating material having longitudinal air cells arranged endwise and parallel to the lines of radiation.

3. The herein described insulating material having longitudinal air cells arranged at right angles to the exterior radiating surface.

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