Nov. 19, 1935. C. J. BECKWITH ET AL 2,021,348

VENEERED STONE LIKE UNIT

Filed April 15, 1932

Fig. 1.

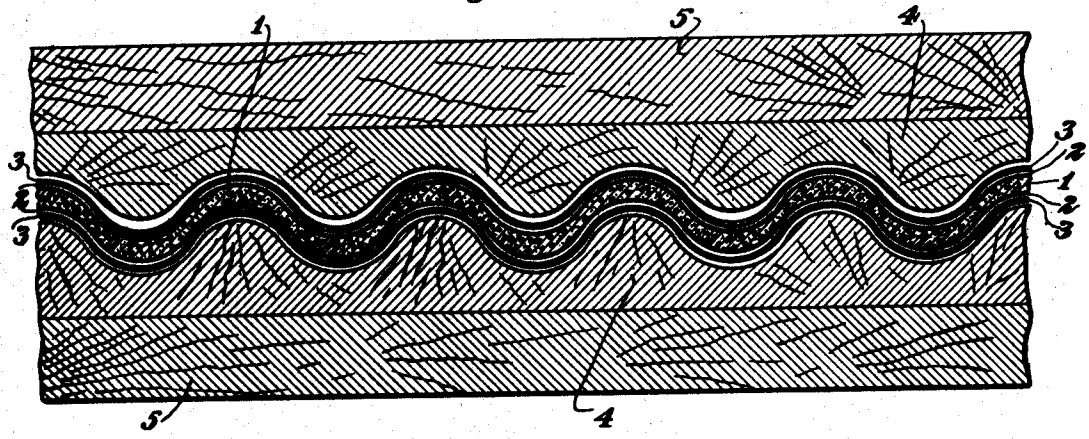


Fig. 2.

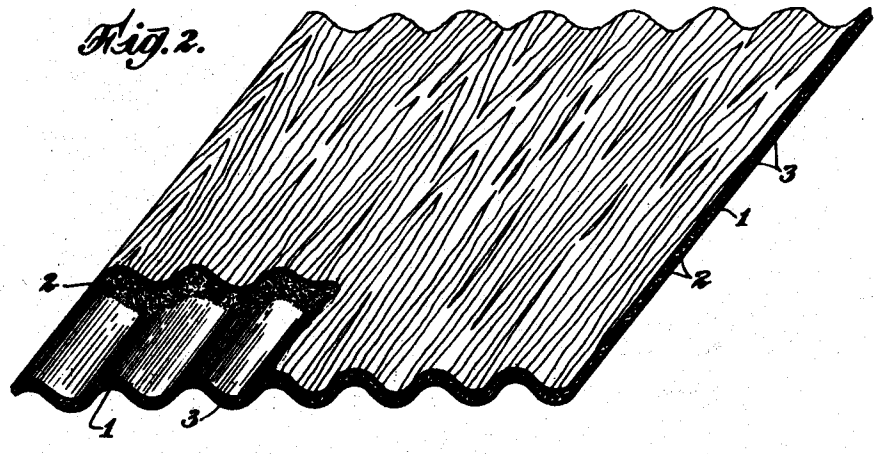
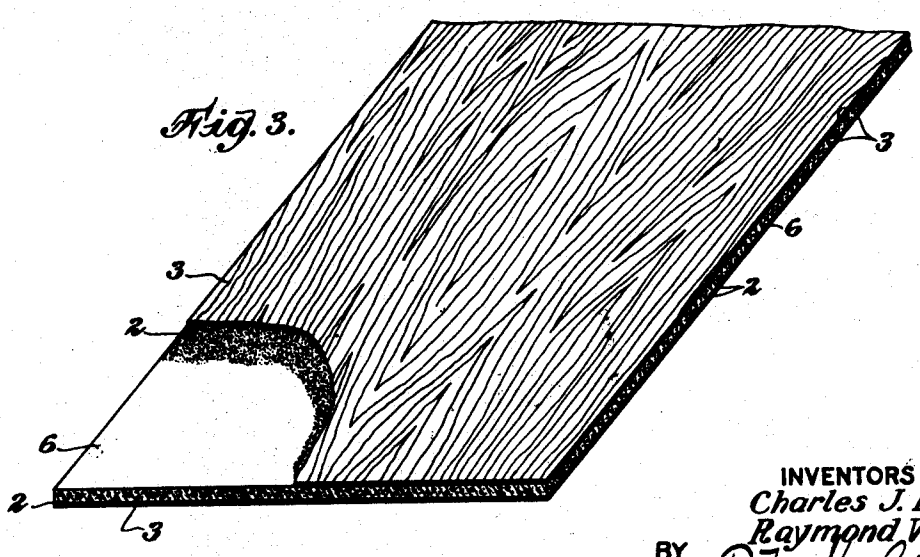


Fig. 3.



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VENEERED STONE LIKE UNIT

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Application April 15, 1932, Serial No. 605,368

2 Claims. (Cl. 20—91)

This invention relates to veneered stone-like units, particularly to asbestos and Portland cement boards or panels provided with adhesively secured wood veneer, and to a method of making the same.

The desirability of structural panels comprising asbestos fibers and Portland cement is widely recognized. However, there are those who prefer a finish resembling wood to the exterior of the asbestos and cement panels. There has now been developed a product combining the desirable features of such panels, including rigidity, fire-proofness, durability on exposure to the atmosphere, and difficulty of being set in vibration by incident sound, with a wood exterior.

The invention is illustrated in a preferred embodiment in the drawing in which,

Fig. 1 is a vertical sectional view of an assembly adapted to be compressed to adhere wood veneer to two sides of a corrugated sheeting comprising asbestos fibers and Portland cement.

Fig. 2 is a perspective view of a specimen of veneered corrugated asbestos and Portland cement board made in accordance with the present invention, with parts broken away for clearness of illustration.

Fig. 3 is a perspective view of a veneered asbestos and Portland cement board of plane surface, with parts broken away for clearness of illustration.

In the various figures like reference characters denote like parts.

In making veneered corrugated sheeting, for example, there is first formed an asbestos and Portland cement sheet 1 in corrugated form. Such a sheet may be made in a conventional process. Thus there may be made a mixture of asbestos fibers with Portland cement, say, in equal proportions by weight, and sufficient water to form a thick slurry. This slurry may then be formed into a sheet and strongly compressed between corrugated plates under hydraulic pressure, to remove excess water and densify and shape the sheet. The thus densified and shaped sheet is removed from the press and allowed to stand until the Portland cement content hardens. The sheet may then be polished, as by sanding, on one or both faces.

The sheet 1 is coated with a layer of adhesive 2, on each face, and then formed into an assembly such as illustrated in Fig. 1, with sheets of wood veneer 3 laid over the adhesively coated faces, back of which sheets of veneer are pressure distributing members 4. These should have each a surface provided with corrugations or otherwise adapted to correspond to the corrugations in the corrugated sheet 1. The pressure distributing members may be hardwood, although a yieldable product such as insulating lumber comprising felted and compressed wood fibers or a like, is particularly desirable in so distributing the pressure as to avoid rupture of or uneven pressure on the sheet of veneer during the compression step.

The assembly is subjected to compression, as by pressure applied to the outer faces of the rigid members 5. Thus, the assembly may be placed in a hydraulic press and the plunger operated in such manner as to compress the assembly strongly.

The adhesive used is one that is commonly used in the plywood industry. Thus, there may be used an aqueous solution of bone or hide glue or an aqueous casein adhesive. The glue, for example, may be dissolved in warm water, say at a temperature of about 170° F., and brushed or sprayed upon the face or faces of the corrugated sheeting that are to be veneered. During the compression of the assembly illustrated in Fig. 1, the temperature is maintained at such a point that the adhesive is kept in optimum condition. Thus, the temperature is not allowed to rise to the point where the glue structure is seriously weakened and, on the other hand, is not allowed to fall so low that the glue does not obtain a good footing in the surfaces of the materials being adhered. An elevated temperature, say of 170° F., may be used during the compositing or compressing operation.

After the pressing is completed, the veneered sheet is finished in conventional manner, as by being clamped in a form, removed from the press, allowed to stand for the adhesive to harden, removed from the form, trimmed to size desired, and polished on the outer surfaces of the wood veneer.

Since asbestos and cement boards are somewhat permeable to water, absorb moisture from a humid atmosphere, and lose moisture thus absorbed when exposed to a relatively dry atmosphere, there may be migration of water-soluble alkaline ingredients of the board to the surface thereof, to such an extent as to have an undesirable effect upon the adhesive used.

To minimize this difficulty due to the absorption of water by the panel, the panel may be sealed against the penetration of moisture, in advance of compositing with the wood veneer. Thus, an asbestos and Portland cement board (panel) may be impregnated with a water-impermeable

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and alkali-resistant sealing material, such as boiled linseed oil or the like, before being coated with the adhesive and adhered to the wood veneer. Or, the veneered board that has not been so sealed initially against the penetration of moisture may be finished with a water-impermeable material over all surfaces, including faces of the veneer and edges of the composited panel, in such a manner as to minimize the effect of exposure to conditions of variable humidity. Thus the material may be varnished over all exterior faces and edges, to give a water-impermeable seal.

In place of the corrugated base material, there may be used asbestos and Portland cement board of plane surface. In veneering such base material of plane surface, the pressure distributing members 4 are preferably of plane surface. Otherwise, the method of veneering the plane surface material may be the same as described above.

A product resulting from the veneering of asbestos and Portland cement board of plane surfaces is illustrated in Fig. 3, in which 6 denotes the board of plane surface adhesively secured by the layer 2 to the wood veneer 3.

Products made as described above have a facing or outer element of wood veneer and resemble wood in exterior appearance. This resemblance to wood, say, to crotch mahogany if crotch mahogany veneer has been used, is obtained with a minimum expense and with preservation of fire resistance to a large degree. Furthermore, the panels are rigid, non-corrodible, and relatively non-vibratile, that is, not adapted to be set in vibration, with the consequent production of a drumming sound or resonance, as readily as wooden, steel, or other panels of less weight and inertia.

Various thicknesses of material may be used, such as base material in thickness varying from one-half to 2 inches and wood veneer varying from one-eighth to one-one hundred and twentieth inch in thickness. Satisfactory structural panels have been obtained by using asbestos and Portland cement board that is approximately one-half inch thick and layers of wood veneer that are approximately one-twentieth inch thick.

In place of the asbestos and Portland cement sheeting that has been used for the purpose of illustration of the invention, there may be used another base of stone-like material. Such stone-like material should be adapted to provide a footing for the adhesive material used to bond the veneer to the base and resistant to the atmosphere. Preferably it should be adapted also to withstand without cracking, the slight deformation or flexing that may occur under compression, during the step of compositing the veneer to the base. Compositions comprising a cementitious material, preferably hydraulic, and reenforcing fibers are particularly suited to the above requirements. Portland cement is the preferred cementitious material, although cement fondu or calcium aluminate cement may be used. While the fibers preferred are asbestos, others may be used if the characteristic, well known properties of asbestos are not required of the fibrous material. Thus, there may be used rag, hemp or jute fibers.

The water-impermeable, alkali-resistant material, associated with the panel, as a continuous layer between the alkali-containing panel and the adhesive securing the wood veneer to the panel or impregnated into the panel, serves as an anti-migration agent, to prevent migration to the adhesive of the alkali present in the panel.

It will be understood that the methods and technic of the plywood industry may be used to supplement the details that have been given and that the details given are for the purpose of illustration and not restriction of the invention. It is intended, therefore, that the invention should be limited only by the terms of the claims.

What we claim is:

1. An article of manufacture comprising a compressed densified and hardened panel including substantial proportions of Portland cement and fibers of the type of asbestos distributed as reenforcement therethroughout, a layer of wood veneer, and adhesive securing the veneer to a face of the said panel, and a water-impermeable and alkali-resistant material associated with the said panel and preventing migration to the adhesive of alkali present in the Portland cement.

2. An article of manufacture comprising a compressed, densified and hardened panel including substantial proportions of Portland cement and fibers of the type of asbestos distributed as reenforcement therethroughout, a layer of wood veneer, an adhesive securing the veneer to a face of the said panel, and water-impermeasble, alkali-resistant material of the type of linseed oil impregnated into the said panel, whereby migration to the adhesive of alkali present in the Portland cement is prevented.

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