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J. N. DEVEREUX

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FIBERBOARD

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Fig. 1.

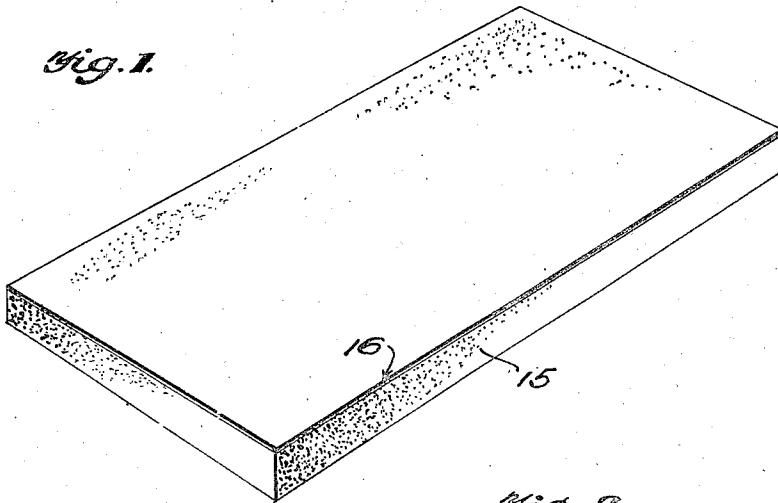
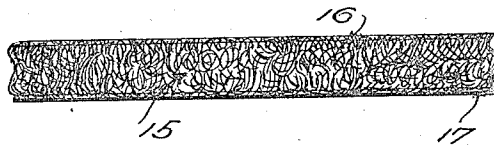


Fig. 2.



Fig. 3.



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FIBERBOARD

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5 Claims. (Cl. 92—3)

My present invention relates generally to fiber board or fiber sheets of the type commonly used in the construction of buildings, in walls, roofs, ceilings, partitions, and the like, and more particularly to fiber board as manufactured according to the method, and by means of the apparatus, described and claimed in my Patent Number 1,997,136, granted April 9, 1935, of which the present application is a division.

Up to the present time, fiber board formed of wood, cornstalk or other suitable fibers, in a single ply, has been rough and unsightly in appearance, and unsuitable for the direct application of paints, wall paper and other decorative materials, as commonly used on building interiors. Some effort has been made to combine two webs or plies, one of which is smooth and water resistant, but such plies have been in the nature of separate layers which are too readily torn apart and this is highly objectionable.

It is the primary object of my invention, therefore, to provide fiber board having a body and at least one surface constituting, in effect, two plies, although not separable, one from the other, and of which the surface ply is smooth and water resistant so that it may be washed when soiled, and is well adapted to receive plastic paints, wall paper, and the like applied directly thereto, with pleasing appearance.

A still further object is the provision of a multiply fiber board, one ply of which is in the nature of a non-separable skin on the body of the board, forming a tough, close grained surface, not only smooth and water resistant, but having an ash content substantially greater than that of the body.

A still further object of my invention is to provide fiber board having a body and at least one skin surface of a tough, water resistant character, the body and said surface being formed of the same materials, of which the fine fibers and a preponderance of the chemical constituents are concentrated in the said skin surface.

With the above, and certain other objects and advantages in mind, my invention resides in the fiber board to be now described with reference to the accompanying drawing, which forms a part of this specification, and in which,

Figure 1 is a perspective view of a section of fiber board constructed according to my invention.

Figure 2 is a transverse sectional view through a section thereof, showing a single surface skin, and,

Figure 3 is a similar view showing a surface skin on both top and bottom of the body.

Referring now to these figures, I have shown in Figures 1 and 2, fiber board, the body 15 of which has upon one side thereof, a skin coat or surface ply 16, which is formed of the same material as the body 15, though containing only short, fine fibers and a preponderance of the chemical constituents of the material, so as to present a tough, water resistant finish which will be sufficiently smooth to present a good appearance when papered or painted and which will be integral with the body to such an extent as to prevent tearing thereof from the body.

Entering into the formation of the board, which as to the method of, and apparatus for, making the same, is fully described and claimed in my above mentioned Patent No. 1,997,136, only so far as it concerns the ultimate structure thereof, a watery mixture of coarse and fine fibers of the material employed, is agitated and aerated, with an admixture of sizing materials, such as alum and rosin. The reaction between the alum and the rosin size, of course, produces a precipitate of aluminum resinate, commonly termed precipitated size. The result of such agitation and aeration is to float to the surface of the mixture the fine fibers and the products of the reaction between the sizing materials and the natural hardness or chemicals of the water. As the board is formed, this foam is killed in such manner as to deposit the foam-carried or flotation products just mentioned on the surface thereof, forming the tough, smooth skin 16, in which is thus concentrated the fine fibers and reaction products, so that a much greater density is found in the skin surface and it has a much higher ash content than the lighter, more porous body 15 which has but little of the reaction products and all of the long fibers.

Thus it is obvious that the skin surface 16 so formed is not a separate ply in the ordinary sense, but is an inseparable, integral skin which adds to the tensile strength of the board as a whole, and admits of ready cleaning and decoration, and provides an ideal board for insulating and sound absorbing purposes due to its extremely light weight.

As an example of its advantages, my improved board presents in its skin surface 16 an ash content approximately five times the ash content of the center of the body 15 and approximately twice the ash content of the back surface of the body. The following table gives the analysis as to ash content of my improved sized and unsized board,

in percentages, as compared with present boards "A" and "B" of other manufactures,

	My board		Board "A"	Board "B"
	Sized	Unsized		
Skin surface.....	6.35	3.02	1.45	2.035
Center.....	1.34	0.834	0.474	2.34
Back surface.....	3.03	1.655	1.81	2.01

The above indicated ash content of the skin surface, center and back surface of my improved board has been found to very materially add to its desirable water proof qualities.

As to the skin surface of my improved board, I have found that it has the following composition: fiber 91.76 percent; rosin 3.34 percent, and inorganic matter 4.90 percent.

Analysis of the ash content of the skin surface shows that it contains the following,

SiO ₂	4.78
R ₂ O ₃	34.80
CaO.....	16.1
MgO.....	5.37
Na ₂ O.....	10.77
SO ₃	20.8
Undetermined.....	7.36

In some cases it may be desirable to provide the board with a skin surface 17 on its side opposite to the skin surface 16 as I have shown in Figure 3, and it is to be understood the foregoing description relative to the skin surface 16 applies equally to the opposite surface 17.

Having thus fully described my invention, what I claim is,

1. A fiber board comprising a body mass of relatively coarse cellulosic fibers and a thin skin-like surface portion of finer fibers of the same kind of cellulose, said surface portion also containing adhered to and interspersed with said fibers an amount of precipitated size greatly exceeding that adhered to the coarser fibers in the body of the board.

2. A fiber board comprising a body mass of relatively coarse cellulosic fibers and a thin skin-like surface portion of finer fibers of the same kind of cellulose, said surface portion also containing adhered to and interspersed with said fibers an amount of precipitated size greatly exceeding that adhered to the coarser fibers in the body of the board, said surface portion having been deposited during the formation of the board from foam carrying in suspension fine cellulosic fibers and precipitated size particles.

3. A fiber board comprising a body mass of relatively coarse cellulosic fibers and a thin skin-like surface portion of finer fibers of the same kind of cellulose, said surface portion also containing adhered to and interspersed with said fibers an amount of precipitated rosin size greatly exceeding that adhered to the coarser fibers in the body of the board.

4. A fiber board comprising a body mass of relatively coarse mechanical wood pulp fibers and a thin skin-like surface portion of fine mechanical wood pulp fibers, said surface portion also containing adhered to and interspersed with said fibers an amount of precipitated aluminum resinate greatly exceeding that adhered to the coarse fibers in the body of the board, whereby said surface is rendered water-resistant and adapted to receive a decorative coating.

5. A fiber board comprising a body mass of relatively coarse mechanical wood pulp fibers and a thin nonseparable skin of fibers on the body of the board, said skin having a tough, close-grained, smooth and water-resistant surface and containing adhered to and interspersed with the fibers thereof precipitated rosin compounds of alum and the hardness-imparting constituents of water, said skin being formed by the destruction of a foam carrying fine fibers and said precipitate, the amount of precipitated material on the fine fibers greatly exceeding that which adheres to the coarse fibers in the body of the board, whereby said surface is rendered water-resistant and adapted to receive a decorative coating.

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