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PANELBOARD AND METHOD OF MAKING SAME

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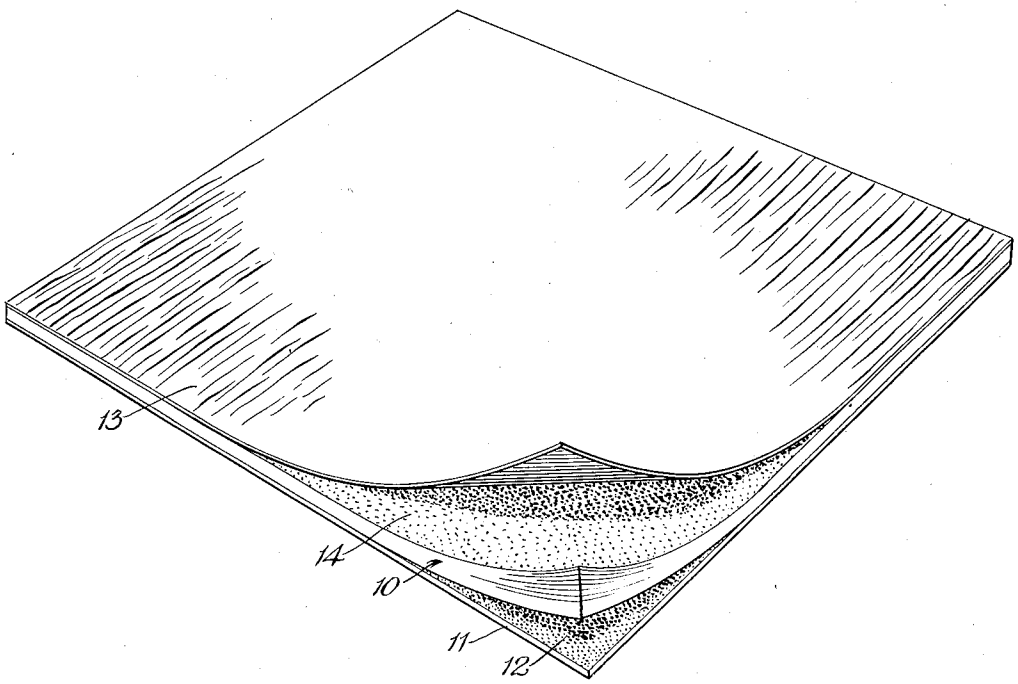

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PANELBOARD AND METHOD OF MAKING SAME

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5 Claims. (Cl. 92—3)

In making the panelboard as described in my application for patent Serial No. 61,505, filed January 30, 1936, now Patent No. 2,073,894, and in cutting this into panels, a large proportion is scrapped.

An object of this invention is to provide a method of utilizing this panelboard scrap to make another panelboard having somewhat the properties of the original panelboard, i. e., resistance of the panelboard to the gain or loss of moisture and the nearly total loss of expansion or contraction of the panelboard due to changes in temperature and in moisture content of the surrounding air.

Another object is to provide a method of making a panelboard from a combination of layers of the original panelboard, of the salvage board and of a pre-lacquered, pre-embossed paper to provide a finish, or of two or more of these layers to form a panelboard for use in an automobile for such exposed parts as cowl, dash, instrument board and the like without additional refinishing or treating.

Still another object is to provide a panelboard according to either of the above methods which have the property of resisting gain or loss of appreciable moisture, and of resisting appreciable expansion or contraction due to changes in moisture content or temperature of the surrounding air.

These and other objects which will hereinafter appear are accomplished by this invention which is fully described in the following specification and shown in the accompanying drawing, in which is shown a perspective view of a sheet of panelboard produced in accordance with the present invention.

The method of making the panelboard as set forth in my Patent 2,073,894 comprises essentially (1) taking a sheet of hard sized paper, preferably .030" or more in thickness, made from sulphite wood pulp on a Fourdrinier or other paper machine where the fibers form but a single layer; (2) passing this sheet through a bath of hard asphalt having a melting point of not less than 140° F. and a penetration point of not over 22; (3) maintaining the sheet in the bath long enough to expel substantially all moisture and permit the asphalt to partially or wholly penetrate the paper; (4) freeing the sheet while still hot from excess surface asphalt; and (5) cementing together two or more such sheets.

In the manufacture of the above panelboard and in cutting, punching and trimming it, a large percentage (sometimes 40% to 50%) is left as scrap. This scrap now becomes the raw material from which to make a panelboard which we may call a "salvage board." The manufacture of this salvage board is accomplished by the well known machinery of the binder's board business, and hence is not illustrated. It consists in (*a*) cooking the scrap from the original panelboard which is made as above described in a rotary digester under steam pressure to again reduce the scrap to a pulp; (*b*) adding a small percentage of alkali sufficient to remove all free oils and to saponify the hard sizing in the paper; (*c*) this pulp is then reduced to the desired fineness by means of beating engines after which (*d*) alum or the like is added to set the saponified size; and (*e*) the pulp is then run through a paper machine to produce a board in any well known manner.

The success of this method lies largely in the hard asphalt which has previously been saturated into the kraft paper of the original panelboard so that each fiber of the kraft paper carries its load of asphalt all the way through to the paper machine, and since the excess asphalt was removed from the kraft sheet no free asphalt exists in the pulp at any stage. Hence this pulp with its load of asphalt can be successfully run through any type of paper machine, such as a "wet machine," a cylinder machine or a Fourdrinier machine. Runs of several days continuously have been made on cylinder machines without fouling the screens or felts with the asphalt to even a slight degree.

The presence of any free soft asphalt or free oil would cause it to gather together in globules in the cooker, and this would be carried through by the stock to the paper machine in the form of sticky-free asphalt which would foul the screens and the felts of the paper machine, and would cause the paper to stick to the drying rolls and to the calenders. In the salvage from the paper as made according to Patent 2,073,894, there is no free asphalt and the asphalt present clings tightly to the fibers of cellulose and which carry it throughout the process in spite of the fact that the original panelboard contains from 80% to 100% hard asphalt as compared to the weight of the original unsaturated fiber.

In the figure shown, the salvage board 10 is made up of as many layers as are necessary to give the desired thickness. For certain purposes it may be desirable to cement to one or both sides of the salvage board a sheet of the asphalt board as made by the original process described in my patent application above referred to, or it may be made waterproof as by coating with tung oil.

In the present figure such a sheet 11 is cemented thereto by a coating of starch and latex 12, the starch being dissolved in water and the latex held in the form of an emulsion by means of ammonia. For use as an exposed untreated panelboard, I prefer to apply a sheet of pre-lacquered, pre-embossed paper 13 which is likewise secured thereto by a coating 14 of the same adhesive.

The salvage board so produced can be cemented, laminated, pressed while still freshly cemented, and otherwise treated and worked in much the same way as the original panel-board from whose scrap it is made. The salvage panelboard while not the equal of the original panelboard for certain purposes, is superior to any other panelboard now on the market, and since the material that goes into it is principally scrap without commercial value, it can be produced at low cost.

A preferred form of panelboard for forming consists of a center of salvage board with outside plies of the original board each outside ply having a thickness of about 25% of the whole, the thermo-plasticity of the center plies permitting the forming more readily while at the same time the outside plies are rendered plastic by excess moisture. This composite type of panelboard forms well in the press and the formed parts set firmly after forming, so that they will not later sag due to temperatures encountered in use or in warehouses where automobiles or parts of pressed panelboard are stored.

The scrap from this salvage board can be mixed with scrap from the original board for a later batch. This salvage board is a true thermoplastic board, i. e., it can be molded to shape under heat and pressure, and will retain that shape after forming. The original panelboard is not thermoplastic but can be formed by pressure when properly moistened.

I claim:

1. The method of making a thermo-plastic panelboard containing asphalt, in sheet form which is highly resistant to physical change in a wide range of temperature and humidity conditions, comprising cooking scraps of fibrous material, the body of which has been impregnated with a hard and brittle asphalt containing no excess surface asphalt to reduce the scraps to a pulp in which there is no free asphalt, the asphalt present clinging tightly to the fibers throughout the process, further reducing the fineness of the pulp, and then running the pulp over a paper machine to form, dry and compress the pulp into sheets.

2. The method of forming a thermo-plastic panelboard comprising cooking under steam pressure scraps of a sheet of wood fibers that has previously been impregnated with asphalt, passing the same through beating engines and refining engines to reduce the scraps to a pulp in which each fiber carries its load of asphalt throughout the process and there is no free asphalt, and running the same as a solid, continuous web over a paper machine.

3. The method of making a thermo-plastic panelboard containing asphalt and which is highly resistant to physical change in a wide range of temperature and humidity conditions, comprising cooking and beating fiber board which has been previously impregnated with asphalt to reduce the board to a pulp in which each fiber carries its load of asphalt throughout and there is substantially no free asphalt, and then running the pulp over a paper machine to form, dry and compress the pulp into a continuous web.

4. The method of making a thermo-plastic panelboard containing asphalt and which is highly resistant to physical change in a wide range of temperature and humidity conditions, comprising cooking and beating hard sized wood fiber board to which is added a small percentage of alkali to remove all free oils and saponify the hard sizing in the board and which has been previously impregnated with asphalt to reduce the board to a pulp in which each fiber carries its load of asphalt throughout and there is substantially no free asphalt, adding an agent to set the saponified sizing, and then running the pulp over a paper machine to form, dry and compress the pulp into a continuous web.

5. A thermoplastic panelboard in sheet form which is highly resistant to physical change in a wide range of temperature and humidity conditions, said sheet being composed of wood fibers obtained from scraps of previously formed panelboard composed of wood paper partially impregnated with asphalt having a melting point of not less than 140° F. and a penetration point of 22 and said scraps being reduced to a pulp in which each fiber carries its own load of the asphalt as an integral part thereof with substantially no free asphalt present, and said loaded fibers being disposed substantially uniformly in all directions and interconnected by heat and pressure to form a thermoplastic sheet without free asphalt or other binder between the fibers thereof.

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