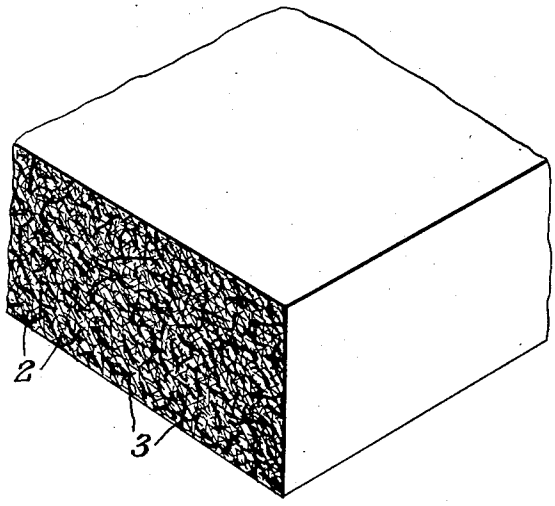
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PRESSED FIBER BOARD AND METHOD OF MANUFACTURE

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PRESSED FIBER BOARD AND METHOD OF MANUFACTURE

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This invention relates to pressed fiber board and particularly such as is generally known as hard pressed board.

Objects of the invention are to provide a pressed fiber board of considerable density, toughness and strength, grainless and non-splitting in character, relatively inexpensive and suitable for use in place of natural wood or lumber.

A special feature of the invention is the combining of wood fiber with certain suitable vegetable fibers in the manner hereinafter described and in a way to compose a product having the desired improved characteristics stated.

It is known that fibers obtained from various forms of vegetable matter are distinctly different in characteristics, particularly in their natural or seminatural states before removal of gum and other elements as by cooking with chemicals and high temperature.

For illustration, wood may be reduced to a finely divided fibrous state without cooking and with hydration the fiber elements be made soft and pliable and moldable into hard sheets or various desired shapes. Subsequently, as the molded product becomes fully dry, the wood characteristics of stiffness and brittleness return to each fiber or bundles of fibers giving these characteristics to the product.

In certain other forms of vegetable matter, the fibers are inherently flexible. Such flexibility is increased with hydration, but in the subsequent drying, the original flexibility and strength appear as permanent characteristics.

Wood may be reduced without cooking with chemicals, to a sub-divided state, in which a considerable portion of the wood is in the form of relatively long stringy bundles of fibers, which upon hydration in a mixing tank with shorter wood bulks or fibers, will have a tendency to twist and bend into a matted relation, providing bonds or ties in the final pressed or molded structure. With drying of the product however, these longer stringy fibrous bundles return to their original more or less brittle character and thus may not appreciably increase the tensile strength or flexibility of the final product.

Important features of the present invention are the combining of the fibers obtained from saw grass, palmetto, or the like, with reduced wood fibers, uncooked, in the sense that this term is understood in the art, that is, not treated with high temperature and strong caustics or chemicals and resulting in a product having new and desirable characteristics of increased tensile strength and, or flexibility in the finished dried structure.

Further objects of the invention are to attain the foregoing desired results economically and by commercially practical manufacturing methods.

The objects mentioned and others as will appear, are effected by the aforesaid and additional special novel features, both in structure and process, all as hereinafter set forth and broadly covered by claims.

The drawing accompanying and forming part of the specification shows by way of illustration an embodiment of the physical form of the invention.

The single view in the drawing is a broken cross-sectional view of a hard pressed board embodying and constructed in accordance with features of the invention, details of structure necessarily appearing in enlarged and exaggerated form to bring out the structure.

The illustration indicates a board made up of a mixture of wood fibers 2, and vegetable fibers 3, compounded and pressed to approximately uniform density throughout.

The wood fibers may be taken from saw mill waste or the like and may be reduced according to the Respess method of Patent No. 1,897,620, or as disclosed in the Respess and Robbins Patent No. 1,951,167.

The vegetable fiber preferably is that obtained from saw grass, or palmetto, or one of the palm group, if required, may be reduced and digested in accordance with paper pulp manufacturing methods, involving in general shredding to proper fiber lengths, digesting with a mild caustic, grinding in attrition or Jordan mills, pulping, etc.

The saw grass in particular, because of its tough long fibered structure possessing considerable tensile strength and because of certain resilient characteristics which it brings to the final product may be preferred over other of the vegetable fibers mentioned. This material also is plentiful and cheap.

The saw grass or vegetable fibers may run from a quarter inch in length upwards and these fibers may be more or less curly, rather than straight, so as to interlace with and cushion the wood fibers.

The desired character of board or final product determines to some extent, the relative proportions of wood and vegetable fibers. For general purposes, the wood fiber may run 70% to 80% and the vegetable fibers 30% to 20%, by weight, of the whole.

The mixing of the two distinct types of fibers may be effected in various ways.

One practical and at present preferred method, is to separately reduce the wood and vegetable fibers, as above and then to mix the two, wet, in the desired proportions in the pulp storage chest of the wood reducing apparatus, where after thorough admixture the pulp may be stored or be immediately processed through to the final board product.

The consistency of the mixture being properly determined and regulated, the mixture is passed to the wet end of the forming machine, through the roll press and drier sections, with progressive compacting and the removal of sufficient moisture before reaching the final press.

To provide a firm body structure, the final press may be of the heated platen type constructed to apply the necessary pressure and heat for sufficiently solidifying and producing the desired board characteristics.

In the progressive treatment as described, the two sets of fibers of wood and vegetable origin are combined and the characteristics of one are made to modify and blend with those of the other, resulting in a product which has some characteristics of each and some original characteristics that may not be found in products of either wood or vegetable origin. The wood fibers when shorter than the vegetable fibers serve as a filler and/or binder. The vegetable fibers may prevent too great densification. The original cellulose, resinous and waxy constituents of the wood and the vegetable fibers are preferably largely retained and utilized as to their beneficial effects in the final product. The mixture of the two different kinds of fibers also results in a board of generally the same density and strength throughout.

Variation of the mixture of the fibers and the heat and pressure employed will give desired variety in the product. As an illustration, a certain degree of density or porosity may be left in the final product by controlling the pressure and by various controls of the mixture, such as by variations in the proportions or in the sizes of the fibers, such control extending not only to length of fibers, but to cross-sectional dimensions as well. If desired, water-proofing or fire-proofing materials may be compounded in the mixture, also coloring and filler materials. As the natural gums of the wood are preferably largely retained, additional binder and filler materials may not be essential but may be used, if desired. The process may be a continuous one without intermediate drying or other time taking steps and this continuity of process is an element in securing in the end a homogeneous, grainless product having characteristics of natural wood reinforced with strong, pliable vegetable fibers and because of its grainless structure, preferable to natural wood in some respects. By employing waste fibrous products, such as saw mill waste, saw grass or the like, a commercially valuable product is obtained by use of otherwise waste materials and cost of production is accordingly low. The final product has certain advantages over natural wood and may be treated in many ways the same as natural wood. If desired, it may be impregnated with oil, wax, paraffin, asphalt, color, etc.

What is claimed is:

1. The process of producing hard pressed board, which comprises reducing uncooked wood and vegetable matter to fibrous states, mixing and sheeting the uncooked wood and the vegetable fibers with an excess of wood fibers over the vegetable fibers, drying and pressing to hard board.

2. The process of manufacturing hard pressed board, which comprises separately reducing uncooked wood and vegetable matter to wood and vegetable fibers of different lengths, with the vegetable fibers longer than the wood fibers, combining the same as a pulp mixture, sheeting said pulp mixture, drying and pressing.

3. A hard pressed board, composed of uncooked wood fibers and saw grass fibers, intimately mixed in a wet state and dried and pressed to hard form.

4. A hard pressed board composed of uncooked wood fibers and fibers of one of the palm group, intimately mixed while wet and dried and pressed to hard board form.

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