June 12, 1928. 1,672,988

I. J. NOVAK

PLIED SHEET AND METHOD OF PRODUCING THE SAME

Original Filed April 12, 1922

Fig. 1.

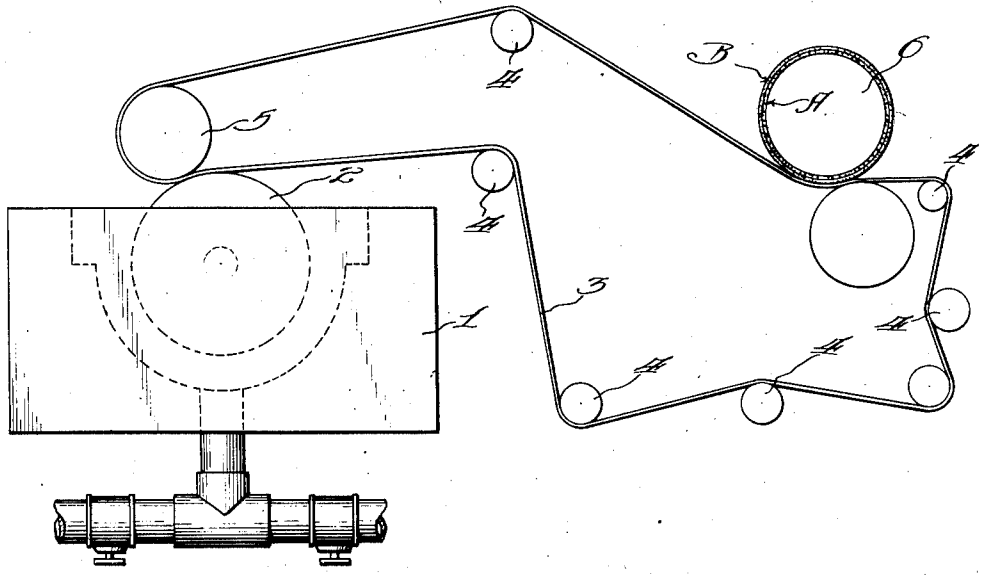


Fig. 2.



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IZADOR J. NOVAK, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE RAYBESTOS COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

PLIED SHEET AND METHOD OF PRODUCING THE SAME.

Application filed April 12, 1922, Serial No. 552,022. Renewed December 22, 1927.

This invention relates to improvements in plied sheet and method of producing the same, and refers more particularly to a sheet of felted fibrous material in which separate plies are bonded together during the forming of the sheet by grading the stock of the separate plies in the make-up vat so that when the plies are incorporated into a fibre board or sheeted material, the material of one ply will be graded and incorporated as a unit with the next adjoining ply.

The wet machine which is commonly used in paper and fibre board manufacture, consists essentially of a hollow horizontal wire mesh covered cylinder revolving in a vat containing the pulp or stock to be formed into sheet. Upon the surface of this cylinder a layer of pulp is deposited in its rotation by the filtering action of the wire mesh. A moving blanket functions to pick up the film or pulp formed on the cylinder and carry it to a horizontal mandrel or make-up roll upon which the film is deposited and wound up to the desired thickness. This type of machine is quite universally employed for the manufacture of fibre boards above a thickness of $\frac{1}{16}$ of an inch.

In producing a sheet of material of a lesser thickness, it is customary to utilize what is known as a "multi-cylinder paper machine." When it is desired to produce a fibre and board material consisting of two or more different types of fibre, it is the usual practice to ply it with the individual constituent sheets of the required thickness by the use of a cementitious material such as starch, paste, glue, dextrin and similar substances.

The novelty in the present invention lies in the method by which a perfect interlocking bond may be formed between the separate plies without the aid of any cementitious agent but simply by the grading of the stock of one character to that of another character to be used in the adjoining ply in a manner that there is a complete interlocking of the fibrous material to produce a unitary structure.

Fig. 1 is a diagrammatic side elevational view of the apparatus. Fig. 2 is a fragmentary section of the finished sheet.

Referring to the drawings, in order to produce a plied sheet by this method, the pulp stock of the desired composition is introduced to the vat 1 in which is mounted a cylinder mould 2. The cylinder mould serves to pick up the film of the stock and transfer it to the blanket 3 which runs over a plurality of guide pulleys 4. The blanket traveling over roll 5 relieves the cylinder of the film of stock which it has picked up in the vat and transfers it onto the mandrel or make-up roll 6. Here the ply is built up to the desired thickness. When it is desired to impose the next overlaying ply upon the mandrel, the character of the pulp in the vat is changed by shutting off the first variety of stock and turning on a pulp stock of a different character. As this is accomplished without stopping the machine, it will be understood that the composition in the vat changes successively from pure A. to pure B., through an intermediate plying stage in which both varieties are present. This intermediate stage may be short or long dependent upon the amount of stock the vat is desired to contain and the rate at which a complete change may be effected.

The sheet on the mandrel will indicate the variation in the composition of the vat stock and will change through its cross section from one kind of stock to the other, as shown in Fig. 2 of the sectional view of the sheet. When removed from the mandrel and dried, the resulting sheet contains the two varieties of fibre of the desired position united by a composition intermediate the two and grading from one to the other so as to produce a perfect union of the separate plied stocks.

It is understood that as many plies may be made as desired by this method conforming with the number of fibres the stock in the vat is varied during the plying operation.

In addition to the variation in the fibrous material used in the successive stocks there may also be a variation in the chemical constituents, coloring matter or numerous other ingredients which make up the stock which is to be sheeted on the machine. The filler substance or a different colored pigment may be used in the different plies thereby varying the character without necessarily changing the character of the fibrous material.

I claim as my invention:

1. A method of producing a sheet of two or more plies of different character upon a wet machine, consisting in successively changing the stock to be sheeted while sheeting the stock in successive plies by convolution.

2. A method of uniting successive plies in

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a laminated sheet of material consisting in successively varying the stock to be sheeted while continuously sheeting the varied stocks and building them up in successive plies.

3. A laminated fibre sheet, comprising a sheeted fibrous stock of varied composition, said sheet having properties variant throughout its cross section, having the characteristics of having been made on a wet machine.

4. A laminated fibrous sheet, comprising two or more plies of fibrous material of differing characteristics, the fibres of adjacent plies interlocking to form a unitary structure to the united sheet having properties variant throughout its cross section.

5. A laminated fibrous sheet comprising two or more plies of fibrous stock of different character united to build up a sheet in which the fibres of adjacent sheets interlock, the constituents varying throughout the cross section of the finished sheet.

6. A method of producing a laminated sheet of material, having properties variant through its cross section comprising successively varying the stock to be sheeted while continuously sheeting the varied stocks and building them up in successive plies.

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