March 1, 1932. M. P. CHAPLIN 1,848,056

INTEGRAL MOLDED ARTICLE

Filed Feb. 15, 1929

Fig. 1

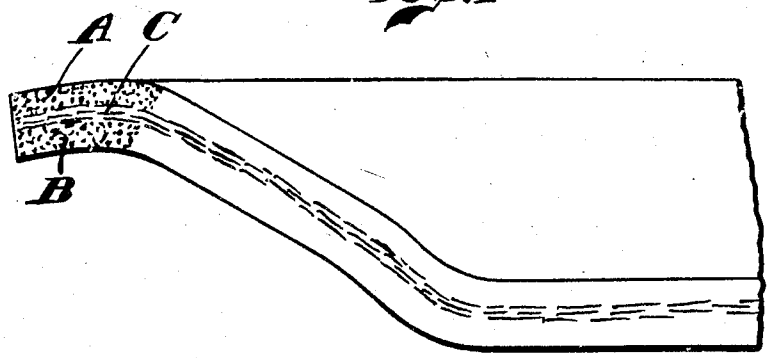
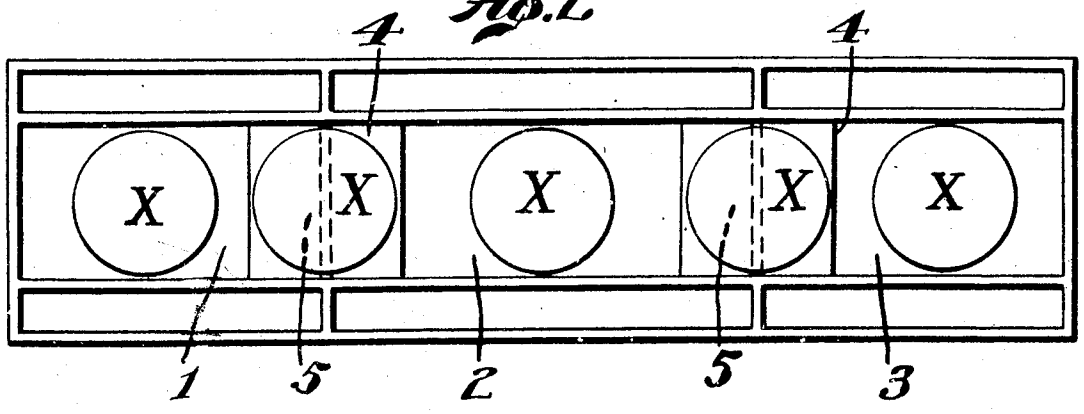


Fig. 2



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UNITED STATES PATENT OFFICE

MERLE P. CHAPLIN, OF WATERVILLE, MAINE, ASSIGNOR, BY MESNE ASSIGNMENTS, TO FIDELITY TRUST COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE, AS TRUSTEE

INTEGRAL MOLDED ARTICLE

Application filed February 15, 1929. Serial No. 340,171.

My present invention relates to the production of articles from fibre pulp or like material by continuous deposit, as from different kinds of stock, so that certain desired characteristics may be attained in the ultimate product. For example, certain finer grades of pulp, or pulp of certain desired color, or other characteristics can be used in one part of the article and merged with other less expensive or differently fibred stock in another part of the article. A characteristic example of such a product is a plate or container in which the interior portion is of a coarser stock, while the exterior surfaces are of finer stock bleached or colored to give the desired finish.

Such articles as have heretofore been produced have been built up in successive layers of laminations, but the difficulty has been that such layers or laminations were distinct and superimposed on each other and hence could not be adequately interfelted, with the result that due to variations in shrinkage and other reasons, warping and cracking occurred.

My invention contemplates an article and a method of producing such an article which is distinguished from all previous articles and methods by its integrality or what might be called the continuity of its fibre deposit. Such articles produced by my method have no line of cleavage or demarcation between the distinctive pulp stocks, but have instead a merging of these stocks in a continuous progression so that there is a blending of the interfelted fibres which precludes that sharp differentiation which heretofore was thought necessary.

Furthermore, according to my method and apparatus the fibred deposit on the die is continuous with no intermediate exposures to atmospheric pressure so that the article is fibred continuously and thoroughly interfelted throughout the depth of the deposit.

The apparatus for the practice of my method and the production of my article contemplates various advantages in structure and operation to the end that the article may be produced efficiently and economically in commercial quantities.

The various factors and relationships involved in the production of such article will be more fully discussed in the following specification, and as illustrative thereof I have shown in the accompanying drawings a characteristic product and diagrammatically, suitable apparatus for the practice of my method.

In the drawings:

Fig. 1 is an enlarged fragmentary section of an article in accordance with my invention showing the continuous merging of successive fiberings, and

Fig. 2 is a diagrammatic indication of my method of producing such an article.

Referring first to the article as shown in Fig. 1, this may be considered for the purposes of the present discussion as a plate formed on a molding die by the suction deposit of water solutions of different pulps.

The inner surface A may be considered as a deposit of a fine grade pulp, for example, and the outer zone B a pure deposit of the same or some other pulp, while the central core C of the plate may be considered as of a rough strong fibred pulp of less expensive quality.

Intermediate of the deposits A and C and B and C is a depth of mergings of these stocks. These mergings may be characterized as somewhat progressive, although it is of course difficult to illustrate such variations in the drawings. The character of these mergings becomes apparent, however, by reference to the diagram of Fig. 2. In this diagram I have illustrated a tank which is partitioned to provide three compartments, numbered 1, 2 and 3, respectively, with connecting passages or chambers 4 and 5 so positioned that by relative movement the die X passes through the pulp solutions A, C and B with an intermediate scavenging of the intermediate channels or chambers 4 and 5 in which the pulp stock from the adjacent compartments merge by the inflow due to the hydrostatic head of the stock in the respective compartments. The die X illustrated is preferably one of a series so that the operation is continuous, just sufficient time being allowed between each scavenging passage of the die through the intermediate mixing

channels or chambers to permit the merging interflow from the adjacent compartments. This results in a thorough interfelting or interlocking of the several pulp solutions on the die so that the ultimate article for all practical purposes may be considered as an integral article in which the respective fiberings are continuously merged into each other without any distinct lines of cleavage or demarcation as has been the case where the successive deposits were simply applied as successive layers or laminæ.

In other words, considered merely as a fibre deposit and regardless of the fact that the fibre is differentiated, the deposit may be said to be homogeneous and the interfelting of the fibre continuous. There is no exposure to atmospheric pressure to flatten any portion of the fibres as they are deposited and due to the intermingling of the different fibres, there is no line of demarcation so that the different structures while being perfectly pure at the surface and showing the desired characteristics in full, amalgamate with the stock of the succeeding step through the blending of the fibre.

Various modifications in both apparatus and method as well as many variations in character and purpose of the pulp solutions used may obviously be resorted to. For example, color effects may be produced in any part of the article by use of an appropriately colored solution in a selected compartment. These and all such variations are simply indicative of the latitude of my invention and are to be considered as within the spirit and scope thereof if within the limits of the appended claims.

What I therefore claim and desire to secure by Letters Patent is:

1. As a new article of manufacture, a plate, or other contoured or shaped container made of molded pulp, with or without the addition of water-resistant or grease-proofing materials, and consisting of at least two successive suction deposits of fibres of different characteristics, said deposits being progressively interfelted and interlaced with each other by a suction bond which is common to and is a composite of all of said deposits and which bond interlocks said deposits together as an integral, homogeneous article in which the several deposits are mergingly integrated with each other as a dense, compact unitary mass.

2. As a new article of manufacture, a die molded plate, dish, or other contoured or shaped container made of molded pulp, with or without the addition of water-resistant or grease-proofing materials, and consisting of at least two successive suction deposits of fibres of different characteristics, said deposits being interfelted and interlaced flatwise with each other without sudden transition from one deposit to another by a suction bond which is common to and is a composite of all of said deposits and which bond interlocks said deposits together as an integral, homogeneous article in which the several deposits are mergingly integrated with each other as a dense compact unitary mass.

3. As a new article of manufacture, a molded fibre plate, dish or other contoured or shaped container comprising a deposit of one kind of pulp and a deposit of another kind of pulp intermediately bonded together by a suction bond which is a composite of said deposits and which interfelts and interlocks said deposits to each other as an integral homogeneous article.

4. As a new article, a plate, dish or other contoured or shaped container comprising a relatively thick body portion composed of one kind of fibres and a relatively thin surfacing composed of another kind of fibres interfelted with said body portion by a suction bond which is a composite of the two kinds of fibres constituting the body portion and surfacing and which forms the deposits into a dense compacted homogeneous article.

5. As a new article of manufacture, a molded pulp plate, dish or other contoured or shaped container, comprising a body portion of one kind of fibres, a surfacing of another kind of fibres, and an intermediate bonding consisting of a composite of said two kinds of fibres which interfelts and interlocks them together as an integral homogeneous article.

6. As a new article of manufacture, a molded fibre plate, dish, or other contoured container, comprising a deposit of one kind of pulp and a deposit of another kind of pulp intermediately bonded together by an air excluding suction bond which prevents blistering in the ultimate article, said bond being a composite of said deposits and acting to continuously interfelt and interlock said deposits to each other as an integral homogeneous article.

7. A molded fibre plate, dish or other contoured container of wet laid pulp, comprising at least two successive deposits of fibres of different characteristic and a transitional mixture of said fibre deposits which is a composite thereof and which acts as a suction bond to interlock said deposits together as an integral homogeneous article.

In testimony whereof I affix my signature.

MERLE P. CHAPLIN.