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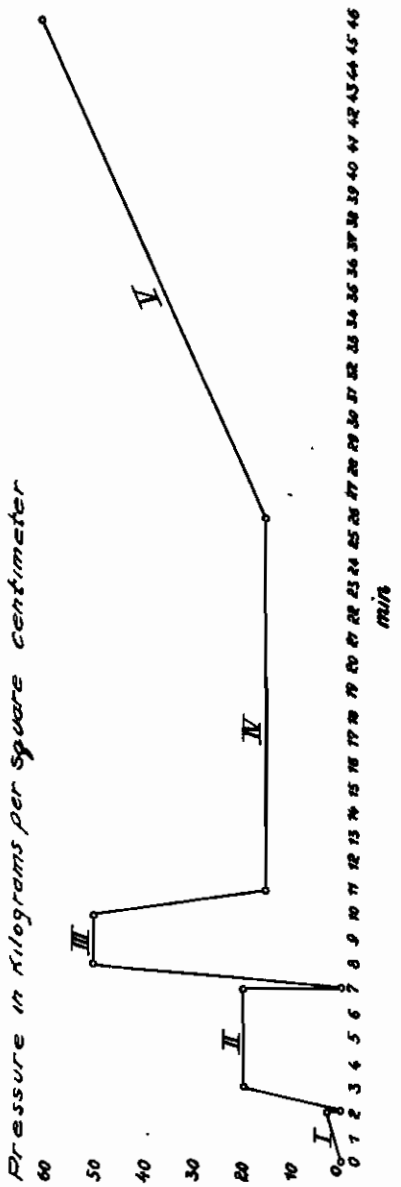

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PRODUCTION OF HARD PLATES FROM VEGETABLE FIBRE PULP

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This invention relates to a process for making hard plates from vegetable fibre pulp and has as its object, with better and more careful dehydration, felting and utilisation of the binding agents which may be employed, the production of hard plates with extraordinarily compact texture and fault-free and bubble-free surfaces in a manner suitable for mass production.

The object aimed at is attained according to the invention by first of all lightly pressing the fibrous pulp in the cold state and thereby preliminarily dehydrating, then the pressure is reduced to zero and after that, with unequal heating of the two surfaces of the preliminarily pressed material by the press plates over a fairly long space of time, a medium pressure is employed, may be with suction action, then the pressure is again lowered to zero and again high pressure is employed with heating but without suction action, whereupon the press pressure is reduced without change in temperature, which is then maintained over a fairly long period of time and finally is increased again gradually approximately up to the maximum pressure with continuous increase in temperature.

A further characteristic of the invention, which is new per se, consists in this that during the pressing one side of the material being pressed is disposed on a sieve which is heated to higher temperature than the side of the press material turned away from the sieve, which side abuts against a press plate.

The accompanying drawing shows by way of example a diagram illustrating the course of the new process. In carrying out the new process in the first stage I the vegetable fibre pulp is introduced into a press at a temperature of 10–70° C. and in this press is subjected to a pressure up to about 3 kg/cm². for about two minutes. The plate preliminarily formed in this way is then, after temporary reduction of the press pressure to zero, subjected in a second process stage II to a pressure of about 20 kg/cm² for a time of about four minutes in a second press, with or without suction action as well. During this pressing the lower surface of the fibrous material plate lies on a sieve, whilst on its upper surface presses a press plate consisting for example of copper. Sieve and press plate, however, may also be reversed. In this second process stage raised temperature is employed, and the surface of the fibrous material plate turned towards the sieve is heated more highly than its surface turned away from the sieve. On the surface of the plate turned away from the sieve preferably a temperature of about 90° C. is employed as compared with a temperature of about 160–180° on the side of the fibrous material plate turned towards the sieve. In consequence of the unequal heating of the two surfaces of the fibrous material plate, the fibre particles in the proximity of the colder press plate dry more slowly than those in the proximity of the sieve. As a result the smooth surface of the preliminarily shaped plate, that is to say the surface turned away from the sieve, is maintained plastic. In this way a premature consolidation on this surface is prevented, which more particularly when using binding agents, can form a sort of film or crust which then prevents the further vaporisation from the interior of the plate. As a result also the marks, defects and bubbles which otherwise readily appear on this side of the fibrous material plate are avoided. Owing to the more rapid drying of the side of the fibrous material plate turned towards the sieve, this latter side of the plate becomes more solid as a whole and can be more readily handled in the subsequent stages of the process.

The treatment of the preliminarily shaped fibrous material plate described above ensures that the moisture content of the fibre cake is already reduced to a minimum, which relieves the working in the treatment of the fibrous material plate in the last process stage inasmuch as too strong a cooling down, to be attributed to too large a moisture content, can no longer occur.

The fibrous material plate treated in the two first process stages I and II is after again temporarily reducing the press pressure to zero passed in a third stage either in the same or in another press at an initial temperature of 140° for one or two minutes under a pressure of about 50 kg/cm² and thereupon is pressed with simultaneous raising of the temperature to about 160° and lowering of the press pressure to about 20 kg/cm². Then in a fourth process stage IV the pressure is reduced to about 15 kg/cm², and, according to the thickness of the fibrous material plate being prepared, the temperature is raised to 160–200° in a time of 15–20 minutes, whereupon, depending on this temperature raising, in a fifth process stage V pressure is raised from about 15 kg/cm² to about 60 kg/cm² during a time of about 20 minutes. The fibrous material plate is then ready. It is perfectly flat, very solid and strong, but at the same time elastic, and even after long storage or long use shows no shape change.

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