

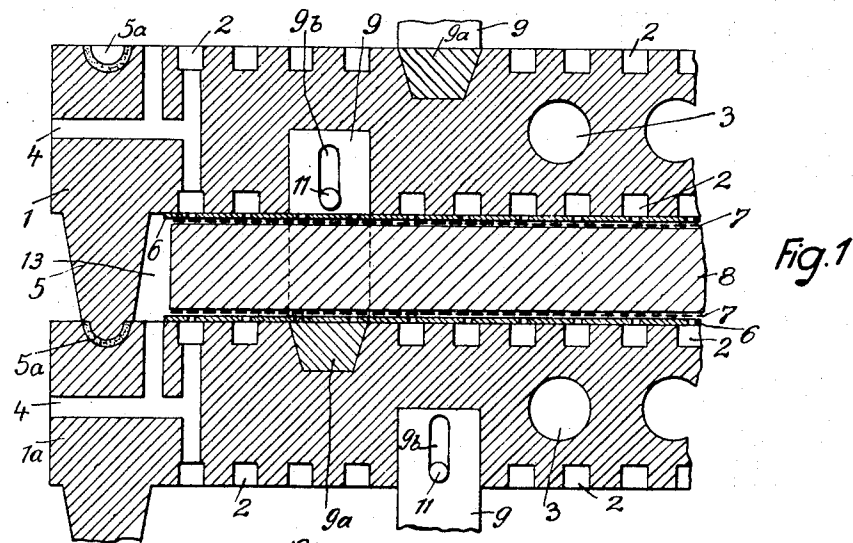
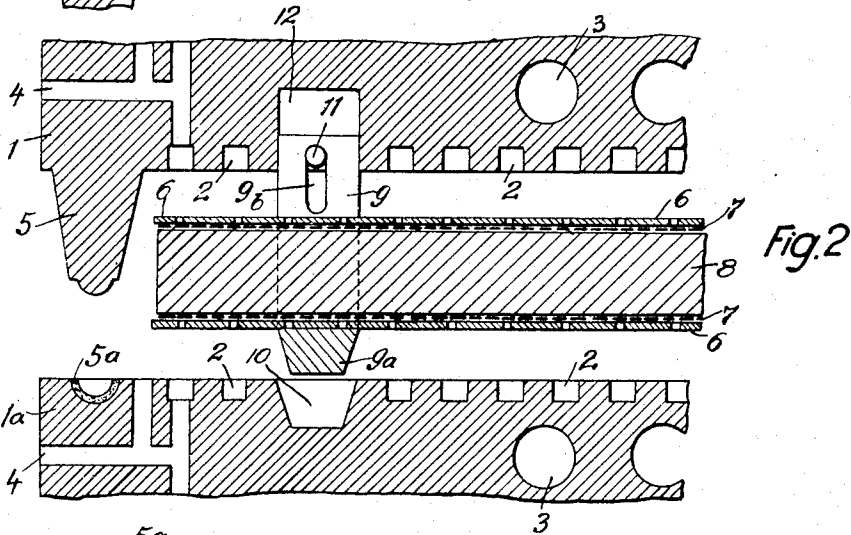
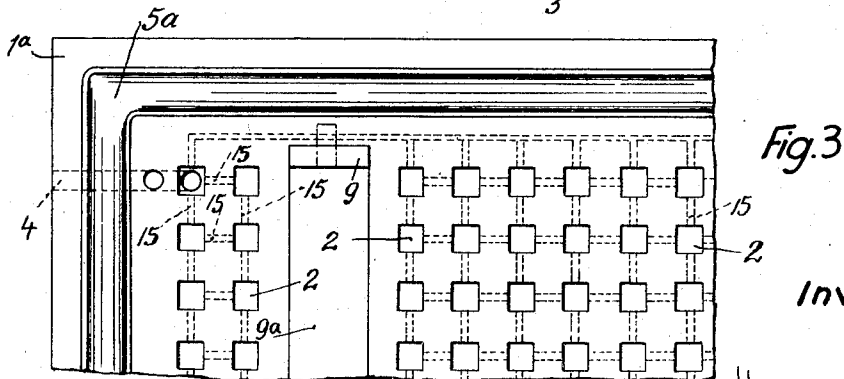
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APPARATUS FOR DRYING SHEETS

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APPARATUS FOR DRYING SHEETS

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3 Claims. (Cl. 34-144)

The present invention relates to an apparatus for drying sheets, particularly fibre pulp sheets, between heated pressure plates with or without the use of suction to draw off the moisture. It is known to treat an individual sheet to be dried in a press, wherein the pressure is temporarily released either by lifting one of the pressure plates or by alternate lifting of both pressure plates. In this treatment of the material to be dried employing variable pressure an effective aeration of the entire surfaces of the material to be dried cannot be obtained particularly in case of material having a large surface and sheets of considerable thickness. Moreover, the likelihood is that effective aeration mainly is confined to the outer edge parts of the individual sheets. With this method as well as with all other known methods the material to be dried or the blank remains upon a heated or hot support when the press is opened so that a non-uniform aeration and heating occurs. This causes a one-sided and insufficient drying of the material so that warping of the latter cannot be avoided.

The object of the invention is to provide a device whose operation is devoid of the drawbacks of the known devices. The invention differs from the known art mainly in means for removing each individual sheet of the material to be dried and holding the sheet in a freely suspended state between pressing operations for obtaining aeration from all sides. By this means a uniform aeration of all sides of the blank is obtained so that the drying operation not only is accelerated and improved, but also is effected uniformly in such a manner that warping of the material to be dried cannot occur. The material to be dried is lifted off the hot pressure plates so that a one-sided heating cannot be effected and also the so-called after-evaporation is effected without pressure, because no additional heat is supplied to the material to be dried.

In a manner known per se suction also may be applied when operating the device according to the invention in spite of the fact that the above mentioned advantageous effects are obtained if the operation is carried out without using suction.

The device according to the invention is so constructed that during aeration the pressure plates themselves suspendingly hold the sheet to be dried between, a particularly simple device being provided for carrying out this phase of the operation of the device.

When using suction for withdrawing the dry steam, the pressure plates engage into each other

by means of a groove and a tongue engageable therewith and extending all around the pressure plates. Moreover, suction channels are provided which communicate with the spaces between the pressure plates. The latter, moreover, may be provided with shiftable carrier frames which during aeration serve to carry the material to be dried between the pressure plates. Preferably the upper surfaces of the pressure plates are provided with recesses into which the carrier beams of the carrier frame engage in closed condition for instance during pressing, whereas the lateral sides of the carrier beams are guided and held by slots and pins in openings provided at the lower side of the pressure plates.

The press may otherwise generally be constructed in a well known manner. A detailed description of the press is not necessary, because the general construction thereof forms no part of the subject matter of the invention.

One device according to the invention is shown by way of example in the accompanying drawing in which:

Fig. 1 is a fragmentary section taken through two superimposed pressure plates with material to be dried in the heated state interposed between the plates the press being closed,

Fig. 2 is a section similar to that of Fig. 1 but with the press shown in its open position, and

Fig. 3 is a fragmentary top plan view of one of the pressure plates.

The pressure plates 1, 1a and so on are provided on their surfaces with grooves 2 which render the surface of the pressure plates grate-like. The plates, moreover, have internal channels 3 for heating purposes as well as channels 4 which are connected to a suction device, for instance a pump or the like. The internal channels 4 branch in such a manner that both sides of the plate may be evacuated by a single suction channel. For this purpose the channels 4 extend into spaces 13 which are closed on the one hand by surrounding walls 5 covering the space between two pressure plates and on the other hand by the side walls of the material to be dried.

These walls 5 are somewhat wedge-shaped and the lower portion thereof is rounded off as well as provided with an indenture so that these walls tightly may engage in sealing surfaces 5a of the pressure plate arranged below them.

The upper surface of the pressure plates is provided along two parallel sides with trapezoid-shaped recesses 10 into which engage correspondingly formed carrier beams 9a when the press is closed. Carrier members 9 are provided at the

ends of the carrier beams 9a which by means of slots 9b are suspended upon pins 11 of the superimposed pressure plate. When the pressure plates are closed, the carrier members 9 fill the corresponding hollow space 12 of the pressure plates (Fig. 1). When, however, the plates 1, 1a and so on are removed from each other, the carrier members 9 are suspended on the pins 11 and hold the material 8 to be pressed freely suspended between the pressure plates so that air may be admitted to all sides of the material to be dried (Fig. 2).

Both sides of the material 8 to be pressed are covered with a network 7 consisting for instance of wire and above this network perforated plates 6 are provided at both sides. The perforations of these plates are preferably so arranged as to align with the grooves 2 forming the grate and the latter themselves are connected to each other by any suitable means, so that the entire grate surfaces, i. e., the entire surfaces lying above the plates effecting drying may be sucked off by way of the channels 4 leading into the spaces 13.

Depending on the size of the plates the suction may be effected from one or several points and depending on the other construction of the plates, the drying members and the supports, the construction of the connections in the grate compartments may be different.

As may be seen from Fig. 1, the carrier members 9 and the corresponding grooves are staggered with regard to each other and also the grate spaces may be staggered with regard to each other, or the connections with the perforations may alternately be different and the like.

The grooves 2 for instance may be connected to each other by channels 15 as has been indicated by dash and dotted lines in Fig. 3.

What I claim is:

1. A press of the character described comprising a plurality of pressure plates each being provided with recesses in both its upper and

lower surface, means for heating said pressure plates, displaceable carrier frames comprising carrier beams engaging into said recesses when the press is closed, longitudinal slots in said carrier beams, pins on said pressure plates cooperating with said slots, said carrier beams being guided in said recesses and held by said pins when the press is open to freely suspend each of the sheets to be dried between said pressure plates.

2. A press of the character described comprising a plurality of pressure plates, means for heating said pressure plates, each of said pressure plates having grooves on its surfaces, channels connecting said grooves and discharging into a space formed between said plates, each of said pressure plates having recesses in its upper and lower surface, slidable carrier beams engaging into said recesses when the press is closed, longitudinal slots in said carrier beams, pins on said pressure plates cooperating with said slots, said carrier beams being guided in said recesses and held by said pins when the press is open to freely suspend each of the sheets to be dried between two of said pressure plates.

3. A press for drying fibrous sheets comprising a plurality of pressure plates, means for heating said pressure plates, said pressure plates being provided with interengaging grooves and tongues extending along the edges of said plates, said plates being further provided with suction channels discharging into spaces formed between said pressure plates, means for applying a partial vacuum to said suction channels to withdraw vapor therefrom, and a plurality of vertically slidable members for suspendingly holding the sheets to be dried when the press is open, said members being located between said pressure plates and loosely connected to the upper one of said pressure plates for suspension therefrom and for movement relative thereto.

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