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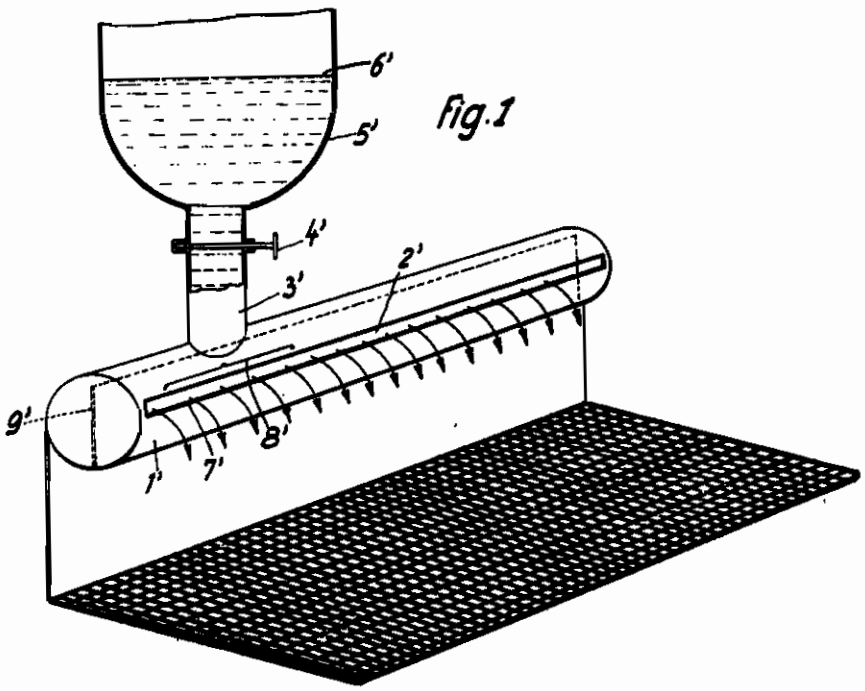

Fig.1

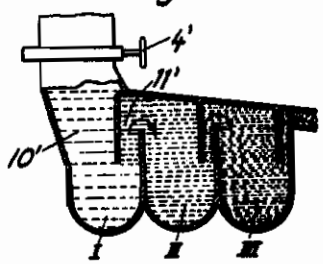

Fig.2

Fig.3

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Fig.4

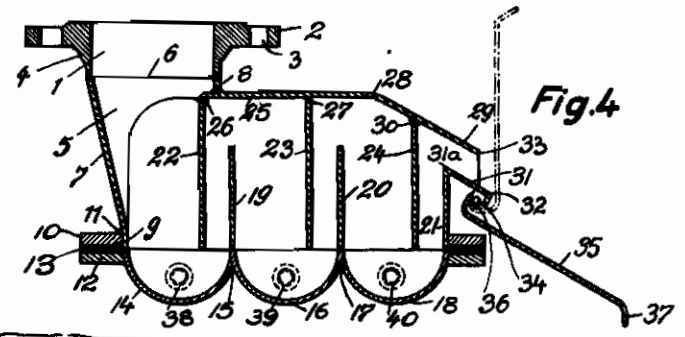
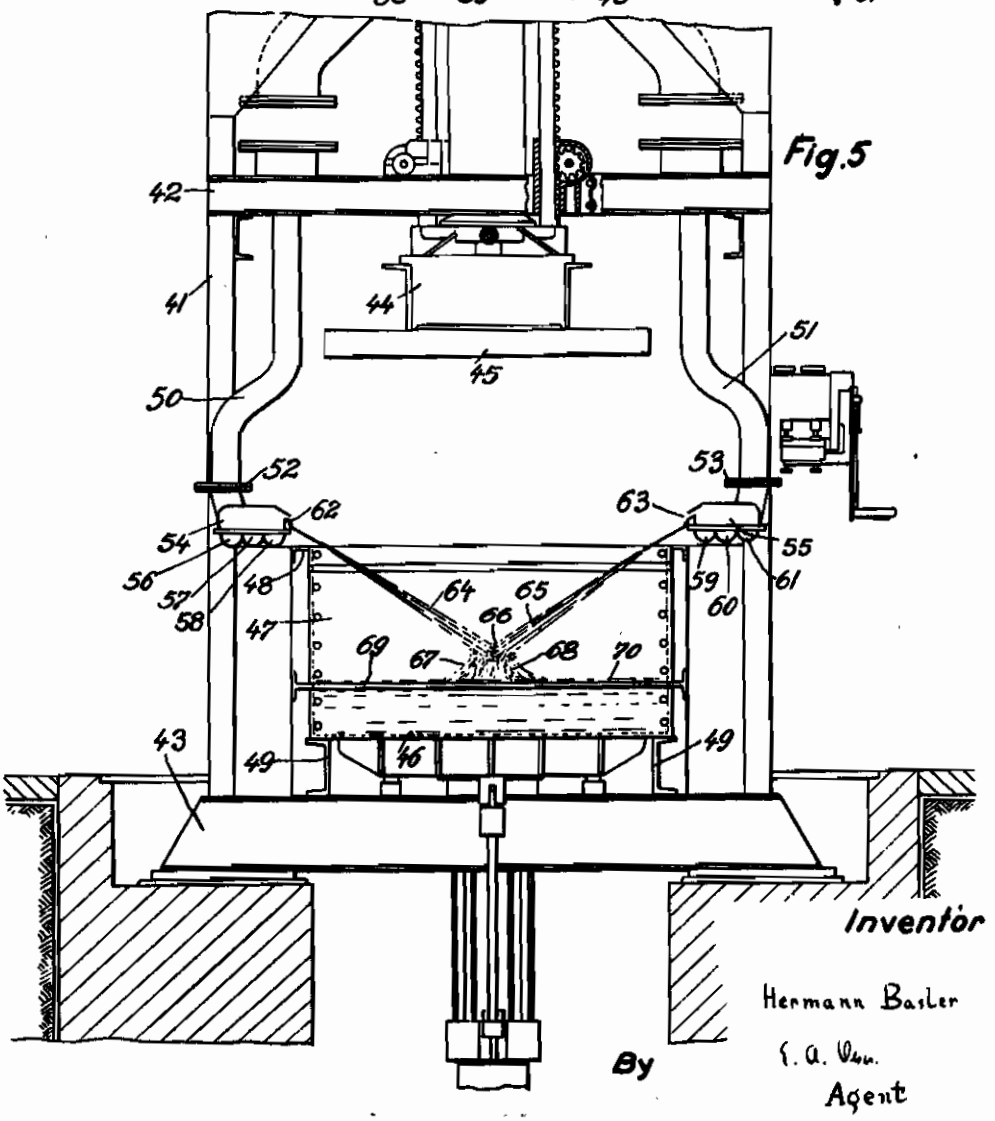


Fig.5



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ALIEN PROPERTY CUSTODIAN

DISTRIBUTING DEVICES

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vested in the Alien Property Custodian

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The present invention relates to a distributing device comprising a supply chamber and a distributor having a broad discharge opening and is particularly concerned with devices of this kind adapted to be used in connection with plants operating with variable supply pressure for equalizing the supply and spreading of pulpy material, particularly fibrous material, upon sieves, screens or the the like, whereupon this material is pressed for instance in the form of plates.

The hitherto known distributing devices have proved rather unsuitable for a uniform discharge, particularly in connection with plants operating with variable supply pressure. The object of the invention is to avoid the drawbacks of the known devices and to provide a distributing device ensuring a uniform discharge of the material supplied.

In the accompanying drawings the invention is shown by way of example.

In these drawings:

Fig. 1 is a perspective view of a known distributing device,

Figs. 2 and 3 are diagrammatic sectional detail views of a distributing device according to the invention,

Fig. 4 is a cross section through a distributing device provided with three juxtapositioned channels, and

Fig. 5 shows a view partially in section and on a reduced scale of a device using the arrangement illustrated in Fig. 4.

As shown in Fig. 1, a tube 1' is provided with a slot 2' and connected to a socket 3' which may be closed by a slide 4' and in turn is connected to an open container or tank 5' arranged in a higher level. In practice this container is arranged about two meters above the tube 1'. Consequently the entire mass of the fibrous material 6' present in the container 5' has a corresponding pressure in relation to the cross section of the socket 3'. A definite flowing velocity corresponds to this pressure of the fibrous material.

Now, if the slide 4' would be slightly opened only the tube or pipe 1' would first of all be filled practically uniformly up to the height of the discharge slot 7'. If more material would be supplied, the channel would slowly begin to overflow, particularly if water is used as conveying material.

If, however, the slide 4' is completely opened, then in accordance with the known physical laws the liquid is mainly discharged about in the zone 8', whereas the rest of the slot 7' would discharge relatively small quantities of liquid only.

The above explained conditions are extremely disadvantageous for conveying fibrous masses and the like, because then particularly a uniform spreading of the material over a large area cannot be obtained. Now, with the supply devices used, nearly always variable pressures occur in the supply pipe or result from the filling chamber, particularly as for instance the supply chamber is very often periodically filled with about $2m^3$ of fibrous pulp at a time. If then the slide 4' is opened, the pressure and the discharge velocity naturally rise to a maximum. However, the more the container tank 5' is discharged the smaller will be the pressure. Therefore, variable pressures occur. The main object of the present invention is to equalize these variable pressures.

According to the present invention the distributing device which for instance may be connected to the filling chamber by way of a closable connecting socket is formed as a practically completely closed tube-like body provided with walls forming chambers extending in the longitudinal direction which reduce the cross sections of the discharge for the material flowing under pressure from one chamber to the other and round the walls.

In particular, practical tests made with the device claimed as new in the present application have proved that, if a single baffle 9' is mounted in the tube as shown in dotted lines in Fig. 1, generally a rather slight improvement of the pressure- and flowing ratios prevailing in the tube is obtained.

According to the invention, therefore, a plurality of channels or tubes are if possible arranged side by side and, moreover, various cross walls (baffles) are provided in the direction of flow. The operation of such a device according to the invention is most clearly shown in Figures 2 and 3.

In the moment in which the slide 4' is opened the space 10' is completely filled because the cross section of the discharge slot 11' between chamber I and chamber II is smaller than the cross section of the socket which connects the container, holding the fibrous material, to the channel or tube and is temporarily closed by the slide 4'.

In the chamber I, therefore, an over-pressure is produced which uniformly is distributed over the entire length of this chamber. First of all the pressure prevailing at the connecting point of the socket 3' is larger than that prevailing at the end of the tube or pipe where a supply socket is not provided. Now, as the material in the chamber I is subjected to over-pressure and at

first irregularly flows into the chamber II, a filling is formed in the latter having a lower pressure. By the overflow of the material into chamber III and finally by the action of the discharge slot provided in the tube or pipe the equalization of the pressure and flowing ratios aimed at is obtained.

As the experiences made with the new device also have proved, not only an overflow round the baffles from one chamber to the other occurs, but indeed all the chambers are practically completely filled with material for instance fibrous mass because the latter is not discharged as quickly as it is admitted through the corresponding larger cross section of the inlet or supply socket.

If now no pressure would exist, i. e. if the material to be supplied would be fed without pressure, then the level of the fibrous pulp never would reach the upper closure wall of the channel and, therefore, such a closure of the channel would not be necessary at all.

The tapered cross sections acting as choke or accumulating channel may be formed according to the invention in different manners. In a special simple construction tapered cross sections are formed by arranging a nozzle or lip at the overflow edge of the channel or channels which nozzle or lip extends along the entire edge and has its discharge opening directed obliquely downwardly towards the surface to be covered with the material.

A preferred modification preferably used in connection with the last mentioned construction substantially consists in forming tapered cross sections by plates extending into the channels and along the same. Hereby the arrangement of the plates preferably is such that the distance between the plates and the walls facing the overflow is smaller than the distance between the plates and the opposite walls of the channels, whereby two channels are formed one of which, i. e. that one lying near the supply side, is broader than the other which is arranged near the discharge side. The arrangement of the plate or plates extending into the channel, moreover, preferably is such that the distance of the lower edge of the plate from the bottom of the channel advantageously is not smaller than the smaller lateral distance of the plate.

A particular uniform discharge of the fibrous mass or the like is obtained in accordance with the invention by the fact that a plurality of channels provided with plates forming a weir are arranged directly side by side, and only the channel, finally discharging the mass, is provided with the discharge nozzle or lip, whereas tapered cross sections are provided in each channel and the tapered discharge cross section of the one channel merges into the broader supply cross section of the adjoining channel.

Preferably a plate or the like is pivotally mounted on an axis extending longitudinally to the axis of the channel and connected to the lower inclined wall of the discharge nozzle in such a manner that in the downwardly directed position this plate practically forms a prolongation of the lower wall of the nozzle or lip and in the nearly vertically upwardly directed position forms a closure for the discharge opening of the nozzle or lip. Eventually the pivotally arranged plate may be formed in the manner of a telescope so that according to requirements, for instance corresponding to the desired discharge directions of the material, the plate may be extended or pushed together, whereby the position of the discharge edge is correspondingly altered.

Preferably a closure plate is arranged above the channels and the side walls of the channels which covers the channels and eventually simultaneously serves as guide plate for the material. The plates forming the weirs and extending into the channels advantageously are fixed to the closure plate, for instance by welding.

The channels preferably have the form of a semi-cylinder open on top and provided with extended side walls, projecting from the free edges, between which side walls the above described plates forming weirs are inserted.

For the supply of the fibrous material or the like the channel first receiving the mass preferably is provided with sockets which are connected to the pipe system supplying the fibrous mass to the channels.

Particularly if the device according to the invention is to be used for uniformly spreading fibrous masses or the like upon die surfaces or the like for subsequently pressing the material into plates, the arrangement is such that at each side of the surface to be covered a group of channels is provided of about the construction described above, the group preferably being symmetrically formed with regard to each other.

It has in particular been found that it is advisable to arrange the groups of channels in such a distance from each other and in such heights above the surface to be covered with the material that the jets or beams of jets of the fibrous masses leaving the discharge nozzles or the discharge edges may cross each other. Preferably attention is directed to the fact that the jets or beams of jets cross or intersect each other about in a straight line. This for instance renders possible that the jets meeting each other are spread by the rebounding force, whereby a beam of jets results the individual jets of which flow in the form of an arc from the crossing zone downwardly towards the surface to be covered. Hereby for instance the disadvantage also may be avoided that the fibrous mass forms undesired beads or folds upon the surface to be covered. The mass, moreover, is practically completely uniformly spread over the entire surface.

In the construction shown by way of example in Fig. 4 the socket 1 is provided with the flange 2 by means of which the socket 1 may be connected to the supply pipe for the material to be distributed by the device. The connection is effected by means of screw bolts, not shown, which are passed through holes 3 provided in the flange 2. The socket 1 is, moreover, provided with part 4 connected to the inlet socket 5 proper of the distributing device. At 6 the connecting member 4 of the socket 1 and the socket 5 are connected together, for instance by welding. The walls 7 and 8 of the socket 5 are connected to the distributing device and the wall 7 is inclined downwardly.

The lower end of the wall 7 of the socket 5 is provided at 9 with a flange 10 which is connected thereto by a welding seam 11. The flange 10 is connected to the flange 12 by way of a package 13. The flange 12 is arranged at the channel 14. The latter is connected by a welding 15 to a channel 16 and the latter is connected by a welding 17 to the channel 18. The three channels 14, 16 and 18 are formed semi-cylindrically and arranged side by side in the longitudinal direction. The upwardly directed extended wall 19 of the channel 14 simultaneously

forms a wall of a channel 16. Correspondingly the plate 20 forms a wall for the channel 16 as well as for the channel 18. The walls 19 and 20 practically extend vertically upwardly and longitudinally to the axis of the channels. The channel 18 is provided with a wall 21 which forms the outer closure wall and is arranged near the side facing the discharge opening for the material. Into the channels 14, 16 and 18 extend for instance the plates 22, 23 and 24 respectively which are arranged in the spaces of these channels in the longitudinal direction of the same in such a manner that their distance from the wall near the overflow is smaller than the distance from the wall in the neighborhood of the supply. The plates 22, 23 and 24 extend into the channels 14, 16 and 18 respectively to such a depth that the lower edges of the plates are spaced from the bottom of the channel for a distance which about corresponds to the radius of the cylindrical portion of the channel. The upper edges of the plates 22, 23 and 24 are connected for instance by weldings 26, 27 to a plate 25 covering at least a portion of the channels.

The cover plate 25 is bent downwardly at 28 and the portion 29 which obliquely extends towards the surface to be covered with the material together with a wall 31, arranged opposite and in spaced relation to the wall 29, forms the discharge nozzle or lip extending in the longitudinal direction of the channel. The front edge of the wall 29 is designated 33 and with regard to the latter the front edge 32 of the lower wall 31 of the nozzle projects for a definite length. At the lower side of this projection a nose 34 is provided having a link 36 to which plate 35 is pivoted. The latter is bent at the link 36 in such a manner that, when being turned upwardly, the inner surface of the plate 35 abuts against the front edge 32 of the lower wall 31 of the nozzle. The free end of the plate 33 is provided with a bent off portion 37 which in the downwardly turned position of the plate practically extends vertically downwardly so that the material flowing over the upper surface of the plate 35 is not hindered from running off this plate. A plate 24 is connected by a welding 30 to the upper inclined wall 29 of the nozzle, said plate extending into the channel 18 and forming a weir.

In the lower cylindrical portion of the channels 14, 16, 18 outlet pipes 38, 39, 40 respectively are provided.

The operation of the above described device according to Fig. 4 is about as follows:

From the distributing pipe system fibrous material which for instance is to be pressed to plates is introduced into the space formed by the walls 7 and 22 by way of the socket 1. From this space the mass reaches by way of the lower cylindrical portion of the channel 14 the passage formed by the walls 22 and 19 which acts as choking or accumulating passage.

If the channel closed at the front sides is filled with fibrous mass to such a height that the level of the mass reaches the upper edge of the wall 19, then the material begins to flow over this edge, whereby the flowing movement through the choking or accumulating passage between the walls 22 and 19 is equalized in accordance with the invention. The mass then passes through the opening between the upper edge of the wall 19 and the lower surface of the cover plate 25 facing the wall 19 into the broader portion of the passage in channel 16 which is limited by the wall 19 and the plate 23. The above described operation is repeated at this point. The fibrous mass raises in the channel 16 at both sides of the plate 23 until the level of this mass reaches the upper edge of the wall 20. Then the mass begins to flow over, traverses the slot formed by the upper edge of the plate 20 and the lower face of the cover plate 25 and flows downwardly into the broader portion of the passage in the channel 18 formed by the wall 20 and the weir plate 24. The fibrous mass again raises in the channel until its level reaches the edge 31a of the wall 21. During flowing into the passage of the channel 18 formed by the walls 20 and 24 the flowing movement of the mass is equalized by the smaller passage between the walls 23 and 20. The flowing movement of the mass also is equalized during flowing through the smaller passage between the walls 24 and 21. If the mass reaches the edge 31a flowing off begins by way of the nozzle or lip which is formed by the upper wall 29 and the lower wall 31. The mass flows over the upper surface of the lower wall 31 of the nozzle or lip downwardly and if the guide plate 35 is turned downwardly over the upper surface of the latter, obliquely downwardly until the bent off portion 37 is reached from which the mass, depending on the flowing velocity, the pressure, etc., is more or less far thrown out into the free space present laterally of and below the running off edge of the plate 35 and for instance drops upon a molding plate, a screen or the like which serves for further treating the mass to molded bodies or the like.

In the construction shown in Fig. 5 the upper ends of lateral supporting members 41 of the frame for a hydraulic press, adapted to manufacture fibrous press plates, are connected by cross members 42. The lower ends of the supporting members 41 rest upon or in a base plate 43 respectively which simultaneously carries the molding box for the fibrous mass to be pressed.

The holder for the press ram 45 is designated 44, whereas the counterbearing forming the die is designated 46. The latter is arranged in a box-like frame 47 which is open at the top and the walls of which form a container or tank into which flows the material to be pressed. The upper edge of the box 47 is reinforced for instance by angle irons 48 and the bottom of this box 47 rests upon a support consisting of channel irons 49 which in turn rest upon the base plate 43.

The material to be pressed, for instance fibrous material, is supplied by way of the tubes 50, 51 which are arranged about symmetrically to the longitudinal axis of the box 47 receiving the material to be pressed. The pipes 50 and 51 are connected by flanges 52 and 53 respectively to the inlet socket of the distributing devices 54, 55 respectively according to the invention. The distributing device 54 is, as shown in the construction according to Fig. 4, provided with three channels 56, 57, 58 closely arranged side by side. The corresponding channels of the distributing device 55 are designated with 59, 60, 61 respectively.

The distributing devices 54 and 55 are provided with a nozzle or lip 62 and 63 respectively.

From these nozzles or lips the material to be pressed, for instance a fibrous mass, is discharged in a jet which eventually is influenced by the pressure prevailing in the pipe system 50. The two jets are designated 64 and 65 respectively and cross each other about in a straight line 66

which practically is situated in the middle above the surface to be covered with the material. By the rebound of the jets of the material, particles 67 and 68 are thrown off which, so to say in the form of rain reach, by way of curved pathes the surface 46 of the counter-bearing upon which they form uniform layers 69, 70 adapted to be pressed.

The operation of the device according to Fig. 5 is about as follows:

Fibrous material is supplied by the pipe system 50, 51 and passed through the distributing devices 54, 55 in which it is subjected to the actions explained above in detail by way of Fig. 4. The masses are discharged by the nozzles or lips 62, 63 in the form of jets the size and shape of which may be predetermined and then impinge on the surface of the thrust counter-bearing 46 to be covered with the material. After formation of a uniform layer of a suitable thickness, further supply of fibrous mass is interrupted, and the press ram 45 is moved downwardly to compress the mass present in the box 47 and resting upon the counter-bearing 46. This compression, directly following the interruption of the supply of the mass, is possible due to the construction of the distributing device according to the invention, because the layers formed by these distributing devices practically are absolutely uniform and homogeneous. The molded bodies which may be produced by the presses have prooved to be of excellent, dense, solid and uniform quality.

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