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A. MYLIUS

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SUCTION FILTERS

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Fig. 1.

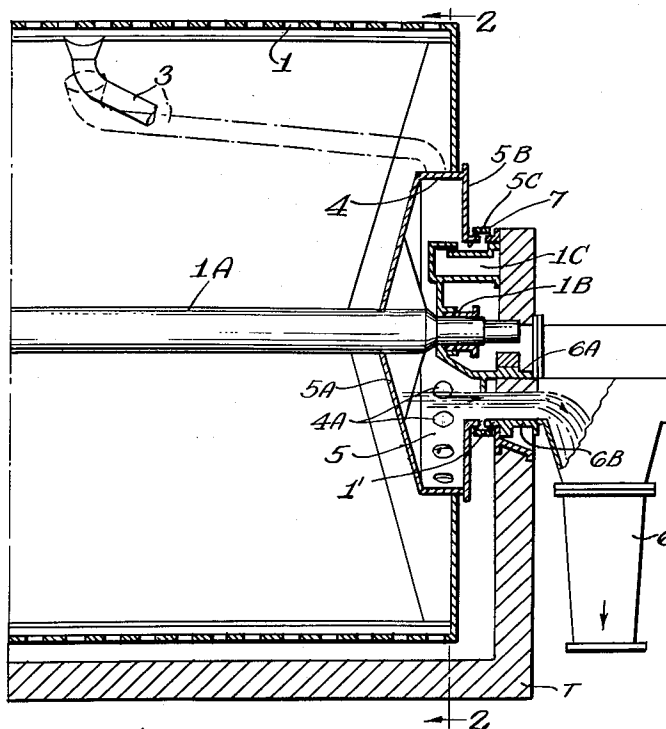
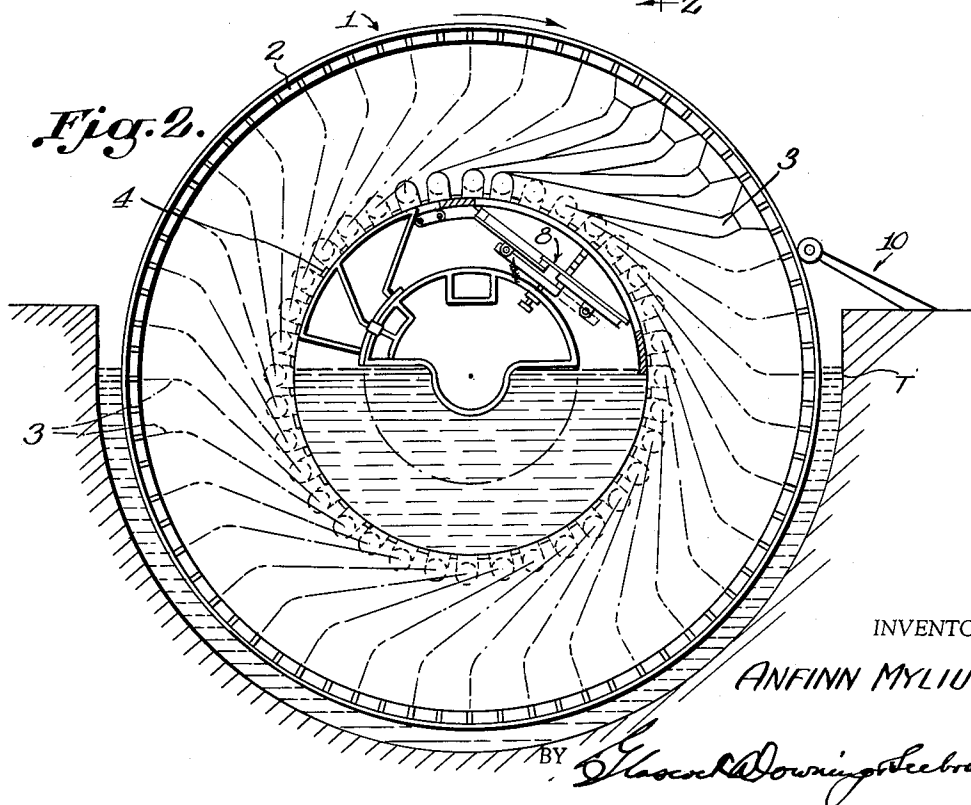


Fig. 2.



INVENTOR

ANFINN MYLIUS.

BY

Charles Downing Peck

ATTORNEYS

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SUCTION FILTERS

Anfinn Mylius, Sogn, Oslo, Norway, assignor to Aktiebolaget Kamyr, Karlstad, Sweden

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2 Claims. (Cl. 210—199)

The present invention relates to means for removing pulp from a pulp-liquid mixture and more particularly has reference to suction filters or sieves of the drum type wherein the interior of the drum is provided with means defining a suction path or paths between the drum cells and a suction chamber at either or both ends of the drum.

It is known that in order to obtain a vacuum in either or both suction chambers, the chamber may be connected to a flowoff conduit, or the chamber may be in communication with a conventional vacuum pump. I have ascertained that if in addition to the results achieved by either type of suction filter, it is possible to employ the principles of the "Strindlund" filter (suction filters not using a flow-off conduit or vacuum pump but relying upon the difference in level between the pulp-liquid mixture in the tank and that within the drum), technical advantages are obtained.

Accordingly, an important object of the present invention is to provide a drum of the character described wherein each of the drum cells is connected to the suction chamber at either or both ends of the drum by means of a conduit leading from the cell to the suction chamber, the conduits being displaced angularly with respect to the suction chamber in a direction opposite to the direction of rotation of the drum.

In this manner an increased aspirating action is obtained on the inlet or supply side of the cells while, on the exit or discharge side of the cells, a reduced resistance against water forcing its way in from the outside surroundings is achieved.

A special advantage is obtained at the start, because an aspirating action is obtained on the inlet or supply side of the cell even prior to the vacuum arising in the suction chamber or chambers.

With the foregoing and other objects in view, the invention relates to the details of construction set forth in the following description and drawing of a preferred form of the inventive concept, it being understood that the invention is not limited to such form, since the invention recited in the claims may be embodied in numerous other assemblies.

Referring to the drawings wherein like reference legends refer to the same or similar parts and in which,

Figure 1 is an elevational view partly in section and partly broken away of one end of a drum constructed in accordance with the invention; and

Figure 2 is a sectional view taken along the line 2—2 of Figure 1, the view looking in the direction of the arrows.

As shown in Figure 2, a drum or sieve 1 is supported for rotary movement partially immersed in a tank T containing a pulp-liquid mixture and any suitable means (not shown) may be used to rotate the drum. The drum is provided with a horizontally extending shaft 1A and each end of the shaft is journaled in a trunnion 1B fixed to the tank wall. The trunnion 1B is carried by a housing 1C conveniently anchored to the wall and the hous-

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ing together with a member 5 constitute a suction chamber. The member 5 includes an inner wall 5A, annular surface 4 and an outer wall 5B. An annular flange 5C is formed on the outer wall and it can be seen that the flange is disposed in close relationship in the same plane to a complementary element 1' on the housing 1C. A packing ring 7 embraces the flange 5C and the element 1' to define a leak-proof joint.

The annular surface 4 is provided with a plurality of equidistantly spaced apertures or inlet ports 4A and the interior of the suction chamber is in communication with a flow-off conduit or fall tube 6 by means of a duct 6A formed in the housing, the duct extending through an opening 6B in the tank wall.

The drum periphery is provided with a plurality of cells 2 and a pipe or conduit 3 extends between the exit side of adjacent cells and one of the inlet ports 4A in the annular surface 4. More specifically, it will be noted that each conduit has been bent so that the portion of the conduit secured to the port 4A is displaced angularly in the same direction as the direction of rotation of the drum with respect to the cells 2 to which the opposite end of the conduit is attached, and the purpose of this arrangement will be later more fully set forth.

With reference to Figure 2, it will be observed that a valve plate 8 is fixed to the interior of the suction chamber, such as by stationarily supporting the plate on the housing 1C so that one end of the plate will be in contact with the inner face of the annular surface 4 during rotation of the drum and as a consequence the member 5. Manifestly, the conduits 3 will not be subject to the aspirating effect of the chamber until the drum has turned to a position where the plate is not covering the inlet port 4A of the conduit.

It is believed apparent from the above description that the liquid with which the cells 2 are filled will cause an increased aspirating action on the inlet or supply side of the cells at the beginning of the operating cycle prior to the necessary vacuum being produced in the suction chamber. This is of material value in maintaining the pulp on the drum periphery and is a marked improvement over drums equipped with merely a suction chamber.

Furthermore, it will be seen that a reduced resistance against liquid entering the discharge or exit side of the cells is obtained by virtue of the fact that the conduits or pipes 3 are not entirely filled with liquid until the conduit openings have been submerged below the liquid level in the suction chamber. However, the filtering process has been in operation in the various cells on the discharge side with less resistance than would have been the case had the full inner liquid pressure acted immediately upon the cells entering the suction cycle or zone.

As illustrated in Figure 2, a conventional take-off roller and scraper combination 10 is provided for removing the pulp layer from the periphery of the drum 1.

The invention is not to be confined to any strict conformity with the showing in the drawing but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

I claim:

1. In an assemblage for removing pulp from a pulp-liquid mixture, a drum rotatable about a horizontal axis partially immersed in the mixture, means defining a suction chamber at at least one end of the drum, the dimensions of the suction chamber being such as to collect a substantial amount of liquid therein, a fall-tube located exteriorly of said drum, means defining a communication path between the interior of the suction chamber and the fall-tube whereby a vacuum may be created in the

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suction chamber, further means on the periphery of the drum defining cells having inlet and outlet sides, conduit defining means leading from the outlet side of each cell to the interior of the suction chamber, the point of juncture between each conduit defining means and the suction chamber being angularly displaced in the same direction as the direction of rotation of the drum with respect to the point of juncture of the conduit means to the outlet side of the cell and valve means within the means defining a suction chamber to prevent an aspirating effect in each of said cells until the conduit defining means leading to the chamber is not closed by the valve means.

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2. An assemblage as defined in and claimed by claim 1 further characterized in that said valve means is fixedly mounted within the means defining the suction chamber and is constituted by a plate-like element.

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