[0013] Improving upon known membrane filers it is proposed according to the invention that the at least one tub includes an inner edge respectively between adjacent slots in at least one vertical sectional view orthogonal to the wall which inner edge at least in a portion of a lower half of the slots has an angle relative to horizontal of less than 60° in any point. This configuration can either be implemented by a greater slant angle or rounding this inner edge. This creates a flow impact portion at lower inner edges of the wall for the liquid flowing below the gas cushion wherein hair and fibrous compounds are stripped off by the liquid flow in the flow impact portion which reduces the blocking propensity of the slots and of the membrane portion arranged there above.

[0029] Based on the known method it is provided according to the invention that the liquid flow generated below the gas cushion flows respectively between adjacent slots in at least one vertical sectional view orthogonal to the wall against an inner edge of the at least one tub which inner edge at least in a portion of a lower half of the slots has an angle relative to horizontal of less than 60°. Thus hair and fibrous compounds at the inner edge are stripped off and blocking the slots and the membrane portions arranged there above is substantially avoided. Thus the blocking propensity of the membrane filter is reduced overall.

[0012] Thus it is an object of the invention to provide a membrane filter with reduced blocking propensity.

Solution

[0013] Improving upon known membrane filers it is proposed according to the invention that the at least one tub includes an inner edge respectively between adjacent slots in at least one vertical sectional view orthogonal to the wall which inner edge at least in a portion of a lower half of the slots has an angle relative to horizontal of less than 60° in any point. This configuration can either be implemented by a greater slant angle or rounding this inner edge. This creates a flow impact portion at lower inner edges of the wall for the liquid flowing below the gas cushion wherein hair and fibrous compounds are stripped off by the liquid flow in the flow impact portion which reduces the blocking propensity of the slots and of the membrane portion arranged there above.

[0014] In an advantageously embodiment of the membrane filter according to the invention the gas distribution system is configured at a bottom side of the at least one membrane carrier. In this case the membrane carrier and the gas distribution system are one component. Thus the gas is distributed into the liquid to be filtered directly at a bottom side of the membrane carrier, thus at locations where it exits from the gas distribution system. Thus the gas bubbles flow around the membrane carrier and the membranes attach therein directly at their intended locations. The configuration of the gas distribution system at the bottom side of the membrane carrier helps to prevent potential deviating gas flows.

[0015] Due to the small blow in depth an energy requirement for the gas loading is reduced compared to systems with a gas distribution system that is separately installed below the membrane carrier. The low production costs presents another advantage since the membrane filter has one less component due to the configuration of the gas distribution system at a base of the membrane carrier.

[0016] In order to provide a stripping of hair and fibrous compounds at the rounded or slanted inner edge of the tub a horizontal extension of this inner edge of approximately of 10 – 15 mm is required. In the simplest case this requirement causes a configuration of the tub that is configured accordingly thick.

[0017] In the membrane filter according to the invention the gassing system can be installed in an alternative as a separate component below the membrane carrier

gassing. The slots that become wider in downward direction thus form a variable "throttle" for the gas volume flowing through the slots for different gas volume flows. Through the cross sectional shape of the throttle the volume dependent filling level in the slots can be influenced.

[0026] In another advantageous embodiment of the membrane filter according to the invention the slots have cross sectional surfaces with different sizes. This because different geometric configuration of the tub, in particular also when gas conduction channels are connected at some of the slots which shall facilitate flushing differently sized membrane surfaces with the gas volume flowing through the different slots it is advantageous to adapt the gas volume flowing through the slots through the geometric configuration of the slots to adapt to different required gas volumes. Thus in slots to which a gas conducting channel adjoins which transports the gas into portions of the membrane filter which are arranged further outward and away from the tub larger cross sectional surfaces of the slots are implemented in that the slots have a greater width.

[0027] In another advantageous embodiment of the membrane according to the invention the at least one gas inlet laterally adjoins the at least one tub. This is part advantageous when the gas distribution system is configured at a bottom side of the membrane carrier. In this case the gas distribution is provided at the level of the slots which helps to prevent vertical flows of the gas and thus a sloshing of the gas cushion out of the tube.

[0028] In case of a gas distribution system that is separated from the membrane carrier the gas inlet can be alternatively also provided from above through the base of the tub that is arranged on top. Alternatively a gas inlet that is separate from the tub and the gas distribution system can provide that the gas flows into the tub for example from a separate tube that is positioned below the tub.

[0029] Based on the known method it is provided according to the invention that the liquid flow generated below the gas cushion flows respectively between adjacent slots in at least one vertical sectional view orthogonal to the wall against an inner edge of the at least one tub which inner edge at least in a portion of a lower half of the slots has an angle relative to horizontal of less than 60°. Thus hair and fibrous compounds at the inner edge are stripped off and blocking the slots and the membrane portions arranged there above is substantially avoided. Thus the blocking propensity of the membrane filter is reduced overall.