Consequently, the two embodiments discussed last have proved to be successful. Nevertheless, there is a further demand for optimization, especially with regard to a good energy recovery with simultaneous assurance of a low tendency toward contamination.

~~1.~~ ~~The~~ Embodiments seek to provide solutions ~~of~~to the previously described problem ~~is the object of the invention~~.

~~The invention achieves this object by means of the subject matter of claim 1~~According to an aspect, there is provided a solid-bowl screw centrifuge with at least one or more discharge weirs for discharging clarified liquid out of a drum which has a rotational axis and a direction of rotation, having the following features:

a. at least one or more outlet ports in a drum cover,

b. wherein a weir plate, which has a recess, is associated with the at least one outlet port in each case,

c. wherein an open discharge channel, by means of which a deflection from a direction parallel to the rotational axis of the drum essentially into a circumferential direction opposite the direction of rotation is carried out, is formed at the outlet opening in the recess,

d. wherein the discharge channel is designed in such a way that discharging liquid is directed via the bottom of the discharge channel up to an overflow edge,

e. wherein the bottom of the discharge channel is inclined inwardly toward the rotational axis toward the overflow edge relative to the tangential direction by an inclination angle $\delta \geq 0$ at the location of the overflow edge.

Accordingly, it is provided that the bottom of the discharge channel is inclined inwardly toward the rotational axis toward the overflow edge relative to the tangential direction by an inclination angle δ at the location of the overflow edge.

A main advantage of this embodiment is again that product deposits cannot easily form, as in the case of the housings in the manner of WO 2008/138345 A1. Rather, as a result of the open design of the discharge channels this disadvantage is avoided in turn. In this case, the constructional embodiment is simple and stable. Moreover, the discharging product flow is deflected onto a radial diameter so that a particularly large saving of energy ensues.

Preferably, $\delta > 0°$ and $\delta < 25°$, especially $\delta \geq 10°$ and $\delta \leq 20°$, apply to the angle δ in this case since a particularly advantageously outflow behavior can be achieved in such a way.

Advantageous embodiments of the invention are to be gathered from the ~~dependent~~ appended claims.

The invention is described in more detail below with reference to the drawing. In the drawing:

Patent claims

1. A solid-bowl screw centrifuge with at least one or more discharge weirs ~~(23)~~ for discharging clarified liquid out of a drum ~~(3)~~ which has a rotational axis ~~(D)~~ and a direction of rotation ~~(K)~~, having the following features:
   a. at least one or more outlet ports ~~(15)~~ in a drum cover ~~(17)~~,
   b. wherein a weir plate ~~(25)~~, which has a recess ~~(29)~~, is associated with the at least one outlet port ~~(15)~~ in each case,
   c. wherein an open discharge channel, by means of which a deflection from a direction parallel to the rotational axis ~~(D)~~ of the drum essentially into a circumferential direction opposite the direction of rotation ~~(K)~~ is carried out, is formed at the outlet opening in the recess ~~(29)~~,
   d. wherein the discharge channel is designed in such a way that discharging liquid is directed via the bottom of the discharge channel up to an overflow edge ~~(31k)~~,
   ~~characterized in that~~
   e. wherein the bottom of the discharge channel is inclined inwardly toward the rotational axis ~~(D)~~ toward the overflow edge ~~(31k)~~ relative to the tangential direction ~~(T)~~ by an inclination angle $\delta \geq 0$ at the location of the overflow edge ~~(31k)~~.

2. The solid-bowl screw centrifuge as claimed in claim 1, ~~characterized in that~~wherein $\delta > 10°$ and $\delta < 25°$ apply to the inclination angle δ.

3. The solid-bowl screw centrifuge as claimed in claim 2, ~~characterized in that~~wherein $\delta \geq 10°$ and $\delta \leq 20°$ apply to the inclination angle δ.

4. The solid-bowl screw centrifuge as claimed in claim 1, ~~characterized in that~~wherein the bottom of the discharge channel is formed from one or more guide plate pieces ~~(31b, c)~~.

5. The solid-bowl screw centrifuge as claimed in one of the preceding claims, ~~characterized in that~~wherein the side walls of the discharge channel are formed from an additional guide plate piece ~~(31a)~~ and the weir plate ~~(25)~~.

6. The solid-bowl screw centrifuge as claimed in one of the preceding claims, ~~characterized in that~~wherein the first guide plate piece ~~(31a)~~ has an arced shape or at least one arc-shaped section ~~(31a'')~~.

7. The solid-bowl screw centrifuge as claimed in claim 6, ~~characterized in that~~wherein the first guide plate piece ~~(31a)~~ also has one or two flat section ~~(31a', 31a''')~~.

8. The solid-bowl screw centrifuge as claimed in one of the preceding claims, ~~characterized in that~~wherein the first guide plate piece ~~(31a)~~ in itself is formed in one piece or in a multiple of pieces.

9. The solid-bowl screw centrifuge as claimed in one of the preceding claims, ~~characterized in that~~wherein a plurality of guide plate pieces are formed from a single plate element.

10. The solid-bowl screw centrifuge as claimed in one of the preceding claims, ~~characterized in that~~wherein the guide plate pieces or sections of the guide plate pieces are interconnected, preferably by welding.

11. The solid-bowl screw centrifuge as claimed in one of the preceding claims, ~~characterized in that~~wherein the first guide plate piece ~~(31a)~~, as a side wall of

the discharge channel, by its side or surface facing the drum, directly adjoins a first edge section ~~(29a)~~ of the recess ~~(29)~~ and in that the angle α between the plane of the weir plate ~~(25)~~ and the first guide plate piece ~~(31a)~~ is preferably between 0 and 45°, especially between 5° and 25°.

12. The solid-bowl screw centrifuge as claimed in the preamble of claim 1 or as claimed in one of the preceding claims, ~~characterized in that~~wherein an angle β, to which $\beta > 0°$ and $\beta < 30°$, especially $\beta < 20°$, applies, is formed between the plane of the weir plate ~~(25)~~ and the plane into which extends the bend of the first guide plate piece ~~(31a)~~.

13. The solid-bowl screw centrifuge as claimed in one of the preceding claims, ~~characterized in that~~wherein the second guide plate piece ~~(31b)~~ is preferably oriented perpendicularly, or in the main perpendicularly, to the weir plate ~~(25)~~ and tangentially, or in the main tangentially, to the circumferential direction.

14. The solid-bowl screw centrifuge as claimed in one of the preceding claims, ~~characterized in that~~wherein the second and third guide plate piece ~~(31b, c)~~ align totally or partially with the corresponding edges of the recess ~~(29)~~ in the weir plate ~~(25)~~.

15. The solid-bowl screw centrifuge as claimed in one of the preceding claims, ~~characterized in that~~wherein the at least one recess ~~(29)~~ in the weir plate has one or more straight edge sections ~~(29a, b, c)~~.

16. The solid-bowl screw centrifuge as claimed in one of the preceding claims, ~~characterized in that~~wherein the at least one recess ~~(29)~~ in the weir plate has, at

least in certain sections, at least one curved arc-shaped edge section ~~(29d)~~.

17. The solid-bowl screw centrifuge as claimed in one of the preceding claims, ~~characterized in that~~wherein the cross-sectional area of the recess ~~(29)~~ up to the inner edge ~~(25a)~~ of the weir plate ~~(25)~~ is smaller than the imaginary cross section of the drain channel in the region of the overflow edge ~~(31k)~~.

18. The solid-bowl screw centrifuge as claimed in claim 17, ~~characterized in that~~wherein the cross-sectional area of the recess ~~(29)~~ up to the inner edge ~~(25a)~~ of the weir plate ~~(25)~~ is by more than 25% smaller than the imaginary cross section of the drain channel in the region of the overflow edge ~~(31k)~~.

19. The solid-bowl screw centrifuge as claimed in claim 17, ~~characterized in that~~wherein the cross-sectional area of the recess ~~(29)~~ up to the inner edge ~~(25a)~~ of the weir plate ~~(25)~~ is by more than 30% smaller than the imaginary cross section of the drain channel in the region of the overflow edge ~~(31k)~~.