CLAIMS

1. A separator insert for a separator, which is designed for separating a flowable suspension into at least two flowable phases of different density in a centrifugal field, comprising:
    a) a housing which is stationary during operation and which is designed in the form of a container which is closed except apart from multiple openings, wherein these openings are designed as follows: as a supply opening for an inflowing suspension in a first axial boundary wall of the housing, as two outlets for flowable phases of differing density in an outer casing of the housing, and as a recirculation inlet in a second axial boundary wall of the housing,
    b) a rotor arranged within the housing and which can rotate about an axis of rotation and having a drum, which also has multiple openings, wherein one or more first and one or more second openings of the drum serve as free radial outlets for the light and the heavy phase into the housing, and wherein into two further ones of the openings of the drum at the two axial ends of the drum a feed pipe extends in each case, which does not touch the drum,
    c) wherein a separation means is arranged in the drum,
    d) at least two rotor units for magnetic bearing devices at two axially spaced-apart points on the rotor with the drum, with which the rotor with the drum can be held in a suspended state, can be rotatably mounted and can be made to rotate within the housing during operation.

2. The separator insert according to claim 1, characterized in that the separator insert forms a pre-assembled, exchangeable unit for insertion into a frame of the separator.

3. The separator insert according to claim 1 or 2, characterized in that the housing and the drum are made entirely or predominantly of plastic or a plastic composite material.

4. The separator insert according to claim 1, 2 or 3, characterized in that the rotor units for the magnetic bearing devices are arranged at the two axial ends of the drum, and in that each of the feed pipes passes axially through one of the rotor units.

5. The separator insert according to claim 4, characterized in that one or both of the magnetic bearing devices can also be used for rotating and for adjusting the speed

of the drum, and in that one or both of the magnetic bearing devices act in a radially and axially bearing manner and keep the rotor suspended in the drum at a distance from the latter during operation.

6. The separator insert according to one of the preceding claims, characterized in that each of the two outlets for flowable phases of different density is associated with a respective trapping ring chamber of the housing.

7. The separator insert according to one of the preceding claims, characterized in that the two outlets for flowable phases of different density are formed radially or tangentially on the housing.

8. The separator insert according to one of the preceding claims, characterized in that the inlet is formed by the first, non-rotatable feed pipe, which projects with one end out of the housing to a first side, in particular with vertical alignment of the axis of rotation upwards, and outwards, and which extends through the first axial boundary wall and through the one magnetic bearing axially into the drum, but does not touch the latter in the process.

9. The separator insert according to one of the preceding claims, characterized in that the first feed pipe passes through the housing concentrically to the axis of rotation of the rotor, then extends axially further within the housing into the rotatable drum and ends there with its other end - a free outlet end - in front of or in a distributor which is arranged in the drum and rotates with the latter and by means of which the suspension can be conducted into the centrifugal chamber.

10. The separator insert according to one of the preceding claims, characterized in that the drum has at least two sections of different diameter and in that, for discharging the differently dense phases from the drum in the sections of different diameter, at least one or more outlets are provided in each case in the outer casing of the drum, which outlets each have one or more of the openings, in particular nozzle-like openings, in the drum outer casing and thus form the free outlets into the respective trapping ring chambers.

11. The separator insert according to one of the preceding claims, characterized in that the respective outlet for the respective light or heavier phase is formed at the lowest point of the respective trapping ring chamber.

12. The separator insert according to one of the preceding claims, characterized in that the light or heavy phase emerging from one of the two outlets can be conveyed away from the housing by a discharge line with a pump, and in that a

branch line is provided which opens into the recirculation inlet, so that a recirculation line is formed for returning the light or the heavy phase to the drum.

13. The separator insert according to one of the preceding claims, characterized in that the light or heavier phase to be recirculated can be pumped into the drum by the pump.

14. The separator insert according to one of the preceding claims, characterized in that the recirculation inlet comprises the second feed pipe passing through a second axial boundary wall of the housing and opening into a second distributor in the drum not rotating with the drum.

15. The separator insert according to one of the preceding claims, characterized in that a controllable regulating valve is provided, with which the recirculation inlet can be shut off or opened completely or partially.

16. The separator insert according to one of the preceding claims, characterized in that at least one measuring device is provided with which a parameter of the light phase and/or the heavy phase can be determined.

17. The separator insert according to one of the preceding claims, characterized in that a stack of separator disks is inserted into the drum as the separation means.

18. The separator insert according to one of the preceding claims, characterized in that all of its components are assembled into the pre-assembled unit, wherein all of the product-contacting elements are made of plastic or other non-magnetic material.

19. The separator insert according to one of the preceding claims, characterized in that its feed pipes and its outlets project outwardly from the housing in the manner of nozzles, wherein these nozzles are connected to the housing in a sealed manner or are formed integrally therewith.

20. The separator insert according to one of the preceding claims, characterized in that the housing is of hermetically sealed design except for the openings with the feed pipes and the outlets.

21. A separator having a frame and the separator insert according to one of the preceding claims which is exchangeably arranged on the frame.

22. The separator according to claim 21, characterized in that on it are formed spaced-apart receptacles with stator units of the bearing devices, between which the

separator insert can be inserted in a rotationally fixed and exchangeable manner.

23. The separator according to claim 22, characterized in that the relative distance of the receptacles with the stator units of the bearing means is adjustable in order to exchange the separator insert.

24. The separator according to claim 22 or 23, characterized in that the housing of the separator insert can be fastened to the frame in a form-fitted and/or force-fitted rotationally fixed manner.

25. The separator according to claim 23, characterized in that the housing and at least one receptacle, preferably the receptacles, and at least one stator unit, preferably the stator units, comprise corresponding form-fitting means for retaining the housing in a rotationally fixed manner on the receptacle or receptacles.

26. The separator according to one of claims 21 to 25, characterized in that at least one control device is provided with which the amount of recirculation of the light or the heavy phase is controlled or regulated, in particular by using one or more results of measurements with a measuring device.