C L A I M S

1. A sewage treatment machine (1) of a type comprising: a closed container (2) into which a liquid to be treated is brought to boil; a vacuum-generating apparatus (3) which is adapted to maintain the inside of the closed container (2) at a given pressure having a value lower than the environmental/external pressure; a supply line (4) for the liquid to be treated, which is adapted to channel the liquid to be treated to the inside of the closed container (2); a heat-pump assembly (5) which is associated to the closed container (2) so as to be able to transfer heat to the liquid present on the bottom of the closed container (2) thus to bring said liquid to boil, and simultaneously remove heat from the vapours that reach the top of the closed container (2) thus to condense the vapour and obtain a distilled liquid; a first drain line (6) that branches off/departs from the bottom part of the closed container (2) and is adapted to channel/transfer, outside of the closed container (2), the liquid that accumulates/stagnates on the bottom of the closed container (2); and a second drain line (7) that branches off/departs from the upper part of the closed container (2) and is adapted to channel/transfer, outside of the closed container (2), the vapours that form inside the closed container (2) and/or the distilled liquid resulting from condensation of said vapours;

said sewage treatment machine (1) being **characterised in that** said heat-pump assembly (5) contains a refrigerant fluid comprising one or more gases of the family of the hydro-fluoroolefins in a percentage greater than 3%.

2. Sewage treatment machine according to Claim 1, wherein said refrigerant fluid comprises one or more gases of the family of the hydrofluoroolefins in a percentage greater than 30%.

3. Sewage treatment machine according to Claim 1 or 2,

wherein said refrigerant fluid comprises one or more gases of the family of the hydrofluoroolefins in a percentage greater than 50%.

4. Sewage treatment machine according to any one of the preceding claims, wherein said refrigerant fluid comprises one or more gases of the family of the hydrofluoroolefins in a percentage greater than 75%.

5. Sewage treatment machine according to any one of the preceding claims, wherein said refrigerant fluid comprises one or more gases of the family of the hydrofluorocarbons.

6. Sewage treatment machine according to any one of the preceding claims, wherein said vacuum-generating apparatus (3) is adapted to continuously maintain the pressure inside the closed container (2) at a value lower than 0,8 bar.

7. Sewage treatment machine according to any one of the preceding claims, wherein said supply line (4) is adapted to control/vary the flow rate of the liquid to be treated that enters into the closed container (2), so as to continuously maintain the level of the liquid inside the closed container (2) in the neighbourhood of a given value.

8. Sewage treatment machine according to any one of the preceding claims, wherein said heat-pump assembly (5) comprises: a first heat-exchanger (41) adapted to heat up the liquid that stagnates on the bottom of the closed container (2); a second heat-exchanger (42) adapted to cool down/condense the vapour that forms inside the closed container (2); and a first expansion member (43) which is interposed between the first (41) and the second (42) heat-exchanger and is adapted to cause the rapid expansion of the refrigerant fluid directed towards the second heat-exchanger (42).

9. Sewage treatment machine according to Claim 8, wherein said first heat-exchanger (41) is located along a recirculation pipe (18) of said first drain line (6), or

adjacent to the bottom of the closed container (2).

10. Sewage treatment machine according to Claim 8 or 9, wherein said second heat-exchanger (42) is located at least partially inside the closed container (2), or along said second drain line (7).

11. Sewage treatment machine according to any one of the preceding claims, wherein said second drain line (7) comprises a tank (24) adapted to contain the vapour and/or the distilled liquid arriving from the closed container (2).

12. Sewage treatment machine according to Claim 11, wherein said heat-pump assembly (5) additionally comprises a third heat-exchanger (45) which is located inside the tank (24) of the second drain line (7), so as to be able to cool down the distilled liquid and/or vapour located inside the same tank (24).

13. Sewage treatment machine according to Claim 12, wherein said third heat-exchanger (45) is connected in parallel to the second heat-exchanger (42), and the heat-pump assembly (5) additionally includes a second expansion member (46) that is interposed between the first (41) and the third (45) heat-exchanger and is adapted to cause the rapid expansion of the refrigerant fluid directed towards the third heat-exchanger (45).

14. Sewage treatment machine according to any one of the preceding claims, characterised by additionally comprising: a rotatable stirring member (60) which is located inside the closed container (2), close to the bottom of the container, with the capability of rotating about a given rotation axis (A), and a motor assembly (61) which is adapted to drive into rotation the stirring member (60) about said rotation axis (A); the stirring member (60) being structured to scrape the inner surface of the closed container (2) during rotation about said rotation axis (A).

15. Sewage treatment machine according to any one of the

preceding claims, characterised by additionally comprising a separator/demister filter (50) which is located inside said closed container (2), beneath the entrance of the second drain line (7), and is adapted to prevent any drops of liquid dragged upwards by the current of the vapour, from reaching the second drain line (7).

16. Sewage treatment machine according to any one of the preceding claims, characterised by additionally comprising a rigid supporting framework (8) adapted to stably resting on the ground; said closed container (2), said vacuum-generating apparatus (3), said supply line (4), said heat-pump assembly (5), said first drain line (6) and said second drain line (7) being placed on the rigid supporting framework (8) so as to form an easily transportable single block.