CLAIMS

1. Nozzle for injecting pressurized water containing a dissolved gas, said nozzle comprising:

- a cylindrical intake chamber (20) for said water;
- a cylindrical expansion chamber (30) comprising a part (301) communicating with said intake chamber (20) by an orifice (401) and an outlet;
- a diffusion chamber (60) of truncated conical section communicating with the outlet of said expansion chamber (30) and widening out from said expansion chamber

said nozzle comprising means for putting the stream of water that flows out of said expansion chamber (30) into rotation.

2. Nozzle according to claim 1, wherein said outlet of said expansion chamber (30) comprises at least two apertures (901) crossing a wall (90) that separates said expansion chamber (30) from said diffusion chamber (60), said at least two apertures (901) being distributed uniformly about the axis of revolution of said expansion chamber (30), each of said apertures (901) extending along an axis:

- situated in a plane parallel to the axis of revolution of said expansion chamber (30), and
- tilted relative to the axis of revolution of said expansion chamber (30),

the axes of said apertures being tilted in a same sense so as to put the stream of water flowing out of said expansion chamber (30) into rotation along said sense.

3. Nozzle according to claim 2, wherein the angle γ of said truncated conical diffusion chamber (60) relative to its axis of revolution and the angle α of tilt of the axis of said apertures (901) relative to said wall (90) separating said expansion chamber (30) from said diffusion chamber (60) are chosen to maintain a bubble size essentially ranging from 100 to 200 micrometers at the exit from said diffusion chamber (60).

4. Nozzle according to claim 2 or 3, comprising a needle (80) placed in said expansion chamber (30) facing said orifice (401) and pointing in its direction.

5. Nozzle according to any one of the claims 1 to 4, comprising means (70) for sustaining the putting of said stream into rotation, said means for sustaining being housed in said diffusion chamber (60).

6. Nozzle according to claim 5, wherein said means for sustaining comprise at least two blades (70) extending from the axis of revolution of said diffusion chamber (60) up to its peripheral contour and being distributed uniformly about this axis, each of said blades (70) extending in a plane passing through an axis perpendicular to the axis of revolution of said diffusion chamber (60) and tilted in the sense of rotation of said stream.

7. Nozzle according to any one of the claims 1 to 6, comprising at least one truncated conical intermediate diffusion chamber (50) placed between said expansion chamber (30) and said diffusion chamber (60), and having a section that widens in the direction of the diffusion chamber (60).

8. Nozzle according to claim 7, comprising lateral water inlets (100) situated between said diffusion chamber (60) and said intermediate diffusion chamber (50).

9. Nozzle according to claim 8, wherein the inlet diameter of said diffusion chamber (60) is greater than the outlet diameter of said intermediate diffusion chamber (50), the inlet of said diffusion chamber (60) overlapping the outlet of said intermediate diffusion chamber (50) to create spaces between said chambers, said spaces constituting said lateral water inlets (101).

10. Nozzle according to any one of the claims 7 to 9, wherein the angle γ of said truncated conical diffusion chamber (60) relative to its axis of revolution and the angle β of said intermediate diffusion chamber (50) relative to its axis of revolution are identical.

11. Nozzle according to any one of the claims 7 to 9, wherein the angle γ of said truncated conical diffusion chamber (60) relative to its axis of revolution is

greater than the angle β of said intermediate diffusion chamber (50) relative to its axis of revolution.

12. Nozzle according to any one of the claims 7 to 11 wherein the value of the angles γ of said truncated conical diffusion chamber (60) relative to its axis of revolution and β of said intermediate diffusion chamber (50) relative to its axis of revolution ranges from 0 to 30°.

13. Nozzle according to any one of the claims 3 to12, wherein the angle α of tilt of the axis of said apertures (901) ranges from 20° to 60°**.**

14. Nozzle according to any one of the claims 6 to 13, wherein the angle φ of tilt of said blades (70) ranges from 20° to 60°.