CLAIMS

1. A loading and/or unloading tower (2) for a tank (1) intended for storing a liquefied gas, comprising an upper end intended to be suspended from a ceiling wall (9) of said tank (1) and a lower end, said loading and/or unloading tower (2) comprising at least one first and one second vertical mast (11, 12) that are attached to each other by crossmembers (14); said loading and/or unloading tower (2) being further equipped with a device for spraying liquefied gas comprising at least one first and one second nozzle (26, 27, 36, 37) that are respectively capable of spraying liquefied gas along a first and a second spray cone (32, 33, 34) respectively directed along a first and a second central direction (d1, d2), the first and the second nozzles (26, 27, 36, 37) being arranged such that:
- the first and second central directions (d1, d2) each have a vertical component oriented towards the lower end of the loading and/or unloading tower (2); and that
- the first and second vertical masts (11, 12) respectively have a surface exposed to the first and second spray cones (32, 33).

2. The loading and/or unloading tower (2) as claimed in claim 1, further comprising a third vertical mast (13) that is attached to the first and second vertical masts (11, 12) by crossmembers (14), the first, second and third vertical masts (11, 12 ,13) defining a prism with a triangular cross section, the device for spraying liquefied gas comprising a third nozzle (28, 38) that is capable of spraying the liquefied gas along a third spray cone directed along a third central direction (d3), the third nozzle being arranged such that the third vertical mast (13) has a surface exposed to the third spray cone (34).

3. The loading and/or unloading tower (2) as claimed in claim 2, in which the first, second and third nozzles (26, 27, 28, 36, 37, 38) are further arranged such that said exposed surface of each of the first, second and third vertical masts (11, 12, 13) extends over more than 80% of the height of said first, second or third vertical mast (11, 12, 13).

4. The loading and/or unloading tower (2) as claimed in claim 2 or 3, in which the first, second and third nozzles (26, 27, 28) are further arranged such that all of the crossmembers (14) placed, in a portion of the prism with a triangular cross section extending over at least 80% of the height of the first, second and third vertical masts (11, 12, 13), have a surface exposed to one or more of the first, second and third spray cones (32, 33, 34).

5. The loading and/or unloading tower (2) as claimed in claim 4, in which the surface exposed to one or more of the first, second and third spray cones (32, 33,

34) of each of the crossmembers (14) extends over the entire length of said crossmember (14).

6. The loading and/or unloading tower (2) as claimed in any one of claims 2 to 5, in which the device for spraying liquefied gas comprises a spray boom (19) placed close to the upper end of the loading and/or unloading tower (2) and supporting the first, second and third nozzles (26, 27, 28).

7. The loading and/or unloading tower (2) as claimed in claim 6, in which the spray boom (19) comprises a central portion (29) and two lateral portions (30, 31) that are inclined with respect to the central portion (29), the central portion (29) and the two lateral portions (30, 31) being respectively equipped with the first, second and third nozzles (26, 27, 28).

8. The loading and/or unloading tower (2) as claimed in claim 7, in which the central portion (29) of the spray boom (19) is placed parallel to a first face of the prism with a triangular cross section defined by the second and third vertical masts (12, 13) and is centered with respect to a plane perpendicular to said first face and passing through the first vertical mast (11).

9. The loading and/or unloading tower (2) as claimed in claims 7 or 8, in which the lateral portions (30, 31) are inclined with respect to the central portion (29) so as to be away from the first vertical mast (11).

10. The loading and/or unloading tower (2) as claimed in any one of claims 2 to 9, in which the first, second and third nozzles (26, 27, 28) are positioned such that the first, second and third central directions (d1, d2, d3) each have a horizontal component, the horizontal component of the first central direction (d1) being oriented towards the first vertical mast (11), the horizontal component of the second central direction (d2) being oriented towards a face of the prism with a triangular cross section that is defined by the first and second vertical masts (11,12) and the horizontal component of the third central direction (d3) being oriented towards a face of the prism with a triangular cross section that is defined by the first and third vertical masts (11, 13).

11. The loading and/or unloading tower (2) as claimed in any one of claims 2 to 10, in which the first, second and third central directions (d1, d2, d3) each form an angle β that is between 20 and 40° with respect to the vertical direction.

12. The loading and/or unloading tower (2) as claimed in any one of claims 2 to 11, in which the first, second and third nozzles (26, 27, 28) each have a spraying angle between 50 and 80°.

13. The loading and/or unloading tower (2) as claimed in any one of claims 2 to 12, in which the first, second and third nozzles (26, 27, 28) are positioned such that the second and third central directions (d2, d3), projected in a horizontal plane, are inclined by an angle between 45 and 60° with respect to the first central direction (d1).

14. The loading and/or unloading tower (2) as claimed in any one of claims 1 to 3, in which the first and second nozzles (36, 37) are arranged to spray the liquefied gas respectively into the first and second vertical masts (11, 12).

15. The loading and/or unloading tower (2) as claimed in claim 14, in which the first and second nozzles (36, 37) are each housed in a respective tapping connection (43) leading to the interior of the first or the second vertical mast (11, 12).

16. The loading and/or unloading tower (2) as claimed in claim 15, in which the first and second vertical masts (11, 12) respectively extend coaxially to a first and a second central axis (A) and in which the first and second central directions (d1, d2) are respectively oriented parallel to the first and second central axis (A).

17. The loading and/or unloading tower (2) as claimed in claim 16, in which the first and second central directions (d1, d2) are respectively oriented coaxially to the first and second central axis (A).

18. The loading and/or unloading tower (2) as claimed in any one of claims 15 to 17, in which the first and second vertical masts (11, 12) each have an upper portion intended to protrude above the ceiling wall (9) of said tank (1) and in which each tapping connection (43) leads into the upper portion of one of the first and second vertical masts (11, 12) or in an elbowed portion (40, 41, 42) connected to said upper portion

19. The loading and/or unloading tower (2) as claimed in any one of claims 1 to 18, in which at least one of the first, second and third vertical masts (11,12, 13) is hollow and is connected to an unloading pump (15) so as to form an unloading line.

20. A sealed and thermally insulating tank comprising a loading and/or unloading tower (2) as claimed in any one of claims 1 to 19.

21. A sealed and thermally insulating tank comprising a loading and/or unloading tower (2) as claimed in any one of claims 6 to 9 comprising a liquid dome (10) protruding upwards from the ceiling wall (9) and having a cover (35), said loading and/or unloading tower (2) being suspended from said cover (35) and the spray boom (19) being housed inside said liquid dome (10).

22. A ship (70) for transporting a fluid, the ship comprising a hull (72) and a

tank (71) as claimed in claim 20 or 21 placed in the hull (72).

23. A method for loading or unloading a ship (70) as claimed in claim 22, in which a fluid is routed through insulated pipes (73, 79, 76, 81) from or to a floating or onshore storage installation (77) to or from the tank in the ship (71).

24. A system for transferring a fluid, the system comprising a ship (70) as claimed in claim 22, insulated pipes (73, 79, 76, 81) arranged so as to connect the tank (71) installed in the hull of the ship to a floating or onshore storage installation (77) and a pump for driving a fluid through the insulated pipes from or to the floating or onshore storage installation (77) to or from the tank in the ship.