**CLAIMS**

**1.** A gas supply system (100) for supplying gas to at least one gas-consuming appliance (300) equipping a ship (70), the supply system (100) comprising at least:

– one gas supply line (123) for supplying gas to the at least one gas-consuming appliance (300), said gas supply line being configured to be passed through by gas taken in the liquid state from a tank (200) and subjected to a pressure lower than a pressure of the gas in a headspace (201) of the tank (200),

- one first compression member (120) configured to compress the gas from the gas supply line (123) for supplying gas to the at least one gas-consuming appliance (300),

- one second compression member (130),

characterized in that the first compression member (120) and the second compression member (130) alternately compress the gas in the gaseous state from the gas supply line (123) and gas taken in the gaseous state from the headspace (201) of the tank (200), the gas supply system (100) comprising at least one conduit (129) arranged between a conduit (109) ensuring the supply of the first compression member (120) and/or the second compression member (130) with gas taken in the gaseous state from the headspace (201) of the tank (200) and intended to supply the at least one gas-consuming appliance (300), and an inlet (125) of the first compression member (120), at least one first flow control means (183) being arranged on this conduit (129).

**2.** The gas supply system (100) as claimed in the preceding claim, comprising at least one heat exchanger (110) configured to implement a heat exchange between the gas which flows in the supply line (123) and gas taken in the liquid state from the tank (200).

**3.** The gas supply system (100) as claimed in the preceding claim, wherein the heat exchanger (110) is equipped with at least one first pass (111) configured to be supplied with the gas taken in the liquid state from the tank (200) of the ship (70) and at least one second pass (112) configured to be supplied with the gas subjected to a pressure lower than the pressure of the gas in the headspace (201) of the tank (200),

**4.** The system (100) as claimed in the preceding claim, comprising at least one first pump (140) configured to supply the first pass (111) of the heat exchanger (110), one second pump (141) configured to supply the second pass (112) of the heat exchanger

(110), at least one expansion means (170) being arranged on the supply line (123), between the second pump (141) and the second pass (112) of the heat exchanger (110).

**5.** The system (100) as claimed in one of the preceding claims, wherein the first compression member (120) and the second compression member (130) suck in the gas taken from the headspace (201) of the tank (200).

**6.** The system (100) as claimed in one of the preceding claims, comprising as a compression member only the first compression member (120) and the second compression member (130).

**7.** The system (100) as claimed in one of the preceding claims, comprising at least one reliquefaction system (400) for gas compressed by the first compression member (120) and/or by the second compression member (130).

**8.** The system (100) as claimed in the preceding claim, in which the reliquefaction system (400) comprises at least one first heat exchanger (410) equipped with at least one first pass (411) configured to be passed through by gas compressed by the first compression member (120) and/or by the second compression member (130) and with at least one second pass (412) configured to be passed through by gas taken in the gaseous state from the headspace (201) of the tank (200).

**9.** The system (100) as claimed in the preceding claim, wherein the reliquefaction system (400) comprises at least one second heat exchanger (420) configured to implement a heat exchange between compressed gas leaving the first pass (411) of the first heat exchanger (410) and gas taken in the liquid state from the tank (200).

**10.** The system (100) as claimed in one of the preceding claims, wherein the first compression member (120) is configured to be supplied with gas having a pressure between 0.35 and 0.7 bar and to compress this gas to a pressure between 2 bar and 13 bar, and wherein the second compression member (130) is configured to be supplied with gas having a pressure equivalent to 1 bar and to compress it to a pressure between 5 bar and 20 bar.

**11.** The system (100) as claimed in one of claims 1 to 10, wherein the first compression member (120) and the second compression member (130) are connected in series with each other.

**12.** The system (100) as claimed in the preceding claim, wherein at least one first conduit (128) is arranged between an outlet (124) of the first compression member (120) and an inlet (131) of the second compression member (130), at least one pressure control means (182) being arranged on this at least one first conduit (128).

**13.** The system (100) as claimed in the preceding claim, wherein at least the second conduit (129) is arranged between an outlet of the second pass (412) of the first heat exchanger (410) and an inlet (125) of the first compression member (120).

**14.** The system (100) as claimed in one of claims 11 to 13, wherein the first compression member (120) is configured to be supplied with gas having a pressure of between 0.35 bar and 0.7 bar and to compress it to a pressure of between 2 bar and 6 bar, and wherein the second compression member (130) is configured to be supplied with gas having a pressure equivalent, or substantially equivalent, to 1 bar and to compress it to a pressure of between 5 bar and 20 bar.

**15.** A ship (70) for transporting liquefied gas, comprising at least one tank (200) of a liquefied gas cargo, at least one evaporated-gas-consuming appliance (300) and at least one system (100) for supplying gas to the at least one gas-consuming appliance (300) as claimed in one of the preceding claims.

**16.** The ship (70) as claimed in the preceding claim, comprising at least one first gas-consuming appliance (300) configured to be supplied with gas compressed at a first pressure, and at least one second gas-consuming appliance (301) configured to be supplied with gas compressed at a second pressure, the first gas-consuming appliance (300) and the second gas-consuming appliance (301) both being configured to be supplied by the at least one supply system (100), and the first supply pressure of the first gas-consuming appliance (300) being higher than the second supply pressure of the second gas-consuming appliance (301).

**17.** A system (100) for loading or unloading a gas in a liquid state which combines at least one onshore means and at least one ship (70) for transporting gas in the liquid state as claimed in the preceding claim.

**18.** A method for loading or unloading a gas in a liquid state from a ship (70) for transporting gas as claimed in claim 15.