CLAIMS

1. A system (1) for stowing, preserving and distributing fodder in ships for transporting large quantities of animals, characterized in that it comprises:

– at least one silo (2, 3) for storing the fodder, located in a region of the ship (N) that is located below deck;

– means (4) for automated drawing of the fodder from said storage silo (2, 3) to convey it into at least one intermediate region (5) located at a higher level than the level at which the compartments (6) for the animals to be fed are located;

– means (7) for the automated distribution of the fodder from said intermediate region (5) to said compartments (6) for the animals to be fed.

2. The system (1) according to claim 1, characterized in that it comprises means (8) for the automated loading of the fodder into said at least one storage silo (2, 3).

3. The system (1) according to claim 1, characterized in that said at least one storage silo (2, 3) comprises at least two storage silos (2, 3) arranged symmetrically with respect to the longitudinal median plane (PML) of the ship (N).

4. The system (1) according to one or more of the preceding claims, characterized in that said automated loading means (8) and/or said automated drawing means (4) and/or said automated distribution means (7) comprise chain-type conveyors (9, 18, 19, 20, 21, 22, 29, 30, 31, 33, 34) and/or bucket elevators (27, 28).

5. The system (1) according to one or more of the preceding claims, characterized in that said automated loading means (8) comprise a chain-type loading conveyor (9), which is arranged transversely to the longitudinal median plane (PML) of the ship (N) at a higher level than that of said at least one storage silo (2, 3); said loading conveyor (9) being provided, in a downward region, with discharge outlets (16) which are mutually spaced

along the longitudinal extension of the loading conveyor (9) and are controlled by means of shutters that can be driven and that supply filling conveyors (18, 19) of the chain type, which are adapted to convey and distribute the fodder in a corresponding storage silo (2, 3).

6. The system (1) according to one or more of the preceding claims, characterized in that said automated drawing means (4) comprise drawing conveyors (21, 22) of the chain type, which are arranged below said at least one storage silo (2, 3) at discharge outlets (23, 24) of the storage silo (2, 3) which are controlled by means of shutters that can be driven; said drawing conveyors (21, 22) supplying at least one bucket elevator (27, 28) which is adapted to discharge the fodder, drawn from said at least one storage silo (2, 3), to said intermediate region (5).

7. The system (1) according to one or more of the preceding claims, characterized in that it comprises at least two bucket elevators (27, 28), which are arranged symmetrically with respect to said longitudinal median plane (PML) of the ship (N); between said drawing conveyors (21, 22) and said bucket elevators (27, 28) exchange or bypass conveyors (29, 30) of the chain type being provided for transferring the fodder from said drawing conveyors (21, 22) to one or to the other of said bucket elevators (27, 28).

8. The system (1) according to one or more of the preceding claims, characterized in that said bucket elevators (27, 28) supply a transverse distribution conveyor (31) of the chain type, which is arranged substantially horizontally at said intermediate region (5) and is oriented transversely to said longitudinal median plane (PML); said automated distribution means (7) comprising longitudinal distribution conveyors (33, 34) of the chain type, which are arranged below said transverse distribution conveyor (31) and are oriented longitudinally with respect to the ship (N); said longitudinal distribution conveyors (33, 34) being supplied by discharge outlets (32) of said transverse distribution conveyor (31) which are mutually spaced along the longitudinal extension of said transverse distribution

conveyor (31) and are controlled by corresponding shutters that can be driven; said longitudinal distribution conveyors (33, 34) supplying, by means of discharge ports (35, 36) that are spaced along the longitudinal extension of the corresponding longitudinal distribution conveyor (33, 34) and are controlled by corresponding shutters that can be driven, ducts (37, 38) for gravity distribution of the fodder, which lead into troughs located in the several compartments (6) for the animals to be fed, which are arranged below said intermediate region (5).

9. The system (1) according to one or more of the preceding claims, characterized in that said longitudinal distribution conveyors (33, 34) are provided with return discharge outlets (39, 40) which are arranged above at least one of said storage silos (2, 3) and are connected to corresponding discharge ducts (41, 42) for discharging into a storage silo (2, 3) the excess fodder.

10. The system (1) according to one or more of the preceding claims, characterized in that said transverse distribution conveyor (31) is provided with at least one return discharge outlet (43, 44) which is located above at least one of said storage silos (2, 3) and is connected to a corresponding discharge duct (45, 46) for discharging into a storage silo (2, 3) the excess fodder.

11. The system (1) according to one or more of the preceding claims, characterized in that said transverse distribution conveyor (31) is provided with at least one discharge outlet (47) which can be connected to extraction means (48) for discharging the fodder outside the ship (N).

12. The system (1) according to one or more of the preceding claims, characterized in that it comprises a control and monitoring element (50) of the programmable electronic type, which is functionally connected to said shutters that can be driven, to said conveyors (9, 18, 19, 20, 21, 22, 29, 30, 31, 33, 34) and to said bucket elevators (27, 28) for their actuation according to preset programs.

CLAIMS

l. A system (l) for stowing, preserving and distributing fodder in ships for transporting large quantities of animals, characterized in that it comprises:

- at least one silo (2, 3) for storing the fodder, located in a region of the ship (N) that is located below deck;
- automated drawing means (4) for drawing of the fodder from said storage silo (2, 3) to convey it into at least one intermediate region (5) located at a higher level than the level at which the compartments (6) for the animals to be fed are located;
- automated distribution means (7) for the distribution of the fodder from said intermediate region (5) to said compartments (6) for the animals to be fed.
- automated loading means (8) for the loading of the fodder into said at least one storage silo (2, 3);
- a control and monitoring element (50) of the programmable electronic type, operatively connected to said automated drawing means (4) and said automatic loading means (8) for their operation according to preset programs to ensure the stability of the vessel during the filling and/or emptying of said at least one storage silo (2,3).

2. The system (l) according to claim l characterized in that said at least one storage silo (2, 3) comprises at least two storage silos (2, 3) arranged symmetrically with respect to the longitudinal median plane (PML) of the ship (N).

3. The system (l) according to one or more of the preceding claims, characterized in that said automated loading means (8) and/or said automated drawing means (4) and/or said automated

distribution means (7)comprise chain-type conveyors (9, 18, 19, 20, 21, 22, 29, 30, 31, 33, 34)and/or bucket elevators (27, 28).

4.The system (l) according to one or more of the preceding claims, characterized in that said automated loading means (8) comprise a chain-type loading conveyor (9), which is arranged transversely to the longitudinal median p lane (PML) of the ship (N) at a higher level than that of said at least one storage silo (2, 3); said loading conveyor (9) being provided, in a downward region, with discharge outlets (16) which are mutually spaced along the longitudinal extension of the loading conveyor (9) and are controlled by means of shutters that can be driven and that supply filling conveyors (18, 19) of the chain type, which are adapted to convey and distribute the fodder in a corresponding storage silo (2, 3).

5. The system (l) according to one or more of the preceding claims, characterized in that said automated drawing means (4) comprise drawing conveyors (21, 22) of the chain type, which are arranged below said a t least one storage silo (2, 3) at discharge outlets (23, 24) of the storage silo (2, 3)which are controlled by means of shutters that can be driven; said drawing conveyors (21, 22) supplying at least one bucket elevator (27, 28) which is adapted to discharge the fodder, drawn from said at least one storage silo (2,3), to said intermediate region (5).

6.The system (l) according to one or more of the preceding claims, characterized in that it comprises at least two bucket elevators (27, 28), which are arranged symmetrically with respect to said longitudinal median plane (PML) of the ship (N); between said drawing conveyors (21, 22) and said bucket elevators (27, 28) exchange or bypass conveyors (29, 30) of the chain type being provided for transferring the fodder from said drawing conveyors (21, 22) to one or to the other of said bucket elevators (27, 28).

7.The system (l) according to claims 5 or 6, characterized in that said bucket elevators (27, 28) supply a transverse distribution conveyor (31) of the chain type, which is arranged substantially horizontally at said intermediate region (5) and is oriented transversely to said longitudinal median plane (PML); said automated distribution means(7) comprising longitudinal distribution conveyors (33, 34) of the chain type, which are arranged below said transverse distribution conveyor (31) and are oriented longitudinally with respect to the ship (N; said longitudinal distribution conveyors (33, 34) being supplied by discharge outlets (32) of said transverse distribution conveyor (31) which are mutually spaced along the longitudinal extension of said transverse distribution (31) and are controlled by corresponding shutters that can be driven; said longitudinal distribution conveyors (33, 34) supplying, by means of discharge ports (35, 36) that are spaced along the longitudinal extension of the corresponding longitudinal distribution conveyor (33, 34)and are controlled by corresponding shutters that can be driven, ducts (3 7,38) for gravity distribution of the fodder, which lead into troughs located in the several compartments (6) for the animals to be fed, which are arranged below said intermediate region (5).

8.The system (l) according to claim 7, characterized in that said longitudinal distribution conveyors (33, 34) are provided with return discharge outlets (39, 40) which are arranged above at least one of said storage silos (2, 3) and are connected to corresponding discharge ducts (41, 42) for discharging into a storage silo (2, 3) the excess fodder.

9. The system (l) according to claim 7, characterized in that said transverse distribution conveyor (31) is provided with at least one return discharge outlet (43, 44) which is located above at least one of said storage silos (2, 3) and is

connected to a corresponding discharge duct (45, 46) for discharging into a storage silo (2, 3) the excess fodder.

10. The system (l) according to claim 7, characterized in that said transverse distribution conveyor (31) is provided with at least one discharge outlet (47) which can be connected to extraction means (48) for discharging the fodder outside the ship (N).

11. The system (l) according to one or more of the preceding claims, characterized in that it comprises a control and monitoring element (50) of the programmable electronic type, which is functionally connected to said shutters that can be driven, to said conveyors (9, 18, 19, 20, 21, 22, 29, 30, 31, 33, 34) and to said bucket elevators (27, 28) for their actuation according to preset programs.