

PATENT CLAIMS

1. An ammunition transfer system (1) for reversible transfer of ammunition (2) in an automatic cannon (5), comprising:
- 5 a primary magazine (4), at least one secondary magazine (3), a hoisting device (7) comprising a chain drive arrangement (8) for the transport of the at least one secondary magazine (3) to the primary magazine (4), wherein the system comprises a docking and transfer arrangement (60) for
- 10 docking of the secondary magazine (3) with the primary magazine (4) for transfer of ammunition (2) between the magazines (3, 4), wherein the secondary magazine (3) and the primary magazine (4) comprise a respective chain conveyor (17) for feeding ammunition to or from an ammunition outlet
- 15 (18, 19), wherein the respective chain conveyors are driven synchronously with one another via at least one drive arrangement (23) for driving the secondary magazine (3) and the primary magazine (4) during the transfer of ammunition (2) between the magazines (3, 4).
- 20 2. The ammunition transfer system (1) as claimed in claim 1, wherein the hoisting device (7) is arranged in the form of two vertical self-supporting pairs of rails (30, 31) beneath the primary magazine (4), being a front pair of rails (30) and a rear pair of rails (31), configured for the
- 25 hoist transport of a secondary magazine (3), wherein the chain drive arrangement (8) of the hoisting device (7) is a freestanding construction separated from the two pairs of rails (30, 31) and is attached and fixed to the outside of the two front pairs of rails (30).
- 30 3. The ammunition transfer system (1) as claimed in claims 1 or 2, wherein the hoisting device (7) is arranged in the form of a self-supporting framework comprising two parallel side-mounted vertical pairs of members (40) between

an ammunition store (6) and the primary magazine (4) of the automatic cannon (5), wherein the two pairs of members (40) are each linked together via a lower pair of transverse members (41), two intermediate pairs of transverse members (42) and an upper pair of transverse members (43), wherein, arranged on the insides of the two vertical pairs of members (40), are four vertical parallel support rails and slide rails (44, 45), two being two front support rails (44) and two being two rear support rails (45), between which rails the secondary magazine (3) is transported upwards and downwards to the primary magazine (4) via the chain drive arrangement (8) of the hoisting device (7), wherein the chain drive arrangement (8) is arranged in the framework in the form of a loop on the inside of the pair of members (40) of the framework via chain wheels and drive wheels mounted on the three pairs of transverse members (41, 42, 43) of the framework.

4. The ammunition transfer system (1) as claimed in any of claims 1-3, wherein the ammunition loading system (1) comprises a common drive arrangement (23) for synchronized driving of the secondary magazine (3) and the primary magazine (4) during the transfer of ammunition (2) from the secondary magazine (3) till the primary magazine (4).

5. The ammunition transfer system (1) as claimed in any of claims 1-3, wherein the ammunition loading system (1) comprises two separate drive arrangements for independent driving of the secondary magazine (3) and the primary magazine (4) during the transfer of mixed types of ammunition (2) from the secondary magazine (3) to different positions in the primary magazine (4).

6. The ammunition transfer system (1) as claimed in claim 5, wherein the ammunition loading system (1) comprises a switching unit for switching from the common drive

arrangement (23) to two separate drive arrangements and vice versa.

7. The ammunition transfer system (1) as claimed in any of claims 1-6, wherein the ammunition loading system (1) comprises a programmable control and monitoring unit (80) for controlling and monitoring of the hoisting device (7) and the docking and transfer arrangement (60).

8. The ammunition transfer system (1) as claimed in any of the foregoing claims, wherein the docking and transfer arrangement (60) comprises four locking bolts (61) arranged in the corners of the ammunition inlet (19) of the primary magazine (4), four preloaded, V-shaped projecting articulations (64), movably connected to the four movable locking bolts (61), so that the locking bolts (61), during activation of the articulations (64), are displaced radially from a closed blocking position into an open position in the ammunition inlet of the primary magazine (4), wherein the secondary magazine (3) comprises four gate devices (87) each one enclosed by a casing (91), arranged in the corners of the ammunition outlets (18) of the secondary magazines (3), each comprising a contact surface (63), a toothed wheel (88), a chain wheel (89) and a chain link (90) arranged in conjunction with the chain wheel (89) which is driven by the toothed wheel (88), and when the secondary magazine (3) is hoisted up towards the primary magazine (4) and the articulation (64) meets the secondary magazine is thereby forced sideways so that the ammunition outlet (18) is opened at the same time as the primary magazine pushes the contact surface (63) down onto the secondary magazine (3) which drives the toothed wheel and the chain wheel (88, 89) in order to draw back the chain link (90), wherein the ammunition outlet (18) in the secondary magazine (3) is

opened so that ammunition (2) can be transferred between the primary (4) and the secondary magazine (3).

9. A method for reversible transfer of ammunition in an ammunition transfer system (1) as claimed in any of claims 5 1-8, wherein the method comprises the following steps;
- transporting a secondary magazine (3) to the primary magazine (4) via a hoisting device (7),
 - docking the secondary magazine (3) with the primary magazine (4),
 - 10 - transferring the ammunition (2) in the desired direction between the magazines (3, 4) via the docking and transfer arrangement (60) and via the at least one drive arrangement (23).
10. The method as claimed in claim 9, wherein at least one 15 secondary magazine (3) is arranged in a transport carriage (11) and is subsequently docked to the chain drive arrangement (8) of the hoisting device (7).