Packaging device, assembly comprising such a device and a container, use thereof and a method for filling or withdrawing

The invention relates to a conditioning device, to an assembly comprising such a device and a container, to its use and to a filling or tapping method.

An aspect of the present invention provides a conditioning device intended for engaging with a filling and/or tapping connector of a pressurized-fluid container cock, the conditioning device comprising a body bearing at least one coupling member arranged about a longitudinal axis, the central space situated between the at least one coupling member and the longitudinal axis forming a housing intended to accommodate a filling connector of cylindrical general shape, the at least one coupling member being movable between a moved-away position to allow the introduction of the filling connector into the central space or the exit of the filling connector from the central space, and a moved-in position to ensure coupling of the at least one coupling member with the filling connector, the conditioning device comprising a locking member which is movable with respect to the body and with respect to the coupling member or members between a first active position blocking the at least one coupling member in the moved-in position, and a second inactive position allowing the movement of the at least one coupling member towards the moved-away position, the conditioning device comprising a valve pusher which is movable in a gas transfer duct along the longitudinal axis in order to actuate the opening of at least one valve of the filling connector, the conditioning device additionally comprising a blocking member, the blocking member being movable in a direction parallel to the longitudinal axis between a first upstream position preventing the movement of the at least one coupling member from its moved-away position towards its moved-in position, and a second downstream position allowing the movement of the at least one coupling member from the moved-away

position towards the moved-in position, the blocking member being urged by default towards its working position by a return member, the blocking member comprising an upstream face intended to come into contact with a terminal end of the filling connector, the blocking member being movable from its first position towards its second position during a pushing force of the filling connector on its upstream face when a filling connector penetrates into the central space of the conditioning device characterized in that the upstream face of the blocking member comprises a tightness seal arranged about the longitudinal axis to form sealing between the gas transfer duct and an internal circuit of the filling connector.

The invention relates in particular to a mechanism for rapidly connecting a conditioning (filling and/or tapping) device (or clamp) to a connector of a gas cylinder in order to allow the filling (or a tapping) of said cylinder.

Such devices are described for example in documents FR2962520A1 and EP2737234A1.

These devices describe satisfactory solutions for carrying out filling (or tapping) operations through a connector comprising an isolation valve housed in the connector (separating the high pressure from the external atmosphere) and an anti-dust valve which is flush with the end of the connector.

In the case where the isolation valve separating the high pressure from the external atmospheric pressure is situated at the end of the connector (in particular when it is flush at the terminal end of the connector), the architectures mentioned above are not suitable for realizing a secure fluid-tight connection. For example, for a filling connector of the type described in document EP2783152A1 (two concentric valves flush with the terminal end of the connector), the conditioning tools described above are poorly suited.

One aim of the present invention is to overcome all or some of the disadvantages of the prior art stated above.

To this end, the conditioning device according to the invention, otherwise conforming to the generic definition given thereof by the preamble above, is essentially characterized in that the upstream face of the blocking member comprises a tightness seal

CLAIMS

1. Conditioning device intended for engaging with a filling and/or tapping connector of a pressurized-fluid container cock, the conditioning device comprising a body bearing at least one coupling member arranged about a longitudinal axis, the central space situated between the at least one coupling member and the longitudinal axis forming a housing intended to accommodate a filling connector of cylindrical general shape, the at least one coupling member being movable between a moved-away position to allow the introduction of the filling connector into the central space or the exit of the filling connector from the central space, and a moved-in position to ensure coupling of the at least one coupling member with the filling connector, the conditioning device comprising a locking member which is movable with respect to the body and with respect to the coupling member or members between a first active position blocking the at least one coupling member in the moved-in position, and a second inactive position allowing the movement of the at least one coupling member towards the moved-away position, the conditioning device comprising a valve pusher which is movable in a gas transfer duct along the longitudinal axis in order to actuate the opening of at least one valve of the filling connector, the conditioning device additionally comprising a blocking member, the blocking member being movable in a direction parallel to the longitudinal axis between a first upstream position preventing the movement of the at least one coupling member from its moved-away position towards its moved-in position, and a second downstream position allowing the movement of the at least one coupling member from the moved-away position towards the moved-in position, the blocking member being urged by default towards its first working position by a return member, the blocking member comprising an upstream face intended to come into contact with a terminal end of the filling connector, the blocking member being movable from its first position towards its second position during a pushing

force of the filling connector on its upstream face when said filling connector penetrates into the central space of the conditioning device, characterized in that the upstream face of the blocking member comprises a tightness seal arranged about the longitudinal axis to form sealing between the gas transfer duct and an internal circuit of the filling connector.

2. Conditioning device according to Claim 1, characterized in that the tightness seal of the upstream face of the blocking member is an O-ring compression seal.

3. Conditioning device according to Claim 1 or 2, characterized in that it comprises a pushing member for pushing the blocking member, the pushing member being movable in a direction parallel to the longitudinal axis between a first downstream position and a second upstream position, the conditioning device additionally comprising an actuating device for actuating the pushing member that is configured to control the movement of the pushing member between its first and second positions.

4. Conditioning device according to Claim 3, characterized in that the pushing member comprises a face forming a stop for the return member urging the blocking member towards its working position, towards the upstream side.

5. Conditioning device according to Claim 3 or 4, characterized in that the actuating device for actuating the pushing member is of the mechanical and/or pneumatic and/or magnetic and/or hydraulic type and comprises a manually and/or automatically actuatable switch.

6. Conditioning device according to Claim 5, characterized in that the actuating device for actuating the pushing member comprises the switch which is formed by a push-button or by a pivoting lever and a mechanism for the transmission of force between the switch and the pushing member.

7. Conditioning device according to any one of Claims 1 to 6, characterized in that the locking member is urged towards its active position by a return member such as a spring.

8. Conditioning device according to Claim 7, characterized in that the locking member is movable in translation in a direction parallel to the longitudinal axis, and in that, when the at least one coupling member is in the moved-away position, a stop prevents the passage of the locking member from the inactive position towards the active position, and in that, when the at least one coupling member is in the moved-in position, the passage of the locking member from the inactive position towards the active position is not impeded by the stop.

9. Conditioning device according to any one of Claims 1 to 8, characterized in that it comprises an actuating device for actuating the valve pusher of the mechanical and/or pneumatic and/or magnetic and/or hydraulic type, said actuating device comprising a manually and/or automatically actuatable actuator.

10. The conditioning device according to Claim 9, characterized in that the actuating device for actuating the valve pusher comprises a switch formed by a push-button or a pivoting lever

and a mechanism for the transmission of force between the switch and the valve pusher.

11. Assembly comprising a pressurized-fluid container provided with a filling and/or tapping connector and a conditioning device according to any one of Claims 1 to 10, the filling connector comprising a body of cylindrical general shape extending along a longitudinal axis and the outer surface of which comprises coupling members intended to engage with the coupling members of the conditioning device in order to allow removable coupling between these two entities, the filling connector comprising an internal circuit accommodating at least one valve for closing the internal circuit, said internal circuit opening at a terminal face of said filling connector.

12. Use of a conditioning device according to any one of Claims 1 to 10 or of an assembly according to Claim 11 for filling and/or tapping a pressurized-fluid container, in particular a pressurized-gas cylinder.

13. Method for filling or tapping a container with pressurized fluid, the container comprising a cock provided with a filling connector, the method comprising a mechanical connection, on the filling connector, of a conditioning device according to any one of Claims 1 to 11, the filling connector having a body of cylindrical general shape extending along a longitudinal axis and the outer surface of which comprises coupling members intended to engage with coupling members of the conditioning device in order to allow removable coupling between the filling device and said filling connector, the filling connector

comprising an internal circuit accommodating at least one valve for closing the internal circuit, said internal circuit opening at a terminal face of said filling connector, characterized in that the mechanical connection comprises a step of contact between the blocking member and the terminal face of said filling connector, in which step the tightness seal of the blocking member provides sealing between the duct of the conditioning device and the internal circuit of the filling connector, the method additionally comprising a step of moving the blocking member towards its rest position by relative drawing-together between the conditioning device and the filling connector, and a step of moving the at least one coupling member from its moved-away position towards its moved-in position with coupling on the body of the filling connector.

14. Method according to Claim 13, characterized in that it comprises a step of clamping by pushing the blocking member against the terminal face of said filling connector via a pushing force provided by a movable pushing member controlled by the actuating device.

15. Method according to Claim 14, characterized in that it comprises a step of locking the at least one coupling member in the moved-in position via a movable locking member of the conditioning device.

16. Method according to Claim 14 or 15, characterized in that it comprises a step of moving the valve pusher of the conditioning device in the upstream direction via an actuating

device in order to open at least one closure valve of the internal circuit of the filling connector.