

Filling outlet, its use and filling method

The present invention relates to a pressurized-gas filling nozzle, a unit comprising a connector and a
5 filling nozzle, the use thereof and a corresponding filling method.

More specifically, the invention concerns a filling nozzle designed to engage with a filling connector of a
10 faucet of a pressurized-fluid recipient, including at least one claw extending longitudinally about a longitudinal axis, the central space located between the claw or claws and the longitudinal axis forming an enclosure intended to receive a filling connector of
15 cylindrical overall shape.

The invention concerns in particular the filling of high-pressure gas bottles (for example between 200 and 700 bar).

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The present invention concerns in particular a mechanism for quickly connecting a filling nozzle (or clamp) to a connector of a gas bottle to enable said bottle to be filled.

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Such devices usually have two functions:

- A locking function (i.e. mechanical engagement) of the nozzle to the connector and
- 30 - A fool-proofing system (i.e. a male/female system that only allows a specific nozzle to be connected to a specific type of connector to prevent dangerous connections).

35 To ensure the "fool proofing" function, most manufacturers use lugs on the profile of the filling connector.

However, these connection systems make connection operations more difficult, in particular automatic connection operations.

5 According to another known system, a jaw system of a filling nozzle engages the threads of a threaded connector to enable the unit to be locked. The drawback of such a system relates essentially to safety, since the operator is not able to properly check the quality
10 of the lock. Furthermore, the threads of the threaded connector tend to become damaged, which affects the quality of the mechanical connection.

Document FR2570469 describes a filling nozzle
15 comprising articulated pegs that selectively grip the body of the faucet such as to sealingly hold a gas inlet of the nozzle against the gas inlet of the faucet.

20 This type of engagement and seal is however difficult to implement by operators and does not provide a sufficient guarantee of safety, in particular for filling at industrial rates. The positioning of the filling nozzle in relation to the faucet is also
25 difficult and hard to automate.

Documents US 6,343,630 and DE 92 176 29 describe systems for delivering high-pressure fluid including engagement jaws that are longitudinally movable in
30 relation to a fixed external sleeve.

The jaws and an internal piston can be moved longitudinally under the action of a connection incorporated into the delivery system.

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Document EP 1 447 574 A1 describes a system for the mechanical connection of two shafts.

One objective of this invention is to mitigate some or all of the drawbacks of the prior art as set out above.

For this purpose, the filling nozzle according to the invention, which conforms to the generic definition given in the preamble above, is essentially characterized in that the internal face of the at least one claw located facing the central space is of flat overall shape and has reliefs and/or recesses of set dimensions, the reliefs and/or recesses being spaced relative to one another in a set fashion so that they fit into the matching grooves and/or reliefs formed on the external face of a filling connector, the at least one claw being movable transversely in relation to the longitudinal axis between an "open" position to enable the insertion of a connector in the central space and a "closed" position to enable the internal face of the claws to fit the external face of a connector, said nozzle including a locking member movable between an active position locking the claws in closed position and an inactive position enabling the claws to move to the open position.

Using a simple and cheap mechanism, the invention performs the following functions:

- Engagement to ensure a good locking of a filling nozzle to a connector and
- Fool-proofing, to ensure that the filling nozzle fits the connector it is combined with (or vice versa).

Moreover, the embodiments of the invention may have one or more of the following features:

- The nozzle includes several claws spaced out from each other about the longitudinal axis,

- The nozzle includes at least one claw that can be moved between the open and closed positions by means of a pivoting movement about an axis of articulation,
- The locking member includes a sleeve of tubular overall shape arranged about the at least one claw,
- The sleeve is movable in translation in a direction parallel to the longitudinal axis,
- The locking member is pushed by default towards the active position thereof by a return member.
- 10 - When the at least one claw is in open position, a stop prevents the locking member from moving from the inactive position to the active position, and in that, when the at least one claw is in closed position, the movement of the locking member from the inactive position to the active position is not prevented by the
- 15 stop,
- The nozzle includes a movable member for selectively opening the claws, said opening member being movable between a "working" position preventing movement of the claws from the open position to the closed position and
- 20 an "idle" position enabling the movement of the claws from the open position to the closed position,
- The opening member is pushed by default towards the working position thereof by a return member,
- 25 - The opening member opens into the central space located between the at least one claw and the longitudinal axis, the opening member being movable from the working position thereof to the idle position thereof under the direct or indirect mechanical action
- 30 of the filling connector when this latter penetrates the central space of the filling nozzle,
- The nozzle includes a valve actuator that is selectively movable in the central space to actuate the opening of at least one internal valve of a filling
- 35 connector.
- The claws are movable in translation between the open and closed positions,

- The nozzle includes at least one claw movable between the open and closed positions via a bending and/or pivoting movement about an axis of articulation fixed in relation to the base located on an "upstream" extremity of the claw, i.e. the axis of articulation is located at an extremity of the claw that is on the upstream side of the nozzle in the direction of flow of the filling gas in the nozzle,
- The filling nozzle includes three or four claws arranged about the longitudinal axis,
- The stop selectively preventing the passage of the locking member from the inactive position to the active position includes at least one shoulder formed on at least one claw,
- The opening member includes a surface forming a selective stop preventing the approach of the at least one claw as a function of the position of the opening member in relation to the at least one claw,
- The opening member includes a body of tubular overall shape, the external surface of which has a sloping profile intended to accept and guide the at least one claw, to determine the opening of said at least one claw in relation to the longitudinal axis,
- The opening member is movable in translation in a direction parallel to the longitudinal axis,
- The valve actuator of the filling nozzle is movable in translation independently of the position of the at least one claw and of the position of the locking member,
- The return member pushing the opening member includes at least either: a compression spring or a traction spring,
- The nozzle includes a movable part that is sensitive to the internal pressure in the filling nozzle, to selectively lock the locking member in the active position when the filling nozzle is under pressure, i.e. when the nozzle is distributing the pressurized fluid,

- The connector is oriented vertically, i.e. the filling nozzle is mechanically connected vertically from top to bottom to said connector.

5 The invention also concerns a unit comprising a filling connector and a filling nozzle, the filling nozzle having any one of the features set out above or below, the filling connector comprising a body of cylindrical overall shape extending along a longitudinal axis, the
10 external surface of which has transversal grooves and/or reliefs of set dimensions oriented perpendicular to the longitudinal axis of the connector, the grooves and/or reliefs being spaced in a set manner in the longitudinal direction of the connector, the reliefs
15 and/or recesses of the at least one claw matching said grooves and/or reliefs of the connector to enable a selective engagement of the claws to the body of the connector.

20 According to other possible features:

- At least some of the transversal grooves and/or reliefs are formed on the circumference of the body of the connector to enable an engagement of the at least
25 one claw to the body of the connector regardless of the angular position of the at least one claw about the longitudinal axis of the connector,

Thus, the fool-proofing function (i.e. the correct
30 geometric match between the filling nozzle and the connector) needs no angular indexing of one part in relation about the longitudinal axis. This facilitates the connection, in particular a potential automatic connection of the nozzle to the connector.

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According to other possible features:

- The filling nozzle connects mechanically via the claw or claws only to a filling connector with no mechanical attachment to the body of a faucet bearing the connector,
- 5 - The filling connector includes a body forming an internal filling circuit between one upstream extremity connecting to the filling nozzle and one downstream extremity linking a recipient, the connector comprising an isolating valve movable in relation to a seat
- 10 between an upstream closed position of the circuit and a downstream open position of the circuit, said isolating valve being pushed towards the upstream position thereof by a return member, the connector also including a dust valve arranged upstream of the
- 15 isolating valve, said dust valve being movable in relation to the body between an upstream closed position of the upstream extremity of the circuit and a downstream open position of the upstream circuit extremity, said dust valve being pushed towards the
- 20 upstream position thereof by a return member,
- The dust valve has a filter interposed on the route of at least some of the fluid passing between the upstream extremity and the downstream extremity of the circuit, the filter being movable with the dust valve,
- 25 - The dust valve includes a downstream extremity and, when said dust valve is in a given "contact" downstream position opening the upstream extremity of the circuit, this downstream extremity of the dust valve pushes an upstream extremity of the movable isolating valve to
- 30 move the isolating valve towards the downstream open-circuit position thereof.

The invention also relates to a use of a filling nozzle according to any one of the features set out above or

35 below or a unit according to any one of the features set out above or below for filling a pressurized fluid recipient, in particular a pressurized gas bottle.

The invention also concerns a method for filling a recipient with pressurized fluid, said recipient having a faucet with a filling connector provided with a body of cylindrical overall shape extending along a longitudinal axis, the external surface of which includes transversal grooves and/or reliefs of set dimensions oriented perpendicular to the longitudinal axis of the connector, the connector including at least one internal valve, the method comprising a step in which the connector is mechanically connected to a filling nozzle according to any one of the features set out above or below, the internal face of the at least one claw of the filling nozzle matching the external shape of the connector.

According to other possible features:

- The filling method involves a step in which the locking member is locked in the active position when the filling nozzle is under pressure and/or when at least one valve of the filling connector is open,
- The method includes a step in which the at least one valve of the filling connector is opened selectively, the step in which the at least one valve is opened selectively is performed independently of the step in which the filling nozzle is connected mechanically to the connector, in particular the step in which the at least one valve is opened is performed after the step in which the filling nozzle is connected mechanically to the connector.

The invention may also relate to any alternative device or method comprising any combination of the features set out above and below.

Other features and benefits are set out in the description below, provided with reference to the figures in which:

- Figure 1 is a partial perspective view showing a detail of a filling nozzle connecting to a connector according to a possible example embodiment of the invention,
- Figures 2 and 3 are partial longitudinal cross sections showing two successive states in the process of engaging a filling nozzle to a connector according to a possible example embodiment of the invention,
- Figure 4 is a cross section showing a filling nozzle according to a possible example embodiment of the invention,
- Figure 5 shows the filling nozzle from Figure 4 connected to a filling connector in which the filling nozzle begins a process for opening the internal valves of the filling connector,
- Figure 6 is a schematic view of the filling nozzle from Figure 5 mounted on a recipient and in which the filling nozzle opens two internal valves of the filling connector.

The filling nozzle shown in Figure 1 includes three claws 2 extending in a longitudinal direction about a longitudinal axis A. The claws 2 delimit a central space located about the longitudinal axis A forming an enclosure intended to receive a filling connector 1 of cylindrical overall shape (see Figure 1).

In the example described, the filling nozzle includes three claws 2 arranged about the axis 2 but, naturally, a nozzle having one, two or more than three claws 2 would be possible.

The claws 2 are for example arranged symmetrically about the axis A (at 120° from each other).

The internal face of the claws 2 (i.e. the face of the claws 2 turned towards the central space and the axis

A) is preferably flat and includes reliefs 12 and recesses 22 of set dimensions (dimensions determined transversely and perpendicularly to the axis A).

5 Furthermore, the reliefs 12 and recesses 22 are spaced longitudinally in relation to one another in a set manner to fit into the matching grooves 11 and reliefs 21 located on the external face of a filling connector 1 (see Figure 1 and Figure 4), i.e. the reliefs 12 and
10 recesses 22 have set locations in a direction parallel to the axis A when the claws are parallel to this axis A.

Thus, the nozzle fits a given connector geometry,
15 limiting the connection to a specific type of connector, to enable the mechanical connection for compatible applications only (to ensure for example compatibility of the gas type and filling pressure).

20 At least one and preferably all of the claws 2 are movable transversely in relation to the longitudinal axis A between an "open" position to enable the insertion of a connector 1 in the central space (see Figure 2) and a "closed" position to enable the
25 internal face of the claws 2 to fit the external face of a connector 1 (see Figure 5).

For example, the claw or claws 2 can be moved between the open and closed positions by means of a pivoting
30 movement about an axis 20 of articulation. As shown in Figure 1, the axis of articulation of the claws 2 is located at an "upstream" extremity of the claw 2, i.e. at an extremity of the claw 2 located on the upstream side of the nozzle in the direction of flow of the
35 filling gas in the nozzle upstream to downstream (when the nozzle is supplying a filling connector).

Naturally, the movement of the claws 2 between the open and closed positions by means of a bending and/or a translational movement of the claws 2 would be possible as a variant or combination.

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The nozzle also includes a locking member 3 that is movable between an active position locking the claws 2 in closed position and an inactive position enabling the movement of the claws 2 to the open position.

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As shown, the locking member 3 may include a sleeve 3 of tubular overall shape arranged about the claws 2. The sleeve 3 is selectively movable in translation in relation to the claws 2 in a direction parallel to the longitudinal axis A between the inactive position (upstream, see Figures 2, 3 and 4) and the active position (downstream, see Figures 5 and 6).

As shown in Figures 4 and 5, the upstream extremity of the sleeve 3 may be mounted slidably between a lower base 15 and an external casing 16. For example, the base 15 is mounted on the casing 16 by means of one or more attachment members such as screws 17. The base 15 is for example of tubular overall shape and houses a valve actuator 111, which is preferably mobile.

In active position (towards the downstream extremity) the sleeve 3 grips the claws 2 in closed position, i.e. in downstream position, the sleeve 3 forms a mechanical stop preventing the claws 2 from opening. In inactive position (towards the upstream extremity of the nozzle, see Figures 2, 3 and 4), the sleeve 3 enables the claws 2 to move into the open position.

For example, the downstream extremity of the external face of the claws 2 includes a shoulder forming a stop 32 intended to engage the sleeve to define the active and inactive positions of the sleeve 3. Furthermore,

these stops 32 can selectively prevent or enable movement of the sleeve 3 from the inactive position to the active position. In the closed position of the claws 2, the movement of the sleeve 3 from the inactive position to the active position (sliding in the downstream direction) is not prevented by the stop 32.

The sleeve 3 is preferably pushed by default towards the active position thereof (towards the downstream extremity) by a return member 60 such as a compression spring.

For example, the upstream extremity of the spring 60 bears against the base 15.

The nozzle may also preferably include a movable member 4 for selectively opening the claws 2. This opening member 4 has for example a tubular shape and is mounted in the base 15, about the movable valve actuator 111. The opening member 4 is preferably movable in translation along the longitudinal axis A. This opening member 4 is movable between a "working" position preventing movement of the claws 2 from the open position to the closed position and an "idle" position enabling the movement of the claws 2 from the open position to the closed position.

The opening member 4 includes an external surface forming a selective stop preventing or permitting the approach of the claws 2 as a function of the longitudinal position of the opening member 4 in relation to the claws 2.

For example, as shown in Figures 2 to 5, the opening member 4 includes a body of tubular overall shape, the external surface of which has a sloping profile 40 that guides at least one claw 2. For example a relief 12 of the internal face of at least one claw 2 is guided by

contact with the sloping profile 40. The sloping profile 40 therefore causes the at least one claw 2 to open in relation to the longitudinal axis A.

5 The opening member 4 is preferably pushed by default towards the working position thereof (downstream) by a return member 5 such as a compression spring. The spring 5 of the opening member 4 is for example mounted about the valve actuator 111 and bears against this
10 latter.

An example connection of such a filling nozzle to a filling connector 1 is described below.

15 Figure 4 shows a filling nozzle in disconnected position. The claws 2 are in relatively open position. The locking sleeve 3 is locked by the claws 2 in inactive position (upstream). The opening member 4 is in working position (upstream).

20 When the filling nozzle is placed on the filling connector 1 along the longitudinal axis (from right to left in Figure 2), the claws 2 open out if necessary to enable the insertion of the connector 1 into the
25 central space of the filling nozzle. The extremity of the connector 1 is then in contact with the extremity of the opening member 4. The extremity of the connector 1 then pushes the opening member 4 towards the upstream extremity of the filling nozzle against the force of
30 the spring 5. The retreating movement (towards the upstream extremity of the nozzle) of the opening member 4 enables the claws 2 to approach the longitudinal axis A (via the sloping profile 40). The reliefs 12 and recesses 22 of the claws 2 engage with the recesses 11
35 and reliefs 21 of the external surface of the connector 1 (see Figure 3 then Figure 5).

The claws 2 pivot and close onto the connector 1. This engagement is only possible if there is a good geometric fit between the claws 2 and the external profile of the connector 1.

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Preferably, the transversal grooves 11 and/or reliefs 21 are formed about the entire circumference of the body of the connector 1. Thus, the claws 2 can engage with the body of the connector 1 regardless of the angular position of the claws 2 (and of the filling nozzle) about the longitudinal axis of the connector 1.

The approach of the claws 2 enables the sleeve 3 to slide (by means of the spring 60 thereof) automatically downstream above the claws (see Figure 5) to prevent the claws 2 from opening.

Thus, unlocking is prevented and the nozzle remains engaged with the connector 1. To disconnect, the sleeve 3 must first be moved into inactive position (towards the upstream extremity) to enable the claws 2 to open. This movement of the sleeve into inactive position is done manually and/or automatically.

Preferably, the filling nozzle may include an additional safety system (not shown) that makes it possible to prevent unlocking (movement of the sleeve 3 upstream) when the nozzle is under pressure (i.e. when it is supplying gas).

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When the mechanical engagement is effected (see Figure 5), the filling nozzle may command the valve(s) inside the connector 1 to open to supply the pressurized gas.

Preferably, the (mechanical) engagement of the nozzle to the connector 1 is independent of the opening of the valves of the connector and of the passage of the gas.

For example, the filling nozzle includes a valve actuator 111 that is movable in translation by electromechanical and/or hydraulic and/or pneumatic means and/or by means of a manual or automatic control lever 204.

The lever 204 is for example pivoting and transforms for example a rotational movement into a selective movement of the valve actuator 111 along the longitudinal axis A (see Figures 5 and 6).

As shown in a non-limiting manner, the valve actuator 111 may be tubular (the pressurized filling gas passing through the internal channel thereof). The downstream extremity of the valve actuator 111 may include a sealing system to sealingly connect it in the orifice of the filling connector 1 (i.e. inside the connector).

In a preferred but non-limiting embodiment shown in Figures 5 and 6, the filling connector 1 includes a body 200 forming an internal filling circuit 600 between an upstream extremity 300 connecting to the filling nozzle and a downstream extremity 400 linking a recipient 13 (see Figure 6). The connector 1 is preferably mounted on a faucet 112 with or without a relief valve.

The connector 1 includes an isolating valve 7 that is movable in relation to a seat 8 between an upstream closed position of the circuit and a downstream open position of the circuit. The isolating valve 7 is pushed by default towards the upstream position thereof by a return member 9 such as a compression spring.

The connector 1 also includes a dust valve 10 placed upstream of the isolating valve 7. The dust valve 10 is movable in relation to the body 2 between an upstream closed position of the upstream extremity 3 of the

circuit 6 and the downstream open position of the upstream circuit extremity 3.

5 The dust valve 10 is pushed towards the upstream position thereof by a return member 14 such as a compression spring.

10 Preferably, without being limitative, the dust valve 10 may include a filter 102 interposed on the route of at least some of the fluid passing between the upstream extremity 3 and the downstream extremity 4 of the circuit 6, the filter 102 being movable with the dust valve 10.

15 The filter (or filters where applicable) have for example a metal or other structure to retain solid particles, for example larger than 0.05 mm or larger than 0.1 mm or larger than 1 mm or larger than 2 mm (as required).

20 According to an advantageous feature, the dust valve 10 includes a downstream extremity and, when said dust valve 10 is in a given "contact" downstream position opening the upstream extremity 3 of the circuit 6, this
25 downstream extremity of the dust valve 10 pushes an upstream extremity of the movable isolating valve 7 to move the isolating valve 7 towards the downstream open-circuit position thereof.

30 As shown, the dust valve 10 (and the filter 102 thereof) may be moved towards the downstream extremity by mechanical contact of the valve actuator 111 (alternatively, pressurized gas coming from the filling nozzle can move the valve 10 towards the downstream
35 extremity).

Thus, the upstream dust valve 10 can act as an actuator for the downstream isolating valve 7, i.e. the dust

valve 10 can indirectly transmit the force generated by the filling nozzle to the downstream isolating valve 7. Naturally, alternatively this downstream isolating valve 7 may also be moved by the pressure of gas delivered by the filling nozzle.

Alternatively, the isolating valve 7 may include a non-return valve preventing the isolating valve 7 from opening except through mechanical contact (by means of the dust valve 10).

As shown above, while having a simple structure, the invention proposes a highly safe system for connecting a filling nozzle to the connector thereof.

The system for geometrically matching the filling nozzle and the connector (the groove(s) and relief(s) of the connector and the claws 2 of the nozzle) make it possible to prevent the filling nozzle from being erroneously connected to a connector of a recipient unsuitable for the filling nozzle (unsuitable filling conditions or fluid).

This exclusive connection system covers a plurality of geometric filling-nozzle/connector pairings that are similar but different.

For example, by providing two grooves 11 and two reliefs 21 on the connector 1 in different longitudinally offset positions, it is possible to provide a plurality of different contact areas (for example more than thirty).

This system also makes it possible to increase safety when filling the corresponding bottles (for example by preventing a bottle containing oxidant from being connected to a filling nozzle supplying fuel).

The structure according to the invention also makes it possible to implement filling procedures that are particularly efficient in terms of safety for operators in charge of the filling and end users of the faucet
5 and of the gas bottle fitted with such a connector.

Thus, for example, with reference to Figure 5, the movable dust valve 10 can adopt, during movement thereof, at least two sealed positions enabling filling
10 to be secured.

In a first sealed position, the dust valve 10 is moved towards the downstream extremity and opens the upstream inlet 300 of the connector without the isolating valve
15 7 being open (see Figure 5). In this position, with the upstream valve 10 open and the downstream valve 7 closed, the chamber located upstream of the isolating valve 7 can be vacuumized (predetermined low pressure) for example using a filling tool to perform pre-filling
20 tests. In this arrangement, it is in effect possible to measure any leaks coming from the isolating valve 7.

In another sealed position (see Figure 6), the isolating valve 7 can also be opened to perform a fill
25 and/or to purge the circuit of the connector and of the bottle before filling.

On completion of the fill, the isolating valve 7 can be re-closed and the dust valve 10 can be kept open (see
30 Figure 5) to perform any necessary post-filling seal tests, such as the pre-filling tests described above.

Whether or not there is a movable filter on a dust valve 10 (the filter may be omitted), the filling
35 method according to the invention thus helps to improve filling safety by means of the use of the double serial valve mechanism described above.

The filling connector may also be the gas extraction connector, where necessary.

5 The mechanism described above in particular enables filling to be automated, in particular if the connection does not require angular indexing between the filling connector and the filling nozzle.

CLAIMS

1. A filling nozzle designed to engage with a filling
5 connector (1) of a faucet of a pressurized-fluid
recipient, including a base (15, 16) and at least one
claw (2) extending longitudinally about a longitudinal
axis (A), the central space located between the claw or
10 claws (2) and the longitudinal axis (A) forming an
enclosure intended to receive a filling connector (1)
of cylindrical overall shape, the internal face of the
at least one claw (2) located facing the central space
being of flat overall shape and having reliefs (12)
and/or recesses (22) of set dimensions, the reliefs
15 (12) and/or recesses (22) being spaced relative to one
another in a set fashion so that they fit into the
matching grooves (11) and/or reliefs (21) formed on the
external face of a filling connector (1), the at least
one claw (2) being movable in relation to the base (15,
20 16) transversely in relation to the longitudinal axis
(A) between an "open" position to enable the insertion
of a connector (1) in the central space and a "closed"
position to enable the internal face of the claws (2)
to fit the external face of a connector (1), said
25 nozzle including a locking member (3) movable in
relation to the base (15, 16) and in relation to the at
least one claw (2) between an active position locking
the claws (2) in closed position and an inactive
position enabling the claws (2) to move to the open
30 position, characterized in that the locking member (3)
is pushed by default towards the active position
thereof by a return member (60), and in that the nozzle
includes a valve actuator (111) that is selectively
movable in the central space to actuate the opening of
35 at least one internal valve of a filling connector (1),
the valve actuator (111) of the filling nozzle being
movable in translation independently of the position of

the at least one claw (2) and of the position of the locking member (3).

2. The filling nozzle as claimed in claim 1,
5 characterized in that it includes several claws (2) spaced apart from one another about the longitudinal axis (A).

3. The filling nozzle as claimed in claim 1 or 2,
10 characterized in that it includes at least one claw (2) that can be moved between the open and closed positions by means of a pivoting movement about an axis (20) of articulation.

15 4. The filling nozzle according to any one of claims 1 to 3, characterized in that the locking member includes a sleeve (3) of tubular overall shape arranged about the at least one claw (2).

20 5. The filling nozzle as claimed in claim 4, characterized in that the sleeve (3) is movable in translation in a direction parallel to the longitudinal axis (A).

25 6. The filling nozzle according to any one of claims 1 to 5, characterized in that, when the at least one claw (2) is in the open position, a stop (32) prevents the locking member (3) from moving from the inactive position to the active position, and in that, when the
30 at least one claw (2) is in closed position, the movement of the locking member (3) from the inactive position to the active position is not prevented by the stop (32).

35 7. The filling nozzle according to any one of claims 1 to 6, characterized in that it includes a movable member (4) for selectively opening the claws, said opening member (4) being movable between a "working"

position preventing movement of the claws (2) from the open position to the closed position and an "idle" position enabling the movement of the claws (2) from the open position to the closed position.

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8. The filling nozzle as claimed in claim 7, characterized in that the opening member (4) is pushed by default towards the working position thereof by a return member (5).

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9. The filling nozzle as claimed in claim 7 or 8, characterized in that the opening member (4) opens into the central space located between the at least one claw (2) and the longitudinal axis (A), and in that the opening member (4) is movable from the working position thereof to the idle position thereof under the direct or indirect mechanical action of the filling connector (1) when this latter penetrates the central space of the filling nozzle.

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10. The nozzle according to any one of claims 1 to 9, characterized in that it includes at least one claw (2) movable between the open and closed positions via a bending and/or pivoting movement about an axis (20) of articulation fixed in relation to the base (15, 16) located on an "upstream" extremity of the claw (2), i.e. the axis (20) of articulation is located at an extremity of the claw (2) that is on the upstream side of the nozzle in the direction of flow of the filling gas in the nozzle.

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11. The nozzle according to any one of claims 1 to 10, characterized in that it includes three or four claws (2) arranged about the longitudinal axis.

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12. A unit comprising a filling connector (1) and a filling nozzle, characterized in that the filling nozzle corresponds to any one of claims 1 to 11 and in

that the filling connector (1) comprises a body of cylindrical overall shape extending along a longitudinal axis, the external surface of which has transversal grooves (11) and/or reliefs (21) of set
5 dimensions oriented perpendicular to the longitudinal axis of the connector (1), the grooves and/or reliefs (21) being spaced in a set manner in the longitudinal direction of the connector (1), and in that the reliefs (12) and/or recesses (22) of the at least one claw (2)
10 match said grooves and/or reliefs (21) of the connector (1) to enable a selective engagement of the claws (2) to the body of the connector (1).

13. The unit as claimed in claim 12, characterized in
15 that at least some of the transversal grooves (11) and/or reliefs (21) are formed on the circumference of the body of the connector (1) to enable an engagement of the at least one claw (2) to the body of the connector (1) regardless of the angular position of the
20 at least one claw (2) about the longitudinal axis A of the connector (1).

14. The use of a filling nozzle according to any one of claims 1 to 11 or of a unit as claimed in either one
25 of claims 12 or 13 for filling a recipient of pressurized fluid, in particular a bottle of pressurized gas.

15. A method for filling a recipient (13) with
30 pressurized fluid comprising a faucet (112) with a filling connector (1) provided with a body of cylindrical overall shape extending along a longitudinal axis, the external surface of which includes transversal grooves (11) and/or reliefs (21)
35 of set dimensions oriented perpendicular to the longitudinal axis of the connector (1), the connector (1) including at least one internal valve (7, 10), characterized in that the method includes a step in

which the connector (1) is mechanically connected to a filling nozzle as claimed in any one of claims 1 to 11, the internal face of the at least one claw (2) of the filling nozzle matching the external shape of the
5 connector (1).