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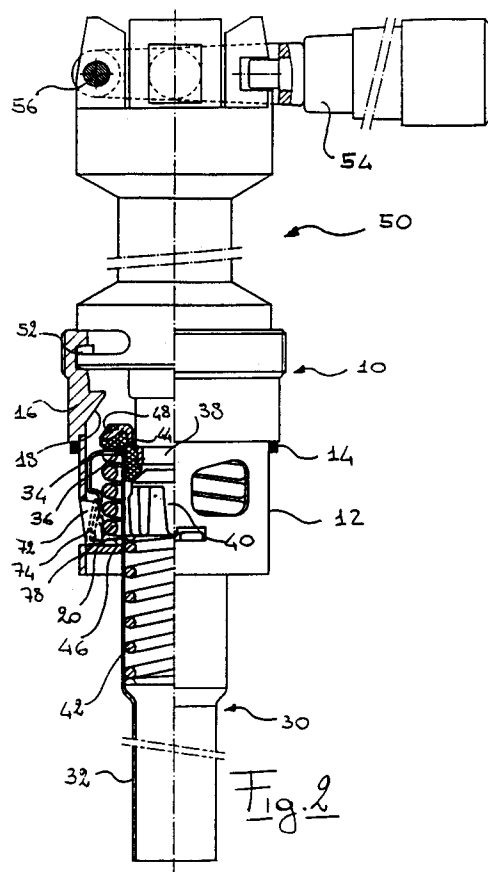
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I-20129 Milano (IT)(54) **Valve device for transportable containers for liquid under pressure.**

(57) Valve device mounted on keg containers particularly for the distribution of beer or other drinks, comprising a double valve with a blockable gas passage and a blockable liquid passage, having a safety system comprising a catch which does not allow the ejection of said valve when the threading is completely unthreaded unless acting with the proper equipment beyond the normal working stroke. Said proper equipment allows the free end of a finger integral with the valve to be engaged between a vertical wall of the catch and a pair of fins also present on said catch for the purpose of effecting the retraction of the catch toward the axis of the valve, making the disassembly of the entire device from the container possible.

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The present invention refers to a valve device in particular for a transportable container of the type adapted to store and deliver a liquid under pressure from a propellant gas.

These types of containers provided with said devices are generally used for the distribution of drinks or liquids in general. Said devices are used particularly in beer containers with an open delivery, said beer containers being kegs with a tap.

In the prior art, different valve devices on transportable containers of the above-mentioned type are known. For this function, each container is provided with a double valve which has both a gas passage and an outlet passage for the liquid from the container by means of the pressure of the gas itself.

This valve is generally mounted on a stub which is mounted in an opening on the upper part of the container; and in some cases, this mounting is done simply with threaded connection means, involving the risk that the valve can cause considerable damage because it could easily come off before the pressure of the gas of the container has been completely released and can, thus, be ejected with a great force by this pressure immediately when the threading is loosened.

In other cases, the valve is mounted in such a way that it cannot completely or partially be removed from the container until the pressure in same is released completely and, thus, the above-mentioned risk is fundamentally eliminated.

A device of this type, in which the safety system is realized through a catch placed in an opening of the valve housing and is adapted to rier around the lower border of the opening, is known. Said catch is provided with a protrusion toward the inside of the valve on which a finger will act, which moves co-axially to the valve so that in the bottom position of the stroke, said catch, by rotating around the lower border of the opening, is retracted in the sectional shape of the valve in such a way that the valve itself can be dismantled.

The inconveniences which this solution presents are several: the assembly of the valve is very complicated since the insertion of the catch into the opening does not allow the positioning of the finger without proper equipment; regarding maintenance of the valves, that represents a considerable rise in costs; lastly, since the retraction of the catch is effected by the finger which acts on the lower protrusion of the same finger, this occurs only at the end of the active stroke of the special wrench, with the need to regulate with absolute precision the stroke of same. It could easily be that the normal machining, mounting, and wear tolerances of the pieces cause an incomplete retraction for the catch or cause reciprocal forcing of the numerous elements involved.

Further, as indicated above, in the known devices, the catch leans against the lower border of a proper opening present in the valve housing; again around said lower border the rotation of said catch occurs in the above-described manner. The fact that the rotation occurs around said lower border of the opening implies that said catch is of a form such that, also in the position in which the catch retracts for the disassembly of the entire valve complex, there is always a small lower part of said catch protruding from said valve housing; this small lower part very often causes difficulties of disassembly since it interferes with the hub on which is mounted the device.

The object of the present invention is to provide an improvement to the valves of the above-mentioned type, which cannot be removed completely from the container before the pressure in same has been released; to provide a device which has a simpler and less costly structure which can be mounted and disassembled more easily and quickly than the known art without requiring high machining tolerances and continuous adjustments.

The valve device mounted on keg containers particularly for the distribution of beer and other drinks comprises a double valve with a blockable gas passage and a blockable liquid passage, and has a safety system comprising a catch which does not allow the ejection of said valve through the action of gas under pressure which may remain in the container when the threading is completely unthreaded, if not acting with appropriate equipment beyond the normal working stroke and it is characterized in that said catch is provided with a pair of fins and a vertical wall such that the free end of a finger, integral with the valve, can, in a position not corresponding to a normal working stroke, be engaged between said vertical wall and said fins, effecting the retraction toward the valve axis of the protrusions which said catch has for the purpose of allowing the complete disassembly of said valves from the container.

The characteristics of the present invention will be more evident from the description which follows and from the attached drawings in which the various figures show:

- Fig. 1: Frontal view of valve device, partially by cross-section, on which is mounted the head comprising the outlet liquid passage of the entrance of the gas and the handle for the actuation of the entire device;
- Fig. 2: Frontal view of valve device on which is mounted the head-tool necessary to disassemble the valve device from the container to which it is connected;
- Fig. 3: Detailed frontal view of the fins of the catch;

- Fig. 4: Detailed isometric view on a scale of 4:1 of the catch;
- Fig. 5: Isometric cross-sectional view on a scale of 4:1 of the catch;
- Fig. 6: Detailed view of coupling between catch and finger;
- Fig. 7: Detailed cross-sectional view of coupling between catch and finger;
- Fig. 8: Detailed view from above showing the ejecting of the fins of the catch.

In Fig. 1, the valve is mounted on a hub 80 through a simple threading, said hub being connected in an opening placed on the upper part of the container 78 containing a liquid to be delivered. Said container can be made of aluminum, plastics, stainless steel or any other material.

The valve 10 comprises an outer housing 12 which is kept against a ring 14 which acts as a sealing gasket between said external housing and said hub.

A riser pipe part 30 is mounted co-axially on the inside of the valve housing 16. Said riser pipe part 30 comprises a tube 32, of whose shape only the upper part can be seen in the figure, and a valve ring 34, which is positioned on the upper part of the tube 32 and is supported by a collar 36 on same.

The valve ring 34 is realized with an elastic material (e.g., rubber) into which is inserted a reinforcing disk to stabilize the form. On the inside, the valve ring 34 has an opening 38 which, when the valve is not activated, is kept closed by a ring nut 40 by means of a compression spring 42 positioned on the inside of the tube 32 and which leans downward against a protruding surface on the inside of said tube 32.

Externally, the valve ring 34 has a joined conical surface 48 which, when the valve is not activated and maintained against a joined conical surface 18 present on the inside of said valve housing 16 by means of a spring 20 which leans upward against a disk 44, leaning, in turn, against a collar 36 integral with the upper part of the tube 32. Below, said spring 20 is supported by a sealing ring 46 which is used, through a certain number of protrusions integral with the external housing of the valve, with the housing itself, allowing to tighten together the various components of the valves 12 to attain the assembly.

Fig. 1 also illustrates a head 100 coupled to the upper part of said valve through a coupling pin 52. Through said head 100, propellant gas is added to make the liquid contained in the container to be ejected through a proper outlet 102.

The liquid contained in the container can be a drink (e.g., beer, wine or mineral water). It is also possible to use the same apparatus to distribute other products, such as liquid pesticides used in

the field of agriculture.

The head 100 is provided with a handle 104 that can be pressed at its end, making it rotate around the pivot pin 106: thus, an upper position is attained in which the valve is closed and a lower position in which the valve is open, permitting the gas to exit from its container by means of a passage 108, provided with a check valve 110. The pressure of said gas acts to make said liquid go out from said outlet 102.

Through the action of a proper head-tool 50 (see Fig. 2) coupled to the upper part of said valve in an analogous way to that done for head 100, a third position is attained, defined as a bottom position.

In said position, the riser pipe part can be moved axially from below said lower position in contrast with the action of said spring 20.

As mentioned above, said valve 10 is mounted on the tube only through a simple threading in the illustrated example.

Other types of connection can, however, be used, but they do not offer the guarantee of safety at the moment of disassembly of the valve itself from where it is attached. That is due, essentially, to the possibility, as already indicated, of the continued presence of gas under pressure in the container and, thus, said gas can eject said valve with a great force, causing possible harm to the person holding it.

To eliminate this risk, the lower part of the external housing of the present invention is provided with a catch 70 (Figs. 4-8) which leans against said sealing ring 46, and with one or more protrusions 72, which extend to the outside of the external housing of the valve 12 through proper openings present on said walls. Said catch 70 has a vertical wall 74 and two fins 76. Said vertical wall 74 is placed between said protrusions 72 and is perpendicular to same. Said fins are essentially comprised of extensions perpendicular to said protrusions 72 and placed toward the inner side of said external housing of the valve.

When said protrusions 72 are extracted, said vertical wall 74 leans on the internal part of said external housing 12 of the valve in the portion between the openings which allow the ejection of said protrusions 72 (Fig. 3).

Against said vertical walls 74, on the face turning toward the internal side of the walls of said external housing 12 of the valve, the free end of a finger 78 acts, maintaining the catch depressed in the safety position; that is, with said protrusions 72 turning outward.

Said finger 78 has an end integral with said disk 44 and is realized with an elastic material such as corrosion-resistant steel springs, also having a free end part spaced from the top and from the

axis of the riser pipe part 30 such that the mounted valve cannot be completely disassembled in any position of the part of the riser pipe part except beyond the normal working stroke.

Moreover, said fins are positioned so as to be used with said finger end 78 when the riser pipe part is beyond the normal working stroke, permitting, as such, the disassembling of the device with proper equipment.

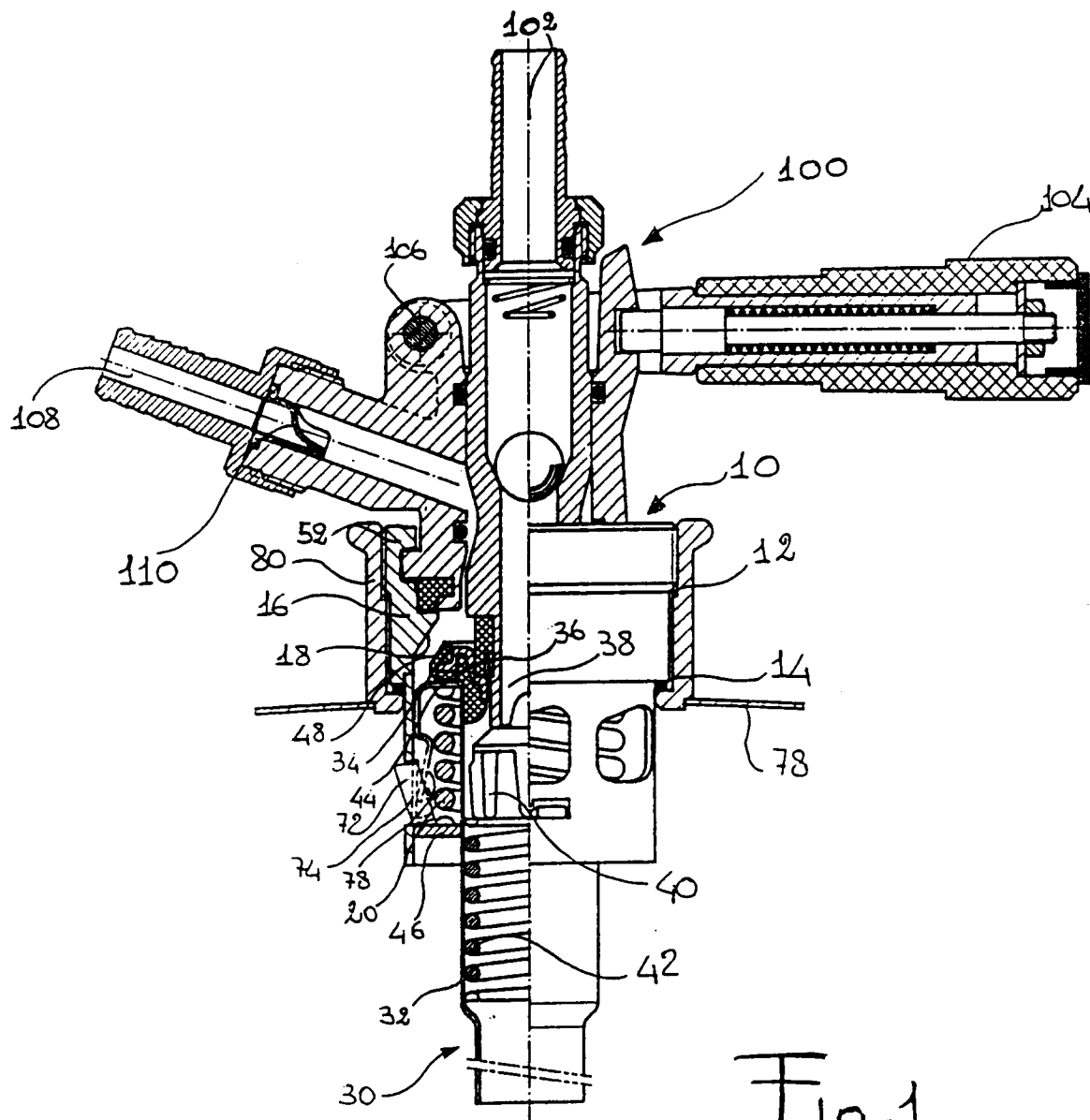
At this point, the advantages which the present invention provides are evident, and in particular, the mounting facility of said valve and of said catch 70 is increased with respect to the known art, further avoiding the use of particular equipment and specialized labor. It is noteworthy that the retraction of the catch is complete and prohibits, contrary to that of the known art, all possible interference between said catch and the hub on which the entire device is mounted during the disassembly operation. Naturally, this mounting and disassembling facility translates into a reduction in cost, taking into account also maintenance operations.

The retraction of the catch occurs not only at the lower bottom position but also next to this said position. This prohibits that, due to wear and tear or unrespected machining tolerances, there be an incomplete retraction of the catch and, thus, a difficulty of disassembly of the valve. Thus, a continuous regulation of the stroke of disassembling equipment, as in the prior art, is rendered unnecessary.

Claims

1. Valve device particularly for transportable containers of the type adapted to store and deliver a liquid under pressure from a propellant gas, comprising a ring-shaped hub (80) secured in an upward opening in the container (78); a double valve (19) having both a blockable gas passage and a blockable liquid passage and essentially consisting of a valve housing (12), which can be detachably mounted on the hub (80) and a riser pipe part arranged co-axially to an upper reception area of the valve housing such that said riser pipe part can be displaced axially from an upper closed valve position to a lower open valve position against the pressure from a spring (20) mounted in the valve housing (12) in which said riser pipe can be further displaced partially axially downwardly from the lower open position to a lower bottom position; a finger (78) protruding toward the outside integral with said riser pipe, said finger being realized with elastic material, such as a corrosion-resistant spring steel, with a free end part spaced from the top and from the axis from

the riser pipe with said finger arranged such that its free end is forced outward toward the internal wall of a lower part of the wall of said valve housing (12); a catch (70) arranged in an opening in said lower part of said wall of said valve housing (12); characterized in that said catch (70) leans against said ring (46) of said valve; said catch has one or more protrusions (72) which are projected outside of the wall of the valve housing (12) through proper openings present on said wall; said catch having a vertical wall (74) and two fins (76); said vertical walls (74) are essentially formed by extensions of said protrusions (72), folded at a right angle to same, and arranged in the space between said two protrusions (72) on the internal side of said valve housing (12); on the face of said vertical walls (74) turning toward the axis of the valve device, the free end of said finger (78) acts, maintaining the catch depressed in a safety position with said protrusions (72) turned outward; said fins (76) are positioned so as to be used with the end of said finger (78) when the riser pipe part is beyond the normal working stroke, thereby allowing the retraction of said protrusions (72) and, thus, the disassembly of the device.



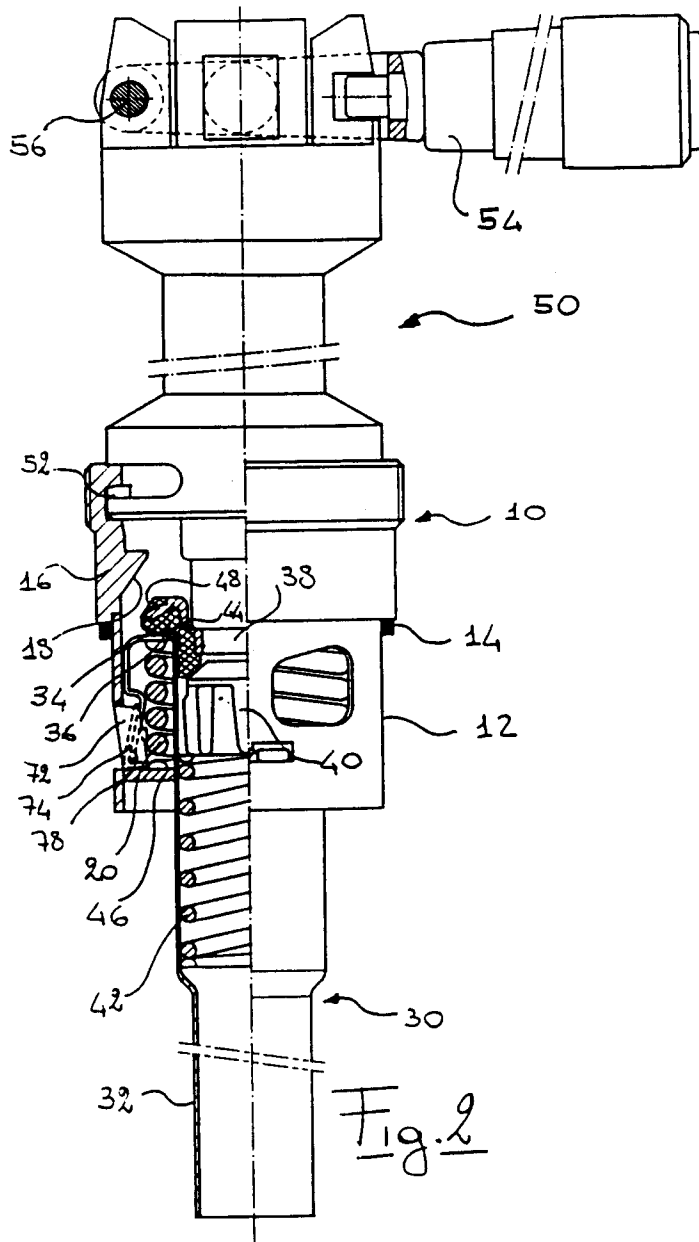


Fig. 3

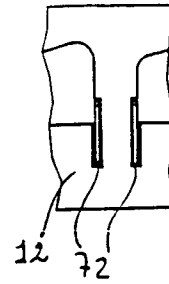


Fig. 6

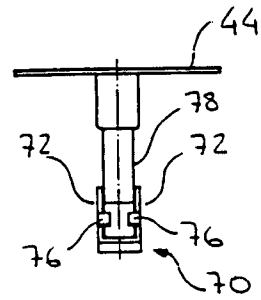


Fig. 7

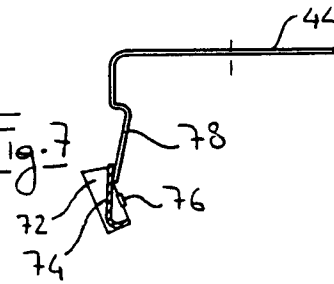


Fig. 8

