

15

Description

The invention relates to a stopper for a container such as a bottle, comprising a shaft which fits in clamping and sealing fashion on the opening of the container, such as in the neck of a bottle, and which has a throughgoing channel which works in conjunction with a non-return valve, said stopper being provided with means for connecting a pump thereto in clamping and/or sealing fashion.

Such a stopper is known from, for example, German Patent Specification 623 620. This known stopper consists of a stopper to be inserted into an opening of the container, for example, into the neck of a bottle, which is provided with a central bore. Placed on the top end of this stopper is a rubber cap which with a tapering part sticks into the mouth of the bore and has a pair of openings between its gripping edge which grips the edge of the stopper and the part of the valve sticking into the bore. When there is excess pressure, the valve will be lifted and gases can escape from the container through the then cleared openings. A vacuum can be produced in the container by sucking off the air or vapours or gases still there. To this end, provision is made for a likewise sealing and gripping cup to be placed over the rubber cap, said cup being connected by means of a hose to a pump which consists of a cylinder having therein a piston with piston rod and handle. When a suction stroke is performed with this pump, the valve will, in consequence of the pressure difference, be moved into the open position and medium will thus be extracted from the container. When a delivery stroke is performed by the pump, the valve will close and discharge will have to take place of the extracted medium by means of a valve or opening which is known per se in hand pumps.

This known pump consists of two parts, a pump with hose which is needed to extract medium, and a cup to be placed over the valve, which is a complication, because these parts take up much space, and the connection of the cup over the valve is inadequate. It will often be necessary to press the cup by hand onto the rubber cap, in which case one no longer has two hands free to operate the pump.

Another disadvantage of the rubber cap is that it can become dirty, and the quality of the rubber can deteriorate. Besides, the stopper cannot be removed from the container by hand without forces being exerted at the same time on the rubber cap forming the valve. This can result in damage to the cap and thus to its sealing function.

With many liquids the problem is that their quality deteriorates after the permanent seal required for transport and storage is removed, but in use only part of the contents is consumed. The liquid then comes into contact with the air after opening of the container. An example of such a liquid is wine. If a certain quantity remains in the bottle, its quality can deteriorate when the bottle is closed again, because there is air in the bottle. With the device known from German Patent Specification 623 620, this air could be sucked off, in which case the quantity of wine remaining in the bottle will keep longer.

In the case of carbonated drinks, the carbon dioxide will escape on removal of the seal. If only part of the contents is being used, the escape of carbon dioxide gas can be countered to some extent by closing the container again. It would, however, be advantageous for the shelf life of the drink if the escape of carbon dioxide gas from the liquid could be suppressed through the production of excess pressure. With the device known from German Patent Specification 623 620, this is not possible.

The object of the invention is then to produce a simple design for the stopper which consists of fewer parts, can work better in conjunction with a pump, is easier to use, and the design principle of which is such that, while retaining the same principle, the stopper can also be used with a somewhat modified design for the pumping in of medium.

The object of the invention is also to produce a pump which is particularly suitable for working in conjunction with the stopper according to the invention.

The improved stopper is obtained according to the invention firstly in that the stopper and the valve are integral and are made of one and the same elastic material, and the valve has a valve opening in the form of a slit in a part of the stopper which is in the path of the channel, and in that the stopper and said part are formed in such a way that the parts determining and closing the slit can be moved apart, and concentrically with the shaft the stopper has an edge which encloses the valve part and which is of such a shape that a pump can be connected to it.

The fact that the stopper and the valve are integral and the stopper is provided with an edge enclosing the valve part means that the stopper can be placed or removed without difficulty by hand. The edge ensures that during placing or removal of the stopper one does not come into contact with the valve, because the latter is protected by the edge.

This slit valve can open outwards if the stopper is one which has to permit the escape or extraction of medium from the container. The slit valve can also open inward, looking from the container, if the stopper in question is intended for a container into which a medium has to be forced under pressure.

The parts which form the slit valve can be held in the closed position either by the elastic properties of the material or by a pressure difference on either side of the valve, either alone or in combination with a difference in surface, in such a way that the forces which press the parts of the slit valve onto each other work at the side with the higher pressure.

The edge is preferably a raised edge whose function is to protect the valve therein and to connect the pump thereto. For taking hold of or connecting the pump, it is also advantageous if between edge and shaft there is a circular flange projecting beyond the edge.

The slit valve is preferably formed by a slit in a rib which extends crosswise over the channel and connects to the opposite zones of the raised edge. This design has the advantage that pressure can be exerted on the edge in the direction of the rib, in

16

such a way that when the edge zones are moved towards each other the slit is opened. This can be promoted further if according to the invention the sides of the ribs transverse to the plane of the slit are connected to the edge by means of ribs. These ribs standing transversely to the rib will promote opening of the slit when the edge is pressed in and thus also to an oval shape.

The stopper according to the invention is not a pouring spout and must therefore be removed when liquid has to be taken again from the container. If, however, a vacuum is produced in the container through the extraction of air, the stopper will be difficult to remove. The design of the stopper with the above-mentioned rib or ribs has the advantage then that on grasping of the stopper the slit can already open, as a result of which air can flow in and the vacuum is released.

Instead of the slit valve described, which is formed by an incision in a rib, the slit can also be formed by an incision in part of a cap extending crosswise over the channel, said incision being preferably transverse to the axis of the channel. Such a cap can be conical in shape, with the top being partially cut open and in that way acting as a valve. The release of the vacuum can also take place here in a simple manner by pressing with one finger against the top of the cap.

The slit can also be formed by a partial incision in a tubular part with end wall, close under the end wall, said tube forming part of the channel.

Other embodiments of slit valves are conceivable, provided that the condition of stopper and valve being made of one and the same material is met.

It is pointed out that the published German application 1 102 538 discloses a device for the production of a vacuum in a container, such as a preserves container. Here the container has a lid with a central opening over which can be placed a closing cap of elastic material which serves as a valve, and which must rest with its edge in sealing fashion against the top face of the lid, and has a conical central section which can stick into the opening of the lid. The closure here thus consists of one single material, and this closure has a valve effect. However, this closure is not in the form of a stopper which is placed in clamping and sealing fashion on the opening of a container, but is a cap which is held in place purely by the pressure difference and which with the slightest soiling or unevenness of the top face of the lid or the edge of the cap will exhibit leakage and will then lose its closing effect. Besides, the cap can easily come off, for example if someone knocks against it.

According to the invention, the stopper preferably consists of a cylindrical part which is provided at several points with thin circular cross flanges in planes perpendicular to the centre line of the stopper. The external diameter of the shaft is then slightly smaller than the neck opening, for example of a bottle, and the thin flanges ensure a good closure.

The invention also relates to a pump in particular a pump for working in conjunction with the stopper according to the invention. A pump comprising a cyl-

inder, a piston in this cylinder, a piston rod and a handle, which pump by means of a hose can be connected to a cap which is sealingly placed on the top end of the stopper is known from the above-mentioned patent specification 623 620.

A pump according to the pre-characterising part of claim 15 comprising a cylinder, a piston in said cylinder, a hollow pipe-shaped piston rod and a handle is known from US-A 2 049 872 which pump at the end facing away from the handle has been provided with a flexible cap which has to be placed over an opening with non-return valve in the cover of a container or jar within which a vacuum has to be established.

The object of the invention is to produce a pump which not only can work in conjunction with the stopper of the invention, but which is also simple in design and is sturdy and which does not have the disadvantage that during the pumping great heat development takes place where in known pumps the piston cup leather has to be able to ensure both the sealing during the stroke in one direction and the passage of the medium during the stroke in the opposite direction.

To this end the pump according to the invention is characterized in that the pipe-shaped piston rod has a diameter which is slightly smaller than the internal diameter of the cylinder, the piston is integral with the piston rod, the piston rod at the level of the piston has a cross wall standing perpendicular to its center line and the cylinder has an end facing away from the handle of such a shape that the pump can be connected in sealing fashion on the stopper, in particular on the edge or flange of the stopper.

This design of piston rod, piston and cylinder is sturdy and permits good guidance of the piston inside the housing of the pump and allows a connection with the stopper such that the operator with one hand can hold the neck of the bottle, the stopper placed inside and on said neck as well as the lower end of the pump so that the operator with the other hand can use the piston to operate the pump.

With the known pumps this is not possible.

It is desirable in the fully pushed-in position of the piston rod for the piston to be at a distance from the end facing away from the handle which corresponds to the distance which the cylinder can grip over the top side of the stopper when it is placed on the stopper.

This pump can be designed without any valve in it. In the central opening of the cross wall, which is at the same height as the piston part, a valve can, however, be fitted, preferably in the form of a mushroom valve of elastic material with a stem which fits with play into the opening, a disc which can seal on the edge of the opening, and a thickened part which on fitting can be pressed through the opening but with the valve in use stays in the opening. Such a valve can be placed in two positions depending on whether the pump has to serve for the extraction of medium or for pumping in medium. The piston rod in both cases must have an escape opening for connection with the outside air. If no valve is used, the piston rod must be closed. Moreover, after each suction or delivery stroke

17

the pump has to be removed from the stopper before the piston is returned to its initial position. After the return of the piston to its initial position, the pump is again placed on the stopper and the next suction or delivery stroke is carried out if the stopper is one which permits this.

All parts are preferably made of plastic, while the stopper is preferably of an elastic synthetic material or rubber, which can therefore of course be natural or synthetic rubber. The elastic synthetic material can be a thermoplastic material, but is in particular a plastic which is neutral as regards the contents of the container. Examples of materials are: polyethylene, polyurethane and polyamides, in particular thermoplastic rubber for the stopper.

The pump is preferably made of a rigid plastic or a more rigid plastic, such as a polyamide, in particular polypropylene and A.B.S. This more rigid plastic can be a thermoplastic or a thermosetting plastic.

The invention will now be explained in greater detail below with reference to the drawings.

Fig. 1 shows a side view of a stopper according to the invention.

Fig. 2 shows a bottom view of Fig. 1.

Fig. 3 shows a top view of Fig. 1.

Fig. 4 shows the stopper of Fig. 1 in cross section, with an embodiment of the pump, also in cross section, placed thereon.

Fig. 5 shows a cross section of a variant of the stopper according to the invention.

Fig. 6 shows a cross section of another variant of the stopper according to the invention.

Fig. 7 shows a variant of the stopper according to the invention suitable for pumping in of medium.

Fig. 8 corresponds to Fig. 4 and shows the placing of the pump on the stopper of Fig. 7.

The stopper shown in Figs. 1, 2 and 3 comprises a shaft 1 which is provided with a number of thin sealing flanges 2 and has a central channel 3 which is indicated by dotted lines.

The stopper has a flange 4 and a raised top edge 5.

Inside this edge 5 is a slit valve. The slit of this slit valve is indicated by 6 and is formed by an incision or slit in a rib 7 whose central part is thickened at 8. This rib 7 is located above a bottom wall 9. The thickened parts 8 of the rib 7 on either side of the slit 6 will ensure that the slit opens when there is pressure difference. This slit can also be opened if pressure is exerted with the fingers on the opposite points 10 and 11. The edge 5 is then pressed to an oval shape. It is then advantageous if there are also ribs 12 and 13. During the pressure to an oval shape, the ribs will ensure that the parts 8 are drawn apart on either side of the slit 6.

Fig. 4 shows a stopper with a shaft 1 and sealing edges 2, a flange 4 and a top edge 5 as shown in Fig. 1, but turned 90 degrees, so that the slit can be seen in cross section.

The pump comprises a pump housing 15 with therein a piston 16 having a pipe-shaped piston rod 17 on which a handle 18 is fixed in some suitable way or other, such as gluing, clamping etc. The piston 16 is

integral with the piston rod 17, and the latter has at the level of the piston a cross wall 19 with a central opening 20.

Shown in this central opening is a rubber mushroom-shaped non-return valve, comprising a stem 21, a valve disc 22, and a locking button 23. This locking button is such that the valve can be pressed into the opening in the manner of a push button and can then move axially, said movement being determined by the length of the stem 21, which sits with some play in the opening 20. This valve can be placed in the position shown, but can, of course, also be placed in the reverse position shown in Fig. 8.

At 24 there is an opening in the piston rod and handle 18. This pump can be used to extract medium from a container through the stopper 1 placed thereon. Starting from the initial position shown in Fig. 4, when the piston rod and piston move upwards the valve disc 22 will move into the closing position, in which it rests on the top face of the wall 19. During this suction stroke medium will be extracted from the container through the slit 6. When the piston is subsequently moved downwards, this medium will pass through the valve 22 into the chamber inside the piston rod 17 and can escape through the opening 24. Several piston strokes can be carried out in this way.

It is, however, also conceivable to design the pump shown in Fig. 4 without the valve in the opening 20 and without the opening 24. In that case, after each suction stroke the pump must be taken from the stopper, and the piston then returned to the initial position shown in Fig. 4. The next suction stroke can be carried out after the pump is placed on the stopper.

In the embodiment shown in Fig. 8 the valve 22 is the other way round and thus lies with its disc 22 against the under side of the wall 19. When the piston is raised, air will be able to pass through the opening 20 under the piston, and on the delivery stroke can be pressed into the container through the slit of the stopper shown in Fig. 7 and in Fig. 8.

In this case also the pump can be designed without valve and without the opening 24, and air can be pressed into the container, provided that before each delivery stroke the piston is always taken to the top position before the pump is placed on the stopper.

Without valve and without the opening 24., thus with a closed piston rod, the pump can be used both for extraction and for pumping in.

Fig. 5 shows a variant of the slit valve. It comprises an incision 25 in a conical cap 26. The top of the cap can have a projecting lip 27 which facilitates opening by hand.

In the embodiment of Fig. 6 the channel of the stopper has inside the edge a tubular part 28 with an end wall 29. The slit valve is formed here by an incision 30 close under the end wall 29, so that during flow in the upward direction, for example, during suction, the end wall 29 can be raised and serves as a valve.

Fig. 7 shows an embodiment suitable for the pumping in of medium, said embodiment being in principle

the reverse of the embodiment shown in Figs. 1-4. Slit valves of the type shown in Figs. 5 and 6 can, of course, also be used in the reverse form.

In the embodiment shown in Fig. 7 the slit 31 of the slit valve is formed by an incision or the like between the parts 32 and 33 of a rib running crosswise over the valve at the side of the edge 34 to the other side. Excess pressure at the under side will hold the valve shut and it will open when there is excess pressure at the outside.

In this case also, pressing open by hand is possible in the same way as that described with reference to Fig. 3.

Claims

1. Stopper (1) for a container such as a bottle, comprising a shaft (1) which fits in clamping and sealing fashion on the opening of the container, such as the neck of a bottle, and which has a throughgoing channel (3) which works in conjunction with a non-return valve (6), said stopper being provided with means for connecting a pump thereto in clamping and/or sealing fashion, characterized in that the stopper (1) and the valve (6) are integral and are made of one and the same elastic material and the valve has a valve opening in the form of a slit (6) in a part of the stopper which is in the path of the channel (3), and in that the stopper and said part are formed in such a way that the parts (8) determining and closing the slit (6) can be moved apart, and concentrically with the shaft the stopper has an edge (5) which encloses the valve part and which is of such a shape that a pump can be connected to it.

2. Stopper according to Claim 1, characterized in that the valve (6, 25, 30) opens outwards, looking from the container.

3. Stopper according to Claim 1, characterized in that the valve (31) opens inwards, looking from the container.

4. Stopper according to Claim 2 or 3, characterized in that the parts forming the valve are held in their closing position by the elastic properties of the material.

5. Stopper according to Claim 2 or 3, characterized in that the parts forming the valve are held in their closing position by a pressure difference on either side of the valve.

6. Stopper according to Claim 2 or 3, characterized in that the parts forming the valve are held in their closing position by the fact that the surface of the valve parts at the side of the valve facing the chamber to which flow can take place is greater than the surface at the other side of the valve parts.

7. Stopper according to one or more of the preceding claims, characterized in that the edge (5) is a raised edge.

8. Stopper according to Claim 7, characterized in that between the shaft (1) and the edge (5) it has a circular flange (4) projecting beyond the edge.

9. Stopper according to Claim 7 or 8, characterized in that the slit valve is formed by a slit (6) in a rib (7) which extends crosswise over the channel (3)

and connects to the opposite zones of the raised edge (5).

10. Stopper according to Claim 9, characterized in that the sides (8) of the rib transverse to the plane of the slit are connected to the edge by means of ribs (12, 13).

11. Stopper according to one or more of the preceding Claims 1-8, characterized in that the slit is formed by an incision (25) in a part of a cap (26) extending crosswise over the channel.

12. Stopper according to Claim 11, characterized in that the incision (25) is transverse to the axis of the channel.

13. Stopper according to one or more of the preceding Claims 1-8, characterized in that the slit is formed by a partial incision (30) in a tubular part (28) with an end wall (29), said slit being close under the end wall, said tube forming part of the channel (3).

14. Stopper according to one of the preceding claims, characterized in that the shaft (1) of the stopper is cylindrical and is provided at several points with thin cross flanges (2) in planes perpendicular to the centre line of the stopper.

15. Pump for working in conjunction with the stopper according to one or more of the preceding claims, comprising a cylinder (15), a piston (16) in said cylinder, a hollow pipe-shaped piston rod (17) and a handle (18), characterized in that the pipe-shaped piston rod (17) has a diameter which is slightly smaller than the internal diameter of the cylinder (15), the piston (16) is integral with the piston rod (17), in that the piston rod (17), at the level of the piston (16), has a cross wall (19) standing perpendicular to its center line and in that the cylinder (15) has an end facing away from the handle (18) of such a shape that the pump can be connected in sealing fashion on the stopper, in particular on the edge or flange of the stopper.

16. Pump according to Claim 15, characterized in that in the fully pushed-in position of the piston rod the piston (16) is at a distance from the end facing away from the handle (18) which corresponds to the distance which the cylinder (15) can grip over the top side (5) of the stopper when it is placed on the stopper.

17. Pump according to claim 15 or 16, characterized in that the cross wall (19) has an opening (20) provided with a non-return valve (22).

18. Pump according to Claim 17, characterized in that said valve is a mushroom valve of elastic material with a stem (2) which fits with play into the opening (20), a disc (22) which can seal on the edge of the opening (20), and a thickened part (23) which on fitting can be pressed through the opening (20) but with the valve in use stays in the opening.

19. Stopper and pump assembly comprising a stopper according to one of claims 1 to 14 and a pump according to one of claims 15 to 18, characterized in that all parts are made of plastic.

20. Stopper and pump assembly according to claim 19, characterized in that the stopper is made of an elastic synthetic material or rubber.

21. Stopper and pump assembly according to claim 19, characterized in that the pump is made of a rigid plastic, such as a polyamide.

the reverse of the embodiment shown in Figs. 1-4. Slit valves of the type shown in Figs. 5 and 6 can, of course, also be used in the reverse form.

In the embodiment shown in Fig. 7 the slit 31 of the slit valve is formed by an incision or the like between the parts 32 and 33 of a rib running crosswise over the valve at the side of the edge 34 to the other side. Excess pressure at the under side will hold the valve shut and it will open when there is excess pressure at the outside.

In this case also, pressing open by hand is possible in the same way as that described with reference to Fig. 3.

Claims

1. Stopper (1) for a container such as a bottle, comprising a shaft (1) which fits in clamping and sealing fashion on the opening of the container, such as the neck of a bottle, and which has a throughgoing channel (3) which works in conjunction with a non-return valve (6), said stopper being provided with means for connecting a pump thereto in clamping and/or sealing fashion, characterized in that the stopper (1) and the valve (6) are integral and are made of one and the same elastic material and the valve has a valve opening in the form of a slit (6) in a part of the stopper which is in the path of the channel (3), and in that the stopper and said part are formed in such a way that the parts (8) determining and closing the slit (6) can be moved apart, and concentrically with the shaft the stopper has an edge (5) which encloses the valve part and which is of such a shape that a pump can be connected to it.

2. Stopper according to Claim 1, characterized in that the valve (6, 25, 30) opens outwards, looking from the container.

3. Stopper according to Claim 1, characterized in that the valve (31) opens inwards, looking from the container.

4. Stopper according to Claim 2 or 3, characterized in that the parts forming the valve are held in their closing position by the elastic properties of the material.

5. Stopper according to Claim 2 or 3, characterized in that the parts forming the valve are held in their closing position by a pressure difference on either side of the valve.

6. Stopper according to Claim 2 or 3, characterized in that the parts forming the valve are held in their closing position by the fact that the surface of the valve parts at the side of the valve facing the chamber to which flow can take place is greater than the surface at the other side of the valve parts.

7. Stopper according to one or more of the preceding claims, characterized in that the edge (5) is a raised edge.

8. Stopper according to Claim 7, characterized in that between the shaft (1) and the edge (5) it has a circular flange (4) projecting beyond the edge.

9. Stopper according to Claim 7 or 8, characterized in that the slit valve is formed by a slit (6) in a rib (7) which extends crosswise over the channel (3)

and connects to the opposite zones of the raised edge (5).

10. Stopper according to Claim 9, characterized in that the sides (8) of the rib transverse to the plane of the slit are connected to the edge by means of ribs (12, 13).

11. Stopper according to one or more of the preceding Claims 1-8, characterized in that the slit is formed by an incision (25) in a part of a cap (26) extending crosswise over the channel.

12. Stopper according to Claim 11, characterized in that the incision (25) is transverse to the axis of the channel.

13. Stopper according to one or more of the preceding Claims 1-8, characterized in that the slit is formed by a partial incision (30) in a tubular part (28) with an end wall (29), said slit being close under the end wall, said tube forming part of the channel (3).

14. Stopper according to one of the preceding claims, characterized in that the shaft (1) of the stopper is cylindrical and is provided at several points with thin cross flanges (2) in planes perpendicular to the centre line of the stopper.

15. Pump for working in conjunction with the stopper according to one or more of the preceding claims, comprising a cylinder (15), a piston (16) in said cylinder, a hollow pipe-shaped piston rod (17) and a handle (18), characterized in that the pipe-shaped piston rod (17) has a diameter which is slightly smaller than the internal diameter of the cylinder (15), the piston (16) is integral with the piston rod (17), in that the piston rod (17), at the level of the piston (16), has a cross wall (19) standing perpendicular to its center line and in that the cylinder (15) has an end facing away from the handle (18) of such a shape that the pump can be connected in sealing fashion on the stopper, in particular on the edge or flange of the stopper.

16. Pump according to Claim 15, characterized in that in the fully pushed-in position of the piston rod the piston (16) is at a distance from the end facing away from the handle (18) which corresponds to the distance which the cylinder (15) can grip over the top side (5) of the stopper when it is placed on the stopper.

17. Pump according to claim 15 or 16, characterized in that the cross wall (19) has an opening (20) provided with a non-return valve (22).

18. Pump according to Claim 17, characterized in that said valve is a mushroom valve of elastic material with a stem (2) which fits with play into the opening (20), a disc (22) which can seal on the edge of the opening (20), and a thickened part (23) which on fitting can be pressed through the opening (20) but with the valve in use stays in the opening.

19. Stopper and pump assembly comprising a stopper according to one of claims 1 to 14 and a pump according to one of claims 15 to 18, characterized in that all parts are made of plastic.

20. Stopper and pump assembly according to claim 19, characterized in that the stopper is made of an elastic synthetic material or rubber.

21. Stopper and pump assembly according to claim 19, characterized in that the pump is made of a rigid plastic, such as a polyamide.



19

Patentansprüche

1. Absperrvorrichtung (1) für einen Behälter, wie eine Flasche, die einen Schaft (1) aufweist, die auf klemmende und dichtende Weise auf die Öffnung des Behälters, wie des Halses einer Flasche, paßt und der einen durchgehenden Kanal (3) hat, der in Verbindung mit einem Rückschlagventil (6) arbeitet, wobei die Absperrvorrichtung mit Einrichtungen zum Anschließen einer Pumpe auf klemmende und/oder dichtende Weise versehen ist, dadurch gekennzeichnet, daß die Absperrvorrichtung (1) und das Ventil (6) einteilig sind und aus ein und demselben elastischen Material hergestellt sind, daß das Ventil eine Ventilöffnung in Form eines Schlitzes (6) in einem Teil der Absperrvorrichtung hat, der in dem Verlauf des Kanales (3) liegt, daß die Absperrvorrichtung und dieser Teil derart ausgelegt sind, daß die Teile (8), die den Schlitz (6) begrenzen und verschliessen, wegbewegt werden können und daß konzentrisch zu dem Schaft die Absperrvorrichtung einen Rand (5) hat, der das Ventiltail umgibt und der eine solche Form hat, daß eine Pumpe daran angeschlossen werden kann.

2. Absperrvorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß das Ventil (6, 25, 30) in Blickrichtung vom Behälter nach außen öffnet.

3. Absperrvorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß das Ventil (31) vom Behälter aus gesehen nach innen öffnet.

4. Absperrvorrichtung nach Anspruch 2 oder 3, dadurch gekennzeichnet, daß die das Ventil bildenden Teile in ihrer Schließstellung durch die elastischen Eigenschaften des Materials gehalten sind.

5. Absperrvorrichtung nach Anspruch 2 oder 3, dadurch gekennzeichnet, daß die das Ventil bildenden Teile in ihrer Schließstellung durch eine Druckdifferenz auf jeder Seite des Ventils gehalten sind.

6. Absperrvorrichtung nach Anspruch 2 oder 3, dadurch gekennzeichnet, daß die das Ventil bildenden Teile in ihrer Schließstellung dadurch gehalten sind, daß die Oberfläche der Ventiltile an der Seite des Ventils, die der Kammer zugewandt ist, zu der ein Einströmen erfolgen kann, größer als die Oberfläche an der anderen Seite der Ventiltile ist.

7. Absperrvorrichtung nach einem oder mehreren der vorangehenden Ansprüche, dadurch gekennzeichnet, daß der Rand (5) ein erhabener Rand ist.

8. Absperrvorrichtung nach Anspruch 7, dadurch gekennzeichnet, daß dieselbe zwischen dem Schaft (1) und dem Rand (5) einen Ringflansch (4) hat, der über den Rand vorsteht.

9. Absperrvorrichtung nach Anspruch 7 oder 8, dadurch gekennzeichnet, daß das Schlitzventil von einem Schlitz (6) in einer Rippe (7) gebildet wird, die sich quer über den Kanal (3) erstreckt und eine Verbindung zu den gegenüberliegenden Bereichen des erhabenen Randes (5) herstellt.

10. Absperrvorrichtung nach Anspruch 9, dadurch gekennzeichnet, daß die Seiten (8) der Rippe quer zur Ebene des Schlitzes mit dem Rand mit Hilfe von Rippen (12, 13) verbunden sind.

11. Absperrvorrichtung nach einem oder mehreren der vorangehenden Ansprüche 1 bis 8, dadurch

gekennzeichnet, daß der Schlitz von einem Einschnitt (25) an einem Teil einer Kappe (26) gebildet wird, die sich quer über den Kanal hinweg erstreckt.

12. Absperrvorrichtung nach Anspruch 11, dadurch gekennzeichnet, daß der Einschnitt (25) quer zur Achse des Kanals verläuft.

13. Absperrvorrichtung nach einem oder mehreren der vorangehenden Ansprüche 1 bis 8, dadurch gekennzeichnet, daß der Schlitz von einem Teileinschnitt (30) in einem rohrförmigen Teil (28) mit einer Endwand (29) gebildet wird, das dicht unter der Endwand liegt, wobei dieses Rohr einen Teil des Kanales (3) bildet.

14. Absperrvorrichtung nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, daß der Schaft (1) der Absperrvorrichtung zylindrisch ist und an mehreren Stellen mit dünnen Querflanschen (2) in Ebenen senkrecht zur Mittellinie der Absperrvorrichtung versehen ist.

15. Pumpe, insbesondere Pumpe, die in Verbindung mit der Absperrvorrichtung nach einem oder mehreren der vorangehenden Ansprüche arbeitet, welche einen Zylinder (15), einen Kolben (16) im Zylinder, eine Kolbenstange (17) und ein Griffteil (18) aufweist, dadurch gekennzeichnet, daß die Kolbenstange (17) ein hohles Rohr ist, dessen Durchmesser geringfügig kleiner als der Innendurchmesser des Zylinders (15) ist, daß der Kolben (16) einteilig mit der Kolbenstange (17) ausgelegt ist und daß die letztgenannte eine Querwand (19) hat, die senkrecht zu der Mittellinie steht, und die eine Mittelöffnung (20) hat, und daß der Zylinder ein Ende hat, das von dem Griffteil (18) wegweist und in Dichtungseingriff an der Absperrvorrichtung, insbesondere am Rand oder Flansch der Absperrvorrichtung anliegt.

16. Pumpe nach Anspruch 15, dadurch gekennzeichnet, daß in der vollständig eingeschobenen Position der Kolbenstange der Kolben (16) einen Abstand von dem vom Griffteil (18) wegweisenden Ende hat, der dem Abstand entspricht, um den der Zylinder (15) die obere Seite (5) der Absperrvorrichtung übergreifen kann, wenn sie sich auf der Absperrvorrichtung befindet.

17. Pumpe nach Anspruch 15 oder 16, dadurch gekennzeichnet, daß ein Rückschlagventil (22) in der Mittelöffnung (20) des Kolbens (16) vorgesehen ist.

18. Pumpe nach Anspruch 17, dadurch gekennzeichnet, daß das Ventil ein pilzartiges Ventil aus elastischem Material mit einem Schaft (2) ist, der unter Spiel in die Öffnung (20) paßt, ferner eine Scheibe (22) aufweist, die in Dichtungseingriff mit dem Rand der Öffnung (2) kommen kann, und einen verdickten Teil (23) aufweist, der beim Einsetzen durch die Öffnung (20) gedrückt werden kann, der aber im Gebrauchszustand des Ventils in der Öffnung bleibt.

19. Absperrvorrichtung und Pumpe nach einem oder mehreren der vorangehenden Ansprüche, dadurch gekennzeichnet, daß alle Teile aus Kunststoff hergestellt sind.

20. Absperrvorrichtung nach Anspruch 19, dadurch gekennzeichnet, daß die Absperrvorrichtung aus einem elastischen, synthetischen Material oder Kautschuk hergestellt ist.



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21. Pumpe nach Anspruch 19, dadurch gekennzeichnet, daß die Pumpe aus einem starren Kunststoff, wie Polyamid, hergestellt ist.

Revendications

1. Bouchon (1) pour récipient tel qu'une bouteille, comprenant un fût (1) qui s'emboîte d'une manière serrée et étanche dans l'embouchure du récipient telle que le goulot d'une bouteille, et qui comporte un conduit traversant (3) qui coopère avec un clapet antiretour (6), ce bouchon étant pourvu de moyens permettant de lui relier une pompe d'une manière serrée et/ou étanche, caractérisé en ce que le bouchon (1) et le clapet (6) sont venus de matière et sont réalisés en une seule et même matière élastique et le clapet comporte une ouverture de clapet ayant la forme d'une fente (6) ménagée dans une partie du bouchon qui se trouve sur le trajet du conduit (3), et le bouchon et cette partie sont réalisés d'une manière telle que les parties (8) qui délimitent et ferment la fente (6) peuvent être écartées, tandis que, concentriquement au fût, le bouchon comporte un bord (5) qui entoure la partie à clapet et est d'une forme telle qu'une pompe peut lui être reliée.

2. Bouchon selon la revendication 1, caractérisé en ce que le clapet (6, 25, 30) s'ouvre vers l'extérieur, en regardant à partir du récipient.

3. Bouchon selon la revendication 1, caractérisé en ce que le clapet (31) s'ouvre vers l'intérieur, en regardant à partir du récipient.

4. Bouchon selon la revendication 2 ou 3, caractérisé en ce que les parties formant le clapet sont maintenues dans leur position fermée par les propriétés élastiques de la matière.

5. Bouchon selon la revendication 2 ou 3, caractérisé en ce que les parties formant le clapet sont maintenues dans leur position fermée par une différence de pression entre les deux côtés du clapet.

6. Bouchon selon la revendication 2 ou 3, caractérisé en ce que les parties formant le clapet sont maintenues dans leur position fermée par le fait que la surface des parties du clapet située sur le côté de ce clapet qui est tourné vers la chambre vers laquelle un écoulement peut avoir lieu est supérieure à la surface sur l'autre côté de ces parties du clapet.

7. Bouchon selon une ou plusieurs des revendications précédentes, caractérisé en ce que le bord (5) est un bord dressé vers le haut.

8. Bouchon selon la revendication 7, caractérisé en ce que, entre le fût (1) et le bord (5), il comporte une collerette circulaire (4) faisant saillie au-delà de ce bord.

9. Bouchon selon la revendication 7 ou 8, caractérisé en ce que le clapet à fente est formé par une fente (6) ménagée dans une nervure (7) qui s'étend transversalement au-dessus du conduit (3) et est reliée aux zones en regard du bord dressé vers le haut (5).

10. Bouchon selon la revendication 9, caractérisé en ce que les côtés (8) de la nervure qui sont transversaux au plan de la fente sont reliés au bord par l'intermédiaire de nervures (12, 13).

11. Bouchon selon une ou plusieurs des revendications précédentes 1-8, caractérisé en ce que la fente est formée par une incision (25) ménagée dans une partie d'un capuchon (26) s'étendant transversalement au-dessus du conduit.

12. Bouchon selon la revendication 11, caractérisé en ce que l'incision (25) est transversale à l'axe du conduit.

13. Bouchon selon une ou plusieurs des revendications précédentes 1-8, caractérisé en ce que la fente est formée par une incision partielle (30) ménagée dans une partie tubulaire (28) pourvue d'une paroi extrême, ce tube faisant partie du conduit (3).

14. Bouchon selon l'une des revendications précédentes, caractérisé en ce que le fût (1) du bouchon est cylindrique et est pourvu en plusieurs endroits de nervures transversales minces (2) situées dans des plans perpendiculaires à l'axe central du bouchon.

15. Pompe, en particulier pompe destinée à coopérer avec le bouchon suivant une ou plusieurs des revendications précédentes, comprenant un cylindre (15), un piston (16) disposé dans ce cylindre, une tige de piston (17) et une poignée (18), caractérisée en ce que la tige de piston (17) est un tube creux dont le diamètre est légèrement plus petit que le diamètre intérieur du cylindre (15), le piston (16) est venu de matière avec cette tige de piston (17) et cette dernière comporte une paroi transversale (19) s'étendant perpendiculairement à son axe central et ayant une ouverture centrale (20), et le cylindre comporte une extrémité disposée à l'opposé de la poignée (18) et s'emboîtant d'une manière étanche sur le bouchon, en particulier sur le bord ou collerette de ce bouchon.

16. Pompe selon la revendication 15, caractérisée en ce que, dans la position totalement enfoncée de la tige de piston, le piston (16) se trouve à une distance de l'extrémité opposée à la poignée (18) qui correspond à la distance dont le cylindre (15) peut recouvrir le côté supérieur (5) du bouchon lorsqu'il est placé sur ce bouchon.

17. Pompe selon la revendication 15 ou 16, caractérisée en ce qu'il existe un clapet antiretour (22) dans l'ouverture centrale (20) du piston (16).

18. Pompe selon la revendication 17, caractérisée en ce que ledit clapet est un clapet à champignon en matière élastique, comportant une tige (21) qui s'engage avec jeu dans l'ouverture (20), un disque (22) qui peut prendre un appui étanche sur le bord de cette ouverture (20) et une partie surépaissie (23) qui, lors du montage, peut être enfoncée à travers l'ouverture (20), mais qui, lorsque le clapet est en cours d'utilisation, demeure dans cette ouverture.

19. Bouchon et pompe suivant une ou plusieurs des revendications précédentes, caractérisés en ce que toutes les pièces sont réalisées en matière plastique.

20. Bouchon selon la revendication 19, caractérisé en ce que le bouchon est réalisé en caoutchouc ou matière synthétique élastique.

21. Pompe suivant la revendication 19, caractérisée en ce que cette pompe est réalisée en une matière plastique rigide, telle qu'un polyamide.

