Description

This invention relates to postmix juice dispensing and in particular to a shut-off valve connector for a juice dispensing system for pulp-containing juice.

Postmix orange juice dispensing systems are known in which thawed juice concentrate is mixed, with water in a desired ratio to produce the juice beverage. The juice may or may not contain pulp. The system is similar to milk dispensing systems and uses dairy bags for the concentrate and a gravity feed system with a simple shut-off valve that is actuated by pushing a beverage cup against a lever arm. When the prior art dairy bag is empty, it is simply replaced with a new bag. The use of juice containing pulp causes many problems because the pulp clogs valves and lines.

US-A 4 380 310 discloses a shut-off valve connector for a juice dispensing conduit, comprising a housing having an elongate chamber therein, said chamber being open at a proximal end of said housing and having an outlet port in a wall of said housing, a sleeve located in said chamber for reciprocating movement therein between a closed position and an open position, said sleeve having a passageway therethrough including an inlet opening in a proximal end thereof and an outlet opening, and a coupling at the proximal end of said valve connector housing for attaching said valve connector to a container spout.

EP-A 222 729 discloses an apparatus for dispensing beer including means for changing over the connection of a dispenser from one beer container to another, wherein the flow of beer is not interrupted during change over and the cross-sectional shape of the beer flow passage is constant, with no restrictions therein.

The shut-off valve connector of the present invention is characterized in that the said outlet port is provided in a side wall of the housing, the said outlet opening in the sleeve is provided in a side wall thereof to mate with the said outlet port when the sleeve is in its said open position, and means are provided for biassing the sleeve into its closed position, attachment of valve connector to a container spout acting to force the said sleeve to move, relative to the said housing, to its said open position, and further characterized in that the said sleeve passageway has a smooth interior surface of substantially uniform circular cross-section along its entire length, with a smoothly curving 90° bend therein leading to the said outlet opening.

An embodiment of the invention will now be described by way of example and with reference to the accompanying drawings, in which:-

Fig. 1 is a partly diagrammatic illustration of a dispensing system of the present invention, including a cross-sectional side view of a shut-off valve connector according to the invention, in its closed orientation;

Fig. 2 is a cross-sectional side view of the valve connector shown in Fig. 1 but shown in its open orientation; and

Fig. 3 is a cross-sectional view taken along line 3-3 of Fig. 2.

With reference now to the drawings, Figs. 1-3 show an orange juice shut-off valve connector 10 according to the present invention, connected to the end of an orange juice concentrate conduit 18. The valve connector 10 is to be connected to the spout 12 of a bag 14 used in a bag-in-box container system 16 including a paperboard box 17. The bag 14 contains orange juice concentrate 19. The valve connector 10 is connected by the conduit 18 to a pump 20 which pulls the concentrate from the bag 14 and forces it through a conduit 22 to a dispensing valve connector 24 where it is mixed in the desired ratio with a diluent such as water, fed to the dispensing valve connector 24 through a conduit 26.

The shut-off valve connector 10 includes a housing 30 having a cylindrical chamber 31 therein for accommodating an axially movable sleeve 32 therein. A cap 34 is screwthreadedly connected to the distal end of the housing 30 and a coil compression spring 36 is positioned within the housing between the cap 34 and the sleeve 32 for biasing the sleeve downwardly to a closed position as shown in Fig. 1. The sleeve 32 has a concentrate passageway 38 therethrough from an inlet opening 40 to an outlet opening 42. The sidewall of the housing 30 includes an outlet port 44 that mates with the outlet opening 42 of the sleeve 32 when the sleeve is in its uppermost or open position shown in Fig. 2. A number of O-rings 46 provide a seal between the axially movable sleeve and the housing.

The valve connector 10 also includes a coupling 50 for use in attaching the valve connector 10 to the existing spout 12 or other fitting of the orange juice bag 14. A retainer 52 connected to the housing 30 allows the coupling 50 to rotate, while maintaining it affixed to the housing. The coupling is internally screwthreaded to mate with external screw threads on the spout 12. The lower end of the sleeve has an O-ring that seals against the inside wall of the spout when the valve connector 10 is connected to the spout.

The upper or distal end of the sleeve has a shoulder 54 to limit the downward travel of the sleeve in its closed orientation shown in Fig. 1. The housing preferably has an integral fitting 56 that mates with the outlet port 44 for connecting the valve connector 10 to the conduit 18.

The diameter of the passageway 38 is preferably just under one-half inch (1.27cm). Prior to connecting the valve connector 10 to the spout 12, the bag 14 would have a cap or lid (not shown) screw threaded onto the spout. To keep the outlet opening 42 in registry with the outlet port 44, the housing and sleeve are provided with a key and slot system 60.

In operation, the valve connector 10 is attached to the spout 12 of the concentrate bag 14 by screwing the coupling 50 onto the spout. As the coupling is threaded down onto the spout, the spout contacts the proximal end of the sleeve 32 and pushes it upwardly against the force of the spring 36 to the final position shown in Fig. 2, providing communication between the passageway 38 and the outlet port 44

of the housing 30, so that orange juice concentrate in the bag 14 can flow out of the bag 14 to the pump 20 by the suction created by the pump. The pump then pushes the concentrate to the dispensing valve connector 24.

The passageway 38 is free from any obstruction or areas which may trap pulp in the orange juice concentrate, and is preferably of smooth, uniform, circular cross-section, identical in size and shape to the passageway 58 in the spout 12.

While the preferred embodiment of this invention has been described above in detail, it is to be understood that variations and modifications can be made therein without the departing from the scope of the present invention as set forth in the appended claims. Most of the parts of the valve connector 10, except the spring, are preferably made of plastic. While the valve connector 10 was designed for use in a postmix dispensing system, it can also be used in a premix juice dispensing system. The valve connector 10 can also be used in other postmix juice dispensing systems than the system described above, that is, it is not limited to use with a pump as the means for moving the concentrate through the concentrate conduit, nor to use with thawed concentrate since it can also be used with unthawed 5+1 concentrate at –10°F to 0°F (249.82 K to 255.38K), for example. Alternatively to feeding the juice concentrate to a dispensing valve connector 24, it can also be fed to a reservoir of a gravity fed juice dispensing system, having for example, a float controlled automatic filling arrangement.

It will thus be seen that the present invention, at least in its preferred forms, provides a shut-off valve connector for pulp-containing juice that will not clog up; and furthermore which permits the pumping of viscous, pulp-containing juice concentrate from a container, without spilling concentrate when switching bags.

Claims

1. A shut-off valve connector for a juice dispensing conduit, comprising: a housing (30) having an elongate chamber (31) therein, said chamber being open at a proximal end of said housing and having an outlet port (44) in a wall of said housing, a sleeve (32) located in said chamber for reciprocating movement therein between a closed position and an open position, said sleeve having a passageway (38) therethrough including an inlet opening (40) in a proximal end thereof and an outlet opening (42), and a coupling (50) at the proximal end of said valve connector housing for attaching said valve connector to a container spout (12), characterized in that the said outlet port (44) is provided in a side wall of the housing, the said outlet opening (42) in the sleeve (32) is provided in a side wall thereof to mate with the said outlet port when the sleeve is in its said open position, and means (36) are provided for biassing the sleeve into its closed position, attachment of the valve connector to a container spout acting to force the said sleeve to move, relative to the said housing, to its said open position, and further characterized in that the said sleeve passageway (38) has a smooth interior surface of substantially uniform circular cross-section along its entire length, with a smoothly curving 90° bend therein leading to the said outlet opening.

2. A valve connector as claimed in claim 1, wherein said biasing means (36) is a coil compression spring positioned in said chamber (31) between a distal end of said sleeve (32) and a distal end of said housing (30).

3. A valve connector as claimed in claim 1 or 2, including a fitting (56) connected to said housing (30) surrounding said outlet port (44) of said housing.

4. A valve connector as claimed in any of claims 1 to 3, in combination with a juice container (14) having a spout (12) adapted to contact said sleeve (32) when said valve connector is coupled thereto, for opening said valve connector.

5. Apparatus as claimed in claim 4, wherein said spout (12) has a juice passageway (58) therethrough identical in cross-sectional size and shape to that of said sleeve passageway (38), to prevent any pulp in the juice from clogging said passageway.

Revendications

1. Un connecteur de valve d'arrêt pour un conduit de distribution de jus comprenant : un boîtier (30) comportant une chambre allongée (31), ladite chambre étant ouverte à une extrémité proximale dudit boîtier et comportant un orifice de sortie (44) dans une paroi dudit boîtier, un manchon (32) situé dans ladite chambre en vue d'un déplacement en va-et-vient à l'intérieur de celle-ci entre une position fermée et une position ouverte, ledit manchon comportant un passage traversant (38), comprenant un orifice d'entrée (40) à une extrémité proximale de celui-ci et un orifice de sortie (42), et un accouplement (50) à une extrémité proximale dudit boîtier de connecteur de valve pour attacher ledit connecteur de valve à un déversoir (12) de récipient, caractérisé en ce que ledit orifice de sortie (44) est aménagé dans une paroi latérale du boîtier, que ledit orifice (42) dans le manchon (32) est ménagé dans une paroi latérale de celui-ci pour correspondre audit orifice de sortie lorsque le manchon est dans sa dite position ouverte, et en ce qu'il existe des moyens (36) pour solliciter le manchon dans sa position fermée, l'attache du connecteur de valve sur un récipient agissant pour forcer ledit manchon à se déplacer, par rapport audit boîtier, vers sa dite position ouverte, et caractérisé en outre en ce que ledit passage de manchon (38) comporte une surface intérieure lisse de section transversale sensiblement uniforme, circulaire, sur toute sa longueur, comportant un coude à 90° s'incurvant de façon uniforme, menant vers ledit orifice de sortie.

2. Un connecteur de valve selon la revendication 1, dans lequel ledit moyen de sollicitation (36) est un ressort à boudin en compression positionné dans ladite chambre (31) entre une extrémité distale dudit manchon (32) et une extrémité distale dudit boîtier (30).

3. Un connecteur de valve selon la revendication 1 ou 2, comprenant un raccord (56) relié audit boîtier

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of the housing 30, so that orange juice concentrate in the bag 14 can flow out of the bag 14 to the pump 20 by the suction created by the pump. The pump then pushes the concentrate to the dispensing valve connector 24.

The passageway 38 is free from any obstruction or areas which may trap pulp in the orange juice concentrate, and is preferably of smooth, uniform, circular cross-section, identical in size and shape to the passageway 58 in the spout 12.

While the preferred embodiment of this invention has been described above in detail, it is to be understood that variations and modifications can be made therein without the departing from the scope of the present invention as set forth in the appended claims. Most of the parts of the valve connector 10, except the spring, are preferably made of plastic. While the valve connector 10 was designed for use in a postmix dispensing system, it can also be used in a premix juice dispensing system. The valve connector 10 can also be used in other postmix juice dispensing systems than the system described above, that is, it is not limited to use with a pump as the means for moving the concentrate through the concentrate conduit, nor to use with thawed concentrate since it can also be used with unthawed 5+1 concentrate at –10°F to 0°F (249.82 K to 255.38K), for example. Alternatively to feeding the juice concentrate to a dispensing valve connector 24, it can also be fed to a reservoir of a gravity fed juice dispensing system, having for example, a float controlled automatic filling arrangement.

It will thus be seen that the present invention, at least in its preferred forms, provides a shut-off valve connector for pulp-containing juice that will not clog up; and furthermore which permits the pumping of viscous, pulp-containing juice concentrate from a container, without spilling concentrate when switching bags.

Claims

1. A shut-off valve connector for a juice dispensing conduit, comprising: a housing (30) having an elongate chamber (31) therein, said chamber being closed at a proximal end of said housing and having an outlet port (44) in a wall of said housing, a sleeve (32) located in said chamber for reciprocating movement therein between a closed position and an open position, said sleeve having a passageway (38) therethrough including an inlet opening (40) in a proximal end thereof and an outlet opening (42), and a coupling (50) at the proximal end of said valve connector housing for attaching said valve connector to a container spout (12), characterized in that the said outlet port (44) is provided in a side wall of the housing, the said outlet opening (42) in the sleeve (32) is provided in a side wall thereof to mate with the said outlet port when the sleeve is in its said open position, and means (36) are provided for biassing the sleeve into its closed position, attachment of the valve connector to a container spout acting to force the said sleeve to move, relative to the said housing, to its said open position, and further characterized in that the said sleeve passageway (38) has a smooth interior surface of substantially uniform circular cross-section along its entire length, with a smoothly curving 90° bend therein leading to the said outlet opening.

2. A valve connector as claimed in claim 1, wherein said biasing means (36) is a coil compression spring positioned in said chamber (31) between a distal end of said sleeve (32) and a distal end of said housing (30).

3. A valve connector as claimed in claim 1 or 2, including a fitting (56) connected to said housing (30) surrounding said outlet port (44) of said housing.

4. A valve connector as claimed in any of claims 1 to 3, in combination with a juice container (14) having a spout (12) adapted to contact said sleeve (32) when said valve connector is coupled thereto, for opening said valve connector.

5. Apparatus as claimed in claim 4, wherein said spout (12) has a juice passageway (58) therethrough identical in cross-sectional size and shape to that of said sleeve passageway (38), to prevent any pulp in the juice from clogging said passageway.

Revendications

1. Un connecteur de valve d'arrêt pour un conduit de distribution de jus comprenant : un boîtier (30) comportant une chambre allongée (31), ladite chambre étant ouverte à une extrémité proximale dudit boîtier et comportant un orifice de sortie (44) dans une paroi dudit boîtier, un manchon (32) situé dans ladite chambre en vue d'un déplacement en va-et-vient à l'intérieur de celle-ci entre une position fermée et une position ouverte, ledit manchon comportant un passage traversant (38), comprenant un orifice d'entrée (40) à une extrémité proximale de celui-ci et un orifice de sortie (42), et un accouplement (50) à une extrémité proximale dudit boîtier de connecteur de valve pour attacher ledit connecteur de valve à un déversoir (12) de récipient, caractérisé en ce que ledit orifice de sortie (44) est aménagé dans une paroi latérale du boîtier, que ledit orifice (42) dans le manchon (32) est ménagé dans une paroi latérale de celui-ci pour correspondre audit orifice de sortie lorsque le manchon est dans sa dite position ouverte, et en ce qu'il existe des moyens (36) pour solliciter le manchon dans sa position fermée, l'attache du connecteur de valve sur un récipient agissant pour forcer ledit manchon à se déplacer, par rapport audit boîtier, vers sa dite position ouverte, et caractérisé en outre en ce que ledit passage de manchon (38) comporte une surface intérieure lisse de section transversale sensiblement uniforme, circulaire, sur toute sa longueur, comportant un coude à 90° s'incurvant de façon uniforme, menant vers ledit orifice de sortie.

2. Un connecteur de valve selon la revendication 1, dans lequel ledit moyen de sollicitation (36) est un ressort à boudin en compression positionné dans ladite chambre (31) entre une extrémité distale dudit manchon (32) et une extrémité distale dudit boîtier (30).

3. Un connecteur de valve selon la revendication 1 ou 2, comprenant un raccord (56) relié audit boîtier

(30) entourant ledit orifice de sortie (44) dudit boîtier.

Un connecteur de valve selon l'une quelconque des revendications 1 à 3, en combinaison avec un récipient (14) de jus comportant un déversoir (12) apte à venir en contact avec ledit manchon (32) lorsque ledit connecteur de valve y est accouplé, pour ouvrir ledit connecteur de valve.

5. Appareil selon la revendication 4, dans lequel ledit déversoir (12) comporte un passage traversant (58) de jus, identique en dimension en coupe transversale et en forme à celui dudit passage (38) de manchon, pour empêcher une pulpe quelconque contenue das le jus de boucher ledit passage.

Patentansprüche

1. Absperrventil-Verbinder für eine Saftausgabeleitung, der aufweist: ein Gehäuse (30), das eine darin befindliche längliche Kammer (31) hat, wobei die Kammer an einem proximalen Ende des Gehäuse offen ist, und eine Auslaßöffnung (44) in einer Wand des Gehäuses hat, ein Hülsenteil (32), das sich in der Kammer zur Ausführung einer hin- und hergehenden Bewegung in derselben zwischen einer Schließstellung und einer Offenstellung befindet, wobei das Hülsenteil einen durch dasselbe gehenden Durchgang (38) hat, der eine Einlaßöffnung (40) in einem proximalen Ende desselben und eine Auslaßöffnung (42) hat, und eine Kupplung (50) am proximalen Ende des Ventilverbindergehäuses zum Anbringen des Ventilverbinders an einem Behälterausguß (12), dadurch gekennzeichnet, daß die Auslaßöffnung (44) in einer Seitenwand des Gehäuses vorgesehen ist, die Auslaßöffnung (42) in dem Hülsenteil (32) in einer Seitenwand derselben so vorgesehen ist, daß sie zu der Auslaßöffnung ausgerichtet ist, wenn das Hülsenteil sich in seiner Offenstellung befindet, und daß eine Einrichtung (36) zur Vorbelastung des Hülsenteils in seine Schließstellung vorgesehen ist, ein Ansatz des Ventilverbinders mit dem Behälterausguß so zusammenwirkt, daß das Hülsenteil mit einer Kraft beaufschlagt wird und sich relativ zum Gehäuse in seine Offenstellung bewegt und daß der Hülsendurchgang (38) eine glatte Innenfläche mit im wesentlichen gleichförmigem, kreisförmigem Querschnitt längs seiner gesamten Länge hat, wobei eine gleichmäßig gekrümmte Biegung um 90° zu der Auslaßöffnung führt.

2. Ventilverbinder nach Anspruch 1, bei dem die Vorbelastungseinrichtung (36) eine Schraubenkompressionsfeder ist, die in der Kammer (31) zwischen einem distalen Ende des Hülsenteils (32) und einem distalen Ende des Gehäuses (30) angeordnet ist.

3. Ventilverbinder nach Anspruch 1 oder 2, der ein Verbindungsstück (56) umfaßt, das mit dem Gehäuse (30) verbunden ist, und der die Auslaßöffnung (44) des Gehäuses umgibt.

4. Ventilverbinder nach einem der Ansprüche 1 bis 3 in Verbindung mit einem Saftbehälter (14), der einen Ausguß (12) hat, welcher derart ausgelegt ist, daß er in Berührung mit dem Hülsenteil (32) kommt, wenn der Ventilverbinder mit diesem zum öffnen des Ventilverbinders verbunden ist.

5. Vorrichtung nach Anspruch 4, bei der der Ausguß (12) einen durch denselben gehenden Saftdurchgang (58) hat, welcher gleiche Querschnittsabmessungen und eine gleiche Querschnittsgestalt wie der Hülsenteildurchgang (38) hat, um zu verhindern, daß Fruchtfleisch in dem Saft den Durchgang verstopft.

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