(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 1 832 549 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
10.12.2008 Bulletin 2008/50

(51) Int Cl.:
B67D 5/365 *(2006.01)*

(21) Application number: **07103175.1**

(22) Date of filing: **27.02.2007**

(54) **Fuel dispenser with hose retraction mechanism**

Zapfsäule mit Schlauchrückführung

Distributeur de carburant avec dispositif tendeur de tuyau

(84) Designated Contracting States:
DE GB

(30) Priority: **07.03.2006 GB 0604563**

(43) Date of publication of application:
12.09.2007 Bulletin 2007/37

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(56) References cited:
EP-A1- 1 253 106
WO-A-00/61490
GB-A- 1 217 420

EP 1 832 549 B1

Printed by Jouve, 75001 PARIS (FR)

Description

[0001] The present invention relates to a hose retraction mechanism of a fuel dispenser.

[0002] The simplest type of hose arrangement for a fuel dispenser comprises a hose external to the fuel dispenser, which hose is hung from an outlet line high up on the fuel dispenser, whereby the hose is then simply supported by being attached at one end to the outlet line and at its other end to a nozzle which, in a rest position, is supported by a cradle in the dispenser.

[0003] To avoid the "clutter" of hoses resulting from the above described arrangement and to avoid the possibility of entanglement of hoses and/or to increase the length of hose available at a dispenser; dispensers also exist whereby a length of hose is contained within the housing of a fuel dispenser, as illustrated in the prior art examples of Figures 1 and 2 attached hereto, and in UK Patent GB. 1 217 420, European Patent Application EP 1 253 106, which corresponds to the preamble of claim 1, and International Patent Application WO 00/61490.

[0004] In the example illustrated in Figure 1, a hose is supported by an upper portion of the housing within the dispenser and by the nozzle supported in the cradle, as shown. The hose passes through a slot in the housing which slot extends from slightly below the nozzle cradle, to just above the ground, such that in use the hose can swing out of housing as the nozzle is pulled away from the dispenser by a user. With this arrangement however, there is only a limited length of hose that can be accommodated within the housing, otherwise an excessive amount of hose will protrude from the housing when the nozzle is resting on its cradle, which is both unsightly and could also present a potential hazard.

[0005] To increase the length of hose available, retractor mechanisms are also known, one of which is illustrated in Figure 2. The retractor mechanism of Figure 2 comprises a fixed upper roller which the hose is looped over and a lower, weighted, roller under which the hose passes. Gravity acting on the lower roller causes the hose to be retracted into the housing as the lower roller sinks to the bottom of the housing. Although this arrangement permits a greater length of hose to be available than in the Figure 1 arrangement, the cost of producing a hose retractor arrangement as shown is relatively expensive, for it requires additional panels to be included within the dispenser as the lower roller has to be sandwiched between two closely spaced panels. The hose then traverses one of the panels as it passes over the upper roller such that the hose extending between the upper roller and nozzle is contained within a second compartment adjacent to the first compartment in which the lower roller is housed.

[0006] A further problem with the arrangement in Figure 2 is that the weighted roller has to be sufficiently heavy to ensure the hose will be reliably retracted throughout the lifetime of the dispenser, regardless of the stiffness of the hose which is both dependent on temperature and material, and thus a significant pull force is required. This is acceptable where a car is being fuelled from a side adjacent the dispenser, for there will normally be a sufficient length of free hose to fuel the car without movement of the weighted pulley, or the hose may be pulled in a straight line to the filler cap of the vehicle. However, where it is desired to fuel a vehicle with a filler cap on the side of the vehicle, remote from the dispenser, a significant pull force is then required to fully deploy the hose and it is difficult to maintain this force, especially where the hose has to be pulled around the vehicle and contact with the vehicle is to be avoided.

[0007] According to the present invention there is provided a fuel dispenser having a housing, a nozzle for dispensing fuel, a fuel delivery hose connecting the nozzle to a main body of the dispenser and a hose retraction mechanism for retracting the hose into the housing of the dispenser through an aperture in the housing, the hose retractor mechanism including a cord, means for attaching the cord to a connection point on the hose remote from the ends of the hose, biasing means for retracting the cord so as to urge the connection point on the hose to a high point in an upper portion of the housing and two rollers located adjacent the aperture, the hose running below the two rollers and passing through the aperture out of the housing, wherein the two rollers arranged sequentially such that the two rollers act together to first guide a section of hose and then a section of cord as the hose is drawn from the housing out through the aperture, a first one of the rollers being arranged to receive the hose when it is retracted into the housing and a second one of the rollers located further from the aperture than the first roller and higher than the first roller to guide the hose towards the highpoint.

[0008] An arrangement in accordance with the present invention permits a relatively long length of hose to be contained within the housing of a dispenser with the hose normally being accommodate within a single compartment. This arrangement permits the hose to be pulled out of the dispenser with negligible resistive force, thus the only force that needs to be overcome to withdraw the hose is the force exerted by the biasing means for retracting the cord. This can be set at a fairly low value, requiring to only slightly greater than that sufficient to reliably lift the weight of the hose to the top of the cabinet. Thus, with the present invention, a significant reduction in the required pull force is achieved mechanism is particularly smooth compared to the prior art arrangement illustrated in Figure 2. Cabinet design is also simplified compared to the prior art arrangement illustrated in Figure 2.

[0009] The two rollers adjacent the aperture can smoothly guide the hose and cord, when the hose is pulled from the fuel dispenser housing and permits the retraction mechanism to have a relatively smooth action despite the angles through which the hose must necessarily be bent to permit the hose to be retracted to the top of the housing.

[0010] Preferably, two rollers are located at about waist level of a user, whereby when the nozzle and hose are drawn out of the dispenser, as in normal use, the hose between the nozzle and the first roller will define a first line extending generally in a horizontal direction, the second roller and the high point defining a second line inclined at an angle relative to the first line, with the axes of rotation of the rollers being substantially parallel and horizontal lying on a plane such that the third line perpendicular to the plane of the rollers subtends angles B and C equal to half of angle A $\pm$ 10° relative to the first line and second line, respectively.

[0011] With the two rollers arranged as described above, it is has been found that retraction of the hose is particularly smooth and is unlikely to jam.

[0012] Preferably, the angles B and C are equal to half that of angle A $\pm$ 5°.

[0013] Advantageously, the dispenser further comprises a cradle for the nozzle, the cradle being mounted above the aperture, wherein the aperture extends substantially to ground level to form a vertical slot through which the hose may pass, wherein the end of the hose remote from the nozzle is connected to the dispenser within the housing towards the top of the housing on the opposite side to that of the aperture, with said high point being located substantially midway between the front of the housing in which the aperture is located and the back of the housing towards which the hose is connected to the dispenser, with the connection point with the cord on the hose being towards a central portion of the hose, wherein the hose, when fully retracted, is arranged to hang in a W shape.

[0014] The above described arrangement permits a relatively long length of hose to be retracted within the housing of the fuel dispenser without passing over itself and therefore ensuring that the hose cannot become joined on itself when it is withdrawn from the dispenser. Preferably, the dispenser is arranged such that when the nozzle is first lifted from the cradle and withdrawn from the dispenser, the hose will be drawn into contact with the two rollers, further withdrawal drawing the cord into contact with the rollers whereupon the cord is guided out of the housing by said rollers. This permits the rollers to guide both the hose during the first part of the process to withdraw and to guide the cord during a second further part of the withdrawal process. Preferably both rollers are profiled to centrally guide both the cord and the hose.

[0015] The dispenser preferably further comprises a hose clamp for connecting the cord to the hose at the connection point on the hose, the hose clamp being clamped on the hose with the cord located on the clamp towards the end of the clamp proximal to the nozzle.

[0016] The cord being attached towards the front of the clamp greatly assists the smooth operation of the retraction mechanism as the clamp is retracted past the rollers.

[0017] Preferably, the surface of the clamp has protrusions for engaging with the surface of the hose, the protrusions being elongate and extending in a direction having a component along the axis of the hose to resist rotation of the hose about its axis within the clamp.

[0018] Protrusions having a zigzag shape extending in the axial direction of the clamp have been found to be particularly advantageous.

[0019] One embodiment of the present invention will now be described, by way of example only, with reference to Figures 3a to 10 of the accompanying drawings, of which:

Figure 3a is a front view of a dispenser in accordance with the present invention;
Figure 3b is an enlarged section of the roller arrangement partly shown in Figure 3a;
Figure 4 is an end view of the dispenser along the lines IV-IV of Figure 3a with the end panel of the housing removed;
Figure 5 schematically illustrates the position a hose would adopt when a nozzle is initially removed from a dispenser in accordance with the present invention;
Figures 6a and 6b illustrate the operation of the hose retraction mechanism as the nozzle is further extended away from the fuel dispenser in accordance with the present invention;
Figures 7a and 7b illustrate the operation of the hose retraction mechanism as the hose is fully extended out of the fuel dispenser in accordance with the present invention;
Figure 8 is a cross-section through a clamp of the fuel dispenser in accordance with the present invention;
Figure 9 shows the internal surface of the top half of the clamp of Figure 8; and
Figure 10 is a plan view of the top of the clamp of Figure 8.

[0020] Referring now to Figure 3a there is illustrated a fuel dispenser, indicated generally as 1, having a volume display 2, a price display 3 and a housing 4, a lower portion 4a of which houses the hydraulic equipment associated with the fuel dispenser and an end portion 4b of which provides a housing for six hoses (three on each side) together with their associated cord retraction mechanisms.

[0021] Referring to Figure 4, an end view along the line IV-IV of Figure 3a (with the end panel removed) there is shown the components of a hose retraction system for hose 5 and associated nozzle 6. The nozzle 6 rests in cradle 7 associated with that nozzle. The nozzle 6 is connected by hose 5 to an outlet of the dispenser 8 from which the hose 5 receives fuel to be dispensed by the dispenser. A hose clamp 9 is affixed to the hose at a point 1.7 to 2.0 m along the hose from the outlet 8, to ensure the hose, when fully retracted hangs so that the section of hose between the clamp and the nozzle hangs substantially in a U-shape when the nozzle is in its cradle

and so that the section of hose between the clamp 9 and outlet 8 remains suspended throughout the retraction cycle. The clamp 9 is supported by a cord 10 which is wrapped around spring loaded drum 11 which drum acts to bias the clamp 9 to the top of the housing, such that the clamp and associated portion of the hose are suspended from the top of the housing, as illustrated in Figure 4. The spring loaded drum typically exerts a force of 45 to 50 N, sufficient to ensure the hose when full can be reliably retracted (lifted) to the position shown.

[0022] To the left of the clamp 9, as shown in Figure 4, the hose extends to a bottom portion of the housing where it passes through aperture 12 (a corresponding aperture being shown more clearly in Figure 3a) to the outside of the dispenser. Here it is supported by being connected at the end 13 to the nozzle 6.

[0023] At the top and slightly behind the aperture 12 there is located a first roller 14 and a second roller 15, shown in side elevation in Figure 4 and in front elevation in Figure 3b, Figure 3b being an enlarged view of the section indicated in Figure 3a with the housing removed.

[0024] As shown in Figure 4, when the nozzle 6 is in its cradle 7 and the hose is fully retracted within the housing 4 by the spring loaded drum 11, the hose adopts a substantially "W"-shape, with a panel 16 separating adjacent hoses into separate compartments, each compartment being only slightly wider than the width of the hose, to prevent the hose 5 passing by itself and potentially jamming on itself.

[0025] In the retracted position shown in Figure 4, the second roller 15 is the only roller in contact with the hose 5 and the roller 15 maintains the hose within the housing such that the hose hangs neatly, substantially vertically, from the nozzle (instead of extending away from the dispenser which could occur if the hose was not retained in position by the roller 15).

[0026] Referring now to Figure 5, when the nozzle 6 is lifted from the cradle and pulled away from the dispenser 1, the hose 5 comes into contact with the rollers 14 and 15. As the nozzle and hose are pulled further from the dispenser 1, the hose is then guided by the rollers 14 and 15, as illustrated in Figure 5, until clamp 9 passes by the rollers. At this point the hose will adopt the position illustrated in Figure 6a (see also the enlarged insert of Figure 6b) where the hose is supported at one end by the dispenser and at the other end by the nozzle and in a middle portion by the clamp 9. Rollers 14 and 15 then guide the cord 10 through the aperture 12 as the hose is further withdrawn from the dispenser. As is shown in Figure 3b, the rollers 14 and 15 are profiled such that they may centrally guide both the hose 6 and the cord 10.

[0027] If the nozzle and hose are withdrawn even further from the dispenser, then the hose will eventually come into contact with the rollers 14 and 15, as illustrated in Figure 7a (and enlarged insert Figure 7b) with the rollers 14, 15 acting on the hose 5 to stop further withdrawal of the hose. The hose should limit maximum extension, rather than the cord, for the outlet 8 has an internal breakaway valve that will close should the hose be wrenched away from the coupling, as may happen if a vehicle drives off with the nozzle still in the vehicle tank. Thus, it is important that in this situation the force exerted by the nozzle on the hose should be transmitted directly to the outlet 8, to ensure correct operation of the valve within the outlet 8.

[0028] Referring to Figure 7b, a first line X has been drawn which extends generally in the direction of the hose and the cord outside of the dispenser when the hose is pulled from the dispenser in normal operation. This line X subtends a first angle A relative to the cord extending between the roller 15 and the drum 11, represented as line Y. It is has been found that if the rollers 14 and 15 are arranged with their axes of rotation parallel, substantially horizontal and lying on a plane perpendicular to the line Z, which line Z subtends angles B and C equal to half the angle A, then this results in a hose retraction system having a particularly smooth retraction properties, particularly as the clamp 9 passes across the rollers.

[0029] The clamp 9 is shown in more detail in Figures 8 to 10. In the cross-section of Figure 8 the clamp is seen to comprise a top portion 9a and a bottom portion 9b screwed together to clamp the hose (not shown) therebetween. The top portion 9a has a hole 17, through which the cord extends. The cord is knotted on the far side of the aperture to thereby secure the cord to the clamp 9. As shown, the hole 17 is located towards one end of the clamp 9 and, as can be seen from Figure 6b, the cord is thus secured towards the nozzle end 8. This arrangement has been found to be particularly advantageous in that, as most clearly can be seen from Figure 6a, it encourages the hose 5 between the clamp 9 and dispenser outlet 8 to drop towards the floor of the dispenser. This permits the clamp to pass more smoothly by the rollers 14, 15. It has also been found advantageous if zigzag protrusions 18 are moulded on the inside of the clamp such that they engage with the surface of the hose to prevent rotation of the hose within the clamp, any such rotation hindering the smooth operation of the retraction mechanism.

[0030] The above description is of one preferred embodiment of the invention only and it will be appreciated by the person skilled in the art that various alternative arrangements are possible within the scope of the present invention, as defined in the appended claims.

Claims

1. A fuel dispenser (1) comprising a housing (4), a nozzle (6) for dispensing fuel, a fuel delivery hose (5) connecting the nozzle to a main body of the dispenser and a hose retraction mechanism for retracting the hose into the housing of the dispenser through an aperture (12) in the housing, the fuel dispenser further comprising two rollers (14, 15) located adjacent the aperture, **characterised in that** the hose retractor mechanism includes a cord (10), means (9)

for attaching the cord to a connection point on the hose remote from the ends of the hose, biasing means (11) for retracting the cord so as to urge the connection point on the hose to a high point in an upper portion of the housing, and **in that** the hose runs below the two rollers and , when in retracted position, passes through the aperture out of the housing, wherein the two rollers are arranged sequentially such that they act together to first guide a section of hose (5) and then a section of said cord (10) as the hose is drawn from the housing out through the aperture, a first one (14) of the rollers being arranged to receive the hose when it is retracted into the housing and a second one (15) of the rollers located further from the aperture than the first roller and higher than the first roller to guide the hose towards the highpoint.

2. A fuel dispenser as claimed in Claim 1, wherein the two rollers are located at about waist level of a user such that when the nozzle and hose are drawn out of the dispenser in normal use by a user, the hose between the nozzle and the first roller will define a first line (X) extending generally in a horizontal direction, the second roller and the high point defining a second line (Y) inclined at an angle relative to the first line, with the axes of rotation of the rollers being substantially parallel and horizontal lying on a plane such that the third line (Z) perpendicular to the plane of the rollers subtends angles B and C equal to half of angle A $\pm$ 10° relative to the first line and second line, respectively.

3. A fuel dispenser as claimed in Claim 2, wherein angles B and C are equal to half of angle A $\pm$ 5°.

4. A fuel dispenser as claimed in any preceding claim, further comprising a cradle (7) for the nozzle (6), the cradle being mounted above the aperture (12), wherein the aperture (12) extends substantially to ground level to form a vertical slot through which the hose may pass, wherein the end of the hose remote from the nozzle is connected to the main body of the dispenser within the housing towards the top of the housing on the opposite side to that of the aperture, with said high point being located substantially midway between the front of the housing in which the aperture is located and the back of the housing towards which the hose is connected to the dispenser, with the connection point with the cord on the hose being towards a central portion of the hose, wherein the hose, when fully retracted, is arranged to hang in a W shape.

5. A fuel dispenser as claimed in Claim 4, arranged such that when the nozzle is first lifted from the cradle and withdrawn from the dispenser, the hose will be drawn into contact with the two rollers (14, 15), further withdrawal drawing the cord into contact with the two rollers whereupon the cord is guided out of the housing by said rollers.

6. A fuel dispenser as claimed in any preceding claim , wherein both rollers (14, 15) are profiled to centrally guide both the cord and hose.

7. A fuel dispenser as claimed in any preceding claim, further comprising a hose clamp (9) for connecting the cord to the hose at the connection point, the hose clamp being clamped on the hose with the cord located on the clamp towards the end of the clamp proximal to the nozzle.

8. A fuel dispenser as claimed in Claim 7, wherein an inner surface of the clamp has protrusions (18) for engaging with the surface of the hose, the protrusion being elongate and extending in a direction having a component along the axis of the hose to resist rotation: of the hose about its axis within the clamp.

9. A fuel dispenser as claimed in Claim 8, wherein the elongate protrusions (18) have a zigzag shape extending in an axial direction of the clamp.

Patentansprüche

1. Zapfsäule (1), die ein Gehäuse (4), eine Zapfpistole (6) zur Kraftstoffausgabe, einen Kraftstoffdruckschlauch (5), der die Zapfpistole mit dem Hauptkörper der Zapfsäule verbindet und eine Schlauchrückführung zum Rückführen des Schlauchs in das Gehäuse der Zapfsäule durch eine Öffnung (12) im Gehäuse umfasst, wobei die Schlauchrückführung weiter eine Schnur (10), Mittel (9) zum Anbringen der Schnur an einen Verbindungspunkt am Schlauch fern von den Schlauchenden, Vorspannmittel (11) zum Rückführen der Schnur einschließt, um den Verbindungspunkt am Schlauch an eine hohe Stelle im oberen Abschnitt des Gehäuses drängen, wobei die Zapfsäule weiter zwei Rollen (14, 15) umfasst, die sich angrenzend an die Öffnung befinden, **dadurch gekennzeichnet, dass** der Schlauch unterhalb der zwei Rollen läuft und, wenn in der rückgeführten Position befindlich, durch die Öffnung aus dem Gehäuse läuft, wobei, die zwei Rollen sequenziell so angeordnet sind, dass sie zusammenarbeiten, um zuerst einen Teil des Schlauchs (5) und danach einen Abschnitt der besagten Schnur (10) zu führen, sowie der Schlauch durch die Öffnung aus dem Gehäuse gezogen wird, wobei eine Erste (14) der Rollen angeordnet ist den Schlauch aufzunehmen, wenn er in das Gehäuse rückgeführt wird und eine Zweite (15) der Rollen weiter weg von der Öffnung als die erste Rolle und höher als die erste Rolle positioniert ist, um den Schlauch in Richtung des ho-

hen Punkts zu führen.

2. Zapfsäule nach Anspruch 1, wobei sich die zwei Rollen auf etwa Hüfthöhe eines Benutzers befinden, sodass, wenn die Zapfpistole und der Schlauch bei normaler Verwendung von einem Benutzer aus der Zapfsäule gezogen werden, der Schlauch zwischen der Zapfpistole und der ersten Rolle eine erste Linie (X) definieren wird, die sich generell in horizontaler Richtung erstreckt, wobei die zweite Rolle und der hohe Punkt eine zweite Linie (Y) definieren, die in einen Winkel relativ zur ersten Linie geneigt ist, wobei die Rotationsachsen der Rollen im Wesentlichen parallel sind und horizontal so auf einer Ebene liegen, dass die dritte Linie (Z) senkrecht zur Ebene der Rollen den Winkeln B und C gleich dem halben Winkel A $\pm$ 10° relativ zur ersten bzw. zweiten Linie gegenüberliegt.

3. Zapfsäule nach Anspruch 2, wobei Winkel B und C gleich der Hälfte des Winkels A $\pm$ 5°.

4. Zapfsäule nach einem vorhergehenden Anspruch, die weiter eine Wiege (7) für die Zapfpistole (6) umfasst, wobei die Wiege oberhalb der Öffnung (12) montiert ist, wobei sich die Öffnung (12) im Wesentlichen auf Bodenhöhe erstreckt, um einen vertikalen Schlitz zu bilden, durch den der Schlauch passieren könnte, wobei das von der Zapfpistole ferne Ende des Schlauchs mit dem Hauptkörper der Zapfsäule innerhalb des Gehäuses in Richtung der Oberseite des Gehäuses auf der entgegengesetzten Seite zu jener der Öffnung verbunden ist, wobei besagter hohe Punkt im Wesentlichen auf halbem Weg zwischen der Vorderseite des Gehäuses, in der sich die Öffnung befindet und der Rückseite des Gehäuses in dessen Richtung der Schlauch an die Zapfsäule angeschlossen ist, wobei der Verbindungspunkt mit der Schnur am Schlauch in einem zentralen Teil des Schlauchs liegt, wobei der Schlauch, wenn voll rückgeführt, angeordnet ist in einer W-Form zu hängen.

5. Zapfsäule nach Anspruch 4, die so eingerichtet ist, dass, wenn die Zapfpistole zuerst aus der Wiege gehoben und aus der Zapfsäule herausgezogen wird, der Schlauch in Kontakt mit zwei Rollen (14, 15) gezogen wird, wobei weiteres Herausziehen die Schnur in Kontakt mit den zwei Rollen zieht, wonach die Schnur durch besagte Rollen aus dem Gehäuse geführt wird.

6. Zapfsäule nach einem vorhergehenden Anspruch, wobei beide Rollen (14, 15) profiliert sind, um sowohl die Schnur als auch den Schlauch zentral zu führen.

7. Zapfsäule nach einem vorhergehenden Anspruch, die weiter eine Schlauchschelle (9) zum Verbinden der Schnur mit dem Schlauch am Verbindungspunkt umfasst und die Schlauchschelle an den Schlauch geklemmt wird, wobei sich die Schnur an der Schelle Richtung des Schellenendes proximal der Zapfpistole befindet.

8. Zapfsäule nach Anspruch 7, wobei eine Innenfläche der Schelle Vorsprünge (18) zum Eingreifen in die Oberfläche des Schlauchs aufweist, wobei die Vorsprünge länglich sind und sich in einer Richtung erstrecken, die eine Komponente entlang der Schlauchachse aufweist, um Rotation des Schlauchs um seine Achse innerhalb der Schelle zu widerstehen.

9. Zapfsäule nach Anspruch 8, wobei die länglichen Vorsprünge (18) eine Zickzackform aufweisen, die sich in einer axialen Richtung der Schelle erstreckt.

Revendications

1. Distributeur de carburant (1) comportant un logement (4), un pistolet (6) destiné à distribuer du carburant, un flexible de distribution de carburant (5) raccordant le pistolet à un corps principal du distributeur et un mécanisme d'enroulement de flexible destiné à enrouler le flexible dans le logement du distributeur au travers d'une ouverture (12) dans le logement, le distributeur de carburant comportant par ailleurs deux rouleaux (14, 15) situés de manière adjacente par rapport à l'ouverture, **caractérisé en ce que** le mécanisme enrouleur de flexible comprend une corde (10), un moyen (9) destiné à attacher la corde à un point de raccordement sur le flexible à distance des extrémités du flexible, un moyen de sollicitation (11) destiné à enrouler la corde de telle manière à contraindre le point de raccordement sur le flexible jusqu'à un point élevé dans une partie supérieure du logement, et **en ce que** le flexible s'achemine en dessous des deux rouleaux et, quand il est dans la position enroulée, passe au travers de l'ouverture pour sortir du logement, comme quoi les deux rouleaux sont arrangés de manière séquentielle de telle manière qu'ils agissent ensemble pour tout d'abord guider une section de flexible (5) puis une section de ladite corde (10) alors que le flexible est sorti du logement au travers de l'ouverture, un premier quelconque (14) des rouleaux étant arrangé pour recevoir le flexible quand il est enroulé dans le logement et un deuxième quelconque (15) des rouleaux situé plus loin de l'ouverture par rapport au premier rouleau et plus haut par rapport au premier rouleau étant arrangé pour guider le flexible vers le point élevé.

2. Distributeur de carburant selon la revendication 1, dans lequel les deux rouleaux se trouvent à environ le niveau de la taille d'un utilisateur de telle manière

que lorsque que le pistolet et le flexible sont sortis du distributeur au cours d'une utilisation normale par un utilisateur, le flexible entre le pistolet et le premier rouleau définit une première ligne (X) s'étendant généralement dans une direction horizontale, le deuxième rouleau et le point élevé définissant une deuxième ligne (Y) inclinée selon un angle par rapport à la première ligne, les axes de rotation des rouleaux étant dans une large mesure parallèles et horizontaux reposant sur un plan de telle manière que la troisième ligne (Z) perpendiculaire au plan des rouleaux sous-tend les angles B et C égaux à la moitié de l'angle A $\pm$ 10° par rapport à la première ligne et par rapport à la deuxième ligne, respectivement

3. Distributeur de carburant selon la revendication 2, dans lequel les angles B et C sont égaux à la moitié de l'angle A $\pm$ 5°.

4. Distributeur de carburant selon l'une quelconque des revendications précédentes, comportant par ailleurs un berceau (7) pour le pistolet (6), le berceau étant monté au-dessus de l'ouverture (12), comme quoi l'ouverture (12) s'étend dans une large mesure jusqu'au niveau du sol pour former une fente verticale au travers de laquelle le flexible peut passer, comme quoi l'extrémité du flexible à distance du pistolet est raccordée au corps principal du distributeur à l'intérieur du logement vers la partie supérieure du logement du côté opposé à celui de l'ouverture, ledit point élevé se trouvant dans une large mesure à mi-chemin entre l'avant du logement dans lequel l'ouverture se trouve et l'arrière du logement en direction duquel le flexible est raccordé au distributeur, le point de raccordement avec la corde sur le flexible étant vers une partie centrale du flexible, comme quoi le flexible, quand il est entièrement enroulé, est arrangé pour être suspendu en forme de W.

5. Distributeur de carburant selon la revendication 4, arrangé de telle manière que quand le pistolet est tout d'abord soulevé du berceau et sorti du distributeur, le flexible est tiré pour être mis en contact avec les deux rouleaux (14, 15), tout autre retrait tirant sur la corde pour la mettre en contact avec les deux rouleaux en conséquence de quoi la corde est guidée pour sortir du logement par lesdits rouleaux.

6. Distributeur de carburant selon l'une quelconque des revendications précédentes, dans lequel les deux rouleaux (14, 15) sont profilés pour guider centralement à la fois la corde et le flexible.

7. Distributeur de carburant selon l'une quelconque des revendications précédentes, comportant par ailleurs un collier de serrage de flexible (9) destiné à raccorder la corde au flexible au niveau du point de raccordement, le collier de serrage de flexible étant serré sur le flexible, la corde se trouvant sur le collier de serrage vers l'extrémité du collier de serrage de manière proximale par rapport au pistolet.

8. Distributeur de carburant selon la revendication 7, dans lequel une surface intérieure du collier de serrage a des protubérances (18) à des fins d'enclenchement par rapport à la surface du flexible, la protubérance étant allongée et s'étendant dans une direction ayant un composant le long de l'axe du flexible pour résister à toute rotation du flexible autour de son axe à l'intérieur du collier de serrage.

9. Distributeur de carburant selon la revendication 8, dans lequel les protubérances allongées (18) ont une forme de zigzag s'étendant dans une direction axiale du collier de serrage.

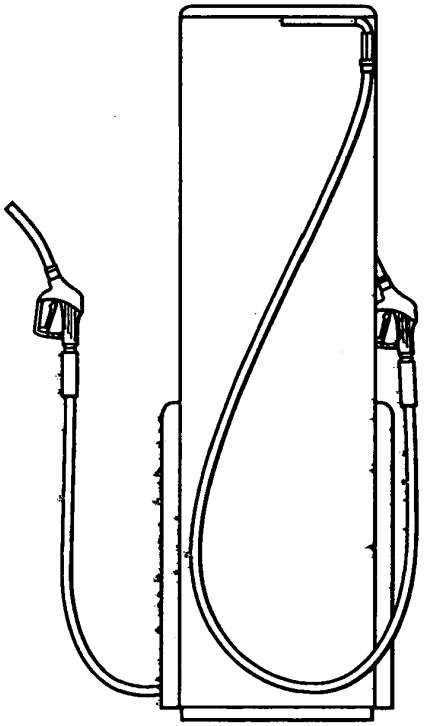

FIG. 1
(PRIOR ART)

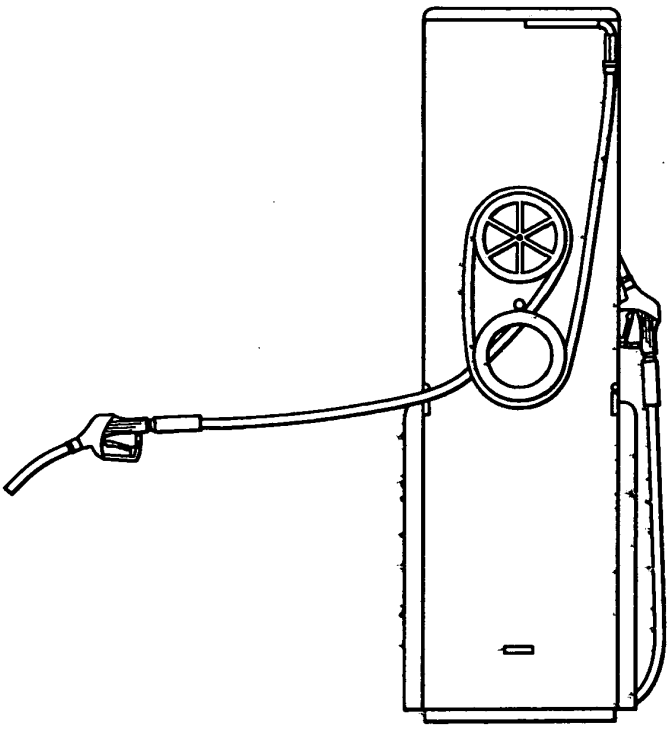

FIG. 2
(PRIOR ART)

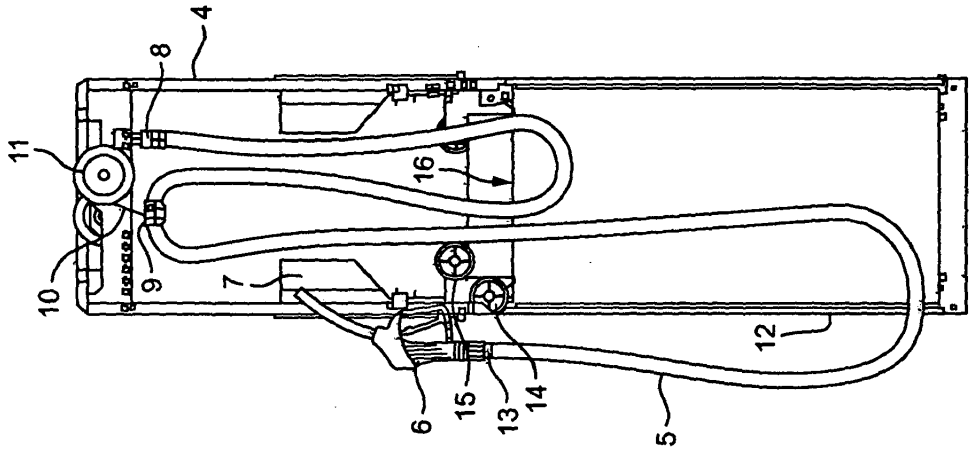

FIG. 4

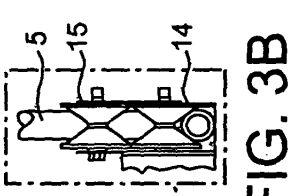

FIG. 3B

FIG. 3A

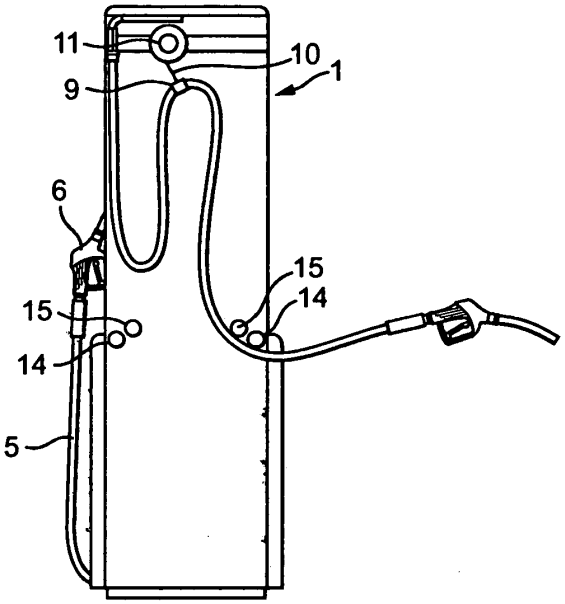

FIG. 5

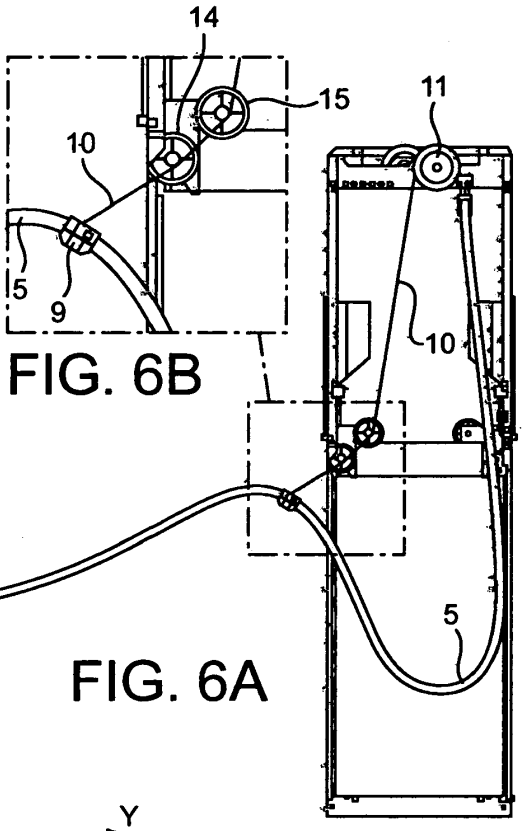

FIG. 6B

FIG. 6A

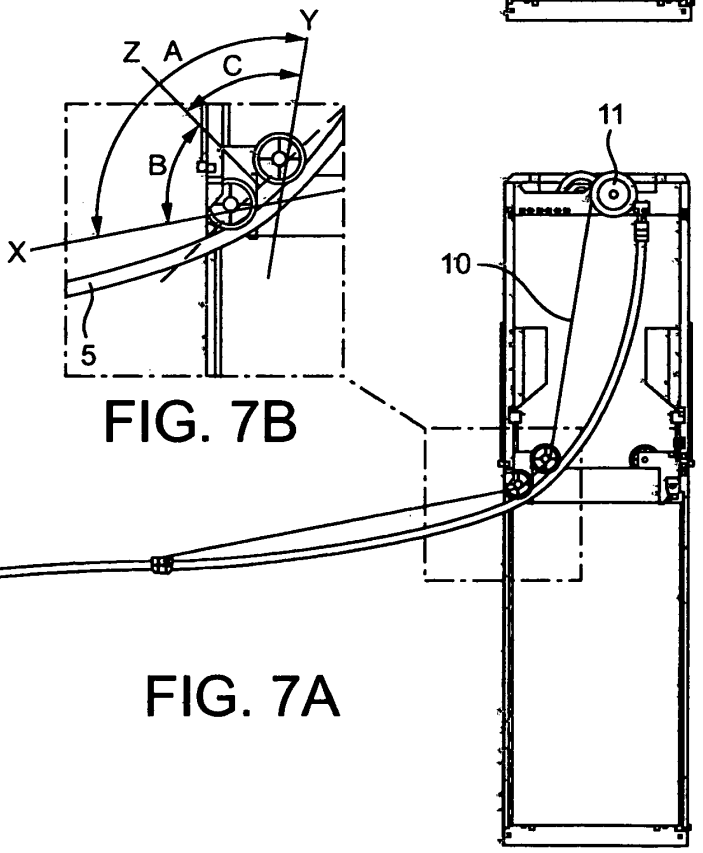

FIG. 7B

FIG. 7A

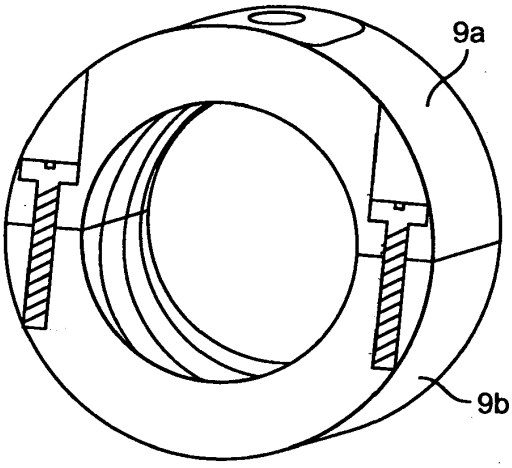

FIG. 8

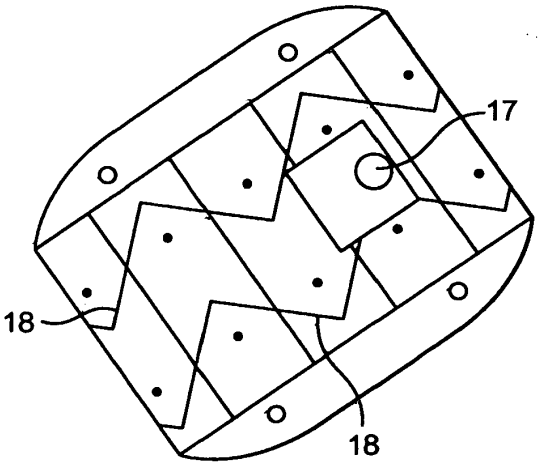

FIG. 9

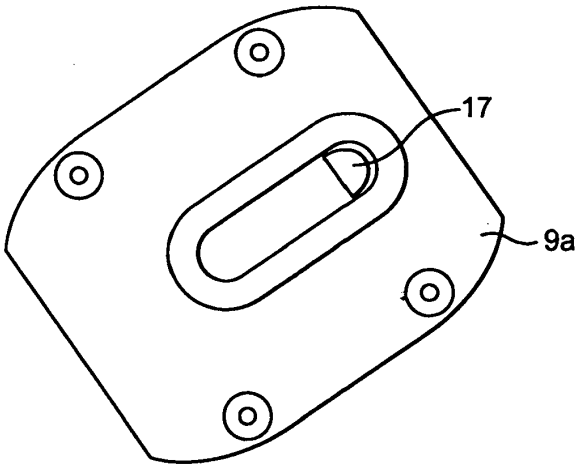

FIG. 10

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- GB 1217420 A **[0003]**
- EP 1253106 A **[0003]**
- WO 0061490 A **[0003]**