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

(11) EP 0 826 627 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
04.03.1998 Bulletin 1998/10

(51) Int Cl.[6]: **B67D 5/378**

(21) Application number: **97306430.6**

(22) Date of filing: **22.08.1997**

(84) Designated Contracting States:
AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV RO SI

(30) Priority: **28.08.1996 GB 9617927**

(71) Applicant: **Crawford, Brian James**
Auchenblae, Kincardineshire AB30 1XQ (GB)

(72) Inventor: **Crawford, Brian James**
Auchenblae, Kincardineshire AB30 1XQ (GB)

(74) Representative: **Gibson, Stewart Harry**
URQUHART-DYKES & LORD,
Three Trinity Court,
21-27 Newport Road
Cardiff CF2 1AA (GB)

(54) Dispensing nozzle

(57) A dispensing nozzle for inserting into a conduit (14), the nozzle comprising valve means (16,18) and an annular sealing means (12) formed by a flexible concentrical sleeve, and arranged such that when the valve means is opened, the annular sealing means is axially compressed, causing it to expand radially and form a seal between the nozzle and the inner wall of the conduit. The nozzle comprises an outer tribe (20) and an inner tribe (22), defining an inner channel (24) and an outer channel (26), whereby the outer channel (26) provides a passage through which vapors (gas fumes) may be evacuated from the conduit (14).

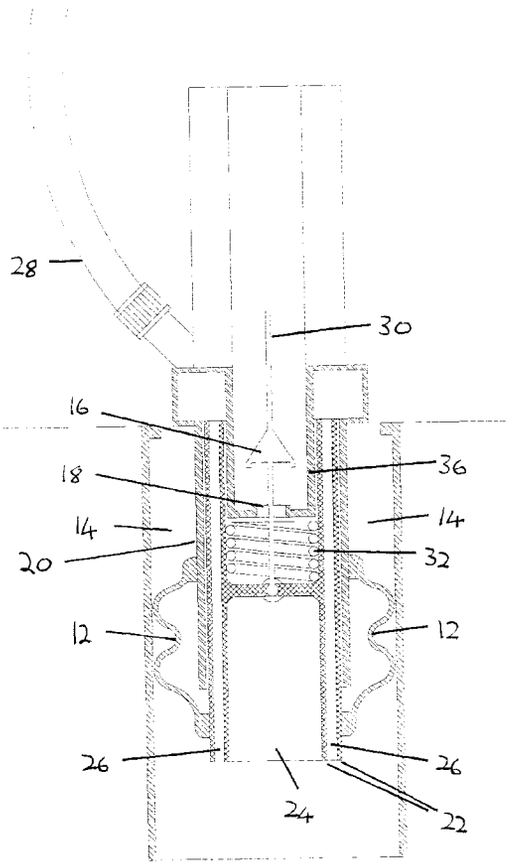

Figure 3

EP 0 826 627 A1

Description

The present invention relates to a dispensing nozzle which is particularly, but not exclusively, intended for attaching to a fuel supply line.

A great many nozzles are known for dispensing fuel from a supply line into the fuel tank of a vehicle, which nozzles typically comprise a handle having a trigger-operated valve mechanism to release fuel through a pipe and into the inlet conduit of a vehicle's fuel tank. However, as such nozzles do not fully seal the fuel tank inlet conduit, highly flammable fumes are permitted to escape to the surrounding atmosphere, creating a serious fire risk and potential environmental hazard.

I have now devised a nozzle which overcomes the aforementioned limitation of existing dispensing nozzles.

In accordance with the present invention, there is provided a dispensing nozzle for inserting into a conduit, said nozzle comprising valve means and an annular sealing means, and arranged such that when said valve means is opened, said annular sealing means is axially compressed, causing it to expand radially and form a seal between said nozzle and the inner wall of said conduit.

It will be appreciated that, in use, this nozzle seals the conduit, into which the nozzle is fitted, whilst its valve means is opened.

Preferably the nozzle comprises a trigger mechanism which, upon actuation, opens the valve means and also axially compresses the annular sealing means.

Preferably said dispensing nozzle comprises a pair of tubes, one within the other and each connected to a respective end of said annular sealing means, and arranged such that relative axial movement between said tubes causes said annular sealing means to be axially compressed.

Preferably said pair of tubes overlap over all or part of their respective lengths.

Preferably the inner of said tubes is connected to the leading end of said annular sealing means and the outer of said tubes is connected to the trailing end of said annular sealing means.

In a first preferred embodiment of the present invention, said nozzle is arranged such that a longitudinal extension of the outer of said tubes, from the distal end of said nozzle, causes said annular sealing means to be axially compressed.

In a second preferred embodiment of the present invention, said nozzle is arranged such that a longitudinal retraction of the inner of said tubes, from the distal end of said nozzle, causes said annular sealing means to be axially compressed.

Preferably the inner of said tubes is formed with a double wall, defining an inner and an outer channel. Preferably said inner channel is arranged to conduct a flow of fluid to said channel. Preferably said outer channel provides an exhaust for said channel.

Preferably said outer channel communicates with evacuating means which produce an outward flow of gases from said conduit.

Preferably said valve means comprises a first part connected to the inner of said tubes, a second part connected to the outer of said tubes, and a valve-spring arranged to bias said first and said second parts so that said valve means is normally closed.

Preferably said annular sealing means comprises a concertina'd flexible sleeve.

Embodiments of the present invention will now be described by way of examples only and with reference to the accompanying drawings, in which:

FIGURE 1 is a perspective view of a nozzle in accordance with the present invention;
FIGURE 2 is a sectional view of a first preferred nozzle arrangement; and
FIGURE 3 is a sectional view of a second preferred nozzle arrangement.

Referring to Figure 1 of the drawings, there is shown a dispensing nozzle for inserting into a conduit, the nozzle comprising a combined supply and exhaust line 2, a handle 4 having a trigger mechanism 6, and a dispensing/exhaust pipe 8, the handle being formed with an annular flange 10 adjacent its leading end.

The nozzle further comprises a flexible concertina'd sleeve 12 disposed about a portion of its length, the nozzle being arranged, as illustrated in the preferred embodiments of Figures 2 and 3, such that the flexible sleeve 12 may be axially compressed to cause it to radially expand and thereby form a seal between the nozzle and the inner wall of the conduit into which the nozzle is inserted.

Referring to Figures 2 and 3, in each embodiment a nozzle is shown inserted into a conduit 14, the nozzle having its component parts arranged such that its flexible sleeve 12 is radially expanded to form a seal between the nozzle and the inner wall of the conduit 14, and such that a valve 16 of the nozzle is separated from its corresponding seat 18 to allow a fluid to be dispensed there-through.

The nozzle comprises an outer tube 20 and an inner tube 22, the inner tube having a double-walled construction such that it defines an inner channel 24 and an outer channel 26, the inner channel 24 providing a passage for a flow of fluid to the conduit 14, and the outer channel 26 providing a passage through which fumes may be evacuated from the conduit 14 via pipe 28.

The inner tube 22 is attached to the leading end of the flexible sleeve 12 whose opposite end is attached to the outer tube 20.

In the nozzle of Figure 2, a rod 30, having a profiled valve face 16 formed there-upon, is connected at one end to the projecting outer tube 20 and its outer end is coupled by a linkage (not shown) to the trigger mechanism 6. Actuation of the trigger mechanism 6 extends

the rod 30 forwardly to cause the following: (a) the valve-face 16 becomes separated from its seat 18, thereby allowing fluid to flow through the inner channel 24 and into the conduit 14; (b) the outer tube 20 extends axially, thereby causing a radial expansion of the flexible sleeve 12; and (c) a valve spring 32 becomes compressed between the inner tube 22 and a brace 34, attached to the rod 30.

A somewhat reversed mechanism to that of Figure 2 is illustrated in Figure 3, wherein the forward end of the rod 30 is instead connected to the projecting inner tube 22 such that a retraction of the rod 30 (and thus of the inner tube 22) by the trigger mechanism 6 causes the sleeve 12 to expand, the valve-face 16 to be unseated and the valve-spring 32 to be compressed between the inner tube 22 and an extension 36 of the outer tube 20.

In each of the two embodiments shown in the drawings, when the trigger mechanism and hence the rod 30 is released, the recoil action of the valve-spring 32 causes the valve parts 16 and 18 to close and the sleeve 12 to decompress, allowing the nozzle to be removed from the conduit 14.

A nozzle in accordance with the present invention thus provides a convenient means for dispensing fuel, which also prevents flammable gases from escaping to the surrounding atmosphere.

Claims

1. A dispensing nozzle for inserting into a conduit (14), said nozzle comprising valve means (16,18) and an annular sealing means (12), and arranged such that when said valve means is opened, said annular sealing means is axially compressed, causing it to expand radially and form a seal between said nozzle and the inner wall of said conduit.

2. A dispensing nozzle as claimed in Claim 1, comprising a pair of tubes (20,22), one within the other and each connected to a respective end of said annular sealing means (12), and arranged such that relative axial movement between said tubes causes said annular sealing means to be axially compressed.

3. A dispensing nozzle as claimed in Claim 2, wherein said pair of tubes (20,22) overlap over all or part of their respective lengths.

4. A dispensing nozzle as claimed in Claim 3, wherein the inner (22) of said tubes is connected to the leading end of said annular sealing means (12) and the outer (20) of said tubes is connected to the trailing end of said annular sealing means.

5. A dispensing nozzle as claimed in Claim 4, arranged such that a longitudinal extension of the outer (20) of said tubes, from the distal end of said nozzle, causes said annular sealing means (12) to be axially compressed.

6. A dispensing nozzle as claimed in Claim 4, arranged such that a longitudinal retraction of the inner (22) of said tubes, from the distal end of said nozzle, causes said annular sealing means (12) to be axially compressed.

7. A dispensing nozzle as claimed in any of claims 2 to 6, wherein the inner (22) of said tubes is formed with a double wall, defining an inner (24) and an outer channel (26), one said channel serving for the flow of a fluid to be dispensed and the second said channel serving for the exhaust of gases.

8. A dispensing nozzle as claimed in Claims 7, wherein second of said channels communicates with evacuating means which produce an outward flow of gases from said conduit (14).

9. A dispensing nozzle as claimed in any of claims 2 to 8, wherein said valve means comprises a first part (16) connected to the inner of said tubes, a second part 18 connected to the outer of said tubes, and a valve-spring (32) arranged to bias said first and said second parts so that said valve means is normally closed.

10. A dispensing nozzle as claimed in any preceding claim, wherein said annular sealing means (12) comprises a concertina'd flexible sleeve.

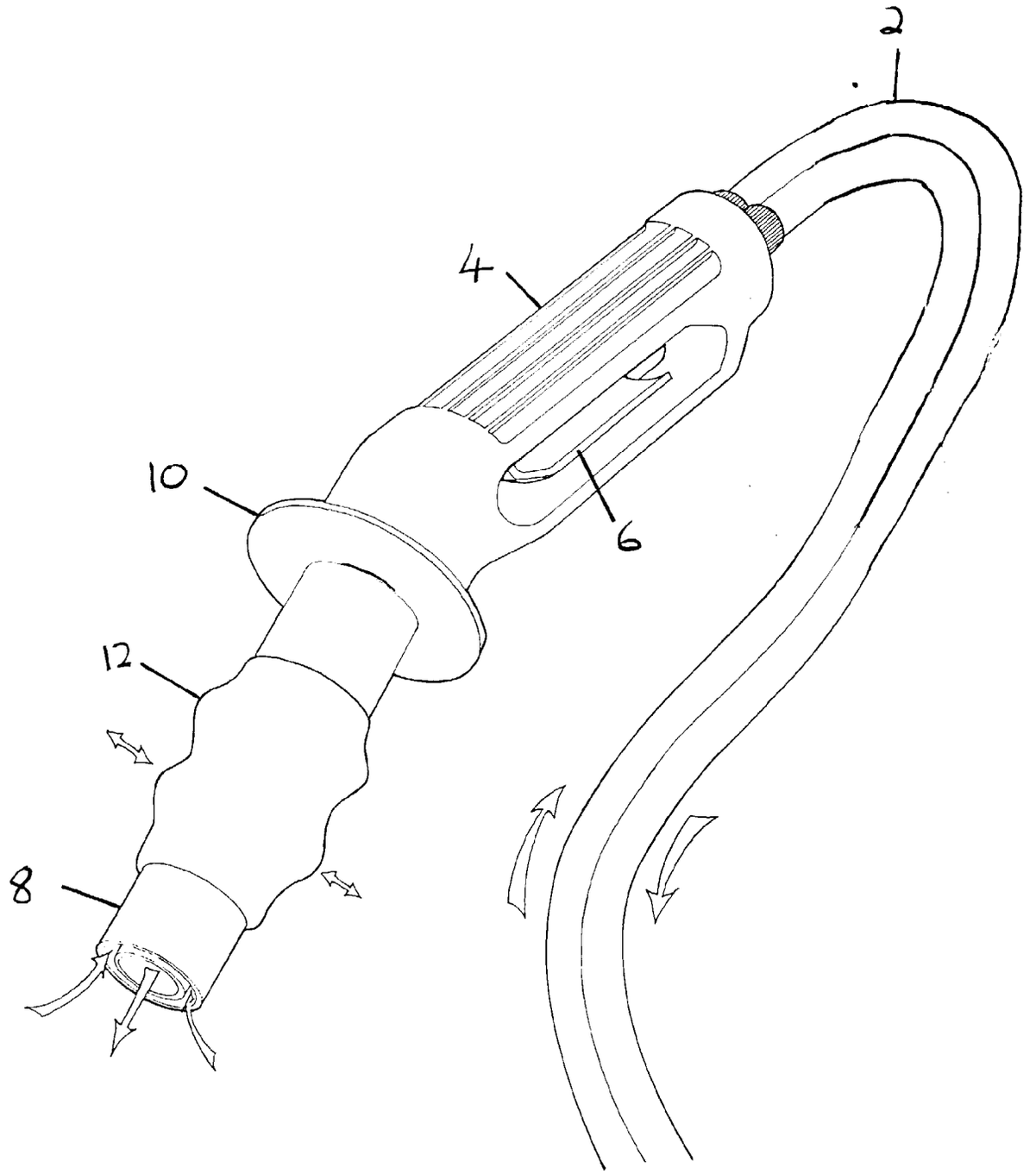

Figure 1

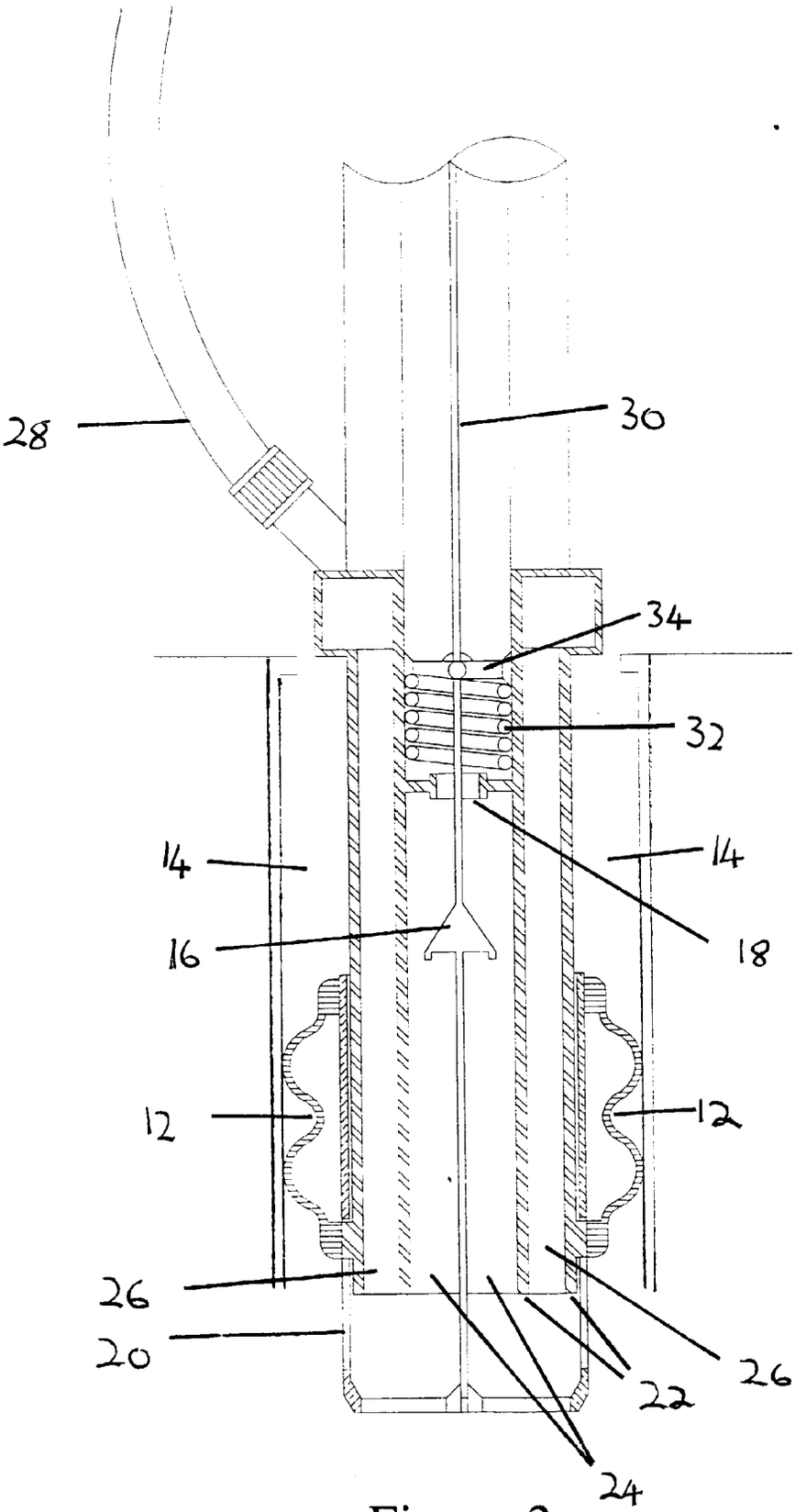

Figure 2

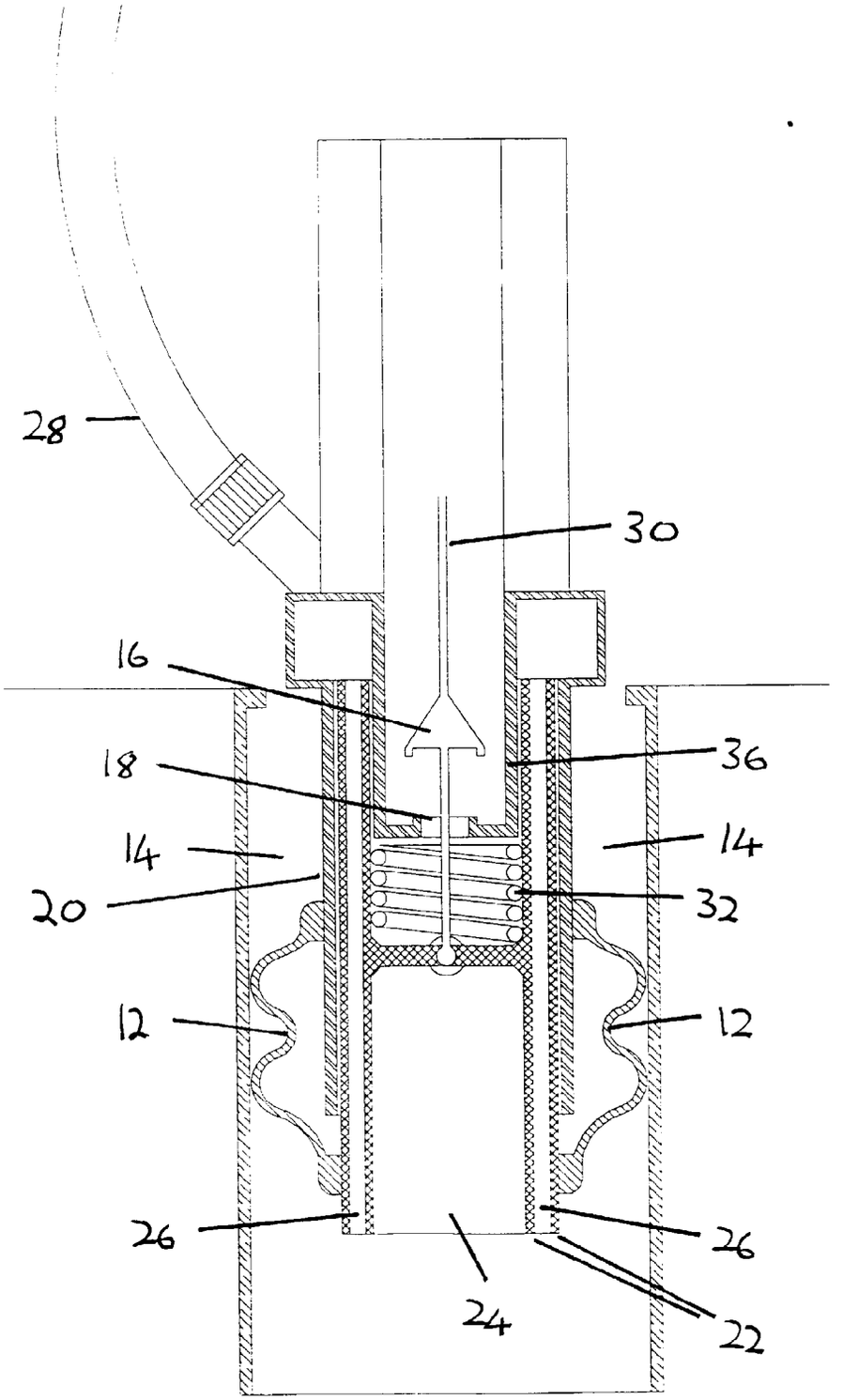

Figure 3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 30 6430

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US 5 069 260 A (SHEA REEFORD P) * column 3, line 31 - line 52; claims 1,3; figures 1,2 * * column 5, line 17 - column 6, line 34 *	1-3,7,8, 10	B67D5/378
A	DE 94 02 182 U (HARTMANN PHILIPP ;LAMBERTY FRANK (DE))		
A	US 4 505 308 A (WALKER DONALD C ET AL)		

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

B67D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	20 November 1997	Müller, C

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)