

68 3349

AUSTRALIA

PATENTS ACT 1990

PATENT REQUEST: STANDARD PATENT

We, SOCIETE DES PRODUITS NESTLE S.A., a Swiss body Corporate, being the person identified below as the Applicant, request the grant of a patent to the person identified below as the Nominated Person, for an invention described in the accompanying standard complete specification.

Full application details follow.

Applicant: SOCIETE DES PRODUITS NESTLE S.A.

Address: 1800 Vevey, Switzerland

Nominated Person: As above

Address: As above

Invention Title: "SYSTEM FOR METERING A PRODUCT IN POWDER FORM"

Names of actual inventors: Petr MASEK and Jean-François TINEMBART

BASIC CONVENTION APPLICATION DETAILS:

Application Number: 94107109.4

Country: European Patent Office (Designating Switzerland)

Country Code: EP

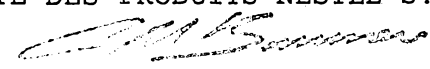
Date of Application: 6th May, 1994

Drawing number recommended to accompany the abstract: Figure 3

Address for service is: SHELSTON WATERS
60 Margaret Street
SYDNEY NSW 2000

Attorney Code: SW

DATED this 19th Day of April, 1995
SOCIETE DES PRODUITS NESTLE S.A.

by 
Peter Masek, Patent Attorney of Australia
c/o SHELSTON WATERS
To: The Commissioner of Patents
WODEN ACT 2606

File: 17968

Fee: \$280.00

S 055005 190495

AUSTRALIA

PATENTS ACT 1990

NOTICE OF ENTITLEMENT

We, SOCIETE DES PRODUITS NESTLE S.A. of 1800 Vevey,
Switzerland, being the applicant in respect of an application
entitled....."SYSTEM.FOR.METERING.A.PRODUCT.IN.POWDER.FORM".....
.....
.....

state the following:-

1. The person nominated for the grant of the patent has
entitlement from the actual inventor/s by assignment.

2. The person nominated for the grant of the patent is the
applicant of the basic application/s listed on the patent request
form.

3. The basic application/s listed on the patent request form
is/are the first application/s made in a Convention country in
respect of the invention.

For and on behalf of
SOCIETE DES PRODUITS NESTLE S.A.



(Signature)

6 APR 1995

(Date)

Name: ... Roman L. VUILLE

Title: ... Vice President

File:



AU9516522

(12) PATENT ABRIDGMENT (11) Document No. AU-B-16522/95
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 683349

- (54) Title
SYSTEM FOR METERING A PRODUCT IN POWDER FORM
- (51)⁶ International Patent Classification(s)
G01F 011/40 A47G 019/21 B65D 083/06
- (21) Application No. : 16522/95 (22) Application Date : 19.04.95
- (30) Priority Data
- (31) Number (32) Date (33) Country
94107109 06.05.94 EP EUROPEAN PATENT OFFICE (EP)
- (43) Publication Date : 16.11.95
- (44) Publication Date of Accepted Application : 06.11.97
- (71) Applicant(s)
SOCIETE DES PRODUITS NESTLE S.A.
- (72) Inventor(s)
PETR MASEK; JEAN-FRANCOIS TINEMBART
- (74) Attorney or Agent
SHELSTON WATERS, Level 21, 60 Margaret Street, SYDNEY NSW 2000
- (56) Prior Art Documents
US 2987224
US 4724984
- (57) Claim

1. System for metering a product in powder form, comprising

- a body for holding the product to be metered, the said body comprising a hopper in its upper part, extending downwards in at least one metering chamber and a flow chute which is smaller than the hopper, a metering slidable member designed to slide between a closed position and an open position in the said flow chute and comprising, at the level of the hopper, a housing for cooperating with a control system, a connection part connecting the said housing to a closure member, the closure member having a crosssection substantially corresponding to that of the flow chute and a closure plug of cross section smaller than that of the closure member and designed to close the outlet orifice of the flow chute, and
- a control system arranged at the level of the hopper of the holding body and comprising an outer lever and an inner lever which are mounted so as to rotate about the same axis, the inner lever cooperating with the housing of the metering slidable member.

AUSTRALIA

PATENTS ACT 1990

C O M P L E T E S P E C I F I C A T I O N

FOR A STANDARD PATENT

O R I G I N A L

Name of Applicant: SOCIETE DES PRODUITS NESTLE S.A.

Actual Inventors: Petr MASEK and Jean-François TINEMBART

Address for Service: SHELSTON WATERS
60 Margaret Street
SYDNEY NSW 2000

Invention Title: "SYSTEM FOR METERING A PRODUCT IN POWDER FORM"

The following statement is a full description of this invention,
including the best method of performing it known to us:-

System for metering a product in powder form

5 The invention relates to a system for metering a product in powder form, in particular for water-soluble powders.

10 Systems for delivering products in granular form are already known, such as, for example, the device forming the subject of US Patent 4,724,984. However, this system has various drawbacks, in particular that of giving a solution for dispensing the product in which there is not, strictly speaking, complete closure of the system, so that it is not possible to guarantee, on the one hand, complete hygiene and, on the other hand, total absence of
15 depositing on the walls particles which have not been delivered.

20 The device forming the subject of the present invention makes it possible to guarantee even metering, which leads to optimum quality of the beverage prepared. The object of the present invention is furthermore to develop a metering system with which correct hygiene can be guaranteed in dispensing and it is possible to avoid any degradation of the product by virtue of complete closure of the system, thus avoiding
25 any degradation, for example in a climate with a high relative humidity. This problem is particularly critical for all water-soluble products, such as instant coffee. It is thus necessary to have available a metering system which is indeed leaktight, guaranteeing perfect protection of the product to be
30 dispensed against water vapour and ensuring its good quality over a long period of time.

The invention relates to a system for metering a product in powder form, comprising
35 - a body for holding the product to be metered, the said body comprising a hopper in its upper part, extending downwards in at least one metering chamber and a flow chute which is smaller than the hopper,
- a metering slidable member designed to slide between

a closed position and an open position in the said flow chute and comprising, at the level of the hopper, a housing for cooperating with a control system, a connection part connecting the said housing to a closure member, the closure member having a crosssection substantially corresponding to that of the flow chute and a closure plug of cross section smaller than that of the closure member and designed to close the outlet orifice of the flow chute, and

- a control system arranged at the level of the hopper of the holding body and comprising an outer lever and an inner lever which are mounted so as to rotate about the same axis, the inner lever cooperating with the housing of the metering slidable member.

The flow chute may be of square, rectangular or round shape. The body for holding the product may be in two parts, so as to allow assembly, disassembly and cleaning.

In this system, it is sufficient to fill the body for holding the product to be metered with the said product to be dispensed and then to operate the control system manually by acting on the outer lever so that the metering slidable member opens the metering chamber, thus delivering the metered quantity of product in powder form into a cup or a mug located directly below the outlet orifice of the flow chute. It then remains to add the appropriate quantity of hot or cold water to the said powder.

As already mentioned, it is important for the product in powder form to be correctly isolated from the ambient atmosphere. This is the reason why the body for holding the product to be metered comprises a lid for closing the top of the said body in a leaktight manner.

The metering system according to the invention makes it possible to meter any type of product in water-soluble powder form, in particular instant coffee, sugar and instant tea. The system finds a

highly advantageous application in any part of the world which has a climate with high relative humidity: makes it possible to avoid any premature wetting of the powder.

5 The only region in which the system is in contact with the ambient atmosphere is the outlet orifice of the flow chute; this outlet is closed by the closure plug. It is only at this location that blockage of the system might occur. This problem is solved by a
10 specific geometry of the inner lever, making it possible to multiply by 8 the detachment force when initiating the vertical translational movement of the metering slidable member, in the event that the closure plug might actually have stuck onto the periphery of
15 the outlet orifice of the chute.

 In the device according to the invention, it is preferable to provide two metering chambers, arranged symmetrically with respect to the plane of symmetry of the flow chute. Metering chambers of variable volume
20 are preferably provided, for example in order to vary the metered quantity between a volume substantially lying between 4 and 20 ml, which corresponds to a weight of between 1.5 and 4.5 g.

 It is clear that, when the metering slidable
25 member is moved in order to open the metering chamber or chambers, in order for the product to be able to flow freely, it is necessary for the closure plug to have a cross-section which is smaller than that of the closure member; a cross-section of the closure plug
30 which is substantially half that of the closure member is chosen. A closure plug having a circular cross-section is preferably envisaged, the cross-section of the closure member being square or rectangular. In the case of the closure plug, a diameter lying between 10
35 and 40 mm, preferably equal to 20 mm is envisaged.

 In order to produce a metered quantity which pours directly into the cup or mug, a centring stop is provided in the vicinity of the outlet orifice of the flow chute. This stop has, for example, the form of two

parallel vertical rods.

5 It has also been observed that, in order to guarantee better precision of the metering, it is preferable to provide a wall in the hopper, so as to prevent the entire weight of the product in powder form from bearing on the metering slidable member; this wall is arranged so as to cover the metering slidable member.

10 When the system is in its closed position, it is necessary for the metering chambers to be directly above the closure member, which corresponds to choosing a height of the flow chute corresponding substantially to that of the closure member and of the closure plug.

15 It may be envisaged for the metering system according to the invention to have stands for arranging it on a table or a counter, in which case the geometry of the stands is designed so that they simultaneously form the centring stop. The metering system may also be designed to be fixed to the wall.

20 If the metering of various different types of coffee or of sugar, of tea and of coffee is envisaged, it is possible to combine a plurality of metering systems so as to form a metering assembly.

25 As already mentioned, the control system of the metering slidable member should allow occasional detachment of the two aforementioned parts, namely the closure plug and the flow chute. Provision is made for the inner and outer levers to be independent; the outer lever pivots freely about its rotational spindle whilst
30 the inner lever is solidly attached to the spindle axis and turns with it. Since the outer lever pivots freely, it is provided with a pin so that actuating it makes it possible to raise the inner lever.

35 The independence of these two levers makes it possible to regulate the falling of the product in powder form. Provision is furthermore made for the outer lever to interact with a click, making it possible to delay the centre of the metering slidable member; this delay makes it possible to ensure complete

descent of the product in powder form.

The system according to the invention is made, in the case of the body for holding the product to be metered and the metering slidable member, of transparent or opaque injected plastic. The metering
5 slidable member may also be made of metal.

The rest of the description is given with reference to the drawings, in which

Fig. 1 is a diagrammatic representation of the
10 metering system, produced on stands,

Fig. 2 is a diagrammatic representation of the metering system, fixed to the wall,

Fig. 3 is a section of the system according to the invention,

15 Fig. 4 is a partial section in a plane perpendicular to that in the preceding figure,

Fig. 5 is a section along the line A-A in Fig. 3,

20 Fig. 6 is a section along the line B-B in Fig. 4,

Fig. 7 is an equivalent section to that in Fig. 3, with the metering slidable member in the open position,

25 Fig. 8 is a partial section equivalent to that in Fig. 4, with the metering slidable member in the open position,

Fig. 9 is a section along the line C-C in Fig. 4 and

30 Fig. 10 is a section along the line D-D in Fig. 8.

The metering system (30) is mounted on stands (32) and the vertical part (31) of the said stands forms a centring stop for metering the product in powder form. The body (1) for holding the product to be
35 metered comprises a hopper (2) and a flow chute (4), as well as a lid (5). The product is metered manually using the outer lever (12).

Fig. 2 represents the same metering system as that in Fig. 1, with the exception that, instead of

being placed on a table or a counter, it is fastened to the wall (33) using a fastening system (34). In this case, a centring stop (35) is arranged behind the flow chute (4).

5 With reference to the following figures, the metering system (30) is composed of the following parts:

- 10 - a body (1) with a hopper (2) and a wall (37) in its upper part and two metering chamber (3) and a flow chute (4) in its lower part, the said body being in two parts (40) and (41),
- a lid (5) with a seal (6) and a hinge (7) and held in its closed position by a hook (8),
- 15 - a metering slidable member (9) with a housing (36) for allowing it to be opened using the control system, a connection part (38), a closure member (10) and a closure plug (11),
- a control system with an outer lever (12) and an inner lever (13) both being mounted on the same
20 spindle (14), and
- an adjusting slide (15), with an adjustment screw (16) making it possible to vary the volume of the metering chambers (3) if necessary.

25 The flow chute (4) is of rectangular cross section at the level of the closure member (10) and is round below.

The system operates as follows:

30 The body (1) is first of all filled with product in powder form and the lid (5) is reclosed. The volume of the chamber (3) is adjusted as indicated hereinabove and a ready-to-use system is obtained.

35 When the lever (12) is pressed in the direction of the arrow X, the inner lever (13) turns inside the housing (36) and pushes the metering chamber (9) upwards: the closure member (10) obstructs the passage between the hopper (2) and the metering chambers (3), releases the product from the said chambers and opens the flow chute (4). The product falls into the cup (39).

When the lever (12) is released in its lower position, it rises because it is pushed by the torsion spring (17). The metering slidable member (9) descends under its own weight, frees the passage between the hopper (2) and the metering chambers (3) and closes the flow chute (4) in a leaktight manner. The product refills the metering chambers (3) and the operation can be repeated:

The operation of the system may be described in more detail with reference to Figures 9 and 10:

The outer lever (12) pivots about the spindle (14) and its movement is limited by the protrusions (18) and (19). It is pushed downwards by hand, in order to obtain a metered quantity of product, as described hereinabove. It rises back into its initial position under the effect of the torsion spring (17).

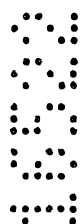
The lever (13) is solidly attached to the spindle (14) and is driven upwards by the pin (20) when the outer lever (12) moves downwards. The inner lever (13) drives the metering slidable member (9) upwards initially using a short arm (21). The latter is necessary for detaching the closure plug (11) if it is stuck against the flow chute (4) after the metering system has not been used for a long period of time.

The metering slidable member (9), the inner lever (13) and the spindle (14) are held in the upper position by a pin (20) and the click (22). The pin (20) is released when the outer lever (12) rises back into its initial position and pushes back the click (22). When the pin (20) is released, the metering slidable member (9) descends under its own weight, driving the inner lever (13) and the spindle (14).

The fact that the metering slidable member (9) is held in the upper position extends the opening time, allows all of the product to fall into the cup (39) and regulates the lowering of the metering slidable member (9), which can be braked or held by the outer lever (12).

The metering slidable member (9), actuated by

the inner lever (13), is stopped in its lower position by the protrusion (23). The metering slidable member is guided by two lateral guides (24) and (25) which are open upwards, allowing disassembly of the metering
5 slidable member by pulling it upwards, when the lid (5) is open.



THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. System for metering a product in powder form, comprising
 - a body for holding the product to be metered, the
5 said body comprising a hopper in its upper part, extending downwards in at least one metering chamber and a flow chute which is smaller than the hopper,
 - a metering slidable member designed to slide between
10 a closed position and an open position in the said flow chute and comprising, at the level of the hopper, a housing for cooperating with a control system, a connection part connecting the said housing to a closure member, the closure member having a crosssection substantially corresponding to
15 that of the flow chute and a closure plug of cross section smaller than that of the closure member and designed to close the outlet orifice of the flow chute, and
 - a control system arranged at the level of the hopper
20 of the holding body and comprising an outer lever and an inner lever which are mounted so as to rotate about the same axis, the inner lever cooperating with the housing of the metering slidable member.
2. Metering system according to Claim 1,
25 characterized in that the body for holding the product to be metered comprises two metering chambers.
3. Metering system according to one of Claims 1 or 2, characterized in that the metering chamber or chambers have an adjustable volume of between 4 and
30 20 ml.
4. Metering system according to one of Claims 1 to 3, characterized in that the product in powder form to be metered is chosen from instant coffee, sugar and instant tea.
- 35 5. Metering system according to one of Claims 1 to 4, characterized in that the cross-section of the closure plug is substantially half that of the closure member.

5. Metering system according to one of Claims 1 to 5, characterized in that it comprises a centring stop.
7. Metering system according to one of Claims 1 to 6, characterized in that the hopper comprises a wall, so as to prevent the entire weight of the product in powder form from bearing on the metering slidable member.
8. Metering system according to one of Claims 1 to 7, characterized in that the height of the closure member and the closure plug corresponds substantially to the height of the flow chute.
9. Metering system according to one of Claims 1 to 8, characterized in that it is provided with stands or fixed to the wall.
10. Metering system according to one of Claims 1 to 9, characterized in that a plurality thereof are provided for metering different products in powder form.
11. Metering system according to one of Claims 1 to 10, characterized in that the body for holding the product to be metered comprises a lid for closing the top of the said body in a leaktight manner.
12. Metering system according to one of Claims 1 to 11, characterized in that the outer lever comprises two stops cooperating with a pin which is solidly attached to the spindle and makes it possible to lift the inner lever during actuation of the outer lever.
13. Metering system according to one of Claims 1 to 12, characterized in that the outer lever interacts with a click making it possible to delay descent of the metering slidable member.
14. Metering system according to one of Claims 1 to 13, characterized in that the closure plug has a circular cross-section.
15. Metering system according to one of Claims 1 to 14, characterized in that the body for holding the product is in two parts.

16. A metering system substantially as herein described with reference to the accompanying drawings.

DATED this 19th Day of April, 1995
SOCIETE DES PRODUITS NESTLE S.A.

Attorney: CAROLINE M. BOMMER
Fellow Institute of Patent Attorneys of Australia
of SHELSTON WATERS

24
25
26
27
28
29
30

ABSTRACT

System for metering a product in powder form

The invention relates to a system for metering a product in powder form, comprising

- 5 - a body (1) for holding the product to be metered, the said body comprising a hopper (2) in its upper part, extending downwards in at least one metering chamber and a flow chute (4) which is smaller than the hopper,
- 10 - a metering slidable member (9) designed to slide between a closed position and an open position in the said flow chute and comprising, at the level of the hopper, a housing (36) for cooperating with a control system, a connection part (38) connecting
- 15 the said housing to a closure member (10), the closure member having a crosssection substantially corresponding to that of the flow chute and a closure plug (11) of cross section smaller than that of the closure member and designed to close the
- 20 outlet orifice of the flow chute, and
- a control system arranged at the level of the hopper of the holding body and comprising an outer lever (12) and an inner lever (13) which are mounted so as to rotate about the same axis, the inner lever
- 25 cooperating with the housing (36) of the metering slidable member.

1/5

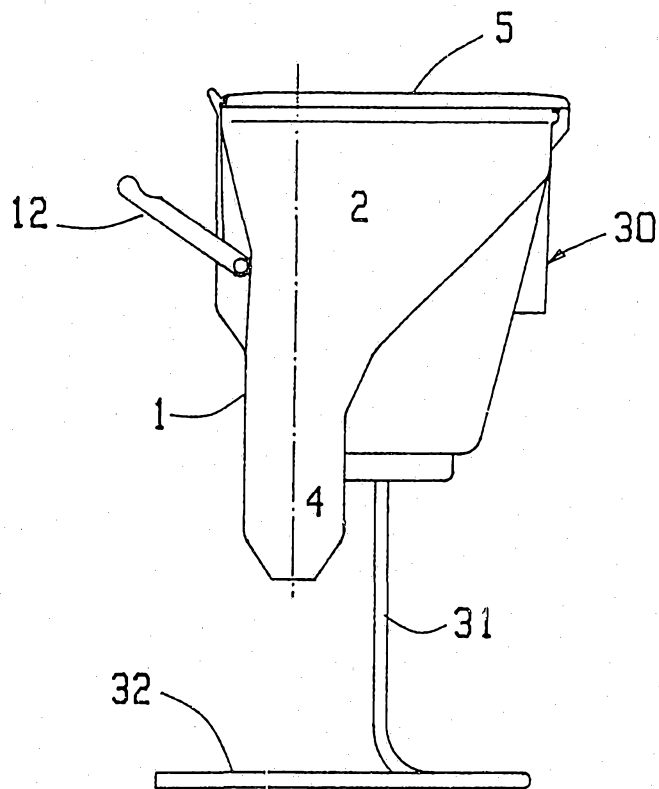


Fig. 1

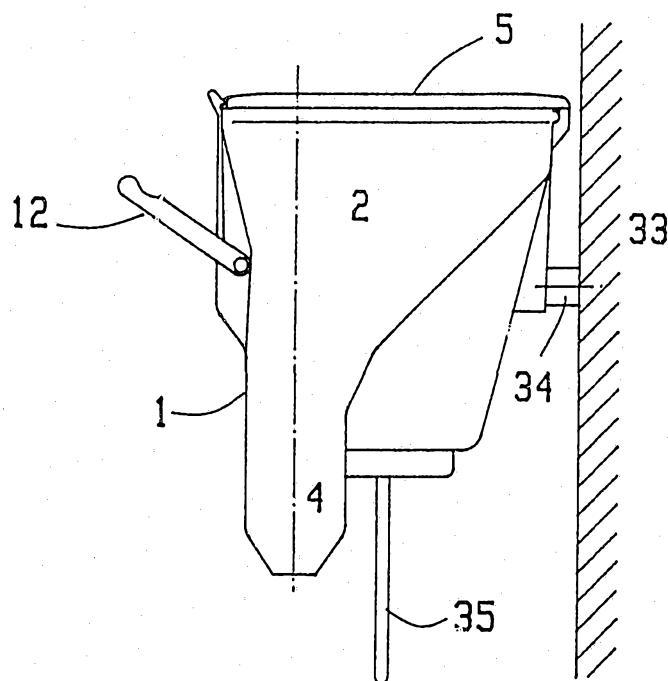


Fig. 2

19 4 90 16522

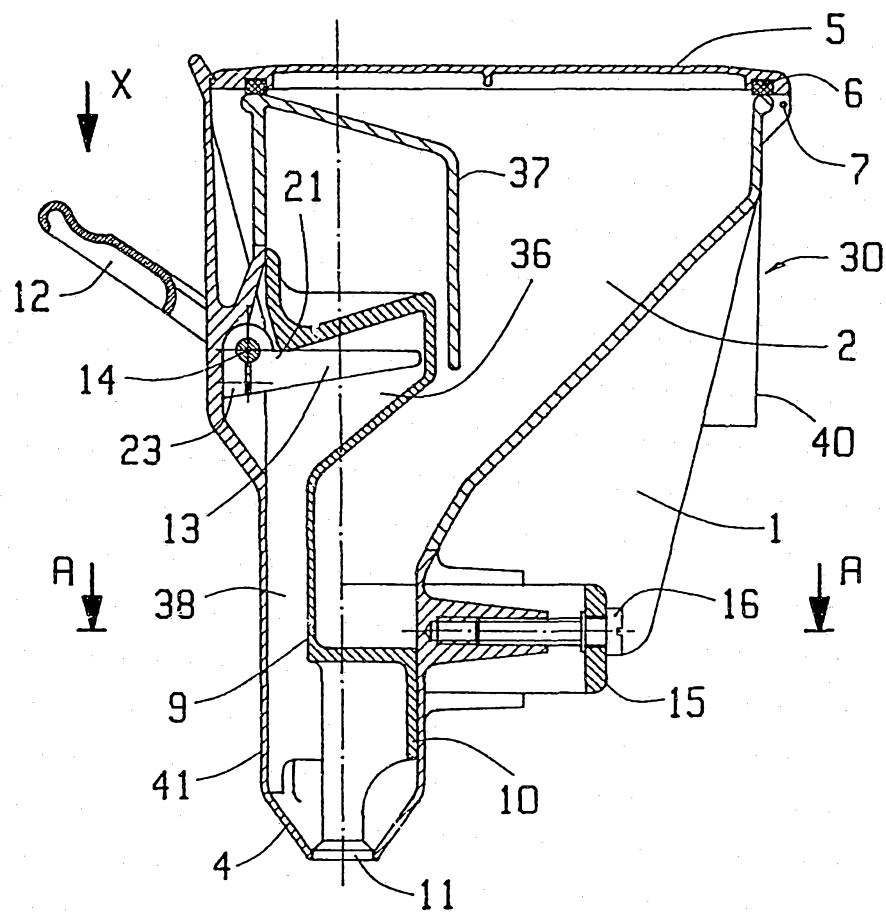


Fig. 3

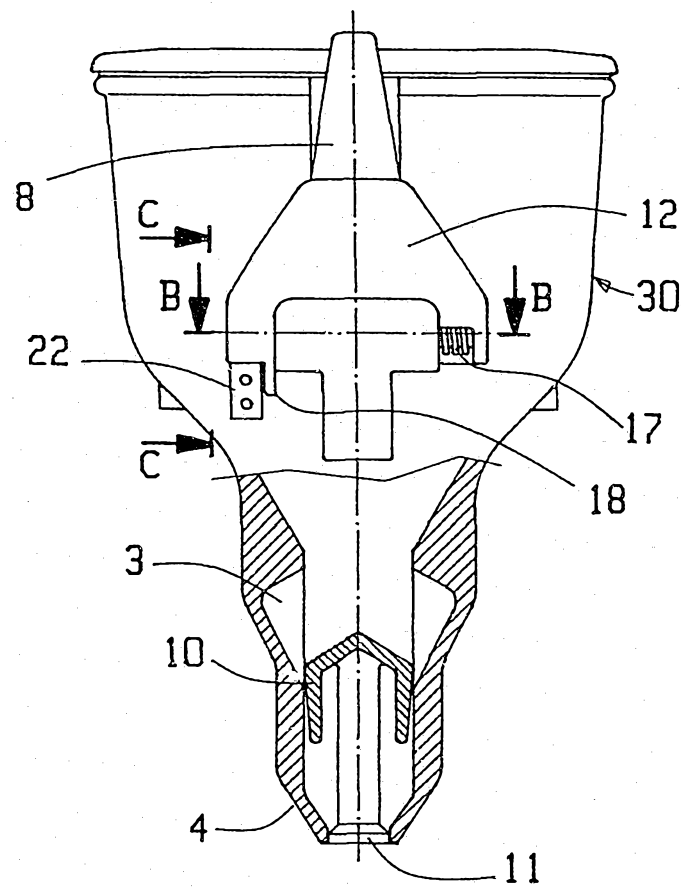


Fig. 4

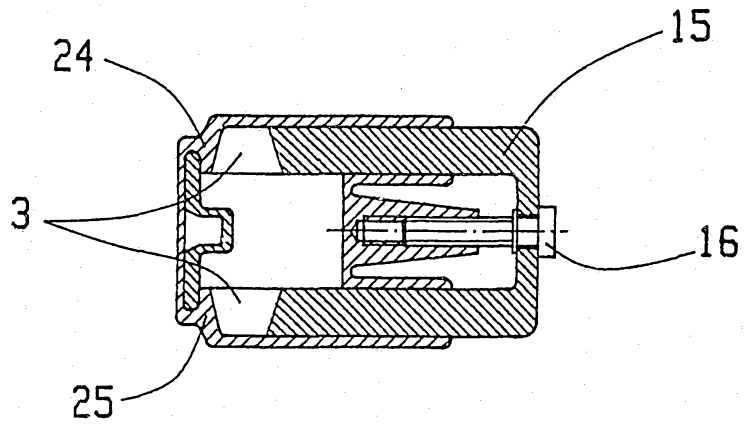


Fig. 5

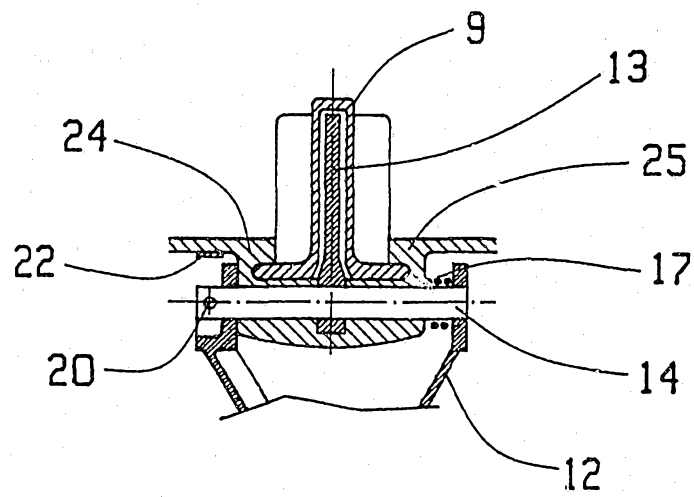


Fig. 6

19 4 95 10522

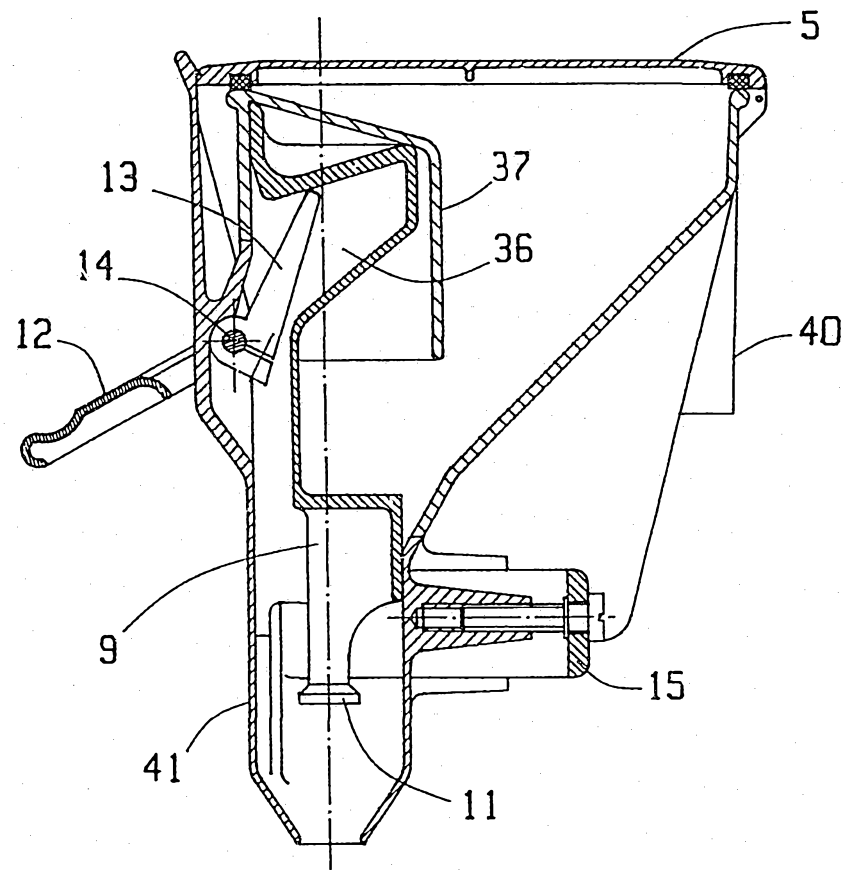


Fig. 7

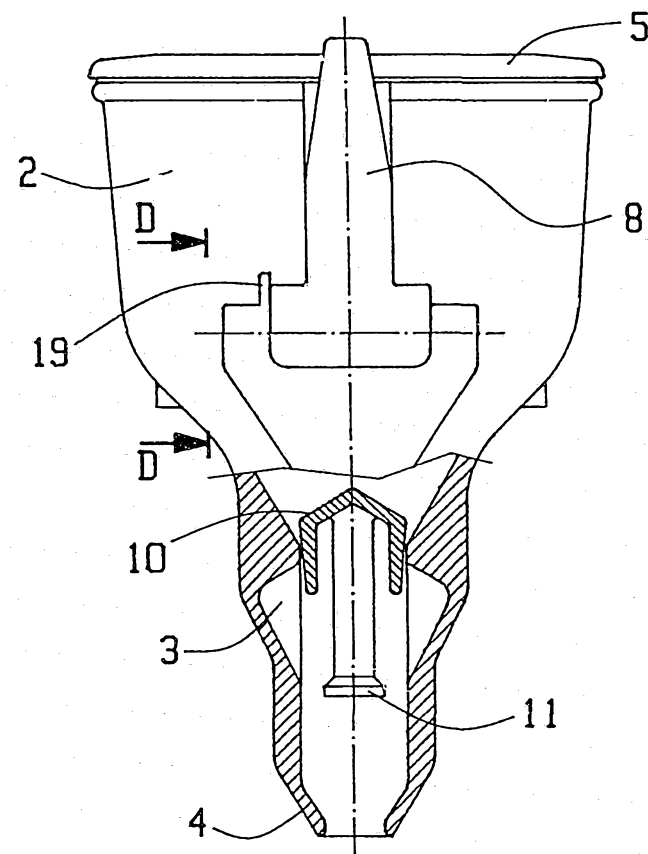
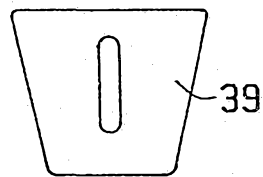


Fig. 8

