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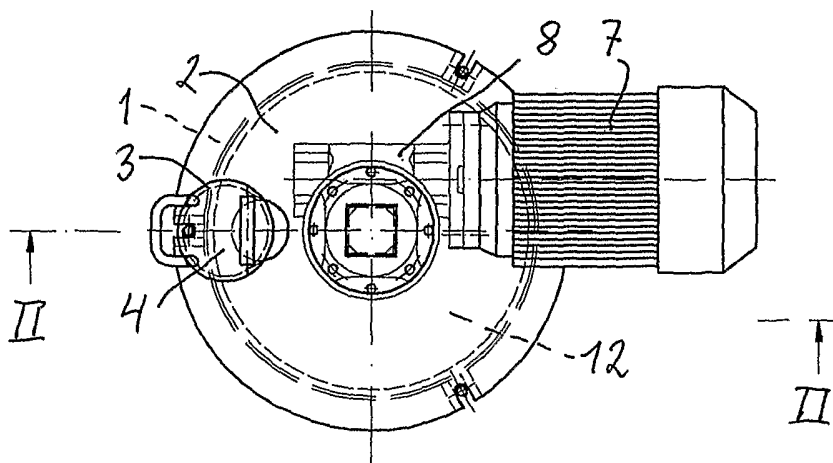
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(54) Title: A DOSING DISPENSER



(57) Abstract: A dosing dispenser comprises a generally vertical dosing cylinder (5) in the lower portion of a container (1) for a fluid product to be dispensed, a valve mechanism (14-17) at the bottom portion of the dosing cylinder, and a dosing piston (13) for transferral into and out of the dosing cylinder and having substantially the same external diameter as the internal diameter of the dosing cylinder. The dispenser is provided with an electric motor (7) for accomplishing axial movements of the dosing piston and with means for controlling said axial movements of the dosing piston (13).

A DOSING DISPENSER

Technical Field

5 The present invention relates to a dosing dispenser, comprising

 a generally vertical dosing cylinder in the lower portion of a container for a fluid product to be dispensed,

10 a valve mechanism at the bottom portion of the dosing cylinder, and

 a dosing piston for transferral into and out of the dosing cylinder and having substantially the same external diameter as the internal diameter of the dosing cylinder.

Background of the Invention

15 Dosing dispensers of the above kind are known in the art. They are used for dispensing fluid products, for example omelette batter or omelette fillings in an omelette making machine. The requirements on such dispensers may be difficult to fulfil. The required working speed may be
20 high, i.e. new product doses may have to be dispensed at short intervals. It may be necessary to change the dispensed volume at short notice. The dispensed volume in each dispensing operation may have to be rather exact.

 The main problem to be solved by the dosing dispenser
25 according to the invention is thus to fulfil the above different requirements by a reliable, simple and cost-effective design.

The Invention

30 This is according to the invention attained by an electric motor for accomplishing axial movements of the dosing piston and by means operatively connected to the motor for controlling said axial movements.

 The control may be obtained in that the electric motor is provided with a pulse emitter, used for control of
35 the motor via for example electronic control means.

The electric motor is used to govern the position of the dosing piston, the axial movement of the piston into and out of the dosing cylinder and how far into the cylinder the piston is transferred (for controlling the dosing volume).

In a practical embodiment the dosing piston is attached to a spindle axially movable by the electric motor and in thread engagement with a worm gear unit on the electric motor. The worm gear unit may be replaced with any suitable gear unit.

A further feature of a preferred embodiment is that a stirring disc, provided with perforations or holes and having a diameter generally corresponding to the internal diameter of the container, is attached to the spindle. In this simple way a stirring of the product in the container is obtained at each axial movement up or down of the spindle.

It is advantageous that the valve mechanism is controlled for opening and closing by electric means. In this way the control of the dosing piston movements and the opening and closing of the valve mechanism for dispensing the dosed amount of product can be easily correlated. Also, an important result is that the dosing dispenser only needs electric energy supply for its operation and control, whereas other dosing dispensers may need for example both pneumatic and electric energy supply.

In a practical case the valve mechanism has a rotary valve spindle controlled by a double-acting rotary magnet. It is also possible to use a double-acting linear magnet with a lever mechanism.

The electric motor is preferably mounted on a cover for the container, and the spindle is axially guided by a guide tube extending down from the cover.

Brief Description of the Drawings

The invention will be described in further detail below under reference to the accompanying drawings, in which Fig 1 is a top view of a dosing dispenser according to the invention, Fig 2 is a side view partly in section of the dispenser according to Fig 1, mainly along the line II-II in Fig 1, and Figs 3A-C are partial views corresponding to Fig 2 illustrating different working positions of the dispenser.

Detailed Description of a Preferred Embodiment

A dosing dispenser as shown in Figs 1 and 2 has a generally cylindrical container 1 for a fluid product to be dispensed. (The term "fluid product" is meant to include fluids containing smaller pieces of for example meat, fish or vegetables, such as omelette fillings.) The container 1 (like other elements in contact with the product) is preferably manufactured of stainless steel or the like for hygienic reasons.

The container 1 is at its top provided with a removable cover 2 having a supply funnel 3 with an openable lid 4.

At its lower end the container 1 is provided with a dosing cylinder 5, to which it is connected by a frustoconical portion 6.

An electric motor 7 with a worm gear unit 8 is attached to the cover 2. A threaded spindle 9 is engaged by the worm gear unit 8 for vertical axial movements in relation to the container 1. The spindle 9, which may be unthreaded or smooth further down in the container 1, is axially guided by a guide tube 10 extending down from the cover 2. Further, a protective sleeve 11 (with square cross-sectional shape) for the spindle 9 may be arranged on top of the worm gear unit 8 and may as shown be provided with internal guide means 11' for preventing rotation and for axial guiding of the spindle 9.

Along its length the spindle 9 may have a stirring disc 12 provided with perforations or holes in a certain pattern. The diameter of the stirring disc 12 is preferably only slightly less than the inner diameter of the container 1 so as to force the fluid product in the container 1 to pass through its perforations or holes and to bring about an efficient stirring action, when the spindle 9 is axially transferred in the container 1, as will be further described below.

At its lower end the spindle 9 is provided with a dosing piston 13 having an external diameter corresponding to the inner diameter of the dosing cylinder 5. For simplifying the entering of the piston 13 in the cylinder 5, the former may have a conical or tapering end downwards and the latter a conical or tapering opening upwards.

The dosing cylinder 5 is provided with a bottom valve mechanism at its lower end. A valve housing 14 is connected to the lower end of the dosing cylinder 5. The valve housing is provided with a through hole 14', 14". A cylindrical valve spindle 15 is rotationally arranged in the housing 14 substantially transversely to the dosing cylinder 5. The valve spindle 15 has a transverse through bore 15', which may be brought in line with the housing hole 14', 14". The valve spindle 15 is for its rotation connected to a double-acting rotary magnet 16 attached to the valve housing 14. The rotation of the valve spindle 15 may be limited to a quarter of a full revolution by a housing pin 17 in engagement with a valve spindle notch. Alternatively the rotation may be accomplished by a double-acting linear magnet with a lever arrangement.

Practical tests have shown that the valve mechanism will provide a practically drop-free control.

With reference to Figs 3A-C (which for the sake of clarity are not provided with reference numerals) the

function of the dosing dispenser according to the invention is as follows:

A fluid product to be dispensed, for example omelette batter or omelette filling, is contained in the container

5 1. As shown in Fig 3A (corresponding to Fig 2), the dosing piston 13 is in an upper position leaving the entrance to the dosing cylinder 5 open, so that the product can flow down in this cylinder 5. The bottom valve mechanism 14-17 is closed (in that the spindle bore 15' is not in line with
10 the valve housing hole 14', 14").

The electric motor 7 is energized, so that the dosing piston 13 is brought down into or enters the dosing cylinder 5, as is illustrated in Fig 3B. The position is governed by a pulse emitter at the motor 7.

15 The rotary magnet 16 now rotates the valve spindle 15 to the open position shown in Fig 3B with the spindle bore 15' in line with the valve housing hole 14', 14", so that the product can be dispensed from the dosing cylinder 5 under the action of the dosing piston 13, which is driven
20 down by the electric motor 7 to the extent governed via the pulse emitter (in relation to the desired volume to be dispensed).

Fig 3C shows the position when the dosing piston has reached its adjustable, lowermost position and the valve
25 spindle 15 has been rotated to its closed position, ending the product dispensing.

The electric motor 7 is now energized for rotation in the reverse direction, so that the piston 13 is lifted to its upper position, for example as shown in Fig 3A, ready
30 for a new operational cycle.

The stirring disc 12 is of course hereby also transferred upwards for stirring the fluid product contained in the container 1.

By the shown and described device the electric motor with its control means will accomplish all the following operational steps:

- 5 - allows the fluid product to flow down in the dosing cylinder,
- pushes out the product through the bottom valve mechanism,
- provides a signal to close the valve mechanism, when the desired dosed product volume has been obtained,
- 10 - changes the dosed volume without any mechanical or manual action,
- can be programmed to provide different dosing volumes,
- stirs the fluid product in the container.

15

CLAIMS

1. A dosing dispenser, comprising
a generally vertical dosing cylinder (5) in the lower
portion of a container (1) for a fluid product to be
5 dispensed,

a valve mechanism (14-17) at the bottom portion of
the dosing cylinder, and

a dosing piston (13) for transferral into and out of
the dosing cylinder and having substantially the same
10 external diameter as the internal diameter of the dosing
cylinder,

c h a r a c t e r i z e d by an electric motor (7)
for accomplishing axial movements of the dosing piston (13)
and by means operatively connected to the motor for
15 controlling said axial movements.

2. A dispenser according to claim 1, wherein the
electric motor (7) is provided with a pulse emitter.

3. A dispenser according to claim 1, wherein the
dosing piston (13) is attached to a spindle (9) axially
20 movable by the electric motor (7) and in thread engagement
with a worm gear unit (8) on the electric motor.

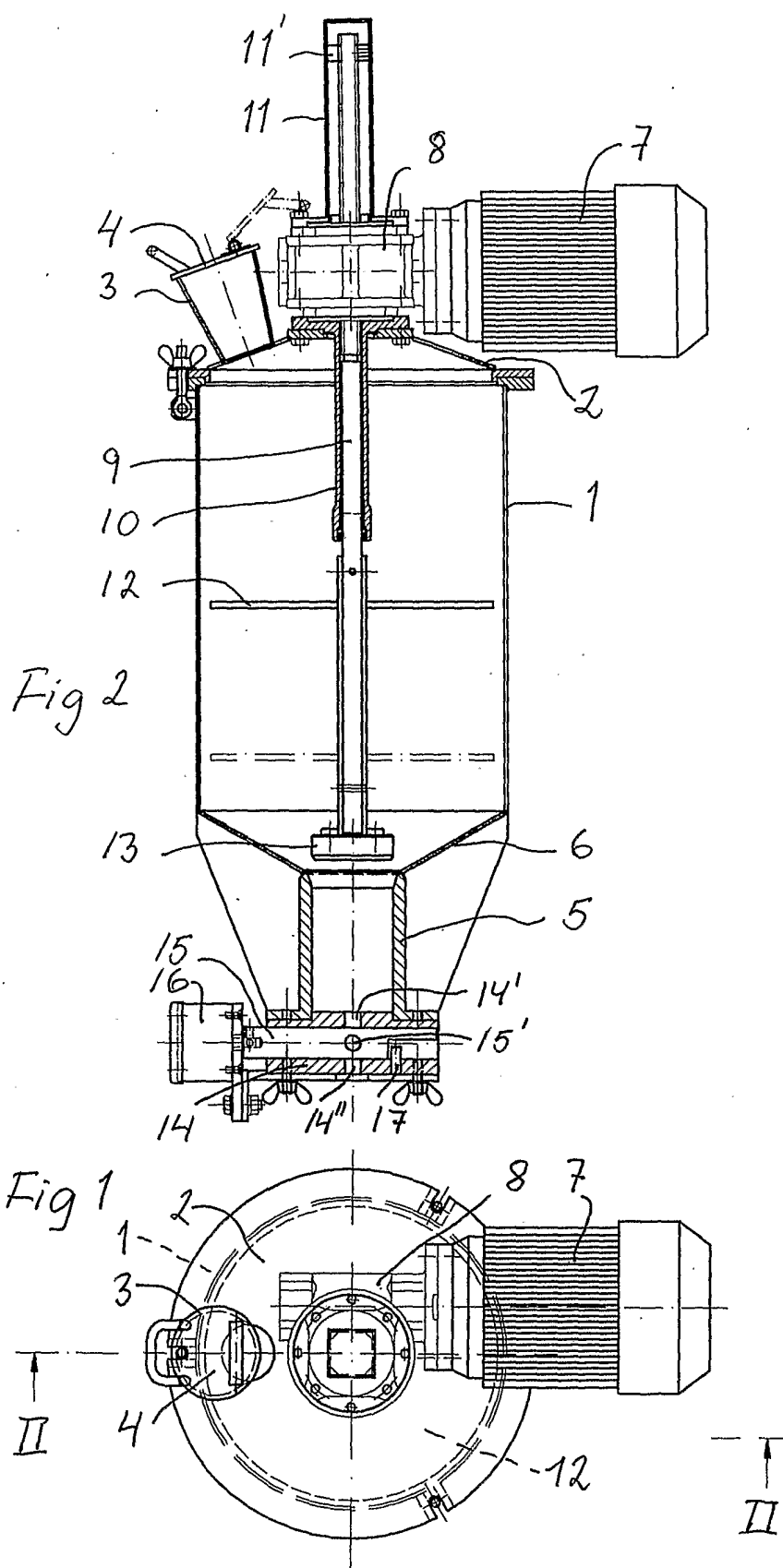
4. A dispenser according to claim 3, wherein a
stirring disc (12), provided with perforations or holes and
having a diameter generally corresponding to the internal
25 diameter of the container (1), is attached to the spindle
(9).

5. A dispenser according to claim 1, wherein the
valve mechanism (14-17) is controlled for opening and
closing by electric means (16).

30 6. A dispenser according to claim 5, wherein the
valve mechanism (14-17) has a rotary valve spindle (15)
controlled by a rotary magnet (16).

7. A dispenser according to claim 3, wherein the
electric motor (7) is mounted on a cover (2) for the

container (1) and that the spindle (9) is axially guided by a guide tube (10) extending down from the cover.



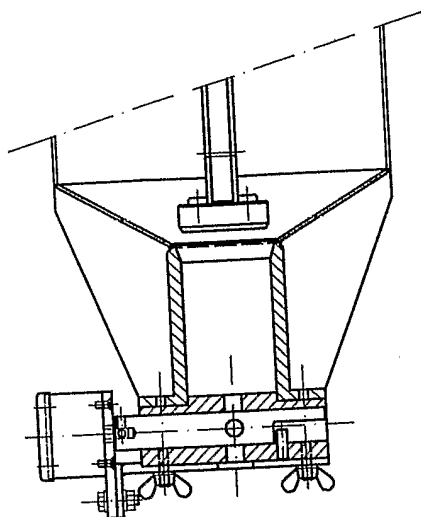


Fig 3A

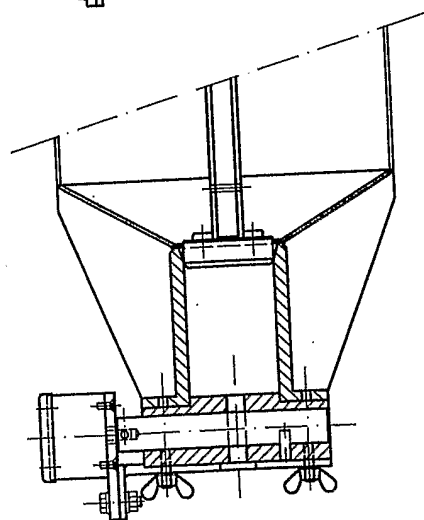


Fig 3B

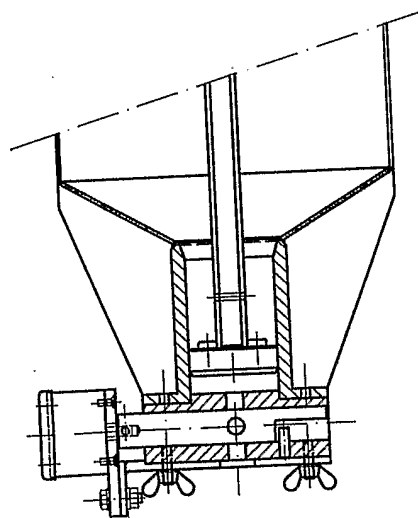


Fig 3C

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE2006/000254

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: A21C, B67D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 1866061 A (F L SCHOEL), 5 July 1932 (05.07.1932), page 1, line 21 - line 25; page 3, line 1 - line 65, figures 1-11 ---	1-7
X	US 3314382 A (S B JONES), 18 April 1967 (18.04.1967), column 3, line 23 - column 4, line 2, figures 1-4 ---	1-7
A	EP 0061545 A2 (LICENCIA TALALMANYOKAT ERTEKESITÖ VALLALAT), 6 October 1982 (06.10.1982), figure 6, abstract ---	1-7

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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A	US 5556268 A (TOPPER ET AL), 17 Sept 1996 (17.09.1996), column 5, line 18 - line 45, figures 3,4, abstract --	1-7
A	US 6336396 B1 (SALA), 8 January 2002 (08.01.2002), figures 1,2, abstract -- -----	1-7

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Paper copies can be ordered at a cost of 50 SEK per copy from PRV InterPat (telephone number 08-782 28 85).

Cited literature, if any, will be enclosed in paper form.

INTERNATIONAL SEARCH REPORT

Information on patent family members

04/03/2006

International application No.

PCT/SE2006/000254

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