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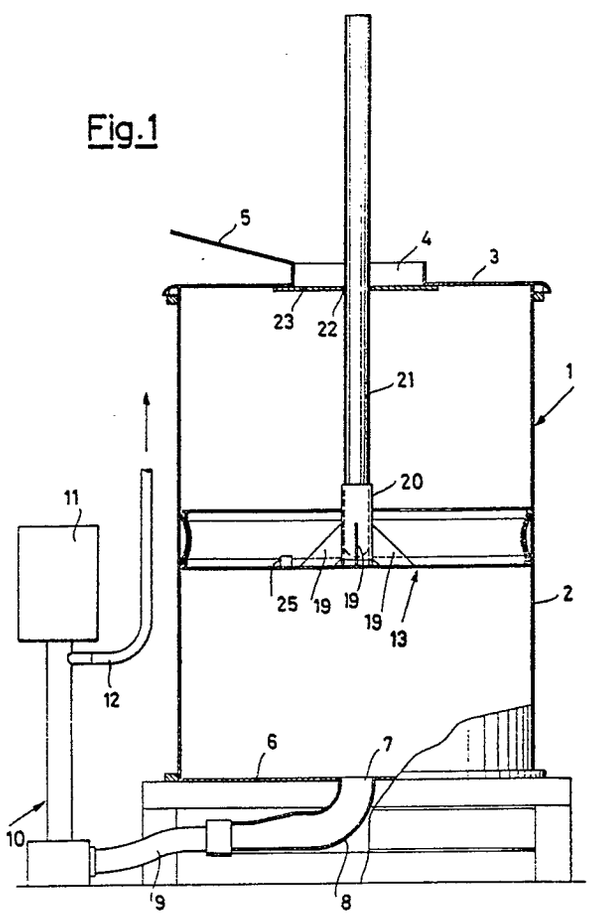
(54) Device for the total emptying of large-size ink containers having a low degree of flowability.

(57) The device includes a pressing plate (13) provided with a concave lateral wall (14). With the latter there is held in engagement a cylindrical annular gasket (15) which is in contact with the lateral wall (2) of the container (1) at a lower extreme lip (17).

Fig.1



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Device for the total emptying of large-size ink containers having a low degree of flowability.

The present invention relates to a device for the total emptying of large-size ink containers having a low degree of flowability.

Modern ink used in super-fast heat-set reel printing machines is notoriously characterized by a high degree of thixotropy and thus by extremely low qualities of flowability.

There has been in use for some time a valid system for feeding the ink fountains of printing machines when the ink is packaged in 200 kg containers having total opening.

The system includes a piston pump operated by compressed air inserted directly from above into the container and integrally connected to a pressing plate forming a perfect airtight seal. The plate has the function of scraping the walls of the container perfectly and promoting with its descent the feeding of the ink to the pump's intake mouth.

The problem started when 1000 kg containers began to be used instead of the 200 kg size. In fact, with these containers, different requirements had to be met such as:

a) a high adherence to the container's inner walls;

b) a highly flexible gasket to adapt to the inevitable ovalization of the container's wall;

c) the lowest possible friction between gasket and container so as not to hamper the plate's descent;

d) a gasket of a material able to resist chemically;

e) a non-sinkable plate;

f) the descent of the plate to be executed in a constantly horizontal manner.

According to the invention an emptying device has thus been accomplished for large-size containers, of the type having a pressing plate sliding vertically inside the container, characterized in the first place in that the pressing plate is provided with a concave lateral wall and is surrounded by an annular cylindrical gasket held against such concave lateral wall so as to be in friction and sealing contact with the containers' lateral wall at an extreme lip of same turned towards the bottom of the container.

Preferably, the concavity of the pressing plate's lateral wall is of a circular shape, and in which case the annular gasket is in contact with the container's inner wall at both its extreme lips.

Still preferably, the gasket is accomplished in flexible PVC.

In this way the gasket adapts easily to any ovalization of the container, it has a high adherence to the container's inner wall and, at the same time, it creates limited friction, which does not hamper the descent of the plate. An appropriate size also ensures the pressing plate's unsinkability.

A further feature of the present invention is represented by the fact that the pressing plate is provided with a guide tube which extends axially upwards from the centre of the plate and slidably engages the top of the container.

In this way the pressing plate can maintain itself constantly horizontal during its downward stroke.

Of course, so as to assist in the descent of the pressing plate even in the case of some slight oozing of ink through the gasket's engagement area, the device also includes a suction pump associated with the bottom of the container, below the pressing plate.

An example of an embodiment of the present invention is illustrated for greater clarity, but with no limiting intention, in the enclosed drawings, wherein:

Fig. 1 shows schematically, partly as a view and partly in cross-section, a large-size container provided with an emptying device according to the invention;

Fig. 2 shows the enlarged detail of the pressing plate and its corresponding gasket, of which said emptying device is constituted.

Fig. 1 shows a container 1, having a cylindrical lateral wall 2, a top wall 3 provided with a feed opening 4 having an openable cover 5, and a bottom wall 6 having a supply hole 7.

From the supply hole 7 there extends laterally a conduit 8, which a flexible union 9 connects to the inlet of a piston pump 10 operated by a motor 11 and provided with an outlet conduit 12.

Inside the container 1 there is slidably housed a pressing plate 13, with a lateral wall having circular concavity 14 (Fig. 2), wherein a flexible gasket in PVC 15 is inserted in the form of a cylindrical ribbon. The gasket 15 is held by a clamp 16, which in combination with the above concavity confers on the gasket a corresponding concave shape which determines the friction contact between the gasket and the container's lateral wall only at two extreme lips 17 and 18.

At the centre of the pressing plate 13 there is welded and strengthened with gussets 19 a receiving opening 20 for a vertical tube 21, which extends upwards and passes slidably through the feed opening 4 and a lower guide hole 22 in the plate 23 (Fig. 1).

Lastly the pressing plate is provided with a hole 24 with a vent valve 25 (Fig. 2).

During operations, the pressing plate 13 pushes the underlying ink contained in the con-

tainer 1 towards the supply hole 7. The ink is sucked up by the piston pump 10 and sent to the outlet conduit 12.

The gasket 15 is airtight with the container' s lateral wall 2 at the lips 17 and 18, thus limiting friction with the above wall 2. The tube 21 together with the guide hole 22 ensures the constant horizontal disposition of the plate 13 during its descent. The venting hole 24 with the valve 25 allows the air to be vented from under the plate 13 when required.

Claims

1. An emptying device for the total emptying of large-size ink containers having a low degree of flowability, including a pressing plate (13) sliding vertically inside the container (1), characterized in that said pressing plate (13) is provided with a concave lateral wall (14) and is surrounded by an annular cylindrical gasket (15) held against such concave lateral wall (14) so as to be in friction and sealing contact with the containers' lateral wall (2) at an extreme lip (17) of same turned towards the bottom of the container.

2. Device according to claim 1, characterized in that said gasket (15) is of PVC.

3. Device according to claim 1, characterized in that said concave lateral wall (14) of the pressing plate (13) has circular concavity and that said gasket (15) is held inside it so as to be in contact with the container's lateral wall at its extreme lower (17) and upper (18) lips.

4. Device according to claim 1, characterized in that said pressing plate (13) is provided with a guide tube (21), which extends vertically upwards from the centre of the plate and slidably engages with a guide hole (22) on the top of the container.

5. Device according to claim 1, characterized in that it also includes a suction pump (10) associated with the container's bottom (6).

Fig.1

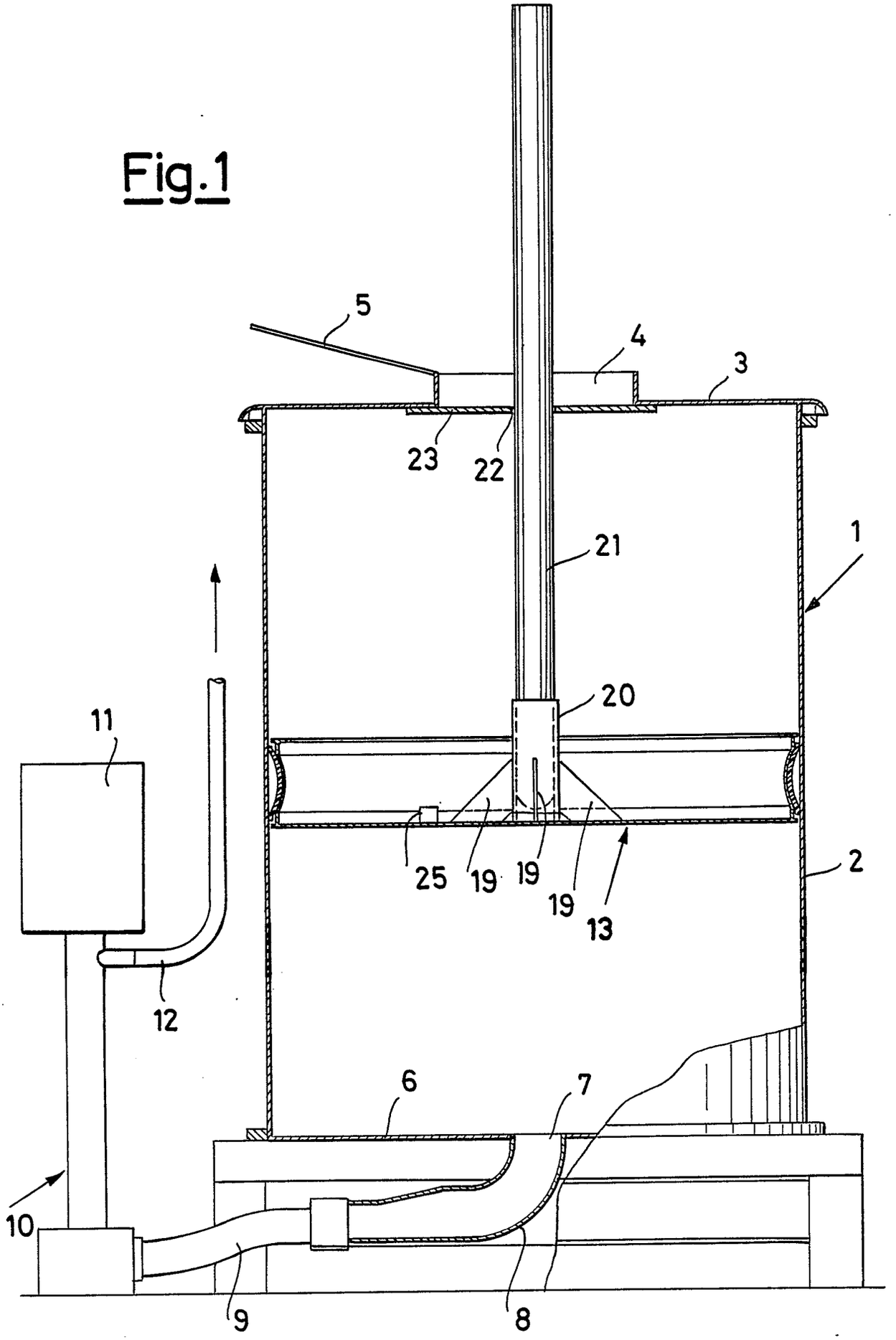

Fig.2