Dec. 9, 1969 B. SEM 3,482,882

APPARATUS FOR CONVEYING GRANULAR OR VISCOUS MATERIAL
BY MEANS OF COMPRESSED AIR
Filed March 22, 1968

FIG.1

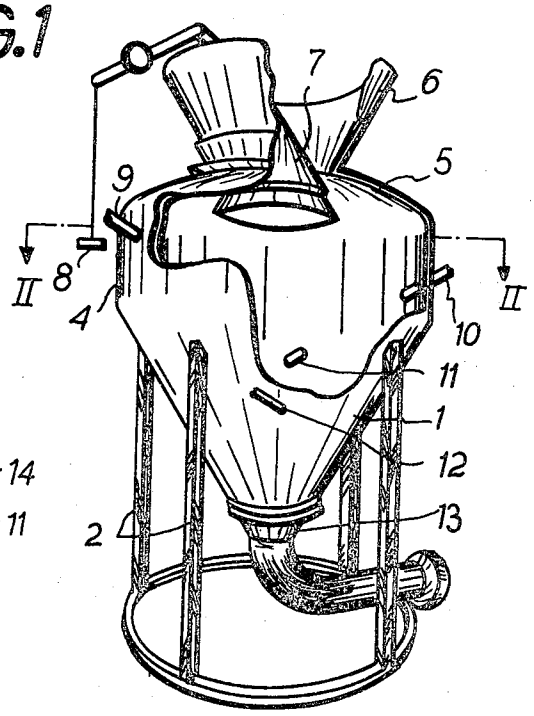


FIG.4

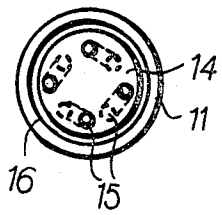


FIG.2

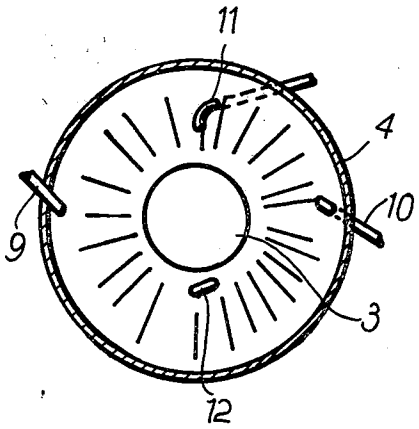
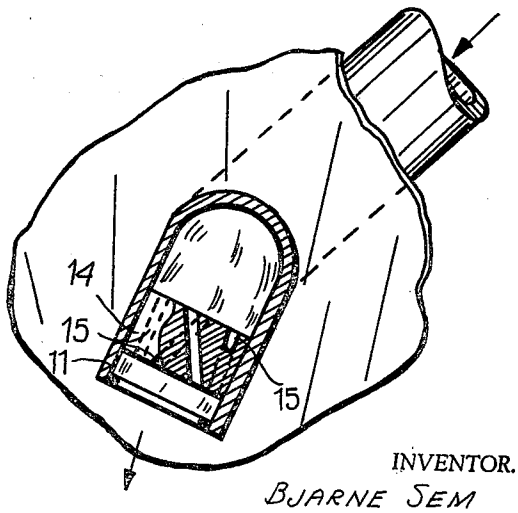


FIG.3



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APPARATUS FOR CONVEYING GRANULAR OR VISCOUS MATERIAL BY MEANS OF COMPRESSED AIR

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Int. Cl. B65g 65/40
U.S. Cl. 302—53 3 Claims

ABSTRACT OF THE DISCLOSURE

Apparatus for conveying granular or viscous material by means of compressed air, comprising a container having a tapering lower portion which terminates in a dispensing orifice and at least one nozzle for the supply of compressed air to the container, wherein a plate-shaped member is disposed within the nozzle in the interior of the container, the plane of said plate-shaped member being substantially normal to the axis of the nozzle, and a plurality of through-channels arranged in a circle and positioned obliquely with respect to the said plane in the same direction around the circle.

The present invention relates to apparatus for conveying granular or viscous material by means of compressed air of the kind comprising a container having a tapering lower portion which terminates in a dispensing orifice and an upper portion provided with a closable filling orifice for material to be conveyed, at least one nozzle for the supply of compressed air to the container, the axis of said nozzle being downwardly inclined with respect to the vertical axis of the container.

The object of the invention is to provide apparatus of the above-mentioned kind which conveys the material more efficiently than heretofore.

According to the invention apparatus of the above-mentioned kind comprises a plate-shaped member disposed within the nozzle in the interior of the container, the plane of said plate-shaped member being substantially normal to the axis of the nozzle, and a plurality of through-channels are arranged in a circle and positioned obliquely with respect to the said plane in the same direction around the circle.

The interior of the mouth of the nozzle is preferably constricted by an annular member.

One embodiment of apparatus in accordance with the invention will now be described, by way of example, with reference to the accompanying drawing, in which:

FIGURE 1 is a partially sectioned perspective view of an apparatus for conveying concrete,

FIGURE 2 is a section through the apparatus of FIGURE 1, taken along the line II—II,

FIGURE 3 is an enlarged part axial section through a nozzle of the apparatus of FIGURE 1, and

FIGURE 4 is a view of the nozzle of FIGURE 3 seen in the direction of the arrows IV—IV.

The apparatus shown in FIGURE 1 comprises a container with a frusto-conical lower portion **1**, which is supported by a rack **2**, and which, in the narrow end thereof, is provided with a dispensing orifice **3** (see FIGURE 2). The lower portion **1** merges at its upper part into a cylindrical wall portion **4** which then merges into a curved upper portion **5** which is provided with a central filling funnel **6**. The filling funnel **6** can be closed by means of a conical closure member **7** which is pressed tightly against the funnel opening when the container is at super-atmospheric pressure. The closure member **7** can be raised and lowered by means of a lever arrangement **8**. Compressed air is introduced into the container from a compressor (not shown) through four inlet nozzles **9**, **10**, **11** and **12**, arranged at 90° intervals around the wall, the nozzles **9** and **10** being arranged diametrically in the cylindrical wall portion **4** and the two further nozzles **11** and **12** being arranged diametrically in the lower portion **1**. All the nozzles **9**, **10**, **11** and **12** are positioned at different heights within the container and are directed somewhat obliquely with respect to the container wall, as will be apparent from FIGURE 2.

As shown in FIGURE 3, each nozzle consists of the actual nozzle tube (nozzle tube **11** has been shown in FIGURE 3) which, at a certain distance from the opening of the nozzle, is provided with a plate **14** having a ring of through-channels **15** formed therein, the channels **15** each extending obliquely with respect to the axis of the nozzle in the same direction. In this manner a helical stream of compressed air is obtained from the mouth of the nozzle. In order to constrict the stream of air, the interior of the mouth of the nozzle is constricted by an annular member **16**.

If desired, in order to prevent flow of concrete into the nozzles on the creation of back pressure within the container, the plate **14** on the side adjacent the mouth may be covered by a disc of flexible material attached centrally to the plate (not shown on the drawing).

Having described my invention, I claim:

1. Apparatus for conveying granular or viscous material by means of compressed air, comprising a container having a tapering lower portion which terminates in a dispensing orifice and an upper portion provided with a closable filling orifice for the material to be conveyed at least one nozzle for the supply of compressed air to the container, the axis of said nozzle being downwardly inclined with respect to the axis of the container, wherein a plate-shaped member is disposed within the nozzle in the interior of the container, the plane of said plate-shaped member being substantially normal to the axis of the nozzle, and a plurality of through-channels arranged in a circle and positioned obliquely with respect to the said plane in the same direction around the circle.

2. Apparatus according to claim **1**, wherein the interior of the mouth of the nozzle is constricted by an annular member.

3. Apparatus as claimed in claim **2**, wherein a disc of flexible material overlies the plate on the side thereof adjacent to the mouth of the nozzle.

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