

[54] **ARRANGEMENT FOR DELIVERING
PREDETERMINED QUANTITIES OF
LIQUID AND SOLID MATERIAL**

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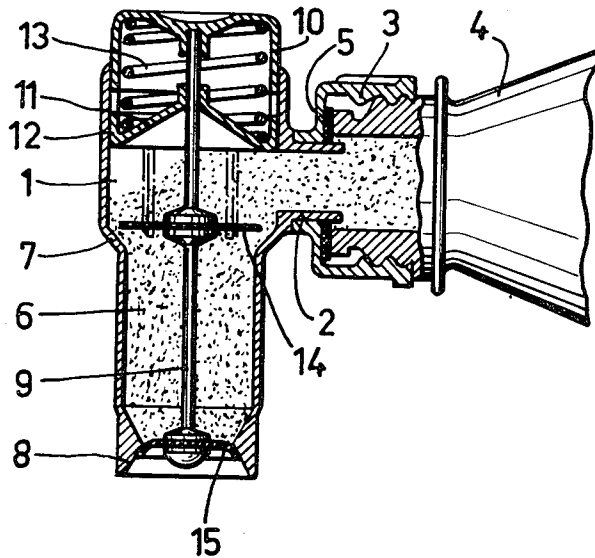
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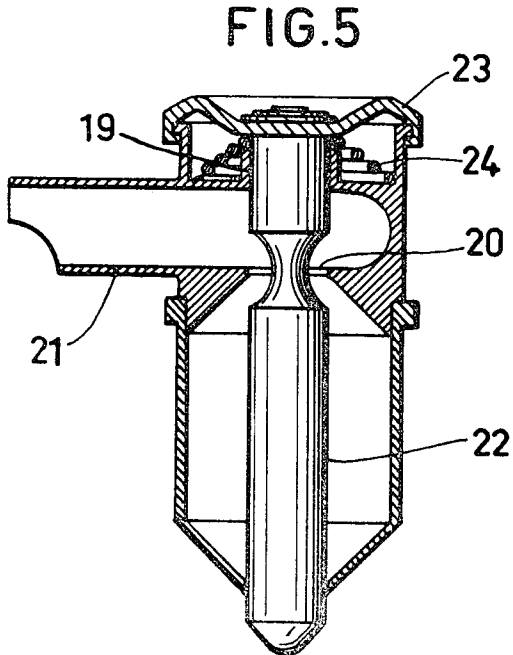
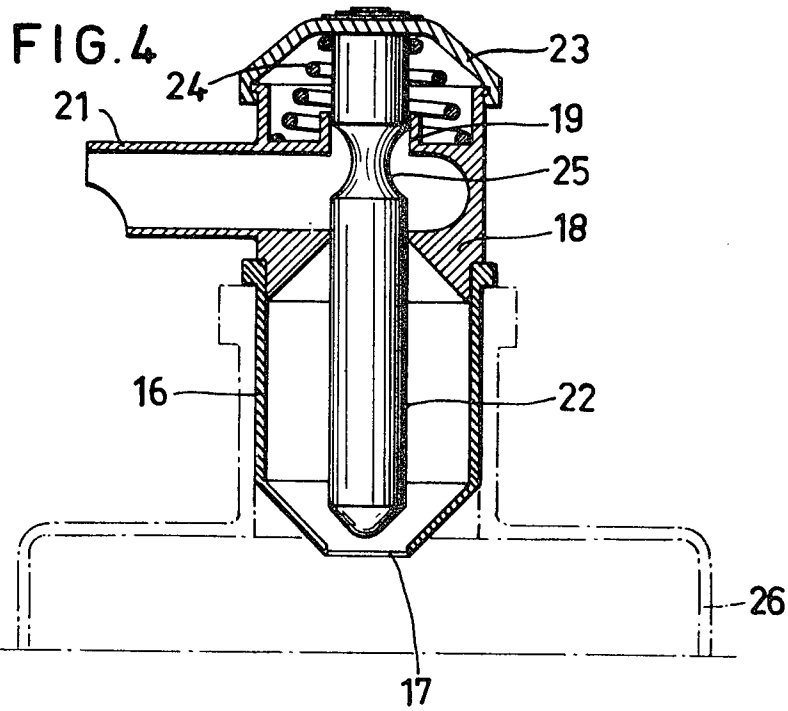
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[57] **ABSTRACT**

A batching arrangement comprising two valve bodies both of which are closed in an intermediate position and thereby ensure accuracy of the material amount to be batched, in such a manner, that both valve bodies during a certain stroke length are simultaneously in sealing engagement whereafter one of said valves opens.

2 Claims, 5 Drawing Figures





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ARRANGEMENT FOR DELIVERING PREDETERMINED QUANTITIES OF LIQUID AND SOLID MATERIAL

This invention relates to an arrangement for delivering predetermined quantities of freely running liquid and solid material, comprising a measuring chamber with an inlet opening which is connected or can be connected with a supply chamber for the liquid or solid material, and with an outlet opening for the same material and further with a control member adapted to be actuated outside the measuring chamber and to reciprocate within said measuring chamber so as in a first position to close the outlet opening and hold open the inlet opening for allowing material to pass therethrough, and in a second position to hold open the outlet opening for the passage of the material and shut the inlet opening.

The invention is described in greater detail in the following, with reference to the accompanying drawing, in which:

FIG. 1 shows a section through an arrangement according to a first embodiment of the invention in the position in which the control member closes the outlet opening and holds open the inlet opening,

FIG. 2 shows the same arrangement as in FIG. 1, the inlet opening and outlet opening being held closed by the control member,

FIG. 3 shows the same arrangement as in FIG. 1, the inlet opening being closed and the outlet opening being open,

FIG. 4 shows a section through another embodiment of the arrangement according to the invention, the control member closing the inlet opening, and

FIG. 5 shows the same arrangement as in FIG. 4, in a position in which the control member closes the outlet opening.

Referring to FIGS. 1-3, the arrangement for delivering predetermined quantities is placed in an oblong housing 1, the longitudinal direction of which coincides with the vertical. The housing is provided on the side with a connection piece 2 having a tubular internally threaded sleeve 3. To said tubular sleeve a supply 4 in the form of a bottle or another similar vessel can be connected, which vessel is provided with an end portion having an external thread corresponding to the internal thread of sleeve 3. A gasket 5 is provided in order to effect sealing between the connected parts when the vessel containing material to be batched is connected to the batching arrangement. The batching arrangement proper includes a measuring chamber 6 located between an upper seat 7 with a conical surface and a lower seat 8 also with a conical surface. Through said measuring chamber 6 extends a control rod 9 adapted to be actuated from outside, to which rod at its upper portion is connected a piston 10 adapted to reciprocate within a corresponding piston barrel. Said control rod is directed through a conical guide means 11 rigidly mounted in the piston barrel and with its lower portion folded upwardly so as to form a cylindrical portion 12 abutting to the wall of the piston barrel. The border zone between the cylindrical portion 12 and the conical portion 11 forms the seat for a compression spring 13 tending to move the piston 10 with associated control rod 9 upwardly to the position shown in FIG. 1. Within said control rod are mounted two flexible sealing discs whereof one 14 is intended to cooperate with the conical surface 7 and the other 15 is intended to cooperate with the conical surface 8. In the position of the control rod 9 shown in FIG. 2 the sealing disc 14 is brought into engagement with its seat, and the sealing disc 15 engages with the conical surface 8. In the position shown in FIG. 3 the sealing disc 14 engages with its seat, and the sealing disc 15 is disengaged from the conical surface 8.

The arrangement when being in function performs two working operations whereof the first operation is illustrated in FIG. 1 and the second operation is illustrated in FIG. 3. At the first operation, i.e. when the upper opening is exposed and the lower opening is closed, the measuring chamber 6 is filled with the material to be batched. When said chamber is filled, the control rod is caused to move downwards by action of a force applied to the piston 10 against the action of spring 13. Said force can be effected manually by the thumb or mechanically, for example by the assistance of an eccentric means of some kind. Due to the elastic flexibility of the material in the disc

15, the disc maintains its engagement with the conical surface 8 in spite of the control rod movement. A determined amount of the material is now included in the measuring chamber, as shown in FIG. 2. During the second working operation the control rod 6 is moved still further downwards. The flexible elastic disc 14 maintains its engagement with the conical surface 7, while the lower disc 15 is released from its engagement surface, so that the material now leaves the measuring chamber via the exposed lower opening. As soon as the material included in the measuring chamber has left the chamber, the spring 13 pushes the piston 10 up to the upper end position whereafter a new first working operation commences.

The arrangement has proved to be an effective and reliable batching device.

Referring to FIGS. 4 and 5 the batching apparatus is built up of a lower cylindrical housing portion 16, the lower end portion of which has conical shape and terminates in an opening 17, and an upper housing portion 18 which is provided with a piston barrel 19, an upper opening 20 and a connection piece 21 for connecting the apparatus to a supply of material to be batched. Through said two housing portions 16, 18 extends a control rod 22 adapted with its upper portion to slide downwards in the barrel 19 by action of an outside force. The upper housing portion 18 is covered by a cap 23 in which the control rod 22 is mounted. A space between the inner surface of the cap 23 and an annular space around the barrel 19 constitutes the seat for a compression spring 24 which so applies to the inside of the cap that the cap 23 and the control rod 22 mounted therein in the end position assume the position shown in FIG. 4. The control rod 22 is provided with an annular recess 25 which in the position shown in FIG. 4 is located above the upper opening. The control rod, along the remaining part of its length, has the same diameter as the upper and the lower opening 17. In the position shown in FIG. 4 the lower end of the control rod is located above the lower opening 17. In the position shown in FIG. 5 the control rod 22 so is moved downwards against the action of spring 24 that the lower end of the rod now sealingly extends through the opening, while the recess portion 25 is located in the upper opening and exposes the same.

The batching arrangement when in function performs two working operations. At the first operation the control rod 22 is in the position shown in FIG. 5, i.e. material can pass through the upper opening downwards into the measuring chamber in the housing portion 16. During the second operation the control rod is in the position shown in FIG. 4, i.e. the upper opening is closed and the lower opening is exposed. The batched amount now leaves the apparatus and may, for example, be collected in a vessel 26 connected to the apparatus.

Also this embodiment of the arrangement is effective and operates reliably.

I claim:

1. Arrangement for delivering a predetermined amount of a freely running material which comprises a measuring chamber having a first conically shaped valve seat beneath an upper inlet opening connected to a supply chamber for the free running material and a second conically shaped valve seat above a lower outlet opening for the free running material, and a control member comprising a first elastic sealing disc adapted to flexibly cooperate with the first conically shaped valve seat and a second elastic sealing disc adapted to flexibly cooperate with the second conically shaped valve seat, said first and second sealing discs united in fixed position by a rod member, said control member adapted to be actuated from outside the measuring chamber and to reciprocate within the measuring chamber between a first position wherein the second elastic sealing disc seals the outlet opening and the inlet opening is held open, a second position wherein the first elastic sealing disc seals the inlet opening and the outlet opening is held open, and an intermediate position wherein both the elastic sealing discs are held in sealing abutment with their respective conically shaped valve seats.

2. Arrangement according to claim 1 including a spring located above the measuring chamber, and cooperating with the control member and biasing the control member in the first position.

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