

[54] VALVE UNIT FOR REGULATING THE DISCHARGE OF GRANULAR OF POWDERED PRODUCTS

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[22] Filed: Dec. 13, 1971

[21] Appl. No.: 207,170

[30] Foreign Application Priority Data

Jan. 7, 1971 Italy 19108/71

[52] U.S. Cl. 222/529, 222/556, 222/536

[51] Int. Cl. B67d 3/00

[58] Field of Search 222/527, 528, 529, 536, 222/556; 251/298-299

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ABSTRACT

In a conveyor system for cattle fodder, which conventionally comprises a conveying tube and a plurality of discs attached to a rope sliding in the interior of said tube, a vane-like valve door for closing the discharge hopper of the conveyor comprises at least a flexible member to ensure a tight seal between the vane-like member and the conveying machine frame. Preferably, a piece of fabric is hangingly mounted on the inner face of the vane-like valve member and abuts, when the valve member is in the closed position; a corresponding flexible (fabric) member fastened to a confronting fixed portion of the conveying system. The advantage is that trapping of fodder particles between the valve member and the discharge hopper ledge is quite reliably prevented.

6 Claims, 3 Drawing Figures

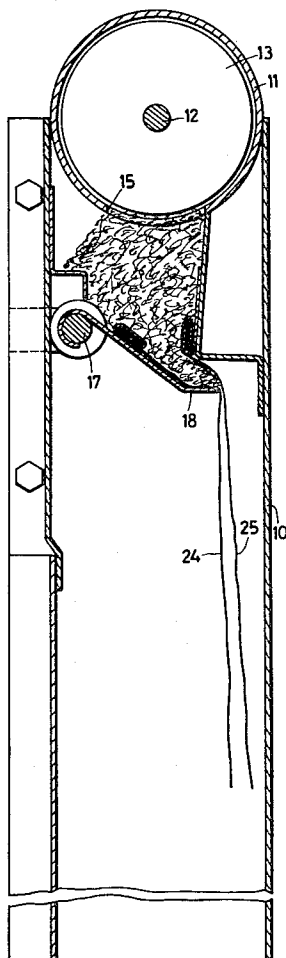


Fig.1

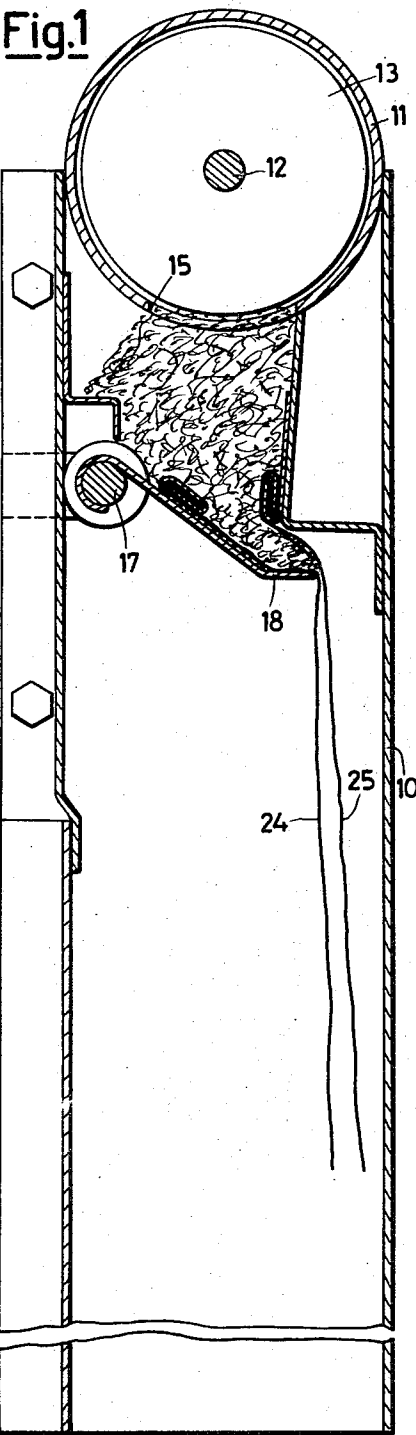


Fig.2

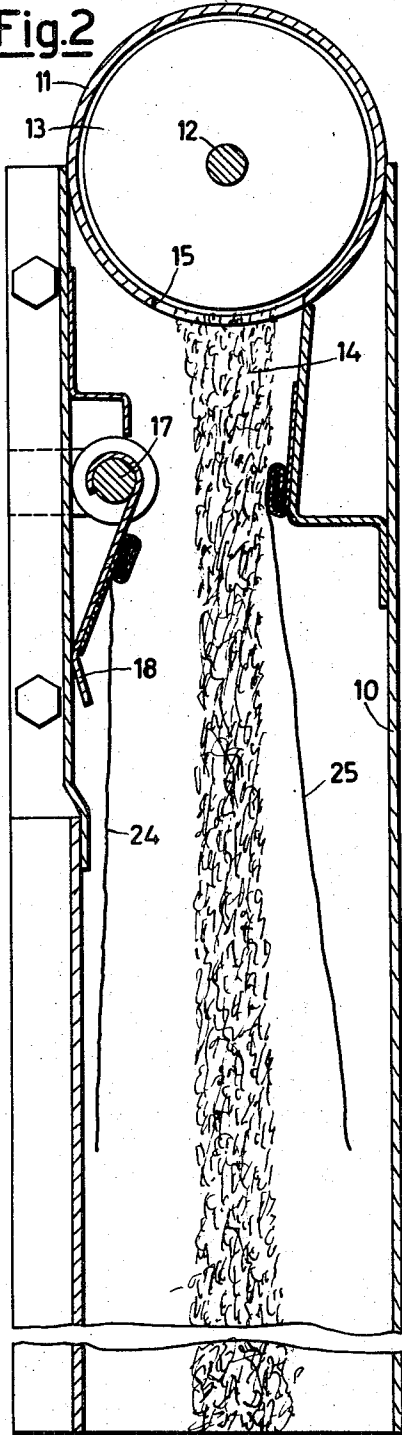
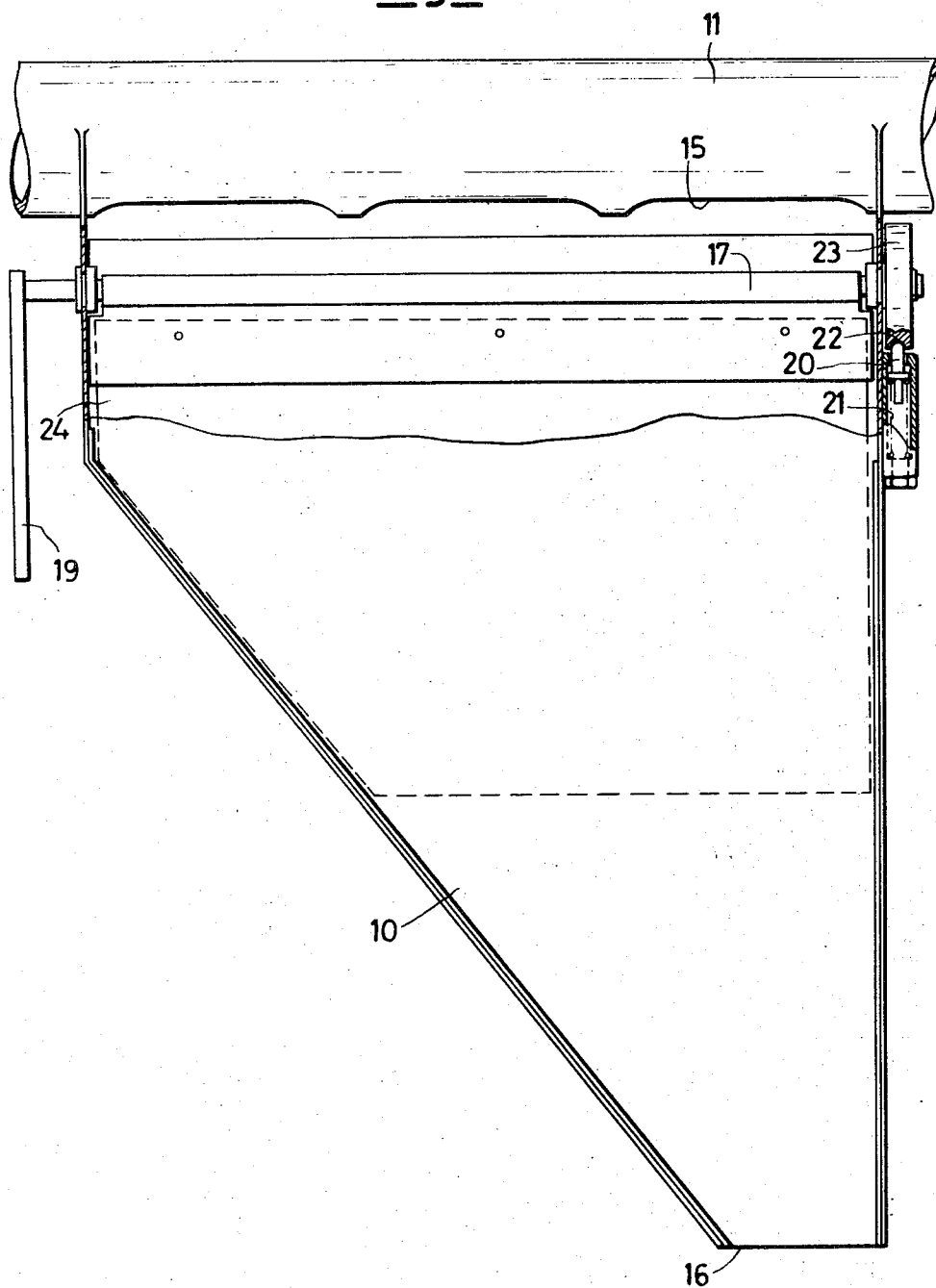


Fig.3



VALVE UNIT FOR REGULATING THE DISCHARGE OF GRANULAR OR POWDERED PRODUCTS

This invention relates generally to a valve unit for regulating the discharge of granular or powdered products from dispensing mouths. More particularly, the present invention relates to a valve unit for regulating the discharge of granular or powdered products from dispensing mouths in installation for the automatic dispensing of fodder in livestock breeding farms, especially those for breeding poultry, swine or cattle.

Conventional valve units for this use comprise a vane which can be switched, either manually or automatically between an opening and a closing position, and vice versa, of the dispensing mouth, the closure being obtained between a ledge of the dispensing mouth aforesaid and an edge portion of the vane.

It has been observed that in the valve units of the kind referred to above it may happen that a few fodder granules may become jammed between the dispensing mouth ledge and the edge portion of the vane, thus preventing the latter from being closed in a sealtight manner, the result being seeping of fodder especially of the fractions thereof having a grit size which is smaller than that of the granules which have become jammed between the vane and the ledge.

An object of this invention is to redress such an objectionable situation and, to this end, it has been envisaged to provide a valve unit which is characterized in that it comprises a valve body having an inlet and an outlet, said body exhibiting at least a deformable wall portion, and a valve member between said inlet and outlet, which can be switched between an open position, where the inlet and the outlet are in mutual communication, and a closed position, where said valve member forms a sealtight joint against the aforesaid deformable wall portion of the valve body, so as to cut off any communication between the inlet and the outlet.

The foregoing and other features of the invention the subject of the present application will become more clearly apparent from a scrutiny of the ensuing detailed exemplary description, reference being had to the accompanying drawings, wherein:

FIG. 1 is a vertical cross-sectional view of a valve unit constructed according to the subject invention, in the closed position.

FIG. 2 is a cross-sectional view similar to that of FIG. 1, but illustrative of the valve unit in the open position, and

FIG. 3 is a side view of the same unit, partly in fragmentary view and partly in cross-sectional view.

With reference to the drawings, the valve unit in question, according to a preferred embodiment, structurally comprises a substantially box-like body 10 which, by way of example only and without any limitation, has been shown as attached to a tube 11, the latter being well known to those skilled in art, and in whose interior a cable 12 is slidable, to which properly spaced apart discs 13 are integrally fastened.

The discs 13, as they slide forward, convey the fodder, diagrammatically shown at 14, along the tube 11, so that the fodder passes into the body 10 of the valve unit through inlet ports 15 of the tube 11 and, when the valve is open, as will be explained hereinafter, emerges through an outlet port 16 of the body 10.

In the interior of the box-like body 10, between the ports 15 and 16, there is, rotatably supported on a shaft 17, a vane-like valve member 18, which can be switched between the positions shown in FIGS. 1 and 2, by means of a manual lever control 19 mounted outside the body 10.

The vane 18 is locked in either position by means of a pin 20 urged by a spring 21 so as to enter corresponding holes 22 of a member 23 solid with the shaft 17. Obviously, the rotation of the vane 18 could also be automatically controlled by the agency of electromagnetic means as a function of the amount of fodder which has been dispensed and spent. Quite characteristically, a piece of fabric, or other flexible material, 24, hangs from the vane 18, said piece of fabric being intended to cooperate with another piece of fabric or another flexible material, 25, confrontingly mounted and similarly supported in the interior of the body 10 so as to hang down.

By so doing, a sealtight, closure of the vane 18 (FIG. 1) is obtained since an undulated path is originated where the fodder may become jammed, whereas the flexibility of the fabric matches the rough surface of the fodder particles and so locks the interstices between the granules so that seeping of the finer grit particles is prevented.

What is claimed is:

1. A valve unit for regulating the discharge of granular or powdered materials, comprising a valve body having an inlet and an outlet, said body having at least a deformable wall portion, and a valve member between said inlet and said outlet and which can be moved between an open position, where the inlet and the outlet are in mutual communication relationship, and a closed position where said valve member provides a sealtight joint against said deformable wall portion of the valve body so as to cut off any communication between said inlet and outlet, said valve member being a vane which can be rotated at a side which is pivoted on a rigid wall portion of said valve body, the opposite side of said vane providing said sealtight joint against the deformable wall portion of the valve body, said vane being movable between said open position and said closed position, said vane being flush with the inner surface of said valve body when in said open position, said vane extending transversely of said valve body in said closed position, said deformable wall portion being deformed by said vane in said closed position, seepage occurring in said closed position being directed along a path of varying flow direction, said deformable wall portion being a flexible suspended member, said vane having an auxiliary suspended flexible member engaging the flexible member of said deformable wall portion when said vane is in closed position to form said sealtight joint.

2. A valve unit according to claim 1 including the piece of flexible material hanging down from said vane being attached to said vane substantially at a point intermediate between said two sides.

3. A valve arrangement for regulating the discharge of granular or powdered materials comprising, in combination,

- a valve body having an inlet and outlet;
- at least one deformable wall portion within said body;
- and
- a valve member within said body between said inlet and outlet and movable against said deformable

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wall portion within said body for forming a seal-tight joint between said valve member and said deformable wall portion; said valve member being in closed position when said valve member is against said deformable wall portion, said valve member substantially supporting said materials and inhibiting the discharge of said materials from inlet to outlet when in said closed position, said valve member being in open position when substantially spaced from said deformable wall portion, said materials being dischargeable from said inlet to said outlet when said valve member is in open position, said valve member being pivotably connected to a rigid wall portion of said valve body, said valve member being flush with the inner surface of said valve body when in said open position, said valve member extending transversely of said valve body in said closed position, said deformable wall portion being deformed by said valve member in said

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closed position, seepage occurring in said closed position being directed along a path of varying flow direction, said deformable wall portion being a flexible suspended member, said valve member having an auxiliary suspended flexible member engaging the flexible member of said deformable wall portion when said valve member is in closed position to form said sealtight joint.

4. The arrangement as defined in claim 3 wherein said deformable wall portions are of flexible material freely suspended within said body.

5. The arrangement as defined in claim 3 wherein said valve member is a rotatable member and rotatable between said open and closed positions.

6. The arrangement as defined in claim 5 including means for indexing and holding said rotatable member at said open and closed positions.

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