

Dec. 23, 1952

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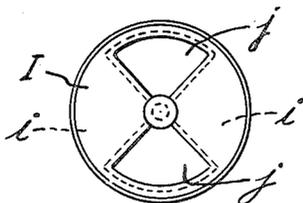
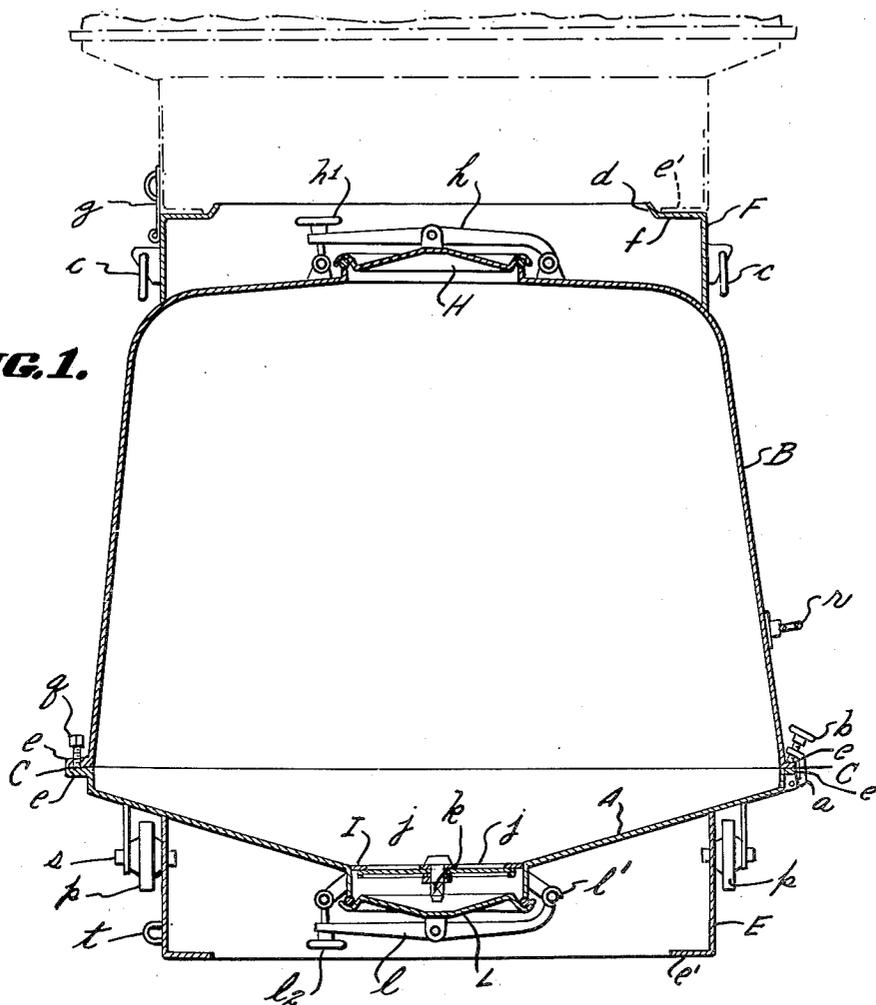
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CONTAINER WITH PIVOTED BOTTOM GATE

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**FIG. 1.**



**FIG. 2.**

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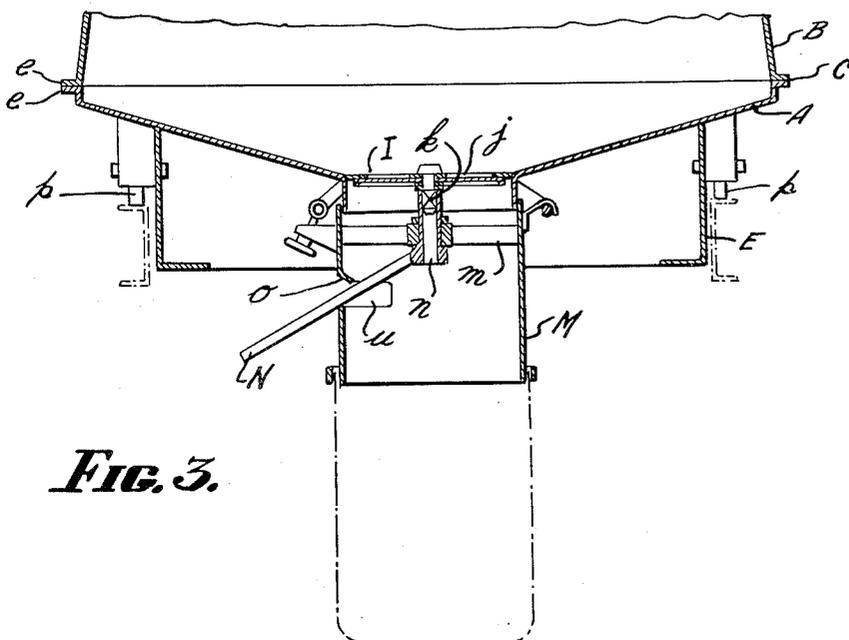
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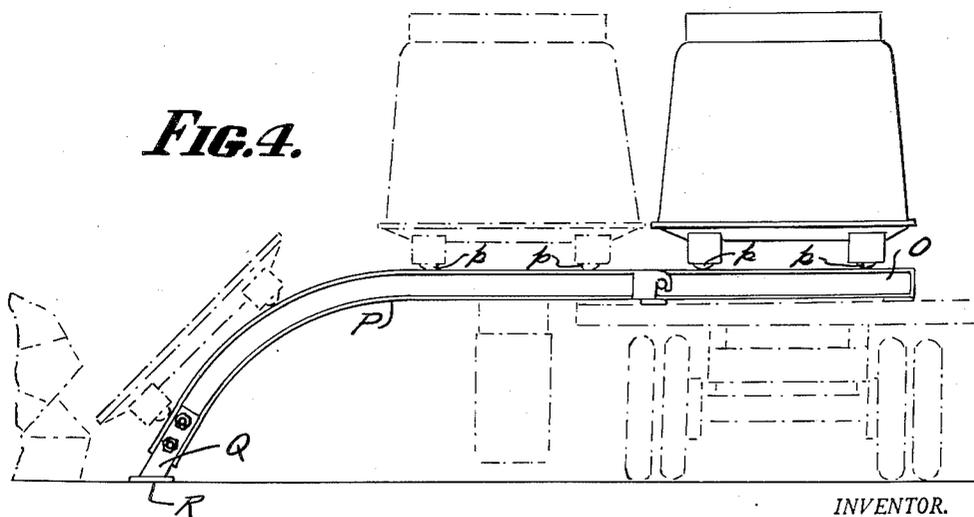
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**FIG. 3.**



**FIG. 4.**

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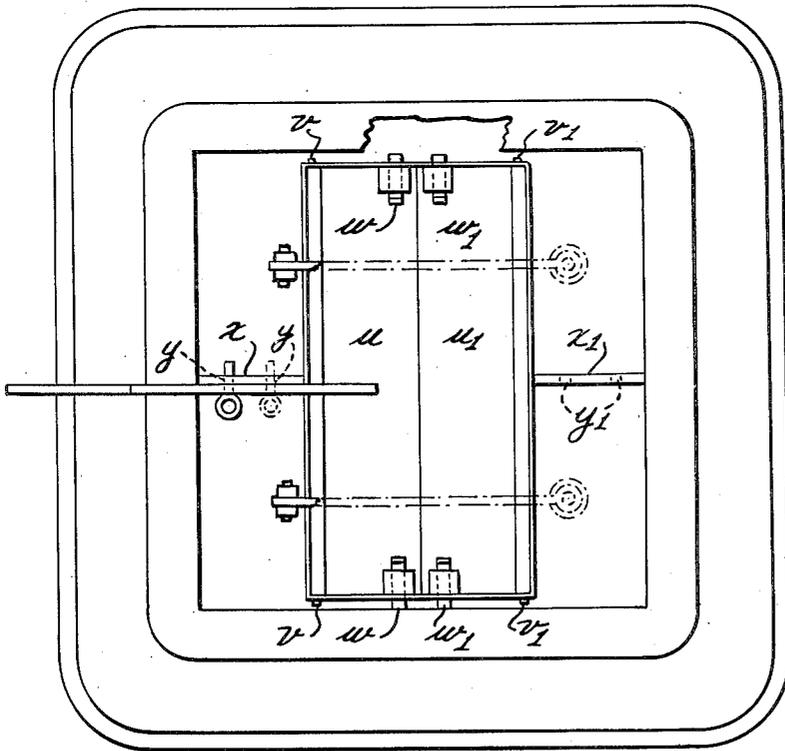
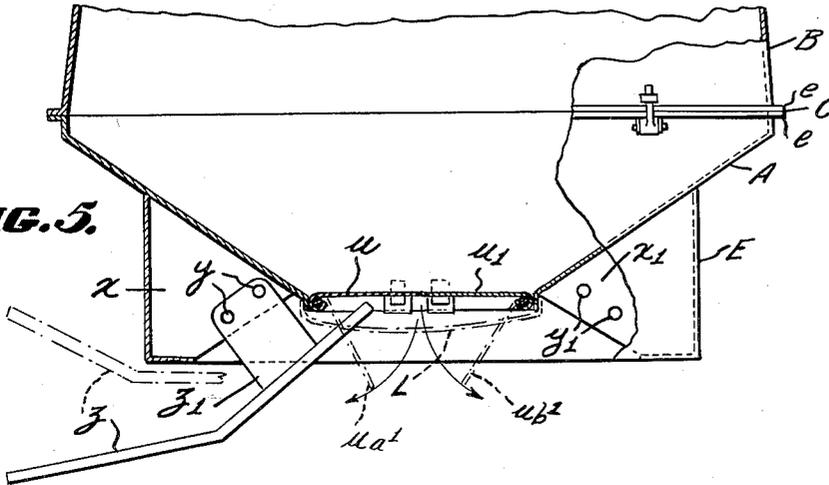
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**FIG. 5.**



**FIG. 6.**

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# UNITED STATES PATENT OFFICE

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## CONTAINER WITH PIVOTED BOTTOM GATE

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3 Claims. (Cl. 222-502)

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The present invention has for its object to allow the direct conveyance in bulk, from the producer to the user with the minimum of handling operations, of pulverulent or granulous products while insuring the best conditions of preservation for the same through a complete protection against air, moisture and weather and while making it possible, furthermore, to easily discharge the said products if clogging has taken place.

This invention fundamentally consists in forming the vessel (which will be designated hereinafter as "container") of two parts of frusto-conical or preferably frusto-pyramidal shape, said parts being joined together base to base by means making it possible to unite and separate them, each of said parts being provided with openings provided with closing means, of such a size that they render possible a quick introduction and a quick delivery of the product to be conveyed.

The discharge means is formed preferably, of two closing members arranged in series, one of the closing members being not entirely tight while the other is entirely tight; and a sacking device can be combined with the discharge means.

Both parts forming the container are optionally provided with means which can be coupled in order to connect the containers one to the other and to hold them stationary in this position, for example by means of appendages which can be inserted in one another, said means extending possibly far enough above and below the container in order to protect its filling and discharging means.

On the other hand, the lower part of the container can be advantageously provided with wheels, elevated with respect to said lower part of the device in order to make possible its displacement on a rolling track.

The appended drawings represent by way of example, a construction of a container according to the invention and some modifications of the same.

In the said drawings:

Figure 1 is a diametral elevational sectional view showing a first construction;

Figure 2 is a top plan view of the not entirely tight discharge closing means;

Figure 3 is a fragmentary diametral elevational sectional view showing a sacking device combined with the lower closing means of the container;

Figure 4 is a side view of a device for discharging the container from the conveying vehicle;

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Figure 5 is a view similar to Figure 1 but with some parts broken away, showing a modification of the discharging means.

Figure 6 is a bottom plan view of the same.

In the construction shown in Figures 1 and 2, the container is formed of a tight vessel made, for example, of steel sheet and formed of a square base A in the shape of a frustum of an inverted pyramid on which an upper part formed of a bell B having also the shape of a frustum of a pyramid is assembled by means of a joint C wherein a series of flanges *e* are locked together by handwheels *b* actuating clamping screws.

The base comprises an appendage E forming a stand which makes it possible to put said vessel on the floor of any uncovered vehicle (platform wagon, truck, carriage, barge, ship hold and the like) or on the ground.

The upper part of the bell B is surmounted by a head F carrying a ring *c* on each corner which makes it possible to suspend the apparatus to the hook of a hoist in order to allow of its handling and more particularly, of its transfer under load from one conveying means to another.

Said head F comprises a supporting surface *f* provided with an inner flange *d*, the size and the shape of which are the same as those of the stand E and of its own supporting surface *e* which makes it possible to superpose two or more of said devices if the commodities of the conveyance or other necessities require it; in this case the supporting surface *e* of the stand of the upper apparatus rests on that *f* of the head of the lower apparatus, the inner flange *d* of this latter preventing displacement of the upper apparatus; two locking devices *g* insure the fastening of said devices on one another.

The bell B comprises in its upper part a circular manhole closed by a removable cover H provided with a gasket and maintained in its closed position through a lever *h* and a pressure hand-wheel *h*<sup>1</sup>.

The opening of this closing device allows the filling of the apparatus by simple pouring through gravity, of the pulverulent or granulous goods to be transported.

The base A is formed of an inverted frusto-pyramid forming a hopper the bottom of which ends in a tight closing device L allowing the discharge of the apparatus to be operated simply by gravity.

Inwardly of the closing device L is an additional closing device; the base A terminates in a flat circular piece of sheet metal I provided with two diametrically opposed perforated sectors *j*; both apertures *j* can be closed by the solid

sectors of a second sheet metal plate *i* similar to the first named one and applied against it and which can rotate with respect to it by 90° around a vertical axis which passes through their centre.

The rotation of this shutter is controlled by a square nut *k* which can be actuated by means of a removable key.

Below this closing member there is a circular chamber hermetically closed by a tight cover L similar to that of the upper part, but the lever *l* of which can be completely removed due to its open hinge *l'*.

During the loading operation and transportation the rotary closure *i* remains closed as well as the lower tight cover L, the former insuring only a relative tightness while the latter provides complete tightness.

For the discharging operation the cover L has therefore, to be opened and then removed together with its lever *l* and its clamping handwheel. It is then sufficient to actuate the closure *i* by a rotation of 90° by means of the above said key in order to make it possible for the goods to flow out and to empty the apparatus.

However it is possible if desired, to effect this discharge while combining it with a sacking operation, the goods being discharged into calibrated or non-calibrated sacks by means of an attachment forming a sacking device. The latter (Figure 3) comprises a steel sheet cylinder M open at the bottom and which can be attached below the apparatus instead of the tight cover L (Figure 1) which has been removed, the said cylinder lengthening, by forming a cap thereon, the circular chamber which was closed by the cover.

Said device internally comprises on its upper part a bent actuating key N supported by an axial cross piece *m*. The female head *n* of the key is internally square and fits onto the actuating square nut *k* of the closure *i*.

The handle of said key projects out of the cylinder through a circular slot *u* making it possible for the same to be turned a quarter of a revolution. In the upper part of said slot and inside the cylinder a sheet metal deflector *o*, prevents the discharged material from escaping through the slot.

On its lower part and externally, the cylinder M terminates in any conventional sacking device. When the sacking device is in its regular position the actuation of the key N allows the goods to flow more or less quickly and permits interruption at will.

Such an emptying operation can be effected while the vessel is suspended by the hook of a hoist but it can often occur that such a hoist does not exist at the discharging place. To remedy this difficulty the container may be provided, with a second attachment (Figure 4) making it possible to effect the emptying without having to lift the container.

The road or railway vehicle used for the transport is provided, for this purpose, with two metallic girders O assembled in a parallel relation and in a rigid manner, thus forming a track element transverse or longitudinal with respect to the vehicle.

The gauge of said track is such that it makes it possible for the stand E of the container to travel between said girders with a clearance. Then the container no longer rests upon the supporting surface of its stand but on four raised rollers *p* which are provided on two opposed faces of the container. Any well known means may

be provided to prevent any displacement of the container during transportation.

The said track member O can be extended by means of track member P the girders of which have been bent on a part of their length so as to make it possible for said track member P to rest upon the ground at one of its ends, the other end resting on the vehicle and being connected with the first named track element O for example by means of hooks.

On the ground supported side a member Q which can be telescopically adjusted with respect to the element P makes it possible to regulate the height of the horizontal track section according to that of the vehicle.

If it is found at the time of discharge, that the conveyed goods have clogged and agglomerated into a single body inside the container it is possible to remove them therefrom in the following manner; the handwheels *b* (Figure 1) of the straps *a* which hold the joint C between the bell and the base are loosened and thus both said parts are released from each other. After having exerted pressure if necessary, by means of pressure screws *q* (Figure 1) provided on the edge of the bell B and resting on the base A, for releasing the bell from the base, said bell is lifted by means of the handles *r* with which it is provided on two of its side faces and it is removed. If a hoist is at hand it is also possible to lift the bell by means of said hoist.

There remains then a block of material resting upon the base A. If the discharging is effected by means of a bridge P (Figure 4) the base is pushed until it comes over the bent part of the said bridge; the block of material will then separate therefrom, fall on the ground and break to pieces.

If the discharge is operated by means of a hoist, the base is lifted on one of its sides by means of the lugs *t* (Figure 1) so as to cause the block to tilt and to fall on the ground.

In the modification shown in Figures 5 and 6, the closing device is formed of two shutters *u* and *u*<sub>1</sub> pivotally connected at *v* and *v*<sub>1</sub> on the sides of the opening in the bottom of the container, which opening is here rectangular. Said shutters are maintained in the closed position by two pairs of sliding bolts *w* and *w*<sub>1</sub>, shown diagrammatically in Figures 5 and 6. The base E carries two gussets *x* and *x*<sub>1</sub> provided with pairs of holes *y* and *y*<sub>1</sub>. A lever *z* having a wing *z*<sub>1</sub> provided with two holes corresponding to the holes *y* and *y*<sub>1</sub>, can be secured momentarily on the gusset *x* or on the gusset *x*<sub>1</sub> by means of pins which are inserted in one of the holes *y* or *y*<sub>1</sub> (see Fig. 5). The tightness of the bottom of the container is insured by a door L provided with a gasket and kept closed by two clamps *l* which can be tightened by two handwheels *l*<sub>2</sub>, as more fully described in connection with Figures 1 and 2.

The bottom of the container may be constituted of the shutter system *u*, *u*<sub>1</sub> with the bolts *w*, *w*<sub>1</sub>, shown in Figures 5 and 6, with the tight closure L of Figure 1, having the open hinge, or the tight closure of Figures 5 and 6 having the pivoted hinge. In order to discharge the contents, the clamps *l* are removed, or caused to pivot around the pivoting axes, as the case may be. The lever Z is then positioned by the insertion of a pin through one of the holes therein and through one of the holes *y* or *y*<sub>1</sub> of the corresponding gusset *x* or *x*<sub>1</sub>. By slight downward pressure on the lever, the corresponding shutter *u* or *u*<sub>1</sub> is

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slightly raised off its respective bolts  $w$  or  $w_1$  which can then easily be withdrawn, so that upon raising the lever  $Z$ , the shutter  $u$  or  $u_1$  drops to its open position, shown in broken lines in Figure 5 at  $u_{a^1}$  or  $u_{b^1}$ .

In order to close the bottom of the container again the reverse operation is performed.

The shutter mechanism just described in connection with Figures 5 and 6 may of course be substituted for the mechanism I, J of Figures 1 and 2, if desired.

What I claim is:

1. In a container for conveying pulverulent material, formed of two flaring parts united together at their corresponding large bases, closing means at the bottom of the container, comprising a pair of shutters extending substantially the whole width of said bottom, said shutters being pivotally mounted on two opposite sides of the bottom opening, and the edges of said shutters opposite their pivoted edges meeting centrally of said opening when brought to their closed position, two pairs of bolts maintaining said shutters in said closed position and means securable on the lower part of the container in operative relation to either of said shutters to slightly lift the shutters to permit removal of their maintaining bolts, so that they can drop pivotally to clear the said opening.

2. In a container for conveying pulverulent material, formed of two flaring parts united together at their corresponding large bases, closing means at the bottom of the container, comprising a pair of shutters extending substantially the whole width of said bottom, said shutters being pivotally mounted on two opposite sides of the bottom opening and the edges of said shutters opposite their pivoted edges meeting centrally of said opening when brought to their closed position, two pairs of bolts maintaining said shutters in said closed position, and a lever, and

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means for pivotally and removably mounting said lever on the lower part of the container in operative relationship to either of said shutters, to slightly lift the shutters to permit removal of their maintaining bolts so that they can drop pivotally to clear the said opening.

3. In a container for conveying pulverulent material, formed of two flaring parts united together at their corresponding large bases, closing means at the bottom of the container, comprising a pair of shutters extending substantially the whole width of said bottom, said shutters being pivotally mounted on two opposite sides of the bottom opening and the edges of said shutters opposite their pivoted edges meeting centrally of said opening when brought to their closed position, two pairs of bolts maintaining the shutters in said closed position, means securable on the lower part of the container in operative relation to either of said shutters to slightly lift the shutters to permit removal of their maintaining bolts so that they can drop pivotally to clear the said opening, and removable tight closure means fastened on the outside to the bottom side of the container over the said shutters.

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#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

Number	Name	Date
543,540	Sauer -----	July 30, 1895
726,584	Squire -----	Apr. 28, 1903
1,443,181	Hill -----	Jan. 23, 1923
2,070,349	Woodruff -----	Feb. 9, 1937
2,110,687	Weinstein -----	Mar. 8, 1938
2,244,419	Dickens -----	June 3, 1941
2,254,168	Dale -----	Aug. 26, 1941
2,371,958	Douthitt -----	Mar. 20, 1945