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SELECTIVE DISTRIBUTING SPOUT FOR ELEVATOR BINS AND THE LIKE

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FIG. 2

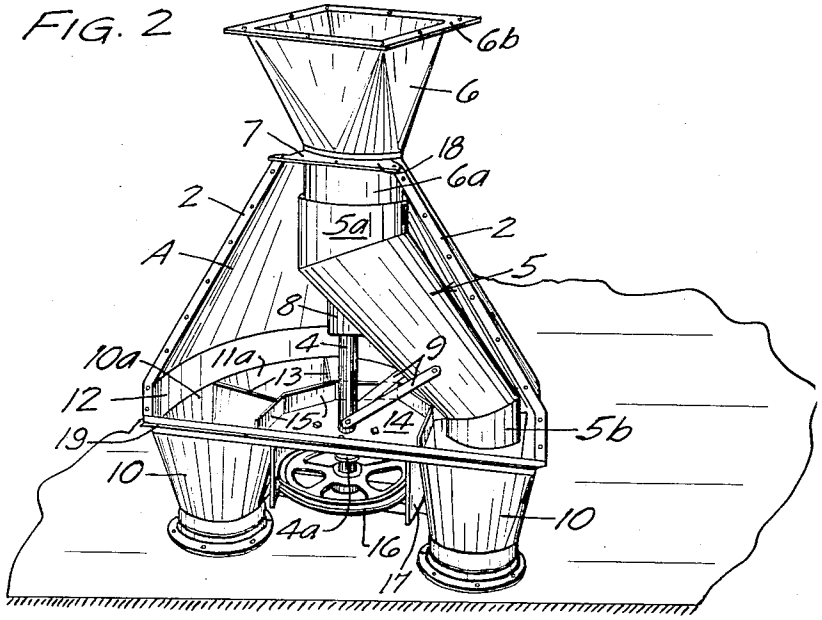
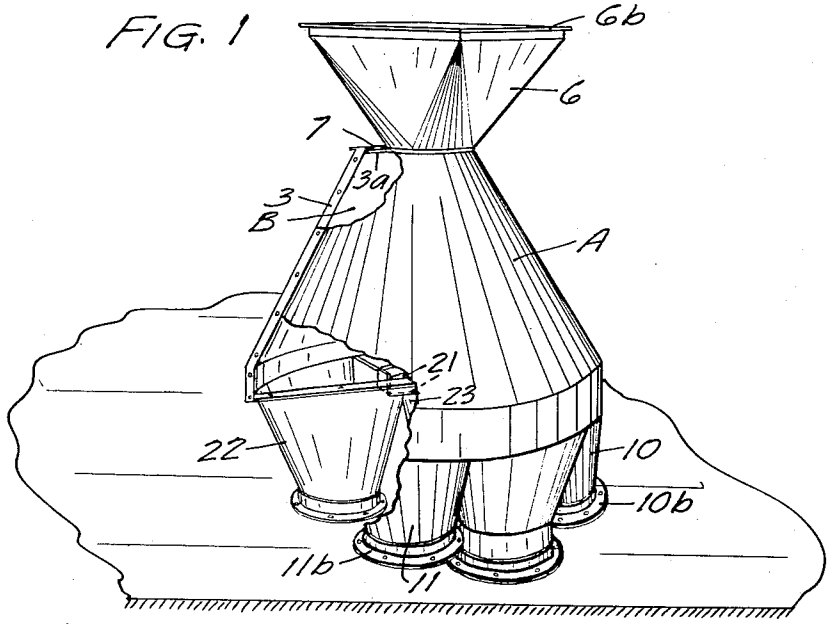



FIG. 1




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# SELECTIVE DISTRIBUTING SPOUT FOR ELEVATOR BINS AND THE LIKE

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2 Claims. (Cl. 193—23)

This invention relates to the selective loading or filling of storage bins for granular and pulverulent materials such as are utilized in grain elevators, feed mills, bakeries and manufacturing plants where a plurality of vertical tanks or bins are utilized. The invention has particular relation to the selective distributing spouts which receive the granular or pulverulent material from the top of an elevator leg or freight car or other supplying medium.

It is an object of my invention to provide a compact, selective distributing spout unit of the class defined wherein the receiving funnels for the various bins or storage chambers as well as the selectively movable distributing spout itself and its connection with a stationary hopper or receiving member, are all enclosed and sealed from the surrounding atmosphere, thereby excluding dust and soot from the lines of communication and of course, from the storage bins themselves.

A further object is the provision of a distributing spout unit of the class described occupying a minimum amount of space and of relatively light weight and constructed to be readily attached to and wholly supported from the open, depending upper end of an elevator leg or the like, and wherein material of the class described may be selectively distributed to any one of a multiplicity of storage bins under the remote control of an operator.

Another object is the provision of a very simple but highly efficient unitary structure of the class described adapted to be readily assembled and installed by an unskilled operator and constructed to be readily opened, inspected and the working parts cleaned after installation.

These and other objects will be more apparent from the following description made in connection with the accompanying drawings, in which like reference characters refer to similar parts throughout the several views and in which:

Fig. 1 is a side elevation showing an embodiment of my invention in assembled form, ready for attachment support to the top of an elevator leg or the like and ready for connection with the upper ends of the bin-supply-tubes or conduits; and

Fig. 2 is a perspective view illustrating the main section of my unitary device with the selective, movable spout mounted therein, after the second section of the unit has been removed.

In the embodiment of my invention illustrate, an upstanding, truncated conical housing constructed of heavy gauge sheet metal or equivalent material, is utilized, comprising longitudinally split housing sections A and B, said sections having outturned peripheral sealing and attachment flanges 2 and 3 respectively for efficient inter-connection of the two sections to form the unit, with provision of self-hardening sealing material or gaskets between the opposed and secured flanges of the two sections.

The unitary housing is split longitudinally along a plane offset some distance from its axis whereby the main housing section A defines a structure of adequate size and volume to provide for the mounting of an oscillatory, vertical shaft 4 for controlling the selective positioning



of the distributing spout 5 and for also furnishing the support and connection of a rigidly mounted hopper or receiver-member 6 at the top thereof as well as housing the telescoping connections and communication between the reduced tubular, lower end 6*a* of said receiver and the vertical sleeve 5*a* at the upper end of the spout.

Main housing section A at its upper end, has integrally formed or welded in sealed relation thereto, a heavy top 7 circularly apertured for reception of and rigid and sealed connection with the upper portion of the tubular discharge 6*a* of receiver member 6. The receiver member is disposed axially of the operating shaft 4.

The distributing spout 5 has a body of tubular form preferably tapering somewhat from its upper to its lower end and disposed angularly and diagonally relative to the shaft 4, the upper end of spout 5 constituting an elbow of circular cross section and having the upper extremity thereof telescoped in clearance-fitting relation externally of the lower extremity of the tubular discharge 6*a* of the receiver. The lower and discharge end of spout 5 also constitutes an elbow 5*b* with its axis disposed vertically and parallel to actuating shaft 4 and spaced a short distance from the interior walls of the truncated housing and chamber made up of sections A and B.

Distributing spout 5 is rigidly connected with and supported from operating shaft 4 by means of a heavy attachment collar 8 affixed to the upper portion of said shaft which collar may be welded or otherwise securely attached to the underside of the spout body. A pair of diagonal brace bars 9 interconnect the outward portion of the spout body with a portion of said shaft adjacent the closed bottom of the chamber defined by main housing section A.

Secured to the base and skirt portion of main housing section A are a plurality of upstanding, open ended bin-conduit-receiving-funnels clustered in semi-annular arrangement and comprising alternate, longer funnels 10 and shorter funnels 11. The funnels 10 and 11 have their upstanding, outer edge portions contoured arcuately along edges 10*a* and 11*a* to lie flush against and be welded with the inner and relatively narrow, cylindrical band 12 at the lower portion of the split, truncated conical section, as clearly shown in Fig. 2. The open upper extremities of the several funnels 10 and 11 are of segmental shape, leaving upstanding divider edges 13 which are disposed radially of shaft 4. The funnels 10 and 11 at their lower ends have connection collars 10*b* and 11*b* respectively for making sealed connection with the upper ends of the conduits or communication spouts which go to the various bins of the storage apparatus. The various and adjacent funnels 10 and 11 are rigidly secured together at their upper ends by welding and constitute efficient reinforcement in combination with a heavy bottom partition 14 for the entire unit and sectional housing. Upstanding straight edges 15 are provided at the inner peripheral portions of funnels 10 and 11 which are angularly related in interconnection of the adjacent funnels, such edges being preferably elevated above the radial edges 13 of the spout and at a level some distance above the horizontal plane at the lower extremity of the discharge 5*b* of the delivery spout.

The bottom partition 14 of heavy gauge metal, is welded or otherwise rigidly secured in sealed relation with said upstanding funnel edges 15 to completely close and seal the bottom of the chamber afforded by the main housing section A and to combine with the peripheral walls of the funnels in effectively reinforcing the entire housing section.

A shaft bearing 4*a* is affixed to the bottom of partition 14 journaling shaft 4 which is extended therebeyond and has affixed to the lower extremity thereof, a pulley or sheave 16 preferably of V-belt type. It will be under-

stood that the sheave **16** and consequently, shaft **4** will be driven by V-belt connection from a V-pulley mounted on a vertical countershaft and extending usually downwardly through a building or elevator and having associated with the lower end thereof, a circular indexing device and also, an operating handle whereby the oscillation of the distributing spout **5** and positioning selectively of the same above any one of the funnels **10** or **11**, may be obtained. Since such countershaft structure, drive and indexing is conventional, it is not shown in the drawings.

The hopper or receiver member **6** rigidly and durably connected with the main housing section A is equipped at its upper end for rigid supporting attachment to an overhanging device such as the top of an elevator leg and to this end, as shown, is provided with an outturned, rectangular attachment flange **6***b* which with interposition of a gasket or sealing medium, is rigidly bolted to a similar shaped open frame or discharge as at the bottom of the upper end of an elevator leg.

Sheave **16**, below partition **14** has a guard and protector in the form of a depending, semi-circular flange **17** surrounding about five eighths of the circumference thereof, and leaving one side of the pulley exposed for receiving an endless, flexible V-belt.

For sealed attachment of the top and lower edges of the main housing section A, horizontal attachment flanges **18** and **19** respectively are provided. The upper flange **18** is preferably integrally formed with the top **7** of the housing.

In the form of the invention illustrated, the main housing section A surrounds approximately five eighths of the total circumference of the assembled housing and the housing section B surrounds approximately three eighths of said circumference. It will of course be understood that the sectional housing may be vertically split at different angular proportions of the total circumference, all within the scope of my invention but it being desirable to have the main housing A of a shell shape and circumference to adequately support and house the parts which have been previously described.

In Fig. 1, the left upper portion of the main housing member A is broken away, showing the housing section B behind the same, section B constituting a metal shell member of a circumference and sectional truncated conical shape to fit and complete symmetrically the truncated conical contour of the assembled housing. It carries at its top edge, an inwardly extending, horizontal attachment flange **3***a* which underlies the attachment flange of the top **7** of the main housing section.

The housing member B carries and supports no working parts of the device, but does have affixed to the lower skirt portion thereof and within the confines of the same, a plurality as shown of the bin-supply-funnels (**22** and **23**). The arrangement of such funnels affixed to and serving as a reinforcement to the skirt of the housing section B is similar to that of the funnels in housing A. Centrally of housing section B, the polygonal shaped reinforcing and bottom partition of the housing assembly is completed by a rigid plate or partition (dotted **21**) of a shape to complete the symmetrical, polygonal configuration of the central closure or bottom. As shown in the drawings, a total of eight bin-supply-funnels are provided in the assembled structure, five being carried by the main housing section A and three by the second housing section B. It will of course be understood that the oscillatory distributing spout **5** may be revolved through a complete 360 degree orbit, thereby disposing its discharge ends **5***b* over and in alignment with the center of the three or plurality of bin-supply-funnels secured to and supported from the smaller housing section B.

It will readily be seen that the two sections A and B of my structure may be readily assembled by merely attaching clamping bolts through the apertured flanges **2** and **3** respectively of the two sections. Gaskets may be supplied between such flanges and other interfitting parts of the two sections or if desired, after securing the two housing sections together, calking material may be utilized to thoroughly seal all connected flanges and interconnected parts of the housing section.

The funnels **10** and **11** of housing section A and the corresponding funnels of section B of the housing, are of course rigidly interconnected with the upper end of the conventional ducts or spouts leading to the various bins of the elevator or other storage building. Such interconnection of said funnels with the mounting of the tubes or conduits, constitutes a guy or stabilizing and brace support for my assembled unit. The weight of said unit and main support therefrom of course, is through connection of the attachment means such as the rectangular attachment flange **6***a* at the upper open edge of the receiver **6**.

In use when it is desired to deliver for storage, granular or pulverulent material from a loading device such as an elevator leg or other loader to any one of the bins serviced, the operating shaft **4** by an attendant is turned with reference medium at a remote point to align the discharge end **5***b* of the selective spout with the funnel of the bin to be filled.

In moving the selective spout from one position to another, it will be seen that the spout and weight thereof is nicely balanced on the shaft **4** and that the telescoping communication at the upper end or elbow **5***a* of the oscillatory spout fits loosely and externally about the tubular restricted and discharge portion of the receiver or hopper **6**. The communication connection between said hopper and spout as well as the discharge of material from spout to any one of the various funnels servicing the respective bins are entirely protected from dust, soot and foreign material, all being enclosed within a sealed housing.

From the foregoing description it will be seen that I have provided a simple, comparatively inexpensive and highly efficient selective distributing spout of the class described, particularly well adapted for elevators of the smaller size for feed mills and feed storage, bakery storage bins, manufacturing plants where it is desired to selectively load a plurality of bins from a point of overhead distribution.

It will of course be understood that various changes may be made in arrangement, form and details of the parts of my structure without departing from the scope of my invention.

What is claimed is:

1. A selective distributing spout unit for servicing a plurality of clustered storage bins comprising, an upwardly tapered sealed housing having a receiver-hopper rigidly connected to the upper end thereof, said hopper having sealed communication with the upper interior of said housing through an axial discharge sleeve, a vertical shaft journalled axially within said housing and disposed axially of said discharge sleeve and having a distributing spout affixed thereto in a diagonal relation generally conforming to the taper of said housing and confined wholly within said housing, said spout having an elbow at is upper end terminating in a tubular extremity axially disposed of and having communication with said discharge sleeve, a plurality of upright, interconnected bin-conduit, receiving funnels arranged in annular formation at the bottom of said housing and rigidly connected therewith and supported thereby, the open upper extremity of said funnels lying in a substantially common horizontal plane, a medium constituting a bottom for said housing and having means for cooperating with the peripheries of said funnels to form a sealed closure for the lower end of said housing and said spout having a lower discharge end terminating slightly above the common horizontal plane defined by the upper edges of said annularly arranged funnels for selective discharge there-

to, said housing being composed of two vertically and longitudinally split sections, means for rigidly securing said sections together in an integral unit, one of said sections being substantially greater in circumference than the other and having said hopper rigidly attached to its upper end and also having a bottom partition element rigidly secured to the inner peripheral portions of said funnels and supporting said shaft and spout, and the section of smaller circumference also having a plurality of said funnels thereon and supported thereby.

2. The invention set forth in claim 1 wherein the means for rigidly securing said sections together includes a plurality of horizontal and vertical flanges on the separate sections of the housing in confronting relation with each other and means securing said flanges together.



**References Cited** in the file of this patent

UNITED STATES PATENTS

| | | |
|---|---|---|
| 352,583 | Spencer | Nov. 16, 1886 |
| 1,145,215 | Roney | July 6, 1915 |
| 2,732,052 | Campbell et al. | Jan. 24, 1956 |