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ANTICLOG DEVICE FOR VALVED OPENINGS

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Fig. 1.

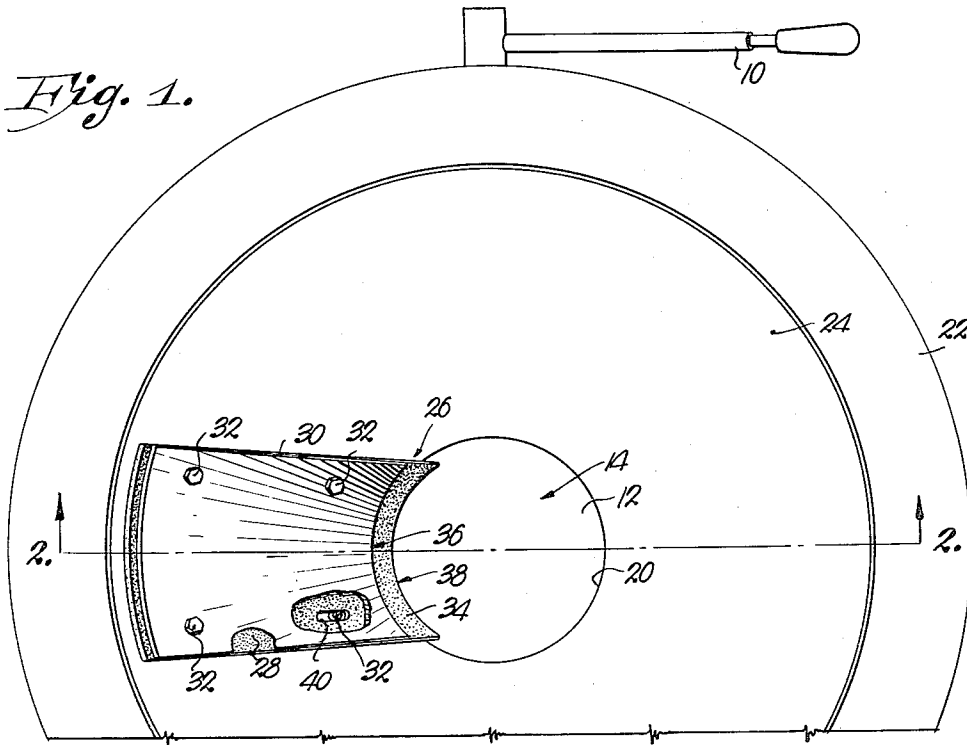


Fig. 2.

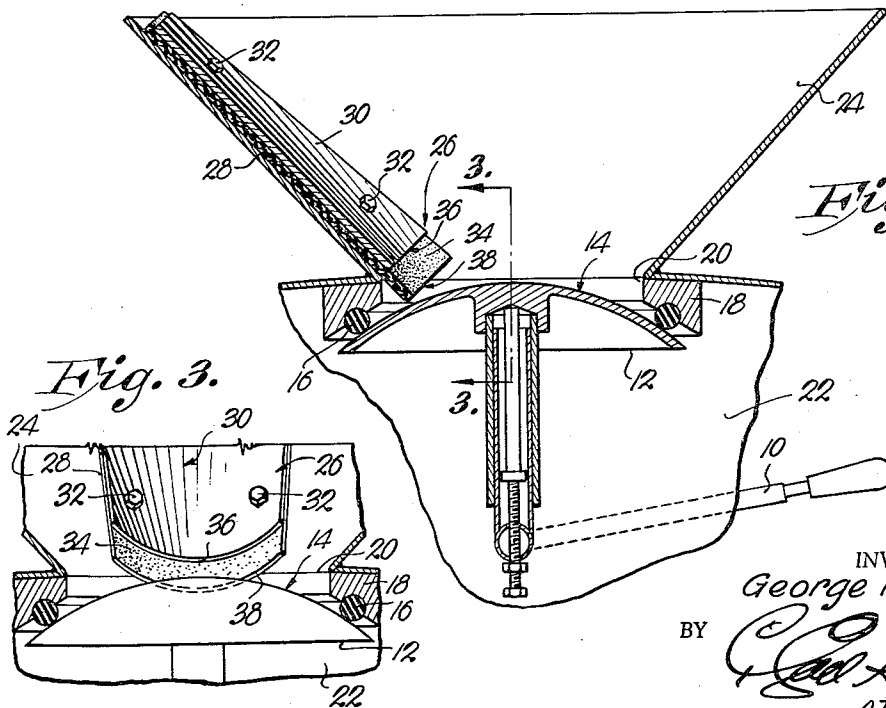
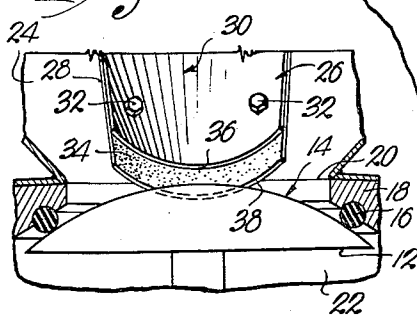


Fig. 3.



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4 Claims. (Cl. 137-242)

This invention relates to the handling of particulate material, and more particularly to improvements in machines which receive such material for admixing purposes or otherwise, the primary object being to minimize the difficulties encountered in closing of valves or stopping the flow of the materials from a feeder chute to a hopper.

In my copending application, Serial No. 492,397, filed March 7, 1955, and maturing into U.S. Letters Patent No. 2,949,275, there is disclosed and claimed a novel valve arrangement for the mixing hoppers for cementitious materials as, for example, aggregates and cement in the preparation of concrete. Such valve effectively separates the materials and ceases the flow thereof from a feeder chute to a mixing hopper by virtue of its special form causing the same to slide through the materials toward a closed position. A resilient seal used in conjunction with the floating valve permits a certain degree of lodgment of the particulate materials between the valve and the seal, but some difficulty is experienced in moving the valve to a closed position when the particles are comparatively large.

It is the most important object of the present invention, therefore, to provide in conjunction with the aforementioned valve and its seal, a retention device within the chute formed and disposed to retard the tendency of the large interfering particles to move toward the seal as the valve is swung toward its closed position.

Another important object of the instant invention is to provide a device of the aforementioned character that is adapted to permit the operator to oscillate the valve as he attempts to close the same and thereby, through the unique action of the retention device itself, cause the interfering particles to move away from the seal as the valve is being closed.

Still another object of the present invention is to provide a retention device which, through its inherent characteristics, form, shape and disposition, effectively flips the particles away when the valve is properly manipulated during the closing operation.

In the drawing:

FIG. 1 is a fragmentary, top plan view of an anticlog device for valved openings made pursuant to my present invention illustrating the feeder chute and its association with the material-receiving hopper.

FIG. 2 is a fragmentary, cross-sectional view taken on line 2-2 of FIG. 1; and

FIG. 3 is a fragmentary, cross-sectional view taken on line 3-3 of FIG. 2 but showing the valve in elevation.

As fully disclosed in my copending application above identified, swinging of handle 10 causes valve 12 to move to and from the closed position. The uppermost surface 14 of the valve 12 is shaped substantially in conformity with a sector of a sphere and bears against an annular, resilient seal or seat that is detachably carried by a ring 18 which registers with a port 20 in a hopper 22. A material feeder chute 24 which may be funnel-shaped as shown, if desired, discharged directly into the port 20.

This valve arrangement of my copending application has proved satisfactory and, for the most part, the same may be easily and quickly closed without a break in the air-tight seal between valve 12 and seat 16 since small particles of the aggregate which tend to become lodged between surface 14 and seal 16, embed themselves within the pliable material from which the seal is made.

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However, on occasion, the particle size of the aggregate is rather large and under such conditions of use, it oftentimes requires considerable maneuvering of the valve 12 through use of the handle 10 in order to close the valve. Manifestly, as valve 12 is swung toward the closed position, the particles tend to move therewith by virtue of frictional contact with surface 14, and the lodgment of such larger particles in and around the ring 18, as well as the seal 16, impedes proper and easy closing of the valve 12.

According to the principles of the instant invention therefore, there is provided an anticlog or material retention device within the chute 24, that is broadly designated by the numeral 26. It includes an initially flat, rectangular, flexible panel 28 and a similarly-shaped, inflexible plate 30 superimposed on the panel 28. The plate 30 is bent or otherwise formed transversely thereof to the configuration of the chute 24 and, therefore, when it is attached to the chute 24 with the panel 28 clamped therebetween, the latter will likewise conform to the shape of the chute 24. The clamping is effected through the medium of a plurality of bolts or similar fasteners 32, passing through the plate 30, the panel 28 and the chute 24. Noteworthy however, is the fact that the lowermost marginal edge 34 of the panel 28, extends downwardly and inwardly toward the surface 14 of valve 12, beyond the lowermost edge 36 of the plate 30. In fact, the panel 28 actually protrudes through the port 20 and into the ring 18 at least at the center of the lowermost edge 38 of panel 28, but even at the center of the edge 38, there should be a spacing of the edge 38 from the surface 14 of valve 12. Such spacing may be adjusted by loosening of the bolts 32 and shifting of the panel 28, which adjustment is made possible by virtue of elongated, bolt-receiving slots 40 in the panel 28. Movement of the panel 28 downwardly toward the surface 14 may become necessary also as, and if, the lower edge 38 of the panel 28 wears away after long periods of use. However, there are many types of synthetic rubbers, belting materials and the like, some of which are canvas reinforced, and proper selection of the material for panel 28 will reduce the wear of the aggregate particles thereon.

In use, such fine aggregate particles which are classifiable as ordinary sand, will pass beneath the edge 38 of panel 28 as the valve 12 is moved to the closed position, since such relatively fine materials are not particularly troublesome insofar as obtaining a fluid-tight seal is concerned. However, larger particles which tend to move toward the ring 18 and the seal 16 as the valve 12 is closed, will be retained by the panel 28 and will not, therefore, clog between the surface 14 and the ring 18 or the seal 16. Occasionally, if the retention action of the panel 28 still prevents easy closing of the valve 12, the operator need merely oscillate the handle 10 to impart like movement to the valve 12, and as such is done, the flexible marginal edge 34 of the panel 28 will yield slightly in a downward and inward direction. However, this marginal edge 34 always tends to return to its normal position and as it does so, the interfering particles are flipped upwardly and inwardly toward the axis of the chute 24. As soon as the troublesome particles are thus cleared away, the operator is able to completely close the valve 12 with the assurance that there is a fluid-tight seal completely around the seat 16.

Although the invention is not limited to use in connection with a funnel-shaped chute 24, nonetheless, it is apparent that the chute illustrated in the drawing does normally hold the marginal edge 34 in a position where its upper face is concave. This enhances the tendency of the marginal edge 34 to reassume its normal position after being deflected downwardly and inwardly, thereby more

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effectively flipping the particles away from the ring 18 and the seat 16 as above described.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. In a particulate materials handling machine having a plurality of elements including a materials feeding chute having a lowermost opening therein, a valve seat adjacent to and surrounding said opening, and a valve provided with a convex face slidably movable along the seat to and from a normal position closing said opening and bearing against said seat, the combination with said elements of a materials retention device secured to said chute for holding materials against movement with the valve as the latter slides along the seat during movement thereof toward said position, said device having a resilient, lowermost marginal edge portion projecting downwardly from said chute and into said opening, said portion being disposed in relatively close proximity to said face to flex toward said seat under the influence of the materials on the face of said valve and to return to its initial position under the influence of the restoring force due to the resiliency thereof as said valve moves toward said position, whereby said materials are shifted away from said seat and are prevented from accumulating between said valve and said seat.

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2. In a machine as set forth in claim 1, wherein said device comprises a panel secured to said chute for movement of said marginal edge portion toward and away from said seat.

3. In a machine as set forth in claim 2, wherein said panel is provided with a plurality of elongated slots there-through, and wherein is included a plurality of bolts receivable in said slots engageable with the panel and threadably mounted in said chute to retain said panel in a fixed location relative to the latter, said panel being shiftable relative to said bolts and said chute when said bolts are disengaged therefrom.

4. In a machine as set forth in claim 2, wherein is included an inflexible plate engaging the panel and clamping the latter to said chute, said portion projecting downwardly and inwardly beyond the normally lower margin of the plate.

References Cited in the file of this patent

UNITED STATES PATENTS

1,719,685	Brown	July 2, 1929
2,236,203	Willman	Mar. 25, 1941
2,949,275	Pro	Aug. 16, 1960