Aug. 2, 1932. A. J. STOCK, JR 1,869,628

NONSEGREGATING CONVEYER CHUTE

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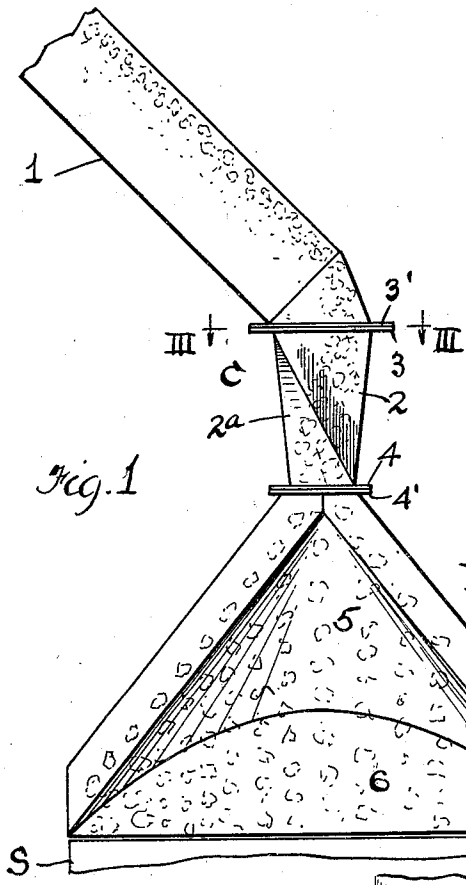


Fig. 1

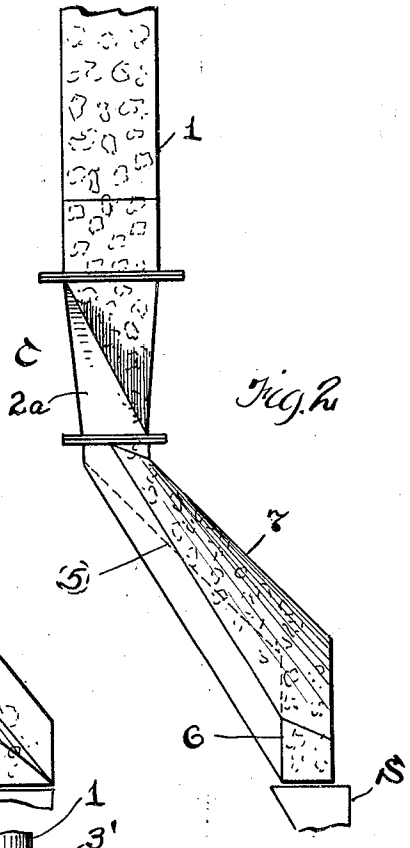


Fig. 2

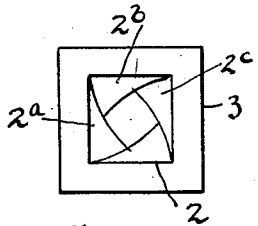


Fig. 3.

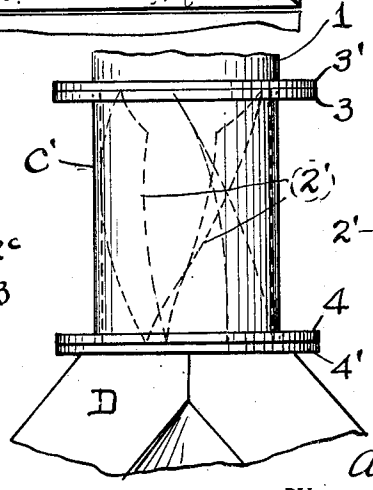


Fig. 4.

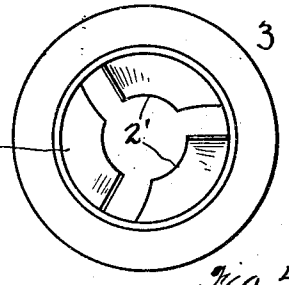


Fig. 5

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NONSEGREGATING CONVEYER CHUTE

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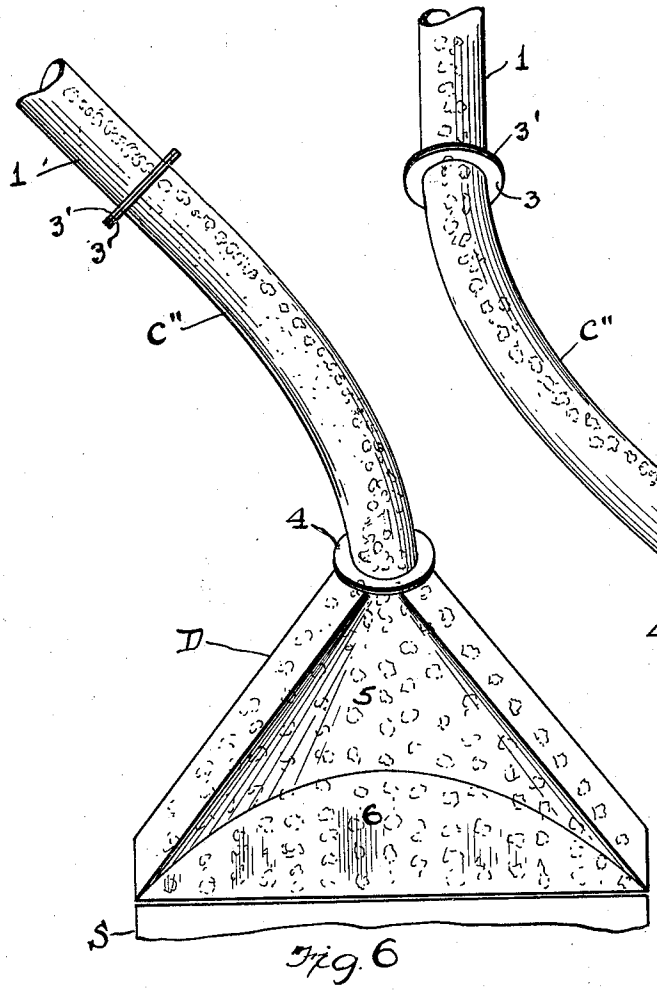


Fig. 6

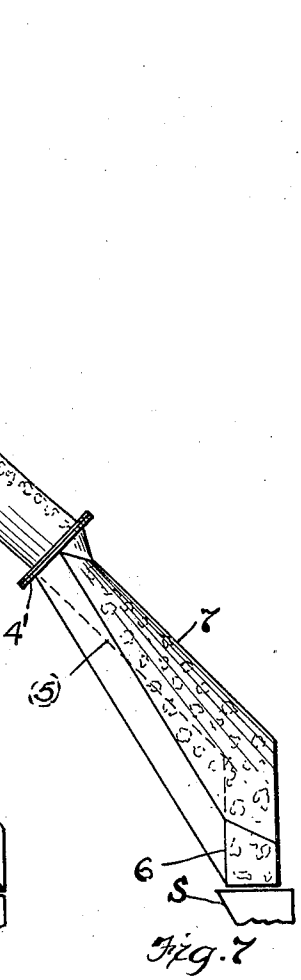


Fig. 7

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UNITED STATES PATENT OFFICE

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NONSEGREGATING CONVEYER CHUTE

Application filed February 10, 1928. Serial No. 253,358.

This invention relates to conveyers, and more particularly gravity chutes. Where divided solid material is forwarded through the chutes customarily employed, unless the material has been graded or sized, separation or segregation sets in, the larger lumps tending to run into the upper stratum, while the finer portions settle out into the lower stratum. In many situations, as for example in the conveying of coal to a mechanical stoker or the like, this occasions considerable difficulty by hindering an even distribution in the feed, and correspondingly further cutting down the efficiency of the remainder of the installation. A construction correcting tendencies toward segregation and capable of adaptation with various equipment is accordingly fundamentally important and highly desirable.

To the accomplishment of the foregoing and related ends, the invention, then, consists of the features hereinafter fully described and particularly pointed out in the claims, the following description and the annexed drawings setting forth in detail certain structures embodying the invention, such being illustrative of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawings:

Fig. 1 is a front elevation of an embodiment of the invention; Fig. 2 is a side elevational view of the same; Fig. 3 is a transverse section taken on a plane indicated by the line III—III, Fig. 1; Fig. 4 is an elevational view of a modification; Fig. 5 is a plan view thereof; and Figs. 6 and 7 are front and side elevational views respectively of another modification.

Referring more particularly to the drawings, there is shown a feed spout or conduit 1 coming from a source of supply, for example a coal bunker or pile, and directing its material through the further provision of a non-segregating distributor feeding for example in the manner illustrated, to a mechanical stoker as indicated conventionally at S. Connecting with the inclined spout 1 is a chute member having means for imparting an axial twist to the stream of material. As illustrated in Fig. 1, this comprises containing walls 2, 2*a*, etc., the walls being inclined with a twist axially, as for instance by being set angularly, whereby to virtually supply a progressive partial rotation with respect to the point of entry. Connecting flanges 3 and 4 allow of suitable attachment to corresponding flanges 3′ and 4′ above and below respectively, the lower connection proceeding on to a further distributing chute member D which is wider below. This member may vary somewhat in its detail, but for the present illustration may consist of a lower or floor surface 5 which presents in general a conical section or is arcuately raised centrally. Discharge thence occurs over a foot plate 6 into the stoker or the like S. A casing or cover 7 is advisably arranged in spaced relation.

As will be seen, with material containing pieces of varying size passing down the chute section 1, the fines gravitate into a lower stratum, while the larger lumps segregate out into the upper stratum, but on encountering the chute-member C, the angularly directed walls 2, 2*a*, 2*b*, 2*c* thereof impart such an axial twist to the moving current of material as to rearrange its relative portions and on reaching the distributing-member D, the material is in a position to thence be further non-segregatively passed on and distributed thereby.

In Figs. 4 and 5, the chute-member C′ is shown as taking the form of a tubular conduit having on its inner walls deflecting vanes or ribs 2′. These are set angularly, so as to again give the result of an axial twist to the flowing stream of material. The flanges 3 and 4 are connected to corresponding flanges 3′ and 4′ of the upper chute and the lower distributor-member as in Figs. 1 and 2. As will be readily seen, material passing from the upper chute section into the chute member C′ will encounter the blades or vanes 2′, which from their angular placement will occasion an axial twisting and mixing of the stream, whereupon it is delivered as in the foregoing to the distributor-member D or the like.

In some situations where there is an abun-

dance of head room, I may provide the means for axially twisting the stream by suitably shaping the walls of the conduit or chute itself. In Figs. 6 and 7, there is shown for instance a chute member 1 connecting to a member C'' and this in turn connecting into a distributor-member D or other member as may be desired. As will be observed, the chute-member C'' has a layout such as to provide a twisting in its contour, the walls themselves affording a spiraling effect. In use, material passing down through the member 1 will in the chute-member C'' be directed by the walls thereof into an axial twist, thereby bringing such material in a more commingled condition into the distributor-member D which further carries it non-segregatively to a stoker chute S or other point of delivery.

In whatsoever form effected, it will be seen that there is provided a chute having a containing wall for a stream of granular or lumpy solid material, and means for axially twisting and commingling the stream as it is forwarded, and in accordance with the amount of head room available in any given situation, the twisting means may inhere in the walls of the conduit or may be in the form of directing vanes therewithin. And in its further course, such stream may encounter a distributing surface which present a plurality of preferably diverging paths of substantially equal frictional drag, one advantageous form therefor being a centrally arched or conical-sectional shape.

Other modes of applying the principle of the invention may be employed, change being made as regards the details disclosed, provided the means stated in any of the following claims, or the equivalent of such, be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. A chute for feeding ungraded material and inhibiting segregation into fine and coarse zones, which comprises an initial gravitational chute-portion presenting surfaces imparting an axial twist to material flowing therethrough, and a final gravitation chute-portion thence widening laterally with a floor terminating in a transverse lower edge forming a substantially transversely straight-line drop-off and higher at one point than at others.

2. A chute for feeding ungraded material and inhibiting segregation into fine and coarse zones, which comprises an initial gravitational chute-portion presenting surfaces imparting an axial twist to material flowing therethrough, a final gravitational chute-portion thence widening laterally with a floor arched centrally and terminating in a transverse foot-plate, and a cover preventing unrestrained run-off from such floor.

3. A chute for feeding ungraded coal and inhibiting segregation into fine and coarse zones, which comprises an initial gravitational chute-portion having twisting surfaces in internal exposure to coal flowing therethrough, a final gravitational chute-portion thence widening laterally with a floor terminating in a transverse lower edge forming a substantially transversely straight-line drop-off which is higher at one point than at others, and a stoker receiving-hopper in line with such transverse lower edge.

4. A chute for feeding ungraded coal and inhibiting segregation into fine and coarse zones, which comprises an initial gravitational chute-portion having twisting surfaces in internal exposure to coal flowing through, and a final gravitational chute-portion thence widening laterally with the floor arched centrally and terminating in a transverse chute-plate, a cover preventing unrestrained run-off from such floor, and a stoker receiving-hopper in line below such floor.

Signed by me this 7th day of February, 1928.

ARTHUR J. STOCK, JR.