March 12, 1935. H. W. J. PETERSON 1,993,945

LOWERING CHUTE

Filed Dec. 11, 1933

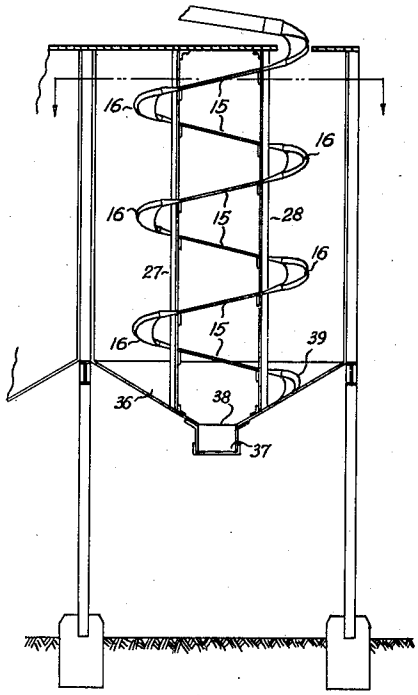


FIG. 1

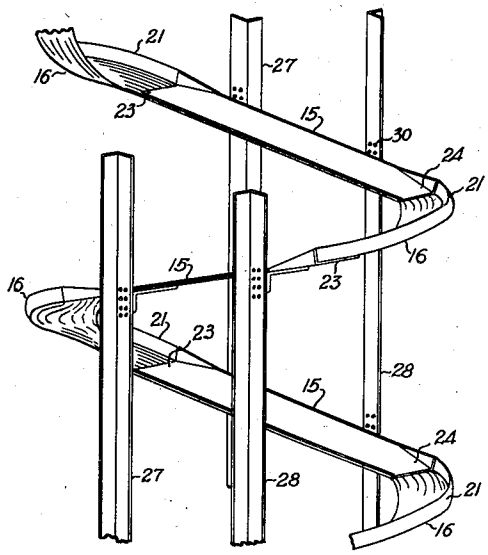


FIG. 2

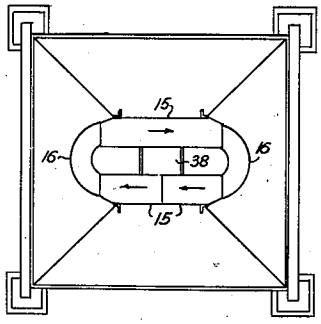


FIG. 3.

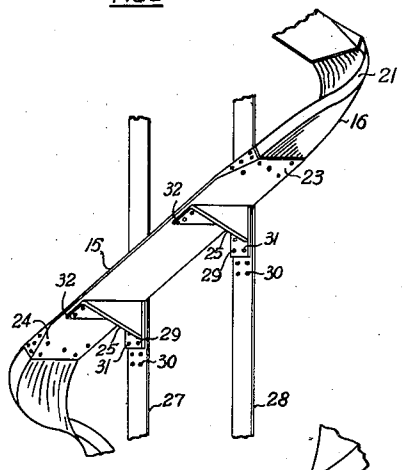


FIG. 4

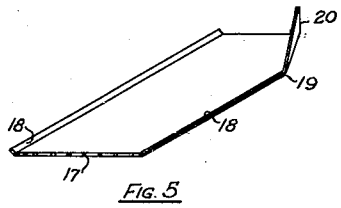


FIG. 5

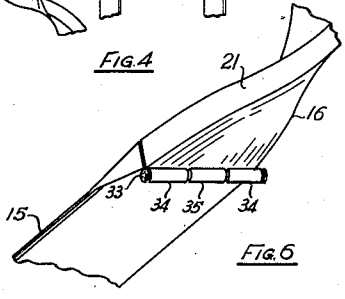


FIG. 6

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LOWERING CHUTE

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8 Claims. (Cl. 193—12)

The invention relates to a lowering chute, as described in the present specification and illustrated in the accompanying drawing that forms part of the same.

The invention consists essentially in concentrating the sections or slides and joining them by means of spiral paths as pointed out in the claims for novelty following a description in detail of the preferred construction.

The objects of the invention are primarily to construct a chute that will lower coal into prepared pockets after it has left the conveyance transporting it from the coal region and facilitate this handling of the coal through the direct runs that the coals usually make in reaching the lower levels thereby reducing friction and in consequence lessening the degradation of the coal, and at the same time effecting a marked economy in so far as the costs of production are concerned of the device, as under the most favorable conditions heretofore known the expenses attached to the building of lowering chutes has been prohibitive, except in the very large tipples; to reduce the cost of the maintenance of such devices, as the substitution at all times of straight-away courses for the coal is a comparatively simple operation and the same may be said of the spiral connections and these obviate the necessity of elaborate changes in altering the pitch of the lowering members and in adding to the length of the complete course; secondarily to furnish to many trades a simple and effective apparatus for the lowering of commodities to pockets or other receptacles where it is desirable to save these commodities from the damaging results of friction, and generally to provide a simple means of joining straight-away courses which will efficiently carry out the work and at the same time be produced at the minimum cost.

In the drawing, Figure 1 is a side elevational view of the device, showing it in a pocket of a conventional coal tipple.

Figure 2 is a fragmentary view showing in perspective a portion of Figure 1 enlarged.

Figure 3 is a plan view of the same installation.

Figure 4 is an enlarged fragmentary perspective view of a straight-away course and two spiral connections showing the adjustable supports.

Figure 5 is a sectional view of the straight-away course showing one end for the spiral connection.

Figure 6 is a detail of connections to spiral joint members, where the spiral joint piece is of an unyielding material.

Like numerals of reference indicate corresponding parts in the various figures.

Referring to the drawing, the numeral 15 indicates the straight-away sections of the complete course and the numeral 16 the spiral joining sections.

The straight-away sections 15 are made of steel plates in the shape of very shallow channels, the bed 17 of the channels being flat and wide and raised at the edges for the slightly inclined walls 18.

The ends of the sections 15 are turned upwardly at the longitudinal sides to form the triangular lugs 19 and 20 always on the outer side which form couplings for the spiral sections 16.

The sections 15 therefore form the straight-away paths of the complete course.

The spiral sections are so formed that the retaining wall 21 is shown in each spiral section on the outer side and in performing the curve, each section slopes downwardly in the intermediate portion 22 of the length thereof from the wall and flattens out at 23 and 24 to join said sections 15.

The spirals 16 are preferably formed of reinforced rubber belt material or of leather, though they may be of steel or other hard substance.

The angle brackets 25 support the straight-away sections 15 from the posts 27 and 28 and are adjustable thereon, these angle brackets having the pin holes 29 registering with different sets of pin holes 30 through which the pins 31 support the different sections on the posts.

It will thus be seen that the brackets which are riveted through the bracket plate 32 to the straight-away sections 15 may be lowered on the posts 27 and 28 or raised as the case may be, and as the spiral sections are mentioned as being formed of reinforced rubber or leather, the different pieces of the sections 15 make no particular difference in so far as the spiral piece is concerned, for in many instances it is desirable to lower or raise the straight-away sections or to change their pitch or inclination, it all depends on the classification of coal or on the commodity being handled.

In Figure 6 the spirals are shown as formed of metal or other stiff and unyielding material and when that is the case, the sections 15 are joined to the spiral sections 16 by the hinge pins 33 inserted in the barrel formations 34 and 35 formed by the ends of the spiral sections and the straight-away sections respectively.

This is not by any means as serviceable a construction as shown in the rubber or leather

spirals for the very good reason that the metal presents too smooth a surface for the joint pieces and there is therefore no brake or retarding means of any kind, which is so valuable in the handling of almost any commodity, but where friction does not matter much, these spirals may be used.

However, when it is a case of changing the pitch the straight-away sections throughout change so as to leave the spirals in substantially the same position that they were in before the adjustment, in other words, it is impossible to make as clear a course, though the lowering feature is still feasible.

In the operation of this invention, the posts, to all intents and purposes, form legs and carry the complete device into the hopper 36 forming part of the tipple construction and the pocket 37 is filled through the discharge opening 38, the hopper sides being inclined to the opening on all sides.

The posts stand on the inclined surfaces, therefore the lower straight-away section is practically inside the mouth of the hopper while the conveyer 39 at the upper end empties on to the uppermost section.

The coal or other matter flows down from straight-away section to straight-away section, the upper section always running into the lower section through the joint piece connecting the sections. This joint piece forms a spiral or semi-spiral curve so that the coal travels along and is turned by the joint piece on to the succeeding straight-away section in each instance therefore the coal suffers very little degradation, in fact it constitutes a comparatively gentle ending.

In addition to this efficiency in handling, the reversing inclined pieces and the reversing joint pieces constitute an ideal lowering path and can be constructed without employing experts in machine work for the device is largely of simple plate formation with the joint piece of such flexible material as will naturally lend itself in meeting the reverse incline of the next plate below.

Nothing could be much simpler than this and yet the pitch can be altered and the speed of lowering thereby changed and also a retarding surface is assured between each smooth straight-away course.

What I claim is:—

1. A lowering chute comprising a plurality of extended plates slightly turned upwardly adjacent to each longitudinal edge and forming sections of a slideway set adjacent to one another in reversed inclines and joint pieces flexibly joined to said plates to connect the intermediate plates to the uppermost and lowermost plates.

2. A lowering chute comprising a plurality of extended plates bent at the outer side corners to form couplings and slightly turned upwardly adjacent to each longitudinal edge and forming sections of a slideway set adjacent to one another in reversed inclines and joint pieces flexibly joined to said plates to connect the intermediate plates to the uppermost and lowermost plates.

3. A lowering chute comprising a plurality of extended plates slightly turned upwardly adjacent to each longitudinal edge and forming sections of a slideway set adjacent to one another in reversed inclines, posts supporting said plates, brackets adjustably secured to said posts and joint pieces of flexible material joined to said plates to connect the intermediate plates to the uppermost and lowermost plates, and to one another.

4. A lowering chute comprising a plurality of extended plates slightly turned upwardly adjacent to each longitudinal edge and forming sections of a slideway set adjacent to one another in reversed inclines, and joint pieces of reinforced rubber belting material joined to said plates to connect the intermediate plates to the uppermost and lowermost plates.

5. A lowering chute comprising a plurality of extended plates slightly turned upwardly adjacent to each longitudinal edge and forming sections of a slideway set adjacent to one another in reversed inclines, and joint pieces of pliable material having a high flanged outer side sloping down intermediately to the inner ends of the uppermost and lowermost plates and to intermediate plates.

6. In a lowering chute, flat plate sections of steel and rubber joining pieces twisted around to form chutes in alternately changed directions.

7. In a lowering chute, channelled plates extended to form straight-away courses and pliable joint pieces twisted under itself and continuing in different directions downwardly and supporting means adapted to determine the pitch.

8. In a lowering chute, a unitary chute member having supporting posts, a continuous course of reversed sectional pieces adjustably secured to said posts and having retarding material alternating with smooth material throughout and effecting sharp bends.

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