

No. 700,789.

Patented May 27, 1902.

J. A. LINDALL & N. MATTSON.
ORE CHUTE AND TRAP DOOR.

(Application filed Dec. 27, 1901.)

(No Model.)

Fig. 1.

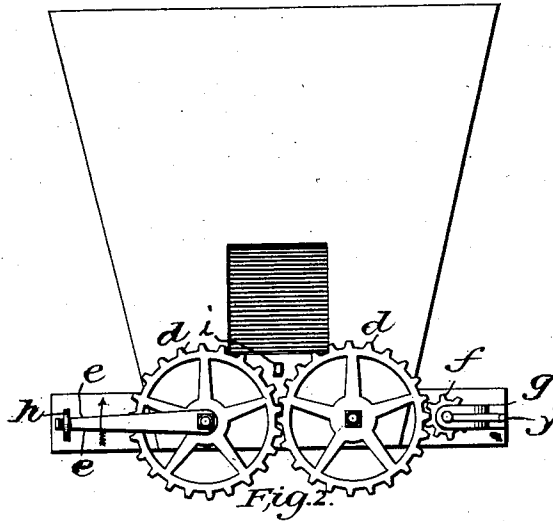


Fig. 2.

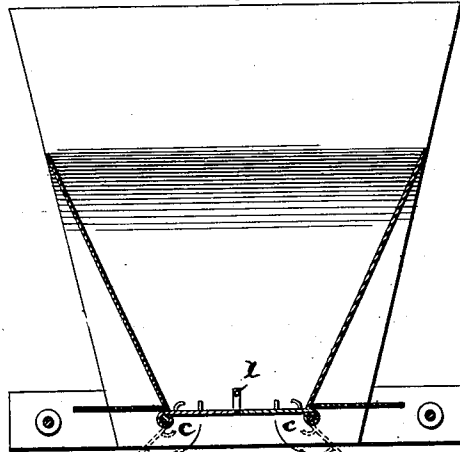


Fig. 3.

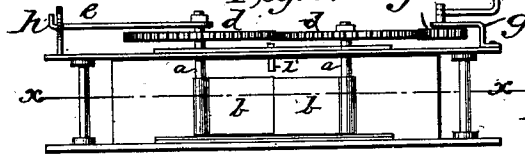


Fig. 4.

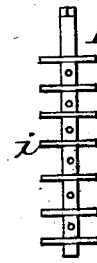


Fig. 5.

Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN A. LINDALL AND NILS MATTSON, OF TWO HARBORS, MINNESOTA.

ORE-CHUTE AND TRAP-DOOR.

SPECIFICATION forming part of Letters Patent No. 700,789, dated May 27, 1902.

Application filed December 27, 1901. Serial No. 87,508. (No model.)

To all whom it may concern:

Be it known that we, JOHN A. LINDALL and NILS MATTSON, citizens of the United States, residing at Two Harbors, in the county of Lake and State of Minnesota, have invented certain new and useful Improvements in Ore-Chutes and Trap-Doors; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of our invention is to provide a new and improved attachment for the opening and closing of passages leading from pockets or receptacles to spouts or ore-chutes and to regulate the flow of coal, ore, or other materials which are usually loaded from one receptacle to another by way of spouts or chutes which is simple in construction and serves to increase or diminish the flow of ore or other substance from one receptacle to another by the means of opening or closing the passage through which same is to pass.

The invention consists of certain parts which will be described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a top plan view of a receptacle in which any material may be placed which it is intended to transfer by way of spout or chute to a vessel or car, said figure also showing the top view of our improved mechanism for the opening and closing of the outlet from said pocket and the upper end of the rod used for loosening of the ore in the pocket. Fig. 2 is a bottom plan view of a pocket or other receptacle, showing the doors or gates closed by full lines and open by dotted lines and being a transverse sectional view of Fig. 3 on lines *xx*. Fig. 3 is a bottom plan view of a receptacle, usually an ore-dock or an elevator, showing our improved opening and closing attachment applied and the rod extending down into the receptacle usually employed in loosening the materials in the pocket, the outlet from the pocket being closed by means of doors *bb*.

Fig. 4 is an enlarged view of the rod used for loosening of the ore extending down through the upper deck, at which end a lever may be applied projecting down in the pocket and engaging a bracket placed at any suitable place over the doors used for the regulating of the flow of ore from the pocket. Fig. 5 is an end elevation of Fig. 4.

The invention consists of the following parts, namely: two operating cranks, two doors for the opening and closing of the outlet from the pocket, one shaker-rod with suitable brackets, three cog-wheels properly mounted on suitable rods or brackets, and suitable rods extending from the top of the receptacle down to the lower part thereof, the regulating-doors being secured on the said rods and suitable pegs or projections being made a part of the doors for loosening of the materials in the pocket when the said doors are opened.

The arrangement and construction of the mechanism are as follows: Two iron rods *aa* are preferably put in, extending down to the lower edge of the pocket, where same are properly secured to some suitable timbers. Two suitable doors *bb* are secured at the lower end of said rods, said doors being provided with suitable pegs or projections *cc*. At the upper end of said rods *aa* suitable cog-wheels *dd* are secured. Said cog-wheels interpose each other and are operated by a crank or lever *e*. One of said cog-wheels also interposes another small cog-wheel *f*, mounted at any suitable place and secured on a rod or bracket *g*. Said cog-wheel may be operated by a crank or lever *j*. A suitable stopper *h* is provided, into which lever *e* may be placed when it is desired to keep the doors closed. Shaker-bar *i* is preferably placed close to the outer side of the pocket and made in such proportion that the upper end projects through the top of the pocket, where a lever may be applied to the same, and that part of the bar provided with the projections is placed under the cover of the pocket and extending down to within a few inches from the upper edge of the trap-doors, where said shaker-rod interposes a bracket which acts as support for said shaker-rod.

The operation is as follows: When it is desired to open the mechanism from its normal position, as shown in Fig. 3, lever *e* may be

moved in the direction shown by the arrow
 in Fig. 1, which operates the cog-wheels *d d*.
 Said cog-wheels operate rods *a a* and doors
b b, secured to the said rods, and the doors
 5 will open and allow the ore to pass through.
 In opening the said doors pegs *c c* will engage
 the materials in the pocket and have a tend-
 ency to loosen the same. If for any reason
 it should be deemed desirable to stop or regu-
 10 late the flow from the pocket before same
 is empty, cog-wheel *d* may be operated by
 means of lever *j*, said cog-wheel being made
 quite small and the lever being made long
 in proportion, so that a complete stoppage
 15 of the flow of materials may take place. If
 for any reason the ore or materials placed
 in the pocket or receptacle should become so
 packed that it will not flow, a lever may be ap-
 plied to the upper end of shaker-rod, (shown
 20 in Fig. 4,) and by moving said rod back and
 forth it has a tendency to disturb the ore and
 dislodge same, so as to facilitate the flow of
 same.

Having thus described our invention, what
 25 we claim as new, and desire to secure by Let-
 ters Patent of the United States, is—

1. In a mechanism for regulating the flow
 of ore or materials in transporting same from
 one receptacle to another, the combination of
 30 two rods extending from the top of a pocket
 down to the lower end of the same and there
 secured, suitable trap-doors being secured on

said rods, said doors being provided with suit-
 able pegs or projections, suitable cog-wheels
 being secured on the upper end of said rods, 35
 said cog-wheels intermeshing with each other,
 a suitable lever being secured on one of said
 rods, a suitable stopper to engage said lever,
 a smaller cog-wheel intermeshing with one of
 the main cog-wheels secured on the rods, said 40
 smaller cog-wheel being actuated by a lever,
 substantially as described and shown.

2. In a mechanism for the regulating the
 flow of ore or materials from a pocket or other
 receptacle, the combination of rods provided 45
 in or about the sides of a pocket, extending
 from the top to the bottom of same, doors be-
 ing secured on the lower end of said rods and
 suitable cog-wheels being provided at the up-
 per end of said rods, said cog-wheels inter- 50
 meshing each other, a smaller cog-wheel in-
 termeshing one of said large cog-wheels, both
 of said cog-wheels being operated by a lever,
 which lever engaging a suitable stopper, a
 suitable shaking-bar provided with a series 55
 of projecting pegs preferably placed at right
 angles, substantially as described and shown.

In testimony whereof we affix our signa-
 tures in presence of two witnesses.

JOHN A. LINDALL.
 NILS MATTSON.

Witnesses:

JOHN OLSON,
 JOHN B. BOYER.