L. D. & C. C. Roberts.

Coal Chute.

No. 89,793. Patented May 4, 1869.

Fig. 1.

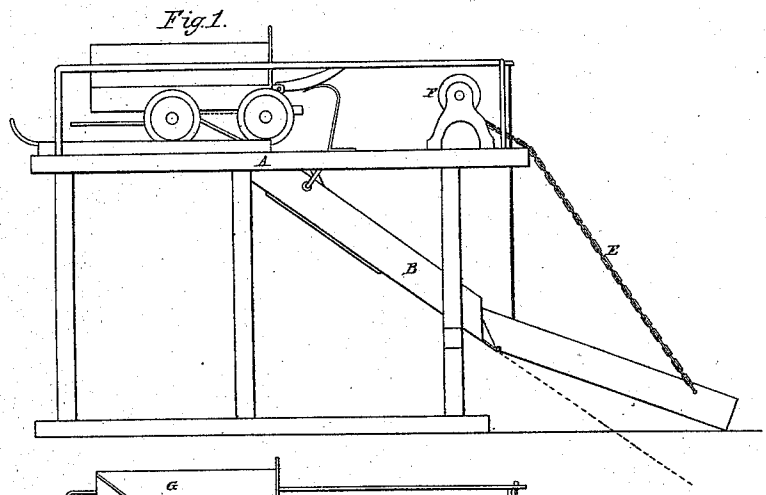


Fig. 2.

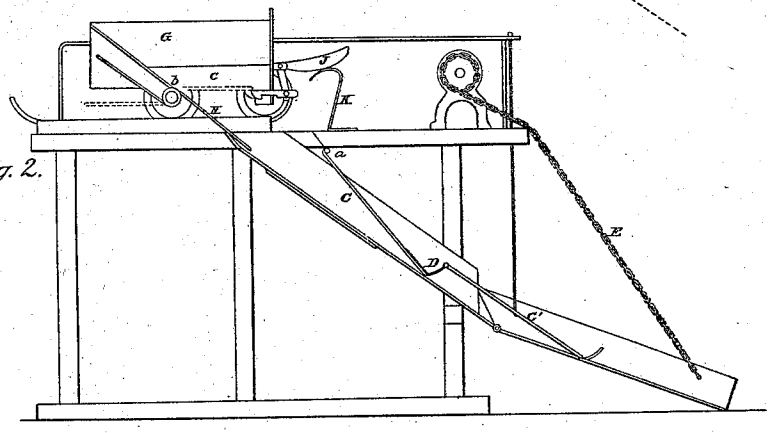
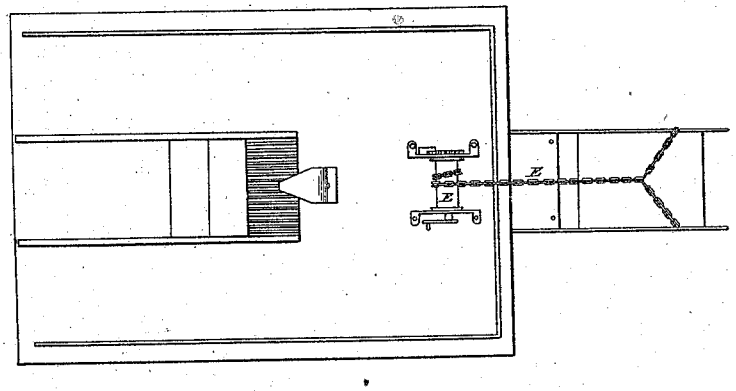


Fig. 3.



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L. D. ROBERTS AND C. C. ROBERTS, OF CLEVELAND, OHIO.

Letters Patent No. 89,793, *dated May* 4, 1869.

IMPROVED COAL-CHUTE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, L. D. ROBERTS and C. C. ROBERTS, of Cleveland, in the county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in a Chute and Car for Coal, &c.; and we do hereby declare that the following is a full and complete description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side view of the apparatus.

Figure 2, a vertical section.

Figure 3, a view of the top.

Like letters of reference refer to like parts in the different views.

The nature of this invention relates to a coal-chute, the peculiar construction and operation of which are such that coal can be discharged from a car into the hold of a vessel, or upon the dock or coal-yard, without its being so much broken up as when discharged in the usual way.

A, fig. 1, represents a platform, or an elevation above the vessel or place at which the coal is to be deposited.

B is a chute, the length of which being according to circumstances, and proceeding from the platform to the vessel.

Said chute is represented as being in two sections, which, however, may be more or less in number, as the length of the chute required may demand.

I, fig. 2, is a fall, or apron, the upper end of which is hinged to the under side of the platform, at the point *a*, so that the lower end can be moved upward or downward, as and for a purpose hereafter shown.

To the lower end of said apron is hinged another section, or apron, as an extension of the first.

It will be obvious that the connection of the upper and lower aprons to each other is such that the upper end of the lower section is elevated above the lower end of the upper section, by means of the raised wing D of the hinge, whereby the connection is made.

It will also be seen that the width of the apron is such that it fits in between the sides of the chute, and on the bottom of which the lower ends of each apron rest.

E is a chain, and F, a windlass, whereby the end of the chute may be adjusted to any required elevation.

G is a coal-car, the bottom H of which is hinged at the point *b*, so that the front end can be dropped from the position indicated by the dotted line *c*, to that shown at H, which, as will be seen, forms an inclined plane in the direction of and in connection with the chute.

Said bottom, when closed, is held thus by a slide, I, fig. 2, operated by means of a right-angled lever, J, to which it is connected and actuated, as will presently be shown.

The ordinary way of loading coal into vessels, or depositing it at any other place, is to run it uninterrupted down a chute. The consequence is that a large amount of the coal, especially the softer kinds, becomes broken up into small fragments, known to the dealers as slack. So much of the coal is reduced to this condition that the transportation of it, in consequence of this great waste, is a matter of great concern and loss.

In order to correct this evil, and save the losses resulting therefrom, we have devised the above-described apparatus, the practical operation of which is as follows:

The lower end of the chute, on being properly adjusted to the hatchway of the vessel, or other place, the loaded car is then run to the platform, and over the scuttle, through which the coal is dropped from the car, by withdrawing the slide I from under the bottom, and which is done by the end of the lever J impinging upon the incline of the standard K, thereby throwing up the end, and, as a consequence, withdrawing the bolt, or slide, by the outward movement of the vertical limb of the lever.

As the bottom of the car forms an inclined plane, the descent of the coal is guided thereby into the chute. Now, if an uninterrupted descent of the coal down the chute is allowed, it will be obvious that the velocity of the descent will be so great as to cause a breaking to pieces of the lumps, and more especially so, if the chute is a long one and the coal of a soft nature.

To guard against this swift descent of the coal, it is arrested, or rather retarded in its downward course, by means of the falls, or aprons G, which, as above said, rest upon the bottom of the chute, and under which the coal must pass as it descends.

The weight of the aprons upon the top of the descending coal retards its downward movement; hence it reaches the bottom of the chute with less violence, and is, therefore, not broken to pieces, as it would be if not thus retarded.

The aprons being hinged in the chute, as above described, will rise or fall, according to the size of the lumps, or quantity of coal running down by this adaptability of the aprons. The coal cannot lodge under them, and the chute thus become clogged, but simply retards it in its descent.

In consequence of elevating the ends of the aprons above each other, as aforesaid, an enlarged space is obtained immediately below the end of each apron, or section.

By this means, coal is less liable to lodge, and is more successfully retarded in its descent, than it would be if no such space existed.

It will be observed that the upper end of the chute, on which the coal falls from the bottom of the car, is made of open work, or bars, forming a sieve, through which the dust and small fragments of coal fall below and under the chute, and is, therefore, prevented from passing down the chute into the vessel, or other place, along with the larger coal.

By the use of a chute thus constructed, a large percentage of coal is saved from being reduced to slack, and, therefore, wasted, in consequence of the little value

of the broken coal. Hence, in an economical point of view, this apparatus is one greatly to be desired by those having the handling and transportation of coal.

It will be obvious that the apparatus is equally well adapted to the shipment of ores, and other like articles, as it saves them from violent concussion and breakage in unloading.

The aprons, as above described, are so hinged to each other that the end of the lower one is elevated above the lower end of the upper, and though this practically is found to be the better way of hanging them together, they may be connected without thus elevating the end, and good results thereby obtained.

What we claim as our improvement, and desire to secure by Letters Patent, is—

1. Two or more aprons, C C', hinged to each other, so that the upper end of the lower apron shall be elevated above the lower end of the upper apron, in the manner as and for the purpose set forth.

2. The aprons C C', as arranged in combination with the chute B, and operating conjointly as and for the purpose specified.

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