(No Model.)

D. H. HENKELS.

COAL CHUTE.

No. 424,785. Patented Apr. 1, 1890.

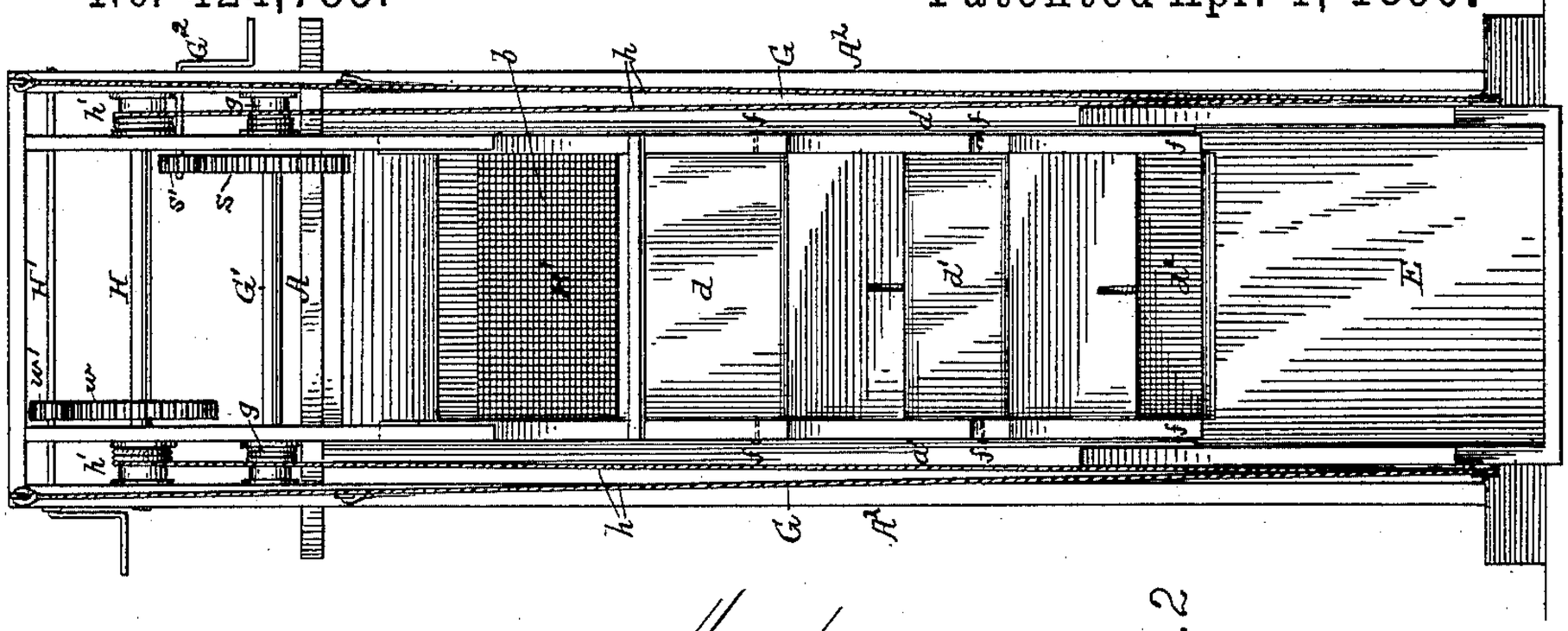

FIG. 2

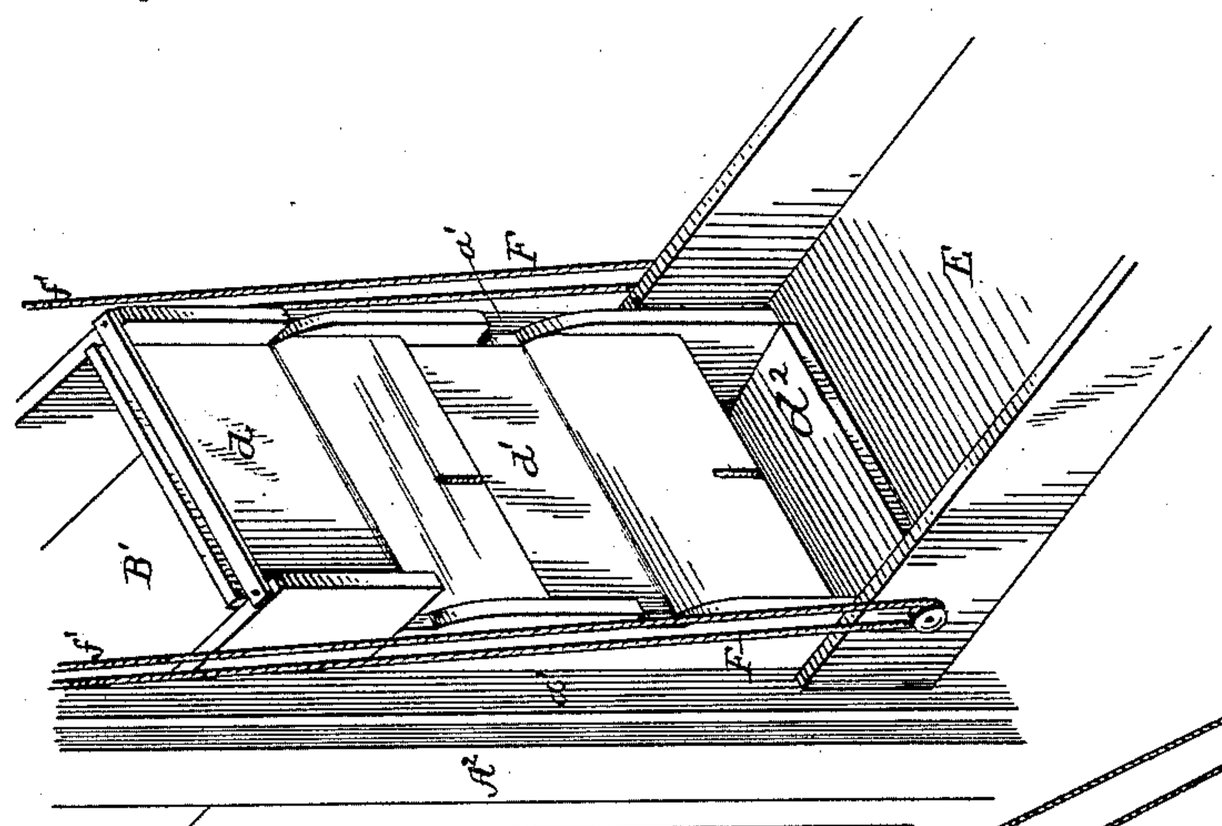

FIG. 3.

FIG. 1.

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DANIEL H. HENKELS, OF PHILADELPHIA, PENNSYLVANIA.

COAL-CHUTE.

SPECIFICATION forming part of Letters Patent No. 424,785, dated April 1, 1890.

Application filed January 27, 1890. Serial No. 338,167. (No model.)

To all whom it may concern:

Be it known that I, DANIEL H. HENKELS, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Coal-Chutes, of which the following is a specification.

The object of my invention is to construct a chute for transferring coal from a car or hopper to a boat or car situated on a lower plane than the hopper, so that the coal in its passage from the hopper to the boat or car will not be broken in the fall more than is consequent through the movement of the coal in a body.

In the accompanying drawings, Figure 1 is a vertical sectional view of my improved coal-delivery apparatus. Fig. 2 is a face view, and Fig. 3 is a perspective view, of a portion of the apparatus.

In the present instance, A is the hopper-platform, mounted on suitable pillars or posts A′, forming part of a supporting frame-work, and on the platform A are the rails *a* of the track, on which are the cars to be unloaded.

In the platform is a hopper B, having a receiving-chute B′, in the bottom of which is a screen *b* to enable the dust to pass away from the coal. This chute connects with the hopper D, extending in the present instance nearly to the base of the structure. In the present instance, in the base of the hopper are a series of openings $e\ e'\ e^2\ e^3$, all the openings, with the exception of the lowermost opening, being provided with doors $d\ d'\ d^2$. The bottom D′ of the hopper is inclined, as shown, to allow the coal to flow out of the opening e^3. The doors are each pivoted at *f* so as to swing inward, as shown by the door d^2, forming a false bottom to the hopper at either of the points throughout the height of the hopper. The doors can be drawn forward when necessary by inserting a hooked rod in the recess *x*, formed in the upper portion of each door.

On the face of the vertical supports A^2 are, in the present instance, flat bearing-surfaces *a′*, against which rests the rear edge of the delivery-chute E or apron, which is suspended by two sets of rope and tackle F and G, one end of the rope *f′* being secured to a standard and passes around a pulley on the delivery-chute E and up around the drum *g* on the shaft G′. The rope and the drum are duplicated on the opposite side of the delivery-chute, as shown, and the shaft is provided with a gear-wheel *s*, which meshes with a pinion *s′* on the crank-shaft. The outer end of the delivery-chute is supported by a rope *h*, which is secured at one end to the frame-work, the outer end of the rope passing around a pulley at the extreme end of the delivery-chute and back over a drum *h′* on a shaft H. This mechanism is duplicated on the opposite side of the chute or apron.

The shaft H is provided with a gear-wheel *w*, which meshes with a pinion *w′* on the crank-shaft H′. Thus by turning either the crank-shaft H′ or the crank-shaft G^2 the delivery chute or apron can be raised and lowered and adjusted to either one of the openings of the hopper D and at any angle required. If, for instance, this device is used in loading coal-carrying boats, and if the boat stands high out of water or the tide happens to be in, in all probability the coal will have to be discharged to the boat through the highest opening *e*, in which case the door *d* will have to be lowered so as to form a false bottom for the hopper and the chute E moved up to the opening *e;* but if the boat sits deep in the water or the tide is low, one or other of the openings will have to be the discharge-opening—as, for instance, the opening e^2—in which case the opening *e* is closed by the door *d* and the door d^2 let down, as shown in the drawings, forming a false bottom for the hopper D.

The delivery chute or apron will be placed in position in respect to the opening e^2 as shown, being directly under the door d^2, the lower extension of each door forming a lip or abutment, against which the delivery-chute rests. In this instance the coal accumulates in the hopper D, and as it gradually feeds out through the opening e^2 it takes coal from the chute B′. Thus there is a gradual flow of coal through the hopper D without breaking, and in a manner similar to that described in the Letters Patent granted to me on November 26, 1889, No. 415,970. In this case, however, the hopper itself was raised and lowered, and consequently, where an extremely large hopper was used, considerable power was expended in raising and lowering the

hopper; but by the device herein set forth only the delivery chute or apron E need be raised and lowered and the doors manipulated, as clearly set forth.

I claim as my invention—

1. The combination of the receiving-chute, a hopper having a series of openings, doors for closing one or more of said openings, and forming when open the bottom of the hopper, with a delivery-chute, substantially as set forth.

2. The combination of the receiving-chute, the delivery-chute, a hopper between the two having a series of openings in the face of said hopper, with mechanism for raising and lowering the delivery-chute, substantially as described.

3. The combination of the receiving-chute with a vertical hopper having a series of openings in said hopper, with doors for closing one or more of said openings, said doors being hinged at the base so as to swing inward, forming a false bottom for the hopper, with the movable delivery-chute adapted to be brought into line with the false bottom, substantially as described.

4. The combination of the receiving-chute, the hopper D, having openings in its face, doors for closing one or more of said openings, said doors being pivoted at their lower ends, extensions of said doors forming lips, against which the delivery-chute rests, with tackle by which said chute is suspended, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DANIEL H. HENKELS.

Witnesses:

H. F. REARDON,

HENRY HOWSON.