M. R. ROBERTS.

Coal-Screens and Chutes.

No. 140,077. Patented June 17, 1873.

Fig. I.

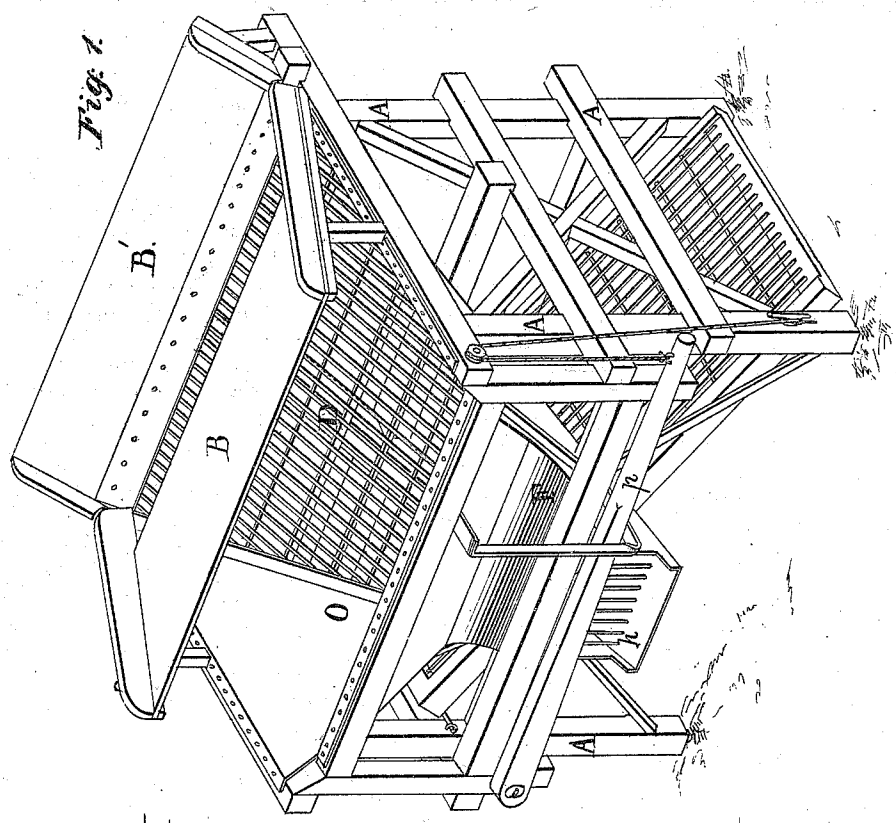
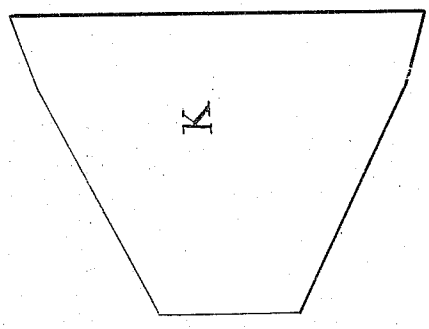


Fig. II.



Witnesses.
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UNITED STATES PATENT OFFICE.

MARTIN R. ROBERTS, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN COAL SCREENS AND CHUTES.

Specification forming part of Letters Patent No. **140,677**, dated June 17, 1873; application filed April 26, 1873.

To all whom it may concern:

Be it known that I, MARTIN RICKARD ROBERTS, of San Francisco city and county, State of California, have invented a Combined Portable Hopper, Chute, and Screening Apparatus; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvement without further invention or experiment.

My invention relates to a portable apparatus which is intended more particularly for receiving, cleaning, and delivering into carts coal and other like substances, which are usually dumped upon the wharf in discharging ships.

The usual method of discharging ships of their cargo of coal is to raise the coal from the vessel in tubs by a steam hoisting apparatus, and dump it in a pile upon the wharf, from which it is removed by carts to the different coal-yards, where it is screened so as to separate the finer portion or screenings from the large and marketable or more merchantable portion.

My invention consists of a portable apparatus having a double hopper, chute, and screens, so arranged that by dumping the coal or other substances to be handled from the tub into the upper hopper, the fine portions or small particles will be separated in two or more grades from the coarser portions, and be deposited in separate piles, while the coarser pieces are caught in the second hopper, from which they can be conveyed through a chute into the carts which convey them to the coal-yards, thus requiring but one operation to discharge the cargo, screen the coal, and load it into the carts.

In order to more fully illustrate and explain my invention, reference is had to the accompanying drawings forming a part of this specification, in which—

Figure I is a perspective view of my invention. Fig. II is a plan view of the blank to be used when the apparatus is used only as a chute.

A A represent a strong frame, which is properly stayed and braced so as to withstand the concussions to which it will be subjected. At one side of the top of this frame, I secure two boards, B B′, at an obtuse angle to each other in the form of a trough, but leave their lower ends separated so as to provide a space, C, between them for the purpose hereinafter described. These boards form what I call the upper hopper. The board B′ forms an extension to one side, D, of a large hopper, O, which is located in the body of the frame below the upper hopper. This side D of the large hopper slopes toward the opposite side of the frame, and is constructed of parallel wires secured at short distances apart, so as to form a screen over which the coal or other substance must pass in descending from the upper to the lower hopper, and through which the small particles, up to a certain size, will fall, leaving the larger pieces, which cannot pass through the screen, lying in the second or large hopper. The lower hopper is contracted toward its lower end, and a chute, F, extends from it out over the opposite side of the frame from that on which the upper hopper is located. A gate, *h*, which will be more fully described hereafter, serves to retain the coal in the chute and hopper until it is desired to allow it to pass from the chute into a cart or other vehicle. An independent grate or screen, I, of finer mesh than the grate D, is secured in an inclined position in the frame A A, below the screen D, so as to receive the particles of coal or other substance which pass through the upper screen, and which serves to again separate it into two grades. This screen stands at an angle transversely to the upper screen, so that the particles which pass down it on account of not being small enough to pass through the meshes will be carried off to one side of the machine, while the finer portions, which pass through the screen, will fall upon the floor or wharf directly under the frame.

Two or more of these screens can be used, and the size of the meshes can be varied according to the substance to be cleaned, and the number and quality of the grades into which it is desired to separate the substance being discharged.

The frame A A will be mounted upon small wheels, so that it can be moved from one place

to another upon a wharf in order to be placed in position to receive the discharging cargo of different ships; but when moving it from one wharf to another, I employ axles across each end of the frame, upon which strong wheels are placed, so that the entire machine can be drawn along similar to any wheeled vehicle.

The upper trough, which is formed by the boards B B′, is as long as the machine, so that in dumping the load, any vibration or swinging of the tub while it is being emptied will not cause the load to be discharged outside of the hopper as long as the machine is properly located, and ordinary care is exercised in dumping it. This form of the upper hopper also allows the substance which is dumped into it to spread over a larger surface and thus be more thoroughly screened than when the hopper is smaller.

When it is not desired to screen the article or substance to be unloaded, a false bottom or metal blank, K, is placed upon the grating or inclined side D of the larger hopper, so that the substance will be carried directly through the chute into the cart or wagon intended to convey it away.

The gate or cut-off which I use consists of a lever-bar, *p*, which has one end pivoted to the frame, so that it will extend transversely across above the end of the chute. Metal teeth *h* extend downward across the mouth of the chute, so as to bar the entrance. When the cart is in position beneath the chute, the free end of the lever is raised so as to clear the teeth from the mouth of the chute, and allow the substance to pass through by its gravity into the cart.

By this arrangement coal can be discharged from ships, screened, and loaded into carts not only at a great saving of expense in handling it, but with less wastage, as the large and more marketable pieces or lumps will not be broken when dumped in this machine, as they always are to a greater or less extent when dumped from the height of twenty or thirty feet upon the wharf or coal pile.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The receiving-hopper B B′, in combination with the hopper O, with its screen or grating side D, chute F, with its toothed gate *h*, and one or more independent screens I, all combined and arranged substantially as and for the purpose above described.

2. The metal blank or false bottom K, in combination with the receiving-hopper B B′, hopper O, chute F, and gate *h*, substantially as and for the purpose above described.

In witness whereof I hereunto set my hand and seal.

M. R. ROBERTS. [L. S.]

Witnesses:
GEO. H. STRONG,
HENRY K. MOORE.