(No Model.)

W. KELLY.

CINDER CAR.

No. 274,786. Patented Mar. 27, 1883.

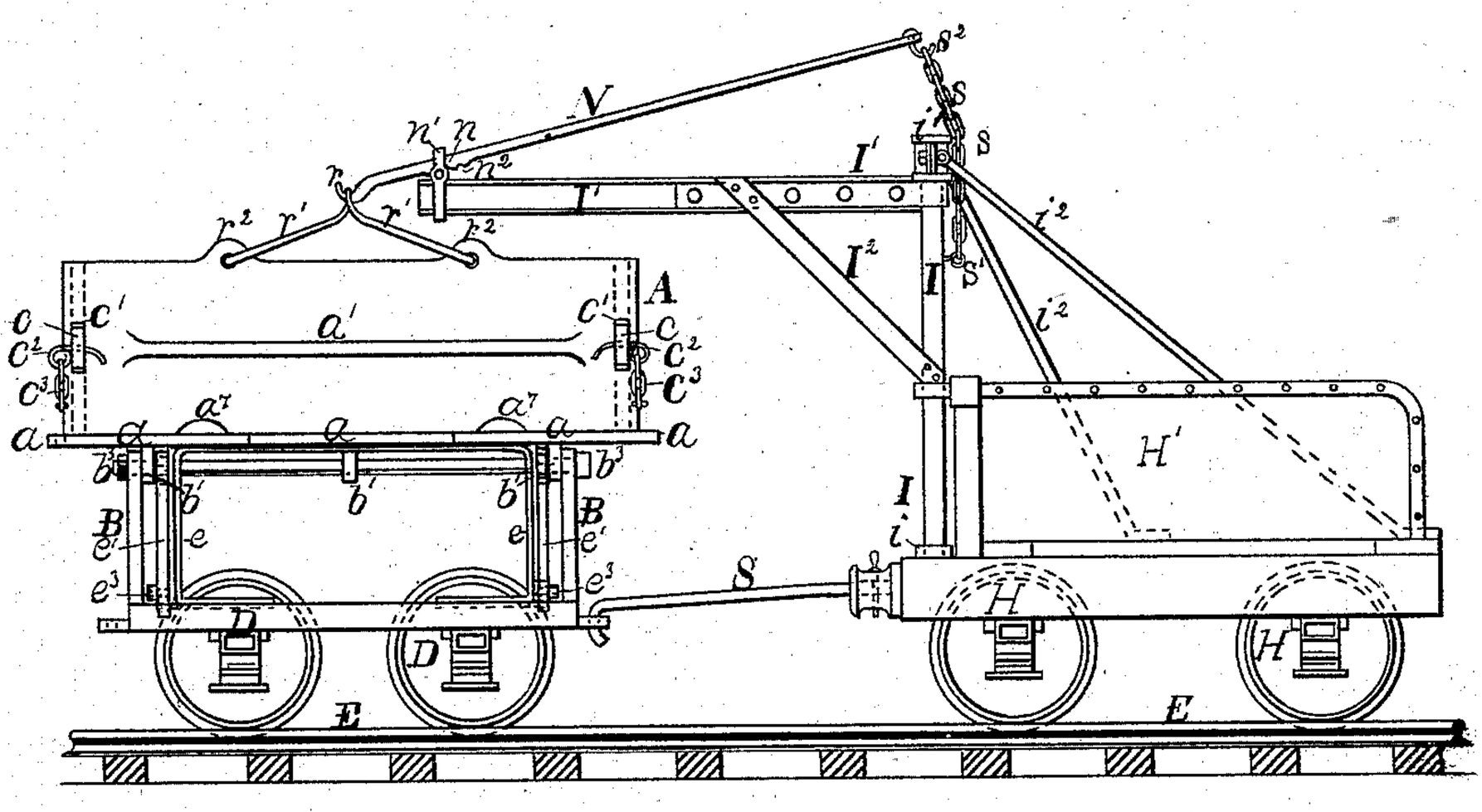

Fig. 1

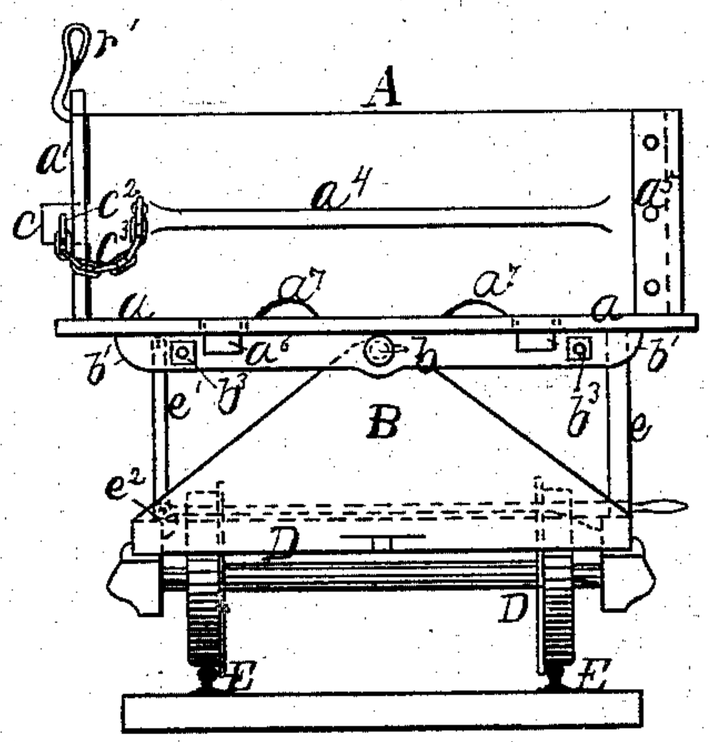

Fig. 2.

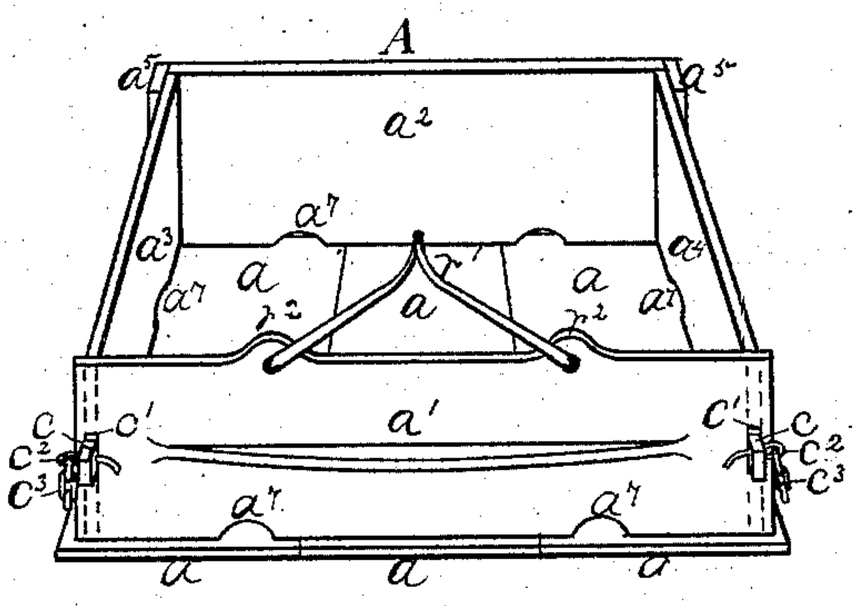

Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM KELLY, OF SCOTTDALE, PENNSYLVANIA.

CINDER-CAR.

SPECIFICATION forming part of Letters Patent No. 274,786, dated March 27, 1883.

Application filed December 19, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM KELLY, a citizen of the United States, residing at Scottdale, county of Westmoreland, State of Pennsylvania, have invented or discovered a new and useful Improvement in Apparatus for Removing Furnace-Cinder; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—like letters indicating like parts—

Figure 1 shows a side elevation of my improved apparatus. Fig. 2 shows an end elevation of the receiving and dumping car, and Fig. 3 is a perspective view of the cinder-box of the car.

My invention relates to certain improvements in apparatus for receiving slag, cinder, &c., from furnaces, and removing and dumping or emptying the same.

In general terms my invention consists in a new and improved cinder-car having a laterally-dumping box with a removable side, in combination with a lifting and rotary crane mounted on a truck and movable with the cinder-car, such crane being adapted by its construction for removing and replacing the removable side of the box, as hereinafter more fully described and claimed.

In the drawings, A represents a car box or body formed by preference of cast-iron, with bed a, sides a' a^2, and ends a^3 a^4. The side a^2 and ends a^3 a^4 are secured together rigidly by riveting, as at a^5, or in other convenient way; and they are also secured by tenons and mortises a^6, or in other suitable manner, to the bed a. In order to prevent warping, the bed a is formed of three pieces, as illustrated in Figs. 1 and 3, with ribs b' cast on their under faces, and they are bound together by two or more bolts, b^3, passed through the ribs. The side a' of the box is removably secured to the ends a^3 a^4 by tongues or tenons c on the latter, which enter mortises c' in side a', and by removable pins c^2, which are passed through the tenons outside of the plate, or side a' when the latter is in place. In order to prevent loss of these pins, they may be secured to some part of the box—for example, to the ends a^3 a^4—by short chains c^3. In dumping or emptying the box A this side a' is removed, as presently described, and in order to facilitate the lateral discharge of the contents the box is made of trapezoidal form, the side a^2 being shorter than a' and the ends a^3 a^4 diverging toward the side a'. With this form of box, on removing the side a' and tipping the bed a, so as to depress the open side, the contents, which may be wholly or partially fluid, semi-solid or solid, or in part in all stages from fluid to solid, will flow or slip freely off the bed and empty the box without binding on or being retarded by the stationary or fixed sides. If, however, from roughness on the bed or for other cause the contents should stick in the box, it may be started by means of suitable pikes or bars inserted for prying through holes a^7, made in the lower edges of the sides; or, in case the contents is still fluid, one or more of these holes may be opened and the fluid contents allowed to run out; and in order to prevent such running out prematurely, the holes are stopped or tamped with clay or other suitable material preparatory to filling the box at the furnace. In order to dump or tip the box, as described, it is mounted by axis-rod b, or by equivalent trunnions, secured by cross-beams b', or in other convenient way, to the bed a upon bearing blocks or bolsters B, which latter are secured in any convenient way to the front and rear ends of a car-truck, D, which may be of any suitable construction, adapted to run upon a railway-track, E, laid from the furnace to the desired place of dumping the cinder.

In order to sustain the car-box A in horizontal position, with provision for tipping or dumping when desired, I make use of standards e, which are secured to and extend from the truck-frame upward a proper distance to afford a support for the box under its short or closed side and swinging bars e', which are pivoted to the bed-beams b' on the opposite or long side, a', of the box. Shoulders e^2 are formed on the lower end of these swinging bars, adapted to rest on the truck-frame and support that side of the box in the desired position. By pulling these rods off their shoulder-rests on the truck-frame, by means of cross-rods e^4, the box A may turn on its pivot. Owing to the

increased length of the side a', and the corresponding increase in the capacity of the box on that side, there will be a preponderance of weight when the car is loaded on the side toward which it tips, sufficient to cause the desired tipping when the supports e' are removed. This feature of advantage may be secured, however, by making the pivots b out of the central line toward the closed side of the box; but I prefer to employ the trapezoidal form of box for securing such preponderance of weight, on account of the additional advantage secured in clearing the box of its contents, as before described; also, when the contents are dumped, the side a' being removed, there will be a preponderance of weight on the closed or elevated side of the box, causing it to "right" or to assume its horizontal position. This automatic action of self-dumping when loaded and self-righting when emptied relieves the workmen from both duty and danger.

In operation the molten cinder, slag, &c., is run from the cinder-notch of the furnace, through a suitable trough or spout, into the car-box A, which is run alongside on the track E, of lower level. By employing a sufficient number of such cars, each may be allowed to stand after filling until the contents have become solid, or a crust formed of considerable thickness; but such waiting involves both trouble and increased expense. I prefer therefore to provide for dumping the cars without waiting for the contents to cool; and for this purpose, and also to provide for removing and replacing the side a' at the place of dumping, I make use of a crane device mounted upon a car-truck and movable with the cinder-car, which is constructed as follows:

Upon a truck, H, and body H', of any suitable form and construction, is mounted a rotary mast or a crane-post, I, by step-bearing i at its foot, and cap or box i' at its top, from which brace-rods i^2 pass to different points of the car-body, and thereby rigidly support the bearing i', and through it the top of the post, with freedom, however, of rotary motion of the post in its bearings. On the upper end of the post or mast is secured the jib I', stiffened by brace I^2. This jib is of sufficient length to reach forward nearly to the center of the cinder-car when the cinder-car and crane-car are coupled for moving, as illustrated in Fig. 1. Upon the outer end of the jib is mounted a lifting-lever, N, by pivot-fulcrum n and surrounding strap n', notches n^2 being provided on the under side of the lever, adapted to bear upon the pivot-pin and prevent endwise movement of the lever. Provision is thus made, also, for changing the distance between the end of the lever and its fulcrum, as may be desired. Upon the outer end of the lever is formed a hook, r, adapted to engage a bail, r', the ends of which are secured to lugs r^2 on the edge of removable side a'. In order to remove this side, the lever-hook r is passed under the bail, as shown, Fig. 1, and the opposite or long end is pressed downward by a workman sufficiently to raise or bear the weight of side a'; and to this end the mortises c' are made to exceed the tenons c somewhat in width, so the side a' may rest upon the bed a when not suspended by the lever, and may be raised to clear the bed without binding upon the tenons; or, if desired, the side a' may be raised by the lever sufficiently to bear upon the under side of the tenons, and thus ease the weight on the swinging bars e', so that they may be easily set to catch on their rests but little as a preparatory step to pulling or knocking them off entirely when ready for dumping. The side may be secured in the desired suspended position by a chain, s, which may be fastened to post I, as at s', and hooked to the end of the lever, as at s^2. When thus suspended the crane is turned on its post I, carrying the side a' laterally out of the way, when the car may be dumped, as before described. When the car-box is righted the crane is swung back, carrying the side a' into position upon the tenons c, where it is secured by the pins c^2.

Various modifications may be introduced in the details of construction of my improved apparatus without departing from my invention, though I prefer the construction shown and described. For example, one of the ends a^3 or a^4 may be at right angles to the sides a' a^2; or staple and hook or other suitable connection may be made between the ends a^3 a^4 and the removable side a'; also, other equivalent devices may be substituted for the bail r' and fastening-chain s.

With my improved apparatus the cinder may be run directly to the place of dumping, and whether the contents be fluid or solid, the side a' may be removed and the contents be discharged quickly and with little manual labor.

The apparatus is simple and cheap in construction, is easily operated, and provides for much more convenient and expeditious removal of the cinder, slag, &c., than means heretofore in use. If but one cinder-car be used, the two trucks D and H may be permanently secured together and form practically one car; but ordinarily it will be more convenient to use two or more cinder-cars, and in such case I prefer to employ the usual or any convenient form of detachable coupling, as at S, for connecting the two trucks so as to move together on the track and to hold them in proper relationship for removing and replacing the side a'.

The adaptation and co-operation of parts effected as above described insure convenient and easy manipulation without exposing the workmen to danger, or the track to injury by burning, as heretofore.

I claim herein as my invention—

1. In a dumping cinder-car, a box, A, of trapezoidal form, having in combination three fixed sides, a^2 a^3 a^4, and one removable side, a', the latter being the longer one of its two parallel sides, substantially as set forth.

2. In a cinder-car, the combination of trape-

zoidal box A, having removable side a', truck D, and pivot-bearings between the box and truck in the longitudinal central line of the car, substantially as and for the purposes set forth.

3. In a dumping cinder-car, a trapezoidal box, A, having a removable side, a', and fixed sides a^2 a^3 a^4, with pry-holes a^7, made in some or all such sides, substantially as set forth.

4. The combination of three-part cast-iron bed a, with ribs b', cast on the under faces of such parts, binding-bolts b^3, and sides a' a^2 a^3 a^4, substantially as set forth.

5. In a laterally-dumping cinder-car, a box, A, having in combination a bed, a, two inclined ends, a^3 a^4, fixed to the bed, with tenons c on the indivergent ends, removable side a', having mortises c' therein, and pins c^2, substantially as set forth.

6. The combination of truck H, crane-post I, jib I', lever N, and chain s, substantially as set forth.

In testimony whereof I have hereunto set my hand.

WILLIAM KELLY.

Witnesses:

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