

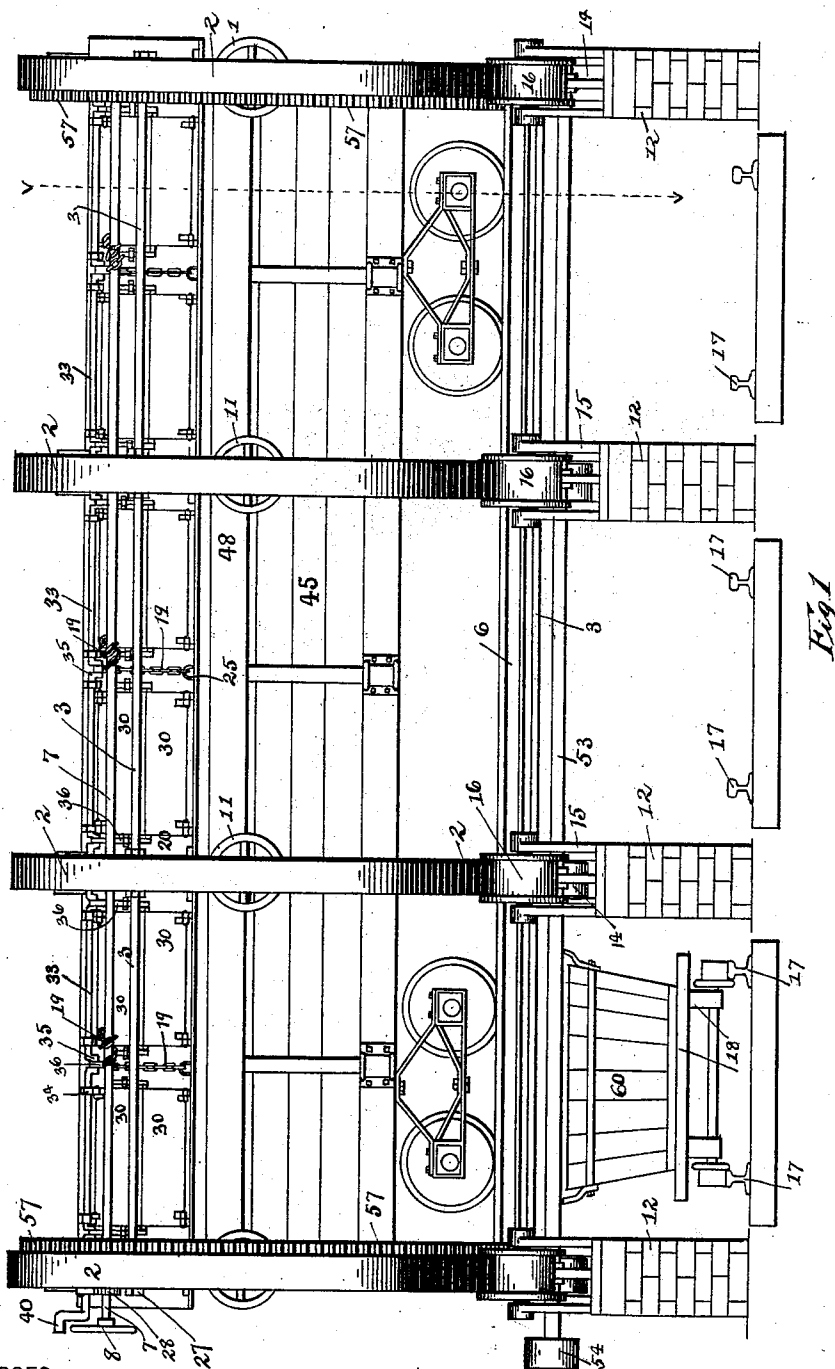
(No Model.)

5 Sheets—Sheet 1.

A. E. WILLIAMS.
CAR DUMPING APPARATUS.

No. 508,071.

Patented Nov. 7, 1893.



WITNESSES:

J. C. B. Bradshaw

A. L. Phelps

INVENTOR

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BY

Daley and Shepherd
ATTORNEYS.

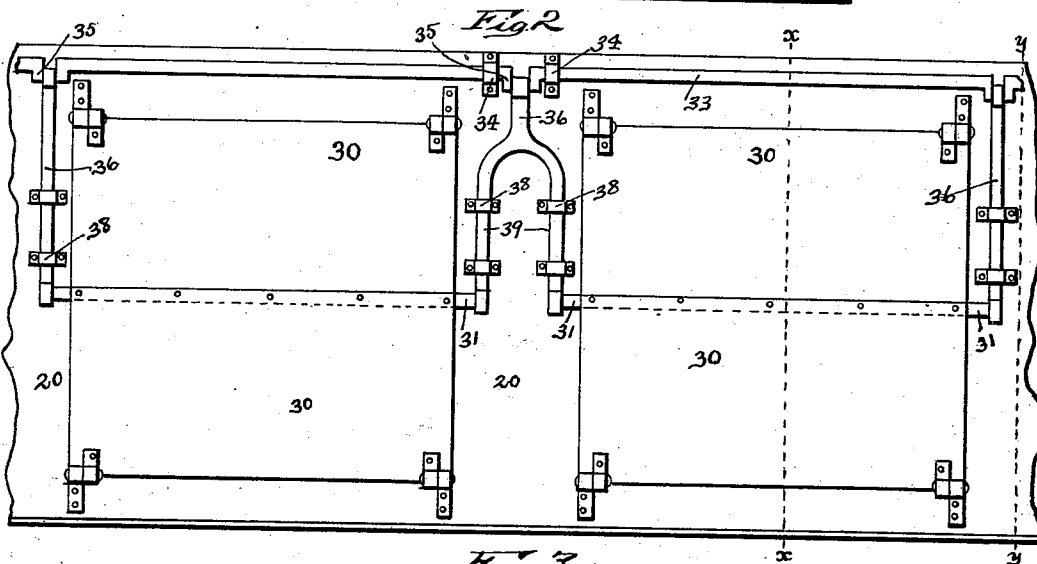
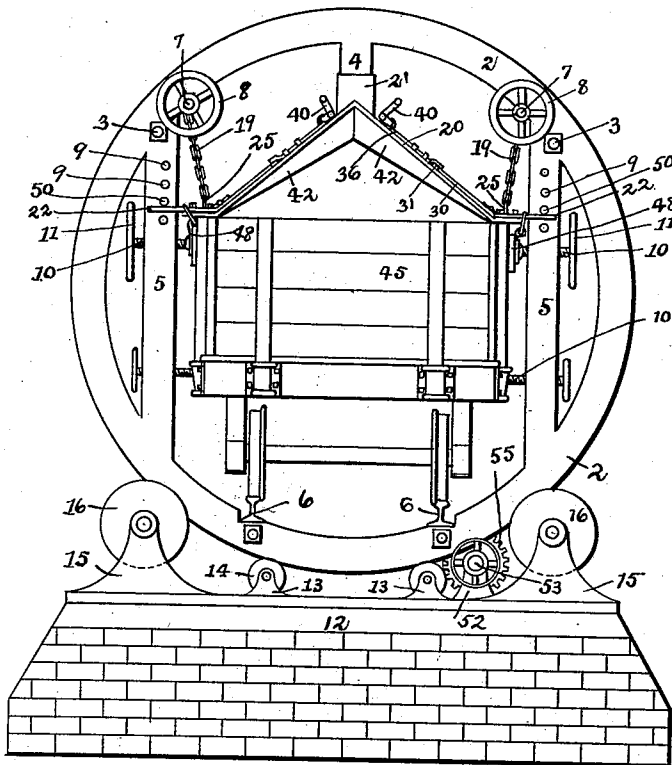
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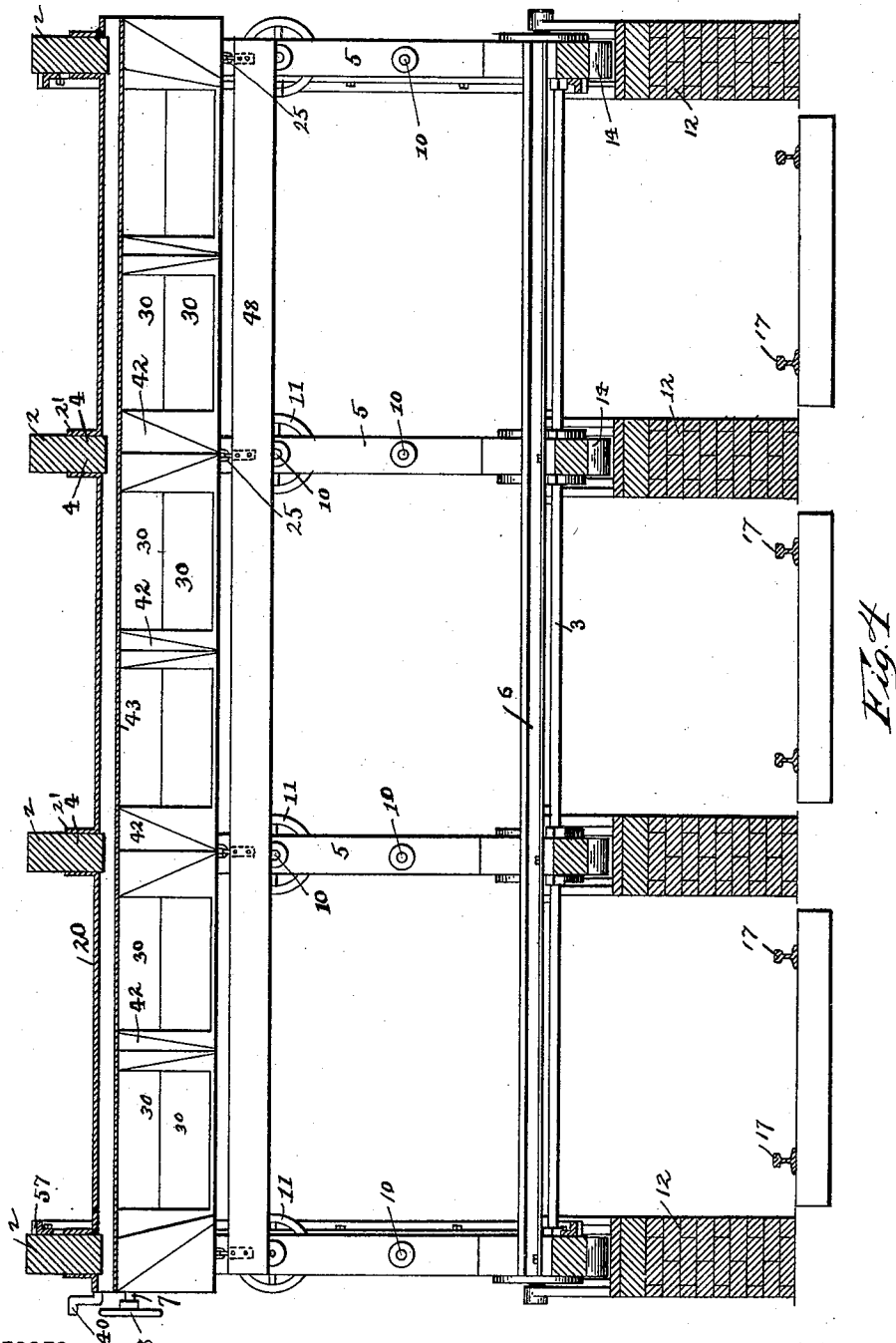
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(No Model.)

5 Sheets—Sheet 4.

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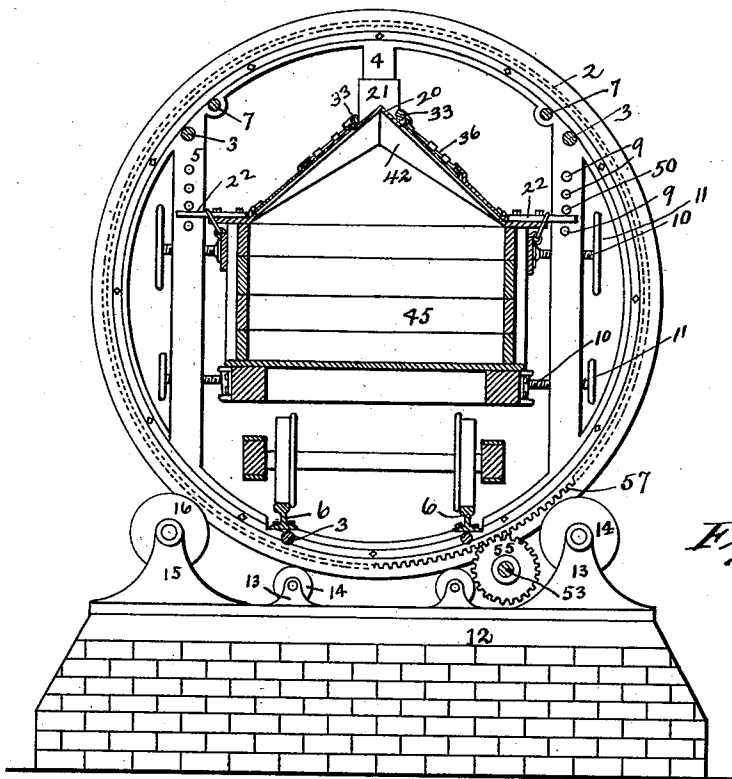


Fig. 5

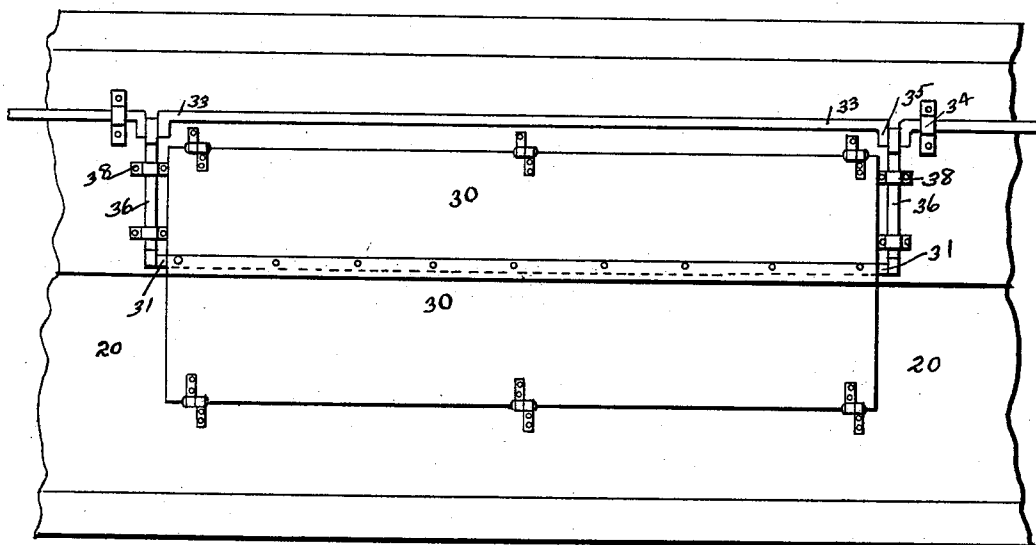


Fig. 6

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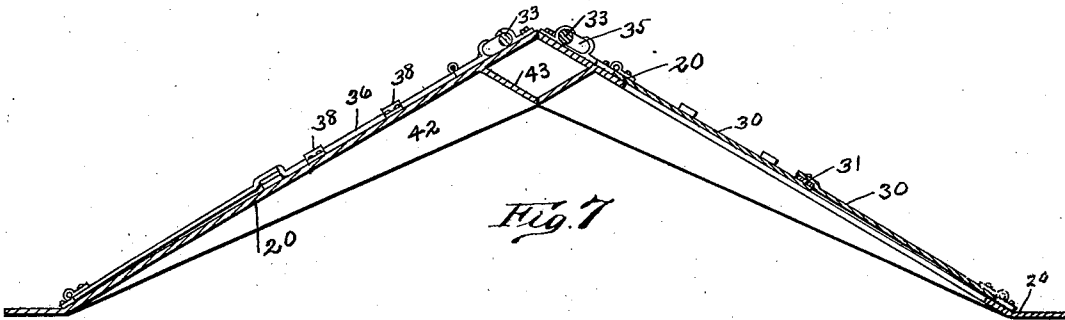
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CAR-DUMPING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 508,071, dated November 7, 1893.

Application filed February 20, 1893. Serial No. 462,974. (No model.)

To all whom it may concern:

Be it known that I, ABRAM E. WILLIAMS, a citizen of the United States, residing at Nelsonville, in the county of Hocking and State of Ohio, have invented a certain new and useful Improvement in Car-Dumping Apparatus, of which the following is a specification.

My invention relates to that class of car dumping apparatus which is designed for dumping coal and other material from cars by inverting the car.

The objects of my invention are to provide an apparatus of this class of superior construction and arrangements of parts; to provide improved means for inverting the car; to provide an improved cage or framework for the support of said car during the dumping operation; to so construct and arrange the parts of said apparatus as to facilitate the dumping or discharge of the contents of the car into tubs or other receptacles and at the same time to admit of the transfer or discharge of the contents of one car to another car beneath the same; to so construct my improved apparatus as to admit of the coal or other material contained in the car being ejected therefrom at the desired time and to produce said dumping operation as to obviate the tendency of the coal to break or crush from the fall; to produce my invention in a simple, reliable and effective manner and to produce other improvements which will be more specifically pointed out hereinafter. These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved dumping apparatus showing a car therein with the roof raised therefrom. Fig. 2 is an end elevation of the same showing the roof lowered upon the car. Fig. 3 is a plan view of a portion of the roof, illustrating the means of latching and unlatching the roof doors. Fig. 4 is a central longitudinal section of my improved cage with the car removed. Fig. 5 is a transverse section on line *vv* of Fig. 1. Fig. 6 is a plan view of a portion of the roof or car cover showing a modified form of doors, and Fig. 7 is a transverse section of the roof shown in Fig. 3 of the drawings, the right half of said section being taken on line *xx* and

the left half thereof being taken on line *yy* of said Fig. 3.

Similar numerals refer to similar parts throughout the several views.

In the construction of my improved cage or framework, I employ a series of vertical rings 2 which as shown in the drawings, are arranged one after the other at a distance from each other and in horizontal alignment. These rings 2 are connected at desired intervals by parallel longitudinal tie-rods 3. 4 represent studs or lugs one of which is formed with and caused to project downwardly from the central portion and under side of each of the rings 2. Arranged in opposite sides of the rings 2 and forming chords of the circles described by said rings, are vertical frame bars 5. Supported within the lower portions of the rings and running throughout the length of the frame and connecting said rings are two parallel track rails 6 upon which, as hereinafter described, the wheels of a car are adapted to run. Extending throughout the length of the ring frame or cage formed as above described, and on opposite sides and in the upper portion thereof are reel rods or shafts 7 the latter being journaled in suitable bearings in said rings and being provided at corresponding outer ends with a suitable hand wheel or other handle indicated at 8. To each of these shafts 7 at desired intervals are secured the upper ends of depending chains or ropes 19, the latter being provided with hooks in their lower ends for the purpose herein shown. Through the upper portion of each of the frame bars 5 are formed in a vertical row, pin holes 9 the latter running in a direction of the length of the cage.

10 represent set or clamping screws which are provided on their outer ends with suitable hand wheels or handle portion 11, said screws being made to pass through and engage with screw holes formed in the bars 5, said screw holes extending at right angles with the openings 9. As shown in the drawings I preferably provide each of said bars 5 with two of said set screws, although a greater number may be employed if desired.

As shown in the drawings, I preferably provide as a support for the cage frame above described, parallel walls of masonry 12, one of

the latter being beneath each of the rings 2 of the cage. It is evident however, that I may substitute for the masonry shown, any suitable supporting framework. Upon each of the walls or piers of masonry or framework thus formed I provide beneath each of the rings on opposite sides of the vertical diameter thereof, roller supporting frames 13 in which are mounted suitable small bearing rollers 14 and upon which the ring above rests and is adapted to travel. On the outer side of each of these roller frames 13, I provide a roller frame 15 within which is journaled a larger roller 16 the latter having flanged sides as shown, which embrace opposite sides of the ring 2, said outer rollers serving as hereinafter described, as guides for said rings.

When it is desired to discharge the contents of the cars into other cars or into tubs or other receptacles upon other cars, I provide at the bottom of the space between each of the piers 12 track rails 17, which run at right angles with the track rails 6 and which serve as tracks for cars 18. 20 represents a car cover or roof which is preferably of metal and which is substantially of a gable form. This roof as shown in the drawings, is suspended or adjustably supported as hereinafter described within the ring cage in the upper portion thereof. Formed in the roof cone at intervals are upwardly projecting socket pieces 21, which are of the chimney form shown. Each of these socket pieces is adapted to receive loosely, one of the ring lugs 4 for which said socket pieces serve as guides. 22 represent rods or arms which project laterally from the roof sides and which being arranged in pairs as shown, are designed to embrace loosely opposite sides of the frame bars 5. These laterally projecting bars or rods are designed to rest on the outwardly projecting portion of pins which are inserted in the desired openings 9 of said bars when the car is inverted as hereinafter described. The upper sides of the roof are provided near their lateral edges with suitable hooks or eyes 25, with which are made to engage the hook ends of the chains 19. The roof is ordinarily supported or suspended in an elevated position by rotating the rods 7 and thereby winding upon said rods the chains 19. Said shafts 7 are prevented from rotating backward by pawls 27 pivotally connected with the end of the framework and adapted to engage with the teeth of a ratchet wheel 28 on the shaft 7. In each side or incline of the roof, I provide doorways there preferably being two parallel doorways on each of the roof sides between each pair of rails. However, any desired number of doorways might be employed without altering the principle of my invention. These doorways are adapted to be closed by doors 30, two doors being employed to cover each of said doorways and said doors being hinged as shown, at the upper and lower sides of said doorways and falling inward therefrom. As shown in the

drawings, one of the doors 30 is provided on its inner edge which overlaps the inner edge of the adjoining door with an edge bar 31, which being of greater length than the door projects outwardly from each end thereof. Running throughout the length of the car cover and on opposite sides of and adjacent to the socket pieces 21 are latch operating rods or shafts 33. These latch operating rods are journaled in suitable bearings 34 which rise from the roof above the upper line of the doors 30. At points beyond the ends of said doors, I provide each of the rods 33 with a double crank bend 35 and on the crank thus formed I fulcrum the upper end of a latch bar 36. These latch bars extend down the inclines of the roof sides, pass through suitable keepers or guides 38 and thence extend over the projecting ends of the door edge bars 31 when said doors are closed as shown in Figs. 2 and 3 of the drawings. As shown in Fig. 3, I may bifurcate one of the latch bars 36 to form separated latch arms 39 which serve to hold the adjacent ends of two door bars 31. Upon the outer end or ends of the rods 33, I may provide suitable outwardly projecting handles or cranks 40 for the purpose of facilitating the operation of said rods.

As shown at 42 I provide the under side of the roof between each of the doorways with substantially V-shaped partition ribs, which at their upper ends meet a smaller longitudinal rib 43 which extends throughout the length of the roof in the angle thereof. The production of these partition ribs or underside projections of the roof results as shown, in the formation of inclined side and upper end walls which will tend to direct the contents of the car toward the doorways and at the same time prevent any lodging of the coal or other contents between said doors. Journaled in suitable bearings 52 which project from the upper sides of the piers 12 is a power shaft 53, the latter carrying on one of its outer ends a suitable belt wheel indicated at 54. Upon this power shaft is mounted near each end of the cage, a gear wheel 55, each of the latter gearing with a circular rack 57 one of which is affixed to the inner side or face of each of the end rings 2 of the frame. It is evident however, that I may provide each of the rings with a rack such as prescribed for the end rings and that a corresponding number of gear wheels may be carried upon the shaft 53.

45 represents an ordinary coal car or gondola which when loaded and ready for dumping is run from a main or side track of a railway into the cage upon the track rails 6. This having been accomplished the said screws 10 are turned inward, their inner ends clamping against clamping boards 48 which are suspended from the projecting portion of the car roof, said clamping boards bearing against the side framework of the car and being firmly connected therewith by an inward turning of the screws. In this manner any tendency of the car to rock sidewise is obvi-

ated. By releasing the pawls from the ratchets 28 the reel shafts 7 are rotated to unwind the chains 19 and the roof is thus lowered upon the car, its horizontal edge portions resting upon the upper sides of said car. This having been accomplished, pins 50 are inserted in those openings of the bars 5 which are immediately above the arms 22, thus locking said roof against upward movement. It being desired to now dump the contents of the car between the bars into tubs or like receptacles 60 arranged upon the cars 18 rotary motion is imparted by any desired or well known means to the shaft 53 which owing to the connection of the gear wheels 55 with the racks 57 must result as will readily be seen, in the rotation of the cage, the rings turning and bearing against the smaller rollers 14 and traveling within the flanges of the outer or guide rollers 16. This rotary motion is continued until the car is completely inverted when by so turning the latch shaft 33 as to result in the latch arms 36 and 39 being drawn inward and upward out of engagement with the door bars 31. It will be seen that the doors are released and that the weight of the coal or other material contained in the car will result in said doors opening and in the discharge of the coal through the doorways into the receptacles beneath. It will be readily seen that owing to the employment of a number of comparatively small doorways my apparatus admits of the discharge of the coal into a number of different receptacles upon the car beneath and thus providing for the loading of tubs such as are ordinarily employed in loading vessels or coaling locomotives, said tubs being as is well known handled by cranes or other elevating apparatus.

In case it is desired to discharge the coal or car contents into other cars upon the tracks 17, I may employ as shown in Fig. 6 of the drawings, elongated forms of doors and doorways for the discharge of a greater volume of coal. It is evident that these doorways may be so arranged with reference to size and location as to provide a comparatively equal distribution of the coal in the receiving car.

When the car is inverted in the unloading position, it is obvious that the contact of the lateral projecting arms 22 and pins 50 will obviate any tendency of the roof to leave the car and that any tendency of the car to move laterally will be prevented by the clamping screws 10.

The construction which I have shown and described is such as to prevent any premature discharge or unloading of the car, inasmuch as the latches will retain the doors tightly closed until said latches are withdrawn by the operation of the latch shaft.

The car having been unloaded, it is evident that it may be readily turned to its normal position, that the pins 50 may be withdrawn, the reel shafts rotated, the car cover lifted,

the clamping screws loosened and the car run out of the cage.

It is evident that when necessary or desirable such as in the loading of long vessels, I may employ a number of the cages herein described, the ends of said cages being arranged adjacent to each other and thereby admitting of a number of cars being contained in the cages at one time, this being accomplished without necessarily uncoupling the cars, which may be in the usual train form. It will thus be seen that my construction admits of not only one but a number of cars being unloaded simultaneously with the expenditure of a comparatively slight degree of labor and time.

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

1. In a car unloading apparatus the combination with the cage frame comprising a series of rings 2, connecting tie rods 3, ring chord bars 5 and cage track rails, of set screws 10 adjustably supported in said chord bars, roller bearings for said rings, a gable car roof or cover 20 adjustably suspended in said cage frame, doorways and doors in said roof and means for raising and lowering said roof or cover and rotating said cage substantially as specified.

2. In a car unloading apparatus the combination with the cage frame comprising a series of rings, connecting tie rods, ring chord bars and cage track rails, of set screws 10 adjustably supported in said cage bars, roller bearings for said rings, reel shafts 7 journaled in said rings, a gable car cover or roof suspended from said reel shafts by chains or their equivalents, doorways and doors in said roof, latches for said doors and means for raising and lowering said roof or cover and rotating said cage substantially as specified.

3. In a car unloading apparatus the combination with the cage frame consisting of a series of connected rings, piers beneath said rings and roller bearings journaled thereon upon which said rings bear and turn, of a car cover or roof adjustably suspended within said cage, doorways in said roof between each of said frame rings, doors 30 covering said door ways, latch arms normally holding said doors in place as described and a crank shaft 33 journaled in the cage frame-work with the cranks of which said latches are connected and means for rotating said cage upon said roller bearings substantially as specified.

4. In a car unloading apparatus the combination with the cage frame consisting of connected rings adapted to receive the car as described, and inwardly projecting lugs 4 on each of said rings, of a gable car roof or cover adjustably suspended in said cage frame, doorways and doors therefor in said cover between each of the frame rings, latches for said doors and socket pieces 21 projecting from said roof or cover and receiving as de-

scribed the guide lugs 4 of said rings substantially as and for the purpose specified.

5 In a car unloading apparatus the combination of the cage frame comprising a series of rings 2, connecting tie rods 3 and ring
chord bars 5, of cage track rails 6, clamping
screws adjustably supported in said bars 5,
suitable piers beneath said rings, journaled
rollers on said piers on which said rings bear,
10 a car cover or roof adjustably suspended

within said cage frame, laterally projecting
arms 22 on said cover, stop pins 50 adapted
to be inserted in pin holes 9 of bars 5 and
means for rotating said cage frame upon said
roller bearings substantially as and for the 15
purpose specified.

ABRAM E. WILLIAMS.

In presence of—

C. C. SHEPHERD,
F. A. SIEGEL.