

April 19, 1949.

J. H. KINCAID
ROTARY CAR DUMPER

2,467,673

Filed July 10, 1947

4 Sheets-Sheet 1

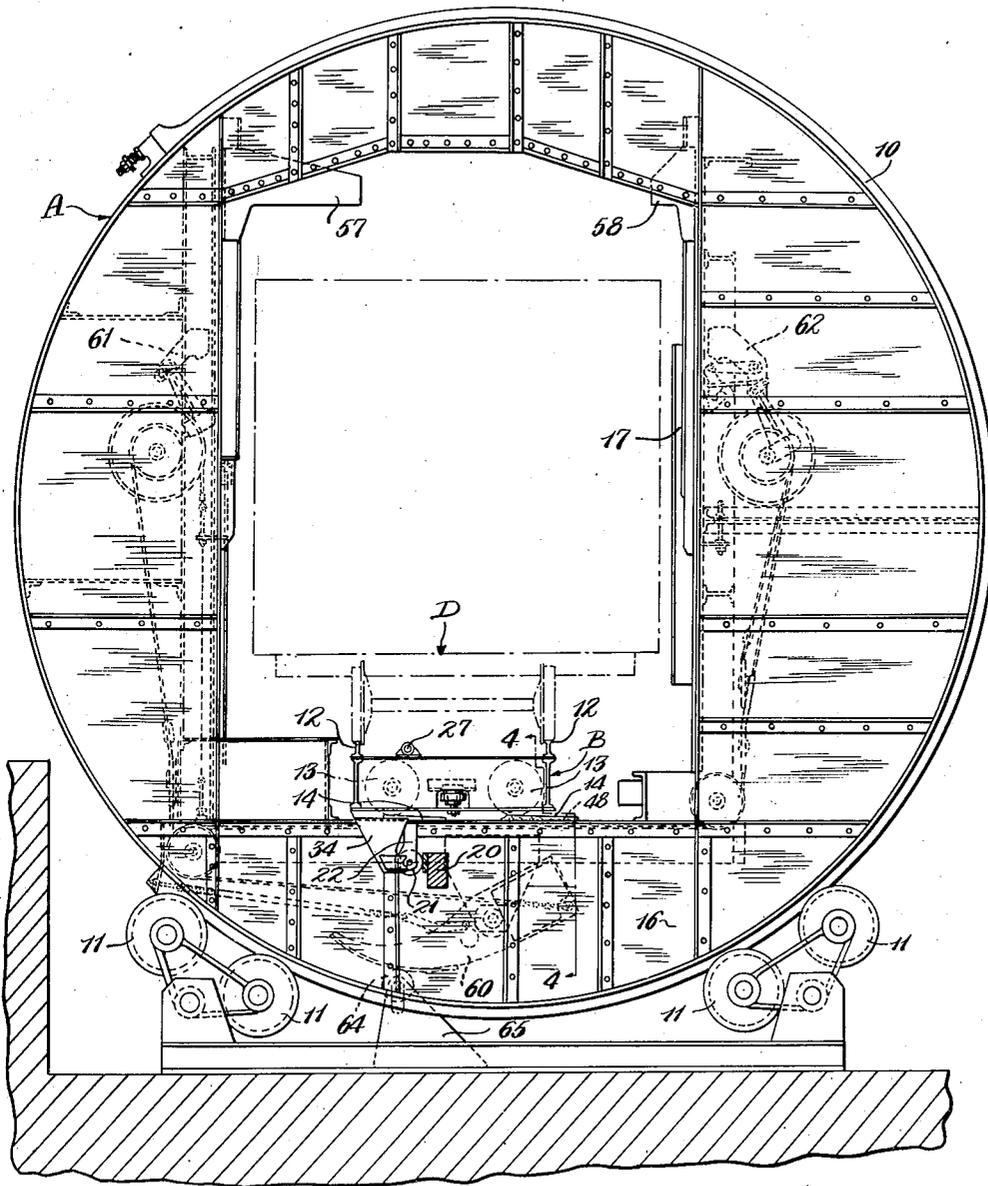


FIG. 1

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4 Sheets-Sheet 2

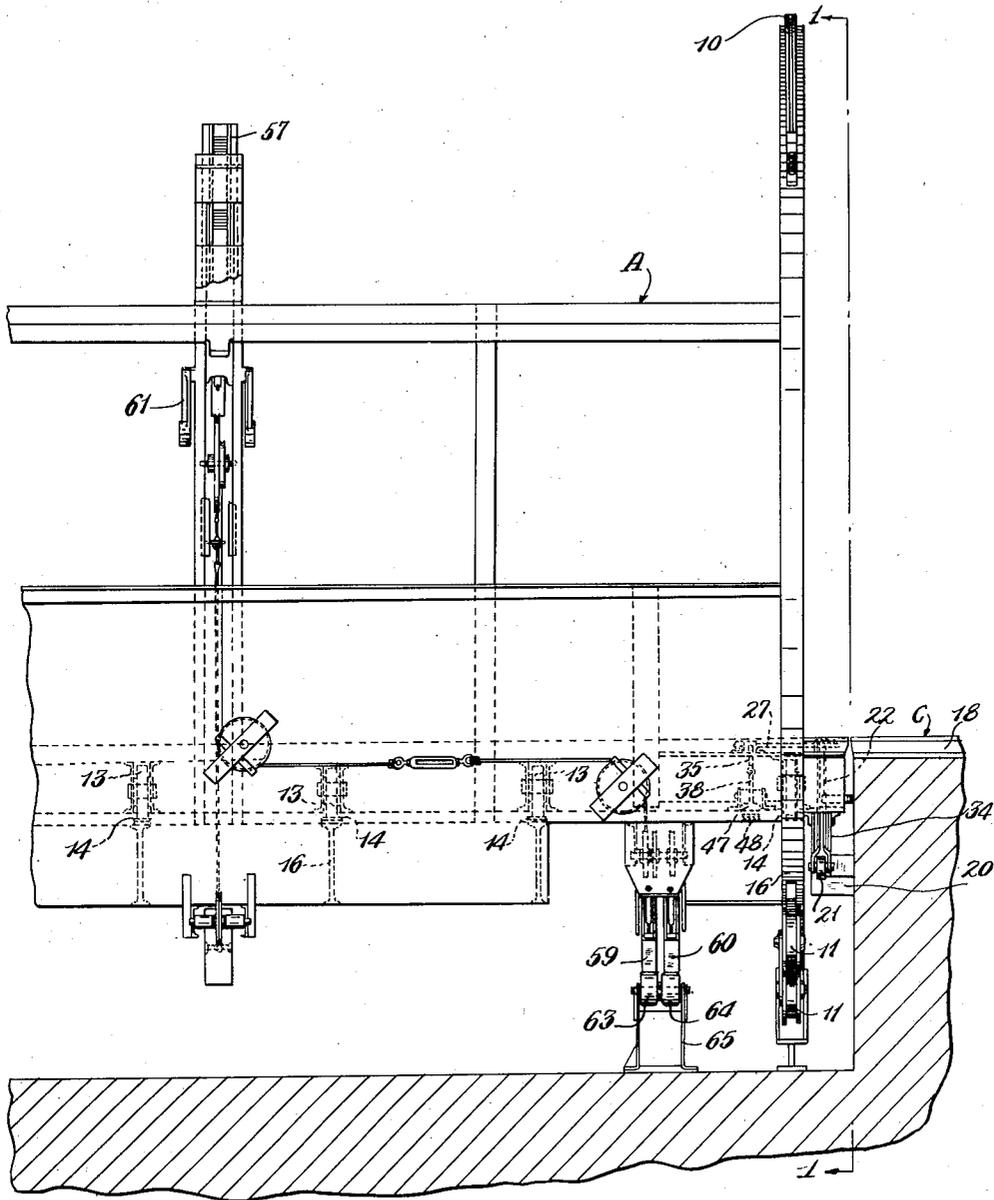


FIG. 2

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4 Sheets-Sheet 3

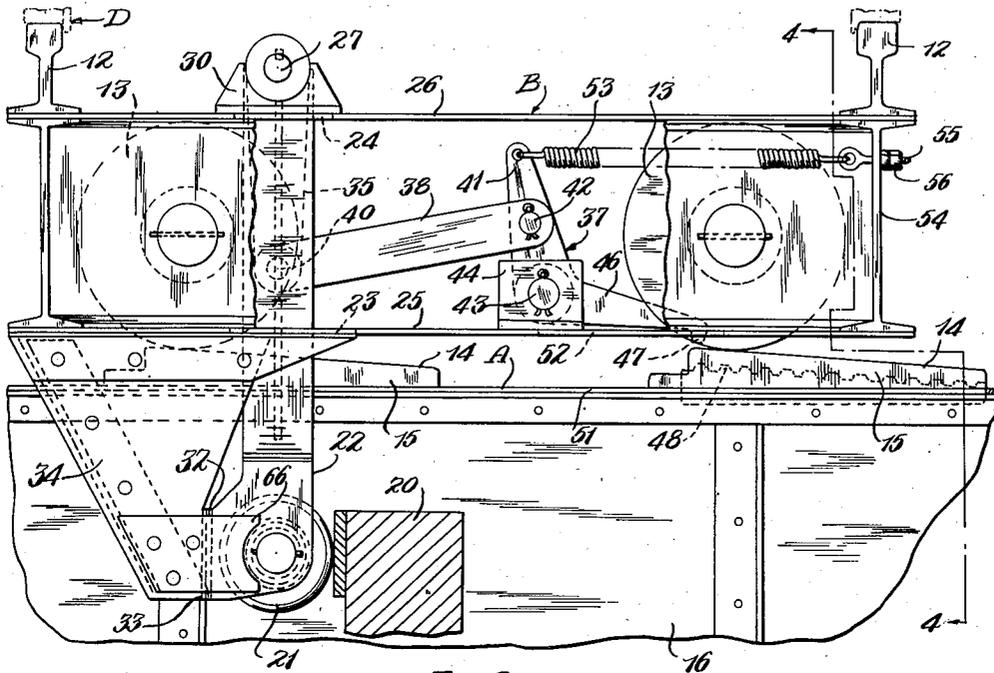


FIG. 3

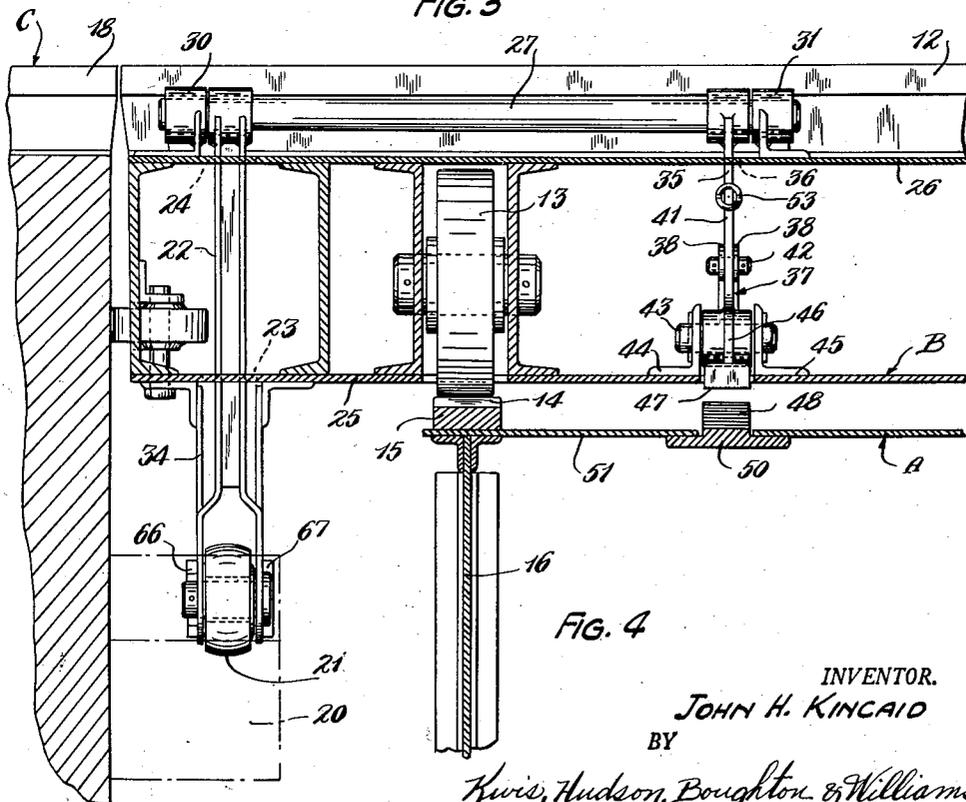


FIG. 4

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4 Sheets-Sheet 4

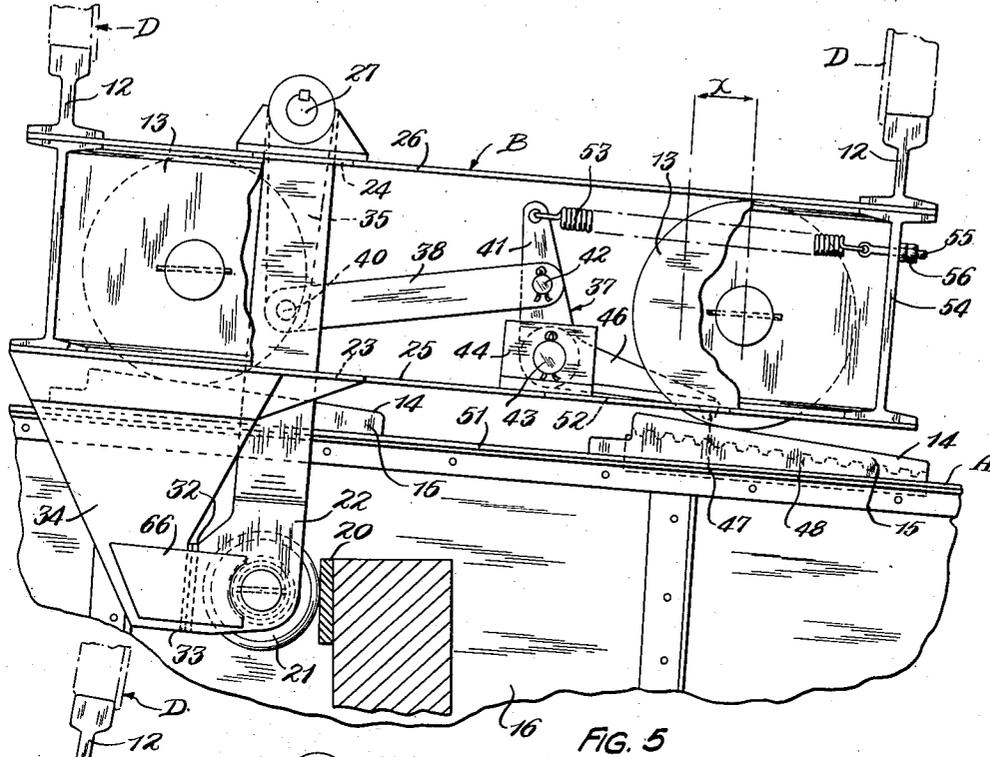


FIG. 5

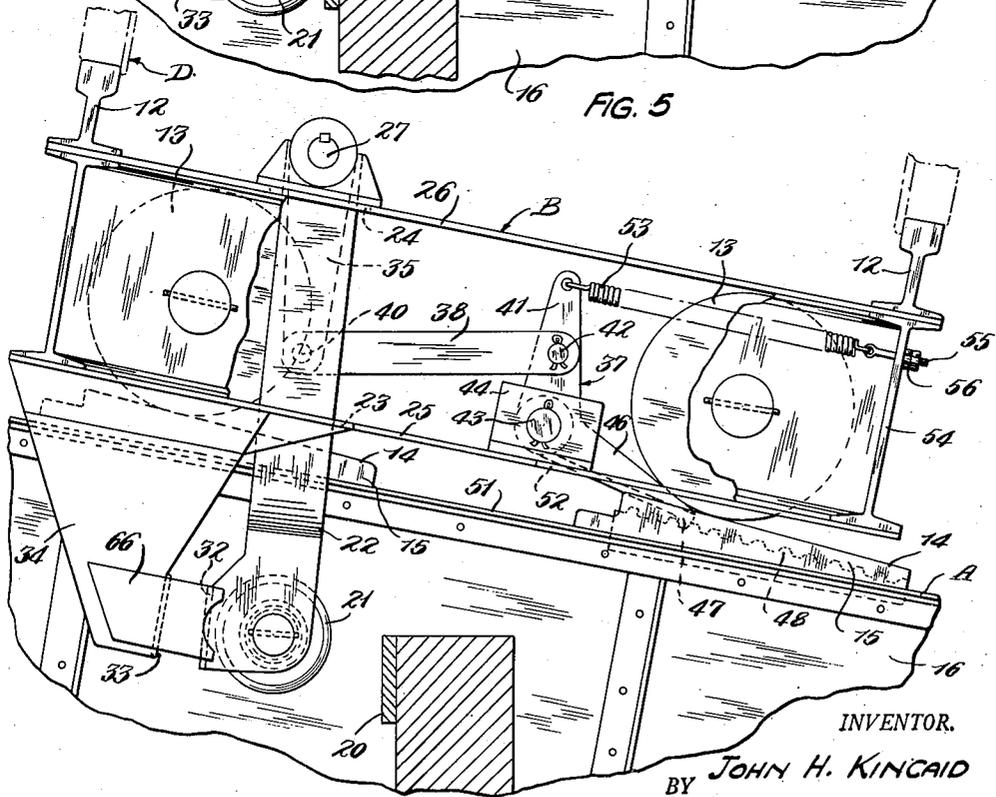


FIG. 6

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2,467,673

ROTARY CAR DUMPER

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5 Claims. (Cl. 214—52)

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The present invention relates to rotary car dumpers adapted for unloading railroad cars and the like by inverting the car and, more particularly, to the mechanism for holding a car in the dumper while it is being inverted and again righted.

Rotary car dumpers of the character here involved usually comprise a rotatable cradle including a section or length of track onto which a car to be dumped is run. The section of track which supports the car is carried upon a transversely movable platen so that the car may move toward the dumping side of the cradle as the cradle begins to rotate, which side is customarily provided with wooden buffers against which the side of the car rests as it is being inverted. After the car has moved into engagement with the buffers at the dumping side of the cradle, it is clamped to the rails upon which it is supported by clamp members movable into engagement with the top of the car. After the contents of the car has been dumped and as it is returned to its initial position, the clamps are automatically disengaged and the platen returned to its original position to realign the rails thereon with the stationary rails adjacent to either or both ends of the cradle so that the car can be removed from the cradle and a new car positioned therein.

Because of the fact that the cars handled usually vary in size and construction, it is difficult to properly secure the same in the cradle and, in many instances, the platen moves for one reason or another after the clamps have been secured to the top of the car. This usually results in the wheels of the car leaving the rails on the platen and becoming disaligned therewith so that when the cradle is returned to its starting position, the wheels of the car do not rest upon the rails. This results in considerable delay, etc., because of the difficulty of again placing the car on the rails.

One of the principal objects of the present invention is the provision of a simple, inexpensive, and positive means for locking the movable platen against further movement after a car carried thereby has been moved into engagement with the side of the cradle, thus preventing the car from becoming derailed during the dumping operation with subsequent loss of time, etc.

The invention resides in certain constructions and combinations and arrangements of parts and further objects and advantages will be apparent to those skilled in the art to which it relates from the following description of the preferred embodiment described with reference to the accom-

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panying drawings forming a part of this specification, and in which

Fig. 1 is an end view, approximately on the line 1—1 of Fig. 2, of a car dumper embodying the present invention;

Fig. 2 is a fragmentary side view of the near end of the dumper, as viewed in Fig. 1 looking from the left;

Fig. 3 is an enlarged, fragmentary end view of a portion of Fig. 1, with parts broken away;

Fig. 4 is a fragmentary sectional view, approximately on the line 4—4 of Fig. 3; and

Figs. 5 and 6 are views similar to Fig. 3 but showing the parts in two different positions which they occupy as the dumper is rotated.

Referring to the drawings, the reference character A designates generally the cradle of a rotary car dumper, which cradle includes partial rings 10, only one of which is shown in the drawings, located adjacent to opposite ends of the cradle and through the medium of which the cradle is rotatably supported upon pairs of rollers 11 in a well-known manner. The construction of the cradle proper, the manner in which it is supported and rotated, and the construction and manner of operation of the clamps which engage the top of the car form no part of the present invention and are not herein shown and described in detail. These parts of the device may be of any conventional construction. The particular dumper shown is, for the most part, similar to that shown in Figs. 12 to 17 of U. S. patent to R. W. Crist, No. 2,381,723.

Referring again to the drawings, the cradle A includes a transversely movable platen, designated generally by the reference character B, the upper part of which is provided with rails 12 upon which a car to be dumped is run into the cradle from a track C adjacent to one or both ends of the cradle. The platen B comprises a plurality of wheels 13 connected thereto and normally engaging and supported upon inclined tracks or surfaces 14 of members 15 bolted or otherwise fixedly secured to the upper surfaces of transversely extending frame members 16 of the cradle A.

In the dumper shown, the direction of rotation for dumping is clockwise, as viewed in Fig. 1, and the inclination of the upper surfaces 14 of the members 15 is such that the platen B normally tends to move toward the right; that is, in a direction to engage the right-hand side of a car D, shown in dot-dash lines, the contents of which are to be dumped, with the buffers or blocking 17 secured to the right-hand or dumping side of

the frame of the cradle. When the cradle is in its normal position, the platen B is maintained in a position to align the rails 12 thereof with the adjoining rails 18 of the track C at either or both ends of the cradle by fixed abutments 20 located at opposite ends of the cradle proper and adapted to be disengaged and re-engaged by rollers 21, one at either end of the cradle, as the cradle is rotated and again returned to normal position.

The rollers 21 and the mechanism associated therewith at opposite ends of the cradle are alike and only one end of the cradle, etc., is herein shown and described. Referring particularly to Figs. 3 and 4, the roller 21 shown is secured to the lower end of a built-up lever 22 normally extending in a generally vertical direction and projecting through slots 23, 24 in plates 25, 26, respectively, forming a part of the frame of the platen B. The upper end of the lever 22 is keyed to the front or outer end of a longitudinally extending shaft 27 rotatably supported in suitable bearings 30, 31 fixedly secured to the upper surface of the top plate 26. The lower end of the lever 22 projects slightly toward the left, as viewed in Fig. 3, and is provided with an abutment member 32 adapted to be engaged by a cooperating abutment member 33 on the lower end of a built-up bracket 34 fixed to the underside of the plate 25 of the platen B.

The rear or inner end of the shaft 27 is provided with a normally vertical lever 35 fixed thereto, which lever projects downwardly from the shaft 27 through a slot 36 in the plate 26 to a point adjacent to but slightly above the plate 25. The lower end of the lever 35 is connected to a bell crank-shaped pawl or latch member 37 by links 38 pivotally connected to the lever 35 by a pin 40 and to the upwardly projecting arm 41 of the latch member 37 approximately midway between the ends of the arm 41 by a pin 42. The latch member 37 is supported for rotation about an axis extending lengthwise of the cradle by a pin 43 carried by brackets 44, 45 fixedly secured to the upper surface of the plate 25. The other arm 46 of the latch member, which normally projects in a generally horizontal direction, is provided with a tooth or latch bolt 47 on its underside, which tooth is adapted to engage and disengage a keeper in the form of a rack 48 formed on the upper side of a member 50 fixedly secured to a plate 51 of the frame of the cradle, which plate is located underneath the plate 25 and the platen B proper. As one of many alternative constructions, the oscillatable latch member 37 could be replaced by a vertically reciprocable latch member, the lower end of which could be engaged within one of a series of holes in the plate 51. The latch and keeper members can be so formed, if desired, that the one will ratchet with reference to the other as the platen moves toward the left, as viewed in Figs. 1 and 3.

The inclination of the rack 48 corresponds with that of the inclined surfaces 14 of the members 15 and the plate 25 is provided with a suitable opening 52 through which the arm 46 and the pawl tooth 47 of the latch member 37 may oscillate to engage and disengage the pawl tooth with the teeth of the rack 48. The latch member 37 is continuously urged in a clockwise direction, as viewed in Fig. 3, to engage the pawl tooth 47 with the rack 48 by a tension spring 53, opposite ends of which are connected to the upper end of the arm 41 of the latch member 37 and an I-beam 54 forming a part of the platen B. The spring 53

is connected to the I-beam 54 by an eye-bolt 55 projecting through a suitable aperture in the web of the beam 54 and provided with jam nuts 56 for adjusting the tension of the spring 53.

When the car dumper is in its normal position; that is, the position shown in Figs. 1 to 4 of the drawings, the various parts of the dumper occupy the positions shown. The platen B is in the center of the cradle, with the rails 12 thereof in alignment with the rails 18 at either or both ends of the cradle and the pawl tooth 47 is disengaged from the rack 48. After a car to be dumped has been properly positioned in the cradle, the cradle is slowly rotated. As the cradle A begins to rotate in a clockwise direction, as viewed in Figs. 1 and 3, the platen B will move toward the right, maintaining the roller 21 in engagement with the fixed abutment 20 and the abutment members 32, 33 in contact with each other until the car engages the buffers 17. The relative positions which the parts shown in Fig. 3 assume at this instance is shown in Fig. 5 and the distance moved is indicated by the arrow x .

Continued rotation of the cradle A causes the abutment member 33 to move away from the abutment member 32. The roller 21, however, is continued in engagement with the fixed abutment 20 by the spring 53, etc., until further rotation of the latch member 37 and, in turn, the lever 22 is arrested by the pawl engaging the rack 50; thereafter, the wheel 21 leaves the abutment 20 and rotation of the cradle continues with the parts in the relative positions shown in Fig. 6. This produces a relative rotation between the members 33 and 32 in a counterclockwise direction, rotating the shaft 27 in its bearings which, in turn, moves the lever 35, the links 38 and the latch member 37. The latch member 37 is moved in a clockwise direction, as viewed in Fig. 3, causing the tooth 47 to engage in one of the inter-dental spaces in the rack 48. The pawl tooth 47 is maintained in engagement with the rack 48 by the spring 53 and prevents any relative movement between the platen B and the cradle A as the cradle continues to rotate.

Up until the time the car engages the buffers 17 at the dumping side of the cradle, no relative movement takes place between the lever 22 and the bracket 34; that is, the lever 22 does not move relative to the cradle but, after the car engages the buffers, the cradle and, in turn, the bracket 34 move relative to the fixed abutment 20 in a clockwise direction, as viewed in Figs. 3, 5 and 6.

Shortly after the car D moves into engagement with the buffers 17 at the dumping side of the cradle, the car clamps located at opposite sides of the car and designated generally as 57, 58 are lowered into engagement with the top of the car by a gravity-operated mechanism including weighted levers 59, 60 and locked in position by gravity-operated pawl mechanisms, designated generally by the reference characters 61, 62, which cooperate with rack teeth formed on the clamps proper in a manner similar to that disclosed in the above-mentioned Crist patent. After the contents of the car is dumped and as the cradle is returned to its normal position, the car clamps 57, 58 are automatically unlocked and raised by engagement of the gravity-actuated levers 59, 60 with rollers 63, 64 carried by a fixed member 65 located underneath the cradle.

As the cradle A approaches its normal position, the roller 21 re-engages the abutment 20, rotating lever 22 relative to the cradle in a clockwise direction, as viewed in Figs. 1, 3, 5 and

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6, and the latch member 37 in a counterclockwise direction to disengage the pawl tooth 47 from the rack 48. Further rotation of the cradle subsequent to disengagement of the tooth 47 from the rack 48 re-engages the abutting members 32, 33 whereupon continued movement of the cradle A restores the platen to its position in the center of the cradle and re-aligns the rails 12 with the stationary rails 18 at the ends of the cradle. The car which has been dumped can then be removed and replaced by a new car and the cycle of operations repeated.

In the embodiment shown, a pair of guide plates 66, 67 fixed to and forming a part of the lower end of the lever 34, the front ends of which plates project to the right of the abutment member 33, as viewed in Figs. 1, 3, 4 and 6, assist in aligning the abutment members 32, 33 or maintaining them in alignment as the cradle is operated.

From the foregoing, it will be apparent that the objects of the invention heretofore enumerated and others have been accomplished and that a simple, inexpensive and positive power-operated latch means have been provided for preventing movement of the platen relative to the cradle in a direction toward the dumping side after the car to be dumped has engaged the buffers at the dumping side of the cradle.

While the preferred embodiment of the invention has been described in considerable detail, the invention is not limited to the particular construction shown and it is my intention to cover hereby all adaptations, modifications and uses thereof which come within the practice of those skilled in the art to which the invention relates.

Having thus described my invention, I claim:

1. In a rotary car dumper, a cradle member having a dumping side and supported for rotation about a generally horizontal axis, a platen member adapted to receive a car to be dumped, means for supporting said platen member in said cradle member for movement toward and from the dumping side thereof, and positive operated latch means controlled by the rotation of said cradle member for locking said platen member in said cradle member against movement in a direction toward the dumping side thereof.

2. In a rotary car dumper, a cradle member supported for rotation about a generally horizontal axis, a platen member adapted to receive a car to be dumped, means for supporting said platen member in said cradle member for movement transversely of the axis of rotation of said

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cradle member, a latch member carried by one of said cradle and platen members, a keeper member carried by the other of said cradle and platen members, and positive means controlled by the rotation of said cradle for engaging and disengaging said latch member with said keeper member.

3. In a rotary car dumper, a cradle member supported for rotation about a generally horizontal axis, a platen member adapted to receive a car to be dumped, means for supporting said platen member in said cradle member for movement transversely of the axis of rotation of said cradle member, a latch member carried by said platen member, a keeper member carried by said cradle member, and positive operated means controlled by the rotation of said cradle member for engaging and disengaging said latch member with said keeper member.

4. In a rotary car dumper, a cradle member supported for rotation about a generally horizontal axis, a platen member adapted to receive a car to be dumped, means for supporting said platen member in said cradle member for movement toward and from one side of said cradle member, a latch member carried by said platen member, a keeper member carried by said cradle member, spring means for continuously urging said latch member in a direction to engage within said keeper member, and means controlled by the rotation of said cradle member for disengaging said latch member from said keeper member.

5. In a rotary car dumper, a cradle member supported for rotation about a generally horizontal axis, a platen member adapted to receive a car to be dumped, means for supporting said platen member in said cradle member for movement transversely of the axis of rotation of said cradle member, a pawl member carried by said platen member, a rack member carried by said cradle member, spring means for continuously urging said pawl member in a direction to engage said rack, and means controlled by the rotation of said cradle member for disengaging said pawl member from said rack member.

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REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Country	Date
55 178,949	Great Britain	Apr. 27, 1922