

May 1, 1923.

C. B. ANFINDSEN

1,453,331

KICK-BACK CAR DUMP

Filed Nov. 9, 1921

3 Sheets-Sheet 1

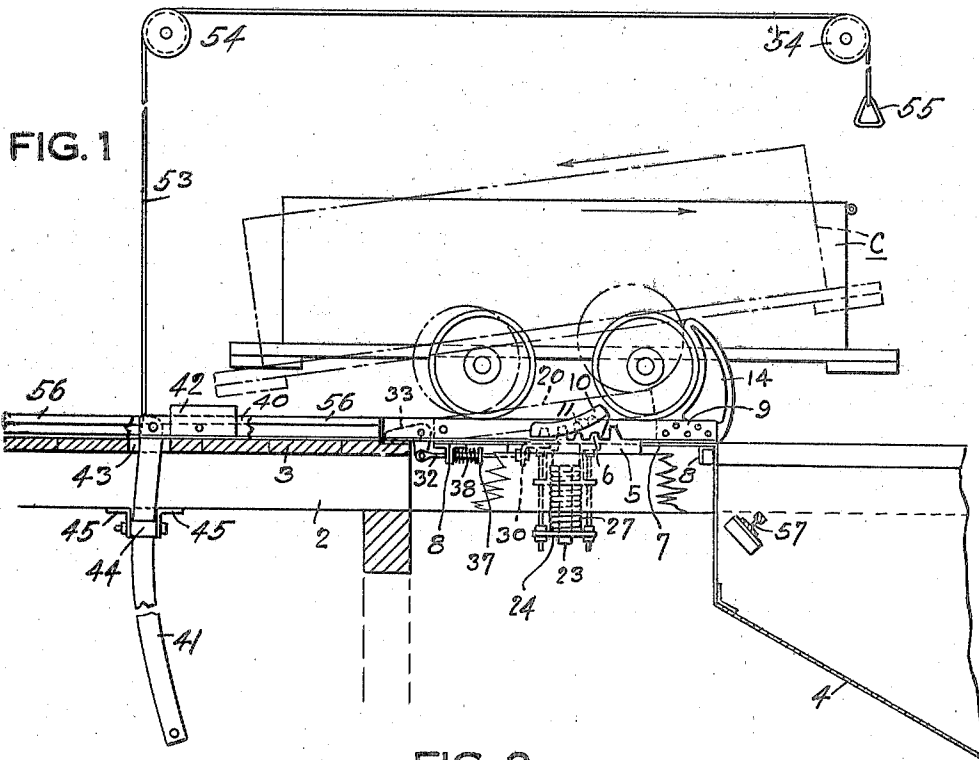
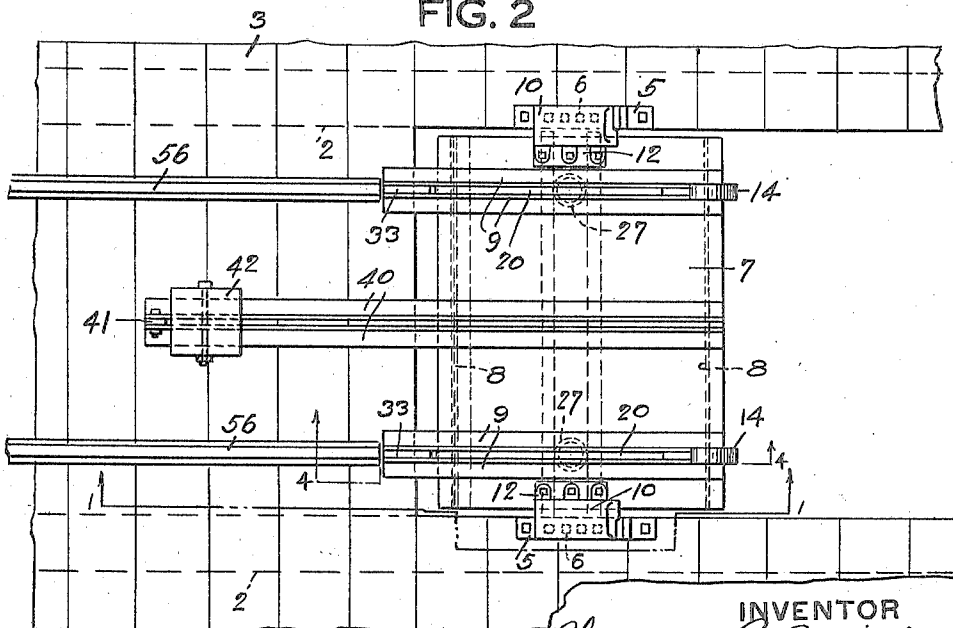


FIG. 2



INVENTOR
Christian B. Aufinsdson
By Kay, Jotten & Brown.
Attorneys

May 1, 1923.

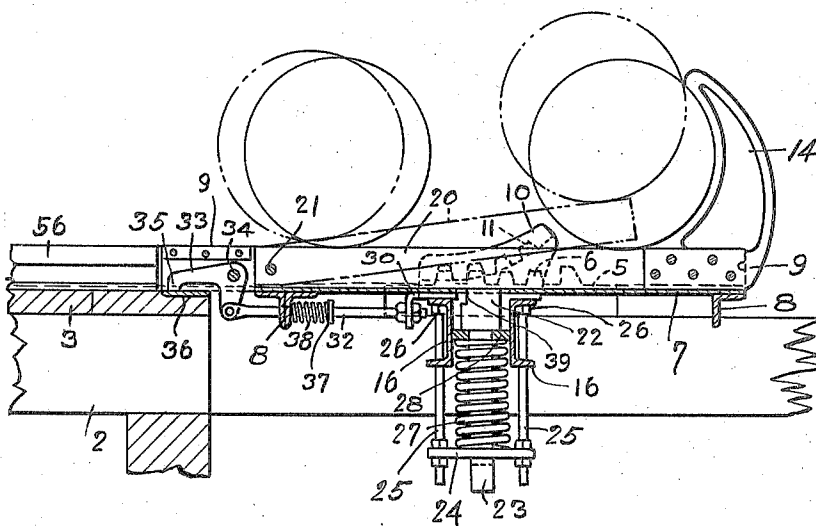
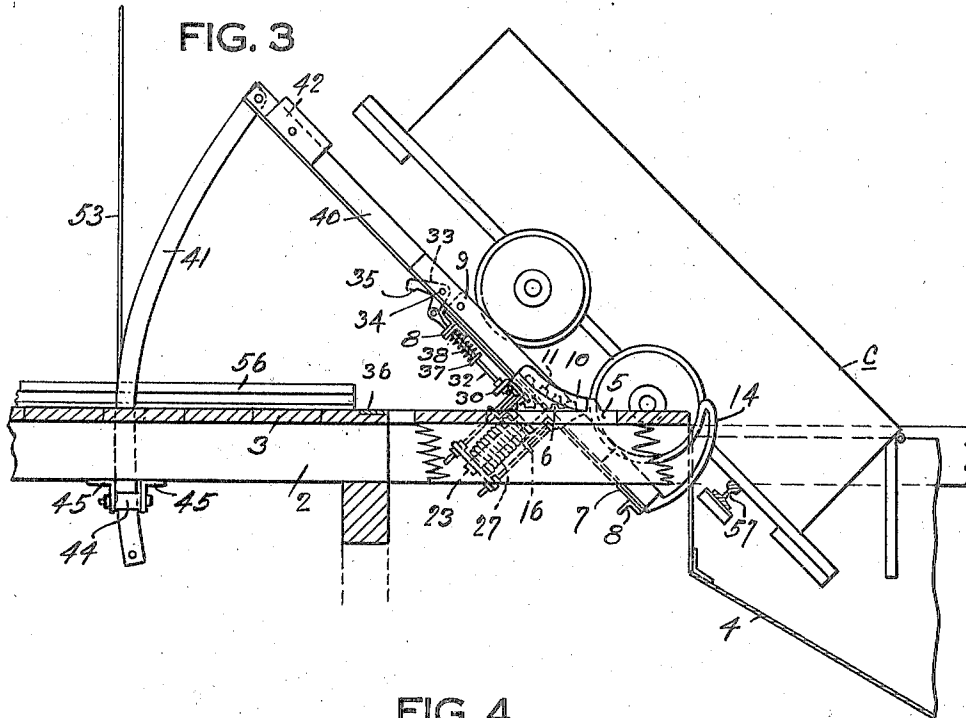
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INVENTOR
 Christian B. Anfinsen
 By Ray, J. J. Brown,
 Attorneys

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3 Sheets-Sheet 3

FIG. 5

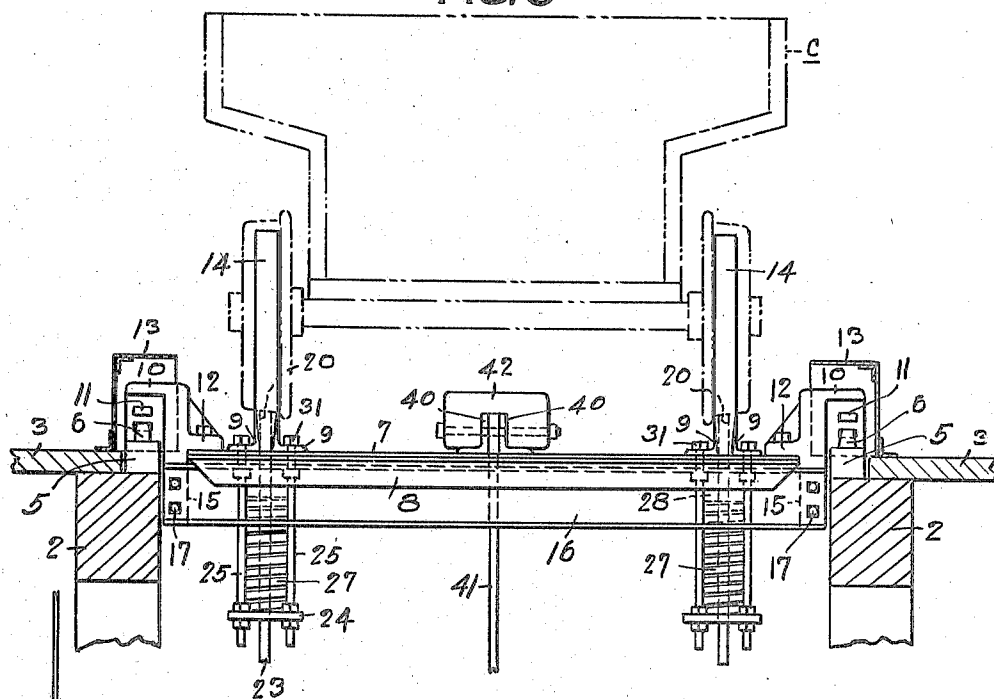
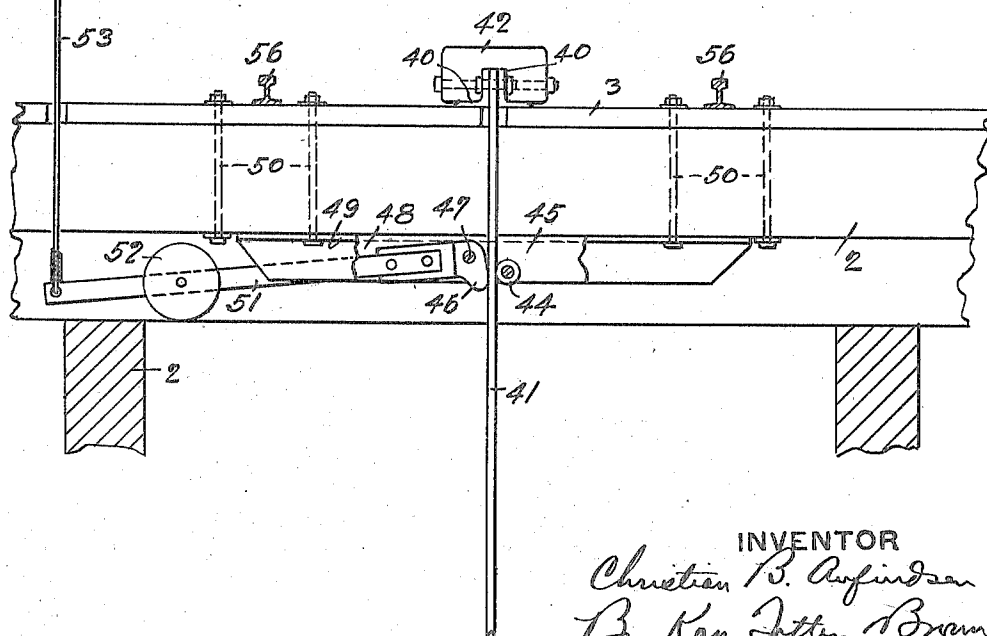


FIG. 6



INVENTOR

Christian B. Anfinsen
By Kay, Jetter & Brown
Attorneys

UNITED STATES PATENT OFFICE.

CHRISTIAN B. ANFINDSEN, OF CHARLEROI, PENNSYLVANIA.

KICK-BACK CAR DUMP.

Application filed November 9, 1921. Serial No. 514,010.

To all whom it may concern:

Be it known that I, CHRISTIAN B. ANFINDSEN, a subject of the King of Norway, a resident of Charleroi, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Kick-Back Car Dumps; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to car dumping apparatus of the type in which a loaded car is run upon a dump which is tilted to empty the car and from which the car is then removed in the opposite direction from that in which it comes upon the dump.

The object of my invention is to provide a simple, rugged and effective device of the character indicated which shall be provided with means for receiving a car and stopping it without shock, and also without the use of shock-absorbing horns such as are now commonly employed for this purpose, and which shall also have effective means for giving the empty car an impulse or kick in its reverse or outgoing direction.

More specifically, my object is to provide a car dump of the class indicated which, in addition to the usual tracks for supporting the car, shall have a pair of pivoted auxiliary tracks so arranged as to receive the car and check its advance movement, these inclined tracks being provided with springs which assist in checking the movement of the loaded car and also operate to raise the pivoted tracks and give the empty car its return impulse.

The accompanying drawing shows the manner in which I now prefer to construct my improved car dump, it being understood, however, that various changes may be made without departing from my invention. Fig. 1 of the drawing is a side elevational view, with parts in section, of the complete apparatus; Fig. 2 is a plan view of the construction shown in Fig. 1; Fig. 3 is a side elevational view similar to Fig. 1 showing the apparatus in dumping position; Fig. 4 is a longitudinal vertical sectional view of the dump, the section being taken substantially on the line 4-4; Fig. 5 is a front elevational view; and Fig. 6 is a rear elevational view showing the braking mechanism.

In the drawing, the numeral 2 indicates the sills, and the numeral 3 the flooring, of a dumping platform adjacent to which is a

hopper 4 for receiving coal or other material from the dump. An opening in the flooring is provided between two of the sills 2 and upon these sills are supported racks 5 having teeth 6. The racks 5 act as supports for a tilting dump consisting of a floor plate 7 strengthened by transverse angle beams 8 and carrying parallel tracks composed of angle beams 9 which are bolted in pairs upon the floor plate 7, as shown in Fig. 5.

The dump is supported from the racks 5 by means of curved shoe-castings or rockers 10 having openings 11 corresponding to the teeth 6 in the bar 5 and also having flanges 12 which are bolted to the opposite edges of the floor plate 7. The toothed engagement between the rack teeth 6 and the openings 11 permits the dump structure to tilt without the use of a supporting shaft such as is commonly employed in tilting dumps. Safety guards 13 are preferably placed around the rockers 10, as shown on Fig. 5.

Curved horns 14 are bolted between the forward ends of the track beams 9 for the purpose of limiting the forward movement of the cars which come upon the dump. These horns are not made yielding as is usually the case in dumps of this kind, but are rigid with the floor plate and tracks, the shock of the cars being absorbed by other means which will presently be described.

The rockers 10 have downward projections 15 which extend below the floor plate 7, as shown in Fig. 1, and two channel bars 16 extend across and beneath the floor plate 7 and are attached at their ends by means of bolts 17 to the projections 15. It will be observed that the channel bars 16 are spaced somewhat below the floor plate 17, and that they are supported by the rockers independently of the floor plate.

Between each pair of angle bars 9, which, as stated above, form the tracks on which the cars are received on the dump, is a track member or plate 20, pivoted at its end farthest removed from the horn 15 on a bolt 21 which also extends through the track angles 9. Each of the track plates 20 rests upon the upper end of a plunger 22 carried at the upper end of a rod 23 which extends through an opening in a plate 24 suspended from bolts 25 that extend through openings in the bottom flanges of the channel bars 16 and are provided at their upper ends with nuts 26 which bear against the under-

side of the upper flanges of the channels 16. A spring 27 is compressed between the plate 24 and a smaller plate 28 below the plunger 22.

5 It will be seen that these spring devices are both supported and guided by the channel plates 16 and that they tend to press the pivoted track members 20 into their upper or inclined position. The pressing of
10 the springs 27 may be adjusted by means of the nuts on the bolts 25. The springs 27 are made strong enough to support the weight of an empty car but not strong enough to support the weight of a loaded
15 car. Therefore, when the loaded car runs upon the dump the pivoted track members 20 are depressed by the weight of the car against the compression of the springs 27, and the forward movement of the car is
20 thus checked. When the car is emptied, the springs 27 can raise the track members 20 to their inclined position, which gives the empty car a kick in the return direction, this kick resulting both from inclination of the
25 track members and from the shape of the horns 14, the upper ends of which are curved backward far enough to cause the forward wheels of the cars to be squeezed past them and moved toward the rear as the pivoted
30 track members are raised.

For the purpose of locking the pivoted track members 2 in their down position so as to prevent the springs 27 from raising the empty car before the dump is returned to its
35 level position, I provide latches adjacent to both of the plungers 22. These latches, as best shown in Fig. 4, consist of L-shaped plates 30 resting slidably on the upper surface of one of the channel bars 16 and confined against lateral movement by the bolts
40 31 which extend through the flanges of the track angles 9, the floor plate and the upper flanges of the channel 16. Each of the latch plates 30 is attached to one end of a rod 32 which extends through openings in the stiffening angles 8 and is pivoted at its rear end
45 to a bell crank lever 33 that is pivoted at 34 between the track angles 9 and has a hammer 35 adapted to engage a plate 36 secured in the floor 3. A collar 37 is carried by each rod 32 and a spring 38 surrounds the rod 32 between the collar 37 and the angles 8.

The spring 38 forces the inner end of the latch plate 30 into a notch 39 in the plunger
55 22 whenever a loaded car comes upon the dump and depresses the track member 20 so as to bring the notch 39 into line with the latch 30.

As soon as the dump begins to tilt and
60 raises the hammer 35 of the bell crank 33 of the plate 36, the spring 38 forces the latch 30 into the notch 39 where it remains until the dump is rocked back to its starting position, at which time the hammer 35
65 of the bell crank 33 strikes the plate 36 and

rocks the bell crank on its pivot 34, thereby drawing the rod 32 to the left, Fig. 4, and so withdrawing the latch 32 from the notch 39. The spring 27 is then free to raise the plunger 22 and tilt the track 20.

The floor plate 7 of the dump also carries two angle bars 40 which extend parallel to and midway between the tracks 9. These angle bars extend beyond the rear end of the floor plate 7 and serve to suspend a
75 curved sword 41, the upper end of which is bolted between the ends of the angles 40. A counterweight 42 is adjustably mounted on the angles 40 and assists in returning the dump to its level starting position after each
80 car is dumped.

The sword 41 extends through an opening 43 in the floor 3 and is engaged by a braking device, best shown on Figs. 1 and 6. This braking device consists of a roller 44
85 which is loosely mounted in brackets 45 secured beneath one of the beams 2, and a brake shoe 46 which engages the sword 41 opposite to the roller 44, and is pivoted at 47 to a plate 48 having a flange 49 that is
90 secured beneath one of the beams 2 by means of bolts 50. An arm 51 is secured to the brake shoe 46 and carries an adjustable weight 52. An operating rope 53 has one end attached to the outer end of the arm 51
95 and extends up and over pulleys 54 to a handle 55 which is in convenient position to be grasped by the operator.

Ordinary rails 56 are shown in line with the tracks 9 to represent the tracks on which
100 the loaded cars are brought to the dump. A section of rail 57 extends across the hopper 4 and serves as a stop to limit the tilting movement of the cars.

The dump starts its operation in the level
105 position shown in Fig. 1 with the pivoted tracks 20 in their upwardly inclined position. A car C is run upon the dump from the left of Fig. 1, and as it rides up on the inclined pivoted tracks 20 its forward
110 momentum is checked. At the same time the tracks 20 yield under the weight of the loaded car, compressing the springs 27. The inclination of the pivoted tracks 20 and the strength of the springs 27 are so proportioned with respect to the normal speed at
115 which the cars are delivered to the dump that the forward movement of the car has nearly ceased when the wheels of the car engage the horns 14. When the car is in this
120 position, as shown in full lines on Fig. 1, the operator grasps the handle 55 and pulls on the rope 53, which releases the brake shoe 56 from the sword 41 and permits the dump and the car to rock forward on the rockers
125 10, the weight of the dump being so distributed that the center of gravity is at this time on the right of the rocker 10, as seen in Fig. 1. The dump and the car then rock to the position shown in Fig. 3, the operator
130

manipulating the brake so as to avoid shock as far as possible, and the movement of the car being limited by the stop rail 57. The car, which is of the open-end type, discharges its load into the hopper 4, and the dump immediately returns from the tilted position of Fig. 3 to the horizontal position of Fig. 1, being assisted in so doing by the counter-weight 42.

As soon as the car begins to rock to the dumping position, the latches 30 enter the notches 39 in the plunger 22 in the manner described above, and hold the plungers in their downward or retracted position. When the dump returns to its horizontal position the bell cranks 33 withdraw the latches 30 from the notches 39 and the springs 27 which, as stated, are strong enough to raise the empty car, immediately lift the pivoted tracks 20 to their inclined position. This at once causes the car to be moved to the rear, because the forward wheels of the car are beneath the overhanging ends of the horns 14 and the upward movement of the tracks 20 causes the horns to exert a wedging effect on the wheels which gives the car a backward kick. When the rails 20 rise to their inclined position the car is on a down-hill track and at once rolls from the dump, which is then ready to receive another loaded car, and the operation is repeated as described above.

The details of construction which I have shown and described produce a rugged and satisfactory car dump, but such details may of course be varied in many respects, and I therefore wish it to be understood that my invention is not restricted to this specific construction but is limited only by the scope of the appended claims.

I claim as my invention:

1. Car-dumping apparatus of the kick-back type comprising a support, tracks carried by the said support, means for causing the said support to be tilted to car-dumping position, auxiliary tracks also carried by the said support and means for resiliently maintaining the said auxiliary tracks inclined upwardly in the direction of movement of the cars coming upon the said support.

2. Car-dumping apparatus of the kick-back type comprising a tiltable support, movable tracks carried by the said support, and means for resiliently holding the said tracks in an inclined position and for permitting the said tracks to be depressed by the weight of a loaded car.

3. Car-dumping apparatus of the kick-back type comprising a tiltable support, tracks carried by the said support, each of the said tracks having one end pivoted on said support and having its other end inclined upwardly in the direction of movement of a car coming on the said support,

plungers for supporting the said movable tracks, and springs tending to force the said tracks into their inclined position while permitting the said movable tracks to be depressed by the weight of a loaded car.

4. Car-dumping apparatus of the kick-back type comprising a tiltable support, tracks carried by the said support, each of the said tracks having one end pivoted on said support and having its other end inclined upwardly in the direction of movement of a car coming on the said support, plungers for supporting the said movable tracks, and springs tending to force the said plungers to raise the said tracks to their inclined position, said springs being of adjustable strength, permitting the said tracks to be depressed by the weight of a loaded car but raise the said tracks with the weight of an empty car.

5. Car-dumping apparatus of the kick-back type comprising a support, fixed tracks carried thereby, each of said fixed tracks being composed of a pair of spaced angle bars, auxiliary tracks each having one end pivoted between one of the said pairs of angle bars, and resiliently supported in position inclined upward in the direction of movement of a car coming upon said support, and fixed horns disposed at the ends of the said fixed tracks, the movement of the cars coming upon the said support being checked and cushioned by the said pivoted tracks.

6. Car-dumping apparatus of the kick-back type comprising a tiltable support, fixed tracks carried thereby, auxiliary movable tracks each having one end pivoted to one of the said fixed tracks and having its other end resiliently supported in a position inclined upwardly so as to provide a resilient ascent for the incoming car, plungers for supporting the said inclined tracks, springs supporting the said plungers, latches for locking the said plungers in their depressed position while the said support is tilted to car-dumping position and returned to upright position, and means for releasing the said latches when the said dump reaches its upright position.

7. Car-dumping apparatus of the kick-back type comprising a tiltable support fixed tracks carried thereby, horns at the ends of the said tracks for limiting the movement of the cars on the said tracks, means for causing the said support to tilt to car-emptying position, and for thereupon returning the said support to its starting position, and means operable when the said dump returns to its starting position to apply a backward impulse to the empty car, the said impulse means comprising auxiliary tracks having their rear ends pivoted adjacent to the said fixed tracks and having their forward ends adjacent to the said horns and supported on springs strong

enough to raise the said tracks with the weight of the said empty car, but not strong enough to support the weight of a loaded car.

5. 8. Car-dumping apparatus comprising a tiltable support, fixed tracks carried thereon, a counterweight also carried by the said support, fixed horns at the forward ends of the said tracks and having backwardly curved wheel-engaging tips, auxiliary tracks having their rear ends pivoted adjacent to the said fixed tracks and having their forward ends adjacent to the said horns and supported on movable plungers, springs supporting the said plungers and of such strength that the said auxiliary tracks may yield under the weight of a loaded car but are raised with the weight of an empty car, latches for locking the said plungers in their depressed position while the said support is tilting, means for causing the said support to tilt to car-emptying position and thereafter to return to its starting position, a brake for regulating the tilting movement
- 25 of the said support, and means for releasing the said latches when the said support reaches its starting position, thereby permitting the said springs to act through the said plungers to raise the said pivoted tracks
- 30 and impel the empty car to the rear by forming an inclined track, and also by wedging the forward wheels of the said car past the tips of the said horns.

- 35 9. Car-dumping apparatus comprising a tiltable support composed of a floor plate, stiffening bars beneath the said floor plate, curved rockers secured to opposite edges of

the said floor plate and having portions depending beneath the said plate, stationary racks supporting the said rockers, transverse channels having their ends bolted to the said depending portions of the said rockers, fixed tracks carried by the said floor plate and each composed of two angle bars placed back to back and spaced from each other, auxiliary tracks having their rear ends pivoted between the bars composing the said fixed tracks and having their forward ends supported on movable plungers extending through the said floor plate, springs for supporting the said plungers, means for suspending the springs from the said transverse channel bars, a bar extending between the said tracks and beyond the said floor plate, a counterweight carried by the said bar, braking means associated with the said sword, fixed horns disposed at the forward ends of the said fixed tracks, latches adapted to engage notches in the said plungers, springs for forcing the said latches into the said notches, and means for withdrawing the said latches from the said notches when the said support returns from its car emptying position to its starting position.

In testimony whereof, I the said CHRISTAIN B. ANFINDSEN have hereunto set my hand.

CHRISTAIN B. ANFINDSEN.

Witnesses:

EDITH K. FREESE,
JOHN F. WILL.