C. A. GRIFFITH.

MINE CAR DUMPING APPARATUS.

APPLICATION FILED MAY 17, 1909.

982,426. **Patented Jan. 24, 1911.**

4 SHEETS—SHEET 1.

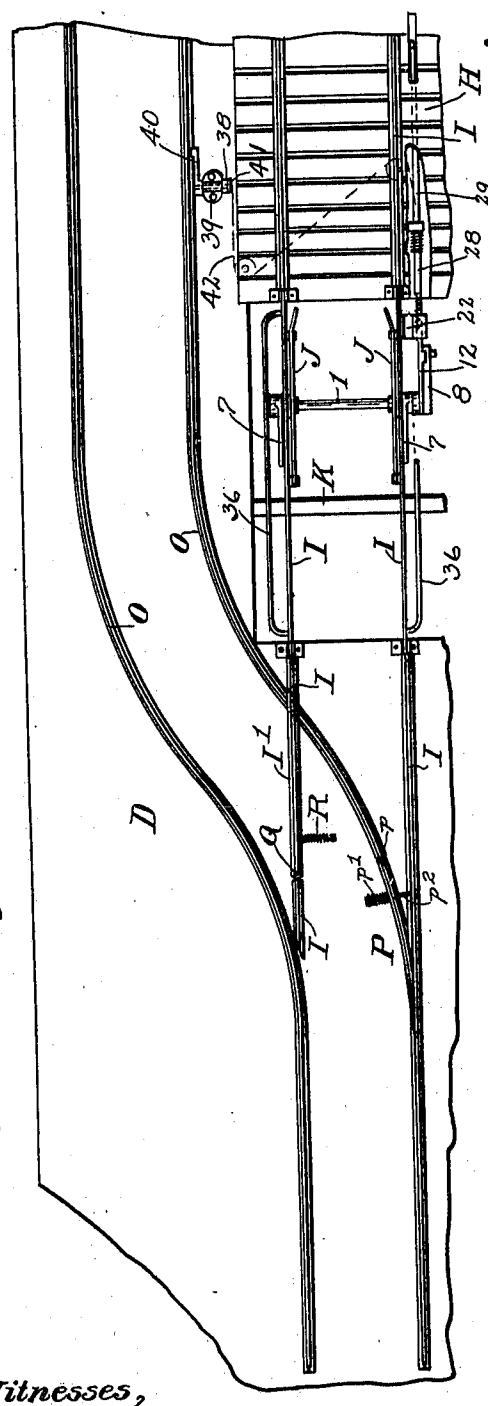


Fig. 1.

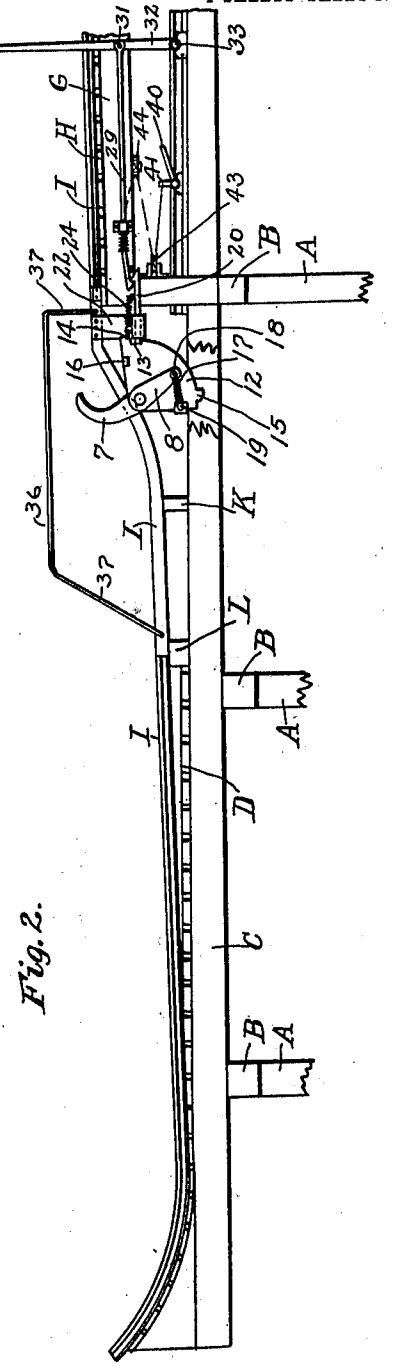


Fig. 2.

Witnesses,
Carrie R. Ivey
Wm. W. Caley

Inventor,
Charles A. Griffith
By Cyrus K. Hr.
Attorney.

C. A. GRIFFITH.

MINE CAR DUMPING APPARATUS.

APPLICATION FILED MAY 17, 1909.

982,426.

Patented Jan. 24, 1911.

4 SHEETS—SHEET 2.

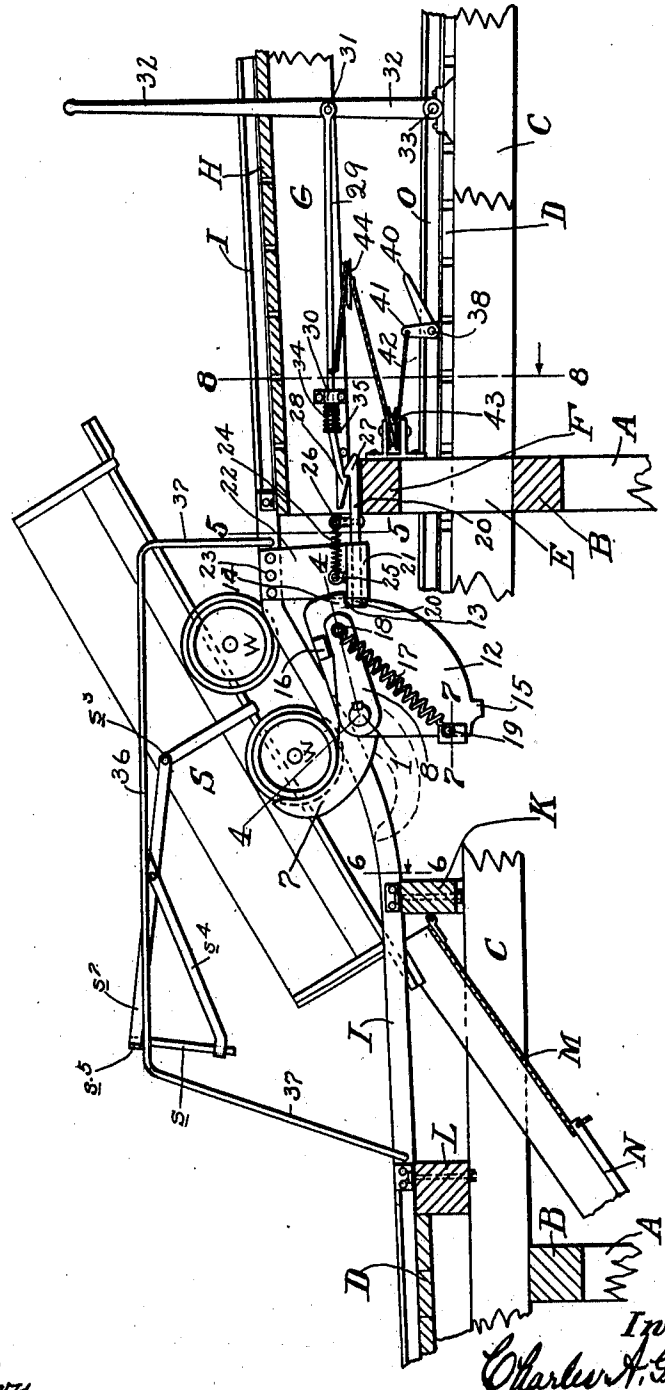


Fig. 3.

Witnesses,
Carrie R. Ivey
Wm. W. Haley

Inventor,
Charles A. Griffith
By Byron Lehr
Attorney.

C. A. GRIFFITH.

MINE CAR DUMPING APPARATUS.

APPLICATION FILED MAY 17, 1909.

982,426.

Patented Jan. 24, 1911.

4 SHEETS—SHEET 3.

Fig. 4.

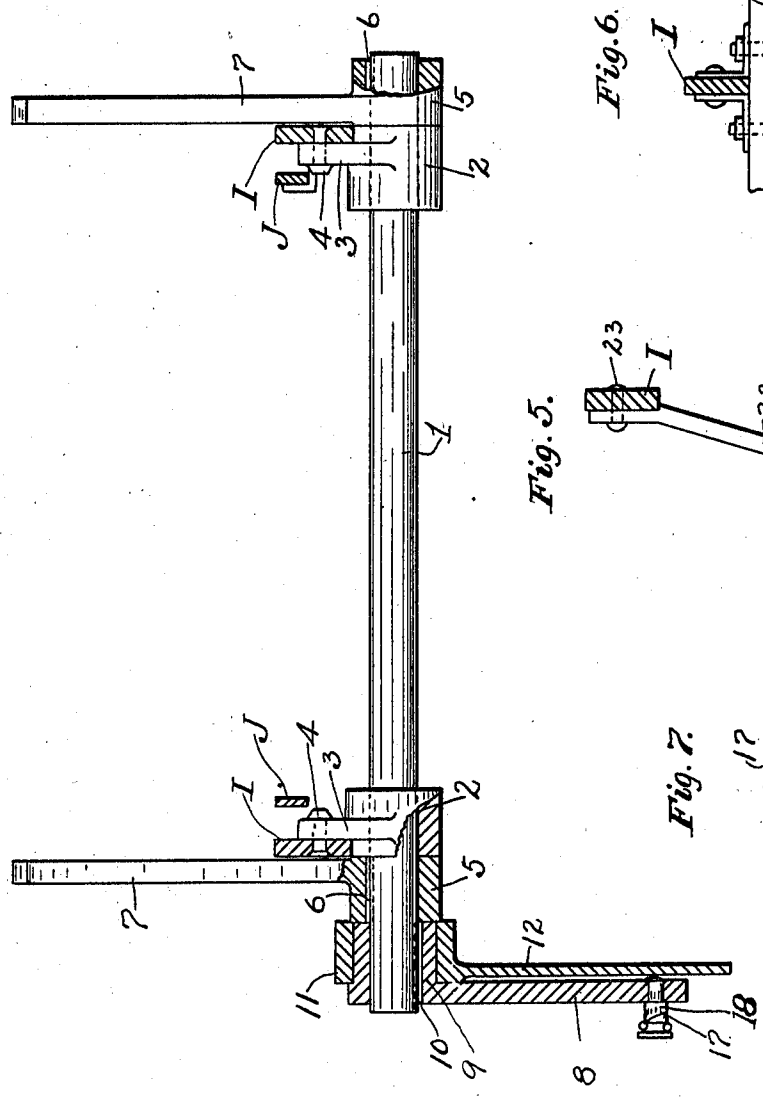


Fig. 6.

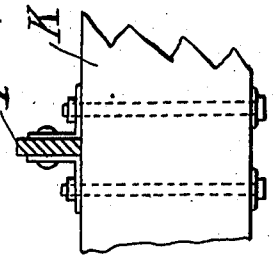


Fig. 5.

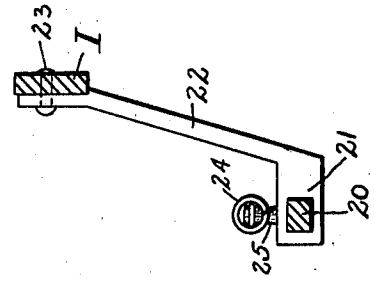
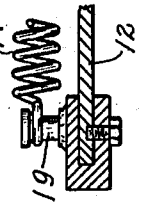


Fig. 7.



Witnesses,
Carrie R. Ivey
Wm. W. Haley.

Inventor,
Charles A. Griffith
By Cyrus Rehr
Attorney.

C. A. GRIFFITH.

MINE CAR DUMPING APPARATUS.

APPLICATION FILED MAY 17, 1909.

982,426. Patented Jan. 24, 1911.

4 SHEETS—SHEET 4.

Fig. 8.

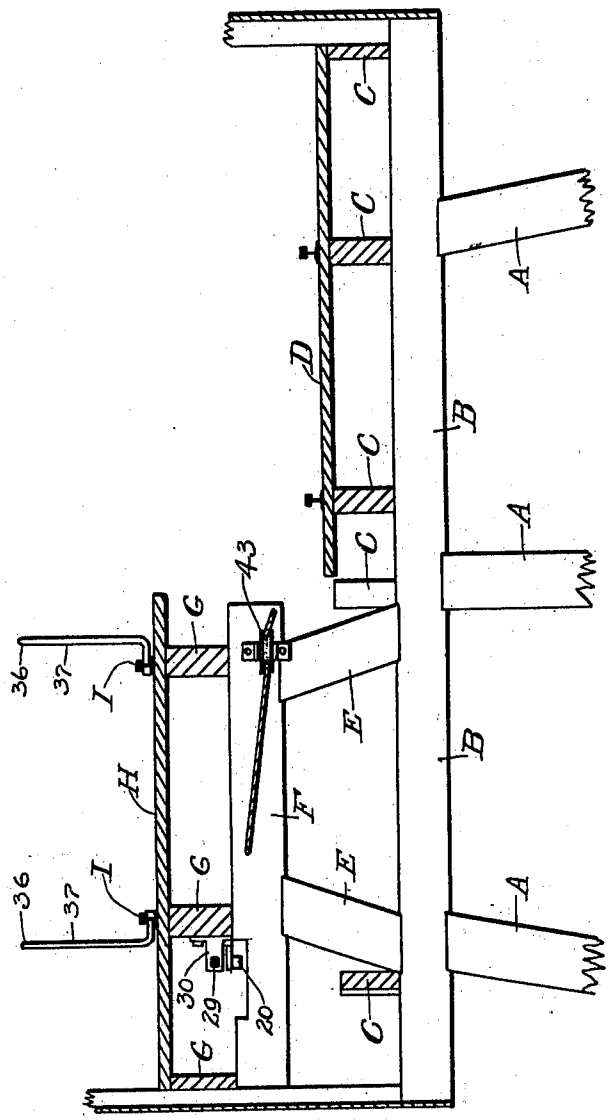
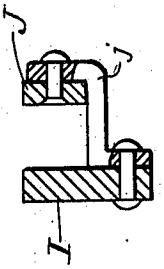


Fig. 9.



Witnesses,
Carrie R. Ivy
Wm Whaley

Inventor,
Charles A. Griffith
By Cyrus Keller
Attorney.

UNITED STATES PATENT OFFICE.

CHARLES A. GRIFFITH, OF PRUDEN, TENNESSEE.

MINE-CAR-DUMPING APPARATUS.

982,426. Specification of Letters Patent. Patented Jan. 24, 1911.

Application filed May 17, 1909. Serial No. 496,560.

To all whom it may concern:

Be it known that I, CHARLES A. GRIFFITH, a citizen of the United States, residing at Pruden, in the county of Claiborne and State of Tennessee, have invented a new and useful Improvement in Mine-Car-Dumping Apparatus, of which the following is a specification, reference being had to the accompanying drawing.

My improvement relates particularly to mine tipples or apparatus applied to a mine railway track for tilting cars endwise for the discharge of their loads while traversing said track.

The object of the improvement is to provide such an apparatus in automatic or semi-automatic form and adapted to rapid operation and simple and durable construction.

In the accompanying drawings, Figure 1 is a plan of an apparatus embodying my improvement; Fig. 2 is an elevation of the same apparatus; Fig. 3 is a larger sectional elevation of the portion of the apparatus shown in the right hand part of Fig. 2; Fig. 4 is a section on the line 4—4 of Fig. 3, showing a transverse shaft and parts thereto attached, the function of which is to engage and hold the car while it is being tilted and thereafter release it and allow it to move forward on the track; Fig. 5 is a detail section of a latch supporting bracket on the line 5—5 of Fig. 3, looking toward the left; Fig. 6 is a section on the line 6—6 of Fig. 3, looking toward the left; Fig. 7 is a horizontal section on the line 7—7 of Fig. 3; Fig. 8 is a section on the line 8—8 of Fig. 3, looking in the direction of the arrow; Fig. 9 is a sectional detail showing the attachment of one of the guard rails to the adjacent main rail.

The movement of filled cars is from right to left.

Any suitable trestle or frame-work may be used for supporting the track at the desired height to make room for dumping plates, screens, etc., below the track. In the form shown in the drawings, the frame-work is wide enough to also support a return track for empty cars.

A, A are posts upon the upper ends of which rest cross beams or caps, B; and on said caps rest longitudinal beams or sills, C. Upon said sills rests platform flooring, D, excepting along the dumping station, (the portion of the main track at which the cars are to be tilted for the discharge of their loads through the spaces between said sills) and along the main track at the right of said dumping station. The posts, A, A, are shortened slightly from the left to the right so as to make the return track supported by the sills, C, decline sufficiently toward the right to cause the empty cars to run thereon toward the right by gravity.

At the right or in front of the dumping station, short posts, E, rise from the caps, B, and transverse caps, F, rest upon said posts. And upon said caps rest longitudinal beams or sills, G. Upon said beams rests flooring, H, which supports the rails, I, I, forming the main track. In order that said track may decline toward the dumping station so as to allow the filled cars to run thereon by gravity toward the dumping station, the short posts, E, are made lower and lower from right to left, and by means of said posts this portion of the track is elevated above the flooring, D, which is at the opposite side of the dumping station, in order that the portion of the track passing the dumping station may be steep.

Near the middle of the dumping station is a cross beam, K, resting upon the longitudinal beams, C, and at the left of the dumping station is a similar cross beam, L, also resting upon the longitudinal beams, C. But the cross beam, K, is preferably a little higher than the cross beam, L, in order that the track rails, I, may descend slightly in going from the cross beam, K, to the cross beam, L. The track rails, I, extend from the platform, H, across the dump opening in the frame at the dumping station to the platform, D, at the left of said opening, and thence along said platform. After leaving the platform, H, said rails are straight for a short distance and then extend downward at a steep grade to meet the cross beam, K, as shown in Fig. 3. This steep portion of said rails between the platform, H, and the cross beam, K, supports the car, S, while the load is being discharged, and such portion of said rails must be of sufficient inclination to allow the contents of the car to slide by gravity out of the forward or left hand end of the car body when the adjacent end board, *s*, has been raised as will be hereinafter described. In the opening between the cross beams, K and

L, and the longitudinal sills, C, is an inclined dumping plate, M, which leads to a screen, N. Inasmuch as such dumping plates and screens have heretofore been used, I deem it unnecessary to here describe them in detail. Along the inner side of such steep portion of each of the rails, I, I, is a guard rail, J, supported from the adjacent rail, I, by brackets, *j*, (see Figs. 1 and 9). The purpose of said guard rails is to prevent the cars from shifting laterally far enough to make the car wheels fail to engage the curved arms, 7, hereinafter described.

Associated with the track formed by the track rails, I, is a return track, O, suitable track switches being located between the dumping station and the left hand end of the main track, as will be described below. And the left hand end of the main track is curved upward, as shown in Fig. 2, to arrest the forward movement of the car coming from the dumping station after allowing the car to rise sufficiently to cause it to run backward and pass the switch and enter upon the return track. The inner rail, O, of the return track extends beneath the adjacent rail, I, of the main track and approaches the other rail, I, of the main track. A switch point, P, extends obliquely toward the left from the end of said rail, O, to said rail of the main track. Said point is hinged at p to the end of the rail, O, of the return track and is pressed against the adjacent rail of the main track by a spring, p^1, on a bolt, p^2. As will be readily understood from the drawings, the wheels of a car while passing toward the left on said main rail will push said point away from said main rail. Immediately at the right of the inner rail, O, the main track rail, I, is cut obliquely, approximately parallel to said rail, O, so that the ends of said cut overlap, and near the other rail, O, said rail, I, is again cut. The section, I^1, of the rail, I, thus freed is hinged at its left hand end by means of an upright bolt or pintle, Q. And a contracting coiled spring, R, located between the two rails, I, I, and fixed by one end to the platform, D, and attached by the other end to said freed section of the adjacent rail, I, draws the right hand end of said freed section yieldingly against the adjacent overlapping rail end. At the left of the hinge formed by the pintle, Q, there is a space between the rail, I, and the outer rail, O, sufficient to permit the passing of the flanges of the car wheels. It will now be understood that when a car stands upon the extreme left hand portion of the rails, I, I, leftward of the switch point, P, and is allowed to move rightward by gravity, the wheels will enter upon the rails, O, O, the wheels on the inner of said rails pushing aside the hinged section, I^1, of the rail, I, which extends across or over the inner rail, O. Thus the two tracks are adapted for the movement of the cars by gravity from the right toward the left, on the main track, and then from the left toward the right on the return track. Tracks providing for such movement of the cars past a dumping or tipple station have heretofore been used.

My improvement is limited to the mechanism by means of which the car is stopped, in the inclined position, and made to discharge its load at the dumping station and then released and allowed to proceed. This car-stopping mechanism comprises one or move movable members having a path extending from a point outside of the car path into said path in the direction opposite the direction of the movement of the cars. In the particular form shown in the drawings, there are two such members consisting of curved arms rigidly mounted on a rock-shaft located below the track rails, or said arms and said shaft may be regarded as together constituting such a stopping member.

The rock-shaft, 1, is located below the rails, I, I, and rests in bearings, 2, secured by ears, 3, and bolts, 4, to said rails. At the outer side of each of said rails a sleeve, 5, surrounds said shaft and is immovably secured thereto by a key, 6; and from each of said sleeves rises a curved arm, 7, rigid with said sleeve, so that said arms can turn only when said shaft turns. The inner portion of said arm is directed toward the right and is of proper size and form to receive the forward portion of the forward wheel of a car moving toward the left on the rails, I, I, after said arms have been turned toward the left. But, in their normal position, said arms are turned far enough to the right to cause their upper ends to bear against the rims of the forward car wheels approximately horizontally opposite the hubs of said wheels, as shown in Fig. 2. The movements of said arms, and the rock shaft, 1, are controlled by means of a segment, an arm, and a spring mounted upon one end of the rock shaft next to the adjacent sleeve, 5. Such arm, 8, is mounted radially on the sleeve, 9, which surrounds the shaft, 1, and is secured immovably thereto by means of a key, 10. Said sleeve, 9, is loosely surrounded by a sleeve, 11, between the arm, 8, and the adjacent sleeve, 5. And said sleeve, 11, supports a rigid quadrant plate, 12, which is parallel to the arm, 8, and has in its periphery a notch, 13, and on its periphery at its upper corner, a stop, 14, and on its periphery at its lower corner, a stop, 15. Above the arm, 8, and on the adjacent face of said quadrant plate is a stop, 16, which limits the upward movement of said arm. A contracting coiled spring, 17, is secured by one end to a wrist, 18, on the arm, 8, and by its other end to a wrist, 19, on the lower corner of the quadrant plate, 12.

When the curved arms, 7, are not engaged by the wheels of a car, the spring, 17, contracts and draws the arm, 8, toward the wrist, 19, whereby the rock shaft is partially rotated and caused to carry the curved arms, 7, toward the right or clockwise, as viewed in Figs. 2 and 3. Said quadrant plate is normally held in the lower right hand quarter of the circle, the position shown in Figs. 2 and 3, by means of a latch bolt, 20, entering said notch, 13. Said latch bolt is held slidably in a horizontal sleeve, 21, supported by a bracket, 22, which bracket extends rigidly downward from the adjacent rail, I, to which it is secured by means of bolts or rivets, 23. A contracting coiled spring, 24, is secured by one end to the bracket, 22, at 25 and by its opposite end to a standard, 26, rising from the latch bolt, 20, at the right of the sleeve, 21. Through such connection, said spring tends to draw said latch bolt toward the left. At its right hand end, said latch bolt has an upturned hook, 27, which engages a similar downturned hook, 28, on an approximately horizontal shift bar, 29. The left hand portion of said bar extends through a stationary sleeve, 30, secured to an adjacent portion of the framing, while the right hand end of said bar is hinged at 31 to the upright lever, 32. The lower end of said lever is hinged at 33 to the frame structure. At the left of the sleeve, 30, an expanding coiled spring, 34, surrounds the shift bar, 29, and bears by its right hand end against said sleeve while its left hand end bears against a cross pin, 35, in said shift rod, whereby said spring is adapted to normally press said shift rod toward the left.

The relative arrangement and dimensions of the latch bolt, shift bar, and springs, 24 and 34, are such as to put the hooks, 27 and 28, into engagement with each other when the lever, 32, is free and the latch bolt rests in the notch, 13.

The operation of this mechanism for holding the car on the steep inclined portion of the track rails, I, I, is as follows: Assuming that the parts are in their normal position—the latch bolt in the notch, 13, of the quadrant plate, 12, whereby said quadrant plate is locked immovably, and the coiled spring, 17, has contracted so as to lean the curved arms, 7, toward the right—a loaded mine car, S, is allowed to run by gravity over the rails, I, I, from the right toward the left until the front wheels, W, of said car bear against the curved arms, 7, and press them leftward, turning the rock shaft, 1, and the arm, 8, in opposition to the spring, 17, the latter being lengthened, until said arm, 8, bears against the stop, 16, on the upper edge of the quadrant plate, whereby said rock shaft and the curved arms, 7, are locked against further movement with reference to said quadrant plate. The latter has already been locked by the latch bolt, 20. Hence the curved arms, 7, stand immovably in the path of the wheels of the car and hold the car immovably at the same inclination as the inclination of the portions of the rails, I, I, upon which the wheels of the car then rest. And in this position the car will remain so long as the quadrant plate remains locked. By now moving the lever, 32, toward the right, the shift bar, 29, draws the latch bolt, 20, toward the right and out of engagement with the quadrant plate, whereby the latter is free to turn upward (contra-clockwise) until the lower stop, 15, on said plate abuts against the latch bolt sleeve, 21. This allows the curved arms, 7, to move leftward and downward until they reach the level of the upper faces of the rails, I, and leave a clear way for the car wheels to move forward on said rails. After said wheels have passed, the spring, 17, again contracts and draws the arm, 8, toward the wrist, 19, on the quadrant plate, whereby the normal relation between said plate and the curved arms, 8, is restored; and at the same time the weight of the quadrant plate, arm, 8, and coiled spring, 17, turns said rock shaft clockwise, said plate, arm, and spring going downward, until the notch, 13, is opposite the latch bolt, whereupon said bolt slips into said notch and again locks said plate. The stop, 14, arrests the downward movement of the quadrant plate when said notch is opposite the latch bolt. At each side of the dumping station is an approximately horizontal and stationary bar, 36, supported on standards, 37, having their lower ends secured to the adjacent rail, I. The function of said bars is to support the forward end gate, s, of the car while the forward end of the car descends, whereby said end of the car is left open for the escape of the contents of the car by gravity. Each end of said end gate is secured to one end of an arm, s^2, while the opposite end of said arm is hinged to the car body at s^3. A brace, s^4, extends from the lower portion of the end gate to the arm, s^2. An ear, s^5 extends laterally from each upper corner of the end gate far enough to extend across the adjacent bar, 36. The relative height of said bars and said ears is such as that when the car comes to said bars from the right, said ears will pass over a rod upon said bars, whereby the end gate is carried horizontally while the car moves downward away from the end gate until the end of the car is open sufficiently for the discharge of its contents. When the car is released from the curved arms, 7, and allowed to move forward, the ears, s^5, slide downward over the left hand standards, 37, until the end gate again rests in position upon the car body. To avoid abrupt falling of the end gate, said standards are inclined toward the right, in order that said ears may

remain in engagement with said standards until the end gate rests upon the car body.

The lever, 32, and the shift bar, 29, constitute manual means for operating the latch bolt, 20. I also provide mechanism for the automatic shifting of the latch bolt by an empty car running toward the right on the return track. A short rock shaft, 38, rests in a horizontal bearing, 39, adjacent and at right angles to the inner rail, O, of the return track. On said rock shaft is a tripping arm, 40, which rises into the path of the car wheels. On the other end of said rock shaft is an upright cord arm, 41, from the free end of which a cord, 42, extends toward the left to and around a guide pulley, 43, and thence diagonally forward and toward the right beneath the main track to and around the guide pulley, 44, to the shift bar, 29, to which it is attached at the lift of said pulley.

When an empty car moves toward the right on the return track, the wheels thereof on the inner rail, O, turn the tripping arm, 40, toward the right, whereby said rock shaft is turned so as to force the cord arm, 41, toward the right. This draws the cord over the guide pulleys, 43 and 44, the end of said cord which is secured to the shift bar going toward the right and drawing said bar in the same direction and causing said bar to operate for the release of the latch bolt, 20, from the quadrant plate, 12, just as is done when the lever, 32, is drawn toward the right by the hand of the attendant. Thus my apparatus is adapted for the release of the emptied car from the car-stopping member manually or automatically. Whether the operation is manual or automatic, it will be observed that it is desirable that the car engaged by the car-stopping member be released only after the last preceding car has passed backward on the switch and entered fully upon the return track so as to leave a clear way for the next car. By placing the tripping arm, 40, adjacent the return track at a proper distance to the right from the switch, the automatic operation can occur only after the empty car is fully upon the return track.

Those features of invention which are herein disclosed but not specifically claimed are covered by a divisional application entitled mine car dumping apparatus, filed December 27th, 1910, Serial No. 599,241.

I claim as my invention:

1. In an apparatus of the nature described, the combination of a stationary, inclined car track, a movable car-stopping member having a path extending from a point outside of the car path into said path in the direction opposite the direction of movement of cars upon said track, yielding means for normally holding said car-stopping member at the upper limit of its path, and means for temporarily stopping said member intermediate the ends of its path.

2. In an apparatus of the nature described, the combination of a stationary, inclined car track, a movable car-stopping member having a path extending from a point outside of the car path into said path in the direction opposite the direction of movement of cars upon said track, a spring for normally holding said car-stopping member at the upper limit of its path, and means for temporarily stopping said member intermediate the ends of its path.

3. In an apparatus of the nature described, the combination of a stationary, inclined car track, a movable car-stopping member having a path extending from a point outside of the car path into said path in the direction opposite the direction of movement of cars upon said track, yielding means for normally holding said car-stopping member at the upper limit of its path, and latch mechanism for temporarily stopping said member intermediate the ends of its path.

4. In an apparatus of the nature described, the combination of a stationary, inclined car track, a movable car-stopping member having a path extending from a point outside of the car path into said path in the direction opposite the direction of movement of cars upon said track, a spring for normally holding said car-stopping member at the upper limit of its path, and latch mechanism for temporarily stopping said member intermediate the ends of its path.

5. In an apparatus of the nature described, the combination of a stationary, inclined car track, a movable car-stopping member having a path extending from a point outside of the car path into said path in the direction opposite the direction of movement of cars upon said track, yielding means for normally holding said car-stopping member at the upper limit of its path, latch mechanism for temporarily stopping said member intermediate the ends of its path, and a spring for moving said latch mechanism into engagement.

6. In an apparatus of the nature described, the combination of a stationary, inclined car track, a movable car-stopping member having a path extending from a point outside of the car path into said path in the direction opposite the direction of movement of cars upon said track, a spring for normally holding said car-stopping member at the upper limit of its path, latch mechanism for temporarily stopping said member intermediate the ends of its path, and a spring for normally moving said latch mechanism into engagement.

7. In an apparatus of the nature described, the combination of a stationary, inclined car track, a movable car-stopping member having a curved path extending

from a point outside of the car path into said path in the direction opposite the direction of movement of cars upon said track, yielding means for normally holding said car-stopping member at the upper limit of its path, and means for temporarily stopping said member intermediate the ends of its path.

8. In an apparatus of the nature described, the combination of a stationary, inclined car track, a movable car-stopping member having a curved path extending from a point outside of the car path into said path in the direction opposite the direction of movement of cars upon said track, a spring for normally holding said car-stopping member at the upper limit of its path, and means for temporarily stopping said member intermediate the ends of its path.

9. In an apparatus of the nature described, the combination of a stationary, inclined car track, a movable car-stopping member having a path extending from a point outside of the car path into said path in the direction opposite the direction of movement of cars upon said track, automatic means for normally moving said car-stopping member to the upper limit of its path and there yieldingly holding said member, and means for temporarily stopping said member intermediate the ends of its path.

10. In an apparatus of the nature described, the combination of a stationary, inclined car track, a shiftable member, means for temporarily locking said shiftable member, a car-stopping member having a path extending from a point outside of the car path into said path in the direction opposite the direction of movement of the cars upon said track, and a spring interposed between said shiftable member and said car-stopping member for drawing the latter in the direction of the approaching car, one of said members being provided with a stop for limiting such movement.

11. In an apparatus of the nature described, the combination of a stationary, inclined car track, a shiftable member, latch mechanism adapted to lock said shiftable member, a car-stopping member having a path extending from a point outside of the car path into said path in the direction opposite the direction of movement of the cars upon said track, and a spring interposed between said shiftable member and said car-stopping member for drawing the latter in the direction of the approaching car, one of said members being provided with a stop for limiting such movement.

12. In an apparatus of the nature described, the combination of a stationary, inclined car track, a car-stopping member comprising a rock shaft and an arm on said shaft extending into the car path, said member having a path extending from a point outside of the car path into said path in the direction opposite the direction of movement of cars upon said track, yielding means for normally holding said arm at the upper limit of its path, and means for temporarily stopping said arm intermediate the ends of its path.

13. In an apparatus of the nature described, the combination of a stationary, inclined car track, a movable car-stopping member having a path extending from a point outside of the car path into said path in the direction opposite the direction of movement of cars upon said track, a turning member hinged to said stopping member, latch mechanism for engaging said turning member, and a spring interposed between said turning member and said stopping member for drawing the latter in the direction of the approaching car, one of said members being provided with a stop for limiting such movement.

14. In an apparatus of the nature described, the combination of a stationary, inclined car track comprising guard rails, a movable car-stopping member having a path extending from a point outside of the car path into said path in the direction opposite the direction of movement of cars upon said track, yielding means for normally holding said car-stopping member at the upper limit of its path, and means for temporarily stopping said member intermediate the ends of its path.

15. In an apparatus of the nature described, the combination with a stationary, inclined car track, of mechanism for first yieldingly resisting and then temporarily stopping a car upon said track, and releasing mechanism adjacent a portion of the track traversed by the emptied cars.

16. In an apparatus of the nature described, the combination of a stationary, inclined car track, a movable car-stopping member having a path extending from a point outside of the car path into said path in the direction opposite the direction of movement of cars upon said track, yielding means for normally holding said car-stopping member at the upper limit of its path, means for temporarily stopping said member intermediate the ends of its path, and automatic means for releasing said member.

17. In an apparatus of the nature described, the combination of a stationary, inclined car track, a movable car-stopping member having a path extending from a point outside of the car path into said path in the direction opposite the direction of movement of cars upon said track, yielding means for normally holding said car-stopping member at the upper limit of its path, latch mechanism for temporarily stopping

said member intermediate the ends of its path, and automatic mechanism for releasing said latch mechanism.

18. In an apparatus of the nature described, the combination of a stationary, inclined car track, a movable car-stopping member having a path extending from a point outside of the car path into said path in the direction opposite the direction of movement of cars upon said track, yielding means for normally holding said car-stopping member at the upper limit of its path, latch mechanism for temporarily stopping said member intermediate the ends of its path, and automatic mechanism in the path of a released emptied car for releasing said latch mechanism.

19. In an apparatus of the nature described, the combination of a stationary, inclined car track, a movable car-stopping member having a path extending from a point outside of the car path into said path in the direction opposite the direction of movement of cars upon said track, yielding means for normally holding said car-stopping member at the upper limit of its path, means for stopping said member intermediate the ends of its path, and automatic and manual means for releasing said car.

20. In an apparatus of the nature described, the combination of a stationary, inclined car track, a movable car-stopping member having a path extending from a point outside of the path of a wheel of the car into said path in the direction opposite the direction of movement of said wheel upon said track, yielding means for normally holding said car-stopping member at the upper limit of its path, and means for temporarily stopping said member intermediate the ends of its path.

In testimony whereof I have signed my name, in presence of two witnesses, this tenth day of May, in the year one thousand nine hundred and nine.

CHARLES A. GRIFFITH.

Witnesses:
C. A. MORSE,
CYRUS KEHR.