G. H. MUELLER.

CAR DUMPING APPARATUS.

APPLICATION FILED JULY 31, 1911.

1,245,947.

Patented Nov. 6, 1917.

4 SHEETS—SHEET 1.

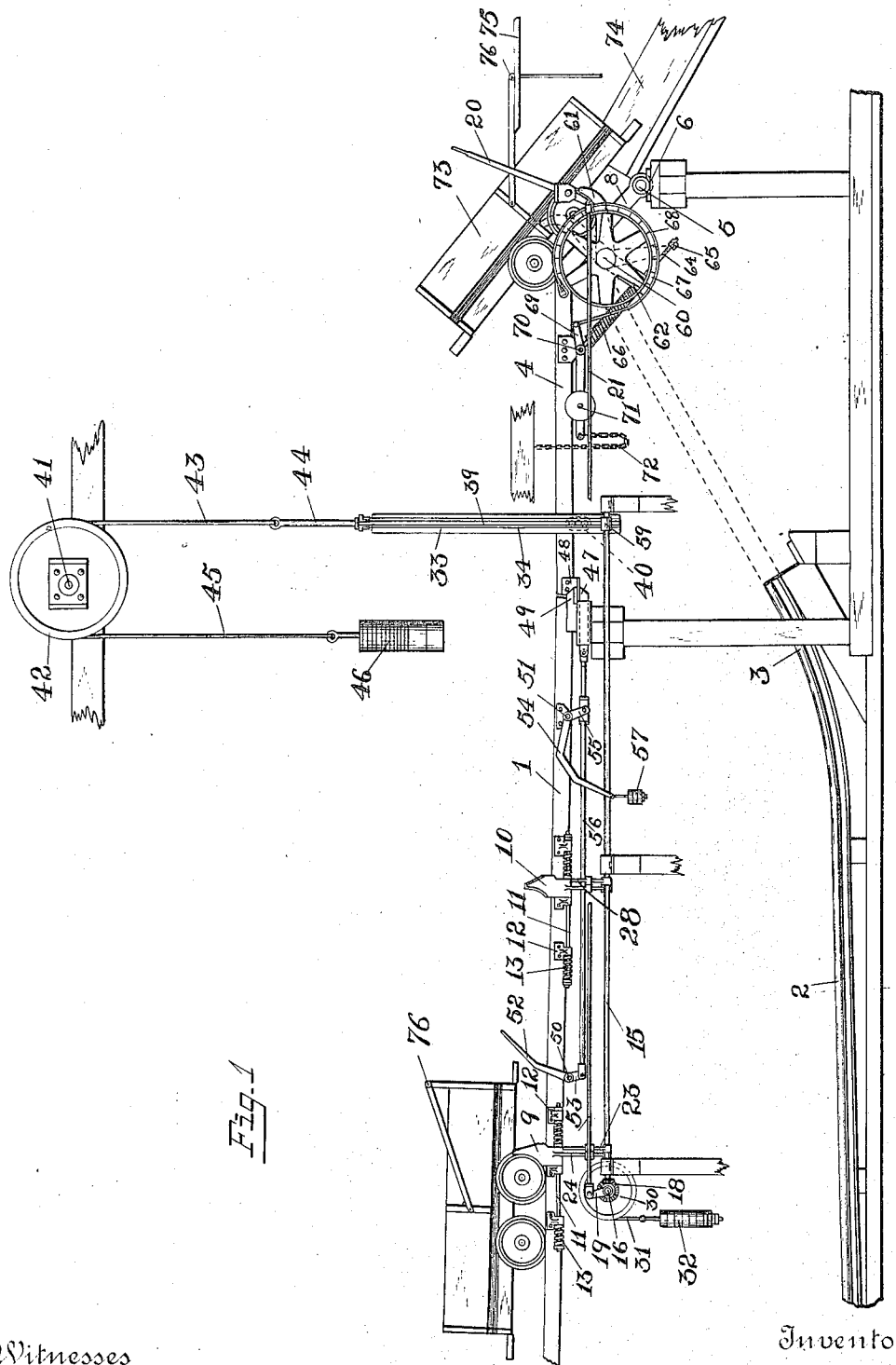


Fig. 1

Witnesses

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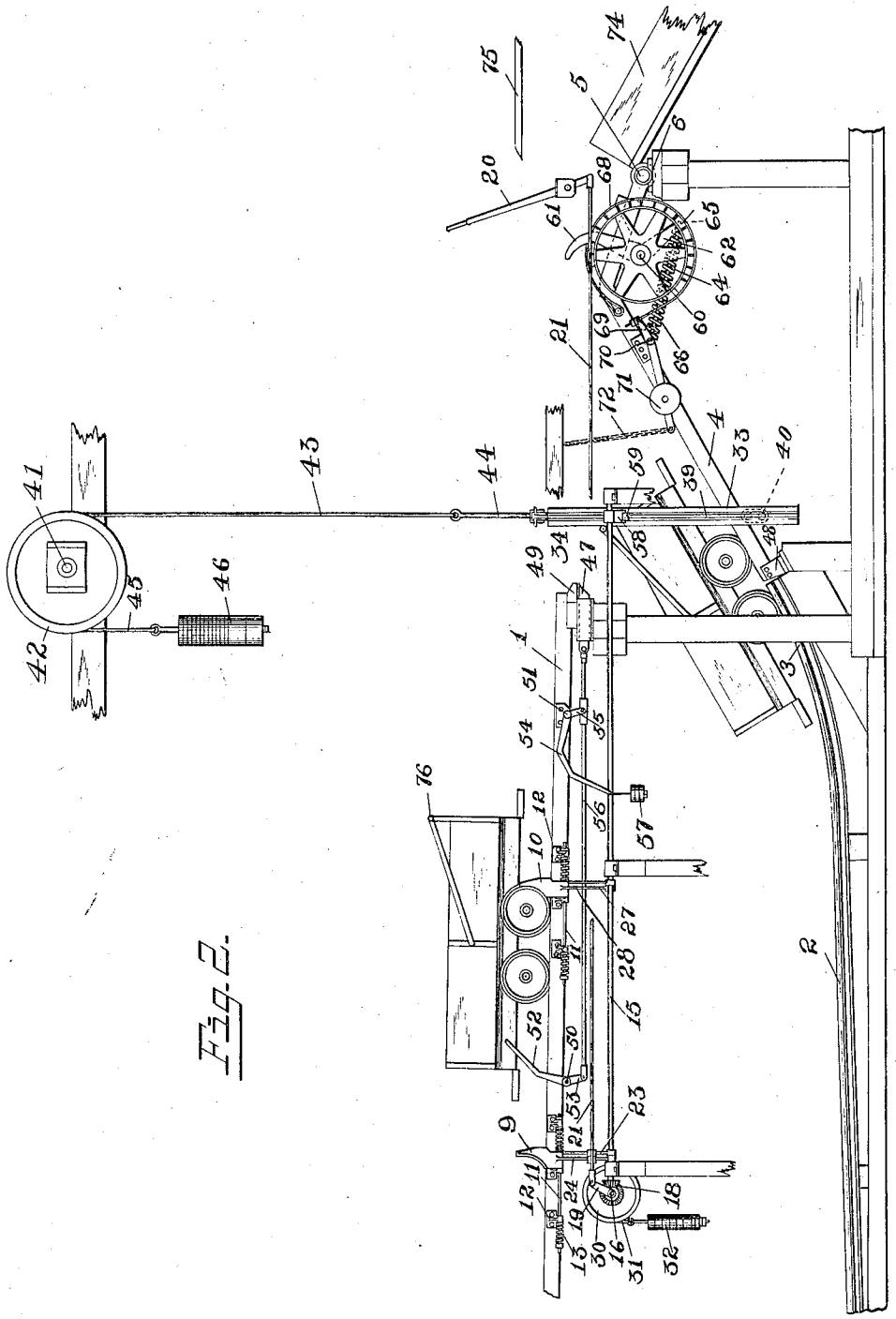


Fig. 2.

WITNESSES

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4 SHEETS—SHEET 3.

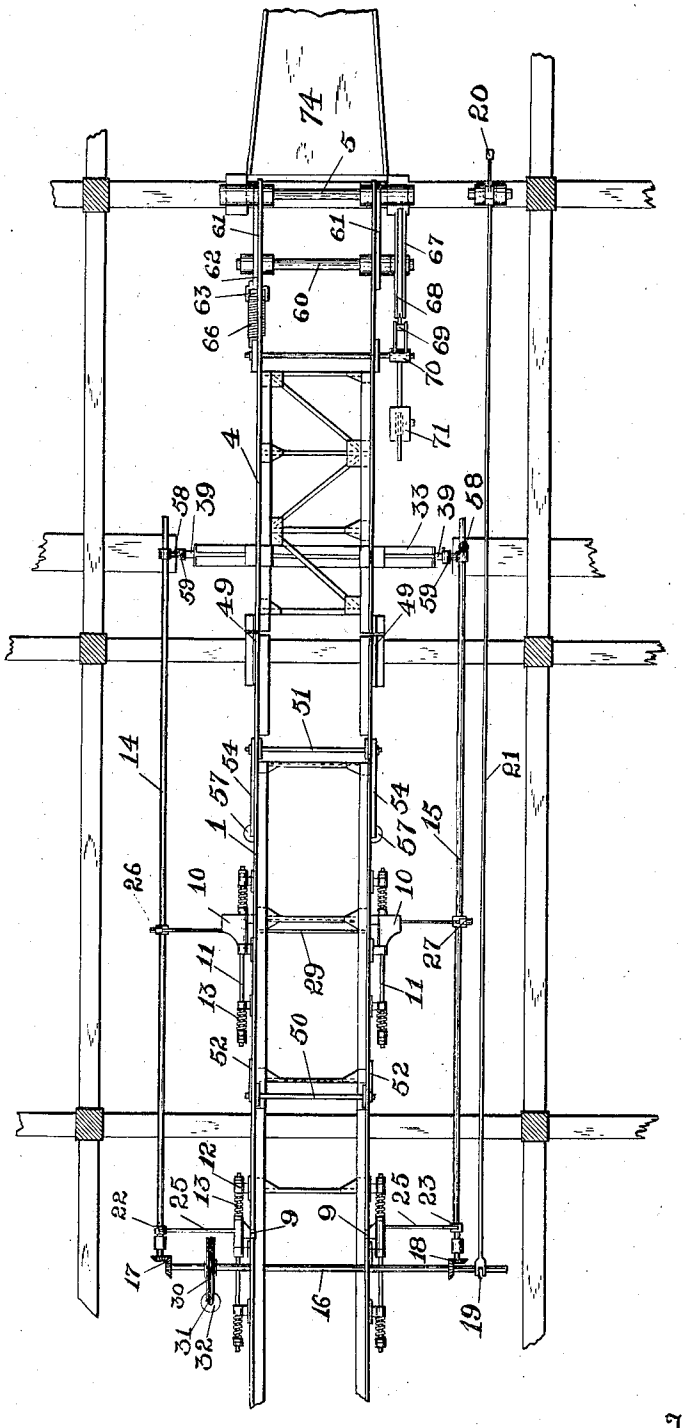


Fig. 2.

Witnesses

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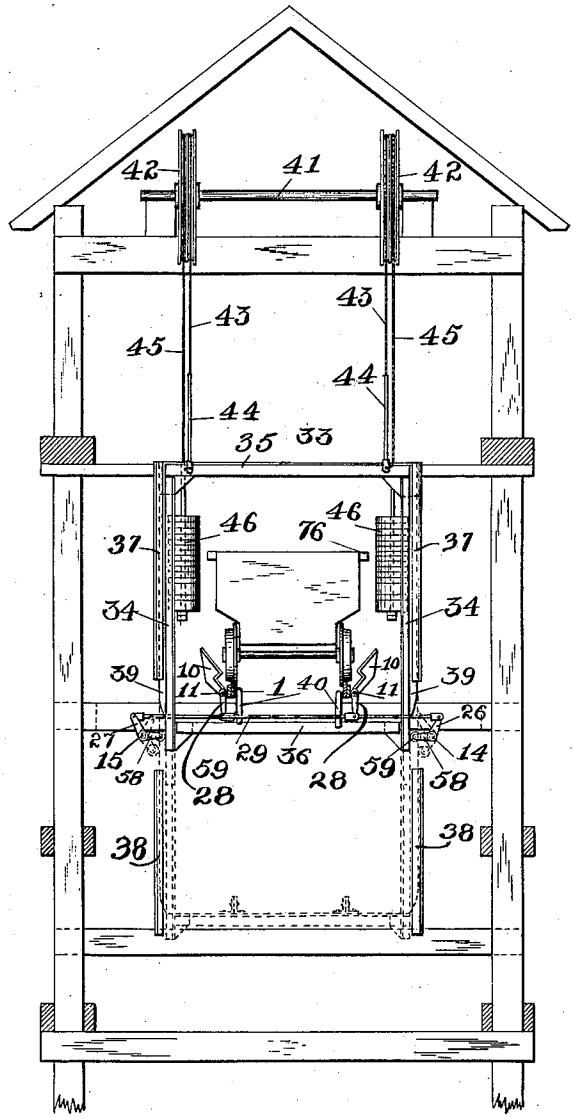
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4 SHEETS—SHEET 4.

Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE HENRY MUELLER, OF COLUMBUS, OHIO, ASSIGNOR TO THE JEFFREY MANUFACTURING COMPANY, A CORPORATION OF OHIO.

CAR-DUMPING APPARATUS.

1,245,947. Specification of Letters Patent. Patented Nov. 6, 1917.

Application filed July 31, 1911. Serial No. 641,524.

To all whom it may concern:

Be it known that I, GEORGE H. MUELLER, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Car-Dumping Apparatus, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to car dumping apparatus of the type in which the car is tilted to an angle such that material within the car will slide out through an opening in the end. More specifically my invention relates to apparatus of the class in which two superposed tracks are provided and in which a car is transferred from one track to the other by means of a shifting track section and dumped while on the shifting track section. The objects of my invention are to provide a car dumping apparatus of this class having improved means for controlling the movement of the car while it is approaching the shifting track section; improved means for controlling the car into and out of dumping position and improved means for actuating and controlling the shifting track section. Numerous other objects will be apparent from the following specification.

In the accompanying drawings, which form a part of this specification, I have shown the form of mechanism which I now deem preferable. It will be understood, however, that various modifications and changes may be made without departing from the spirit of my invention.

Of the drawings,

Figure 1 is a side elevation showing a car in dumping position;

Fig. 2 is a side elevation showing a car leaving the dump;

Fig. 3 is a plan view of the mechanism with the parts in the positions shown in Fig. 1;

Fig. 4 is a cross sectional view taken along the line 4—4 of Fig. 1.

Referring to the drawings, 1 and 2 represent, respectively, two superposed tracks which are mounted upon any suitable framework, such as that indicated in the drawings. The upper track 1 is slightly inclined in one direction, as, for instance, downward toward the right, as indicated in the drawings. The lower track 2 is slightly inclined in the other direction and is provided at its upper end with an upturned part 3 for a purpose to be described. 4 represents a shiftable track section which is mounted at its forward end upon a horizontal transverse shaft 5 having suitably supported bearings 6 and 7 at its ends. The section 4 is arranged when in its upper position to aline with the track 1 and when in its lower position to aline with the upturned end 3 of the track 2. The section 4 has a part 8 adjacent its pivoted end which is bent sharply downward with respect to the main part of the section. The purpose of this will be hereinafter set forth.

By preference the rails of the track 1 and of the section 4 are rectangular in cross section and are narrower than the treads of ordinary track rails.

In order to control the movement of cars along the upper track 1 two pairs of horns 9, 9 and 10, 10 are provided. Each horn is mounted upon a shaft 11 and is capable of swinging about the axis thereof into and out of the path of the axis of a car on the track. Each shaft 11 is supported in bearings 12, preferably three in number, secured to one of the rails. Each shaft is capable of limited sliding movement in its bearings and is held at one extreme position by means of coil springs 13, 13. These springs serve as shock absorbers when the horn is engaged by a car wheel.

14 and 15 are two horizontal rotatable shafts mounted parallel to and at opposite sides of the track 1. At one end there is provided a transverse horizontal rotatable shaft 16 which is connected with the shafts 14 and 15 by means of pairs of bevel gears 17 and 18. The gears 17 and 18 are so arranged that the shafts 14 and 15 will be rotated in the opposite directions. 19 is an arm on the shaft 16. 20 is a hand lever pivotally mounted at a point adjacent the pivotal support for the track section 4. 21 is a rod or link connecting the hand lever 20 with the arm 19. By means of this link an operator by moving the lever 20 can cause the simultaneous rotation of the two shafts 14 and 15.

22 and 23 are upstanding levers secured respectively to the shafts 14 and 15 at points opposite the horns 9, 9. Each of the horns 9 is provided with a depending arm 24 and between each arm 24 and the corresponding

lever 22 or 23 there is provided a link 25. 26 and 27 are other upstanding levers mounted respectively on the shafts 14 and 15 at points opposite the horns 10, 10. Each of the horns 10 is provided with a depending arm 28 and between each arm 28 and the corresponding lever 26 or 27 on the shaft at the opposite side of the track there is provided a link 29.

By means of the construction which I have described an operator by moving the lever 20 and tensioning the link 21 may rotate the shaft 16 and by means of it the two shafts 14 and 15. By means of the two links 29, 29 the horns 10, 10 are moved from outstanding positions into positions for engagement with the wheels of a car moving along the track 1. Simultaneously by means of the links 25, 25 the horns 9, 9 are moved from positions in alinement with the wheels of a car to outstanding positions out of alinement with the wheels of a car. Preferably a sheave 30 is mounted on a shaft 16 and over this sheave there passes a rope 31 to which is attached a counterweight 32. This counterweight will serve to automatically move the parts in the opposite directions from those which have been described and to return them to their initial positions.

33 is a vertically reciprocable gallows frame for controlling the movement of the shifting or oscillatory track section 4. The frame 33 comprises two side upright members 34, 34 and top and bottom horizontal cross members 35 and 36. Suitable guides 37, 37 and 38, 38 are provided for the frame. These guides engage with outstanding vertical flanges 39, 39 on the uprights 34, 34. By means of links 40, 40 the ends of the rails of the track section 4 are connected with the cross member 36 of the gallows frame. Mounted above the gallows frame on a suitable framework is a transverse rotatable shaft 41 upon which two sheaves 42, 42 are mounted. Each of the sheaves 42 preferably has two rope receiving grooves. Secured to each sheave and arranged to engage with one of the grooves is a rope 43 which extends downward and is connected with the top member of the gallows frame, preferably by means of a link 44. Other ropes 45 are secured to the guide sheaves 42 for engagement with the other grooves thereof. These ropes extend downward at the opposite sides of the sheaves and carry at their lower ends the adjustable counterweights 46. It will be observed that the construction is such that the counterweights tend at all times to lift the oscillatory track section. In order that the lifting force of the counterweight may be properly applied, the sheaves 42, are by preference mounted eccentrically on the shaft 41. The sheaves are so arranged and connected that when the section 4 is depressed, as shown in Fig. 2, they are in such position that the force of the counterweight is applied at a relatively great moment arm and that the weight of the track section is applied at a relatively small moment arm. The size of the sheaves is such that when the track section is raised to its upper position the sheaves will have been rotated to a position such that the force of the counterweights is applied at a relatively small moment arm and the weight of the track section applied at a relatively great moment arm. By properly adjusting the size of the counterweights they may be made to approximately balance the track section when it is in upper position. However, when the track section is in lower position the counterweights on account of the changed moment arms will apply a considerable lifting force.

47, 47 are two longitudinally slidable latches arranged to engage with lugs 48 at the ends of the rails of the track section 4 and to support the track section in alinement with the track 1. At points adjacent the latches 48, 48 are suitable stops 49, 49 for engaging the lugs 48 to limit the upward movement of the track section. 50 and 51 are two transverse rock-shafts mounted in suitable bearings connected to the rails of the track 1. Secured to the ends of the rear rock-shaft 50 are upward and forward inclined trip levers 52, having downward extending arms 53. Secured to the ends of the forward rock-shaft 51 are trip levers 54, having downward extending arms 55. 56, 56 represent two links which are connected at their forward ends to the latches 47, 47, at their rear ends to the downward extending arms 53 of the trip levers 52, and at points intermediate their ends to the downward extending arms 55 of the trip levers 54. The trip levers 54 are bent successively backward and downward and preferably carry at their extreme ends counterweights 57, 57.

At the forward ends of the shafts 14 and 15, at points opposite the gallows frame 33, are inward extending arms 58, 58 which carry rollers 59, 59 adapted to engage with the vertical flanges 39, 39, these flanges being beveled at their lower ends. The arms 58, 58 and the rollers 59, 59 serve to lock the shafts 14 and 15 in positions in the horns 10, 10 operative when the gallows frame 33 and the track section 4 are depressed, or to move the shafts to this position when the gallows frame moves downward, in case they are not already in it.

Near the forward end of the track section 4 and mounted upon it is a transverse rock-shaft 60. This rock-shaft carries at its ends horns 61, 61. These horns are outside of and immediately adjacent the rails of the track sections and are adapted to en-

gage with the wheels of a car. One of the horns 61, as, for instance, that on the left hand side of the dump, carries a downward extending arm 62 which is forked at its lower end to receive the pivoted yoke 63. A rod 64 extends through a suitable aperture in the yoke 63 and is pivotally connected at one end to the frame of the track section. The other end carries suitable lock nuts 65. A coil spring 66 surrounds the rod 64 between its point of pivotal connection and the yoke 63. The spring tends to normally hold the horns in the position indicated by dotted lines in Fig. 1, and by full lines in Fig. 2.

At the other end of the rock-shaft 60 there is a brake wheel 67 which is engaged by a brake band 68. One end of the brake band is secured to the frame of the track section and the other end is secured to one end of a lever 69 which is pivotally mounted between its ends on the track section frame at 70. Slidably mounted upon the lever 69 is a weight 71 which serves to normally tension the brake. 72 is a chain suitably connected at its upper end to the framework of the dump and connected at its lower end to the end of the lever 69. This chain is of such a length that when the track section 4 is dropped to its lower position it will move the lever 69 with respect to the track section frame sufficiently to release the tension of the brake band.

73 represents a car in dumping position. 74 is a chute for receiving material discharged from the car. As the car moves into dumping position the end may be opened manually by the operator, or, if desired, bars 75 may be provided for engaging with suitable lugs 76 on the car to raise the door.

In operation let it be assumed that the shiftable track section is in its upper position and that the horns 9, 9 and 10, 10 together with the associated parts have been moved by the weight 32 so that the horns 9, 9 are in position to engage the wheels of a car and the horns 10, 10 are out of car engaging position. Also let it be assumed that there is a car in dumping position, as shown in Fig. 1. As a car approaches the dump it is engaged and stopped at the horns 9, 9. When it is desired to advance the car to dump it, the operator by moving the lever 20 can move the horns 9, 9 to release the car and at the same time move the horns 10, 10 into position to engage the car wheels as the car moves forward under the action of gravity.

The trip levers 52 are positioned to be engaged by the wheels of the car as it advances from the horns 9, 9 to the horns 10, 10. The car wheels depress the levers and cause them to move the latches 47, 47 to release the track section 4 and to permit it to move under the action of gravity to the position shown in dotted lines in Fig. 1 and in full lines in Fig. 2. On account of the eccentric mounting of the sheaves 42, 42 the weights 46, 46 apply a gradually increasing resistance to the downward movement of the track section with the result that it is brought to rest in alinement with the track 2 with a minimum of shock. The weights 46, 46 are of such size that they will be lifted by the combined weight of the track section and of a car, but will lift the track section back to normal position after the car has passed from it.

After the track section 4 has been released, as before described, and as it approaches alinement with the track 2, the chain 72 is tensioned and the brake band 68 is released from the wheel 67 and the horns 61 are permitted to be moved by the previously compressed spring 66 to give the wheels of the dumped car an impulse which serves to start the car over the hump of the pivoted track section and downward onto the return track 2.

As soon as the car has passed from the section 4 the section is at once raised to normal position by the weight 46, 46. On account of the eccentric mounting of the sheaves 42, 42 the weights supply a gradually decreasing lifting force which finally becomes practically equal to the weight of the section. As a result of this gradual decreasing lifting force the track section is elevated with a minimum of shock.

While the track section 4 is depressed the horns 9, 9 and 10, 10 are held in the position as last described by the engagement of the rollers 59, 59 with the flanges 39, 39 of the gallows frame. The operator may, therefore, if desired release his hold on the lever 20. As soon as the track section returns to its normal upper position the weight 32 is permitted to act to move the horns 10, 10 to release the car and to move the horns 9, 9 back into car engaging position. It will be observed that the distance between the horns 9, 9 and the horns 10, 10 is somewhat less than the length of a car. As the result of this if a second car moves onto the dump while the first car is engaged by the horns 10, 10 it will be held a slight distance back from the horns 9, 9. This gives time for the horns 9, 9 to be returned into operative position before the second car reaches them.

The car released from the horns 10, 10 at once advances by gravity and engages the trip levers 54, 54 to depress them and to thereby throw the latches 47, 47 into position to engage and support the track section 4. If, for any reason, the latches do not move, the shapes of the trip levers are such that the car will be stopped.

The advancing car moves first on to the upper slightly inclined part of the track section 4 and finally onto the part which is

inclined sharply downward. As the car approaches the downward inclined part its wheels are engaged by the horns 61 and the downward movement of the car is first resisted and then stopped by the combined action of the spring 66 and the brake band 68 engaging the wheel 67. The car remains in this position until dumped, its end having been opened either manually or automatically, as before described.

After dumping, the operator by moving the lever 20 can release another car from the horns 9, 9, which will act to release the pivoted track section to permit it to drop and the entire operation of the dump will then be repeated in the manner which has been before described.

It will be observed that the construction of the gallows frame is such that when the frame and the pivoted track section are depressed the upper cross member 35 of the frame is in position to engage the buffer of a car. In this way an additional safety device is provided for preventing a car, which may in some manner have gotten past the horns, from running off the open end of the track 1.

I am aware that it has been heretofore proposed to construct a car dump having superposed tracks and a shiftable track section arranged to aline successively with the two tracks. I do not, therefore, claim this combination as a part of my present invention. Neither do I claim broadly as part of my present invention pivotally mounted spring and brake controlled horns for bringing a car to rest in dumping position on an inclined track. This feature is disclosed and claimed in a copending application by another inventor.

What I claim is:—

1. In a car dumping apparatus the combination of two tracks having their ends adjacent, and a shiftable track section movable into successive alinement at one end with the two tracks to receive a car from one of them and discharge it onto the other of them, the said section being rigid throughout and having a part which is inclined sharply downward with respect to the main part and which is adapted to receive a car and to support it in inclined dumping position.

2. In a car dumping apparatus the combination of two tracks having their ends adjacent, a track section shiftable into successive alinement at one end with the two tracks to receive a car from one of them and to discharge it onto the other of them, the said section being rigid throughout and having a part which is sharply inclined downward when the section is in alinement with the first said track, and means for engaging a car on the shiftable track section to retard it and bring it to rest in inclined dumping position on the inclined part.

3. In a car dumping apparatus the combination of two tracks arranged with their ends adjacent, a shiftable track section adapted to be moved into successive alinement with the two tracks to receive a car from one of them and to discharge it onto the other of them, the said section being rigid throughout and having a part which is sharply inclined downward when the section is in alinement with the first said track, means for engaging a car on the shiftable track section to retard its movement and to bring it to rest in dumping position on the inclined part of the shiftable track section, and means for positively engaging the car after dumping to cause its return movement along the shiftable track section out of dumping position.

4. In a car dumping apparatus the combination of two tracks arranged with their ends adjacent, a track section shiftable into successive alinement with the two tracks to receive a car from one of them and to discharge it onto the other of them, the said section having a part which is sharply inclined downward when the section is in alinement with one of the tracks and which is adapted to receive and to support a car in inclined dumping position, a pivotally mounted element arranged to engage a car on the shiftable track section, and a friction brake connected to the pivoted element to resist its movement together with that of the car as the car moves into dumping position.

5. In a car dumping apparatus the combination of two tracks arranged with their ends adjacent, a track section shiftable into successive alinement with the two tracks to receive a car from one of them and to discharge it onto the other of them, the said section having a part which is sharply inclined downward when the section is in alinement with one of the tracks and which is adapted to receive and to support a car in inclined dumping position, a transverse shaft rotatably mounted in bearings secured to the shiftable track section, horns secured to the shaft to rotate therewith, the horns being positioned at points adjacent the inclined part and adapted to engage the wheels of a car, and a brake connected to the shaft and adapted to resist its rotation together with that of the horns when the horns are engaged by a car moving into dumping position.

6. In a car dumping apparatus the combination of two tracks arranged with their ends adjacent, a track section shiftable into successive alinement with the two tracks to receive a car from one of them and to discharge it onto the other of them, the said section having a part which is sharply in-

clined downward when the section is in alinement with one of the tracks, a transverse rotatable shaft mounted on the shiftable track section, two horns connected to the shaft in position to extend into the paths of the wheels of a car on the shiftable track section, a brake connected to the shaft for resisting the rotation thereof together with the rotation of the horns in one direction, and a spring also connected with the shaft and also serving to resist the rotation thereof together with that of the horns in one direction whereby a car when engaged by the horns is brought gradually to rest in dumping position on the inclined part of the section.

7. In a car dumping apparatus the combination of two tracks arranged with their ends adjacent, a track section shiftable into successive alinement with the two tracks to receive a car from one of them and to discharge it onto the other of them, the said shiftable section having a part which is sharply inclined downward when the section is in alinement with the first said track and which is adapted to receive a car and to support it in inclined dumping position, a reciprocable element mounted in position to engage a car on the shiftable section at points adjacent the inclined part thereof, a brake connected with the element to resist the movement thereof when it is engaged by a car moving into dumping position, and means automatically operable when the shiftable section is brought into alinement with the second track for releasing the said brake to permit the return movement of the said reciprocable element.

8. In a car dumping apparatus the combination of two tracks arranged with their ends adjacent, a track section shiftable successively into working relation with the two tracks to receive a car from one of them and to discharge it onto the other of them, the said section having a part which is sharply inclined downward when the section is in working relation with the first said track and which is adapted to receive and support a car in inclined dumping position, a transverse shaft rotatably mounted on the shiftable track section, two horns secured to the shaft and arranged to extend into the paths of the wheels of a car on the shiftable section at points adjacent the inclined part thereof, a brake connected with the shaft and adapted to resist its rotation together with that of the horns when the horns are engaged by a car moving into dumping position, and means automatically operative when the shiftable section is moved into working relation with the second track for releasing the brake to permit the free movement of the shaft and the horns.

9. In a car dumping apparatus the combination of two tracks arranged with ends adjacent, a shiftable track section adapted to aline successively with the two tracks to receive a car from one of them and to discharge it onto the other of them, the said section having a part which is sharply inclined downward when the section is in alinement with the first said track and which is adapted to receive a car and to support it in inclined dumping position, a reciprocable element mounted to engage a car on the shiftable section at points adjacent the inclined part thereof, a brake for resisting the movement of the element when it is engaged by a car moving into dumping position, automatically acting means for releasing the brake when the section is moved into alinement with the second track, and a spring-controlled means for imparting an impulse to the car to move it out of dumping position and backward along the shiftable section.

10. In a car dumping apparatus the combination of two tracks arranged with their ends adjacent, a track section shiftable into successive working relation with the two tracks to receive a car from one of them and to discharge it onto the other of them, the said section having a part which is sharply inclined downward when the section is in working relation with the first said track and which is adapted to receive a car and to support it in inclined dumping position, a transverse shaft rotatably mounted on the shiftable section, two horns on the shaft arranged to extend into the paths of the wheels of a car on the section at points adjacent the inclined part thereof, a brake connected to the shaft for resisting the movement thereof, together with the movement of the horns when the horns are engaged by a car moving into dumping position, automatically acting means for releasing the brake when the shiftable section is moved into working relation with the second track, and a spring-controlled means for imparting an impulse to the car to move it out of dumping position backward along the shiftable section.

11. In a car dumping apparatus the combination of two tracks arranged with their ends adjacent, a section shiftable into successive working relation with the two tracks to receive a car from one of them and to discharge it onto the other of them, the said section having a part which is sharply inclined downward when the section is in working relation with the first said track and which is adapted to receive a car and to support it in inclined dumping position, a reciprocable element arranged to engage a car on the shiftable section at points adjacent the inclined part thereof, a brake for resisting the movement of the element, a spring for resisting the movement of the element, the said brake and spring acting simultaneously when the element is engaged

by a car moving into dumping position, and automatically acting means for releasing the brake when the shiftable section is moved into working relation with the second said track whereby the spring is left free to move the element in the return direction to impart to the car an impulse causing it to move out of dumping position backward along the shiftable section.

12. In a car dumping apparatus the combination of two tracks arranged with their ends adjacent, a shiftable section adapted to be moved successively into register with the two tracks to receive a car from one of them and to discharge it onto the other of them, the said section having a part which is sharply inclined downward when the section is in register with the first said track and which is adapted to receive a car and to support it in inclined dumping position, a transverse shaft rotatably mounted on the shiftable section, two horns secured to the shaft and positioned to extend into the paths of the wheels of a car on the section at points adjacent the inclined part thereof, a brake connected with the shaft to resist its movement in one direction together with the movement of the horns, a spring also connected with the shaft and adapted to resist its movement in the same direction together with the movement of the horns, the said brake and spring acting simultaneously when the horns are engaged by a car moving into dumping position, and means automatically operative when the section is moved into register with the second said track for releasing the brake whereby the spring is left free to return the horns to their initial positions and to cause the movement of the car out of dumping position backward along the shiftable section.

13. In a car dumping apparatus the combination of two superposed tracks having their ends adjacent, a track section shiftable successively into register with the two tracks to receive a car from the upper of them and to discharge it onto the lower of them, the said section having a part which is sharply inclined downward when the section is in alinement with the upper track and which is adapted to receive a car and to support it in inclined dumping position, a reciprocable element mounted to engage a car on the shiftable section at points adjacent the inclined part thereof, a brake connected with the element to resist its movement when it is engaged by a car moving into dumping position, automatic means for releasing the brake when the shiftable section is moved into register with the lower track, and a spring controlled means for imparting an impulse to the car which causes it to move out of dumping position backward along the shiftable section.

14. In a car dumping apparatus the combination of two superposed tracks, a shiftable track section arranged to aline with the upper of the tracks to receive a car therefrom and with the lower of the tracks to discharge a car thereonto, the said shiftable section having a part which is sharply inclined downward when the section is in alinement with the upper track and which is adapted to receive a car and to support it in inclined dumping position, a transverse shaft rotatably mounted on the shiftable section, two horns secured to the shaft and positioned to extend into the paths of the wheels of a car on the shiftable section at points adjacent the inclined part thereof, a brake connected to the shaft for resisting its movement together with that of the horns when the horns are engaged by a car moving into dumping position, automatic means for releasing the brake when the shiftable section is brought into alinement with the lower track, and spring-controlled means for imparting an impulse to the car which causes it to move out of dumping position backward along the shiftable section and onto the lower track.

15. In a car dumping apparatus the combination of two superposed tracks, a shiftable section adapted to be alined with the upper track to receive a car therefrom and with the lower track to discharge a car thereonto, the said shiftable section having a part which is inclined sharply downward when the section is alined with the upper track and which is adapted to receive a car and support it in inclined dumping position, a transverse shaft rotatably mounted on the shiftable section, two horns secured to the shaft and positioned to extend into the paths of the wheels of a car on the section at points adjacent the inclined part thereof, a brake wheel secured to the shaft, a brake band engaging the wheel, a weighted lever pivotally connected with the shiftable track section for tensioning the brake band, means dependent on the movement of the shiftable section into alinement with the lower track for moving the lever with respect to the section to release the brake band from the wheel, and a spring controlled means for imparting to the car an impulse which causes it to move out of dumping position backward along the shiftable section and onto the lower track.

16. In a car dumping apparatus the combination of two superposed tracks, a shiftable section adapted to register with the tracks to receive a car from the upper of them and to discharge it onto the lower of them, the said section having a part which is sharply inclined downward when the section is in register with the upper track and which is adapted to receive a car and to support it in inclined dumping position, a reciprocable element mounted to engage a car on

the shiftable section at points adjacent the inclined part thereof, a brake for resisting the movement of the element in one direction, a spring for resisting the movement of the element in the same direction, the said brake and spring acting simultaneously when the element is engaged by a car moving into dumping position, and automatic means for releasing the brake when the shiftable track section is moved into register with the lower track, whereby the spring is permitted to cause the return movement of the element and of the car.

17. In a car dumping apparatus the combination of two superposed tracks, a track section shiftable successively into working relation with the two tracks to receive a car from the upper of them and to discharge it onto the lower of them, the said section having a part which is inclined sharply downward when the section is in working relation with the upper track, a transverse shaft rotatably mounted on the shiftable section, two horns secured to the shaft and mounted to extend into the paths of the wheels of a car on the shiftable section at points adjacent the inclined part thereof, a brake connected with the shaft for resisting its movement together with that of the horns, a spring connected with the shaft for resisting its movement together with that of the horns in the same direction, the said brake and spring acting simultaneously when the horns are engaged by a car moving into dumping position, and automatic means for releasing the brake when the section is moved into working relation with the lower track whereby the spring is left free to cause the return movement of the shaft and the horns and of the car.

18. In a car dumping apparatus the combination of two superposed tracks, a track section shiftable into successive working relations with the two tracks to receive a car from the upper of them and to discharge it onto the lower of them, the said section having a part which is sharply inclined downward when the section is in working relation with the upper track and which is adapted to receive a car and support it in inclined dumping position, a transverse shaft rotatably mounted on the shiftable track section, two horns secured to the shaft and arranged to extend into the paths of the wheels of a car on the section at points adjacent the inclined part thereof, a brake wheel on the shaft, a brake band for engaging the wheel, a weighted lever pivotally mounted on the track section and connected with the brake band to tension it, a spring connected with the shaft to resist its movement, the said brake and spring acting simultaneously when the horns are engaged by a car moving into dumping position, and means dependent on the movement of the shiftable section into working relation with the lower track for moving the lever with respect to the section to release the brake whereby the spring is left free to cause the return movement of the shaft and the horns and of the car.

19. In a car dumping apparatus the combination of two tracks arranged with their ends adjacent, a shiftable track section adapted to be moved successively into alinement with the two tracks to receive a car from one of them and to discharge it onto the other of them, the said section having a part which is sharply inclined downward when the section is in alinement with the first said track and which is adapted to receive a car and support it in inclined dumping position, two pivotally mounted horns arranged to extend into the paths of the wheels of a car on the shiftable track section at points adjacent the inclined part thereof, and a spring connected with the horns to resist their movement when they are engaged by a car moving into dumping position and to cause their return movement together with that of the car when the shiftable section has been moved into alinement with the second said track.

20. In a car dumping apparatus the combination of two superposed tracks, a pivotally mounted track section having one end normally in alinement with the upper track to receive a car therefrom but movable about a pivotal axis into alinement with the lower track to discharge a car thereonto, means for dumping a car on the pivoted section, means for releasing the section to permit it to move by gravity from alinement with the upper track into alinement with the lower track, an eccentrically mounted rotatable sheave above the pivoted section, a rope extending over the sheave and connected at one end with the movable end of the section, and a counterweight connected to the other end of the rope, the eccentrically mounted sheave being so positioned and connected that when the section is in the upper position the part of the rope connected with the section will be held at the maximum moment arm and the part connected with the counterweight at the minimum moment arm.

21. In a car dumping apparatus the combination of two superposed tracks, a track section pivotally mounted and so arranged that one of its ends is normally in alinement with the upper track to receive a car therefrom but movable into alinement with the lower track to discharge a car thereonto, means on the pivoted section for dumping a car, a vertically reciprocable frame mounted adjacent the free end of the pivoted section, connections between the frame and the said end of the section, and means connected with the frame for controlling its

movement together with that of the pivoted section.

22. In a car dumping apparatus the combination of two superposed tracks, a pivotally mounted track section arranged with one end normally in alinement with the upper track to receive a car therefrom but movable into alinement with the lower track to discharge a car thereonto, means for dumping a car while on the pivoted section, and a vertically reciprocable frame adjacent the free end of the pivoted section, the said frame comprising vertical side members at the sides of the pivoted section, a horizontal bottom member with which the pivoted section is connected and a horizontal top member arranged to lie in the path of a car on the upper track when the pivoted section and the frame are in their lower positions.

23. In a car dumping apparatus the combination of two superposed tracks, a track section normally in register with the upper track to receive a car therefrom but shiftable into register with the lower track to discharge a car thereunto, means for dumping a car while on the shiftable section, means adapted to be actuated by the forward movement of a car along the upper track to release the shiftable section and permit it to move into register with the lower track for discharging the dumped car thereonto, and means for arresting the forward movement of the car on the upper track after it has passed the releasing means.

24. In a car dumping apparatus the combination of two superposed tracks, a track section normally in alinement with the upper track to receive a car therefrom but shiftable in alinement with the lower track to discharge a car thereonto, means for dumping a car on the shiftable section, a device for releasing the shiftable section to permit it to move into alinement with the lower track to discharge the dumped car thereonto, the said releasing device arranged to be automatically operated by the forward movement of a car along the upper track, a stop for the car on the upper track after it has passed the releasing device, and means within the control of an operator positioned adjacent the dumping means for moving the said stop out of the path of the car.

25. In a car dumping apparatus the combination of two superposed tracks, a shiftable track section normally alining with the upper track to receive a car therefrom but movable into alinement with the lower track to discharge a car thereonto, means for dumping a car on the shiftable section, a device for releasing the shiftable section to permit it to move into alinement with the lower track to discharge the dumped car thereonto, the said releasing device being arranged to be actuated by the forward movement of a car along the upper track, a manually controlled stop for preventing the movement of a car into engagement with the releasing device, and a manually controlled stop for arresting the movement of a car after engagement with the releasing device.

26. In a car dumping apparatus the combination of two superposed tracks, a track section normally alining with the upper track to receive a car therefrom but shiftable into alinement with the lower track to discharge a car thereonto, means for dumping a car while on the shiftable section, a device for releasing the shiftable section to permit it to move into alinement with the lower track to discharge the dumped car thereonto, the said releasing device being arranged to be operated by the forward movement of a car on the upper track, a stop adapted to be moved into the path of a car to prevent its engagement with the releasing device, a second stop adapted to be moved into the path of a car to arrest its motion after passing the releasing device, and a manually controlled device for moving either stop into operative position and the other stop simultaneously out of position.

27. In a car dumping apparatus the combination of two superposed tracks, a track section normally alining with the upper track to receive a car therefrom but shiftable into alinement with the lower track to discharge a car thereonto, means for dumping a car while on the shiftable section, a device for releasing the shiftable section to permit it to move into alinement with the lower track to discharge the dumped car thereonto, the said releasing device being arranged to be operated by the forward movement of a car along the upper track, a stop adapted to be moved into the path of a car on the upper track to prevent its engagement with the releasing device, a second stop arranged to be moved into the path of a car on the upper track to prevent its continued movement beyond the releasing device, and means for simultaneously throwing the second stop out of operation and the first stop into operation whereby one car is permitted to move forward from the upper track onto the shiftable section and another car is prevented from moving forward along the upper track to engage the releasing device.

28. In a car dumping apparatus the combination of two superposed tracks, a track section normally alining with the upper track to receive a car therefrom but shiftable into alinement with the lower track to discharge a car thereonto, means for dumping a car while on the shiftable section, a device for dumping a car while on the shiftable section, a device for releasing the

shiftable section to permit it to move into alinement with the lower track to discharge the dumped car thereonto, the said releasing device being arranged to be operated by the forward movement of a car along the upper track, a stop adapted to be moved into the path of a car on the upper track to prevent its engagement with the releasing device, a second stop arranged to be moved into the path of a car on the upper track to prevent its continued movement beyond the releasing device, means for simultaneously throwing the second stop out of operation and the first stop into operation whereby one car is permitted to move forward from the upper track onto the shiftable section and another car is prevented from moving forward along the upper track to engage the releasing device, and means for automatically locking the second stop in operative position when the shiftable track section is in its lower position.

29. In a car dumping apparatus the combination of two superposed tracks, a track section normally alining with the upper track to receive a car therefrom but shiftable into alinement with the lower track to discharge a car thereonto, means for dumping a car while on the shiftable section, a device for releasing the shiftable section to permit it to move into alinement with the lower track to discharge the dumped car thereonto, the said releasing device being arranged to be operated by the forward movement of a car along the upper track, a stop adapted to be moved into the path of a car on the upper track to prevent its engagement with the releasing device, a second stop arranged to be moved into the path of a car on the upper track to prevent its continued movement beyond the releasing device, and means controlled by the shiftable track section for insuring that the second stop is in operative position when the track section is in its lower position.

30. In a car dumping apparatus the combination of two superposed tracks, a track section normally alining with the upper track to receive a car therefrom but shiftable into alinement with the lower track to discharge a car thereonto, means for dumping a car on the shiftable section, a device for releasing the shiftable section to permit it to move into alinement with the lower track to discharge the dumped car thereonto, the said releasing device being arranged to be operated by the forward movement of a car along the upper track, a stop movable into the path of a car on the upper track for preventing its movement into position to operate the releasing device, a second stop movable into the path of a car on the upper track for preventing the continued movement of a car beyond the releasing device, the distance between the two stops being less than the length of a car, and means for simultaneously throwing the second stop out of operative position and the first stop into operative position.

31. In a car dumping apparatus the combination of two superposed tracks, a track section normally in working relation with the upper track to receive a car therefrom but shiftable into working relation with the lower track to discharge a car thereonto, means for dumping a car on the track section, means for releasing the section to permit it to move into alinement with the lower section to discharge the dumped car thereonto, two stops arranged in the path of cars on the upper track and separated by a distance less than the length of a car, and means for simultaneously throwing one of the stops into operation and the other out of operation, or vice versa.

32. In a car dumping apparatus the combination of two superposed tracks, a track section normally in working relation with the upper track to receive a car therefrom but movable into working relation with the lower track to discharge a car thereonto, means for dumping a car on the movable track section, means for releasing the section to permit it to move into working relation with the lower track to discharge the dumped car thereonto, a horn movable into the path of a car on the upper track, manually controllable means normally operative for moving the stop into or out of operative position, and means controlled by the movable track section for insuring that the horn is in operative position when the track section is in its lower position.

33. In a car dumping apparatus the combination of two superposed tracks, a track section normally in alinement with the upper track to receive a car therefrom but shiftable into alinement with the lower track to discharge a car thereonto, means for dumping a car on the shiftable section, means for releasing the shiftable section to permit it to move into alinement with the lower track to discharge the dumped car, two horns each movable into or out of the path of a car on the upper track, connections between the horns whereby one of them is moved out of operative position as the other is moved into operative position, and means for automatically locking the horn which is nearer the shiftable section in operative position when the shiftable track section is in its lower position.

34. In a car dumping apparatus the combination of two superposed tracks, a track section normally in alinement with the upper track to receive a car therefrom but shiftable into alinement with the lower track to discharge a car thereonto, means for dumping a car on the shiftable section, means for releasing the shiftable section to

permit it to move into alinement with the lower track to discharge the dumped car, two horns each movable into or out of the path of a car on the upper track, connections between the horns whereby one of them is moved out of operative position as the other is moved into operative position, manually controllable means for moving the horns, and means for automatically locking the horn which is nearer the shiftable track section in operative position when the track section is in its lower position.

35. In a car dumping apparatus the combination of two superposed tracks, a track section normally in alinement with the upper track to receive a car therefrom but shiftable into alinement with the lower track to discharge a car thereonto, means for dumping a car while on the shiftable section, means for releasing the shiftable section to permit it to move into alinement with the lower track to discharge the dumped car, a horn for holding a car against movement along the upper track, a manually controllable means for moving the horn into operative position, and a normally operative means for automatically moving the horns out of operative position.

36. In a car dumping apparatus the combination of two superposed tracks, a track section normally in alinement with the upper track to receive a car therefrom but shiftable into alinement with the lower track to discharge a car thereonto, means for dumping a car while on the shiftable section, means for releasing the shiftable section to permit it to move into alinement with the lower track to discharge the dumped car, a horn for holding a car against movement along the upper track, manually controllable means for moving the horn into operative position, normally operative means for automatically moving the horn out of operative position, and means controlled by the shiftable track section for holding the said automatically operative means out of operation while the said shiftable track section is out of alinement with the upper track.

37. In a car dumping apparatus the combination of two superposed tracks, a track section normally in alinement with the upper track to receive a car therefrom but shiftable into alinement with the lower track to discharge a car thereonto, means for dumping a car while on the shiftable section, means for releasing the shiftable section to permit it to move into alinement with the lower track to discharge the dumped car, two horns positioned at different points along the upper track and each adapted to engage a car to arrest its movement, connections between the horns whereby one of them is moved out of operative position when the other is moved into operative position, manually controllable means for moving the horn which is nearer the shiftable track section into operative position and the other horn out of operative position, and a normally operative device for automatically moving the first horn out of operative position and the second horn into operative position.

38. In a car dumping apparatus the combination of two superposed tracks, a track section normally in alinement with the upper track to receive a car therefrom but shiftable into alinement with the lower track to discharge a car thereonto, means for releasing the shiftable section to permit it to move into alinement with the lower track to discharge the dumped car, two horns positioned at different points along the upper track and each adapted to engage a car to arrest its movement, connections between the horns whereby one of them is moved out of operative position when the other is moved into operative position, manually controllable means for moving the horn which is nearer the shiftable track section into operative position and the other horn out of operative position, a normally operative device for automatically moving the first horn out of operative position and the second horn into operative position, and means for holding said automatic device inoperative while the shiftable track section is out of alinement with the upper track.

39. In a car dumping apparatus the combination of two superposed tracks, a track section normally in alinement with the upper track to receive a car therefrom but shiftable into alinement with the lower track to discharge a car thereonto, means for dumping a car while on the shiftable track section, a latch normally operative for holding the shiftable section in normal position, a device for releasing the latch to permit the shiftable track section to move out of normal position into alinement with the lower track to discharge the dumped car thereonto, the said releasing device being arranged to be operated by a car advancing along the upper track, means for returning the shiftable track section from its lower position to its upper normal position, and a device controlled by a car advancing along the upper track for returning the latch to its normal operative position.

40. In a car dumping apparatus the combination of two superposed tracks, a track section normally in alinement with the upper track to receive a car therefrom but shiftable into alinement with the lower track to discharge a car thereonto, means for dumping a car while on the shiftable track section, a latch normally operative for holding the shiftable section in normal position, a device for releasing the latch to permit the shiftable track section to move out of normal position into alinement with

the lower track to discharge the dumped car thereonto, the said releasing device being arranged to be operated by a car advancing along the upper track, means for returning the shiftable track section from its lower position to its upper normal position, a device controlled by a car advancing along the upper track for returning the latch to its normal operative position, and a manually controllable stop positioned between the device for releasing the latch and the device for returning it to normal position.

41. In a car dumping apparatus the combination of two superposed tracks, a car holding device adjacent the upper track, a track section normally in alinement with the upper track to receive a car therefrom but shiftable into alinement with the lower track to discharge a car thereonto, a latch normally positioned for holding the said track section in alinement with the upper track, means for dumping a car while on the shiftable section, and means within the control of an operator for releasing the said latch to permit the track section to move into alinement with the lower track to discharge the dumped car and for simultaneously releasing another car on the upper track from the said holding device to permit it to advance toward the shiftable section.

In testimony whereof I affix my signature, in presence of two witnesses.

GEORGE HENRY MUELLER.

Witnesses:
JOS. WEBSTER,
DUDLEY T. FISHER.