No. 837,379 PATENTED DEC. 4, 1906.

A. F. BLAIR & L. J. ROBB.

ROTARY DUMP.

APPLICATION FILED NOV. 27, 1905.

4 SHEETS—SHEET 1.

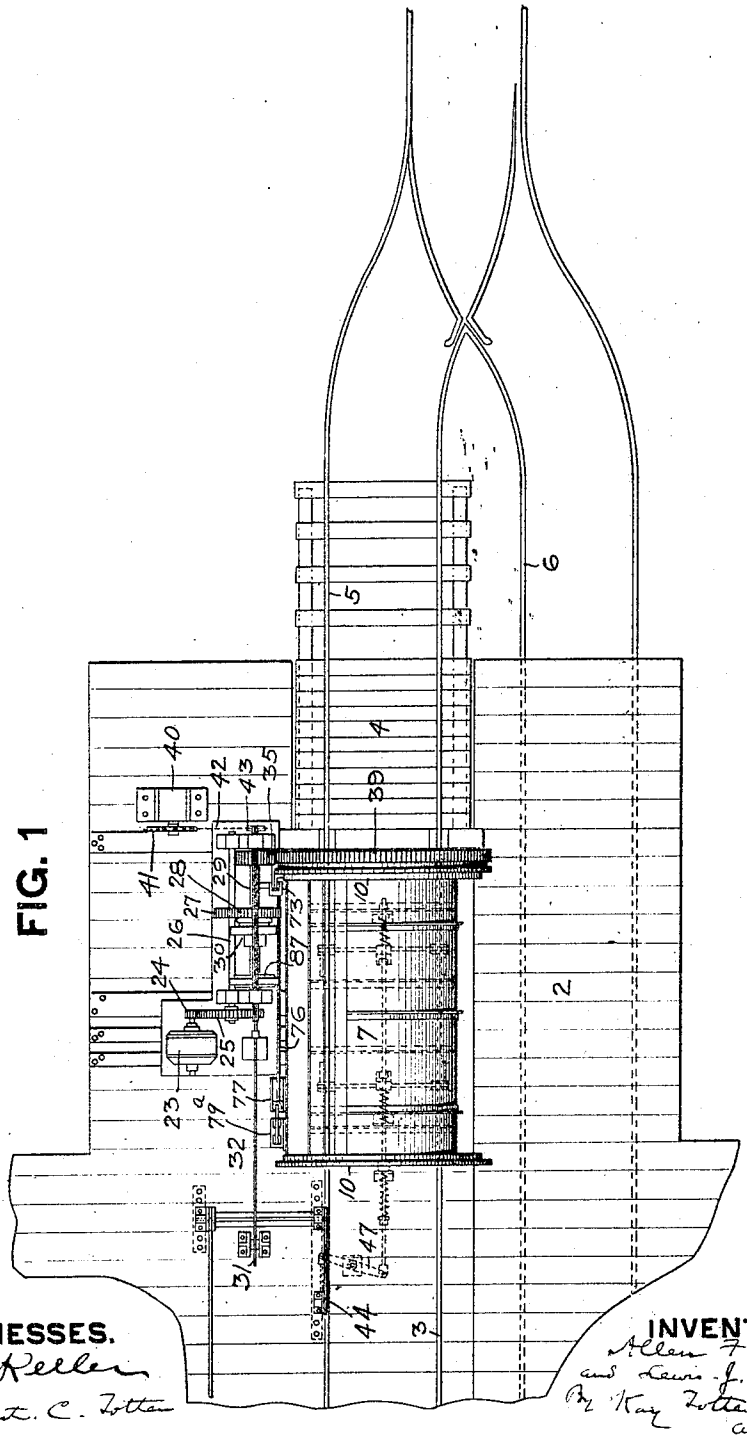


FIG. 1

WITNESSES.

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4 SHEETS—SHEET 2

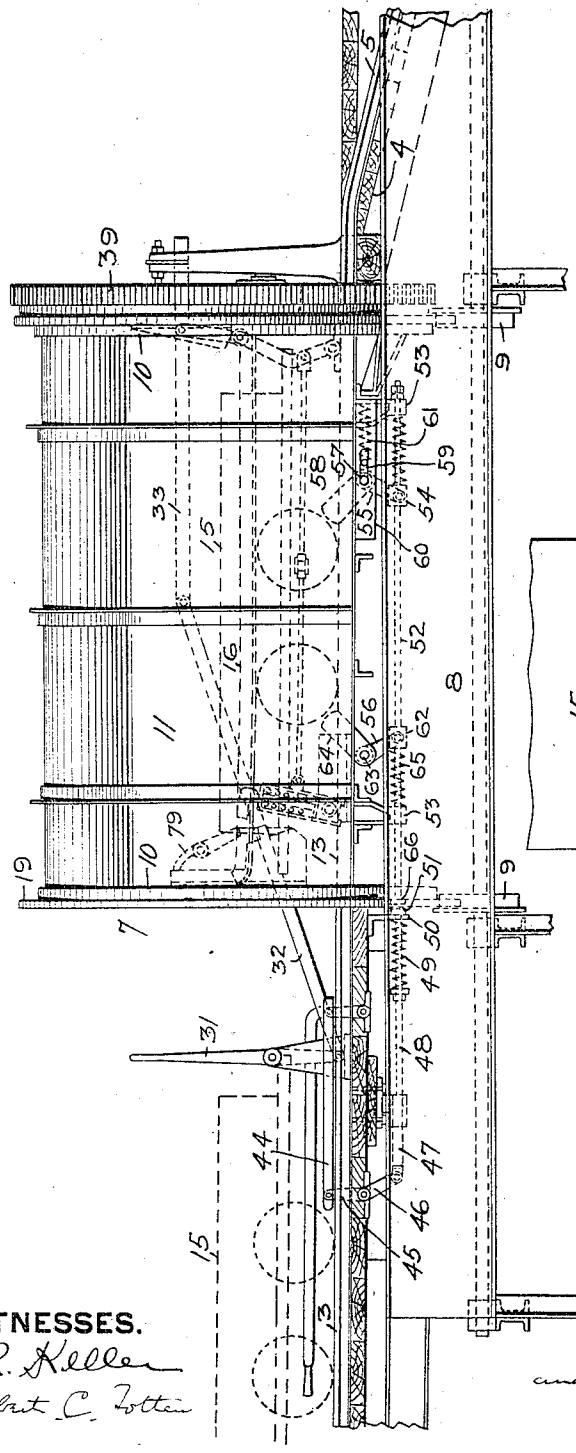


FIG. 2

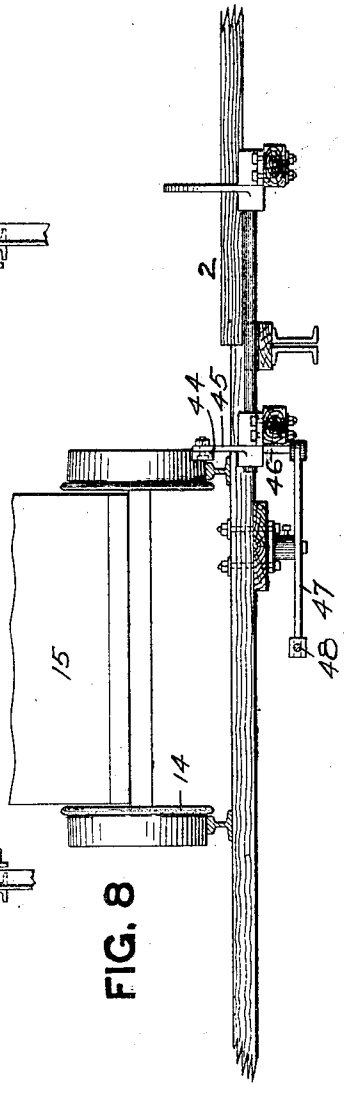


FIG. 8

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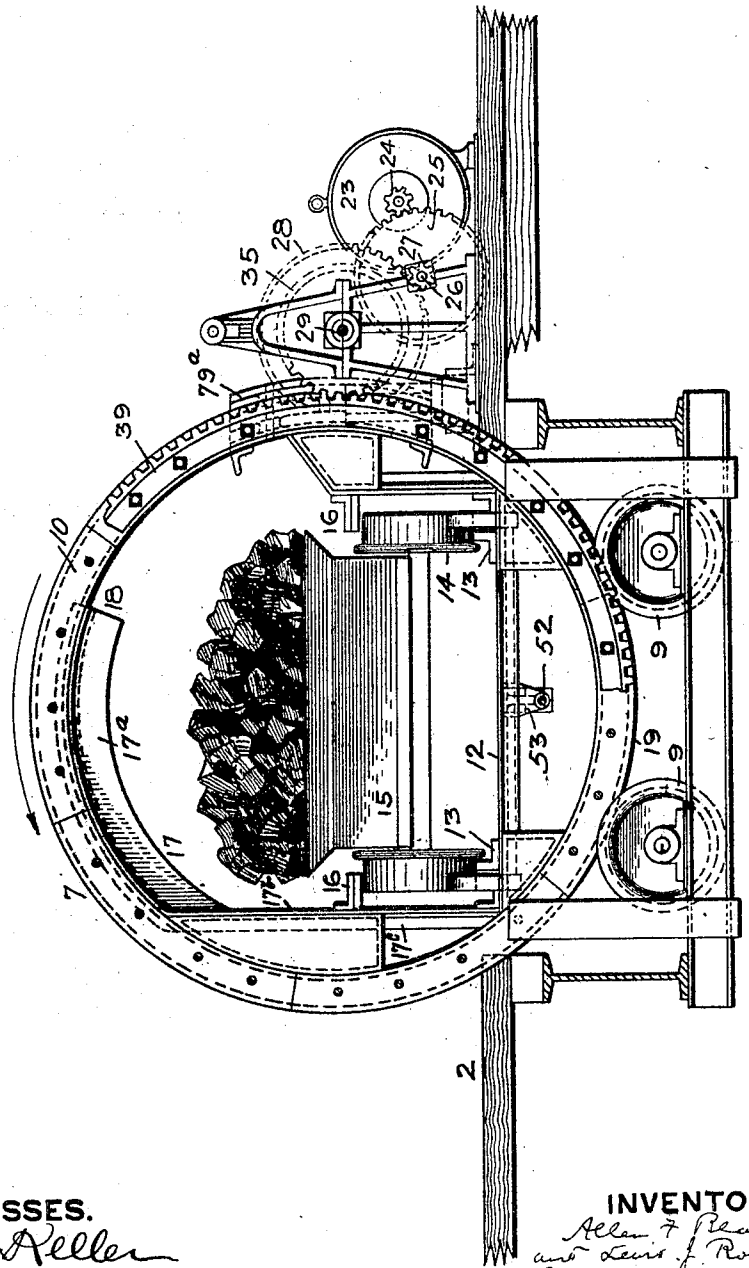
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4 SHEETS—SHEET 3

FIG. 3



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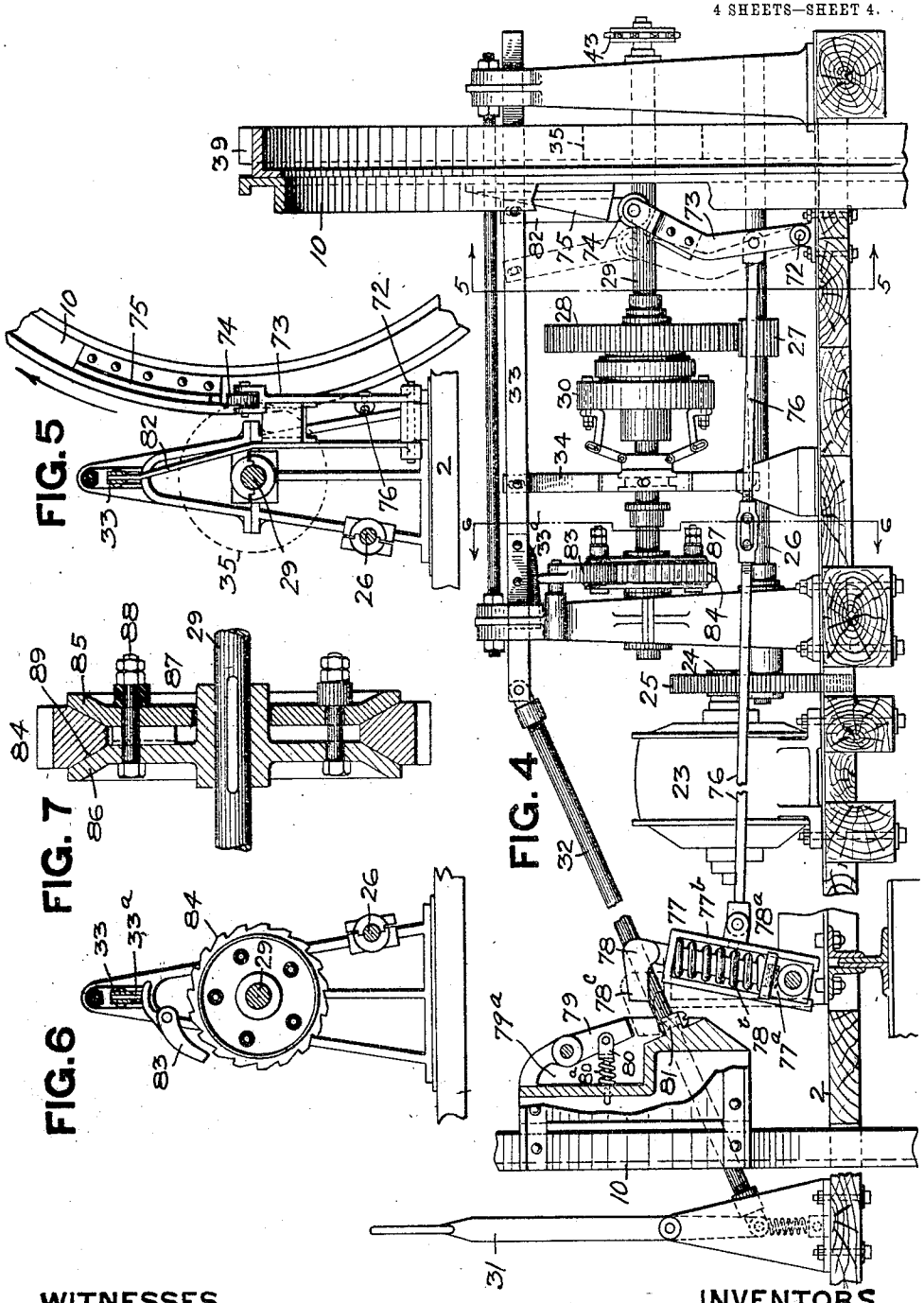
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4 SHEETS—SHEET 4.



WITNESSES.

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UNITED STATES PATENT OFFICE.

ALLEN F. BLAIR, OF CRAFTON, AND LEWIS J. ROBB, OF PITTSBURG, PENNSYLVANIA, ASSIGNORS TO HEYL & PATTERSON INCORPORATED, A CORPORATION OF PENNSYLVANIA.

ROTARY DUMP.

No. 837,379. Specification of Letters Patent. Patented Dec. 4, 1906.

Application filed November 27, 1905. Serial No. 289,340.

To all whom it may concern:

Be it known that we, ALLEN F. BLAIR, a resident of Crafton, and LEWIS J. ROBB, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Rotary Dumps; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to rotary dumps for dumping the contents of coal-cars or like receptacles.

Our invention comprises the novel features hereinafter set forth and claimed.

To enable others skilled in the art to make and use our invention, we will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a plan view of our improved car-dump, in connection with the tracks leading up thereto as well as therefrom. Fig. 2 is a side view of the rotary dump, on an enlarged scale. Fig. 3 is an end view. Fig. 4 is an enlarged detail of the driving and operating mechanism. Fig. 5 is a detail of the stopping means. Figs. 6 and 7 are detail views of the friction-brake, and Fig. 8 is a detail of the treadle-rail.

Like numerals indicate like parts in each of the figures.

In the drawings the numeral 2 designates a suitable platform with the track 3 thereon leading to the dump. Beyond the dump is the inclined platform 4 with the track 5 laid thereon, by means of which the empty cars after being dumped pass along the track 5 to a suitable kick-back, from which they return and are shifted off onto the track 6, whence they may pass by gravity off the tipple.

The car-support 7 is carried by the frame 8, which may be constructed of suitable beams, said frame having the rollers 9 mounted therein, so as to support said car-support 7. This car-support may be composed of the circular end pieces 10, connected by the inclosing walls 11. The car-support has the platform 12, upon which are laid the rails 13, which support the wheels 14 of the car 15. Secured to the car-support are the guard-rails 16, which are adapted to engage the wheels 14 of the car and prevent the displacement of the car during the dumping operation. The car-support is provided with the receptacle or pan 17, which is adapted to receive the coal from the car 15 when the car-support is rotated. This receptacle is composed of the curved portion 17^a and the plate 17^b, supported and braced by the angle-strips 17^c, and is of sufficient size to receive the contents of the car and is open at the end 18, so that when said car-support rotates the contents of the receptacle will be discharged therefrom, as fully hereinafter set forth. The circular end pieces 7 have the flanges 19, which are adapted to enter the grooves in the rollers 9, said flanges moving in said rollers as the car-support is rotated.

In order to rotate the car-support, a motor 23 may be employed, said motor having the pinion 24, which engages with the gear-wheel 25 on the shaft 26. A pinion 27 on the shaft 26 engages the gear-wheel 28 on the shaft 29, said gear-wheel normally running loosely on said shaft. Clutch mechanism 30, of any suitable form, secured to the shaft 29, is adapted to be thrown into connection with the gear-wheel 28 to rotate the shaft 29. This clutch mechanism is operated by the lever 31, which is connected by the rod 32 to the slide-bar 33, which is connected to the clutch by the arm 34.

A gear-wheel 35 on the shaft 29 meshes with the large gear 39 on the car-support 7. In this manner power is communicated from the motor to rotate the car-support. It will be found desirable to vary the speed of the rotation of the car-support in order to cause it to rotate at a high speed during the first part of the rotation, then at a reduced speed, and finally again at a higher speed as it comes around to the point of starting. Accordingly we have provided the variable-speed controller 40, which is of the ordinary construction for controlling the speed of the motor, said controller having the sprocket-wheel 41, which is connected by the chain 42 with the small sprocket-wheel 43 on the shaft 29. This speed-controller is of a common construction used in connection with electric motors, and as we do not claim this feature we do not deem it necessary to illustrate it in detail.

In the track 3 is the treadle-rail 44, which is adapted to be engaged by the tread of the wheels on one side of the oncoming car, said

rail being supported by the pivotal links 45, so as to be depressed and moved forward by the action of the oncoming car. Connected to the link 45 is the link 46, which is connected by the horizontal lever 47 with the rod 48, said rod carrying a spring 49 at its forward end, interposed between the abutment 50 and the collar 51 on said rod. The rod 48 is in alinement with the rod 52, which is slidable in the hangers 53. Secured to the rod 52 is the fixed block 54, to which is connected the crank-arm 55. The crank-arm 55 is secured to the shaft 57, and to each end of said shaft are secured the stops 58, which are adapted to engage the forward wheels of the car. The shaft 57 engages the slots 59 in the brackets 60, and springs 61 act to normally hold said crank-arm 55 in engagement with the wheels of the car. The crank-arm 56 is secured to the movable block 62 and to the shaft 63, and to each end of said shaft are secured the stops 64, which are depressed by the wheels of the oncoming car. A spring 65 is interposed between the movable block 62 and the hanger 53. The outer end of the rod 52 has the head 66.

Pivoted at 72 is the bent lever 73, carrying at its upper end the idle roller 74, adapted to be engaged by the cam 75 on the car-support. Connected to the lever 73 is the rod 76, the opposite end of said rod being connected to the rocking frame 77. This rocking frame 77 comprises the block 77^a, pivoted to the frame, said block having the strap 77^b, which acts as a guide and holder for the latch-bar 78. Secured to the lower end of the bar 78 is the nut 78^a, which has the offset engaging the guide-strap 77^b, so as to be free to move freely up and down thereon, but held against rotary movement. A spring 78^b is interposed between said nut 78^a and the upper end of the guide-strap 77^b. The latch-bar 78 passes through an opening in the upper end of the strap 77^b, and at the upper end of said bar is the finger 78^c.

A pawl 79 is pivoted to the bracket 79^a, and connected to said pawl is the pin 80, which passes through an opening in the bracket 79^a. A spring 80^a is interposed between the head of said pin and said bracket, whereby said pawl is normally forced inward. Below the pawl 79 is the adjustable rest or stop 81, consisting of a screw passing up through the bracket 79^a and forming a rest for the finger 78^c of the bar 78. An arm 82 connects the lever 73 to the slide-bar 33.

The slide-bar 33 has the cam-plate 33^a, which is adapted to normally engage the upper end of the pawl 83 and hold said pawl out of engagement with the ratchet-wheel 84, held between the plates 85 and 86 of the brake-wheel 87. The brake-wheel 87 is rigidly mounted on the shaft 29, and the plates 85 and 86 thereof are secured together by the bolts 88. The plates together form the annular outwardly-flaring seat 89, which receives the tapering inner rim of the ratchet-wheel 84. The plates bind said wheel 84 by friction, and when the pawl is thrown into engagement with said wheel said wheel acts to brake the wheel 87, as will more fully hereinafter appear.

When our improved rotary car-dump is in operation, a loaded car is run from the track 3 onto the track 13 of the car-support and the wheels engaged by the stops 58 and 64. The lever 31 is then operated to move the bar 33 and throw the clutch 30 into engagement with the gear-wheel 28, while at the same time the latch-bar 78 is withdrawn from the car-support by the same operation. Power is thus transmitted from the motor to rotate the car-support, and by means of the variable-speed controller the rotation begins at a high rate of speed. As the car-support rotates the contents of the car 15 are discharged into the receptacle 17, and by the time said receptacle gets around to the point where its contents are discharged from the opening 18 the speed of the motor is reduced, so that the contents of the receptacle 17 are discharged gradually to a chute or other receiving device located underneath the car-support. After the contents have been discharged from the receptacle 17 the speed of the motor increases and carries the car-support around to its original position of starting. During this latter period of rotation the cam 75 moves in contact with the upper end of the lever 73 and moves said lever to the left, acting thereby to move the slide-bar 33 sufficiently to withdraw the cam-plate 33^a to permit the pawl 83 to drop into engagement with the ratchet-wheel 84. This acts to gradually reduce the speed so as to stop the car-support without a sudden jar. The movement of the lever 73 to the left further acts through the rod 76 to move the rocking frame 77, so as to bring it into a substantially vertical position, as shown in dotted lines, Fig. 4. As said rocking frame moves into this position, the finger 78^c of the bar 78 strikes the pawl 79, and said pawl yields and then springs back over said finger, while said finger rests upon the rest 81. This locks the rotary support against further rotation until the finger is withdrawn; but in case said rotary support should vibrate before coming to a complete standstill it is free to do so, as the latch-bar 78 is free to yield vertically under such pressure. By this construction the sudden jolt in locking the rotary support is avoided and the strain on same relieved. The next car is then advanced with its load, and when the forward wheels strike the treadle-rail 44 said rail is depressed and pushed forward so as to force forward the rod 48. The rod 52 being in line with the rod 48 said rod 52 is advanced and through the connections described the stops 58 are

lowered. The further advance of the loaded car pushes the empty car from the car-support onto the track 5, along which it moves by gravity to the kick-back. When the loaded car is in position on the car-support, the spring 65 returns said rod 52 to normal position and throws the stops 58 up into position to engage the front wheels of the car. The operation of dumping is again repeated. In this manner with great rapidity the cars can be advanced onto the car-support and rotated and be pushed from the car-support by the oncoming car in quick succession. By having the receptacle in the car-support to receive the contents from the car during the rotation of the car-support the height which the coal has to fall is greatly reduced, and when said receptacle comes around into position to be discharged the contents fall therefrom without undue jarring or breaking up.

What we claim is—

1. The combination with a suitable frame, of a cylindrical rotary car-support, a receptacle on said support at its circumference and curved to conform with the curve of said support, and means for discharging the material from said receptacle.

2. The combination with a suitable frame, of a cylindrical rotary car-support, mechanism for rotating said support, a receptacle on said support at its circumference and curved to conform with the curve of said support, and means for discharging the material from said receptacle.

3. The combination with a suitable frame, of a rotary car-support, a stop adapted to engage the wheels of the car on said support, a longitudinally-movable rod to which said stop is connected, a second longitudinally-movable rod in the path of said first rod, and means for moving said second rod by the oncoming car.

4. The combination with a suitable frame, of a rotary car-support, brake mechanism, and means for operating said brake mechanism automatically by the rotation of said support.

5. The combination with a suitable frame, of a rotary car-support, brake mechanism, a lever, a cam on said support adapted to engage said lever, and connections between said lever and said brake mechanism.

6. The combination with a suitable frame, of a rotary car-support, brake mechanism comprising a ratchet-wheel held between the faces of a wheel rigidly mounted on the power-shaft, a pawl adapted to engage said ratchet, and means for throwing said pawl into and out of engagement with said ratchet-wheel.

7. The combination with a suitable frame, of a rotary car-support, brake mechanism comprising a ratchet-wheel held between the faces of a wheel rigidly mounted on the power-shaft, a pawl adapted to engage said ratchet, and a slidable bar having a cam adapted to engage said pawl, and means for throwing said pawl into and out of engagement with said ratchet-wheel.

8. The combination with a suitable frame, of a rotary car-support, brake mechanism comprising a ratchet-wheel held between the faces of a wheel rigidly mounted on the power-shaft, a pawl adapted to engage said ratchet, a lever connected to said bar, and a cam on said car-support in the path of said lever.

9. The combination with a suitable frame, of a rotary car-support, a latch-bar adapted to engage said support, and means for throwing said latch-bar into engagement with said support by the rotation of same.

10. The combination with a suitable frame, of a rotary car-support, a latch-bar adapted to engage said support, a lever connected to said latch-bar, and a cam on said support adapted to engage said lever.

11. The combination with a suitable frame, of a rotary car-support, a latch-bar adapted to engage said support, a rocking frame supporting said latch-bar, a lever connected to said frame, and a cam on said support adapted to engage said lever.

12. The combination with a suitable frame, of a rotary car-support, a yielding latch-bar adapted to engage said support, a lever connected to said latch-bar, and a cam on said support adapted to engage said lever.

13. The combination with a suitable frame, of a rotary car-support, a vertically-yielding latch-bar adapted to engage said support, a lever connected to said latch-bar, and a cam on said support adapted to engage said lever.

14. The combination with a suitable frame, of a rotary car-support, a vertically-yielding spring-actuated latch-bar adapted to engage said support, a lever connected to said latch-bar, and a cam on said support adapted to engage said lever.

15. The combination with a suitable frame, of a rotary car-support, a latch-bar adapted to engage said support, a rocking frame supporting said latch-bar, a spring interposed between said rocking frame and said bar, a lever connected to said frame, and a cam on said support adapted to engage said lever.

16. The combination with a suitable frame, of a rotary car-support, a pawl and a rest on said support, a yielding latch-bar adapted to engage said pawl and rest, a lever connected to said bar, and a cam on said support adapted to engage said lever.

In testimony whereof we, the said ALLEN F. BLAIR and LEWIS J. ROBB, have hereunto set our hands.

ALLEN F. BLAIR.
LEWIS J. ROBB.

Witnesses:
ROBERT C. TOTTEN,
G. C. RAYMOND.