

1,165,947.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

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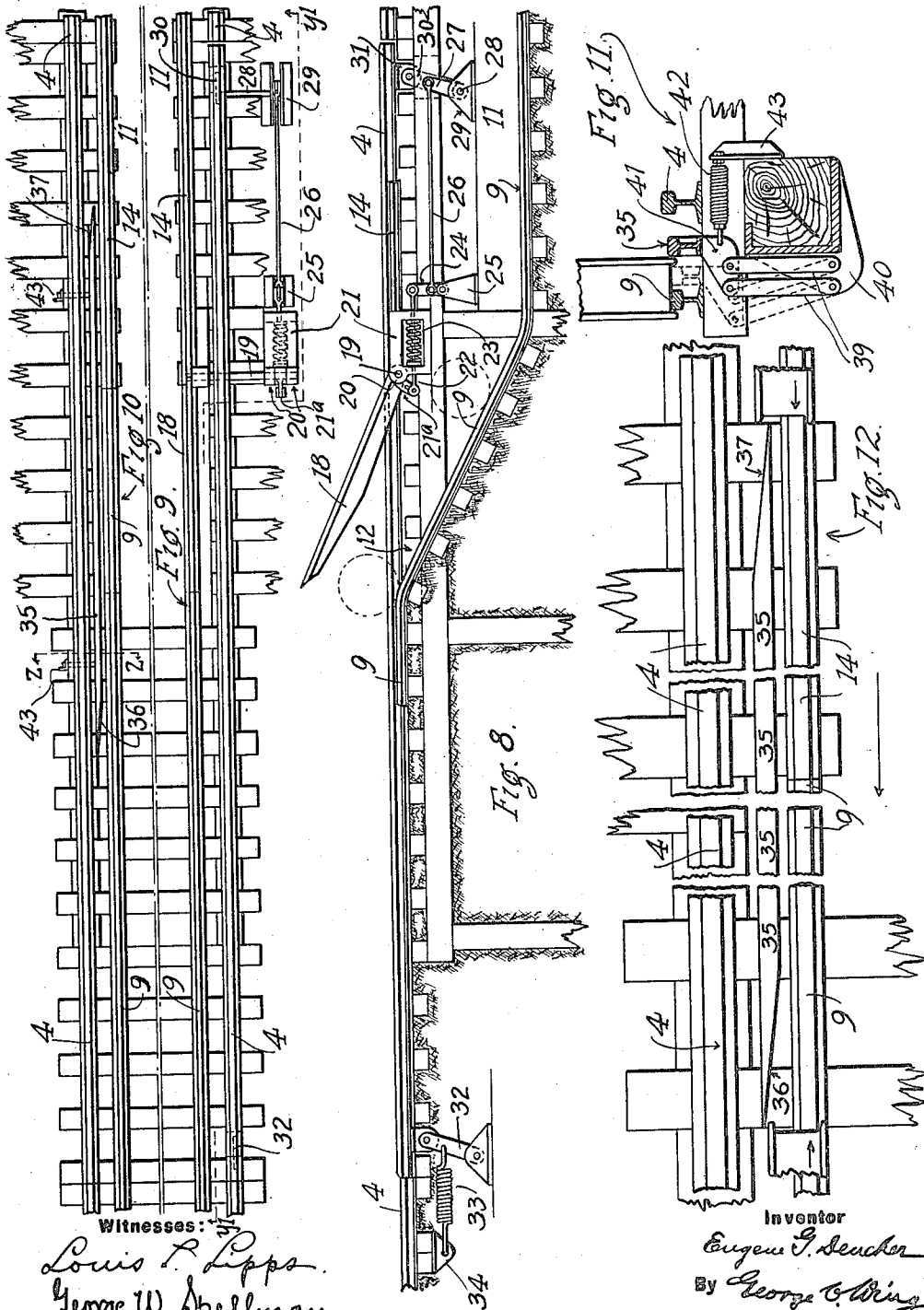
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 MEANS FOR BRINGING UP CARS TO TIPPLES.
 APPLICATION FILED JUNE 23, 1913.

1,165,947.

Patented Dec. 28, 1915.
 2 SHEETS—SHEET 2.



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MEANS FOR BRINGING UP CARS TO TIPPLES.

1,165,947.

Specification of Letters Patent.

Patented Dec. 28, 1915.

Application filed June 23, 1913. Serial No. 775,448.

To all whom it may concern:

Be it known that I, EUGENE G. DEUCHER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Means for Bringing Up Cars to Tipples, as to which I hereby declare the following to be a full, clear, and exact description, reference being had to the several drawings accompanying and forming a part of the specifications, and wherein similar parts are designated by the same numerals in each case.

As is well understood by those who have to do with the handling of coal, ore and like gross material by modern methods, one or another of the accepted types of tippie, is stationed at a predetermined point where the cars are to be successively overturned and emptied of their loads. Such point and tippie is, of course, at some dock or other place of transshipment at the terminal of the railways by which the material to be handled or transshipped is imported, and, the methods in question, in every instance, involve specially designed trackways and equipments for taking the loaded cars from the main tracks and sidings, and bringing them up to and feeding them into the tippie. Heretofore lay-outs of this description have essentially consisted of an approach track leading upwardly to the tippie, duly connected to the supply track, and a subsidiary track, included within the approach track, on which a truck or pusher-car, commonly known as the "ground-hog," is appropriately mounted so as to be drawn up the grade toward the tippie, in a rear contact with the loaded cars, by a drum and cable provided for the purpose. In these designs the subsidiary track terminates at the lowest point of the grade in an abrupt descent into a pit, located below the approach trackway, of suitable dimensions to receive the ground-hog therein without its protruding above said trackway. The loaded cars are switched onto the approach track and brought to a rest thereon between the tippie and said pit immediately in front of the pit. The pusher-car or ground-hog is then pulled in toward the tippie when it will rise up from the pit behind the loaded car and, of course, propel the latter up the grade until it enters the tippie and is in place for clamping and overturning. Thereupon the pusher-car

is allowed to return, by force of gravity, down its track into the pit and another car is brought down in front of the pit, to be propelled upwardly, in turn, as before. It is evident that when the lay-out for a tippie is as just described, a second car can never be brought down the approach track to the point for engagement by the pusher-car until the latter has returned from the tippie, and is in the pit behind said point. An appreciable loss of time in bringing up cars is thus occasioned, between each operation, which, on the whole, amounts to a natural slowing up of the machine from its maximum capacity, and a corresponding failure to realize the full value represented by the plant.

The purpose of the present invention is to improve upon said prevailing system of engaging and bringing up cars, so that the operation of the tippie may be more continuously and rapidly maintained.

In the drawings, Figure 1 represents a tippie with a sectional view of the approaches thereto. Fig. 2 is a plan view of a tippie with its approach and supply tracks. Fig. 3 is a sectional view of the outer end of the pit, with the several tracks involved, and the pusher-car in its initial position. Fig. 4 is a plan view of such pit-portion and tracks. Fig. 5 is a plan view of the pusher-car, within such portion and of the adjacent track arrangements. Fig. 6 is a sectional view, on the line $x x$ in Fig. 3. Fig. 7 is a like view on the line $y y$. Fig. 8 is a sectional view on the lines $y^1 y^1$ in Fig. 9 of the approach track and pit-entrance. Fig. 9 is a half-plan view of Fig. 8. Fig. 10 is a similar view of an alternative arrangement of the tracks at the entrance. Fig. 11 is a sectional view on the line $z z$, in Fig. 10, with the rails for the bridge-section shown in full and, dotted lines, in their extreme positions. Fig. 12 is a broken plan view of certain details of the arrangement shown in Fig. 10.

In the drawings 1 represents the tippie, characterized by the usual framework construction, with an emptied car 2 therein ready to be pushed out by an incoming loaded car 3.

4 is the approach-track which extends, from a kick-back 5 at its outer terminal, downwardly, by a slight gradient, to and along a horizontal or level section midway

of the tipple, and thence rises gradually to the tipple 1. Supply-tracks 6 and 7, are indicated as leading, from the car-yard or a main railway line, through a common trackway 8 to the approach track at a point thereon between said lever section and the outer terminal at 5. Intermediately of the rails of the tracks 4, is a track 9 for the pusher-car 10. Said pusher-track 9 extends from the tipple down the approach track into and along a subway 11, beneath the portion of said track where the loaded cars are to be engaged, wherein the ground-hog will disappear after each trip to the tipple. This subway 11, in the improvement under consideration—unlike the corresponding pit-feature of prevailing arrangements of the kind—is much prolonged in the direction of the track 4, although of the same depth and cross-dimensions as in other cases. It begins at a point fully a car's length nearer the tipple beneath the horizontal portion of the approach track referred to and ends at the usual and proper distance to enable the pusher-car to be brought up from its terminal in the pit, to and behind the loaded cars when the latter have been brought into place in said horizontal section of the track 4. Upon the level portion of this latter track 4, between entrance and exit passageways, 12 and 13, to and from said subway and above the subway, between the rails of said track 4, is a secondary track 14 for the pusher-car. It is in every way similar to, and in reality is a portion and continuation of the main track 9 upon its surface level, but with interruptions by and on account of the span of the passageways referred to. In consequence it is not only necessary to arrange for the ascent of the pusher to this trackway 14 from the farther terminal of the subway, but also for its passage over said track-intervals between the tracks 9 and 14 occasioned by said passageways. To this end, and, in order that the pusher-car shall, at the same time, ascend horizontally, I provide, at the outer end of the subway, the parallelly arranged inclined switch-sections 15 and 16, for the front and rear pairs of the pusher's wheels. The section 15 is hinged to the end of the track 14 and inclines downwardly to the track 9 below, while the section 16 is similarly hinged, but to an auxiliary track 17 that extends above and across the mouth of the pit at this point, between the rails of the approach track 4 and the secondary track 14 projected. Said hinge-points of the two sections must, of course, be at a distance from each other precisely corresponding to the longitudinal dimension of the wheel base of the truck or pusher itself.

In order that the pusher 10 shall accommodate itself to the several tracks involved, the tread of its rear wheels is of sufficient

width to engage, as occasion requires, and be in bearing with both the switch-section 16, and, thereafter, the tracks 14 and 17. In order that the truck 10, when thus brought up onto the track 17, may cross over the interval caused by the mouth or entrance of the passageway 12, I provide a draw-bridge arrangement at this point that will close at the approach, toward the tipple, of said truck, and, thereafter, automatically open to permit the pusher, upon its return, to re-enter the subway, through the passageway 12. Said arrangement, as illustrated in the drawings, consists of a bridge-switch or rail-sections 18, of a suitable length to span the interval between the rails of the track 14 and the track 9, due to the passageway 12. Said switch is arranged so that its rails, in normal or closed position, will be in alignment with the rails of the tracks 9 and 14. The rails of the switch are keyed to transverse shafts 19 that extend out laterally of the rails of the tracks 4, and through a pair of ears 20 upon housings 21, located on each side of said rails 4. Between the ears and keyed to the shafts 19, are downwardly extending arms 21^a, pivoted to the end of plunger-rods 22, of a spring 23 within said housing. The other ends of the rods 22 are pivotally connected to the upper end of an upright lever 24 in each case, whose lower ends are similarly connected to fixed bearings 25. Connecting-rods 26 extend from the middle points of the levers 24, in the direction of the track, to the upper ends of levers 27, which are keyed at their lower ends to a transverse shaft 28, the latter being supported at each end by fixed bearings 29 at the sides of the track 4. On this shaft, near its ends, are keyed the upwardly inclined levers 30, pivoted, at their upper ends to brackets 31 that depend for the purpose from the inner faces of the rails of the track 4. The track 4 from this point thereof to a predetermined point between the subway and tipple is constructed as a unit-portion of the entire track 4, and is free to move, as such with respect to the rest of the track, upon and around the inclined levers 30 just described, and corresponding inclined levers 32, that are similarly located at the other end of said movable track section (Fig. 8). Ancillary tension springs 33 are shown as connecting the levers last above referred to to fixed anchorages at 34.

In Figs. 11 and 12 is shown an alternative arrangement for bridging over the interval in the pusher-track at the entrance to the passageway 12. It consists of the laterally movable rails 35, at such point, of a length to span said entrance and to extend on either side thereof to a sufficient distance to become severally engaged and actuated—as hereinafter explained—by the wheels of the pusher-car as it approaches from either di-

rection. Said rails are reversely or alternately tapered on their sides at the ends—as at 36 and 37—to a degree, dependent upon their own dimensions and location in each particular construction, in connection with the tread and flanges of the wheels of the pusher-car to be employed. The location of the rails and the angle of their taper, in every instance, must be such, with relation to said treads and flanges, as to insure the engagement of the outside face of the rail sections along the taper by the inside face of the flanges when the pusher car is traveling toward the tippie and said entrance to the passageway 12, and, of the inside face of the rail-section, along the taper, by the outside face of the flanges, when the pusher-car is traveling from the tippie toward said entrance. The tread of the wheels must, in turn, be of the proper dimensions, in view of the particular dimensions and location of the movable rails 35, to span the same and the rails of the track 14, when the flanges of said wheels have moved up and along the tapers 37 and crowded the rails 35 in against said track and rails for the purpose.

The rails 35, in their stated positions between and parallel with the rails of the track 14, are severally mounted upon a system of upright parallel bars 39, 39, which pivotally engage, at their lower ends, a fixed support 40, and, at their upper ends, the downwardly extending lever-arms 41 that project from or are firmly secured to the rails 14 for the purpose. An actuating-spring 42, for holding the system, and the rails supported thereby, in the normal position, when not traversed by the pusher, is shown as interposed between and connecting the lever-arms 41 to an opposite fixed anchorage 43.

By means of the prolonged pit and track-details described, it will be manifest that the operation of feeding cars to tipples will be materially expedited as compared with prevailing methods of the kind.

A car having been sent down the approach track to a point in front of the entrance to the passageway 13, the pusher is immediately brought up upon the inclined switch-sections 15 and 16 to the rear of the waiting car, to propel the same along its track 4. When the propelled car reaches the vertical movable portion of said track 4, its weight will depress the rails and, the inclined levers 30 and 32 thereby, through the connecting rods 26, the plunger-rods 22 and the arms 21, turning the shafts 19, so that the bridge-switch 18, keyed to the same, will, in consequence, rotate downwardly across the passageway 12 and close the track interval at that point for the traverse of the pusher-car. Obviously as soon as the car has passed said movable portion of its track, the reverse

action of the springs 23 and 33, upon the several parts involved, will rotate the switch 18 back to its normal position, and leave the passageway 12 open and unobstructed for the return of the pusher-car therethrough, along the track 9, past the hinged sections 15 and 16 to its starting point near and below the exit-space 13, without the necessity—as in present methods—of retraversing the portion of the approach track where the cars are to be engaged for propulsion. In consequence, when one car has been propelled upwardly from this part of its track, such part may be immediately occupied by the next car to be propelled, without the need of waiting until the pusher has returned from the tippie and gained a sunken pit or place beyond such point of engagement. Similarly, in the use of the alternative arrangement described, when the pusher-car has been brought up through the passageway 13, and has started a car upward from its place on the track 4 above, the inside faces of the flanges of the front wheels of the pusher-car will encounter the tapers 37 of the laterally movable rails 35, which, by the parallel movement of the supporting bars 39, will be carried over toward the rails of the track 14 within the tread of the wheels. These supplemental rails 35 will thus serve as the bridge across the space 12 for the pusher-car, but, under the force of the spring 42, will at once resume their normal position when the rear-wheels of the pusher have passed beyond the bridge section, and its rails are no longer under the constraint of the flanges. Under the conditions shown, when the pusher-car returns, the outer face of the rear wheels must encounter the reversed tapers 36 and the car continue on the track 9, down the passageway 12 and, through the hinged sections 15, 16, to the further terminal of the subway 11.

Having thus described my said invention, what I claim and wish to protect by Letters Patent, is:—

1. A means for bringing up cars to tipples comprising an approach-track, inclining downwardly therefrom; a subway extending beneath said track the length of the car to be brought up; passageways at the ends of the subway to the track; a main pusher-track, intermediate of the approach-track, extending from the tippie through the nearer passageway and subway to the farther passageway; a secondary pusher-track, intermediate of the approach-track, between said passageways; movably suspended switch-connections between said main and secondary track through the farther passageway, and switch connections between said tracks across the nearer passageway; a pusher-car adapted to traverse said tracks for the same downwardly from

the tipple by gravity, and to be propelled upwardly on said tracks and switches for the same, together with suitable means for propelling the car accordingly, substantially as shown and described.

2. In means for bringing up cars to tipples, an approach-track, a subway along the line thereof having passageways to said track at its ends, a main pusher-track extending intermediately of the approach-track through the nearer of said passageways to and along said subway, a secondary pusher-track, intermediate of the approach track, between said passageways, and a switch-section hinged to the farther end of said secondary track and inclining downwardly through said passageway at the end of the subway to said track below, substantially as shown and described.

3. In means for propelling cars upwardly

on an approach track by a pusher-car, the combination of a subway along the line of said track having passageways to said track at its ends, a main pusher-track extending intermediately of the approach-track through the nearer of said passageways to and along said subway, a secondary pusher-track, intermediate of the approach-track, between said passageways, suitable rail-mechanism, at the nearer end of said secondary-track, for bridging over the spaces between the rails of said main and secondary tracks at such point, when actuated by the pusher-car, and a pusher-car traversable on said main and secondary tracks, substantially as shown and described.

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In presence of—

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."