

Dec. 22, 1925.

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A. G. REESE ET AL

TIPPLE

Filed May 11, 1922

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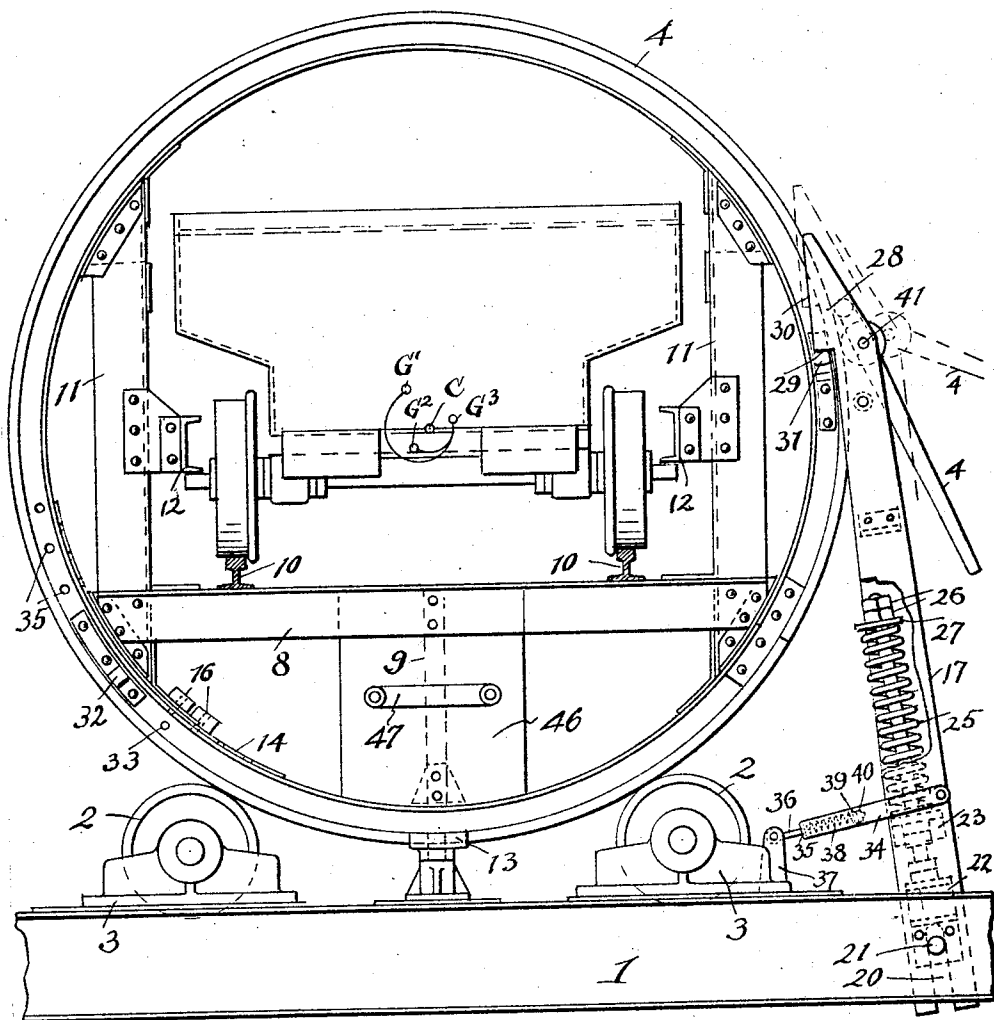


Fig. 1.

Inventors.

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and  
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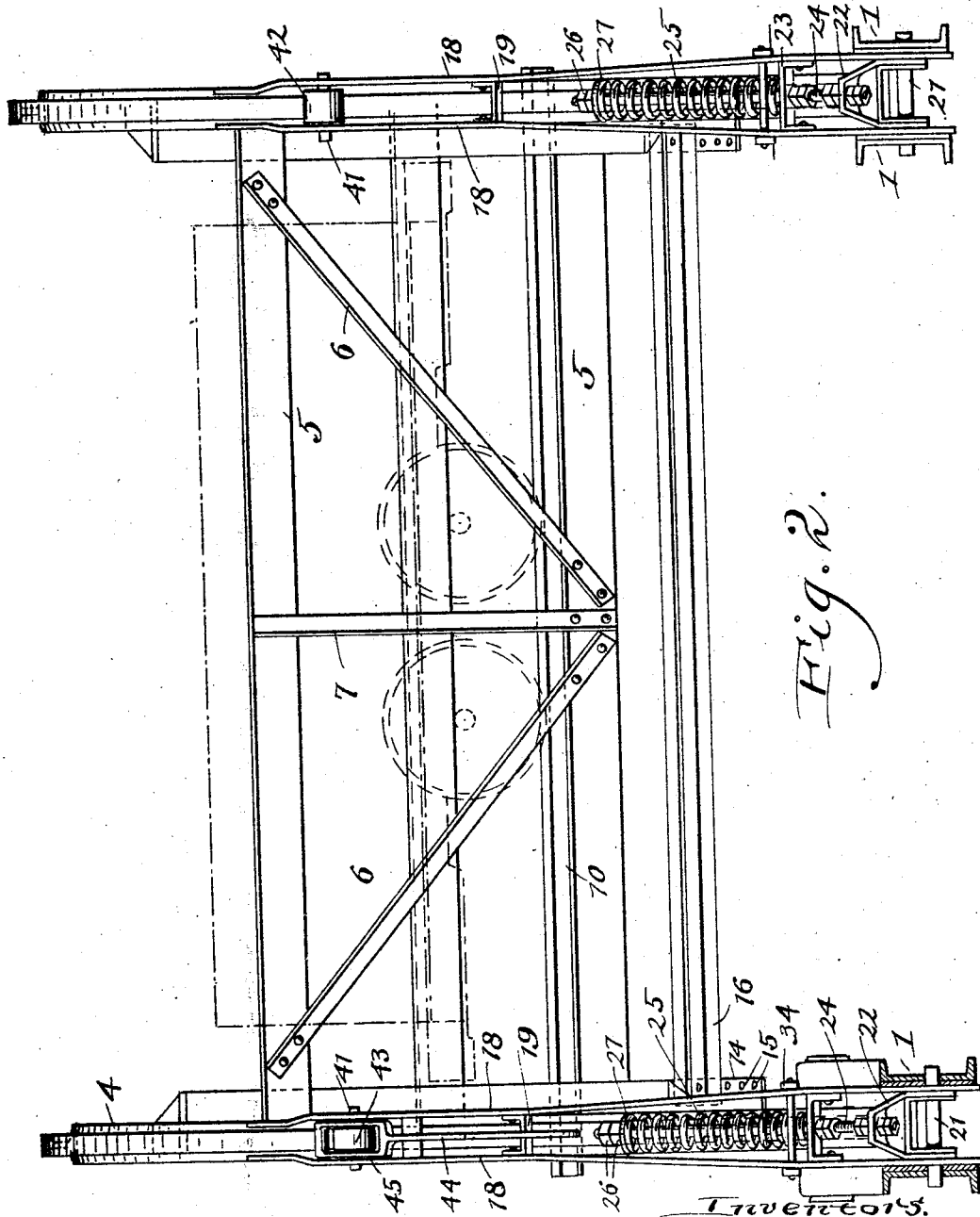


Fig. 2.

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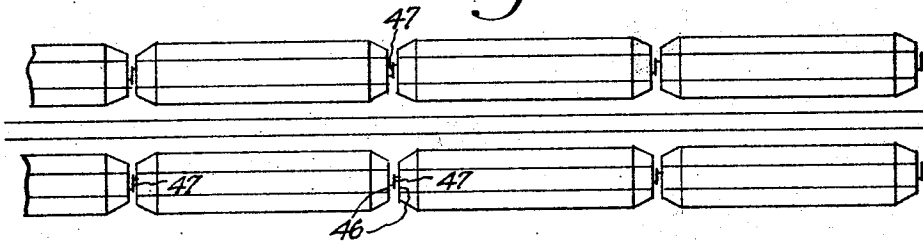
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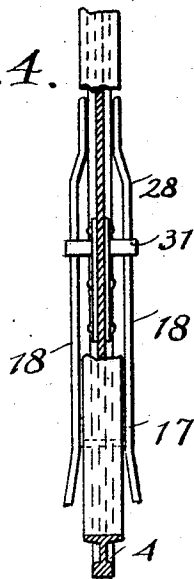
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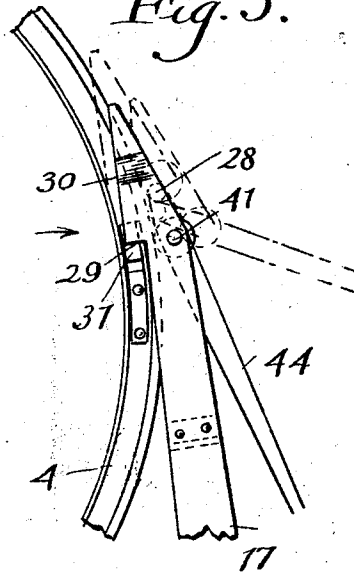
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



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## UNITED STATES PATENT OFFICE.

ARTHUR G. REESE, OF CLEVELAND, AND PAUL H. DOUGLAS, OF CLEVELAND HEIGHTS, OHIO, ASSIGNORS TO THE WELLMAN-SEEVER-MORGAN COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

## TIPPLE.

Application filed May 11, 1922. Serial No. 560,094.

*To all whom it may concern:*

Be it known that we, ARTHUR G. REESE and PAUL H. DOUGLAS, citizens of the United States, and residents, respectively, of Cleveland, in the county of Cuyahoga and State of Ohio, and Cleveland Heights, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Tipples, of which the following is a full, clear, and exact description.

This invention relates to car tipples generally, but more particularly to tipples of the gravity operated type in which the tipple is actuated by gravity both in its dumping movement and in its return movement.

An object of the invention is to provide a mounting for a rotatable car cradle in which the frictional resistance to the movement of the cradle is greatly reduced.

A further object is to provide improved means for shifting the center of gravity of the cradle to increase or decrease the initial turning impulse.

A further object is to provide improved means for holding said tipple in car receiving position, and for limiting the turning movement thereof in dumping.

A further object is to provide a tipple construction which will permit a tipple to be made of a length capable of receiving any desired number of cars end to end and yet be successfully operated by gravity.

Generally speaking, the invention may be said to comprise the elements and combinations thereof set forth in the accompanying claims.

In the annexed drawings forming a part of this specification, Fig. 1 is an end elevation of one of the rotary cradles; Fig. 2 is a side elevation of a cradle; Fig. 3 is a diagrammatic plan view showing a multiple unit tipple adapted to receive a train of cars; Fig. 4 is a fragmentary detail view partly in section showing the end of the stop lever in engagement with the stop lug; Fig. 5 is a fragmentary side elevation of the head of the stop lever in engagement with the lug on the cradle; Fig. 6 is a detail view of the adjustable stop lug.

Referring to the annexed drawings, fixed supporting frames 1 are provided with laterally spaced supporting rollers 2 which have smooth cylindrical peripheries and are journaled in bearing brackets 3 fixed to the

supporting beams. The supporting rollers 2 are journaled in roller bearings to reduce frictional resistance to turning movement. Each cradle consists of end supporting rings 4 which may be made of railroad rails, the flanges of the rails being on the inside and the ball of the rails forming a smooth cylindrical surface adapted to rotate upon the supporting rollers 2. Longitudinal rails 5 connect the end rings 4 and suitable diagonal braces 6 connect the longitudinal rails intermediate the end rings. Central vertical braces 7 may be secured upon the longitudinal rails 5. Horizontal track supporting bars 8 are rigidly connected to the end rings 4. Vertical supporting bars 9 may be secured to the centers of the cross bars 8 and to the rings. Track rails 10 are mounted upon the cross bars 8 and extend longitudinally of the cradle. When the cradle is in normal position the rails 10 are in alignment with the rails of a stationary trackway so that cars can be run from said trackway into the cradle and can be run out of the cradle after dumping. On opposite sides of the track formed by the rails 10 are vertical side bars 11 rigidly secured to the rings 4. Any suitable means may be provided for holding the car in place on the track during dumping. For that purpose we have shown longitudinal axle engaging bars 12 which are secured to the inner sides of the vertical side bars 11.

In order to prevent endwise movement of the cradle, thrust rollers 13 are journaled upon the supporting beams 1 for rotation about a vertical axis and engage the balls of the ring rails 4. Heretofore it has been common practice to provide the supporting rollers with flanges engageable with the sides of the cradle rails to prevent endwise movement. However, in a gravity tipple end thrusts against such flanges are apt to create sufficient friction to interfere with the operation. By providing rollers to take the end thrust such frictional resistance is materially reduced.

As shown in Figs. 1 and 2 arcuate plates 14 are secured upon the flanges of the end rings 4. The plates 14 have a series of apertures 15 along their inner edges by means of which a counterweight 16 can be adjustably attached thereto. The counterweight 16 consists of one or more bars extending longi-

tudinally of the cradle and attached to the plates 14 on the end rings 4. The counterweight may be varied by substituting heavier or lighter bars or by increasing or decreasing the number of bars or by shifting the bars along the arcuate plates 14. In the car receiving position of the cradle the plates 14 are at one side of a vertical plane through the axis of the cradle so that the counterweight tends to cause the cradle to rotate.

For holding the cradle in car receiving position and for limiting the movement thereof, latch levers 17 are pivotally mounted on the fixed support at one side of the cradle. The latch levers 17 are each made up of two spaced bars 18 rigidly connected intermediate their ends by means of spacers 19. The lower ends of the bars 18 of each of the levers have slots 20 therein adapted to fit over a pivot pin 21 carried by the fixed supporting beams 1. Between the bars 18 at the lower end of each lever a shackle 22 is pivotally mounted upon the pivot pin 21. Above the shackle 22 a channel bracket 23 is secured between the side bars 18. A rod 24 is secured to the pivoted shackle 22, extends through the bracket 23 and has a coil spring 25 mounted thereon which is clamped against the bracket 23 by means of nuts 26 at the upper end of the rod 24 beneath which is a washer 27 against which the upper end of the spring 25 bears. By adjusting the nuts 26 the compression of the spring 25 can be varied and the latch lever adjusted to hold the tippie with the rails 10 in alignment with the stationary track. The bars 18 of each lever 17 straddle the ball of a rail forming an end ring 4 of the cradle and are provided with stop engaging portions 28 consisting of an inner lug engaging shoulder 29 and a flat lug engaging inner face 30 extending upwardly from the shoulder 29.

Rigidly secured to the web of the cradle ring rail 4 at one end of the cradle is a stop lug 31 which projects on opposite sides of the web and engages with the shoulders 29 of the lever 17 at that end to retain the cradle in car receiving position. Spaced somewhat more than 90° from the lug 31 is a similar lug 32 which is engageable with the shoulders 29 of the latch lever to limit the rotative movement of the cradle in the dumping operation. A lug 32 is mounted upon each of the cradle rings 4 while there is a lug 31 on one of the rings 4 only. The lugs 32 are preferably adjustable along the rings 4 so that the extent of movement of the cradle in dumping may be varied.

To provide for such adjustment the webs of the ring rails 4 are provided with apertures 33 by means of which the lugs 32 can be adjusted thereon.

Adjacent the lower end of the latch levers 17 U-shaped links 34 are pivotally attached thereto. The outer end of each link 34 is

provided with a base portion 35 through which extends a rod 36 which is pivoted to a bracket 37 on the support 1. A coil spring 38 is mounted on the rod 36 inside the flange 35 and is clamped upon the flange 35 by means of a washer 39 and adjusting nuts 40. The coil springs 38 serve to yieldingly hold the latch head 28 in engagement with the flanges of the rings 4.

Connecting the bars 18 of each of the latch levers 17 at the rear of the shoulders 29 is a pin 41. The latch lever which engages the ring rail 4 which is not provided with a lug 31 has a wide roller 42 on the pin 41 which engages the ball of the rail. The other latch lever has a narrower roller 43 thereon and a lever 44 which has an eye portion 45 adapted to receive the roller 43 and is pivoted to the pin 41 at the sides of the roller. The rounded upper end of the lever 44 is engageable with the ball of the ring rail to disengage the latch lever 17 from the stop lugs 31 to permit the cradle to turn to dumping position.

When a loaded car has been positioned in the cradle the lever 44 is actuated to withdraw the stop shoulders 29 from engagement with the lug 31. Since the center of gravity by reason of the location of the counterweight 16 is at the side of the axis of rotation opposite the lug 31, the cradle will rotate in a direction to invert the car until the stop lugs 32 come into engagement with the stop shoulders 29 of the latch levers.

The impact of the lugs 32 against the shoulders 29 is taken up by the shock absorbing spring 25 which permits the lever to move longitudinally for a limited distance. When the car is dumped the center of gravity is shifted to the side of the axis toward the latch levers 17 by reason of the fact that the car trucks are then positioned on that side of the axis. This causes the direction of rotation of the cradle to be reversed. On return movement of the cradle the lug 31 engages the flat faces 30 of its latch lever and forces the lever outwardly to permit the lug to pass. The lug 31 will move slightly past the stop shoulders 29 and return into engagement therewith holding the cradle in position to permit the empty cars to be removed and full cars to be placed thereon.

In constructing tipples of a length to receive a train of cars it is necessary to provide a considerable number of sets of supporting rollers and it is difficult to avoid excessive frictional resistance of turning movement due to the fact that some of the rollers are apt to settle causing intermediate portions of the tippie to sag. To avoid this difficulty our tippie is constructed as shown in Fig. 3 of a series of independently mounted aligned units, each unit consisting of a rotary cradle such as shown in Figs. 1 and 2.

To a cross-bar at the ends of the cradles

is attached a plate 46. Between the adjoining ends of adjacent cradles, a link 47 is pivoted at one end to the end plate 46 of one cradle and at its other end to the end plate 46 of the adjoining cradle. By means of the links 47 the tippie units or cradles are caused to rotate in unison. A slight settling of the supports for one of the cradles does not interfere with the operation since the entire weight of each unit is carried by its own supporting rollers and the links 47 will permit relative vertical movement between adjacent units without interfering with the rotation of the tippie.

The positions of the center of gravity of the tippie before, during and after dumping, are indicated diagrammatically in Fig. 1. C is the central axis of the cradle which preferably coincides with the axis of the couplings between the cars so that cars may be dumped without being uncoupled from the train. Small circles  $G^1$ ,  $G^2$  and  $G^3$  indicate respectively, the center of gravity of the tippie with a loaded car thereon ready to be dumped, the center of gravity of the tippie at the limit of its swinging movement, and the center of gravity after the return of the tippie with the empty car thereon.

Having described our invention, we claim:

1. A gravity car tippie comprising a car support mounted for rotative movement about a longitudinal axis and having its center of gravity at one side of said axis, car holding means on said support, a pair of spaced stop lugs secured to said support, a latch having a stop shoulder engageable with one of said stop lugs to hold said support in car receiving position and with the other of said stop lugs to limit the rotative movement of said support, said latch acting to stop the movement of the car support in one direction only, and means for releasing said latch from said first lug to permit rotative movement of said support to dump a car thereon.

2. A gravity car tippie comprising a car support mounted for rotative movement by gravity to dumping position and for return movement by gravity after the car is emptied and a single yielding stop device engageable with a part of said support to retain it in car receiving position, with a second part thereof to limit its rotative movement and with said first mentioned part upon the return movement of said support to retain the support in car receiving position, said stop device acting to stop the movement of the car support in one direction only.

3. A gravity car tippie comprising a car support mounted for rotative movement in one direction by gravity to dump a loaded car and for return movement by gravity

after the car is emptied, engaging members on the car support spaced circumferentially a distance corresponding substantially to the angular movement of the car support in dumping, a stop member movable toward and from the axis of the car support into and out of the path of movement of said engaging members, said stop member having a substantially radially disposed face engageable with either engaging member to prevent the passage thereof in one direction and an opposite face inclined with respect to the first to permit passage of an engaging member in the opposite direction, and means for yieldingly supporting said stop member to cushion the impact of an engaging member against the first-mentioned face and to permit outward movement upon impact of an engaging member against the opposite face thereof.

4. In a car tippie, a series of rotatably mounted flexibly connected car receiving cradles arranged end to end.

5. A car tippie comprising a series of rotatably mounted car receiving cradles having car receiving track sections extending longitudinally thereof and means for holding cars upon said tracks, said cradles being arranged end to end with the track sections in alignment, and links connecting adjoining ends of said cradles to cause said cradles to rotate in unison.

6. A gravity car tippie comprising a plurality of cradles each having car holding means thereon, and arcuate supporting bars, supporting rollers upon which said arcuate bars rest, and flexible connections between the cradles by which the cradles are caused to rotate in unison.

7. A gravity car tippie comprising a car receiving cradle having a cylindrical peripheral supporting portion and means for supporting the same to turn about the axis of said peripheral portion, the center of gravity of the cradle being at one side of the axis of rotation thereof, car holding means on said cradle, a pair of spaced stop lugs on said peripheral portion, a yieldably mounted latch having a shoulder engageable with one of said stop lugs to hold said support in car receiving position and with the other of said stop lugs to limit the rotative movement of said cradle, said latch acting to stop turning movement of the cradle in one direction only, and means for releasing said latch from said first lug to permit rotative movement of said cradle to dump a car thereon.

8. A gravity car tippie comprising a car receiving cradle having a cylindrical peripheral supporting portion and means for supporting the same to turn about the axis of said peripheral portion, said cradle having a longitudinal car receiving track so positioned that when a loaded car is placed

thereon the center of gravity is above the axis but is shifted to the opposite side of the axis when the car is emptied whereby said cradle is adapted to return by gravity to normal position after dumping, a pair of stop lugs upon said peripheral portion, a yieldably mounted latch engageable with one of said stop lugs to hold said support in car receiving position and with the other of said stop lugs to limit the rotative movement of said support, and means for releasing said latch from said first lug to permit rotative movement of said support to dump a car thereon.

9. A gravity car tippie comprising a car receiving cradle, having a cylindrical peripheral supporting portion and means for supporting the same to turn about the axis of said cylindrical portion, said cradle having a longitudinal car receiving track so positioned that in operation the center of gravity is shifted upon emptying a loaded car, whereby said cradle is adapted to move to dumping position and return to car receiving position by gravity, a pair of spaced stop lugs on said peripheral portion, a latch member yieldingly held in engagement with said peripheral portion and engageable with one of said lugs to hold said cradle in car receiving position and with the other of said lugs to limit the rotative movement of the cradle, said latch having an inclined face engageable by said first lug on return movement of the cradle to enable said lug to pass said latch and move into operative engagement therewith, and means for releasing said latch from said first lug to permit rotative movement of said cradle to dump a car thereon.

10. A gravity car tippie comprising a car receiving cradle, having a cylindrical peripheral supporting portion and means to support the same to turn about the axis of said cylindrical portion, said cradle having a longitudinal car receiving track so positioned that in operation the center of gravity is shifted upon emptying a loaded car, whereby said cradle is adapted to be moved to dumping position and returned to car receiving position by gravity, means for limiting the swinging movement of said cradle, comprising a plurality of latches engageable with said peripheral portion at longitudinally spaced points and lugs upon said cradle engageable with said latches, each of said latches being engageable with a lug to limit the movement of the cradle in dumping, one of said latches being engageable with a lug to retain said cradle in car receiving position, and means associated with said last mentioned latch to release said latch from its lug to permit said cradle to turn to dumping position.

11. A gravity tippie comprising a cradle having arcuate supporting bars, supporting rollers upon which said bars rest, whereby said cradle is supported for rotative movement, a track supported upon said cradle bar, and a counterweight secured to said cradle bars at one side of the axial plane perpendicular to the track by means permitting adjustment of the counterweight along said bars.

12. A gravity tippie comprising a cradle having arcuate supporting bars, supporting rollers upon which said bars rest, whereby said cradle is supported for rotative movement, car holding means carried by said cradle, certain of said cradle bars having a flange extending laterally therefrom and spaced lugs fixed thereto, a stop latch mounted at one side of said tippie, means for yieldably pressing said latch into engagement with said flange, said latch being engageable with one of said lugs to hold said cradle in car receiving position, and with the other of said lugs to limit the rotative movement of the cradle, and means for releasing said latch from said first mentioned lug.

13. A gravity tippie comprising a car receiving cradle having a cylindrical peripheral supporting portion, laterally spaced rollers rotatably supporting said cradle, the center of gravity of the cradle being at one side of the axis of rotation thereof, a yieldably mounted latch member at one side of said cradle, a stop lug on said peripheral portion engageable with said latch member to hold said cradle in car receiving position, a second lug spaced angularly from said first lug and adjustably secured to said peripheral portion, said second lug being engageable with said latch member to limit the rotative movement of said cradle, and means for releasing said latch member from said first lug.

14. A gravity tippie comprising a fixed support, laterally spaced supporting rollers thereon, a car dumping cradle having a cylindrical peripheral portion resting on said rollers, a latch bar pivoted to said support, a spring interposed between said bar and its pivot, a spring interposed between said bar and support for yieldingly holding said bar in engagement with said peripheral portion of said cradle, stop lugs on said cradle engageable with said latch bar for holding said cradle in car receiving position and for limiting the rotative movement thereof, and means for releasing latch bar from said first mentioned lug.

In testimony whereof, we hereunto affix our signatures.

ARTHUR G. REESE.  
PAUL H. DOUGLAS.