

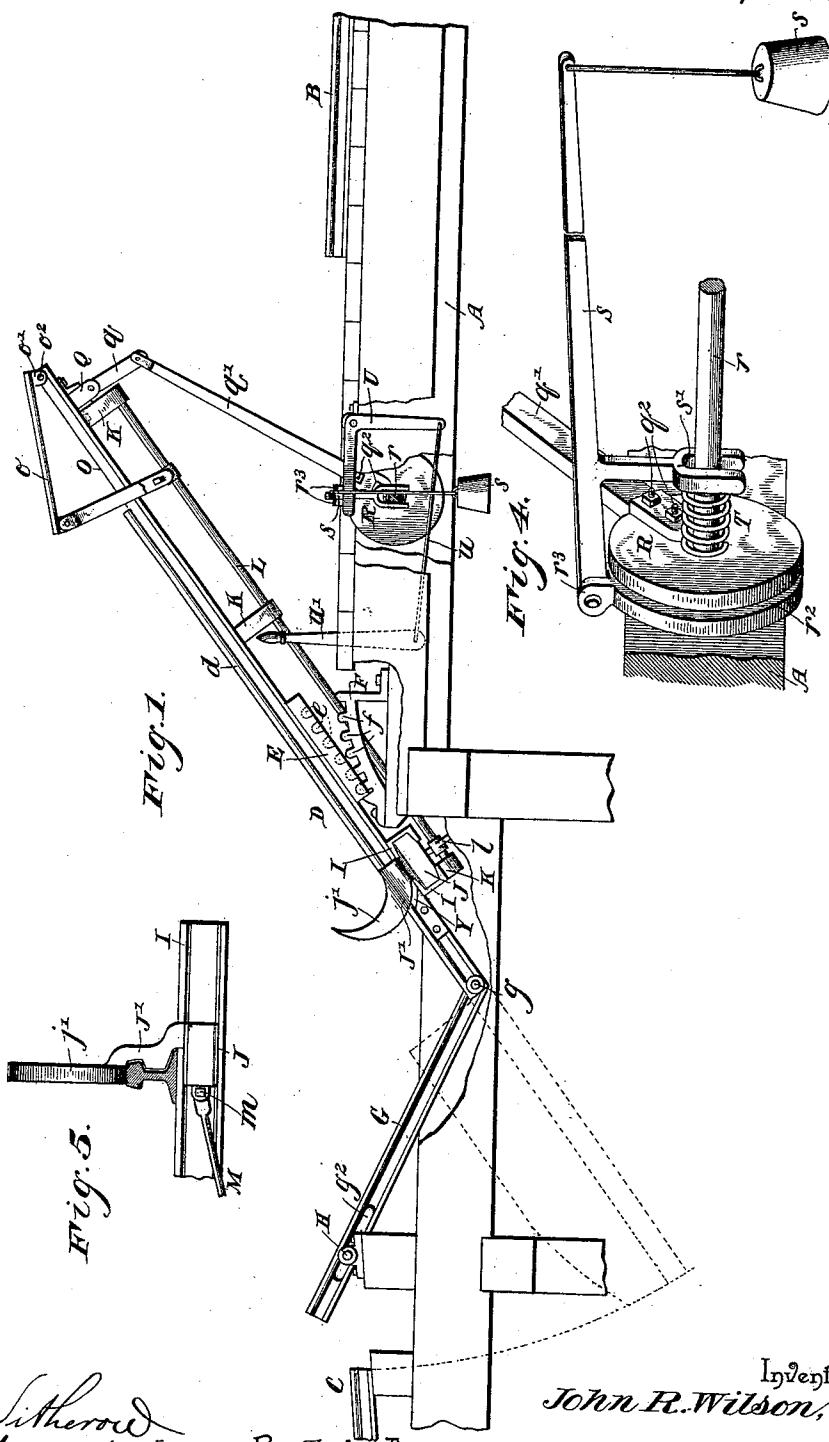
(No Model.)

3 Sheets—Sheet 1.

J. R. WILSON.
AUTOMATIC DUMPING APPARATUS.

No. 508,158.

Patented Nov. 7, 1893.



Witnesses;

J. M. Lithered
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By his Attorneys,

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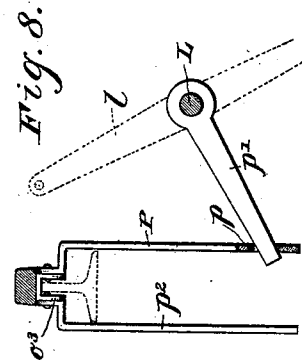
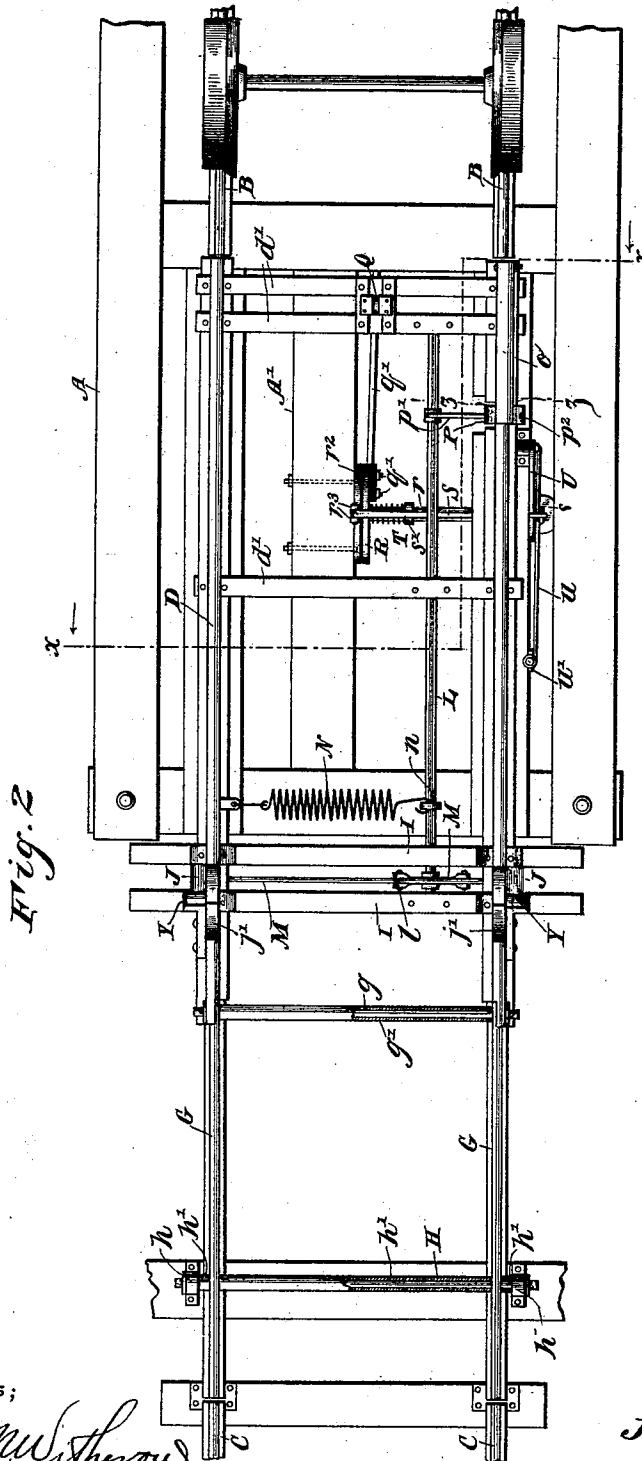
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3 Sheets—Sheet 2.

J. R. WILSON.
AUTOMATIC DUMPING APPARATUS.

No. 508,158.

Patented Nov. 7, 1893.



Witnesses;

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(No Model.)

3 Sheets—Sheet 3.

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Fig. 7.

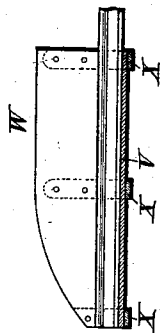


Fig. 3.

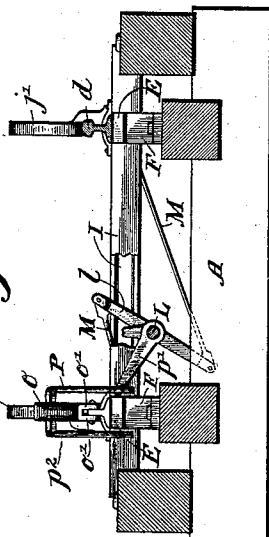
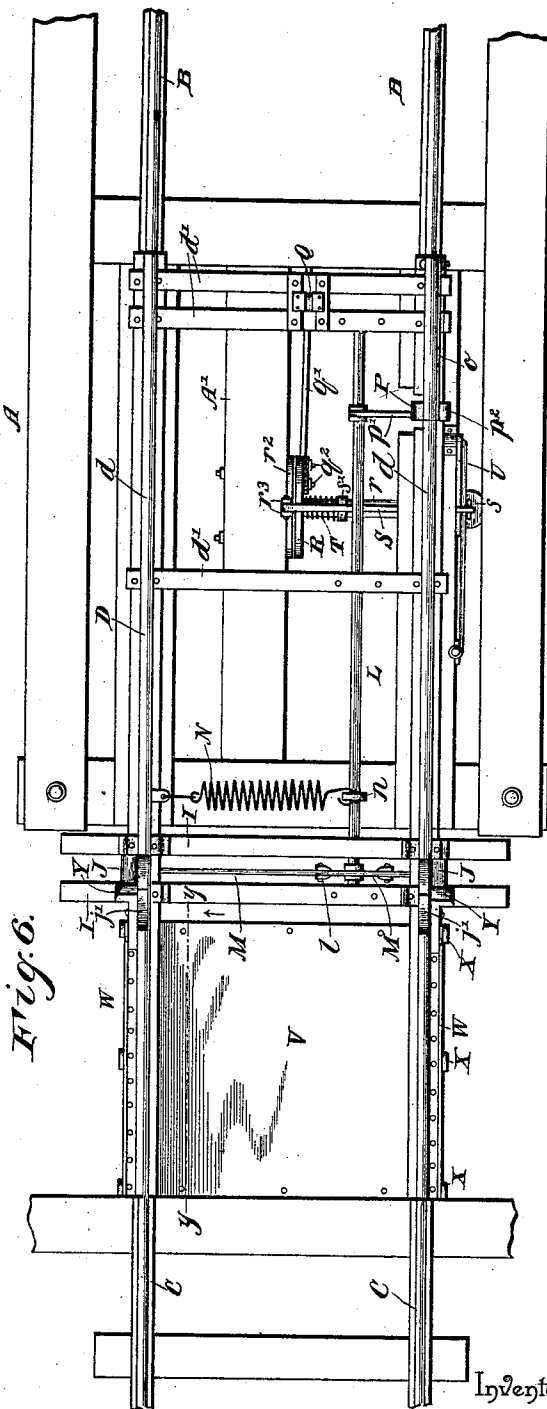


Fig. 6.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC DUMPING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 508,158, dated November 7, 1893.

Application filed October 27, 1892. Serial No. 450,119. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. WILSON, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Automatic Dumping Apparatus, of which the following is a specification.

This invention relates to dumping apparatus; and it has for its object to provide an improvement in car-dumping apparatus for use at coal and ore mines, in which efficient means are provided for rapidly dumping the loaded cars as they come from the mine, automatically.

To this end the invention primarily contemplates an improvement in automatic apparatus of this character, wherein the emptied car or wagon is automatically released from the dumping devices at the same time the loaded car or wagon is traveling to the point the empty wagon has just left.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a side elevation partly in section of a dumping apparatus constructed in accordance with this invention, illustrating the dumping track section in its tilted position. Fig. 2 is a top plan view of the apparatus illustrating the apparatus in its normal position about to receive a loaded car. Fig. 3 is a vertical transverse sectional view on the line *x—x* of Fig. 2. Fig. 4 is a detail in perspective of the brake mechanism. Fig. 5 is a detail sectional view illustrating the arrangement and support of the stop horns. Fig. 6 is a top plan view of a modification of the apparatus. Fig. 7 is a detail sectional view on the line *y—y* of Fig. 6. Fig. 8 is a detail sectional view on the line *z—z* of Fig. 2.

Referring to the accompanying drawings—A represents a trestle supported frame of the ordinary type used in dumping apparatus for coal and ore cars, and upon the same is secured the main stationary track rails B, upon which the mine cars after being raised from the mine are designed to travel to the dump-

ing apparatus herein described, arranged in the line of the main track, and from which the empty cars, after being automatically dumped thereby, are returned in the usual manner to be refilled, over the rails C, of the inclined portion of the main track.

The loaded cars from the main track, pass over the rails D', to the tilting or rocker track section D. The tilting track section D comprises the opposite parallel tilting rails *d*, which, when in their normal horizontal position, form a continuation of the main stationary rails B, and are connected in their spaced position by means of the intermediate bridles *d'*, as fully illustrated. To the under side of each of the opposite rails *d*, of the tilting track section is secured a rocker shoe E, securely bolted or riveted to the flange and bottom of the rail, and provided with a series of notches *e*. The opposite rocker shoes E, of the tilting rails, are adapted to rock over the opposite stationary rocker castings F. The rocker castings F, are constructed segmental in shape, and are provided upon their upper faces with the teeth or cogs *f*, and are adapted to register with the notches in the rocker shoes, so as to provide a secure rocking pivot for the tilting tracks, so that the same does not abruptly tilt as the loaded car overbalances the same, but in order to provide an even unprecipitous tilt. Said opposite rocker castings F, are located at the end of the frame timbers supporting the main track rails, at the point where the loaded cars are to be dumped, and the rocker connection with the tilting track section is arranged at such a point, so that when the stop devices check the loaded car, the weight of the latter is sufficient to tilt the track section and relieve the car entirely or partially of its contents.

Forming continuations of the inclined and tilting track sections are the drop track rails G. The drop track rails G are halved at their dropping ends onto the dropping ends of the rails *d*, and are securely connected thereto by the transverse pivot rod *g*, connecting the meeting ends of the track sections to form a pivotal or hinged joint, which breaks downward as the loaded car tilts the tilting track section. The transverse pivot rod *g*, accommodates the spacing sleeve *g'*,

intermediate of the joined rail ends, and holds the same in direct alignment with each other. The drop track rails G, are provided near their other ends in the web thereof, with
 5 longitudinally disposed slots g^2 , working over the stationary transverse supporting rod H. The supporting rod H, projects beyond the opposite rails G, and has its ends mounted in the boxes h, secured upon one of the frame
 10 timbers adjacent to the ends of the inclined rails C, and said rod also accommodates the spacing sleeves h' , which provide means for holding the drop track rails in their spaced positions, so that when the track sections are
 15 in their normal aligning positions, the rails of the several track sections will form continuations of the same track. When the tilting track section is tilted, and the wagon or car dumping, the drop rails G, hold the
 20 tilting section steady, and when the latter resumes its horizontal position, said drop rails take the empty car and lead the same directly onto the inclined track section to carry the car back to its refilling point.

25 Fixedly secured to the bottom of the rail d , a short distance beyond the rocker support are the parallel channel irons or grooved guide bars I. The said parallel guides I, have their grooves facing each other, and extend transversely under the tilting track section and project a short distance beyond the
 30 opposite sides thereof, in order to accommodate the sliding blocks J. The sliding blocks J, slide between and register with the guides I, and are each provided outside of the opposite rails d , with the upwardly extending arms
 35 J' , which carry upon their extreme upper ends the off-standing curved stop and releasing horns j' . The opposite stop and releasing horns j' , are adapted to normally lie directly
 40 over the tread or ball of the rails of the track, so that the forward wheels of the car take into the horns, so as to hold the car onto the tilting track section, until the same has been relieved
 45 of its contents, after which, means are provided for spreading the horns or throwing the same outwardly and away from the rails, so as to release the car and allow the same to pass beyond the horns, while the next loaded car is
 50 approaching the same.

Depending from the bridle d' , and other points of attachment are the bearing arms K, which accommodate the longitudinally disposed rock shaft L, which is adapted to be
 55 rocked or operated by the loading car as will be presently described. Fixedly secured to one end of the rock shaft L, at a point directly under and between the guides I, is the oscillating cross-lever l , to the opposite ends
 60 of which are pivotally secured the opposite, or upper and lower spreading rods or arms M. The spreading rods or arms M, are pivotally connected at their outer ends as at m , to the inner ends of the sliding horn blocks,
 65 J so that as the shaft L, is rocked in one direction, by the loaded car, the cross-lever l , throws the rods, M, in opposite directions,

and therefore spreads the opposite horns, to release the empty car from the tilting track section as herein described, and after the
 70 empty car has passed from the tilting section, the rock shaft, L, is rocked or turned back in the opposite direction by means of the retractile spring N, connected at its ends to one of the rails d , and to the arm n , project-
 75 ing from the rock shaft L, and thus providing means for automatically returning the sliding horns to their normal position above the rails to catch and hold the next loaded car.

One of the rails d , has the ball or tread
 80 thereof cut away for a portion of its length at one end as at O, in order to accommodate the tread lever o, which is designed to register with said cut away portion and form the
 85 tread or ball of the rail at this point when lowered or pressed down by the wheels of the loaded car or wagon. The tread lever o, is provided at one end with the pivot lugs o' , which embrace the web of the rail and are
 90 pivoted or fulcrumed thereto on the pin o^2 , as clearly illustrated in the drawings. The tread lever o, as noted, corresponds in shape to the tread or ball of the rail, and the same is
 95 further provided at its swinging end with the U-shaped yoke o^3 , fixedly secured to the under side thereof and adapted to embrace the web of the rail. Pivotally secured at its
 100 upper end to one of the jaws of said yoke is the operating bar P, provided near its lower end with a slot or opening p , which receives the outer end of the rock arm p' , fixedly
 105 secured at its other inner end to the rock shaft L, and providing means for positively rocking the shaft L, in one direction, as the tread lever is pressed down by the loaded car. Fixedly
 110 secured to the other opposite jaw of the yoke o^3 , is the opposite guide bar or arm p^2 , corresponding to the bar P, and together with the same, forming a yoke guide and brace for the tread
 115 lever o, to hold the same to its up and down movement as is clearly illustrated in Fig. 8 of the drawings. Now it will be apparent, that, after a loaded car has been relieved of its
 120 contents and the tilting and drop track sections have resumed their normal horizontal positions, the advancing loaded car will press the lever o, into alignment with the rail and thereby spread the horns away from the rails, so
 125 that the loaded car will bump the empty car off of the dump, and after the rear wheels of said loaded car pass the tread lever, the retractile spring N, immediately withdraws the horns to their normal position in time to stop and hold the loaded car, so that the operation can be repeated automatically, as will be readily
 130 apparent.

Depending from the end bridles at one end of the tilting track section are the lugs Q, between which is pivoted one end of the link q , to the other end of which is pivoted one end
 135 of the brake bar q' , which by the mechanism to be described is adapted to regulate the abruptness or suddenness of the tilt, and also to ease the jar of the tilting track section re-

turning to its normal position. The other lower end of the brake bar q' , is fixedly bolted as at q^2 , to the movable friction disk or wheel R. The friction disk or wheel R, is loosely
 5 mounted to turn on the stationary stub shaft or axle r , secured transversely of the track frame and having its inner end connected to the stationary brake disk r^2 , which latter is securedly bolted to an intermediate frame
 10 timber A' . The stationary brake disk r^2 , is provided upon its upper edge with the pivot lugs r^3 , between which is pivoted the inner end of the brake weight lever S. The weight lever S, carries upon its outer free end the
 15 weight s , and is provided at an intermediate point with a bifurcated arm s' , which is adapted to embrace the shaft or axle r , and under the pressure due to the weight, bear against one end of the spring T, mounted upon
 20 the axle r , and the other end of which bears against the turning disk or wheel R, and holds the same in contact with the stationary disk or wheel, so as to cause sufficient friction, to secure the proper braking of the tilting track
 25 section. Various sizes of weights s , may be used as found necessary.

The weight may be lifted or eased from the brake disks by any suitable means, as illustrated, in which I have shown a bell crank
 30 lever U, pivoted to a suitable point of attachment and having one arm thereof bearing under the lever S, while the other arm thereof is connected by the link u , with an operating handle lever u' , which will be readily understood.
 35

In order to prevent the coal or ore from dropping between the rails of the tilting track section as described, I slightly modify and add to the construction just described, as
 40 illustrated in Fig. 6 of the drawings. In this modification I dispense with the drop track rails G, and in lieu thereof extend the ends of the rails d , as illustrated, in order to accommodate the transverse dead or chute plate
 45 V. The plate V, extends transversely under and incloses the entire space between the extended portions of the rails d , and extending beyond the outer sides of the rails is provided with the upturned side flanges W, which project above the plane of the rails and form an
 50 inclosed chute, which throws the contents of the car at an angle from the tilting track section, while at the same time the side flanges W, serve in the capacity of side guards for the car. Bracing strips X, extend transversely under and across the chute plate, and are secured thereto in order to strengthen and brace the same. With the exceptions
 55 noted, the other features of the modification are the same, and in both constructions, it may here be noted, that the horn stops are relieved from any strain by means of the laterally extending shoulders Y, secured to the opposite rails d , directly behind said horns,
 60 as clearly illustrated in the drawings.

From the foregoing it is thought that the operation and many advantages of the herein

described automatic dump, will be readily apparent to those skilled in the art. It will be observed that in Fig. 1, I have shown in dotted lines the position of the chute end of the
 70 tilting rails when the drop track rails are dispensed with as shown in the modifications in Figs. 6 and 7.

Changes in the form, proportion and the
 75 minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention.

Having thus described my invention, what
 80 I claim, and desire to secure by Letters Patent, is—

1. In a dumping apparatus, the combination with the track frame or bed; of opposite stationary segmental rocker castings having cog
 85 facings, a tilting track section having notched rocker shoes secured to the bottom of the opposite rails and supported on said castings, automatic horn stops mounted on the tilting track section and having a transverse sliding
 90 movement, and means for controlling said stops, substantially as set forth.

2. In a dumping apparatus, a tilting track section, a supplemental drop track section, halved onto the dropping ends of the tilting
 95 track at one end, a transverse pivot rod connecting the joined ends of the two track sections, a spacing sleeve on said rod, a transverse stationary supporting rod mounted in suitable bearings on the track bed and passing
 100 through longitudinally disposed slots near the unconnected ends of the rails of the drop section, spacing sleeves on said rod, transverse guides secured to the tilting track section horn stops mounted in said transverse
 105 guides on the tilting track section and means for automatically moving said stops, substantially as set forth.

3. In a dumping apparatus, the combination with the tilting track section; of sliding horn
 110 stops arranged in suitable supports on said section, and means for automatically moving said stops in the supports transversely of the length of the track section, substantially as set forth.
 115

4. In a dumping apparatus, the tilting track section, transverse guides secured to and arranged under the tilting section, sliding blocks moving in said guides beyond the rails and carrying curved stop and releasing
 120 horns, and means for automatically moving said sliding blocks in said guides, substantially as set forth.

5. In a dumping apparatus, the tilting track section, parallel channel guide bars secured to and arranged transversely under the
 125 tilting track section and projecting beyond the opposite rails thereof, laterally sliding blocks moving in said guides beyond the rails and having outwardly extending arms, off-
 130 standing curved stop and releasing horns at the upper ends of said arms, and adapted to normally lie directly over the tread or ball of the rails, and means for automatically mov-

ing said blocks in their guides, substantially as set forth.

6. In a dumping apparatus, the combination of the tilting track section, transverse guides 5 attached to said track section laterally sliding horn-stops supported to slide in said guides transversely of the track section, a longitudinally disposed rock shaft journaled under and to said track section and having a cross lever 10 at one end, spreading rods pivotally connected to the opposite ends of said cross lever and to the sliding horns, and means for automatically turning said rock shaft in both directions, substantially as set forth.

7. In a dumping apparatus, the tilting track section, the dropping track section, pivotally connected at one end to said tilting section, transverse guides secured to the tilting section, horn carrying blocks moving in 20 said guides beyond the rails, a rock shaft journaled under and to the tilting track section and having a cross lever at one end, a projecting rock arm and attaching arm, a tread lever pivoted at one end to the web of 25 one of the rails and connected at its other end with said rock arm, and a retractile spring connected at one end to said attaching arm, substantially as set forth.

8. In a dumping apparatus, the tilting track section, one of the rails of which is provided with a cut-away tread or ball portion at one end, laterally sliding horn stops, a longitudinally disposed rock shaft journaled under and to said tilting section and connected at 35 one end with the oppositely moving sliding horns, and having a rock arm, a tread lever fulcrumed or pivoted at one end to the web of the cut away rail and adapted to register with said cut away portion when pressed 40 down, said tread lever being provided with a U-shaped yoke at its swinging end, a depending operating bar pivoted at its upper end to one of the jaws of said yoke and having near its lower end a slot receiving said rock arm, 45 an opposite guide bar or arm secured to the opposite jaw of the yoke, and a retractile spring connected to said rock shaft, substantially as set forth.

9. In a dumping apparatus, the combination with the tilting track section and the stop 50 and releasing devices thereon; of a stationary brake disk or wheel secured to the bed or frame of the track, a stationary axle or shaft, a movable spring pressed brake wheel or disk 55 mounted to turn on said axle or shaft and normally held against the stationary disk, and a brake bar fixedly connected at one end to said movable disk or wheel and pivotally connected at its other end with said tilting track section, substantially as set forth. 60

10. In an apparatus of the class described, the combination with a tilting track section having depending lugs at one end, of a stationary brake disk or wheel arranged under the track section and having pivot lugs at its 65 upper edge, a stationary axle or shaft, a turning brake wheel or disk loosely mounted on said axle or shaft and contacting with said stationary disk or wheel, a brake bar fixedly connected at one end to said movable disk or 70 wheel and pivotally connected at its other end with the lugs of the track section, a weight lever pivoted at one end to the disk lugs and having an intermediate bifurcated arm embracing the axle or shaft, a weight 75 suspended from the free end of said lever and a spring mounted on said axle or shaft between said bifurcated arm and the movable disk or wheel, substantially as set forth.

11. In a dumping apparatus, the tilting 80 track section, one of the rails of which is provided with a cut-away tread or ball portion at one end, stop horn operating devices, and a tread lever fulcrumed or pivoted at one end to the web of the cut away rail and adapted 85 to register with said cut away portion when pressed down, the other end of said lever being connected with said horn operating devices, substantially as set forth.

In testimony that I claim the foregoing as 90 my own I have hereto affixed my signature in the presence of two witnesses.

JOHN R. WILSON.

Witnesses:

FRANK L. THOMPSON,
J. L. JOHNSON.