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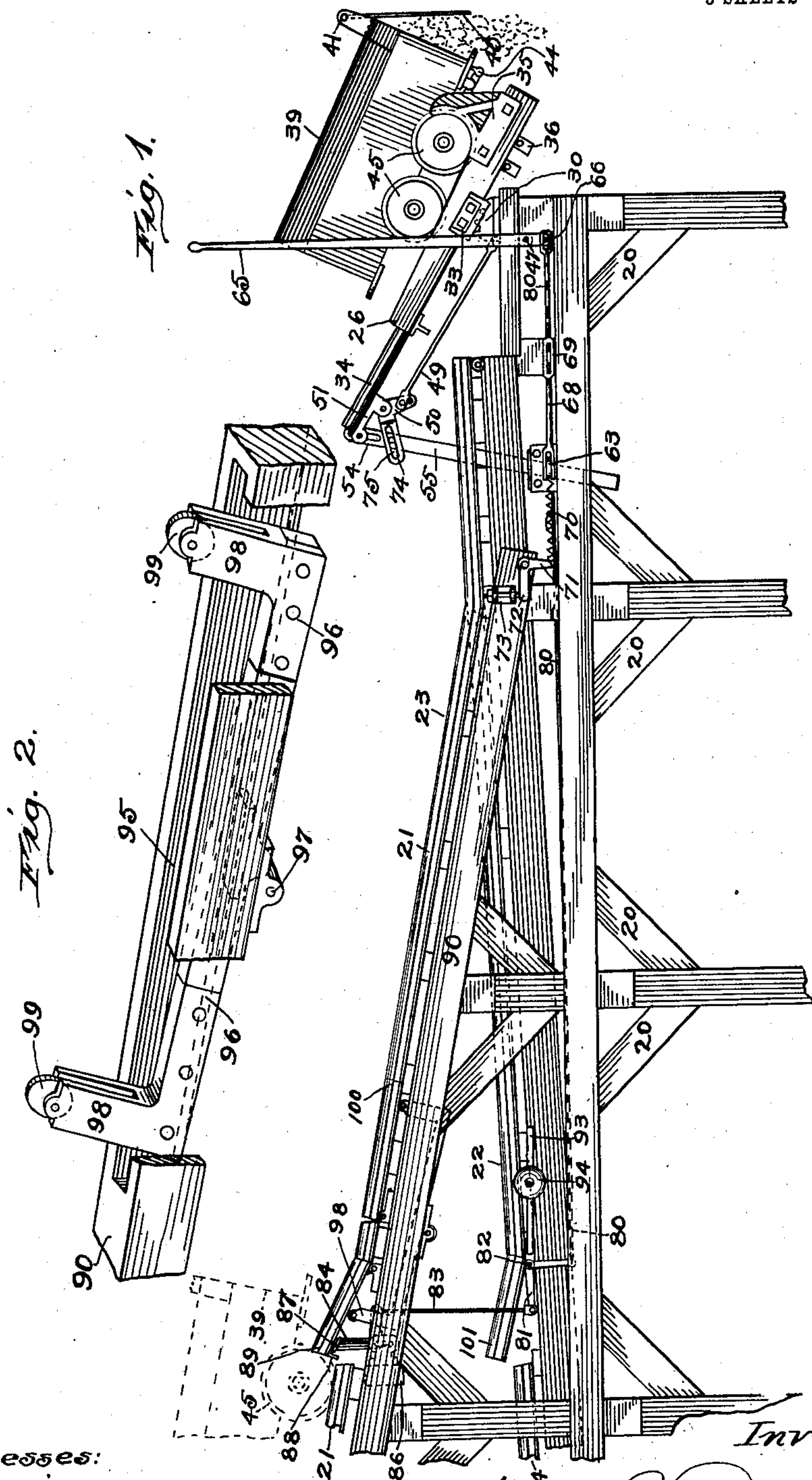
PATENTED MAR. 8, 1904.

C. J. RINGSTROM.  
AUTOMATIC BLOCKING, RELEASING, AND DUMPING SYSTEM  
FOR TRAM CARS.

APPLICATION FILED JUNE 6, 1903.

NO MODEL.

5 SHEETS—SHEET 1.



Witnesses:

Chas. E. Gorton.  
A. Gustafson.

Inventor:

Charles J. Ringstrom  
By Chas. A. Titman Att.



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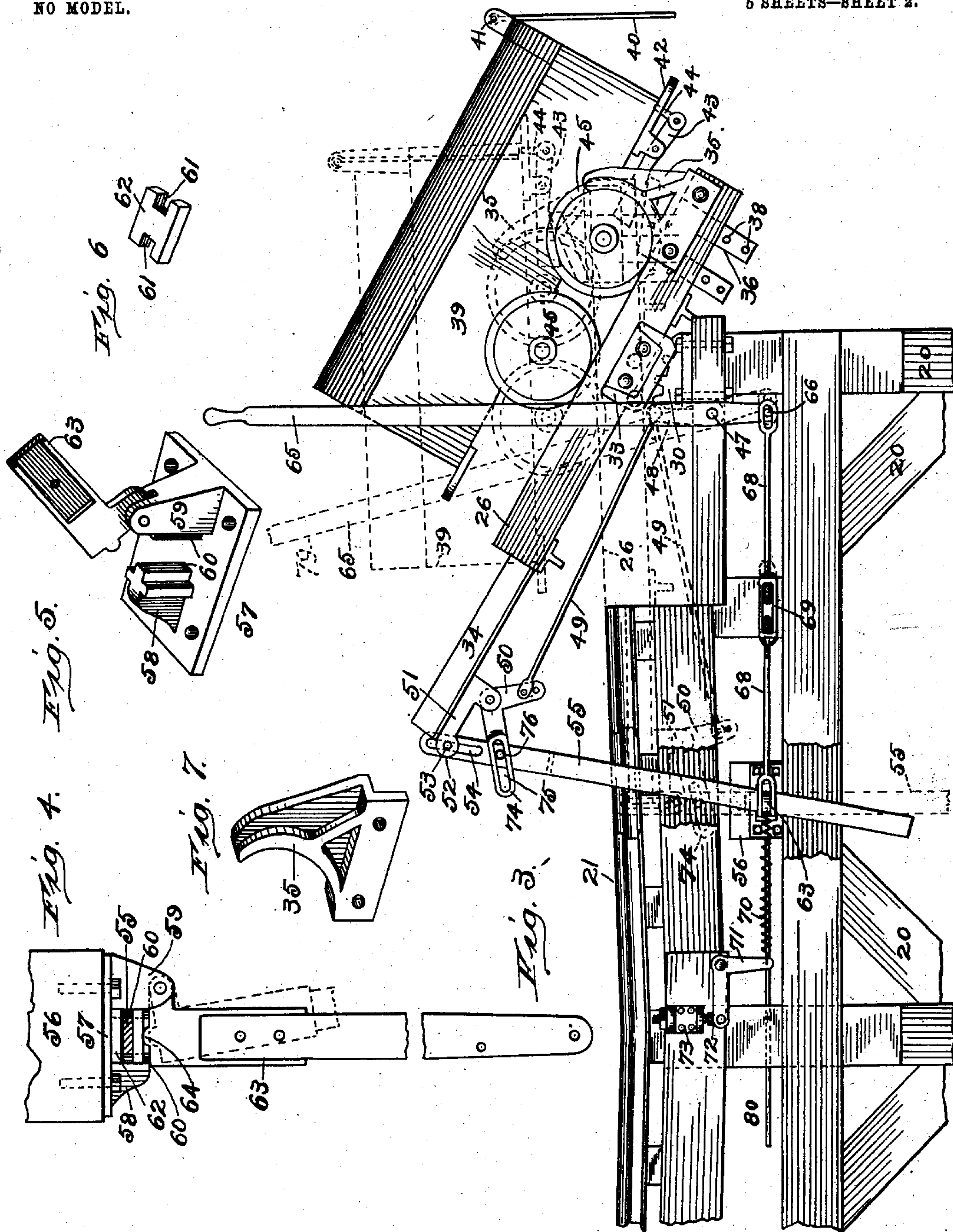
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Witnesses:

Chas. E. Gorton,  
A. Gustafson

Inventor:  
Charles J. Ringstrom  
By: Chas. C. Tillman  
Att'y.



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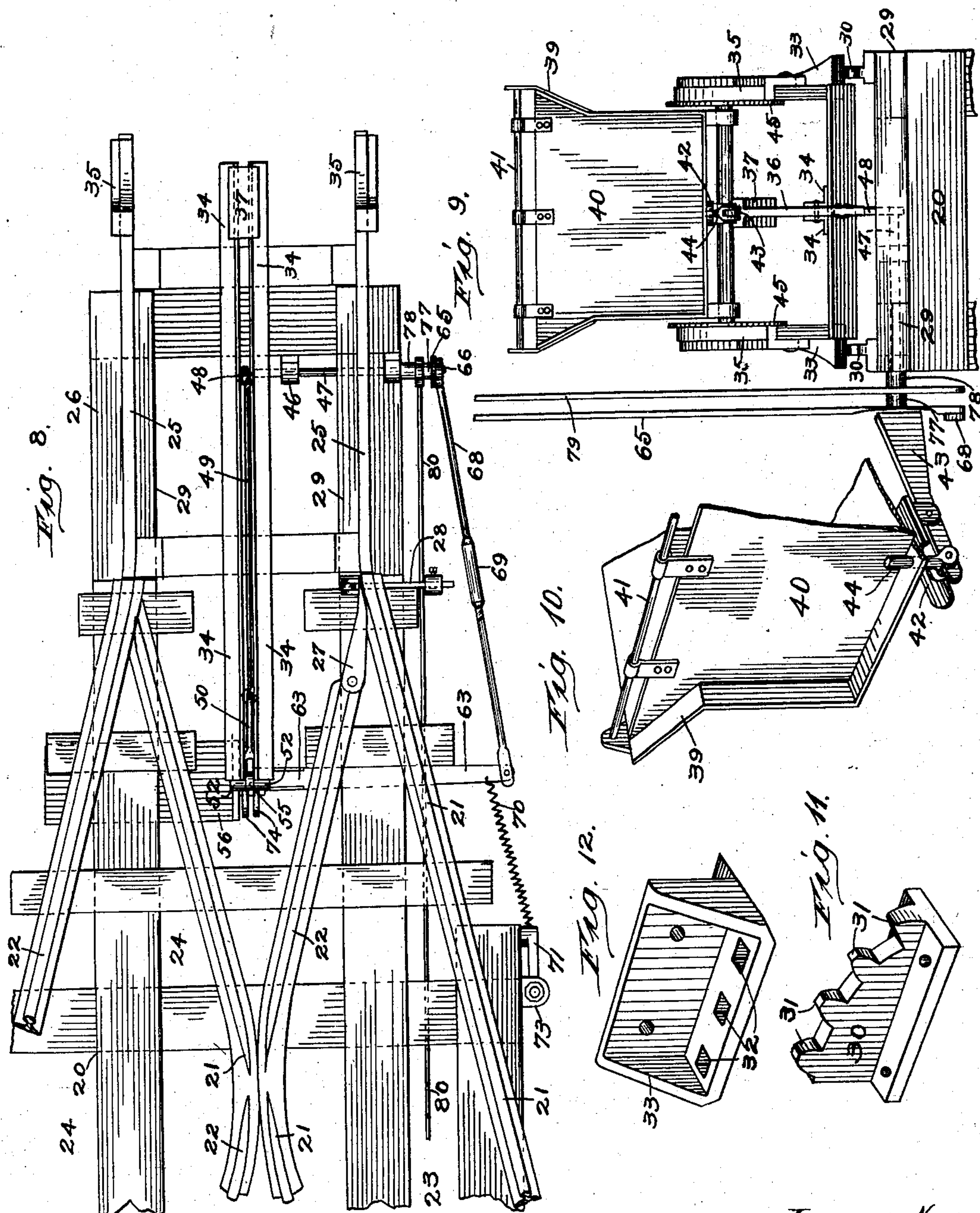
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5 SHEETS—SHEET 3.



Witnesses:

Chas. E. Gorton,  
A. Gustafson

Inventor.

Charles J. Ringstrom.  
By Chas. A. Tillman

Atty



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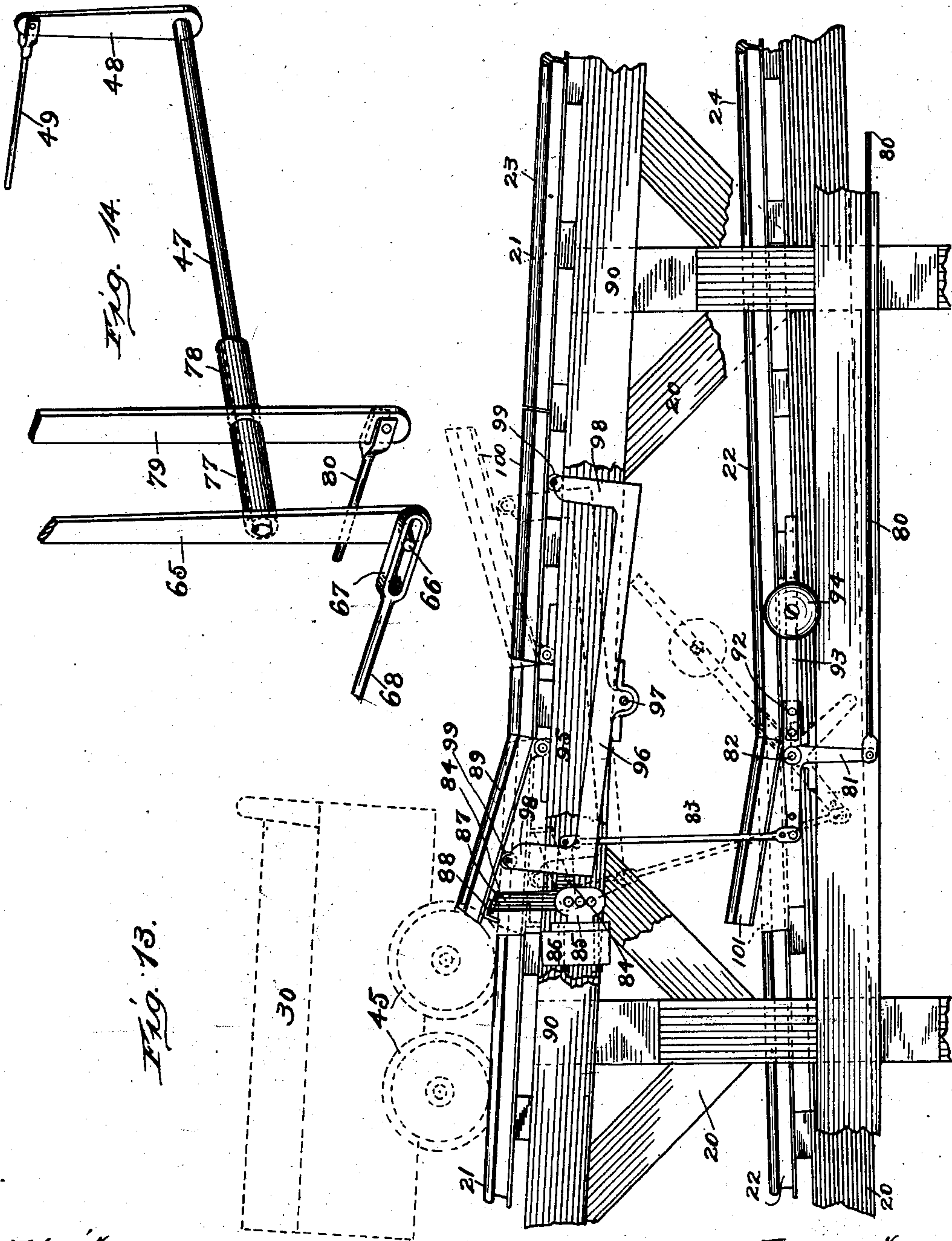
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5 SHEETS—SHEET 4.



Witnesses:

Chas. E. Gordon.

A. Gustafson

Inventor:

Charles J. Ringstrom

By Chas. C. Tillman

Atty.



No. 753,917.

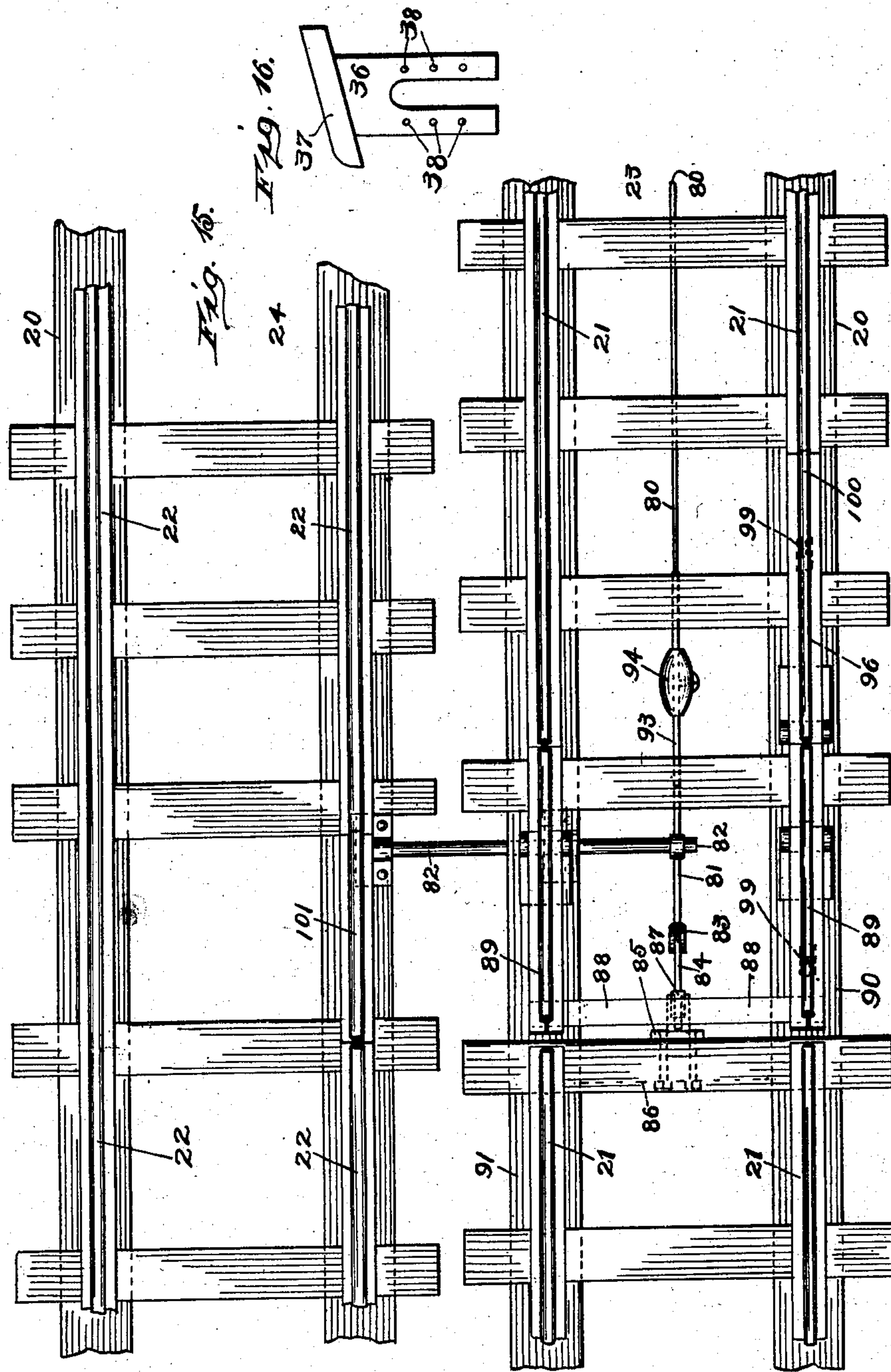
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5 SHEETS—SHEET 5.



Witnesses:

Chas. E. Gorton.

A. Gustafson.

Inventor:

Charles J. Ringstrom

By Chas. C. Tillman

Att'y.



# UNITED STATES PATENT OFFICE.

CHARLES J. RINGSTROM, OF CHICAGO, ILLINOIS.

AUTOMATIC BLOCKING, RELEASING, AND DUMPING SYSTEM FOR TRAM-CARS.

SPECIFICATION forming part of Letters Patent No. 753,917, dated March 8, 1904.

Application filed June 5, 1903. Serial No. 160,189. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES J. RINGSTROM, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Automatic Blocking, Releasing, and Dumping Systems for Tram-Cars, of which the following is a specification.

This invention relates to an improved system or apparatus for automatically stopping or blocking tram-cars or such cars as are used for transporting coal or ore from the mine or other place to the dump and automatically releasing one of said cars at a time and for causing the cars to be automatically dumped and returned to the main track, in which operation another car will be automatically released; and it consists in certain peculiarities of the construction, novel arrangement, and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

The many objects and advantages of the invention will be disclosed in the subjoined description and explanation.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is a view in side elevation of an apparatus embodying my invention, showing by dotted lines one of the cars blocked and by continuous lines one of them in the act of dumping or unloading. Fig. 2 is an enlarged fragmental perspective view of the rocking bar and its support for operating the blocking and releasing rails. Fig. 3 is a side view of the front portion of the trestle or support, showing by dotted lines the position of the parts at the beginning of the dumping operation and by continuous lines the position of the parts when dumping is being effected. Fig. 4 is a plan view, partly in section, of the friction-bar and the clutch mechanism therefor, showing the clutch-lever shortened for the convenience of illustration. Fig. 5 is a detached perspective view of the clutch-guide and a part of the clutch-lever. Fig. 6 is a similar view of one of the clutch-plates. Fig.

7 is a detached perspective view of one of the stop-horns used on the front part of the tilting or dumping frame to stop the cars at their dumping positions. Fig. 8 is a plan view of the front portion of the trestle or support, showing the mechanism for switching the cars from the tilting-platform to the return-track. Fig. 9 is a front view in elevation of the front end of the trestle or support, showing a car thereon and the parts in position ready to release the door of the car. Fig. 10 is a perspective view of a portion of the car-body, showing the gravity locking-dog and pin for securing the door in position. Fig. 11 is a detached perspective view of one of the rocker-racks on which the tilting or dumping frame rides. Fig. 12 is a similar view of one of the rocker-rack boxes. Fig. 13 is a side view in elevation of a portion of the advancing and returning tracks, showing the mechanism for operating the blocking and releasing rails and illustrating by dotted lines a car mounted on the advancing-track and the position the parts will assume when the car is released. Fig. 14 is a detached perspective view of a portion of the levers and their connecting-rods used for operating the tilting or dumping frame and the blocking and releasing mechanism. Fig. 15 is a plan view of a portion of the advancing and returning tracks, showing the mechanism for operating the blocking and releasing rails; and Fig. 16 is a detached side view of a trip-bracket used for operating the gravity-dog, which releases the door of the car.

Like numerals of reference refer to corresponding parts throughout the different views of the drawings.

The reference-numeral 20 represents the trestle or support on which the rails 21 and 22, forming the advancing-track 23 and returning-track 24, respectively, are mounted and which may be of the ordinary or any preferred construction. As shown in Figs. 1 and 13 of the drawings, the advancing-track 23 is downwardly inclined toward the front or dumping end of the trestle or support, while the returning-track 24 is downwardly inclined therefrom. The rails comprising the tracks 23 and 24 are brought together or approximated at the front portion of the trestle or



support in order that the cars may pass from the track 23 onto the track or rails 25 of the tilting or dumping frame 26, which is pivotally mounted on the front end of the support 5 20, all of which will be clearly understood by reference to Figs. 1, 3, and 8 of the drawings.

Pivotally secured at the front end of one of the rails 22 is a switch-arm 27, which is normally held in contact with the inner surface 10 of one of the other rails, 21, by means of a weighted rod or bar 28, which is suitably fulcrumed on the support and which arm is used to cause the cars to be switched from the tilting-frame 26 to the return-track 24, as will 15 be understood by reference to Fig. 8 of the drawings. As the car travels forward along the track 23 it is apparent that the flanges of the wheels will displace the arm 27, which will be thrown back into position by reason 20 of the bar 28, as is apparent.

Mounted on the front end of each of the stringers 29 of the front portion of the trestle or support is a rocker-rack 30, which is segmental in shape and has on its upper surface 25 a series of teeth 31 to engage the openings 32 in the rocker-box 33, one of which is secured to the side rails of the tilting-frame or dumping-frame 26, which is preferably rectangular in shape and has extending longitudinally thereon two angle irons or bars 34, 30 which are placed parallel with one another and at a slight distance apart (see Fig. 8) to permit of the action of the friction-bar in the rear portion thereof, as will be presently explained. 35

On the upper portion of the front end of each of the rails 25 of the tilting or dumping frame, which rails are preferably straight bars of iron, is secured a stop-horn 35, with 40 which the wheels of the car will impinge in its extreme forward movement and which horns will prevent the car running off the dumping-frame.

Between the front portions of the angle- 45 irons is secured a tripping-bracket 36, which has its upper portion upwardly inclined, as at 37, and in its lower portion a series of openings 38 in order that it may be adjustably secured between the bars 34 on the tilting-frame.

Each of the cars 39 is provided at its front 50 end with a door 40, which is hinged at its top on a horizontal rod 41, connecting the sides of the car. Secured to the bottom of the car is a suitable bracket 42, on which is pivotally 55 secured a locking-dog 43, the rear end of which is weighted in order to normally hold the locking-pin 44, which is pivotally secured on the front portion of the dog and passes through an opening in said bracket and the bottom of 60 the car, in engagement with the door. When the car travels forwardly on the dumping or tilting frame 26, the dog 43 will strike the inclined portion 37 of the tripping-bracket 36, in which operation the front portion of the 65 dog 43 will be lowered, thus releasing the pin

44 from the door 40, allowing it to swing outwardly when the car and said frame is tilted, thus permitting the contents to be discharged. In this operation the front car-wheels 45 will impinge the stop-horns 35, by means of which 70 the car will be stopped and held until the load is discharged.

Transversely journaled on one of the stringers 29 and on a bracket 46 on the front portion of the support is a shaft 47, on the inner 75 end of which is fixed an arm 48, to which is pivotally secured at one of its ends a rod 49, the other end of which is pivotally secured to the shorter arm of a bell-crank lever 50, which is fulcrumed on a suitable hanger 51, secured 80 to the lower rear portions of the angle irons or bars 34. The rear portion of the bracket 51 is provided with prongs 52, which carry a transverse pin 53, which passes through a slot 54 in the upper portion of the friction- 85 bar 55, which extends downwardly through a clutch mechanism which is secured to a portion 56 of the support or trestle. This clutch mechanism comprises a plate 57, which is bolted to the part 56 and has on its outer face 90 horizontal projections 58 and 59, each of which has on its inner surface a rib 60 to fit in the grooves 61 of the clutch-plates 62, which are preferably made of the form shown in Fig. 6 of the drawings. Fulcrumed to the free end 95 of the projection 59 is the clutch-operating lever 63, which has on its end adjacent to the outer clutch-plate 62 a curved projection 64 to impinge the same.

Fixed on the outer end of the shaft 40 is a 100 lever 65, which carries on its lower portion a lateral pin or projection 66 to fit in a link 67 at one end of the connecting-rod 68, the other end of which is pivotally connected to the clutch-operating lever 63, and which rod 105 is preferably made of two pieces adjustably secured together by means of a turnbuckle 69.

Connected at one of its ends to the outer portion of the lever 63 is a spring 70, the upper end of which is connected to one arm of 110 a bell-crank lever 71, fulcrumed on the support, the other arm of which engages the lower end of a screw 72, which has its bearings in a bracket 73 on the support and which is employed to adjust the lever 71, so as to 115 regulate the tension of the spring 70, which retracts the lever 63 and normally holds it in engagement with the outer clutch plate or member.

The longer arm of the bell-crank lever 50 120 (see Figs. 3 and 8) is provided with prongs 74, each of which has a slot 75 for the operation of a pin 76, carried by the friction-bar 55.

Loosely mounted on the shaft 47 and held at a distance from the lever 65 thereon by 125 means of sleeves 77 and 78 on the outer portion of said shaft is a lever 79, to the lower end of which is pivotally connected one end of a rod 80, the other end of which is pivotally connected to one arm of the bell-crank 130



lever 81, which is mounted on a shaft 82, suitably journaled on the support. Connected to the other end of the bell-crank lever 81 at one of its ends is a rod 83, the other end of which is pivotally connected to the lower arm of a bell-crank lever 84, which is fulcrumed on a suitable bracket 85, secured to a cross-piece 86 on the advancing-track. The upper arm of the lever 84 is flattened, as at 87, to engage a transverse bar 88, which is preferably made of angle-iron and connects the blocking and releasing sections 89 of the rails 21 of the track 23, which sections are pivotally secured at their other ends to the stringers 90 and 91 of said track. Extending from the bell-crank lever 81 in an opposite direction from its upper arm is a projection 92, to which is secured a bar 93, on which is adjustably mounted a weight 94, used for normally holding the blocking and releasing bell-crank lever 84 in a raised position. One of the stringers, usually the one indicated by the numeral 90, is formed with a longitudinal slot 95, in which operates a rocking bar 96, which is mounted on a transverse shaft 97, secured to the lower portion of said stringer. Each end of the rocking bar 96 is provided with an upward extension 98, which has journaled in its upper end an antifriction-roller 99, which rollers are used to impinge one of the rail-sections 89 and a rail-section 100, which is pivotally connected at its end adjacent to the section 89 on the upper surface of the stringer 90, as is clearly shown in Figs. 1 and 13 of the drawings.

Fixed on the end of the shaft 82 adjacent to the track 24 or returning-track is a rail-section 101, which is pivoted at one of its ends on the support or trestle.

From the foregoing and by reference to the drawings it will be seen and readily understood that the cars may be blocked on the track 23 by raising the blocking and releasing rail-sections 89, so as to impinge the wheels of the car, which may be done by throwing the lever 79 to its vertical position, which through its connections with the bell-crank lever 84 will raise the upper arm of said lever so as to lift the rail-sections 89, which, as before stated, are connected together by means of the cross-bar 88, secured near their free ends. In thus raising the said rail-sections it is apparent that the rail-section 100 will cause the rocking bar 96 to assume the position shown by full lines in Fig. 13 of the drawings. To release the first or initial car, the lever 79 should be thrown rearwardly to about the position shown by dotted lines in Fig. 3 of the drawings, in which operation the rail-sections 89 will be lowered by reason of the connections between said lever and the bell-crank lever 84, thus permitting the car to travel down the inclined track 23 until the wheels thereof run onto the rail-section 100, which will have been raised by the lowering of the rail-sections

89, which will cause the front end of the rocking bar 96 to be elevated, so as to raise the rail-section 100, as is obvious. As soon as the weight of the car is placed on the rail-section 100 it is apparent that the front end of the rocking-bar 96 will be depressed and the rear end thereof correspondingly elevated, in which operation the rail-sections 89 will be again raised to block the next car. In thus automatically raising the rail-sections 89 the bell-crank lever 84 will be automatically raised by reason of the weight 94 on the arm 93, which is fixed to the bell-crank lever 81, which, as before stated, is rigidly secured on the shaft 82, which carries at its end adjacent to the track 24 the rail-section 101 on said track, which will also be raised. From the track 23 the car will pass onto the tilting or dumping frame 26 until its wheels strike the stop-horns 35 thereon, in which operation the weighted end of the locking-dog 43 on the bottom of the car will impinge the inclined surface 37 of the tripping-bracket 36, which will cause the front end of said dog to be lowered, thus withdrawing the locking-pin 44 out of engagement with the door 40 of the car. When the car is in this position, the tilting-frame 26 will be slowly tilted forwardly on the rocker-racks 30 by reason of the preponderance of the weight on its front end, thus gradually discharging the contents of the car, which is an important feature in dumping soft coal so as not to cause the same to break. As the rear end of the frame 26 is raised the friction-bar 55 will also be raised, the clutch mechanism therefor gripping it sufficiently to prevent the frame 26 rising too rapidly, so as to dump all of the contents of the car at once. In its upward movement from the positions shown by dotted lines in Fig. 3 of the drawings to those shown by continuous lines in said figure the upper arm of the bell-crank lever will be somewhat raised by reason of the pin 76, which engages the slots 75 in the prongs 74 thereof, thus by reason of the connection 49 with the arm 48 on the shaft 47 will cause said shaft to be rocked, thus moving the lever 65 forwardly to the position shown by dotted lines in Fig. 3, which operation will, through the connection 68, uniting the levers 63 and 65, cause the former lever to diminish its pressure on the outer clutch-plate 62, thereby permitting the friction-bar 55 to descend to its lowered position, which will be caused by reason of the fact that the rear portion of the tilting-frame overbalances the front portion and the empty car. After the car is emptied of its contents the tilting-frame 26 will assume its normal position—that is, so that its rails 25 will be about flush with the rails of the return-track 24 and slightly rearwardly inclined, which will cause the car to automatically pass onto the rails of the track 24, which are also rearwardly inclined, the switch 27 being automatically set to switch the wheels of the car,



so as to cause them to run on said track. In its rearward progress the car-wheels will strike the rail-section 101 on the track 24 and cause it to be depressed until it is flush with the rails 22, which operation, through the instrumentality of the rock-shaft 82 and its connections with the bell-crank lever 84, will cause the upper arm of said lever to be lowered, thereby releasing the rail-sections 89, so that they will be depressed by their own weight, thus permitting another car to pass thereover, when the foregoing operation will be repeated.

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

1. In an automatic blocking, releasing and dumping system for tram-cars, the combination with two oppositely-inclined tracks, of means on the forwardly-inclined track to block the cars, means thereon to release them one at a time, and means on the rearwardly-inclined track connected to the blocking and releasing mechanism on the other track to trip said mechanism by means of the passage of a car.

2. The combination with an inclined track, of a rocking bar pivotally secured longitudinally under one of the rails thereof and provided with an upward extension at each of its ends, rail-sections pivotally secured at one of their ends and located to aline with the rails of said track and connected together, one of said sections resting on the rear extension of the rocking bar, another rail-section pivotally secured at its rear end and resting on the front extension of the rocking bar in alinement with one of the track-rails.

3. The combination with an inclined track, of a rocking bar pivotally secured longitudinally under one of the rails thereof and provided with an upward extension at each of its ends, rail-sections pivotally secured at one of their ends and located to aline with the rails of said track and connected together, one of said sections resting on the rear extension of the rocking bar, another rail-section pivotally secured at its rear end and resting on the front extension of the rocking bar, and means to support the connected rail-sections in their raised positions.

4. The combination of a forwardly-inclined and a rearwardly-inclined track, of a rocking bar pivotally secured longitudinally under one of the rails of the forwardly-inclined track and provided with an upward extension at each of its ends, rail-sections pivotally secured at one of their ends and located to aline with the rails of said track and connected together, one of said sections resting on the rear extension of the rocking bar, another rail-section pivotally secured at its rear end and resting on the front extension of the rocking bar in alinement with one of the track-rails of the forwardly-inclined track, a rail-section piv-

oted at one of its ends and in alinement with one of the rails of the rearwardly-inclined track, means to support the connected rail-sections in their raised positions, and a connection uniting said means and the rail-section on the rearwardly-inclined track so that when said section is depressed the supporting means will be lowered.

5. The combination of a forwardly-inclined and a rearwardly-inclined track, of a rocking bar pivotally secured longitudinally under one of the rails of the forwardly-inclined track and provided with an upward extension at each of its ends, a roller journaled on the upper end of each of said extensions, rail-sections pivotally secured at one of their ends and located to aline with the rails of said track and connected together, one of said sections resting on the rear extension of the rocking bar, another rail-section pivotally secured at its rear end and resting on the front extension of the rocking bar in alinement with one of the track-rails of the forwardly-inclined track, a rail-section pivoted at one of its ends and in alinement with one of the rails of the rearwardly-inclined track, means to support the connected rail-sections in their raised positions, and a connection uniting said means and the rail-section on the rearwardly-inclined track so that when said section is depressed the supporting means will be lowered.

6. The combination of two oppositely-inclined tracks, of a rocking bar secured longitudinally with one of the rails of the forwardly-inclined track and provided with an upward extension at each of its ends, rail-sections pivotally secured at one of their ends and in alinement with the rails of said track and connected together, one of said sections resting on the rear extension of the rocking bar, another rail-section pivotally secured at its rear end and resting on the front extension of said bar, a rock-shaft suitably journaled, a rail-section fixed on one end of said shaft and pivotally secured at one of its ends in alinement with one of the rails of the rearwardly-inclined track, a bell-crank lever fulcrumed near the connection of the connected pair of rail-sections to support the same, a weighted projection on the rock-shaft and a connection uniting the rock-shaft and said lever.

7. The combination of two tracks, one inclined forwardly and the other rearwardly, with a rocking bar secured longitudinally with one of the rails of the forwardly-inclined track and provided with an upward extension at each of its ends, rail-sections pivotally secured at one of their ends and in alinement with the rails of the forwardly-inclined track and connected together, one of said sections resting on the rear extension of the rocking bar, another rail-section pivotally secured at its rear end and resting on the front extension of said bar, a rock-shaft suitably journaled, a rail-section fixed on one end of said shaft and pivotally



secured at one of its ends in alinement with one of the rails of the rearwardly-inclined track, a bell-crank lever mounted on the other end of the rock-shaft and having a weighted projection, another bell-crank lever fulcrumed near the connection of the connected pair of rail-sections, a connection uniting the said bell-crank levers, and means connected to the lower arm of the first-named lever whereby the blocking and releasing rail-sections may be operated manually.

8. The combination with two oppositely-inclined tracks having at one of their ends a common level and meeting-points for their rails, of a tilting-frame pivotally mounted at said ends of the tracks, rails on said frame, stops at the front ends of said rails, means on the forwardly-inclined track to block and release the cars, means on the rearwardly-inclined track to trip the releasing means on the first-named track, and a connection uniting the said tripping means with the tilting-frame.

9. The combination with a suitable support, of a frame pivotally mounted thereon, a friction-bar pivotally connected at one of its ends to the front portion of said frame, a clutch mechanism to clamp said friction-bar, a spring-pressed lever fulcrumed so as to impinge one of the plates of the clutch, the said friction-bar located vertically between said plates, a shaft horizontally journaled below the tilting-frame and having on one of its ends an upright arm, a connection uniting said arm and the upper portion of the friction-bar, a lever fixed on the opposite end of said shaft, and a connection uniting the lower end of said lever and the spring-pressed clutch-lever.

10. The combination with a suitable support, of a frame pivotally mounted thereon, a friction-bar pivotally connected at one of its ends to the front portion of said frame, a clutch mechanism to clamp said friction-bar, a spring-pressed lever fulcrumed so as to impinge one of the plates of the clutch, the said friction-bar located vertically between said plates, a shaft horizontally journaled below the tilting-frame and having on one of its ends an upright arm, a connection uniting said arm and the upper portion of the friction-bar, a lever fixed on the opposite end of said shaft, a connection uniting the lower end of said lever and the spring-pressed clutch-lever, and a tripping-bracket located on the front upper

portion of the tilting-frame and having its upper surface inclined.

11. The combination with two oppositely-inclined tracks, the rails of which have a common level and meeting-points, means for blocking and releasing the cars on the forwardly-inclined track, means on the rearwardly-inclined track to trip the releasing means on the other track, a connection uniting the means of each track, a frame pivotally mounted at the meeting ends of the rails of the two tracks, rails on said frame, stops at the front of the rails on the tilting-frame, a friction-bar pivotally connected at one of its ends to the front portion of the tilting-frame, a clutch to clamp said friction-bar which passes vertically between the clutch members, a spring-pressed lever fulcrumed so as to impinge one of the clutch members, a shaft horizontally journaled below the tilting-frame and having on one of its ends an upright arm, a connection uniting said arm and the upper portion of the friction-bar, a lever fixed on the opposite end of said shaft, a connection uniting the lower end of said lever and the spring-pressed lever, another lever loosely mounted on the said shaft, a connection uniting the lower end of said lever and the blocking and releasing means on the forwardly-inclined track as well as the tripping means therefor on the rearwardly-inclined track.

12. The combination with a suitable support, of a frame pivotally mounted thereon, a friction-bar loosely connected at one of its ends to the front portion of said frame a bell-crank lever fulcrumed on the front portion of said frame and having its longer arm loosely connected to the friction-bar, a clutch mechanism to clamp said bar, a spring-pressed lever fulcrumed so as to impinge one of the plates of the clutch, the said friction-bar located vertically between said plates, a shaft horizontally journaled below the tilting-frame and having on one of its ends an upright arm, a connection uniting said arm and the shorter arm of the bell-crank lever, a lever fixed on the opposite end of said shaft, and a connection uniting the lower end of said lever and the spring-pressed clutch-lever.

CHARLES J. RINGSTROM.

Witnesses:

CHAS. C. TILLMAN,  
A. GUSTAFSON.