C. M. ARMSTRONG.

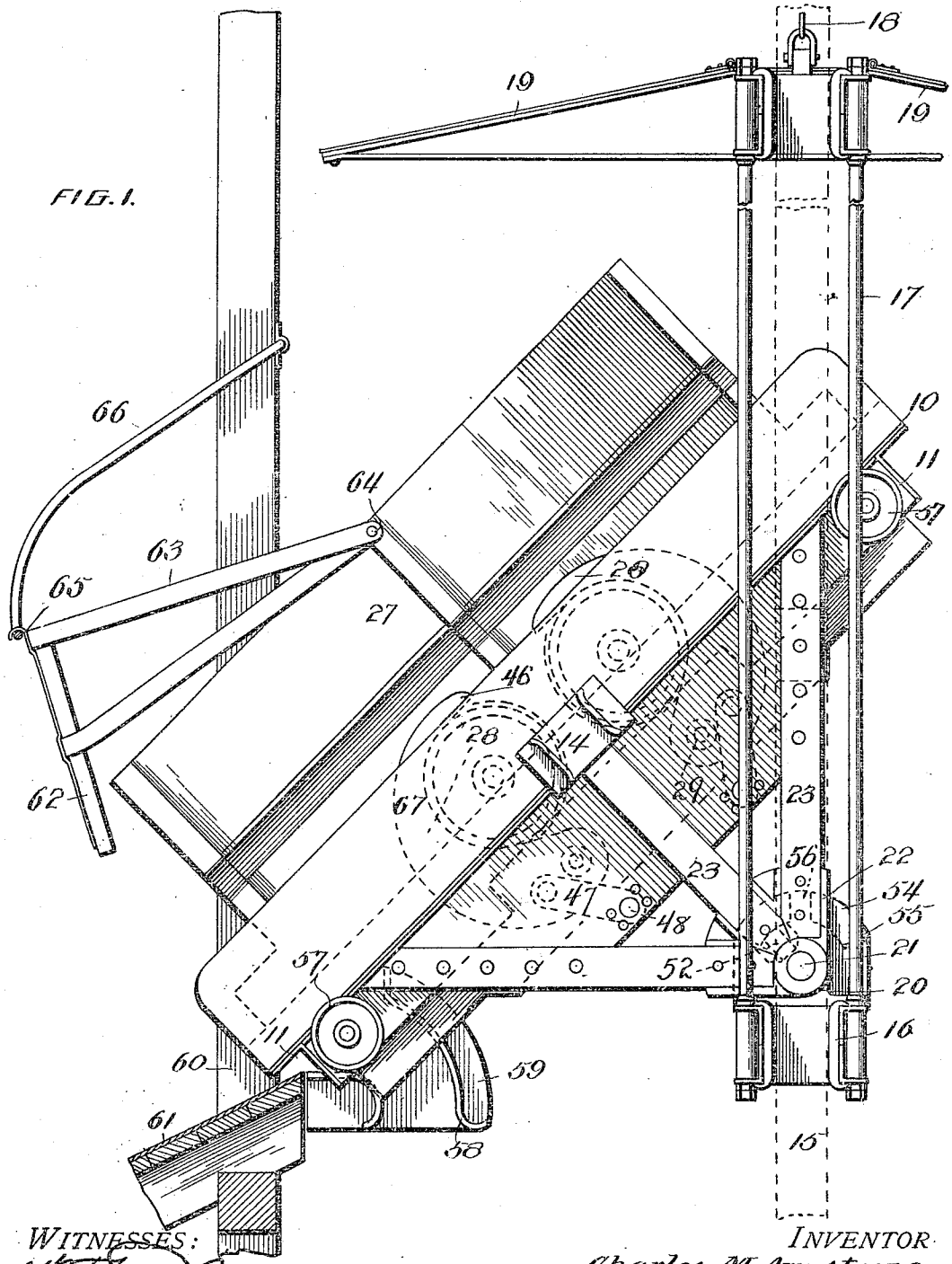
HOISTING PLATFORM.

APPLICATION FILED APR. 9, 1909.

959,835. Patented May 31, 1910.

3 SHEETS—SHEET 1.

FIG. 1.



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3 SHEETS—SHEET 2.

FIG. 2.

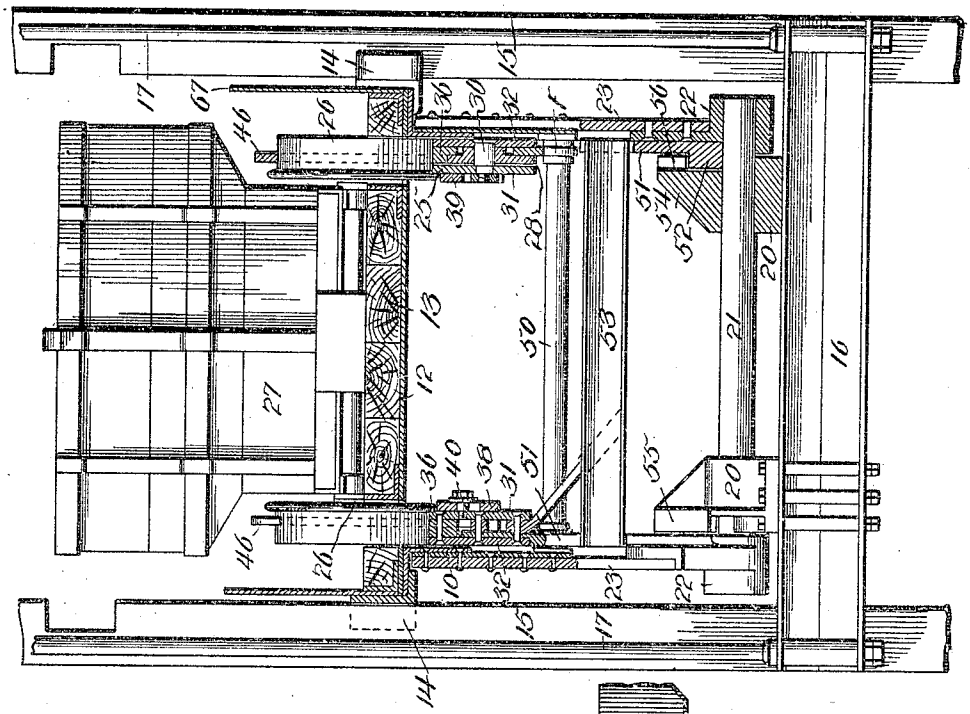


FIG. 6.

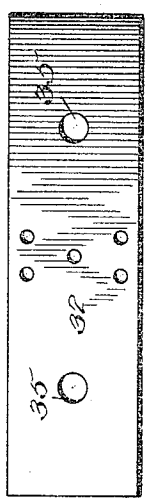


FIG. 7.

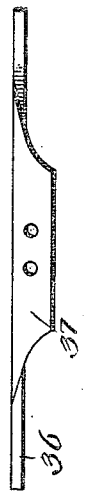


FIG. 8.

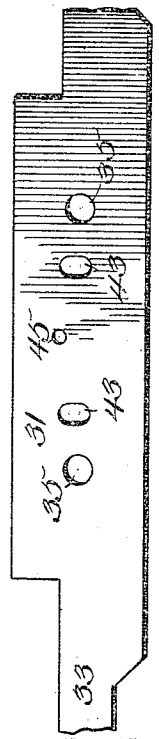
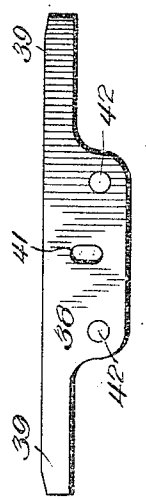


FIG. 9.



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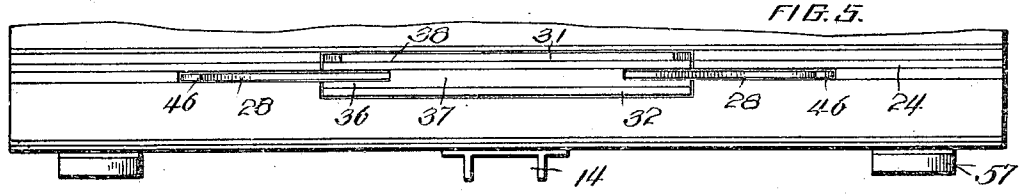
3 SHEETS—SHEET 3.

FIG. 5.



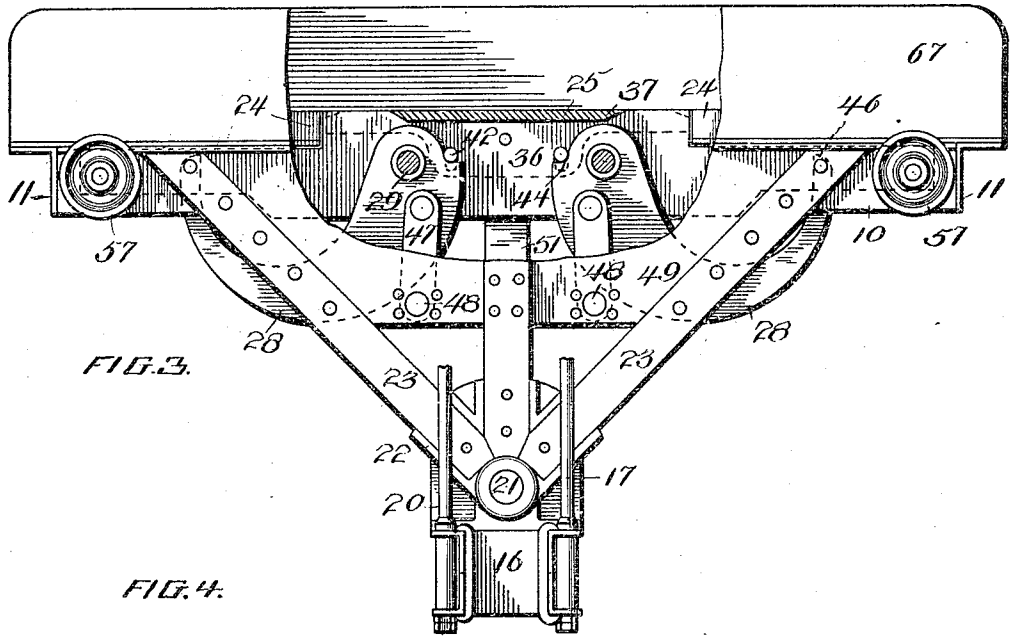
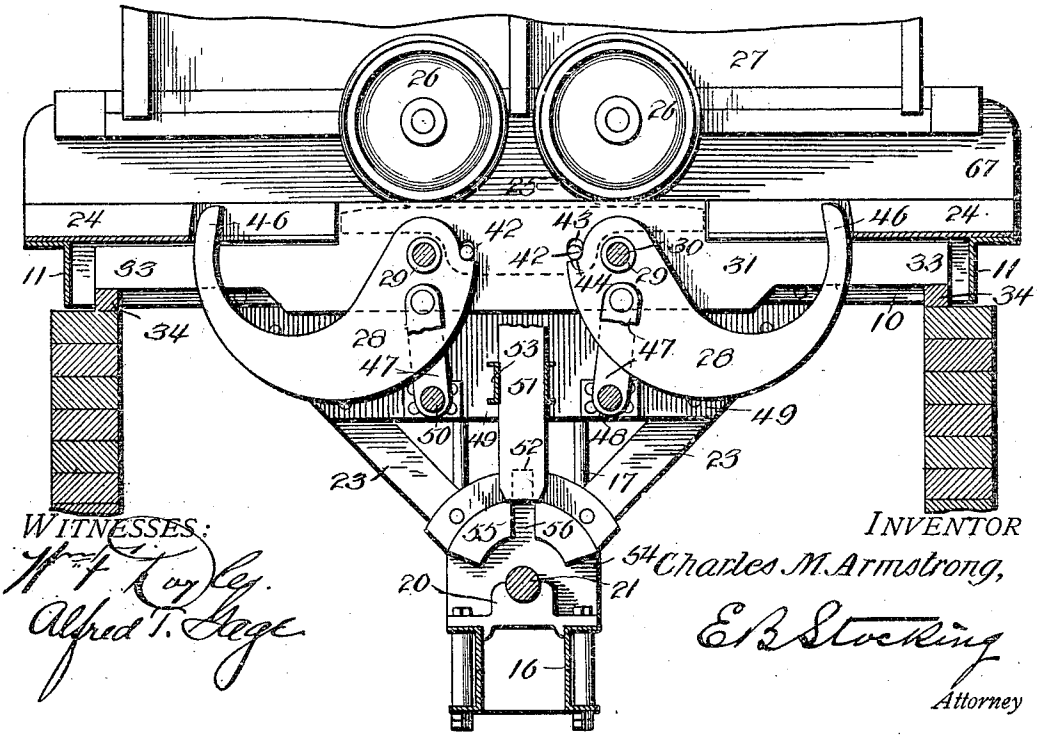


FIG. 3.

FIG. 4.



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CHARLES M. ARMSTRONG, OF BOONVILLE, INDIANA.

HOISTING-PLATFORM.

959,835. Specification of Letters Patent. Patented May 31, 1910.

Application filed April 9, 1909. Serial No. 488,908.

To all whom it may concern:

Be it known that I, CHARLES M. ARMSTRONG, a citizen of the United States, residing at Boonville, county of Warrick, and State of Indiana, have invented certain new and useful Improvements in Hoisting-Platforms, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to a hoisting cage or platform, and particularly to a structure adapted to automatically engage and retain a car or other device thereon.

The invention has for an object to provide one or more keepers connected for automatic operation by the weight of the car and the rising movement of the platform so as to engage and hold a member of the car during the raising and dumping operation of the cage.

A further object of the invention is to provide a novel and improved construction for effecting the dumping of the cage or platform so that the platform may extend into the dumping chute and the material discharged from the car thereon prevented from breakage.

Other and further objects and advantages of the invention will be hereinafter fully set forth and the novel features thereof defined by the appended claims.

In the drawings:—Figure 1 is an elevation showing the platform in dumping position; Fig. 2 is an end elevation showing the receding track in section intermediate of the keepers at the left and in section through the pivot of one of the keepers at the right; Fig. 3 is an elevation with parts broken away and in section showing the unlocked position of the keepers; Fig. 4 is a vertical section showing the position of the keepers after their preliminary movement; Fig. 5 is a detail plan of one side of the platform track; Fig. 6 is an elevation of one of the plates of the receding track section; Fig. 7 is a plan of the tread plate of the receding track section; Fig. 8 is an elevation of the supporting plate for the receding track section; and Fig. 9 is a similar view of the preliminary operating plate for the keepers.

The numeral 10 indicates the side plates of the cage or platform which may be of any desired construction or material, preferably, of angle metal, as shown and connected at their opposite ends by plates 11. The frame comprised of these plates is provided with a platform 12 which, if desired, may be formed with a tread or surface 13 of wood or other suitable material. This platform is also provided with guides 14 of usual construction adapted to embrace the tracks or guides 15 to control the direction of travel of the platform. This platform is supported from a head 16 of any desired construction adapted to embrace the track 15 and connected by suspension rods 17 with any usual form of hoisting connection, as shown at 18 in Fig. 1. The upper ends of these rods also carry a roof or cover 19 extending over the platform so as to protect the occupants thereof from falling water or material. The head 16 is provided upon its upper face with bearing boxes 20 in which a rock shaft 21 is journaled, the opposite ends of this shaft being provided with sectors 22 from which supporting braces 23 extend to the platform and are connected to the side plates 10 thereof. This forms a rigid connection between the platform and hoisting head and permits an oscillation upon said head for the purpose of dumping in the usual manner from either side of the platform. The platform is provided with fixed track rails 24 and an intermediate receding track section 25 formed of sufficient length to permit the wheels 26 of a car 27 to lie between the fixed track rails 24.

Disposed to coöperate with the receding track section 25 are one or more keepers 28 which are pivoted at 29 upon the bearing 30 which is mounted at its opposite ends in plates 31 and 32, as shown in Fig. 2. The plate 31 is extended at its opposite ends 33 to form a support for the receding section 25 when the platform is at rest. Under such conditions the ends 33 rest upon a fixed member 34 which may be either at the bottom of the mining shaft or introduced beneath the platform when the same is raised to the top of such shaft. The plate 31 is also provided with apertures 35 to receive the pivot 30 of the keeper and the plate 32 is formed with similar apertures. Intermediate of the plates 31 and 32 is a tread plate 36 having a lateral flange 37 extending between the keepers 28 to close the space.

Slidingly mounted upon the plate 31, or in any other desired position is a flange operating plate 38 which is reduced at its opposite ends 39 to permit the full swinging movement of the keepers. This plate is secured in position by the bolt 40 ex-

tending through an elongated slot 41 in the plate and is formed on its inner face with pins or projections 42 which pass through slots 43 in the plate 31 and are adapted to engage a shoulder 44 upon the keeper 28 or to be otherwise connected thereto. In the illustration shown the securing bolt 40 for this plate 38 is mounted in an aperture 45 in plate 31, and the tread of the wheel depresses the plate to impart the preliminary movement to the keeper which normally stands in the position shown in Fig. 3. These keepers are provided at their upper ends with curved portions 46 adapted to extend over the tread of a car wheel and past the vertical center thereof, as shown in Fig. 2. The keepers are connected to a fixed support by means of the links 47 pivoted at one end to the keeper and at their opposite ends 48 to a depending plate 49 which is carried by a fixed portion of the platform, for instance, the supporting braces 23 thereof. The preliminary movement imparted to the keepers shifts these links from the position shown in Fig. 3 at one side of the pivot of the keepers to the opposite side thereof, as shown in Fig. 4, so that the lifting movement of the platform to which the links are connected will cause the keepers to complete their swinging movement as the platform is raised and thus center the car thereon and lock it in position. In order to secure a uniform movement of the links upon opposite sides of the platform they may be connected between the pivots 48 by the cross shaft 50, as shown in Fig. 2.

For the purpose of locking the keepers in their position in contact with the car wheels during the dumping action, one of the members of the receding track section at each side of the platform is provided with a locking bar 51 which may be connected to the plate 32, for instance, as shown in Fig. 2. This bar is provided at its lower end with a lateral lug 52 and the bars at opposite sides are connected by an iron 53 to effect simultaneous movement. The bearing 20 is provided with a vertical extension 54 having a flange 55 and a centrally disposed slot 56 therethrough. In the downward movement of the receding section the lug 52 of the locking bar passes through this slot and beneath the flange so that when the platform is tilted in either direction into dumping position, as shown in Fig. 1, vertical movement of the locking bar and receding section is prevented which also prevents any releasing action of the keepers embracing the car wheels, while permitting a free swinging of the platform in either direction, and the releasing of the locking bar when its lug is in alinement with the slot and the platform supported from beneath.

For the purpose of effecting the dumping action the platform is provided at its opposite ends and on both sides with bearing rollers 57 so that it may be tilted in either direction. These rollers are adapted to cooperate with the curved track 58 carried by the dumping plate 59 which is secured to a fixed part 60 at either side of the cage way. The frame 11 of the platform at the ends thereof is formed with its angle disposed toward the center of the platform which permits the end of the platform to extend over and near the chute or incline 61 when the platform is dumped thus delivering the material directly thereto and preventing a fall which would break or injure the material dumped from the car. To arrest further tilting of the platform when the dumping is completed the rollers on the elevated end of the platform come into contact with the guide ways 15, as shown in Fig. 1. The end gate 62 of the car is carried by the lever 63 pivoted at 64 thereon and having a hook 65 adapted to engage a lifting arm 66 of ordinary construction by which the gate is raised automatically as the car is inclined into the dumping position, as shown in Fig. 1. The platform may also be provided with guard plates 67 disposed at opposite sides thereof and extending to any height desired.

In the operation of the invention, when the platform is resting upon supports at the bottom of the shaft and the car run thereon, the weight of the car first shifts the keepers from the position shown in Fig. 3 to that shown in Fig. 4 where the links are carried past the center of the keeper pivots. The raising of the platform is effected through the suspension rods 17, head 16 and bearing plate 20. The slot 56 in plate 20 passes over lug 52 on locking bar 51, at the same time the links 47 press the keepers around wheels 26 centering the car on the track section which remains on the supports 34 until the car is completely locked with the keepers in a binding position on the wheels, as shown in Fig. 1. The car and platform are thus securely locked together with the former centered and held thereon so that they may be raised together to the top of the shaft. If at this point it be desired to run the car off from the platform a support is interposed beneath the supporting plates of the receding section, as shown in Fig. 4, which brings this section into alinement with the fixed tracks of the platform. If it be desired to dump the car while still held by the keepers, the rollers of the platform engage the dumping plates and incline the car into the position shown in Fig. 1, while the tail gate of the car is automatically raised by its contact with the arm for that purpose. A continued raising of the platform after the dumping action causes the dumping roller to leave the dumping plate without injury to any of the parts thereof. In the descend-

ing of the car and platform the roller 57 returns to the dumping plate 59 and restores the car and platform to a horizontal position, the car having been securely locked at all times in the hoisting, dumping and lowering motions of the platform. It can be lowered to the bottom of the shaft and automatically released. For the purpose of allowing this dumping action a portion of the inner face of the guide for the platform is omitted, as indicated in Fig. 2, while the construction of the frame of the platform allows it to overlap the delivery chute and thus discharge directly thereto without a fall of the material liable to break or injure the same. It will be seen that this construction provides for the automatic centering and securing of the car in position upon the platform and also for the locking of the keepers during the dumping action so that they can not be affected thereby to accidentally release the car from the platform, and the return of the car in its locked position to the bottom of the shaft and there automatically released. The track of the dumping plate being open at the top permits the roller on the platform to leave the track in the continued upward movement of the platform in dumped position and the roller at the elevated end travels upon the guide 15 and thus avoids strain or injury to any part of the apparatus. The disposition of the links upon the keepers when in the released position shown in Fig. 3 holds the receding section in raised alinement with the fixed track so that the platform can be used for other purposes, and the keepers are at that time entirely removed so as to offer no obstructions and leave only the small opening through which they travel into locking position, while in this raised position of the track section lug 52 on the locking bar 51 is entirely above the vertical extension 54 of the bearing plate 20 which allows the platform to pass through the dumping action. This arrangement of links and keepers also avoids the use of springs or weights and provides a positive action in the automatic locking of the car which in the downward movement of the receding section disposes the wheels in position to be engaged by the keepers. The receding section is thus locked in both its raised and lowered positions. It will therefore be seen that the invention presents a simple, efficient and economically constructed means for automatically raising, dumping and releasing a car or carrier upon the raising platform in a mining shaft.

Having described my invention and set forth its merits, what I claim and desire to secure by Letters Patent is:—

1. In a hoisting platform, a receding track section mounted thereon, car engaging keepers carried by said section and connected to said platform, and means mounted upon said section for movement independently thereof to engage and automatically move said keepers by contact of a car member with said means.

2. In a hoisting platform, a receding track section, car engaging keepers carried by said section to travel in a plane parallel to the tracks thereon, means carried by said section for producing a preliminary movement of said keepers, and means connecting said keepers and platform for effecting a complete movement of the keepers in the raising movement of the platform.

3. In a hoisting platform, a receding track section, car engaging keepers carried by said section to travel in a plane parallel to the tracks thereon, means carried by said receding section to automatically operate said keepers, a pivotal bearing for said platform, and locking means carried by said section to engage said platform to prevent movement of said keepers when the platform is dumped.

4. In a hoisting platform, a receding track section, car engaging keepers carried by said platform, means carried by said receding section to automatically operate said keepers, a pivotal bearing for said platform, and a locking bolt carried by said section and adapted to engage a fixed member upon the pivotal bearing of said platform.

5. In a hoisting platform, a receding track section, a wheel engaging keeper pivoted upon said section, and a link extending from said keeper to a fixed part of said platform.

6. In a hoisting platform, a receding track section, a wheel engaging keeper pivoted upon said section, a link extending from said keeper to a fixed part of said platform, a movable plate mounted upon said section, and means carried by said plate to engage and shift said keeper.

7. In a hoisting platform, a receding track section, a wheel engaging keeper pivoted upon said section, a link extending from said keeper to a fixed part of said platform, a movable plate mounted upon said section, means carried by said plate to engage and shift said keeper, and supporting extensions from said receding section.

8. In a hoisting platform, a receding track section, a wheel engaging keeper pivoted upon said section, a link extending from said keeper to a fixed part of said platform, a movable plate mounted upon said section, means carried by said plate to engage and shift said keeper, supporting extension from said receding section, a depending pivotal bearing beneath said platform, and a locking bolt carried by said section and adapted to engage a fixed part of said bearing in the tilting movement of said platform.

9. In a hoisting platform, a receding track section, a wheel engaging keeper pivoted

upon said section, a link extending from said keeper to a fixed part of said platform, a movable plate mounted upon said section, means carried by said plate to engage and shift said keeper, supporting extensions from said receding section, a depending pivotal bearing beneath said platform, a locking bolt from said receding section having a lateral extension, and a coöperating flange carried by said bearing and provided with a slot in alinement with said lateral extension when the platform is in horizontal position.

10. In a hoisting platform, a receding track section, a keeper pivotally mounted on said section, and a link extending from a fixed support upon the platform to said keeper and adapted to swing from one side of the pivot of said keeper to the opposite side thereof.

11. In a hoisting platform, a receding track section, a keeper pivotally mounted on said section, a link extending from a fixed support upon the platform to said keeper and adapted to swing from one side of the pivot of said keeper to the opposite side thereof, and a tread plate upon said receding section connected to said keeper.

12. In a hoisting platform, a receding track section, a keeper pivotally mounted on said section, a link extending from a fixed support upon said platform to said keeper and adapted to swing from one side of the pivot of said keeper to the opposite side thereof, and a tread plate upon said receding section having a projection to engage a shoulder upon said keeper.

13. In a hoisting platform, a receding track section, a keeper pivotally mounted on said section, a link extending from a fixed support upon the platform to said keeper and adapted to swing from one side of the pivot of said keeper to the opposite side thereof, and an extended curved free end of said keeper to embrace the periphery of a wheel.

14. In a hoisting platform, a receding track section, a keeper pivotally mounted on said section, a link extending from a fixed support upon the platform to said keeper and adapted to swing from one side of the pivot of said keeper to the opposite side thereof, a pivotal bearing for said platform, and a locking member carried by said receding section to engage a fixed part upon said bearing.

15. In a hoisting platform, a supporting frame provided with a pivotal bearing for said platform beneath the same, a receding track section, keepers pivotally mounted upon said section, and links pivoted at their lower ends to a depending support from said platform and at their upper ends to said keepers beneath the pivots thereof.

16. In a hoisting platform, a supporting frame provided with a pivotal bearing for said platform beneath the same, a receding track section, keepers pivotally mounted upon said section, links pivoted at their lower ends to a depending support from said platform and at their upper ends to said keepers beneath the pivots thereof, shoulders carried by said keepers at one side of their pivots, and an operating plate having means to engage said shoulders.

17. In a hoisting platform, a supporting frame provided with a pivotal bearing for said platform beneath the same, a receding track section, keepers pivotally mounted upon said section, links pivoted at their lower ends to a depending support for said platform and at their upper ends to said keepers beneath the pivots thereof, shoulders carried by said keepers at one side of their pivots, and a tread plate slidingly mounted upon said receding section and provided with pins adapted to engage said shoulders.

18. A hoisting platform having an opening therethrough and a fixed track section thereon, a central receding section, and a keeper disposed in said opening and connected for operation by said receding section.

19. A hoisting platform having an opening therethrough and a fixed track section thereon, a central receding section, a keeper disposed in said opening and connected for operation by said receding section, and extended supporting bars from the opposite ends of said receding section.

20. A hoisting platform having an opening therethrough and a fixed track section thereon, a central receding section, a keeper disposed in said opening and connected for operation by said receding section, and a curved hooked free end carried by said keeper to embrace the periphery of a wheel.

21. In a hoisting platform, a support having a pivotal bearing for said platform, a vertical plate at one side of said bearing and having a lateral flange at opposite sides of its vertical center, and a receding section carried by said platform and provided with a locking bolt having a lateral projection to extend beneath said flange in the dumping movement of said platform.

22. The combination with a pivoted platform, of a dumping surface disposed at one side thereof, and an end plate extended beyond the frame of the platform at one end thereof.

23. The combination with a pivoted platform, of a dumping surface disposed at one side thereof, an end plate extended beyond the frame of the platform at one end thereof, and a frame for the ends of said platform comprising angle irons having their angles disposed toward the center of the platform.

24. The combination with a pivoted plat-

form, of a dumping projection carried by one end thereof, and a dumping plate having a track to engage said projection and open at its upper end.

25. The combination with a pivoted platform, of means for dumping the same, a receding track section, a keeper connected to said section and platform, and means carried by said section to automatically engage a fixed part during the dumping action to prevent movement of the section.

26. In a hoisting platform, a pivotally mounted keeper connected thereto, a receding track section connected to said keeper, and a depending locking bar carried by said section to engage a fixed part of said platform when the latter is moved from a horizontal position.

27. In a hoisting platform, a pivotally mounted keeper adapted to embrace the periphery of a wheel beyond the center thereof, a receding track section for automatically operating said keeper, and means for locking said section in its raised position.

28. In a hoisting platform, a pivotally mounted keeper adapted to embrace the periphery of a wheel beyond the center thereof, a receding track section for automatically operating said keeper, means for locking said section in its raised position, and means for locking said section in its depressed position with the keepers in engagement with a car wheel.

29. The combination with a hoisting frame having a pivotal bearing at its lower portion, a platform having a depending support mounted upon said bearing, a guideway, means carried by said platform to embrace said guideway, a cover carried by the upper portion of said frame above said platform, and means carried by said platform for automatically retaining a vehicle thereon.

30. The combination with a pivotal dumping platform, dumping wheels at opposite ends of said platform, a vertical track for retaining said platform in horizontal position, and a dumping plate adapted to engage the wheel at one end of said platform and bring the wheel at the opposite end into contact with said track.

31. The combination with a pivoted dumping platform, dumping wheels at opposite ends of said platform, a vertical track for retaining said platform in horizontal position, and a dumping plate provided with a curved track to engage one of said wheels and having the horizontal portion of said track omitted to permit the vertical movement of the wheel toward and from the lower portion of the track.

32. The combination with a hoisting platform, of automatically operated keepers for retaining a car thereon, means for automatically dumping said car, and means for automatically locking said keepers when the platform is tilted from a horizontal plane.

33. The combination with a hoisting platform, of automatically operated keepers for retaining a car thereon, means for automatically dumping said car, means for automatically releasing said keepers, and means for automatically locking said keepers during the dumping action.

34. In a hoisting platform, the combination with guideways having dumping recesses therein, a head mounted to travel on said ways, a platform pivotally mounted upon said head and provided with a guide engaging said ways, dumping rollers upon the opposite ends of said platform, and a dumping track to engage one of said rollers and bring the roller upon the elevated end of said platform into contact with said guideway.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES M. ARMSTRONG.

Witnesses:

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H. F. FULLING.