

(No Model.)

3 Sheets—Sheet 1.

D. JENKINS.

AUTOMATIC HOISTING CAGE OR ELEVATOR UNLOADER.

No. 317,136.

Patented May 5, 1885.

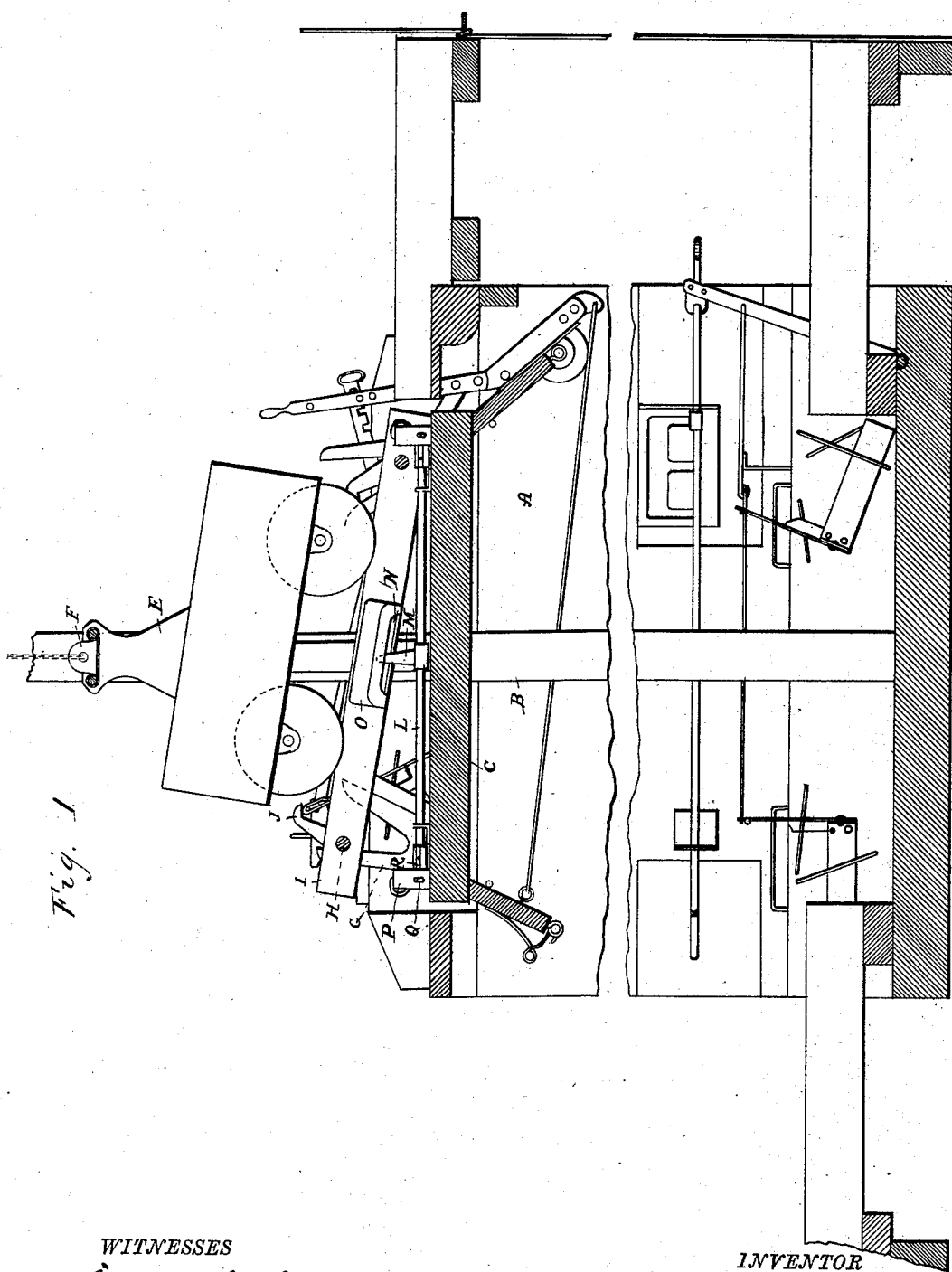


Fig. 1

WITNESSES

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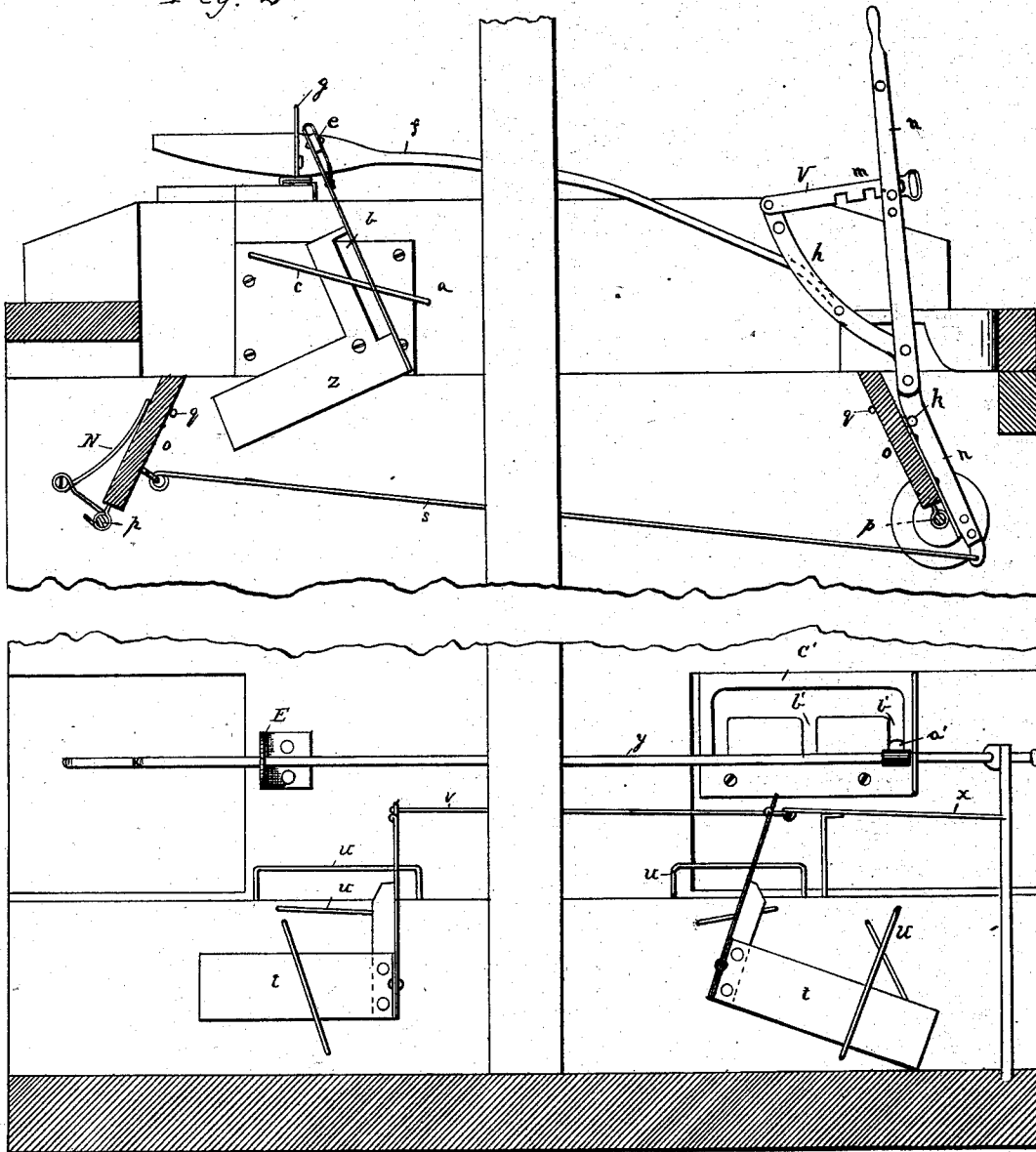
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Fig. 2



WITNESSES

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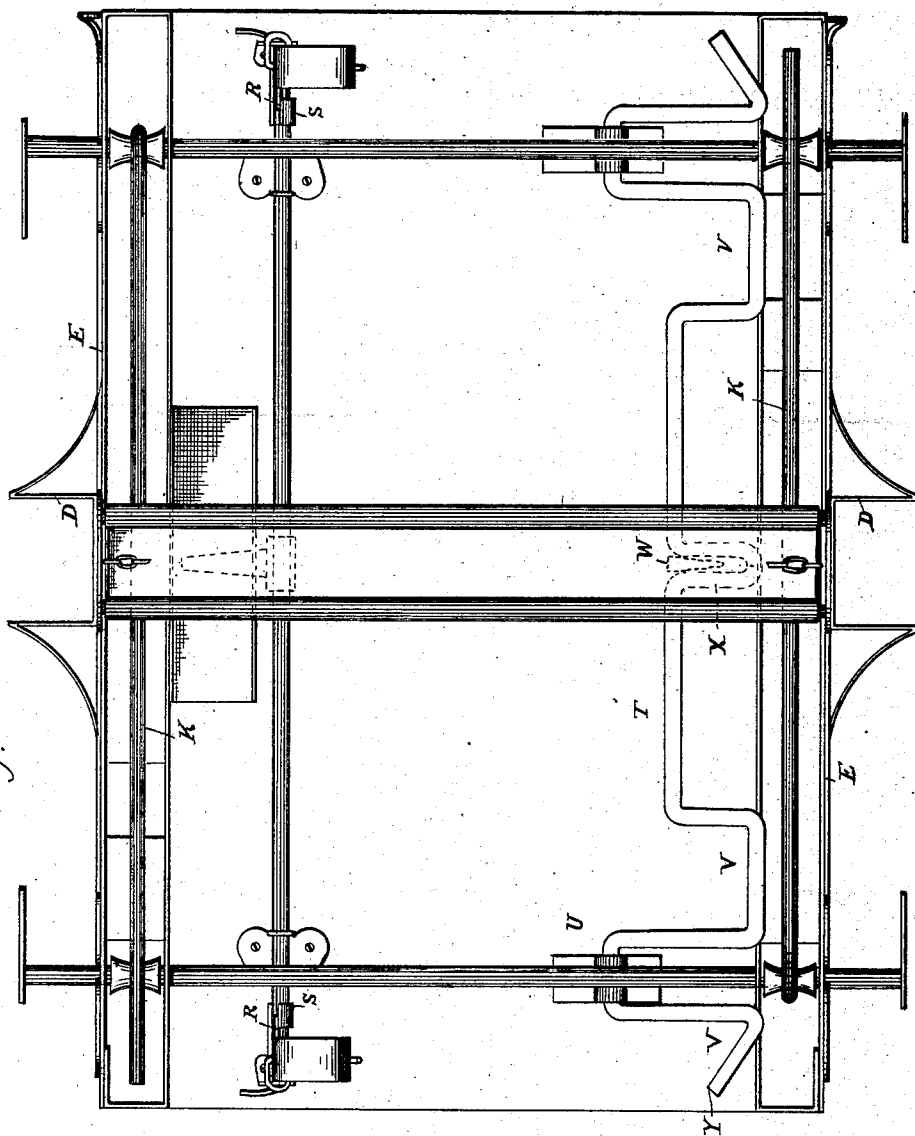
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Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

DAVID JENKINS, OF EVANSVILLE, INDIANA.

AUTOMATIC HOISTING CAGE OR ELEVATOR UNLOADER.

SPECIFICATION forming part of Letters Patent No. 317,136, dated May 5, 1885.

Application filed October 14, 1884. (No model.)

To all whom it may concern:

Be it known that I, DAVID JENKINS, a citizen of the United States, residing at Evansville, in the county of Vanderburg and State of Indiana, have invented certain new and useful Improvements in Automatic Hoisting Cage or Elevator Unloaders, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in elevators used in connection with mining and other shafts; and it has for its object, first, to provide mechanism which shall automatically act to run the car or truck from off the platform or cage when the latter reaches the top and bottom of the shaft, respectively; second, to provide means which shall automatically assume a position with relation to the tracks upon the platform to prevent the accidental running off of the car or truck, and which shall also automatically co-operate with the discharging or "running-off" mechanism to allow the car or truck to run from or leave the same; third, to provide the shaft with means which shall automatically act to sustain the platform or cage when at or near the top or mouth of the shaft; and with these ends in view my invention consists, essentially, first, of a vertically-traveling platform or cage provided with tracks capable of being elevated at either end, and connected together by rock-shafts disposed each at their termini, and having detent-hooks which engage with adjustable dogs located one set at the mouth of the shaft and two sets at bottom of the shaft, whereby, according to which rock-shaft engages the dogs, the tracks are elevated at either end and the car or truck discharged at the other end; secondly, of a rock-shaft located upon the platform in the direction of the tracks and connected with one of them, so as to partially turn on its own axis when that particular track is elevated at either end, whereby the inwardly-yielding arms, with which the said shaft is provided at both ends, and which normally stand vertically and above and beyond the car ends, are thrown to one side and the car allowed to pass over; and, thirdly, of supports pivotally connected with the walls of the mining-shaft, and constructed to yield and allow the platform to pass upwardly by them, and

to fall within the area of the platform after such passage and prevent its descent.

In the accompanying drawings, forming a part of this specification, and on which like reference-letters indicate corresponding features, Figure 1 represents a vertical sectional view through a mining-shaft, showing my improved mechanism, in side elevation, applied thereto; Fig. 2, a like view of a mining-shaft, showing the pivoted supports and the upper and lower dogs and their co-operating devices in side elevation; Fig. 3, a detached enlarged plan view of the platform or case.

The letter A designates one of the walls of a mining-shaft, standing vertically within which are the usual columns, B, which in this instance serve as guides for the platform C, constructed, preferably, of wood, and provided at either side with guide-jaws D, which embrace the columns B. This platform is also provided with bracing-frames E, having like guide-jaws at their upper ends, and connected together by a cross-beam, F, with which is connected the hoisting apparatus. Extending upwardly from the platform are bifurcated standards G, between the members of which pass the rock-shafts H, whereby they are allowed vertical play, but prevented from displacement. These rock-shafts extend through the tracks I, and are both provided at either end with a detent-hook, J, which engages the tripping-dogs, to be presently described, and with long arms or levers K, which are so located with relation to the tracks that the wheels of the car keep them depressed, whereby engagement of the detent-hooks with the dogs is maintained until the car runs off the tracks. The tracks in the present instance are constructed with a hollow or groove, within which the respective levers K normally rest, and their (the tracks') position on the platform is maintained by the rock-shafts H, fitting within the members of the standards G.

The letter L designates the keeper-shaft, the same being mounted in journal-bearings secured to the platform, and provided near the middle with a stud, M, which projects into a slot, N, formed in the plate O, which is attached to one of the tracks I. By this means the keeper-shaft is partially rotated by the elevation of that track, and the car allowed

to run over the arms P (secured to the ends of said shaft) and the pivoted triggers Q, mounted therein. These triggers yield to the touch of the car when moving toward the platform, and the arms P are loosely secured to the shaft L, and are provided with a catch, R, which drops into a notched collar, S, firmly fixed upon the shaft L. This arrangement allows the arms P to be turned down without turning the shaft, should occasion require.

A modified or auxiliary means of maintaining the car or truck on the tracks is represented by T, the same consisting of a shaft pivotally connected with the platform at U, and provided with bends or offsets V, which lie partially across the track and prevent the truck-wheels from rolling in either direction. An inclined hook, W, extends from the track into a link, X, formed in the shaft T, which acts to throw the bends V back from the track when the track is elevated, whereby the track is cleared and the car allowed to run off. The outer bends terminate in inwardly-extending arms Y, which, being impinged by the flanges of the wheels as the car runs onto the tracks, throw the bends V back and permit the car to enter upon the tracks.

The letter Z indicates the upper set of dogs, the same being pivotally connected to a suitable frame-work, a, constructed and located at the mouth of the shaft A. These dogs are of bell-crank form, the lower members serving as counter-balances to the upper members, and the latter are slotted, b, to receive a guide-rod, c, secured to the frame a, whereby the dogs are maintained against undue lateral play. The upper ends of the upper members of the dogs Z are provided with catches d, which drop into notches e, formed in the pitmen f, located at opposite sides of the mouth of the shaft. These pitmen f control the position of the dogs and enable the operator to throw them toward the center of the shaft when it is desired to avoid engagement of the detent-hooks J with the dogs, so as to prevent the tracks being elevated and the car run off. The free ends of the pitmen work in slotted standards g, whereby they are guided, while the other ends thereof are connected, the one to the arm h and the other to the arm i, secured to the rock-shaft k. The arm h is connected to a locking-bar, l, having notches which fit over studs m, extending from the lever n. When it is desired to actuate the pitmen for the purpose above named, the use of this lever is invoked, while the locking-bar serves to maintain any given position of the dogs Z. The rock-shaft k is mounted in bearings secured to one of the supports o, and the lever n is also secured to the same support. Both supports are pivoted upon rods p, fastened to the walls of the mine-shaft, and incline inwardly and rest against stops q, also fastened to the mine-shaft. A spring, r, is used to insure the inward inclination of the supports, and the latter are connected together by a bar or rod, s. When the platform passes these supports in its ascent,

it presses them outward, and when it has cleared them they fall under it and support it. When it is desired to lower the platform, the lever n is thrown outward, so that the supports are withdrawn from under it, and the platform is then allowed to descend.

The letter t indicates the lower sets of dogs, the same being constructed like those above described, and provided with guides u, which prevent lateral play. The upper members of these dogs are connected together by rods v, and to the arms w by the rods x. The arms w extend from a rock-shaft located at the bottom of the mine-shaft, and one of these arms connects with a sliding bar, y, fitted in a bearing, z, and provided with a stud, a', which engages with slots b', formed in the lock-plate c'. When the dogs t are in the position shown in Figs. 1 and 2, the right-hand set will engage the detent-hooks J, and the tracks are elevated at that end, thereby running the car off at the other end of the platform. When, however, the rod y is moved so as to drop the stud a' into the slot at the left of the locking-plate, the left-hand end of the tracks will be elevated and the car run in the opposite direction. Should the stud a' occupy the intermediate slot, b', the horizontal attitude of the tracks will be maintained and the car allowed to remain thereon.

As seen in Fig. 1, tracks which convey the car to any convenient point, either in the mine or above on the surface, are laid so as to register with those on the platform, a suitable buffer, d', being employed to arrest the car where desired.

It is obvious that a double set of dogs may be used at the mouth as well as at the bottom of the mine-shaft, in order to run the car off the platform in either direction.

The track-rails may be connected by cross ties or braces, in addition to the rock-shafts, if desired.

In some mines the car is run onto the cage from one side (or end) of the cage only. In this case only one set of dogs is required at the bottom of the shaft, the same as at the mouth of the shaft, where the car is run off the cage in one direction only. In cases where the car is run off of the cage in one direction only, one rock-shaft passing through or under the track on the platform is all that is necessary.

The pitmen at the mouth of the shaft, connected with the tripping-dogs, and the rods at the bottom of the shaft, used for operating those dogs, may be provided with turn-buckles for the purpose of adjusting the length of said pitmen and rods.

Where the mine-shaft is divided into two vertical apartments, the several devices for operating the cages and cars will be duplicated.

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

1. In a mine-elevator, the combination, with the platform having the tracks thereon capa-

ble of elevation at either end, and the rock-shafts connected with said tracks, of dogs with which said rock-shafts are adapted to engage.

2. In a mine-elevator, the combination, with the platform having tracks thereon capable of elevation at either end, rock-shafts passing through said tracks and having hook-detents, and arms which are engaged by the wheels of the car, of the dogs with which the said hook-detents engage, and the car-keeper adapted to be actuated by the tracks.

3. In a mine-elevator, the combination, with a vertically-traveling platform having tracks thereon capable of elevation at either end, and the rock-shafts which operate the same, of dogs located so as to engage said operating-shafts, to cause the car to be run off the tracks in either direction, and the car-keeper to prevent accidental displacement of the car.

4. In a mine-elevator, the combination, with the vertically-traveling platform, the tracks thereon, the bifurcated standards, the rock-shafts connecting the tracks together, and provided with arms which are engaged by the car-wheels, and hook-detents at their ends, and the car-keeper actuated by the tracks, of the sets of dogs located at the bottom and mouth of the mine-shaft, the devices for adjusting the dogs to and from the hook-detents, and the platform-supports constructed to allow of the ascent of the platform and to prevent its descent.

5. In a mine-elevator, the combination, with the platform, the tracks thereon capable of elevation at either end, the bifurcated

standards, and the rock-shafts which connect the tracks together, of the car-keeper shaft having arms at its ends, in which are pivoted triggers capable of yielding in one direction, the said keeper-shaft being connected with one of said tracks, whereby it is actuated to allow the car to run off.

6. In a mine-elevator, the upper set of tripping-dogs, and the pitmen and devices for adjusting and securing the same.

7. In a mine-elevator, the lower sets of tripping-dogs, the rods which connect them together, and the rock-shaft having arms connected to the dogs, the sliding bar, and the locking-plate.

8. In a mine-elevator, the pivoted platform-supports constructed to yield to the upward passage of the platform, and to automatically pass under the same and prevent its accidental descent.

9. In a mine-elevator, the pivoted platform-supports connected together by a rod, and having a lever, by which they are actuated to allow the platform to descend, and the stops and spring.

10. In a mine-elevator, a rock-shaft car-keeper having arms mounted thereon and held by catches and notched collars, and provided with triggers which yield in one direction.

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

DAVID JENKINS.

Witnesses:

R. N. ROSS,

G. W. DANNETTELL.