

No. 682,525.

Patented Sept. 10, 1901.

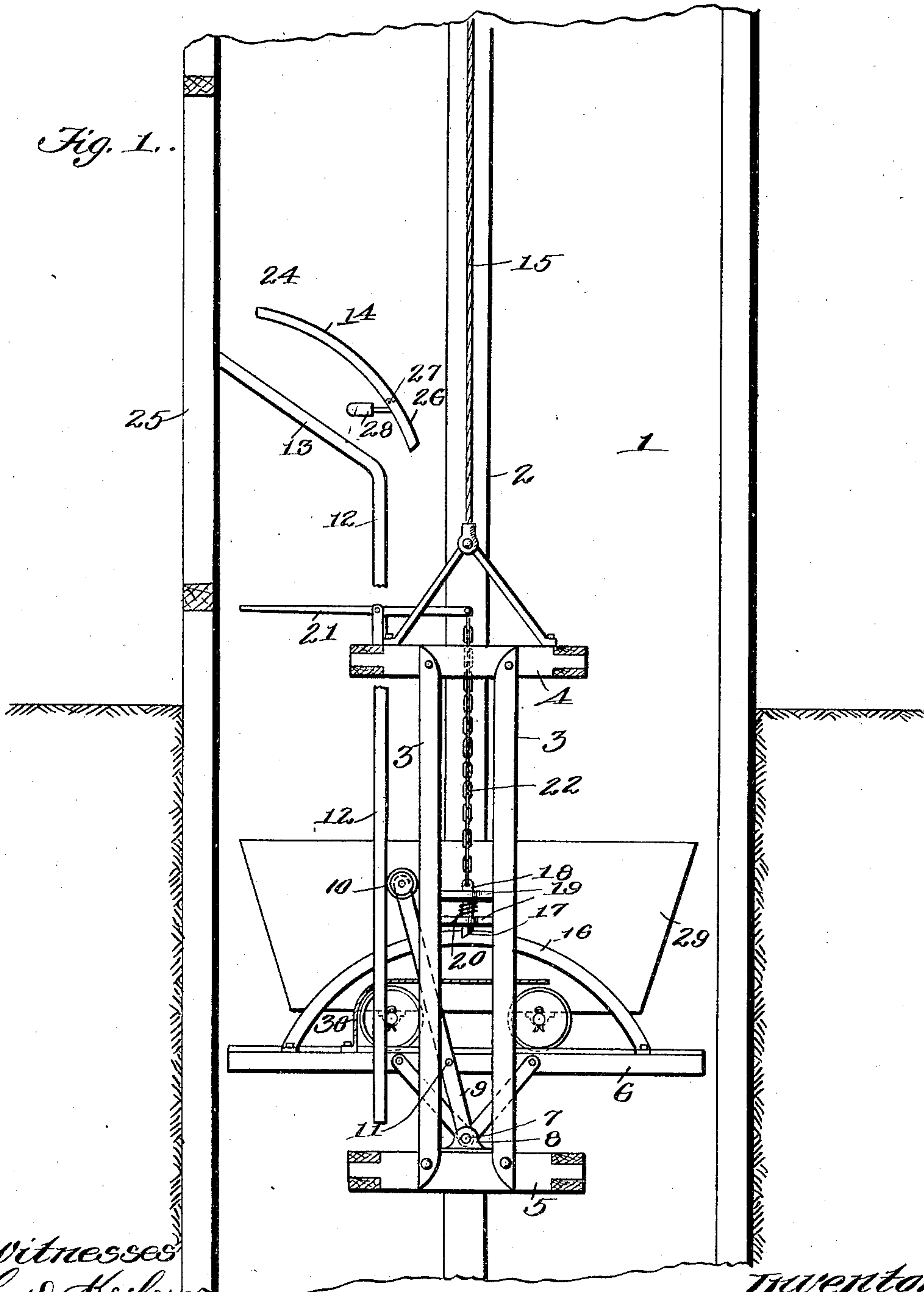
B. BRANTINGHAM.
DUMPING CAGE FOR MINES.

(Application filed Dec. 18, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1..



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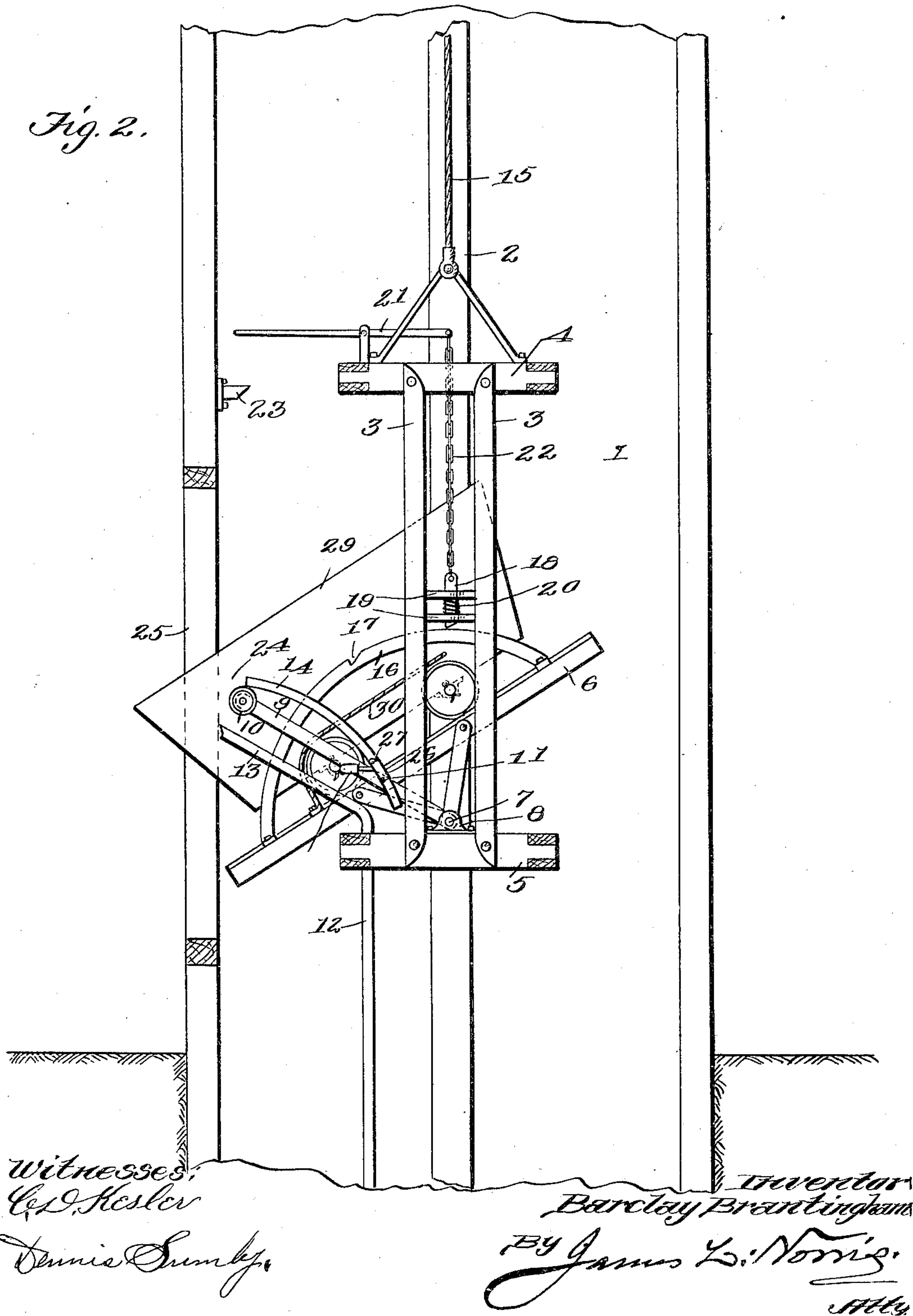
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(No Model.)

2 Sheets—Sheet 2.

Fig. 2.



UNITED STATES PATENT OFFICE.

BARCLAY BRANTINGHAM, OF HOCKING, IOWA.

DUMPING-CAGE FOR MINES.

SPECIFICATION forming part of Letters Patent No. 682,525, dated September 10, 1901.

Application filed December 18, 1900. Serial No. 40,303. (No model.)

To all whom it may concern:

Be it known that I, BARCLAY BRANTINGHAM, a citizen of the United States, residing at Hocking, in the county of Monroe and State of Iowa, have invented new and useful Improvements in Dumping-Cages for Mines, of which the following is a specification.

My invention relates to certain new and useful improvements in dumping-cages for mines, and has for its general objects to provide novel mechanism for automatically tilting the cage-bottom and to provide against breakage of certain parts should the cage be carried up too high or too rapidly.

Other objects of the invention relate to details of construction and to combinations and arrangements of parts, all of which will be clearly set forth in the specification.

I have illustrated the invention in the accompanying drawings, in which—

Figure 1 is a section through a mine-shaft, showing my invention in elevation, the cage being in a lowered position; and Fig. 2 is a similar view showing the position of the parts after the platform has been tilted.

Referring now to the drawings, the numeral 1 indicates a mine-shaft, located on each side of which and extending from top to bottom thereof is a guide-beam 2 for the shoes 3 of the cage. The cage proper may be constructed in any ordinary or preferred manner and comprises a top 4 and a bottom 5.

The numeral 6 indicates the tilting platform of the cage, which is mounted on a shaft 7, journaled in bearings 8, secured at each side of the bottom 5. Fast on each end of the shaft 7 is an arm 9, having mounted on its outer end a wheel 10. The arms 9 extend a distance—say two feet—above the platform 6 and are secured to the side of said platform intermediate their ends, as indicated at 11.

Extending from top to bottom of the shaft 1, or practically so, are guide-rails 12, which are parallel with the guide-beams 2. Each of the guide-rails 12 has at its upper end an inclined portion 13, leading outward from the rail to the surface-opening from the shaft. Each rail 12 is located at such a distance from the guide-beam 2 as that the shoe 3 on that side of the cage shall lie relatively near

said rail, a sufficient space being left between the shoe and rail to permit the wheel 10 at each side of the cage to run smoothly between them, the arms 9 being properly inclined from the vertical to bring the wheels to this position, as shown. Located adjacent to and at a suitable distance above each inclined portion 13 is a curved guide 14, the lower end of which terminates substantially in the plane of the outer side of the shoe 3.

The cage as a whole is suspended on the hoisting-cable 15, and as it is raised and lowered in the shaft by this cable the roller 10, working between the shoe 3 and the guide-rail 12, will prevent the platform 6 from tilting in either direction, said platform being centrally pivoted, as shown. As a further means for preventing the tilting of the platform 6 I provide on said platform a curved latch-rail 16, extending from end to end thereof and having centrally of its length a recess 17, adapted to receive the end of a latch 18. Said latch is mounted in bearings 19, supported on the shoes 3 and is controlled by a spring 20, which tends normally to hold the latch in engagement with the recess 17.

Pivotally mounted on the top 4 of the cage is a lever 21, the inner end of which is connected to the latch 18 by means of a chain 22. The outer or free end of lever 21 is designed to engage a stop 23, located on one of the beams of the shaft above the curved rail 14. In operation as the cage rises the free end of the lever engages the stop 23, and thereby withdraws the latch 18 from engagement with the recess 17 just as the wheel 10 passes under the curved rail 14. As the wheel 10 engages the said curved rail it causes the platform 6 to tilt, which movement continues until the wheel 10 has passed to the outer end of the curved rail. As the free end of the lever 21 passes beyond the stop the latch will descend upon the plain part of the latch-rail and ride over the same. As the cage is lowered the wheel 10 passes down the inclined portion 13, gradually restoring the platform to a horizontal position, and then continues downward between the guide-rail 12 and the shoe 3, while as the platform assumes a horizontal position the latch 18 will, under the action of its spring, engage in the

recess 17. As the cage descends the free end of lever 21 will first be raised by and then pass over the stop 23, this movement being permitted by means of the flexible connection between said lever and the latch 18.

Heretofore in devices of this character it has been customary to employ two curved rails similar to the rail 14 for guiding the wheel 10. By making the lower rail 13 straight instead of curved the descent of the cage is facilitated, owing to decrease of friction, as the wheel does not have to follow the curvature of the upper rail, but passes easily down the incline of the lower rail.

It frequently happens in operating these cages that owing to the carelessness of the engineer the cage is carried upward too far or is brought in contact with the rail 14 with too much force, and as a consequence in either case the rail 14 or the arm or other part carrying the wheel 10 is broken. In order to avoid this, I shorten the rail 14, so that a space 24 is provided between the beam 25, to which the outer end of the inclined rail 13 is secured and the outer end of the curved rail 14, this space being large enough to permit the wheel 10 to pass through it. With this construction should the cage be carried up too far or too rapidly the wheel 10 will pass up through the space 24 and no harm be done. In order to permit the wheel 10 to pass from above the rail 14, I provide a pivoted end piece 26 to said rail, (the pivot being indicated at 27,) the construction affording a hinge-joint, which will break to permit a downward movement of the end piece 26, but will resist upward movement thereof. The end piece 26 forms a continuation of the curved rail 14 and is held normally upward by a weighted arm 28, located to one side and at the rear of said end piece, the location of the weighted arm being such as not to interfere with the passage over the end piece 26 and the curved rail 14 of the wheel 10. Should the wheel 10 pass up through the space 24, when the cage is lowered it will strike against the upper side of the rail 14 and following the curvature of said rail will restore the platform to a horizontal position in like manner as the rail 13. When the wheel reaches the end piece 26, said end piece will readily yield to permit the wheel to pass downward, after which it will be restored to its proper position by gravity acting on the weighted arm 28. It will be understood, of course, that other means, such as a spring, could be substituted for the weighted arm 28 without departing from the spirit of my invention.

The numeral 29 indicates a car on the platform 6, which is of the usual construction, and is prevented from rolling off the platform in one direction by means of a fender 30 on

each side of the platform, under which the wheels run.

Having thus fully described my invention, what I claim as new is—

1. In a dumping-cage for mines, the combination with a tilting platform, of guide-rails having each an inclined straight portion at its upper end, a curved rail located above each of said inclined portions and a wheel carried by said platform at each side thereof, and located between said guide-rail and one of the shoes of the cage and adapted to engage the under side of said curved rail in the upward movement of the cage, substantially as described.

2. In a dumping-cage for mines, the combination with a tilting platform, of guide-rails having each an outwardly-extending portion at its upper end, a curved rail located above each of said outwardly-extending portions but shorter than the latter, whereby to provide an opening as described, a yielding end piece mounted on the opposite end of each of said curved rails, and a wheel carried by said platform at each side thereof and located between said guide-rail and one of the shoes of the cage and adapted to engage the under side of said curved rail in the upward movement of the cage, substantially as described.

3. In a dumping-cage for mines, the combination with a tilting platform, centrally pivoted on the cage, a shaft mounted in bearings on said cage constituting the pivotal bearing of the platform, of guide-rails having each an inclined portion at its upper end, a curved rail located above each of said inclined portions, an arm secured at one end to each end of said shaft and intermediate its ends being secured to said platform, and a wheel mounted on the opposite end of each of said arms and located between said guide-rail and one of the shoes of the cage and adapted to engage the under side of said curved rail in the upward movement of the cage, substantially as described.

4. In a dumping-cage for mines, the combination with a tilting platform and means for automatically tilting the same, of a curved latch-rail mounted on the platform and having a recess, a spring-controlled latch mounted on the cage and engaging in said recess, a lever pivotally mounted on the cage, a chain connecting one end of said lever with said latch, and a stop in the shaft of the mine located in the path of movement of the opposite end of said lever, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

BARCLAY BRANTINGHAM.

Witnesses:

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