J. A. NOLAN.

AUTOMATIC CAR CAGER.

APPLICATION FILED NOV. 28, 1914.

1,144,374.

Patented June 29, 1915.

2 SHEETS—SHEET 1.

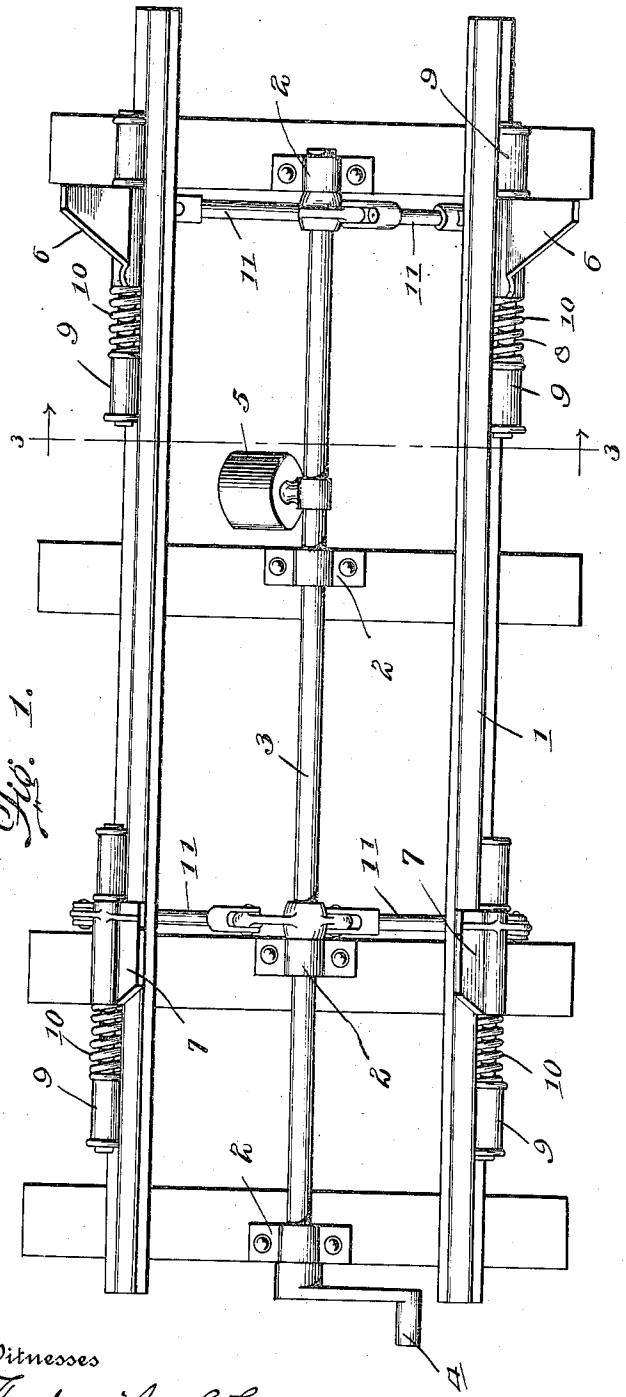


Fig. 1.

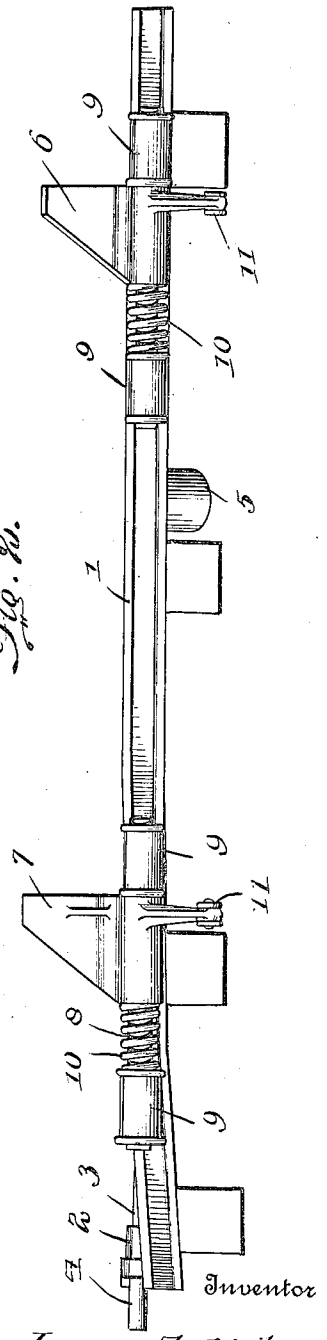


Fig. 2.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 4.

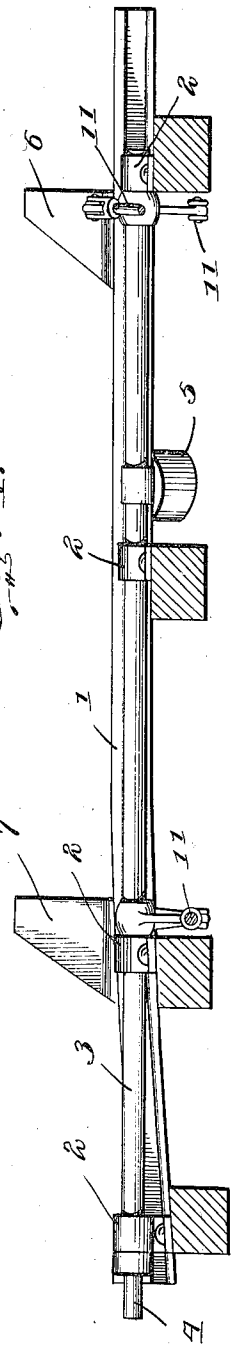


Fig. 3.

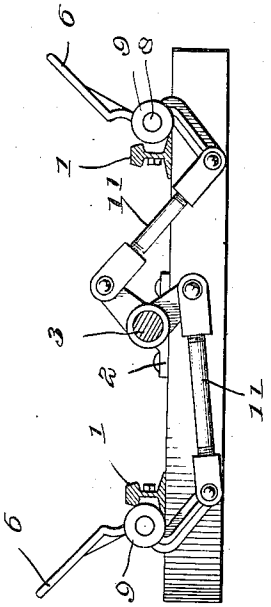
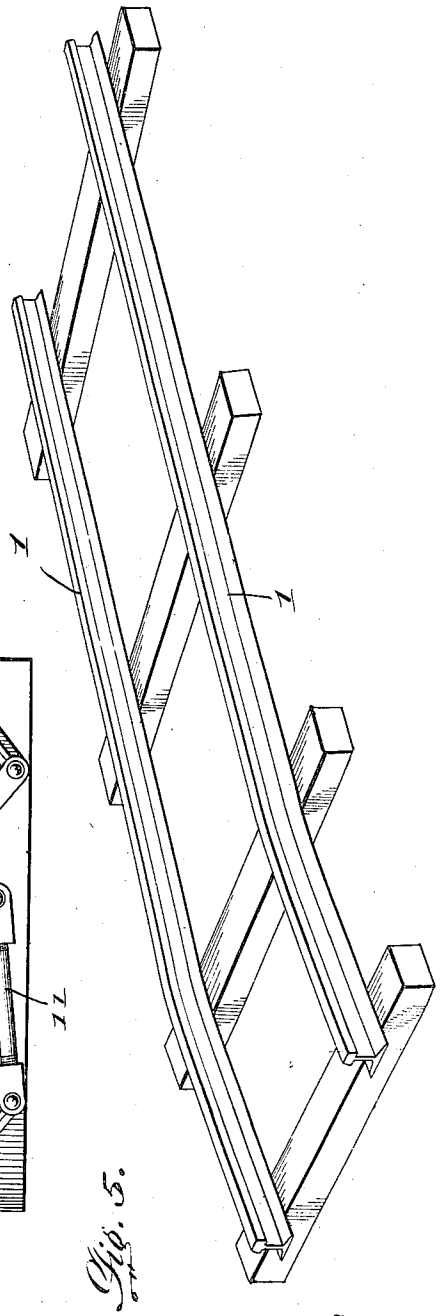


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

JAMES A. NOLAN, OF BOWERSTON, OHIO.

AUTOMATIC CAR-CAGER.

1,144,374. Specification of Letters Patent. Patented June 29, 1915.

Application filed November 28, 1914. Serial No. 874,519.

To all whom it may concern:

Be it known that I, JAMES A. NOLAN, a citizen of the United States, residing at Bowerston, in the county of Harrison and State of Ohio, have invented new and useful Improvements in Automatic Car-Cagers, of which the following is a specification.

The invention relates to an improvement in automatic car cagers primarily adapted for use in mines and adapted to automatically deliver a single car to the cage as required.

As is heretofore constructed, cagers of the automatic type have required a sufficient grade to enable the final car, when released from the holding horns to ride on to the cage with sufficient momentum to displace the empty car thereon. This has required a grade throughout the length of the cager greater than actually required for the travel of the cars to the horn, and under the grade requirement the insulation of the automatic cager in some mines has been found equally difficult if not impossible.

The main object of the present invention is the provision of an automatic cager at the final or terminal grade in the tracks arranged adjacent the final horns so that the car held against said horns will be partially on the final grade. By this construction the car when released will be given sufficient impetus to displace the empty car on the cage, while at the same time the remaining length of the track of the cager need be given only sufficient grade to carry the cars to the horns.

The invention in the preferred form of details will be described in the following specification, reference being had particularly to the accompanying drawings, in which:—

Figure 1 is a plan of the accepted type of cager having my improvement applied thereto. Fig. 2 is a side elevation of the same. Fig. 3 is a section on line 3—3 of Fig. 1. Fig. 4 is a longitudinal section. Fig. 5 is a perspective view of the tracks with the caging apparatus omitted.

The improvement is designed particularly for use with any appropriate type of cager, and in order to effectively describe the improvement, I have shown the same as applied to the accepted type of cager, though it is to be understood that it is clearly applicable and designed for use with any and all appropriate types of cagers. In the type of cager illustrated, 1 represents the rails on which the loaded cars travel, and between the rails is mounted any suitable bearings 2, the operating shaft 3, one end of which is provided with a trip lever 4 designed to be engaged and operated by the descending cage, the movement of the shaft under the influence of the lever shifting the weight 5 secured to the shaft, which weight operates a return shaft to normal position upon elevation of the cage.

Upper and lower horns 6 and 7, arranged in pairs, one horn for each track, are respectively supported upon shafts 8 mounted in bearings 9 secured to the rails, springs 10 assisting in returning the horns to normal or car engaging positions. Rods 11 connect the respective horns with the shaft, the connection being such that the respective pairs of upper and lower horns are reversely actuated as is usual in this type of device.

As is well understood with the type of cager described, the descending cage depresses the lever 4, opening the horns 7 and closing the horns 6. This frees the car on the track between the horns 6 and 7 and allows such car to ride to the cage. As the cage rises the horns close and the horns 6 open, permitting the next car in line to ride down into contact with the horns 7 for subsequent travel to the cage.

As the car being delivered to the cage is required to displace an empty car thereon, it will be appreciated that the loaded car being delivered must have considerable momentum, and in cagers as previously constructed this momentum has been gained by gradually grading the caging sections of the track. From the necessary impetus required by the car being delivered, the grade of the cager tracks must be a comparatively sharp one, with the consequent objection that the car following the car being delivered will, by reason of such grade, contact with the horns 7 with considerable impact, tending to jar the coal from the car, in the use of the cager in coal mines. Furthermore the grade required is not always possible in the mines and hence, if the cager is used, there is more or less trouble and manual labor in properly placing the car on the cage and the displacement therefrom of the empty car. In my improvement I overcome these objections by giving track rails 1 a downward inclination for that section including terminals of the rails and to and slightly beyond the

holding horns 7. The downwardly inclined section 12 of the rails thus provided is at a sharper gradient than the remaining section of the track, and forms such a section of the main length of the rail that when the car to be delivered is in position on said rails against the lower horns 7, the forward wheels of the car will be well upon the section 12 of the rails. As the device is operated, therefore, the car will be automatically delivered upon opening of the horns 7, and then delivered over a section of track having such a grade as will give to the car the desired momentum to properly displace the empty car on the cage as is required. The remaining length of the cager tracks may thus be given much less grade than usual, in fact just sufficient grade to carry the cars to the horns and therefore avoiding all jars incident to the contact of the cars with the horn and preventing the usual dislodgment of the material.

The grade at which the section 12 will be arranged will depend upon the character of the cars, the material they are to handle, and the momentum required to displace the empty cars, the present invention contemplating no particular grade for such section except that it be in excess of the normal grade.

What is claimed is:—

A cager including a section of track rails, said rails having their entrant ends and the greater portion of their lengths arranged at a grade corresponding to the grade of the main length of track, the remaining portion of the length of said rails including the exit ends thereof having a greater grade in the same direction as the remaining lengths of the rails, and holding means coöperating with the rails to engage and retain the car in position, one of said holding means arresting the car in a position to have one set of wheels thereof at rest upon that portion of the greater grade, whereby the position of the car body will be such that in the release of the holding means the car will start more readily and with greater speed than in the normal grade of the track.

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

JAMES A. NOLAN.

Witnesses:
W. B. Law,
Maud Law.