

C. E. BROOKS & C. GATES.
CAR FEEDING DEVICE FOR CAGES.
APPLICATION FILED OCT. 19, 1912.

1,058,405.

Patented Apr. 8, 1913.

3 SHEETS—SHEET 1.

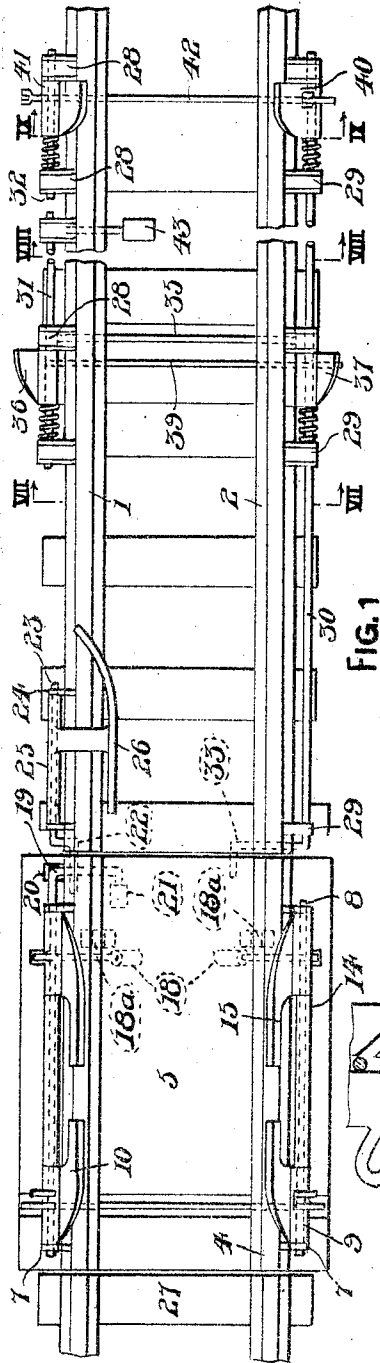


FIG. 1

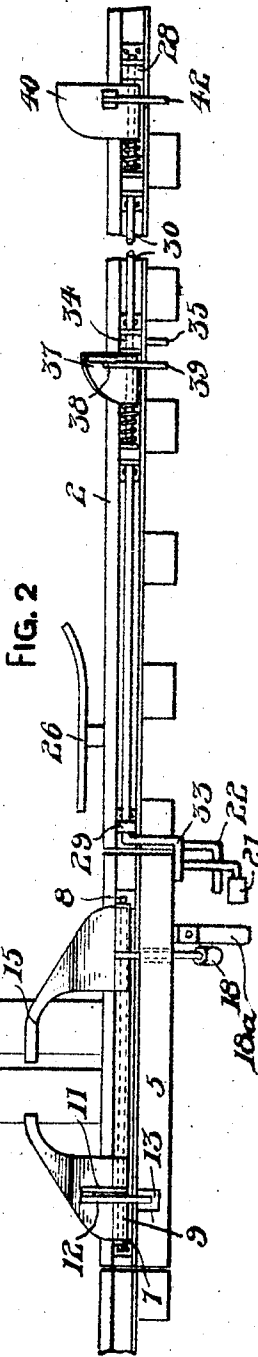


FIG. 2

WITNESSES

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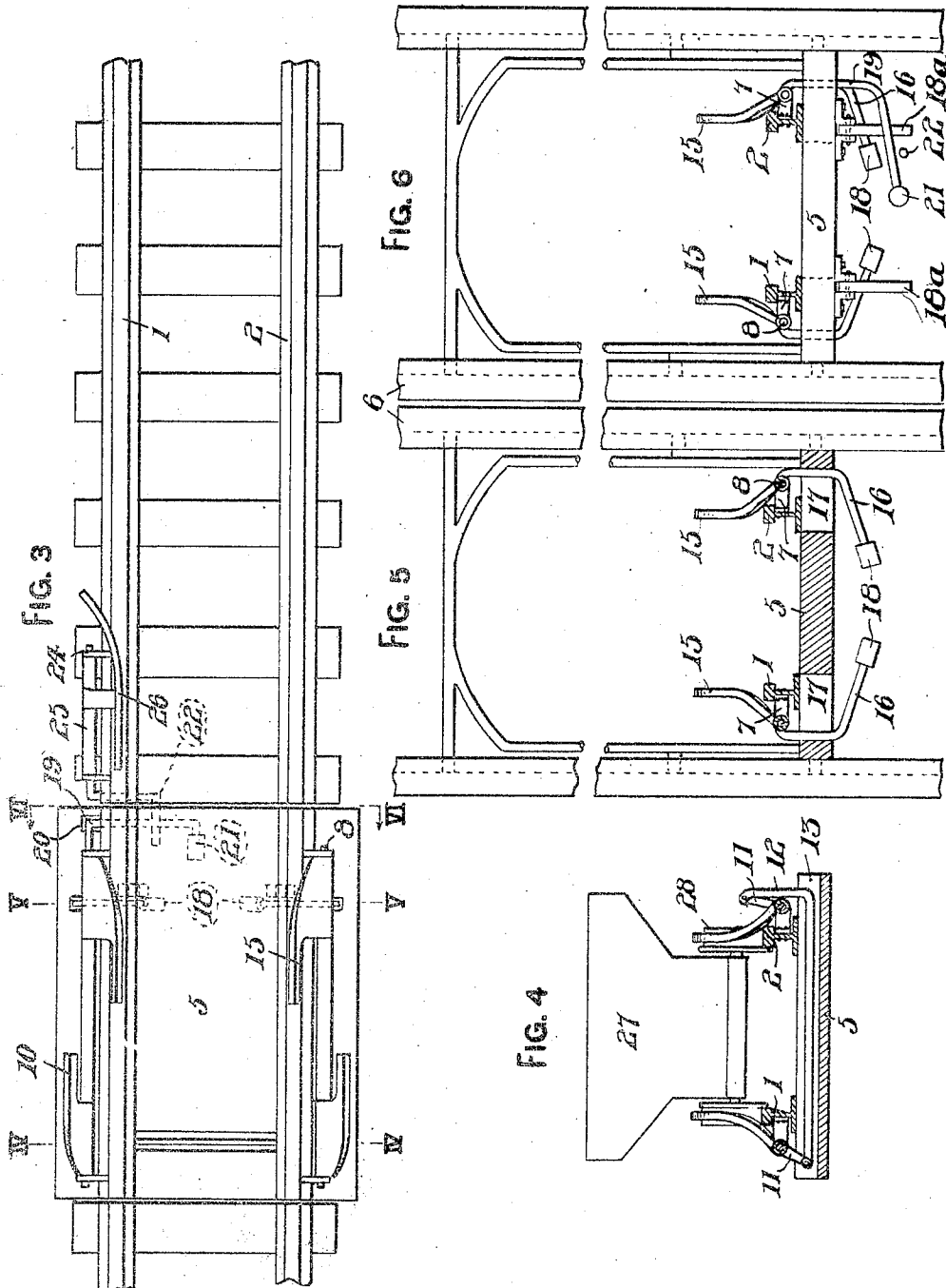
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3 SHEETS-SHEET 3.

FIG. 9

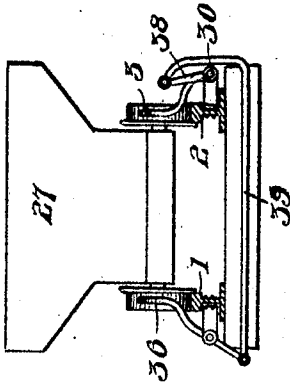


FIG. 7

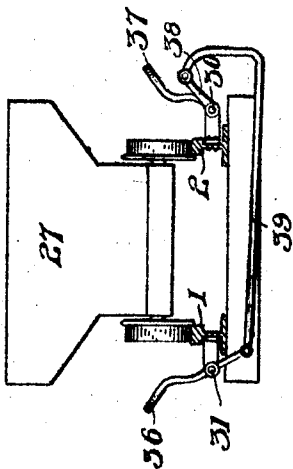


FIG. 10

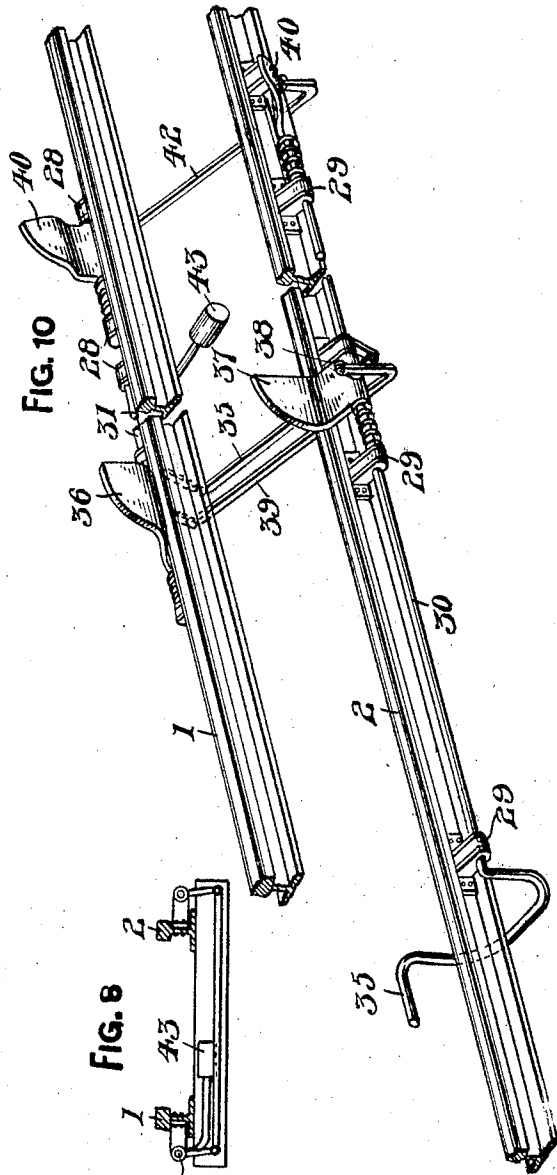
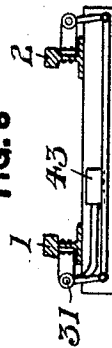


FIG. 8



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UNITED STATES PATENT OFFICE.

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CAR-FEEDING DEVICE FOR CAGES.

1,058,405.

Specification of Letters Patent.

Patented Apr. 8, 1913.

Application filed October 19, 1912. Serial No. 726,741.

To all whom it may concern:

Be it known that we, CHARLES E. BROOKS and CLARENCE GATES, citizens of the United States of America, residing at Bowerstown, in the county of Harrison and State of Ohio, have invented certain new and useful Improvements in Car-Feeding Devices for Cages, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to a car feeding device for cages that are operable in mine shafts for elevating pit cars from a room or entry of a mine to a tippie above the mine shaft.

Our invention aims to provide: First, positive and reliable means, as hereinafter set forth, for retaining a pit car upon a cage while the same is elevated and tilted to discharge the contents thereof. Second, a feeding mechanism that is automatically actuated by a pit car to release the locking mechanism of the cage, whereby the empty car upon the cage can pass off and a loaded car pass thereon. Third, a car feeding mechanism adjacent to the lower end of a mine shaft that is actuated by a cage to release a car held in check, whereby the car can move toward and onto the cage. Fourth, a pit car locking and feeding mechanism consisting of comparatively few parts, inexpensive to manufacture, and easy to install in connection with the track and the present type of cage. Fifth, a mechanism of the above type that is positive in its action, not liable to injury by ordinary use and highly efficient for controlling the passage of pit cars or other types of cars on to and off of cages, elevators and movable bodies.

Our invention further aims to accomplish the above results by a combination of mechanical elements that will be hereinafter specifically described and then claimed.

Reference will now be had to the drawings, wherein like numerals denote corresponding parts throughout the several views, in which:—

Figure 1 is a plan of the car feeding device, and a cage, Fig. 2 is a side elevation of the same showing a portion of the cage, Fig. 3 is a plan of the locking mechanism showing the same in an actuated position, Fig. 4 is a cross sectional view taken on the line IV—IV of Fig. 3, Fig. 5 is a similar view taken on the line V—V of Fig. 3, Fig. 6 is a similar view taken on the line VI—VI of

Fig. 3, Fig. 7 is a similar view taken on the line VII—VII of Fig. 1, Fig. 8 is a similar view taken on the line VIII—VIII of Fig. 1, Fig. 9 is a similar view taken on the line IX—IX of Fig. 1, and Fig. 10 is a perspective view of the feeding mechanism.

In describing our invention by aid of the drawings above referred to we desire to point out that we intend said device as merely illustrative of an example whereby our invention may be applied in practice, and we do not limit our claims to the precise arrangement and construction of parts indicated, and the following description is therefore to be construed broadly as including substitute arrangements and constructions which are the obvious equivalents of those shown.

The drawings show a track having the rails 1 and 2 longitudinally alining with rails 3 and 4 respectively arranged upon a cage or elevator 5. The cage or elevator is of the ordinary and well known construction operable in a mine shaft and capable of being elevated and tipped or tilted between guides 6 by a suitable hoisting mechanism forming no part of this invention.

7 denotes longitudinally alining bearings carried by the cage 5 and mounted in these bearings, at the outer sides of the rails 4, are longitudinal pivot rods 8. Pivoted upon the rods 8, at one end thereof, are the barrels 9 of oppositely disposed stops or check members 10 capable of swinging over the rails 4, as shown in Fig. 1. The barrels 9 are provided with cranks 11, and pivotally connected to said cranks are the ends of a reach rod 12 that extends lengthwise of a groove 13 provided therefor in the cage 5. The reach rod 12 is employed whereby the stops or members 10 can be moved in unison.

Pivoted upon the rods 8, at the opposite ends thereof, and spaced apart from the stops 10 by longitudinal sleeves 14 are locking members 15, similar to the stops 10 but arranged in reverse order. The locking members 15 have depending curved cranks 16 extending through openings 17 provided therefor in the cage 5 and the lower ends of said cranks have weights or enlargements 18 that support the locking members 15 in a normally closed position extending over the rails 4 of the cage.

19 denotes a depending crank, carried by one of the pivot pins 8, said crank extending

through an opening 20 provided therefor in the cage. The lower end of the crank is weighted or enlarged, as at 21 and adapted to engage said crank is a crank 22 of a rock shaft 23, journaled in bearings 24, at the outer side of the rail 1. Mounted upon the rock shaft 23 is a barrel 25 of an actuating member 26, said member normally extending over the rail 1.

Before further describing our invention, it is thought best to consider the operation of the mechanism just described in connection with a pit car 27 having flanged wheels. The rails 1 and 2 are at a slight inclination whereby the pit car can descend by gravity and impinge the actuating member 26. The ends of the actuating members are curved whereby a wheel 28 of the car can easily ride into engagement with the same, shifting the member outwardly, and thereby rock the shaft 23. In rocking the shaft 23, the crank 22 of said shaft engages the crank 19 and rocks the pivot rods 8. As the stops 10 are mounted upon said pivot rods, said stops are swung to an open position, outwardly from the rails 4, allowing a car on the cage 5 to move off onto a track 27 alining with the track of the cage. Immediately upon the cage being vacated the stops 10 assume their normal position by gravity and the cage is ready to receive the car that actuated the member 26. As the forward wheels of the car engage the locking members 15, said members are swung outwardly and the forward wheels of the car engage the stops 10. The rear wheels of the car are then held by the locking members 15, which assume their normal position. The car wheels are therefore held between the stops 10 and the members 15 and the cage 5 can be raised and tilted without any danger of the car becoming displaced until the cage 5 is lowered and restored to its normal position. The car is locked upon the cage until the member 26 is again actuated, as previously described. As a further guard against accidental displacement of the car, while the cage is tilted, we provide the bottom of the cage with pivoted gravity members 18^a that prevent the cranks 16 of the locking members 15 from swinging. Now, as the rails 1 and 2 are at an inclination, there would be danger of cars descending when the cage is elevated, and to avoid the use of an attendant, we have devised a feeding mechanism that is automatic and depends in operation upon the cage being lowered. This feeding mechanism is located some distance or a car-length from the member 26 and said mechanism is constructed somewhat upon the principle of the mechanism of the cage.

At the outer sides of the rails 1 and 2 there are bearings 28 and 29 and journaled in said bearings are rock shafts

30, 31 and 32, the shafts 31 and 32 being located adjacent to the outer side of the rail 1 and the shaft 39 adjacent to the outer side of the rail 2. The shaft 30 is of greater length than either of the other shafts and extends to the cage 5 where it has a crank 33 extending under the cage and into the path of said cage, whereby said crank will be lowered when the cage assumes its normal position, thereby rocking the shaft 30. The shafts 30, 31 and 32 have cranks 34 connected by a reach rod 35 whereby said shafts will be rocked in unison.

Mounted upon the rock shaft 31 is a stop 36 and loosely mounted upon the rock shaft 30 is a stop 37, said stops being oppositely disposed and having cranks 38 connected by a reach rod 39.

Mounted upon the shaft 30 is a stop 40 and loosely mounted upon the shaft 32 is a stop 41, said stops being oppositely disposed and connected by a reach rod 42 whereby they will move in unison.

The rock shaft 31 has a weighted crank 43, which through the medium of connections just described holds the crank 33 normally elevated in position to be impinged by the cage when descending.

By mounting some of the stops on their respective shafts and loosely mounted on others, the stops 36 and 37 can be shifted the reverse of the stops 40 and 41. The stops 36 and 37 extend normally over the rails 1 and 2 thereby holding a car in check. When the crank 33 is lowered the stops 36 and 37 are swung outwardly and the stops 40 and 41 are swung inwardly. The car held in check by the stops 36 and 37 can descend, actuate the member 26 and pass onto the cage without any danger of other cars descending and causing an accident. When the cage is elevated the crank 33 is released, the stops 36 and 37 swing inwardly and the stops 40 and 41 swing outwardly, thereby allowing another car to descend against the stops 36 and 37 in position to pass downwardly onto the cage, when the cage is lowered. It is therefore apparent that for a successful operation of the feeding mechanism a cage must be used and that cars could not automatically pass onto the cage without using the feeding device. Both devices coöperate for obtaining a very important result, and we would have it understood that with certain modifications and variations our invention is applicable to gravity railways, feeding onto elevators or hoists.

What we claim is:—

1. In a car feeding device for cages, the combination with a cage, rails mounted thereon, and a track extending to said cage, a pair of longitudinally alining bearings at each side of and carried by said cage, a pivot rod mounted in each pair of bearings, of

stops pivotally supported by said rods at one end thereof and adapted to swing over the rails to limit the movement of a car thereon, an actuating member in connection with said track and actuated by a car to move said stops, and locking members arranged upon said rods at the other end thereof and cooperating with said stops in retaining a car upon said cage during a movement thereof.

2. In a car feeding device for cages, the combination with a cage, rails mounted thereon, and a track extending to said cage, a pair of longitudinally alining bearings at each side of and carried by said cage, a pivot rod mounted in each pair of bearings, of stops pivotally supported by said rods at one end thereof and adapted to swing over the rails to limit the movement of a car thereon, an actuating member in connection with said track and actuated by a car to move said stops, locking members arranged upon said rods at the other end thereof and cooperating with said stops in retaining a car upon said cage during a movement thereof, and a feeding mechanism actuated by a movement of said cage to control the movement of cars toward said cage.

3. In a car feeding device for cages, the combination with a cage, rails arranged thereon, and a track extending to said cage, a pair of longitudinally alining bearings at each side of and carried by the cage, a pivot rod mounted in each pair of bearings, of pivoted cooperating stops supported by said cage, rods at one end thereof and extending normally over the rails thereof, a pivoted actuating member at the side of said track and adapted to be actuated by a car to shift said stops outwardly from the rails of said cage, pivoted cooperating locking members arranged upon said rods at the other end thereof and cooperating with said stops in

retaining a car on said cage during a tipping movement thereof and spacing means upon said rods interposed between said stops and locking members.

4. In a car feeding device for cages, the combination with a cage, rails arranged thereon, and a track extending to said cage, a pair of longitudinally alining bearings at each side of and carried by the cage, a pivot rod mounted in each pair of bearings, of pivoted cooperating stops supported by said rods at one end thereof and extending normally over the rails thereof, a pivoted actuating member at the side of said track and adapted to be actuated by a car to shift said stops outwardly from the rails of said cage, pivoted cooperating locking members arranged upon said rods at the other end thereof and cooperating with said stops in retaining a car on said cage during a tipping movement thereof, means in connection with said track and including sets of stops actuated by a descent of said cage for controlling the movement of cars toward said cage and spacing means mounted upon said rods and interposed between said stops and members.

5. In a car feeding device for cages, a cage adapted to receive a car, and a track extending to said cage, of movable stops arranged upon said cage, and means including sets of reversely operating stops in connection with said track and actuated by a descent of said cage for controlling the passage of a car upon said track to said cage.

In testimony whereof we affix our signatures in the presence of two witnesses.

CHARLES E. BROOKS.
CLARENCE GATES.

Witnesses:

H. H. McKEAN,
OLA PORTER.