J. H. GORTO

AUTOMATIC LOCKING DEVICE.

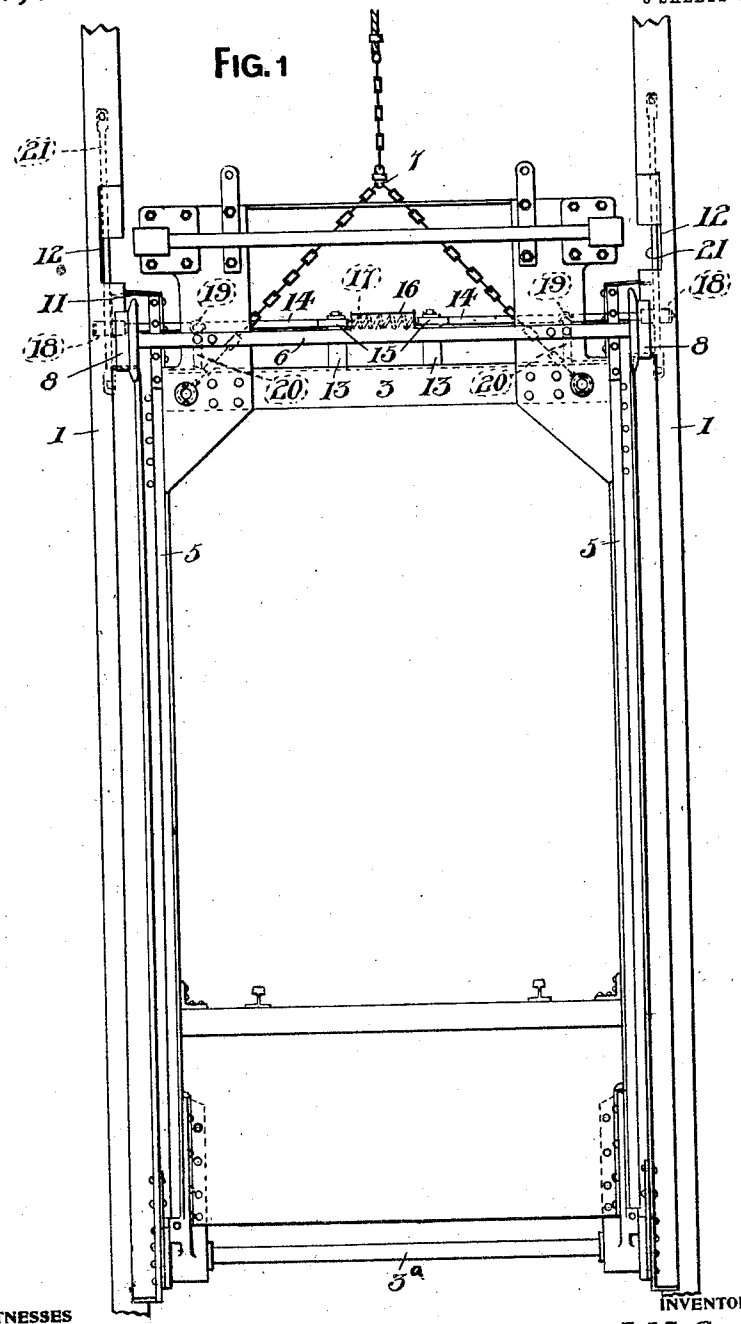
APPLICATION FILED MAY 10, 1912.

1,047,787.

Patented Dec. 17, 1912.

3 SHEETS—SHEET 1.

FIG. 1



WITNESSES

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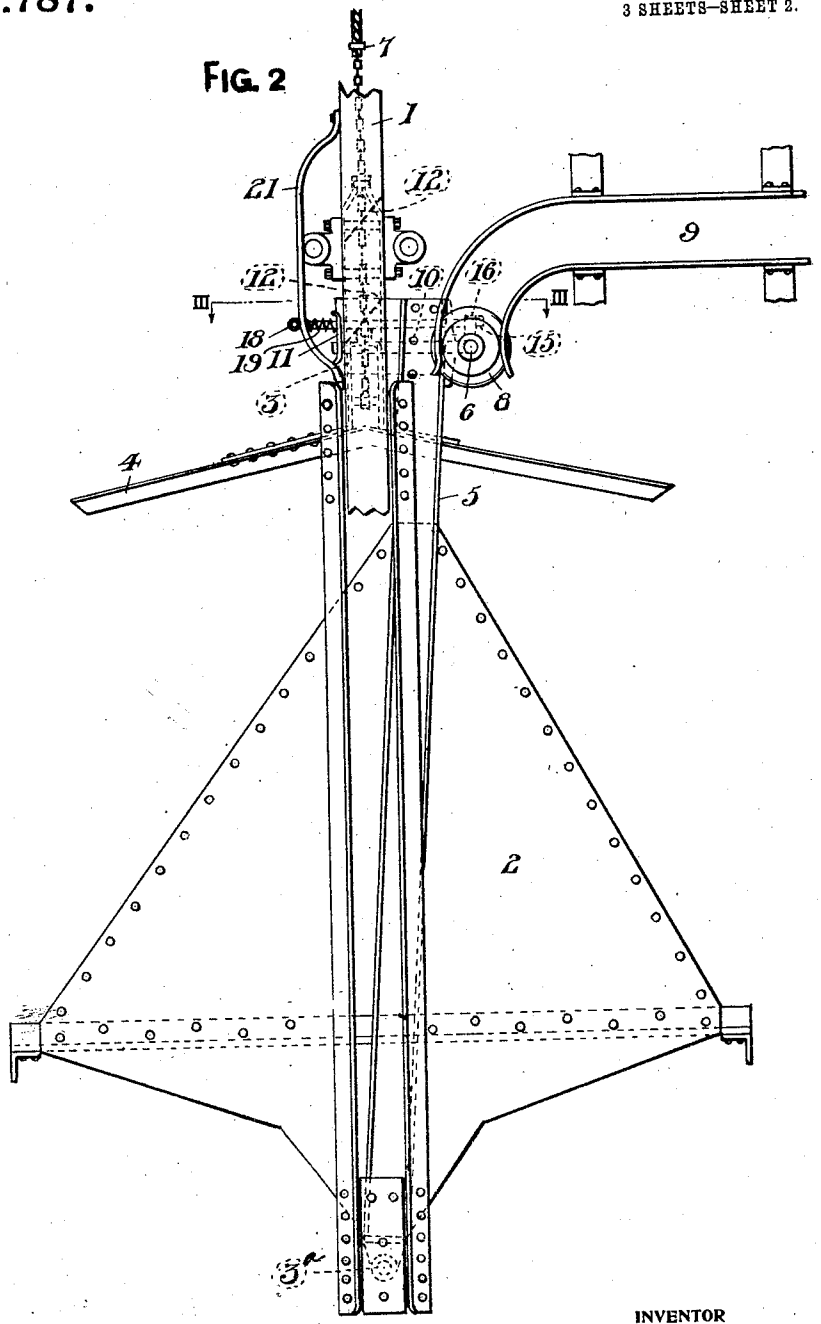
3 SHEETS—SHEET 2.

FIG. 2



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3 SHEETS—SHEET 3.

FIG. 3

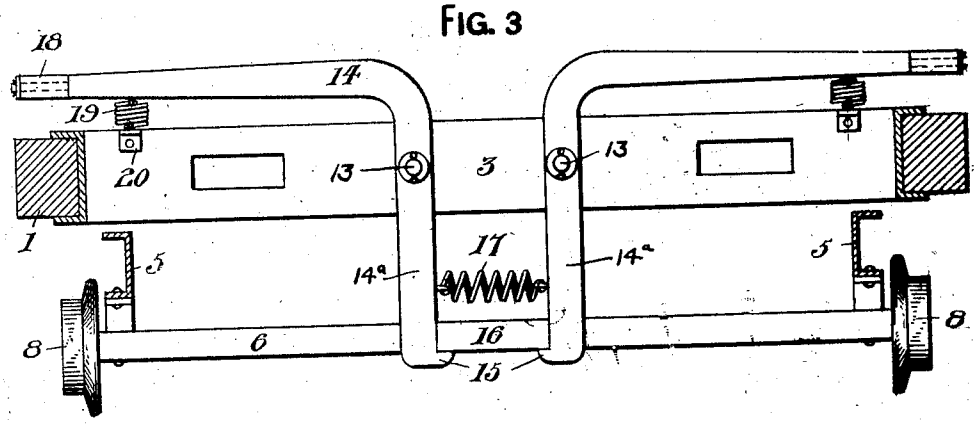


FIG. 4

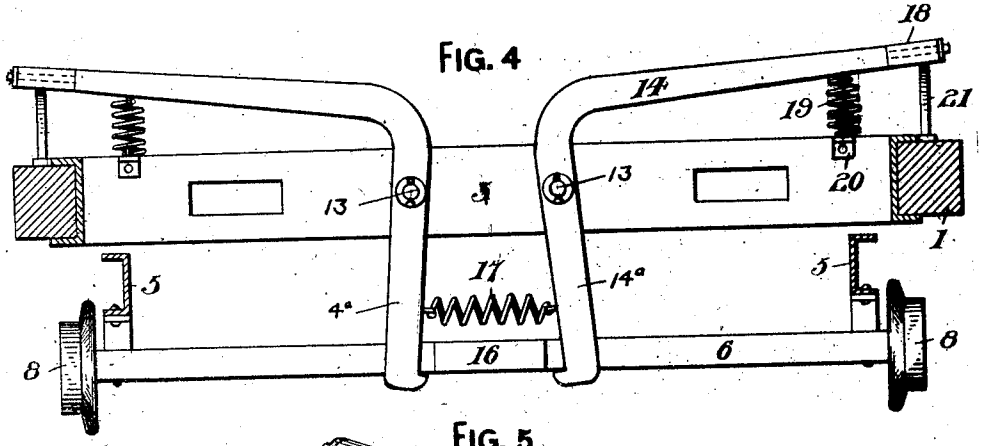
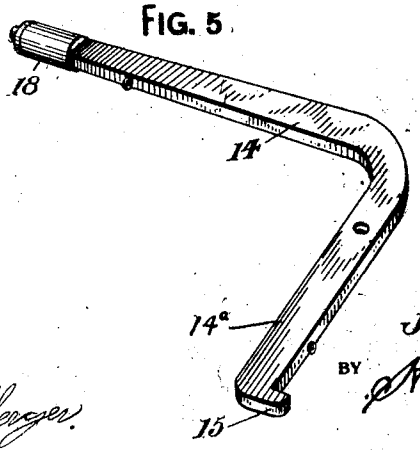


FIG. 5



WITNESSES

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UNITED STATES PATENT OFFICE.

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AUTOMATIC LOCKING DEVICE.

1,047,787. Specification of Letters Patent. Patented Dec. 17, 1912.

Application filed May 10, 1912. Serial No. 696,415.

To all whom it may concern:

Be it known that I, JOHN H. GORTON, a citizen of the United States of America, residing at United, in the county of Westmoreland and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Locking Devices, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to an automatic locking device for self dumping cages used extensively throughout the coal mines for dumping and discharging coal into chutes or suitable receptacles located at the top of a mine shaft.

My invention aims to furnish a tipping cage or platform with positive and reliable means, as hereinafter set forth, for preventing the cage or platform from tipping during its movement in a mine shaft, thereby preventing the destruction of property, the loss of life, and delay in successfully operating a mine.

My invention further aims to accomplish the above results by a mechanical construction that is simple, durable, inexpensive to install and highly efficient for the purposes for which it is intended.

My invention will be better understood when reference is had to the drawing, wherein like numerals denote corresponding parts throughout the several views, in which:—

Figure 1 is a front elevation of a tipping cage in accordance with my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a plan of the automatic locking device showing the same in a locked position. Fig. 4 is a similar view showing the device in an unlocked position, and Fig. 5 is a perspective view of the detached locking member.

The reference numerals 1 denote vertical oppositely disposed main guides of a mine shaft, and slidably mounted between these guides is a cage 2 arranged to tilt upon a transverse shaft 3^a. The tilting cage 2 has, *inter alia*, a transverse beam 3, a roof or deflector 4, angularly disposed frames 5, a fixed axle 6, hoisting cable 7 attached to the beam 3, and a revoluble flanged wheel 8 mounted upon the end of the fixed axle 6.

Arranged at the top of a mine shaft are tipping guides 9 adapted to receive the wheels and gradually tip the cage 2, whereby matter upon the cage 2 will be discharged into a chute, bin or other receptacles near the mouth of the shaft. To prevent the cage from tipping while being raised or lowered in the shaft, the ends of the axle 6 are provided with straps 10 having shoes 11 that engage the main guide 1 and prevent the tilting edge or side of the cage from tipping during the movement of the cage in the mine shaft. In order that the cage can tip when at the top of the shaft, the main guides 1 are cut away or provided with gaps 12 to provide clearance for the shoes 11 whereby the wheels 8 can move in the tipping guides 9.

The above construction referred to in detail by the reference numerals 1 to 12 inclusive is of the ordinary and well known type at present used, and this construction has been set forth in order that the application of my automatic locking device to the same can be fully understood.

The transverse beam 3 in proximity to and at each side of its transverse center is provided with a vertically disposed pivot-pin 13, and upon which are pivotally mounted L-shaped locking members. The outer arm of each of said members is indicated at 14 and the inner arm by the reference character 14^a. The inner arms of said members are termed keeper ends and have the pivot pins 13 extending therethrough in proximity to where said arms merge into the arms 14. The arms 14 are disposed in an opposite direction with respect to each other while the arms 14^a extend over the beam 3 and axle 6. The free end of each of the arms 14^a terminates in an angularly disposed protuberance 15. The protuberances 15 extend toward each other and are adapted to engage a vertically disposed lug 16 carried centrally of the upper face of the axle 6. The arms 14 extend in proximity to the main guides 1 and have their free ends provided with anti-friction rollers 18, best shown in Figs. 3 to 5 of the drawings. The arms 14^a inwardly with respect to the protuberances 15 are connected together by a coiled retractile spring 17 which constitutes means for maintaining the protuberances 15 in engagement with lugs 16. The arms 14 are connected by coiled retractile springs 19 to angle brackets 20 carried by the top of the beam 3, and said springs 19 coöperate with the springs 17 in retaining the protuberances 15 in engagement with the lugs 16.

Secured to the sides of the main guides 1, at the upper end of the mine shaft and at a point contiguous to the tipping guides 9 are tripping members 21 adapted to be engaged by the rollers 18.

During the movement of the cage 2 in the mine shaft, the protuberances 15 of the arms 14ª are in engagement with the lug 16 of the fixed axle 6, consequently said axle is locked relatively to the beam 3 and the frames 5 that support said axle cannot swing relatively to the main guides of the cage and allow the cage to tip. As the cage ascends in the mine shaft it will come to a point in proximity to the tipping guides 9, and the rollers 18 will ride into engagement with the tripping members 21, under such circumstances the locking members are shifted upon their pivots and the arms 14ª moved away from each other whereby the protuberances 15 will clear the lugs 16, releasing the axle 6 and allowing the frames 5 to move as guided by the wheels 8 traveling in the guides 9.

From the foregoing it will be observed that the tipping portion of a mine cage is locked until such time that the cage can be safely tilted. The lug 16 can be easily placed upon the axle 6 at present in use and the remainder of the locking mechanism can be readily installed. The locking device removes all liability of the cage accidentally tipping consequently the employees, horses, material and other matter used in a mine can be safely raised and lowered in a mine shaft.

While in the drawing there is illustrated a preferred embodiment of my invention, it is to be understood that the structural elements can be varied or changed, as to the size, proportion and manner of assemblage, without departing from the scope of the appended claims.

What I claim is:—

1. In an automatic locking device, the combination with a tipping mine cage, main guide therefor, tipping guides, an axle carried by the tipping portions of said cage, wheels supported by said axle and adapted to enter said tipping guides and a beam forming a part of said cage, of locking members pivotally mounted upon said beam, a lug carried by said axle and adapted to be engaged by said locking members to hold the tilting portion of said cage locked relatively to the beam of said cage, and tripping members carried by the main guides of said cage for actuating said locking members to release said lug and allow the tilting portion of said cage to tip.

2. In an automatic locking device, the combination with a mine cage having a tipping portion, main guides for said cage, tipping guides, an axle carried by the tipping portion of said cage, wheels carried by said axles and adapted to ride in said tipping guides, and a beam forming part of said cage, of locking members arranged upon said beam and adapted to hold said axle relatively to said beam, and means carried by said main guides and adapted to be engaged by said locking members to release said axle.

3. In an automatic locking device for tipping mine cages, an axle carried by the tipping portion of said cage and adapted to move relatively to the stationary portion of said cage, spring held pivotally mounted locking members carried by the stationary portion of said cage and adapted to hold said axle in a locked position relatively to the stationary portion of said cage, and means located at the upper end of a mine shaft and adapted to be engaged by said locking members to release the tipping portion of said cage.

4. The combination with a mine cage having a tipping portion, main guides for said cage, an axle carried by the tipping portion of said cage, wheels carried by the end of the said axle, and tipping guides for said wheels, of pivoted spring-held locking members supported by said cage, a lug carried by said axle and adapted to be engaged by the inner ends of said locking members to lock the axle relatively to said cage, and tripping members carried by said main guides and adapted to be engaged by the outer ends of said locking members to shift said members and release the lug of said axle whereby the tipping portion of said cage can be tipped.

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

JOHN H. GORTON.

Witnesses:
MAX H. SROLOVITZ,
K. H. BUTLER.