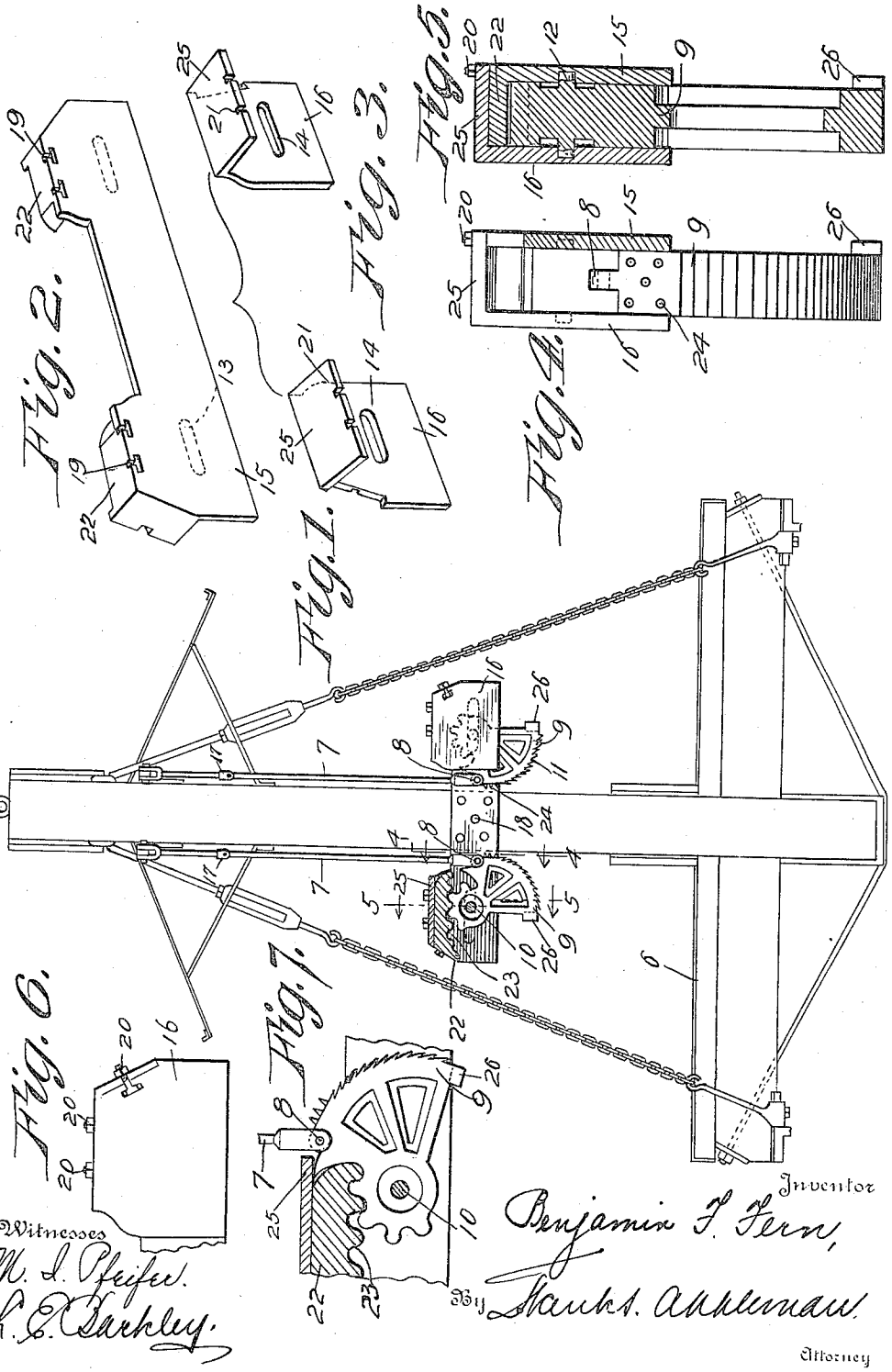
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SAFETY DEVICE FOR MINE CARS.

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1,165,659.

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Witnesses

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SAFETY DEVICE FOR MINE-CARS.

1,165,659. Specification of Letters Patent. Patented Dec. 28, 1915.

Application filed April 8, 1915. Serial No. 19,979.

To all whom it may concern:

Be it known that I, BENJAMIN F. FERN, a citizen of the United States of America, and resident of Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Safety Devices for Mine-Cars, of which the following is a specification.

This invention relates to mine cars and particularly to safety devices therefor.

An object of this invention is to provide novel means for arresting the descent of a mine car upon accidental impairment of the car supporting mechanism.

Another object of the invention is to provide novel means whereby gripping shoes are operated to cause the said shoes to engage the guide rail for a car and at the same time advancing the said shoes toward the rail, augmenting the frictional or clamping engagement of the shoes with the said guide rail.

The present invention is designed to be employed in connection with car suspending means and shoe operating mechanism associated therewith of any general type, an example of which is shown in patent issued May 1, 1906, numbered 819,052.

A further object of this invention is to provide means for housing the shoes or their pivots and operating mechanism against access of water which, if admitted would freeze and impair the action of the device.

With the foregoing and other objects in view, the invention consists in the details of construction and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this specification wherein like characters denote corresponding parts in the several views, and in which—

Figure 1 illustrates a view in elevation of a fragment of a car with the safety appliance associated therewith; Fig. 2 illustrates a perspective view of a housing plate; Fig. 3 illustrates a perspective view of housings adapted to be connected to the housing plate; Fig. 4 illustrates a sectional view on the line 4—4 of Fig. 1; and Fig. 5 illustrates a view on a line corresponding with the line 5—5 of Fig. 1; Fig. 6 illustrates an enlarged detail view showing a section of the housing of the shoe in an elevated position.

In these drawings 6 denotes an elevator which may be of the general type of that shown in the patent above mentioned, the same having rods 7 pivoted to apertured ears 8, said rods being operated in known manner upon removal of the car support or car operating means, as when the cables are severed. The shoes 9 have teeth 10 which are adapted to engage the guide rail and the said shoes have hubs 11 with trunnions 12 projecting into slots 13 and 14 respectively in the housing plate 15 and the housing 16. There is a joint 17 intermediate the length of each rod 7 so that there is oscillatory movement afforded the lower end of each rod 7 sufficient to permit the said rod to swing with relation to the housings and to follow the movement of the shoe as it is moved with relation to the guide rail.

In carrying the invention into practice, the housing plate 15 is secured to a frame of an elevator car by the fastenings 18 and the said housing plate has inverted T-shaped recesses 19 adapted to receive the T-bolts 20 by which the housing plate is secured to the housing, it being seen from an inspection of Fig. 3 of the drawing that the edges of the housings have recesses 21 which receive the shanks of the T-bolts.

The housing plate has withstanding lugs with teeth 22 formed thereon, said teeth constituting a rack which engages the teeth 23 on the hub 10 of a shoe and the interengagement of the rack and the teeth of the shoe is such as to cause the shoes to move longitudinally of the housing plate while swinging on the pivots or trunnions. From an inspection of Fig. 1, it will be apparent that should the rod 7 be moved upwardly, the shoe would be oscillated on its pivot and at the same time the interengaging teeth just described would cause the shoe to advance toward the guide rail, thus forcing the teeth of the shoe into such firm engagement with the guide rail as to prevent slipping and this action would be increased proportional to the swinging movement of the said shoe on its pivot.

While the last paragraph refers to the shoe and the parts associated therewith in the singular, it is to be understood that the

said description applies to the shoes on each side of the guide rail.

The guide rail engaging surface of each shoe has a series of teeth and near one end there is a group of pointed studs 24 which may independently engage the guide rail.

The shoe has an extending horn 25 which engages the rack, the end of the rack being curved so that the horn extends there above. One function of the horn is to prevent the shoe from becoming operative until the support is removed, and its operating above the rack prevents the strain from being wholly on the cog teeth and trunnions and it also prevents the shoe from turning completely over should the lug 26 be broken off. It is understood, of course, that the lug 26 is provided so that it will abut the house plate and limit the movement of the shoe and the horn supplements the lug in this respect.

I claim:

1. In an elevator, a car, a housing plate carried by the car, housings secured to the housing plate, racks inclosed by said housing plate, the said housing plate and housings having longitudinally disposed slots, shoes having trunnions slidable in the slots and oscillatingly mounted therein, teeth carried by the shoes and adapted to engage the racks whereby the oscillatory movement of the shoes causes the teeth of the shoes to travel with relation to the racks for advancing the shoes toward the guide rail of a car, and means for oscillating the shoes when the support is removed.

2. In a safety device for elevators, a housing plate secured to a car, housings, racks inclosed by the housings, said housings and housing plate having slots, shoes slidably trunnioned in the slots of the housings, hubs, and teeth on the said hubs adapted to engage the racks of the housings for advancing the shoes while their trunnions are rotating in the slots.

3. In a safety device for elevator cars, housings, racks therein, shoes having teeth and studs mounted to partially rotate and slide in the housings, means on the shoes engaging the racks for advancing the shoes during their partial rotation, and means for holding the shoes normally out of engagement with the guide rail when the elevator is in normal condition.

4. In a safety device for elevator cars, housings, racks therein, shoes having teeth and studs mounted to partially rotate and slide in the housings, means on the shoes engaging the racks for advancing the shoes during their partial rotation, and a horn on each shoe adapted to abut a housing for limiting the movement of the shoe.

5. In a safety device for elevator cars, housings, racks therein, shoes having teeth and studs mounted to partially rotate and slide in the housings, means on the shoes engaging the racks for advancing the shoes during their partial rotation; and a horn on each shoe and adapted to engage an abutment for limiting the movement of the shoe.

6. In a safety device for elevator cars, housings, racks therein, shoes having teeth and studs mounted to partially rotate and slide in the housings, means on the shoes engaging the racks for advancing the shoes during their partial rotation, and each of said racks having a curved surface, a curved horn on each shoe adapted to engage the curved surface of a rack.

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

BENJAMIN F. FERN.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."