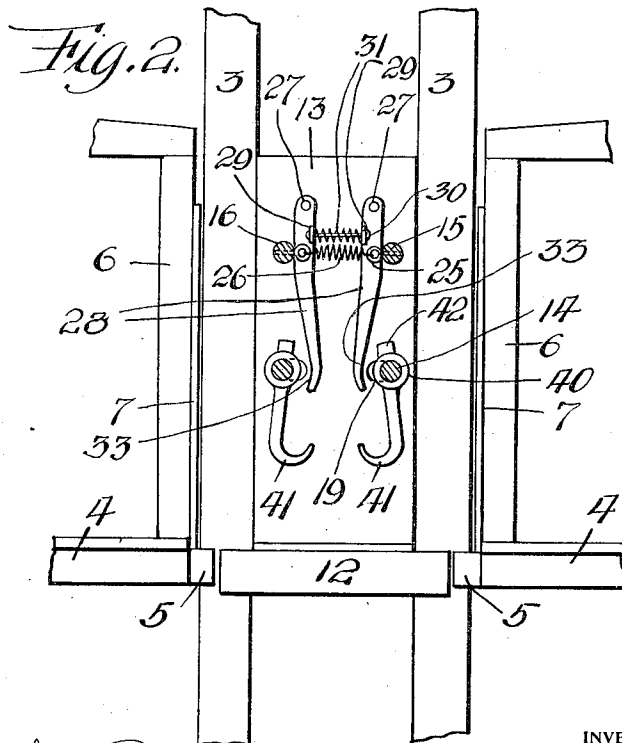
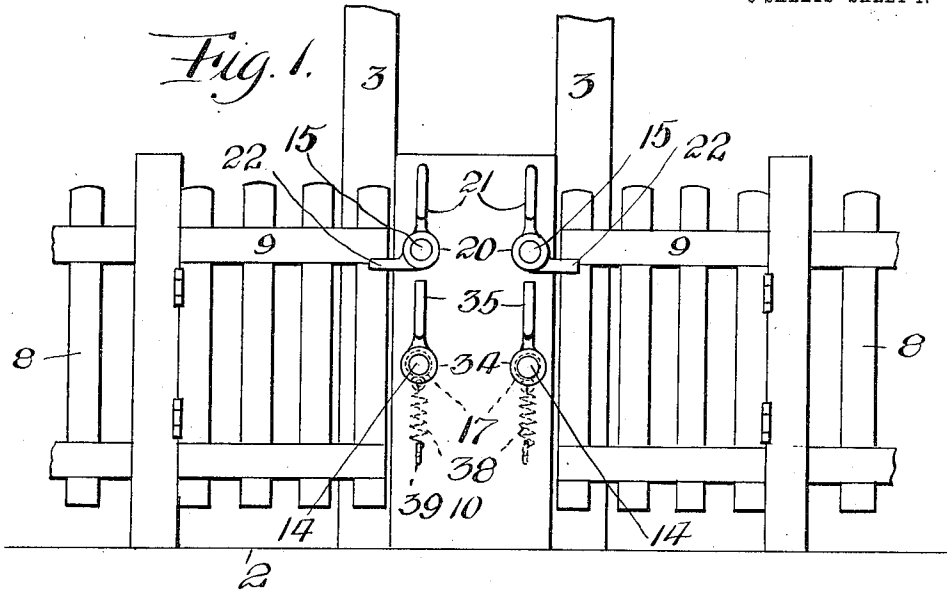


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 LOCKING DEVICE FOR THE GATES OF SHAFTS.
 APPLICATION FILED JAN. 15, 1912.

1,036,504.

Patented Aug. 20, 1912.

3 SHEETS—SHEET 1.



WITNESSES

Samuel Payne
J. C. Hoffman

INVENTORS

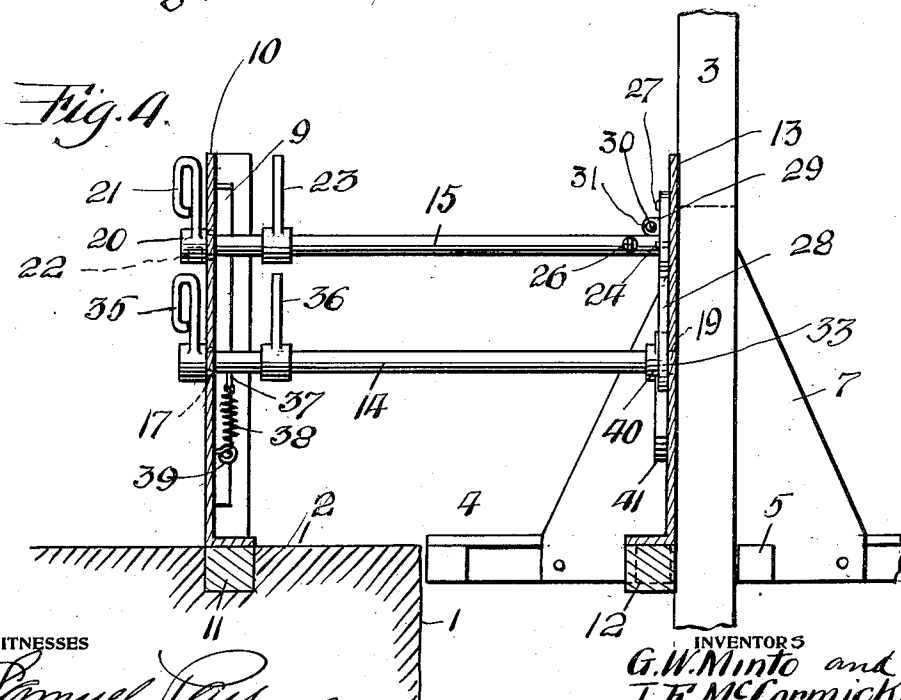
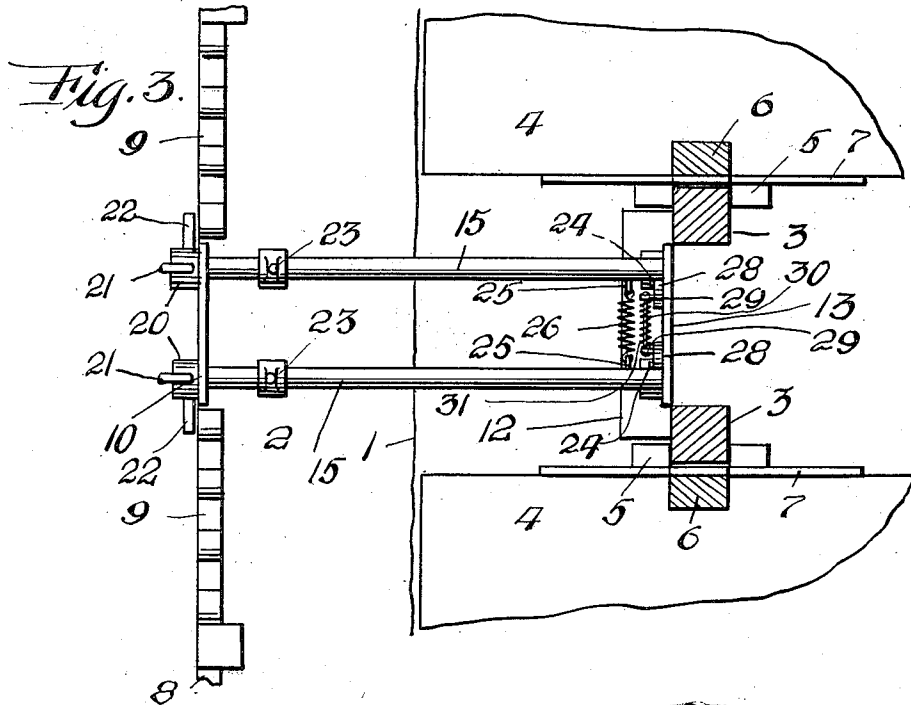
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 BY *A. C. Everett & Co.*
 ATTORNEYS

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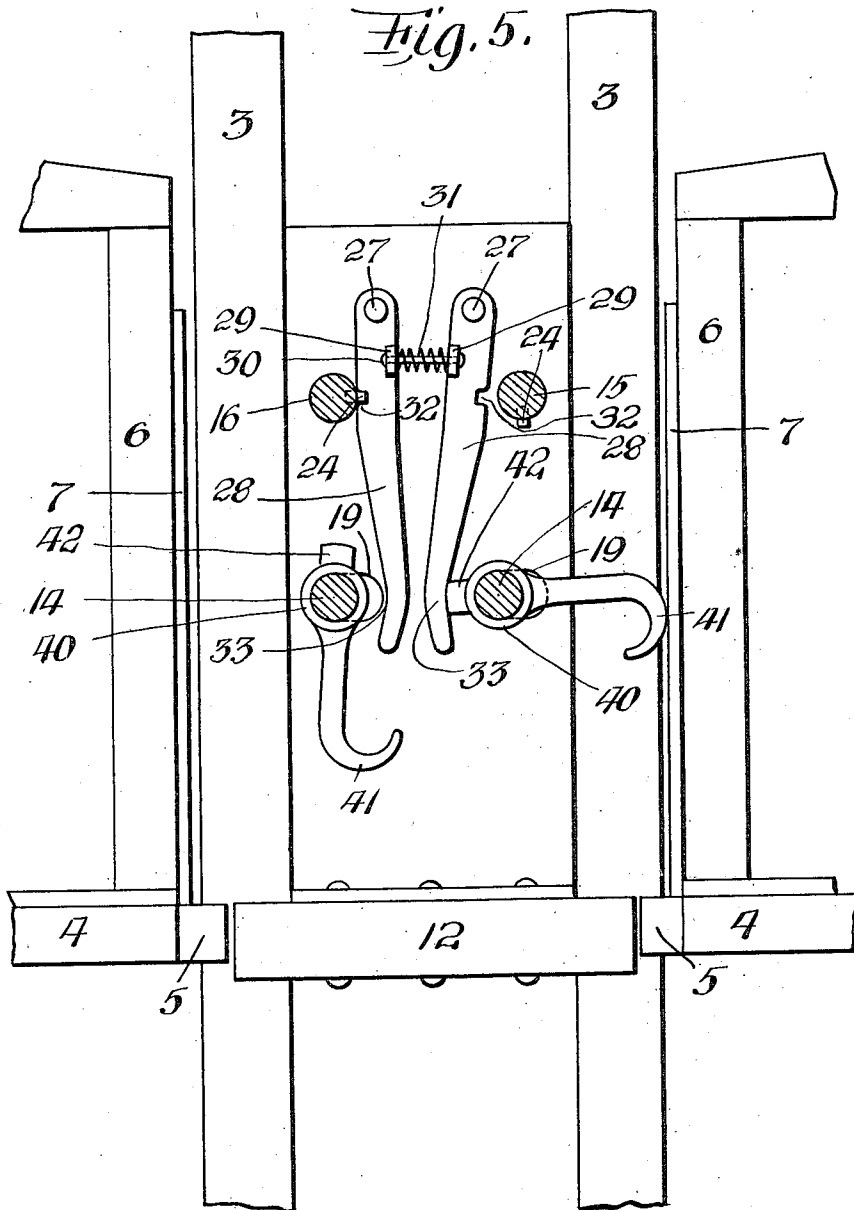
INVENTORS

G. W. Minto and
J. F. McCormick.
 BY *M. C. Everett, Co.*
 ATTORNEYS

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 3 SHEETS—SHEET 3.



WITNESSES
Samuel Paine
J. B. Appleman

INVENTORS
G. W. Minto and
J. F. McCormick
 BY *A. C. Everett & Co.*
 ATTORNEYS

UNITED STATES PATENT OFFICE.

GEORGE W. MINTO AND JAMES F. McCORMICK, OF BRIER HILL, PENNSYLVANIA.

LOCKING DEVICE FOR THE GATES OF SHAFTS.

1,036,504.

Specification of Letters Patent.

Patented Aug. 20, 1912.

Application filed January 15, 1912. Serial No. 671,225.

To all whom it may concern:

Be it known that we, GEORGE W. MINTO and JAMES F. McCORMICK, citizens of the United States of America, residing at Brier Hill, in the county of Fayette and State of Pennsylvania, have invented certain new and useful Improvements in Locking Devices for the Gates of Shafts, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to a locking device for the gates of shafts, and more particularly to a device that can be advantageously used in connection with mine shafts, elevator wells, and openings or pits that are guarded by inclosures provided with gates.

Our invention aims to provide a locking device that will retain the gates of a mine shaft normally locked when the mine hoist or elevator-car is not in position, adjacent to the gate to receive passengers, a car or other matter. The device is arranged whereby it will be actuated by a hoist or elevator and placed in position to permit of the device being operated to release the gate, whereby passengers can enter the gateway and pass on to the hoist or elevator-car.

Our invention further aims to prevent the loss of lives and property by providing a gate locking device that requires the attention of a miner or person desiring to pass on to a hoist or elevator-car and the device is of such construction that it cannot be operated unless the hoist or elevator-car is in position to receive the person, thereby eliminating all danger of the person being precipitated into the shaft or pit.

A still further object of this invention is to provide a gate locking device that is applicable to a single or double hoist or elevator-car, the device consisting of comparatively few parts not liable to injury by ordinary use, inexpensive to manufacture and highly efficient as a safety appliance in connection with elevators.

The invention further aims to accomplish the above and other objects 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 front elevation of the locking device in connection with two gates and

a double elevator shaft, showing the gates in a locked position, Fig. 2 is a cross sectional view of the same showing hoists or elevators at the landing of the shaft, Fig. 3 is a plan of the same with the gates in a locked position, Fig. 4 is a longitudinal sectional view of the locking device, and Fig. 5 is an enlarged cross sectional view of the device showing the locking mechanism in an unlocked position.

The reference numeral 1 denotes a large hoist or elevator shaft having a landing 2, the shaft illustrated being of that type having vertical center timbers 3 serving as guides and dividing the shaft into two hoist-ways accommodating hoists or elevator-cars 4 having guide blocks 5 engaging the sides of the vertical timbers 3. The side frame 6 of the hoists or elevator-cars 4 are provided with side plates 7 that serve as a brace for the side frames 6, also for a purpose in connection with our locking device, as will hereinafter appear.

The type of shaft illustrated is generally inclosed by a fence 8 or other structure upon the landing 2 in proximity to the shaft 1, to prevent persons from accidentally falling down the shaft. The fence 8 is generally provided with hinged gates 9 whereby the inclosure can be entered, and in order that our locking device can be used in connection with the gates of the inclosure, said gates have been arranged in proximity to each other and a bearing plate 10 arranged between the free edges of the gates. The bearing plate is preferably made of metal and mounted upon a suitable foundation 11 arranged in the landing 2.

The vertical timbers 3 are connected by a bolster or timber 12 having the upper surface thereof in the horizontal plane of the landing 2, and suitably mounted upon said timber is a metallic bearing plate 13 in alinement with the bearing plate 10.

Arranged within the bearing plates 10 and 13 are longitudinal parallel operating shafts 14 and longitudinal parallel locking shafts 15, the locking shafts 15 being journaled in openings 16 adjacent to the upper ends of the bearing plates with the ends of said locking shafts protruding through the bearing plate 10. The operating shafts 14 are loosely supported in openings 17 provided therefor in the bearing plate 10 and in slots 19 provided therefor in the bearing plate 13, the ends of the operating shafts 14

protruding from the openings 17 of the bearing plate 10.

Upon the protruding ends of the locking shafts 15 are mounted sleeves 20 provided with radially disposed handles 21 and latches 22, said latches being disposed at right angles to the handles 21 and said latches are adapted to engage the outer sides of the gates 9 and retain said gates in a closed position. The locking shafts 15, adjacent to the bearing plate 10 are provided with radially disposed fixed cranks or handles 23 that are positioned whereby the locking shafts 15 can be rocked by a person on one of the hoists or elevator-cars 4. The locking shafts 15, adjacent to the bearing plate 13, are provided with lugs 24 for a purpose that will presently appear. Adjacent to the lugs 24 are eye bolts 25 connected by a coiled retractile spring 26, said spring holding said locking shafts whereby the eye bolts thereof will normally confront each other, as best shown in Fig. 2.

Pivotaly connected to the bearing plate 13 by pins 27 are keeper arms 28 having apertured ears 29 and loosely mounted in said apertured ears is a rod 30 encircled by a coiled compression spring 31, the tension of said spring holding the keeper arms 28 separated and in engagement with the locking shafts 15. The keeper arms 28 are provided with notches 32 to receive the lugs 24 of the locking shafts 15. The lower ends of the keeper arms 28 are tapered and curved, as at 33 and extend in proximity to the operating shafts 14.

The ends of the operating shafts 14 that protrude from the bearing plate 10 are provided with sleeves 34 having radially disposed handles 35, and said shafts adjacent to the bearing plate 10 are provided with cranks or handles 36 similar to the cranks or handles 23. The operating shafts 14 adjacent to the bearing plate 10 are also provided with hooks 37 connected by coiled retractile springs 38 to eyes 39, carried by the inner side of the bearing plate 10, these springs holding the operating shafts 14 with the handles 35 and 36 normally vertical. The opposite ends of the operating shafts 14 are provided with sleeves 40, said sleeves having hook-shaped cranks 41 and projections 42, said projections being diametrically opposed relatively to the hook-shaped cranks 41.

The normal position of the lock is illustrated in Figs. 1 to 4 inclusive showing the gates 9 locked and this is the position of the lock when the hoist or elevator-car 4 is not at the landing 2. In this position of the locking device, the locking shafts 15 are held in a locked position by the keeper arms 28 and said shafts cannot be rotated or rocked, consequently the gates 9 cannot be

opened and the inclosure entered. The operating shafts 14 are idle, but are maintained in the position shown in Figs. 1 and 2 by the coiled retractile springs 38.

Upon a hoist or elevator-car reaching the level of the landing 2, the occupants of the hoist or elevator-car can open either of the gates or either of the gates can be opened from the outside of the inclosure by a person desiring to enter the same and passed on to the hoist or elevator-car. In the first instance, the handle 36 is used and in the last instance the handle 35. The operation is the same in connection with both handles and I will assume that the handle 35 is used from the outside of the shaft inclosure. This handle is swung downwardly to the left or counter clock wise, placing the coiled retractile spring 38 under tension and elevating the hook-shaped crank 41 of the shaft 14. As the hook-shaped crank 41 is elevated it contacts with the side plate 7 of the hoist or elevator-car and the end of the operating shaft 14 supporting the hook-shaped crank is forced over in the slot 19, causing the projection 42 to engage the keeper arm 28, move said arm out of engagement with the lug 24 of the locking shaft 15, thereby releasing said shaft. The next operation is that of swinging the handle 21 of the locking shaft 15 to the left, thereby elevating the latch 22 of said locking shaft clear of and releasing the gate 9. Immediately upon the gate 9 being opened, the retractile spring 26 which has been placed under tension by a movement of the locking shaft 15, restores said shaft to its normal position and as the operating shaft 14 has been previously restored to its normal position by the spring 38, the spring 31, between the keeper arms 28, immediately restores the keeper arm to its normal position locking the shaft 15. The gate 9 cannot be locked in a closed position until the operation just described is repeated and only such operation can be performed with the hoist or elevator-car on a level with the landing 2. With the gate in proximity to the hoist or elevator-car, the condition of the gate, that is, whether locked or unlocked, can be readily observed and even though the gate be left unlocked, the habit of first unlocking the gate would soon attract the person's attention to the fact that the gate is unlocked and that there is a degree of danger in entering the gate.

From the foregoing it will be observed that we have devised a gate locking device that depends for its operation upon a hoist, elevator-car or platform being in position to prevent accidents of persons passing through the gate, and that the principal locking mechanism cannot be operated until a primary mechanism has been actuated to release the main locking mechanism whereby

the main locking mechanism can be operated to release the gate. In other words, there are two successive operations that must be performed and neither of these operations can be accomplished without a third element being in position to permit of the primary mechanism being actuated.

We reserve the right to double the locking device herein shown upon opposite sides of the shaft 1 in connection with the vertical timbers 3, to use the locking mechanism in connection with various kinds of gates and to resort to other means than the springs for accomplishing the same purpose as said springs.

While in the drawing there is illustrated a preferred embodiment of the invention, it is to be understood that the structural elements are susceptible to such variations and modifications as fall within the scope of the appended claims.

What we claim is:—

1. In a locking device for the gates of elevator shafts, the combination with an elevator shaft, an elevator-car, and a safety gate for said elevator, of bearing plates, one positioned at one side of the gate and the other positioned at one side of the path of the car, a main locking mechanism supported by said bearing plates and including a shaft having means for locking said gate, and a primary mechanism supported by said bearing plates and including a shaft having means adapted to be actuated by contacting with said elevator car for releasing said main locking mechanism whereby said mechanism can be operated to release said gate.

2. A locking device comprising a pair of bearing plates one arranged rearwardly of the other, a locking shaft mounted in said bearing plates and provided with a latch, a keeper arm carried by one of said plates and normally engaging said shaft for locking it, an operating shaft supported in said plates and capable of being rocked and laterally moved, and means carried by said operating shaft and capable of engaging said keeper arm when said shaft is laterally moved for shifting said keeper arm to release said locking shaft.

3. A locking device comprising a pair of bearing plates, one arranged rearwardly of the other, a locking shaft mounted in said bearing plates and provided with a latch, a keeper arm carried by one of said bearing plates for locking said shaft, an operating shaft supported by said bearing plates in a plane below the locking shaft, means carried by said operating shaft and capable of engaging said keeper arm to shift it thereby releasing said locking shaft, means for retaining said keeper arm normally in engagement with said locking shaft, and means connected to said locking shaft for restoring it to locked position after having been released by said operating shaft.

4. A locking device comprising a pair of bearing plates one arranged rearwardly of the other, a locking shaft mounted in said bearing plates and provided with a latch, a keeper arm carried by one of said plates and normally engaging said shaft for locking it, an operating shaft supported in said plates and capable of being rocked and laterally moved, means carried by said operating shaft and capable of engaging said keeper arm when said shaft is laterally moved for shifting said keeper arm to release said locking shaft, means for retaining said keeper arm normally in engagement with said locking shaft, and means connected to said locking shaft for restoring it to locked position after having been released by said operating shaft.

5. A lock for the gate of an elevator shaft comprising a main locking mechanism for normally maintaining the gate in locked position, means for normally maintaining said mechanism in locked position, and a rotatable and laterally movable shifting mechanism for said means, said shifting mechanism being manually rotated and laterally moved by contacting with the elevator-car.

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

GEORGE W. MINTO.
JAMES F. McCORMICK.

Witnesses:

I. E. MOYER,
J. B. WYATT.