W. CHANNON.

ELEVATOR FOR MINES.

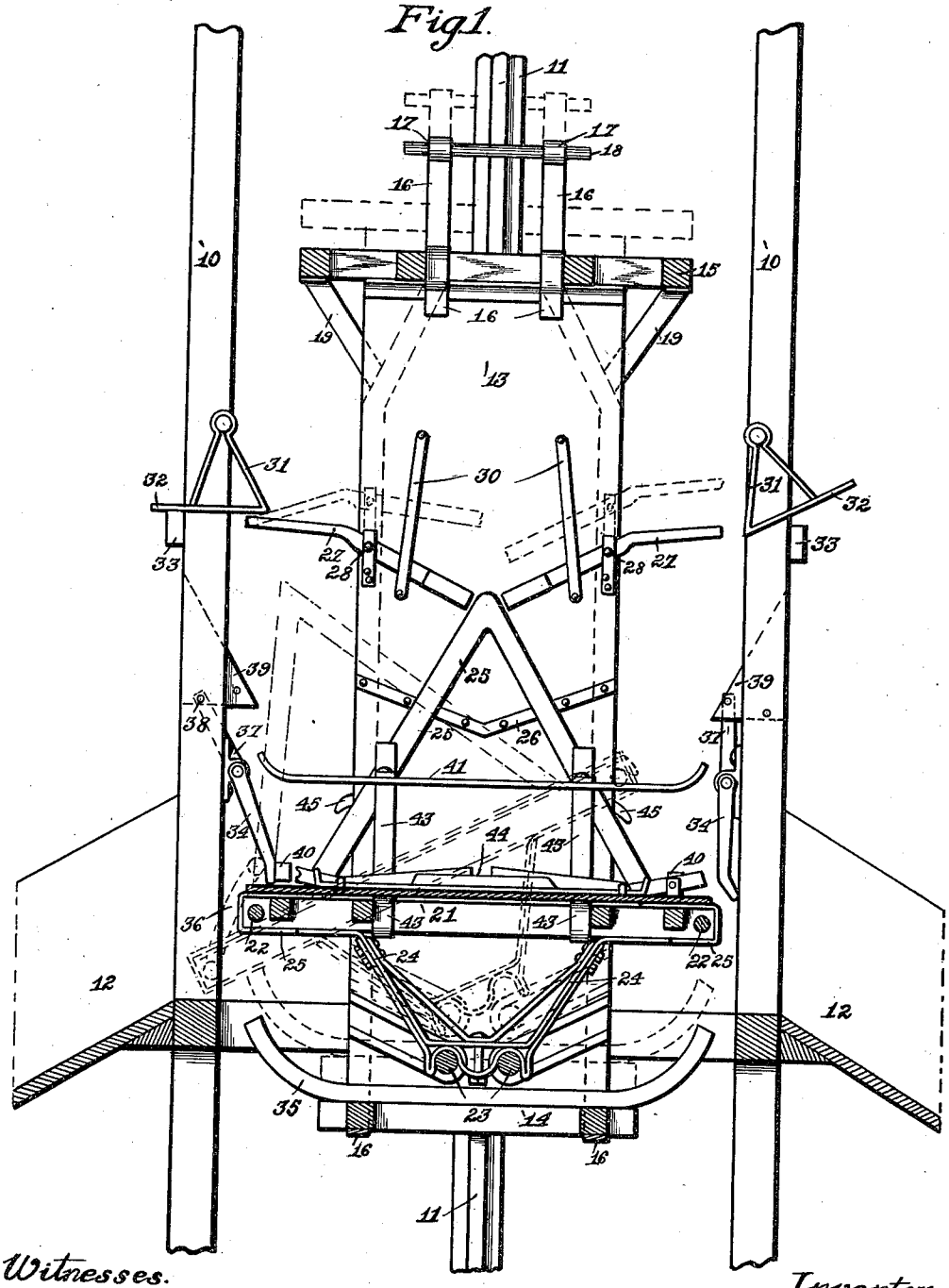
APPLICATION FILED DEC. 20, 1909.

1,001,818.

Patented Aug. 29, 1911.

2 SHEETS—SHEET 1.

Fig 1.



Witnesses.

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2 SHEETS—SHEET 2.

Fig. 2.

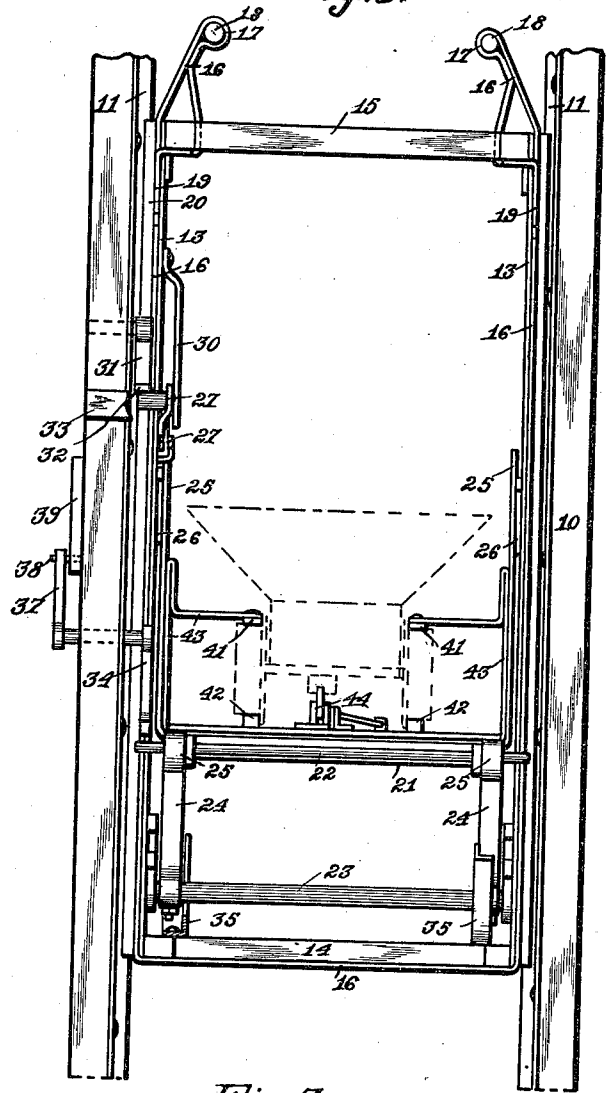
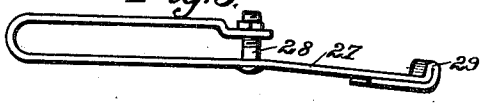


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM CHANNON, OF DES MOINES, IOWA.

ELEVATOR FOR MINES.

1,001,818. Specification of Letters Patent. Patented Aug. 29, 1911.

Application filed December 20, 1909. Serial No. 534,178.

To all whom it may concern:

Be it known that I, WILLIAM CHANNON, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented a certain new and useful Elevator for Mines, of which the following is a specification.

The object of my invention is to provide an elevator of simple, strong and durable construction provided with a tilting platform which platform is so arranged that it may be automatically dumped when it reaches a predetermined position relative to the elevator shaft, and also so arranged that when in its normal position it will be firmly supported against tilting movements.

A further object is to provide improved means for tilting the dumping platform, which means are so arranged that they will not in any way affect the tilting platform during a downward movement of the elevator and the shaft.

My invention consists in certain details, in the construction, arrangement and combination of the various parts of the device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, in which—

Figure 1 shows a vertical, central, sectional view through an elevator shaft and an elevator cage, and a tilting platform therein embodying my invention. The dotted lines in said figure show the position of the tilting platform when ready to discharge its load. Fig. 2 shows a side elevation of same; the dotted lines in said figure show the position of a mine car on the tilting platform, and Fig. 3 shows a detail edge view of one of pivot levers for locking the tilting platform in normal position.

Referring to the accompanying drawings, I have used the reference numeral 10 to indicate that portion of the elevator shaft shown. This comprises two guide rails 11.

At the point where the elevator is to be dumped, I have arranged on each side of the shaft a chute 12 through which the contents of the tilting platform may be discharged.

The elevator cage comprises a body portion made up of two sheets of metal of the kind ordinarily used for making boiler plates and indicated by the numeral 13. Said sheets are arranged on opposite sides of the cage. Connected to said sheets at the bottom is a frame 14 and at the top is another frame 15. In order to strengthen and reinforce the frame of the cage I have provided two straps 16 extended under the bottom of the cage, then upwardly on the exterior of the plates 13 as indicated by dotted lines in Fig. 1, then inwardly and upwardly and the upper ends of these straps 16 are extended above the top frame 15 and are provided with loops 17 to receive the short bars 18, and these bars are designed to have the elevator cables attached to them. The top of the frame is firmly braced on the side plates 13 by means of the brace straps 19. By this means it is obvious that an extremely strong and durable frame for the cage is provided. In order to provide for guiding the elevator cage relative to the guide tracks 11, I provide the ordinary guide bars 20 on the sides of the cage.

The tilting platform comprises a rectangular frame 21 having on each end a shaft 22, the ends of which extend beyond the platform. For supporting the platform I have provided two shafts 23 arranged parallel with each other and slightly spaced apart and having their ends fixed to the sides of the cage. Fixed to the platform are two bracket devices 24 extended downwardly and provided with two semi-circular notches designed to receive the shafts 23, said notches being open at their lower ends so that the platform may tilt on one of the shafts 23 and the bracket that is adjacent to the other shaft may rise above it, as clearly illustrated by dotted lines in Fig. 1. One of said brackets 24 is arranged on each side of the tilting platform adjacent to the side of the cage. For holding the platform against tilting movements, I have provided on each side thereof a supporting bar 25 extended from the side of the tilting platform near its end upwardly and inwardly to a point above the central portion of the tilting platform, and then downwardly and outwardly to the other end of the tilting platform, the ends of said bar being firmly fixed to the platform. In order to prevent said bar from binding against the side of the elevator cage, I have provided a rail 26 which rail extends outwardly from the side of the cage. For the purpose of locking the bars 25 in position with the cage horizontal, I have provided two locking levers each made of a single piece of material as shown in Fig. 3 and comprising a body portion 27

pivoted at its central portion on a bolt 28 fixed to the side 13 and an extension on the end of the body portion to project to the outside of the cage plate 13 and to receive the outer end of the bolt 28. On the inner end of the body portion 27, I have formed a shoulder 29 and on the inner surface of the side plate 13 is a guide strap 30 through which the body portion 27 is extended and which tends to limit the downward movement of the inner end of the locking levers. When these locking levers are in the position shown by solid lines in Fig. 1, they will stand close to the supporting bars 25 and prevent all tilting movements of the platform.

In order to move the locking levers 27 at one end on the tilting platform to position for releasing the supporting bars 25, I have provided the following devices: Pivoted to the elevator shaft frame is a triangular shaft stop device 31 having an extending arm 32 projected in the direction away from the center of the mine shaft. Below this extension 32 is a stationary cross piece 33. One corner of the triangle projects inwardly in the path of the locking lever 27 and as the elevator rises the end of the locking lever will strike upon the projecting portion of the triangle which will cause the inner end of the locking lever to be elevated to the position shown by dotted lines in Fig. 1. Obviously if the locking lever 27 is in position above the triangular device 31, then it can move downwardly past said triangular device without tilting the lever 27 as the triangular device may swing inwardly without engaging the part 33, but it cannot swing outwardly without striking said part 33.

On account of the firm support of the tilting platform on the two shafts 23, it is necessary to provide a positive tilting mechanism for moving the platform to tilted position and for accomplishing this purpose, I have provided the tilting levers 34 pivoted to the elevator shaft frame and extended downwardly and inwardly in the path of the ends of the shaft 22 that project beyond the sides of the platform. When the ends of the shaft strike these levers 34 which are firmly fixed in position as will hereinafter appear, the adjacent end of the tilting platform will be held stationary while the other end will be raised with the elevator cage until the center of gravity is reached, whereupon the tilting platform will tilt farther to the position shown by dotted lines in Fig. 1. In order to limit the tilting movement of the platform, I have provided the stop device 35 on the cage below the tilting platform, the ends of which engage the tilting platform as clearly shown in Fig. 1.

The dotted lines at 36 shown in Fig. 1 are for the purpose of illustrating the movement of the shaft 22. The circle at the upper end thereof shows the position of the shaft 22 when it engages the lever 34 and the dotted lines show the path of travel of the shaft 22 as the tilting platform moves downwardly and outwardly on the shaft 23; then when the cage is moved downwardly the end of the tilting platform that projects over the adjacent end of the chute 12 will be engaged by said end of the chute and the platform will be returned to its normal position and will be automatically locked and held therein by the levers 27.

It is necessary to firmly hold and support the levers 34 and for this purpose I have provided an arm 37 connected with each lever and having a pin 38 extended through it into a part of the shaft frame. This arm 37 may be secured in position out of the path of the shaft 22 by extending the pin 38 through a perforated plate 39 adjacent to the arm 37 as shown to the right in Fig. 1. In order to limit the inward movement of the lever 34 I provide a stationary block 40 secured to a part of the shaft frame and projected to position where it will engage the end of the lever 34, as clearly shown to the left in Fig. 1. This device 40 is out of the path of the pivoted platform.

In order to provide for holding a mine car firmly in position on the platform, I have provided a guide rail 41 on each side of the tilting platform above the ordinary tracks 42 thereon, which guide rails are supported by arms 43 fixed to the platform. I also provide a device on the platform for engaging a part of the car to prevent it from running off of the platform, which device is indicated generally by the reference numeral 44 and which is fully illustrated and described in United States Letters Patent, No. 890,124, issued to me June 9, 1908.

Fixed to the sides of the elevator cage are the lugs 45 arranged in position to engage the shaft 22 when the platform is tilted to thereby prevent further upward movement of said shaft, as clearly illustrated to the right in Fig. 1 by dotted lines.

In practical operation and assuming that it is desired to dump the tilting platform on the chute 12 shown to the left in Fig. 1, then the triangular device 31 adjacent to said chute 12 is placed in position projecting toward the center of the elevator shaft and the lever 34 is also placed in position projecting inwardly toward the center of the shaft; then as the elevator rises the lever 27 will first strike upon the triangular device 31 which will elevate the inner end thereof; then the ends of the shaft 22 will engage the levers 34 and thus prevent the adjacent end of the tilting platform from rising any farther; then the tilting platform will begin to tilt and after it has passed its

center of gravity it will tilt still farther and one end will rest adjacent to the chute 12 while the other end of the tilting platform will have its shaft 22 engaged by the adjacent lugs 45; then when the elevator moves downwardly the tilting platform will be returned to a normal position. During the up and down movement of the elevator the tilting platform is held against slight rocking movements on account of its double support on the two shafts 23 so that the elevator will ride smoothly upon the guide rails at its sides.

I claim as my invention:

1. In a device of the class described, the combination with an elevator cage, of a tilting platform therein, two supports for the platform arranged side by side on opposite sides of the center of the platform, and brackets connected to the platform and having notched recesses to receive said supports, and means for tilting the platform relative to the cage and for causing part of the bracket to rise from one of said supports, and the platform to be pivotally centered on the other one of said supports.

2. In a device of the class described, the combination with an elevator cage, of a tilting platform therein, two supports for the platform arranged side by side on opposite sides of the center of the platform, and brackets connected to the platform and having notched recesses to receive said supports, so arranged that when the platform is tilted relative to the cage part of the bracket will rise from one of said supports and the platform to be pivotally centered on the other one of said supports, and means arranged in the path of the elevator for engaging the tilting platform to cause it to tilt.

3. In a device of the class described, the combination with an elevator cage, of a tilting platform therein, two supports for the platform arranged side by side on opposite sides of the center of the platform, and brackets connected to the platform and having notched recesses to receive said supports, and means for tilting the platform relative to the cage and for causing part of the bracket to rise from one of said supports, and the platform to be pivotally centered on the other one of said supports, a guide bar extended upwardly from the tilting platform, means connected with the cage for holding said guide bar against tilting movements, and means arranged in the path of the cage for releasing said lever from the guide bar.

4. In a device of the class described, an elevator shaft, a cage movable in said shaft comprising two side plates and arranged on opposite sides of the center of the cage, a tilting platform, brackets connected to the platform and having two curved recesses therein to receive said shafts, a guide bar fixed to the tilting platform and extended upwardly, a lever pivoted to the cage to normally engage the guide bar, a stop device in the path of said lever to be engaged thereby for moving it to position away from the supporting bar, an arm fixed to the elevator shaft and extended to position for engaging a portion of the tilting platform, said stop device and said arm being so arranged that the tilting platform will be engaged by the arm after the stop device has engaged its lever, for the purposes stated.

Des Moines, Iowa, Dec. 4, 1909.

WILLIAM CHANNON.

Witnesses:
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M. WALLACE.