A. J. LAFAYETTE, Jr.

CAR HANDLING MECHANISM.

APPLICATION FILED MAY 5, 1909.

950,927.

Patented Mar. 1, 1910.

3 SHEETS—SHEET 1.

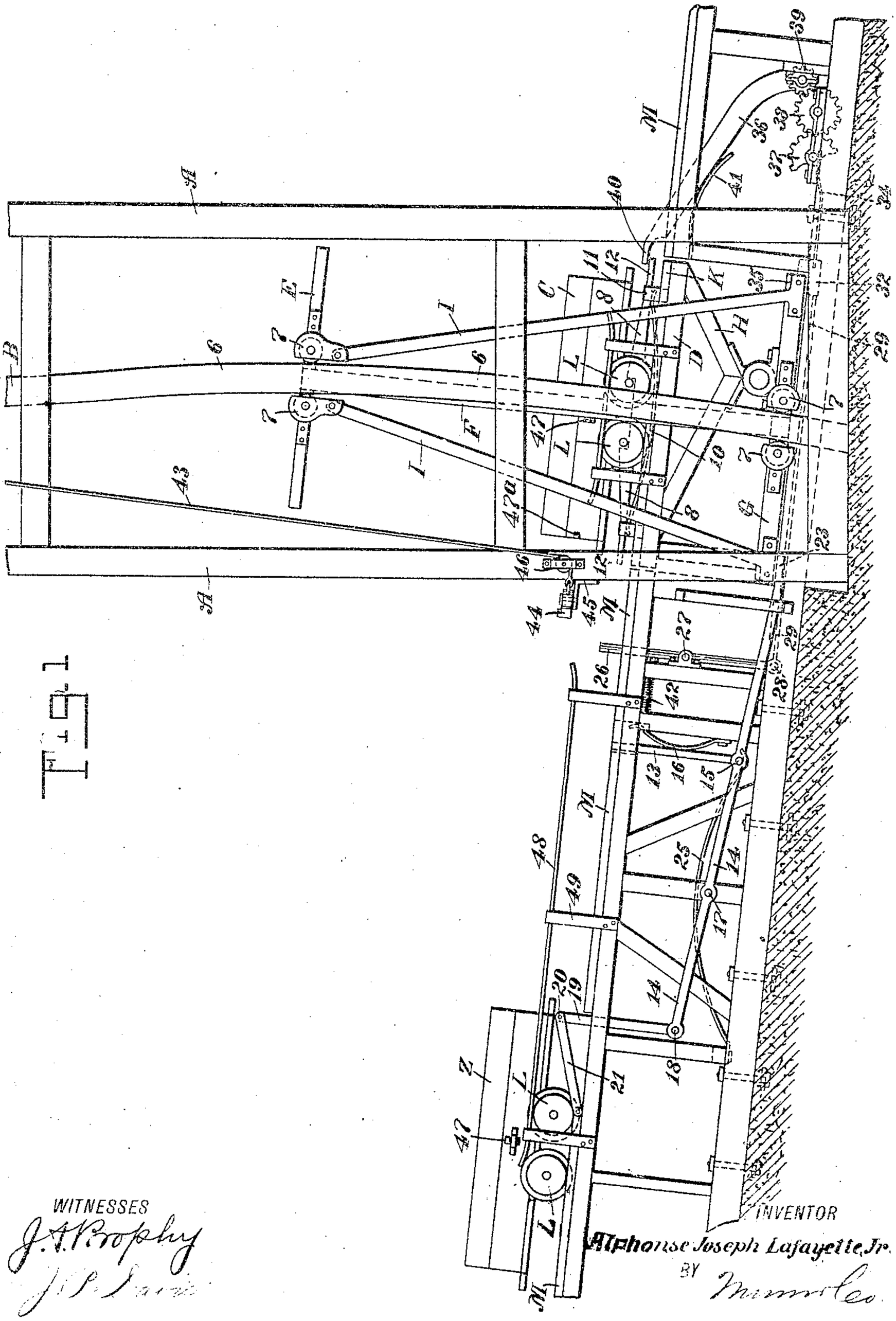

Fig. 1.

WITNESSES

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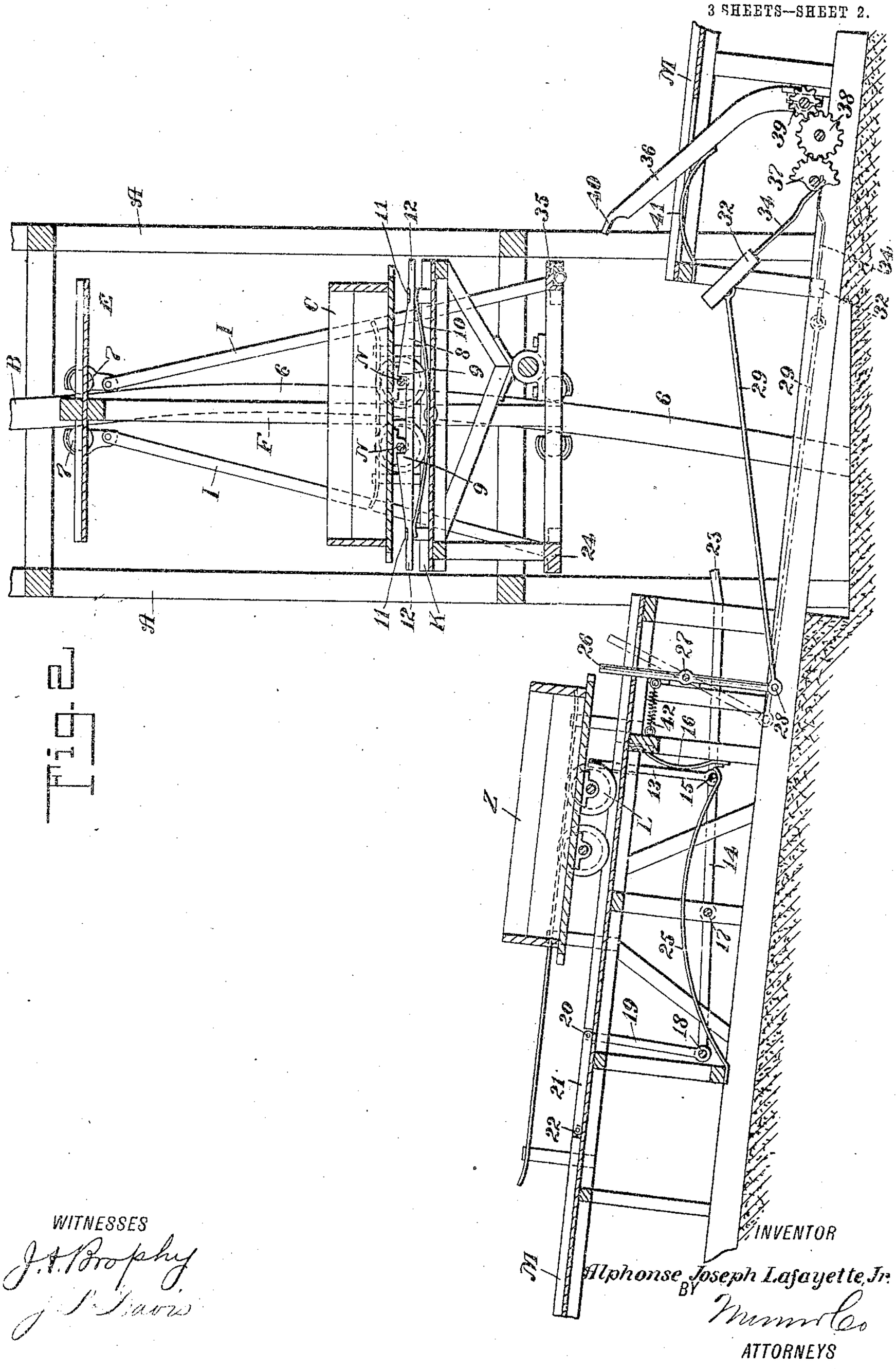

Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 4

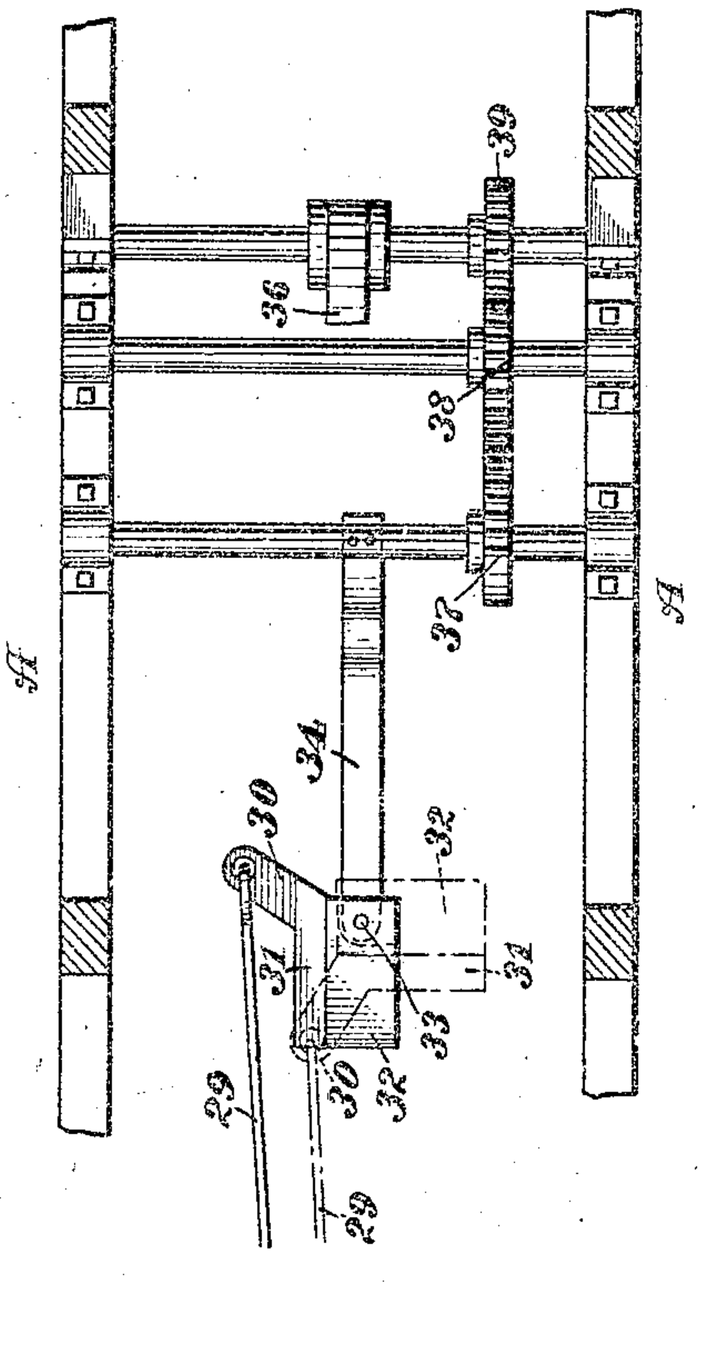

Fig. 5

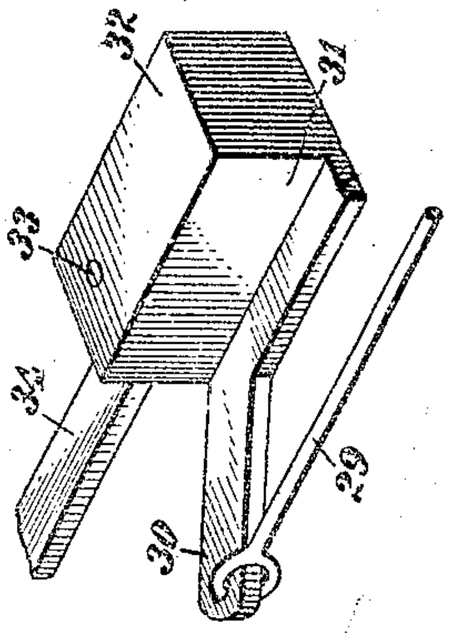

Fig. 3

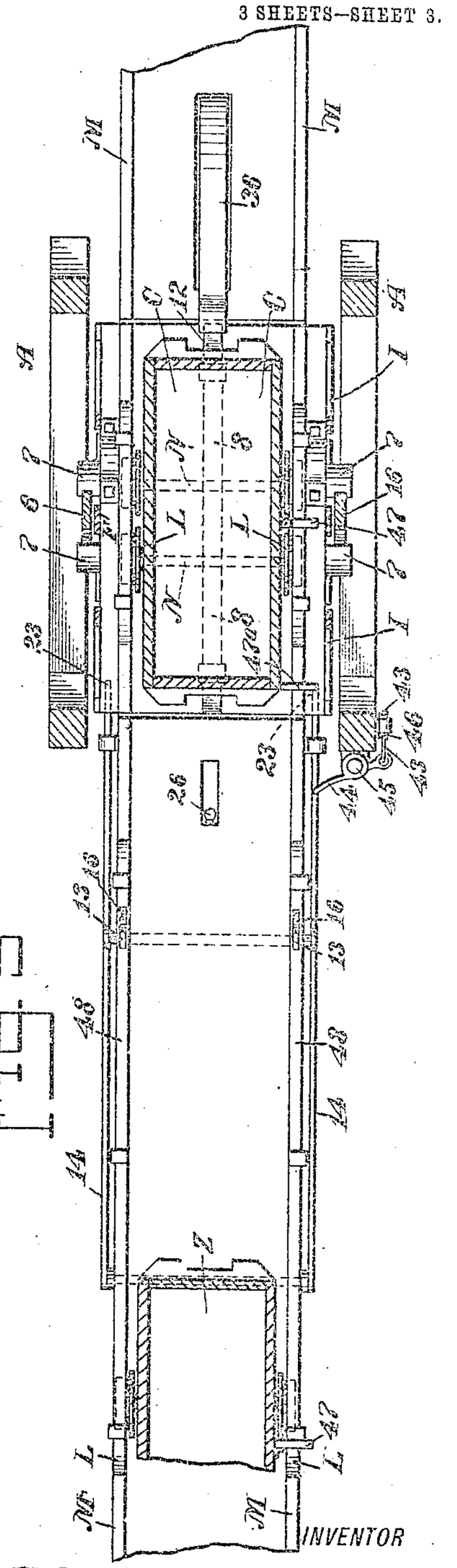

Fig. 2

WITNESSES

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UNITED STATES PATENT OFFICE.

ALPHONSE JOSEPH LAFAYETTE, JR., OF PITTSBURG, KANSAS, ASSIGNOR OF ONE-THIRD TO JOSEPH LAFAYETTE AND ONE-THIRD TO CHARLES DUPIRE, OF PITTSBURG, KANSAS.

CAR-HANDLING MECHANISM.

950,927. Specification of Letters Patent. Patented Mar. 1, 1910.

Application filed May 5, 1909. Serial No. 494,062.

To all whom it may concern:

Be it known that I, ALPHONSE JOSEPH LAFAYETTE, Jr., a citizen of the United States, and a resident of Pittsburg, in the county of Crawford and State of Kansas, have invented a certain new and useful Car-Handling Mechanism, of which the following is a full, clear, and exact description.

The principal objects which the present invention has in view are: to provide means whereby loaded cars are automatically run upon an elevator cage used for hoisting in mine or other shafts; to provide an automatic mechanism for delivering said cars to the elevator cage, and for releasing any empty cars therefrom which may have been lowered with the elevator cage; and to provide a simple and efficient operating means whereby the functions of the said mechanism are performed.

One embodiment of the present invention is disclosed in the construction illustrated in the accompanying drawings, wherein like characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the lower framing of a mining shaft, showing a trestle having railway tracks and loading cars, one of which is upon the elevator cage, while the other is arrested on the inclined portion of the said track, and having mounted thereon the car handling mechanism, constructed and arranged in conformity with the present invention; Fig. 2 is a vertical section of the same, the side timbers being removed to expose the operating members of the car handling mechanism; Fig. 3 is a plan view of the construction shown in Fig. 1; Fig. 4 is a horizontal section of the framing shown in Fig. 1, being slightly enlarged to show the operative relation of certain of the parts, the dotted lines showing the releasing position of the car delivering trip; and Fig. 5 is a perspective view of the releasing trip, shown in Fig. 4.

The present invention is illustrated in the drawings as showing its application more particularly to use in a coal mine.

As shown in the drawings many of the features illustrated form no part of the present invention, and in order that the members which are old may be readily distinguished from the members which are new, I have indicated the old members by the letters of the alphabet, while the new members are indicated by numerals.

Thus the letters A, A, indicate the standing frame of an elevator shaft, and the letter B indicates the lower end of the guide rail mounted upon the framework of the shaft, to guide the car in its ascent and descent.

The numeral 6 is used to indicate a curved or inclined section, which I have provided to aid in the operation of the invented mechanism. In the drawings I have shown the section 6 as curved, and it is in such form that I prefer to use this section; but it will be understood that I do not limit myself to the curved shape, as this section may be set at an angle to the old rail B and deliver the car C upon the platform D in much the same manner as it is delivered by the curved section 6.

The hoisting mechanism for the elevator cage is that employed in the usual constructions.

The cross head E, the uprights F and the lower framing members G and H, together with the tie rods I, I, constitute the framing members of the elevator cage. Antifriction wheels 7, 7, are mounted upon the cross head E and the framing members G at the upper and lower extreme of the cage; they are shown in the present drawings as rollers, bearing against the side of the guide rails B—6 and suitably housed.

The elevator cage, when provided with the guide rollers 7, 7, and brought to the lower end of the shaft, where the curved section 6 of the guide rail B is located, is compelled to assume the position shown in Fig. 1 of the drawings, slightly inclined from the vertical. This inclination gives a dip or incline to the framing members which constitute the platform D of the elevator cage. Upon the platform D there are laid short track sections K, K, to receive the wheels L, L, of the car C. The tracks K are disposed so as to register with the tracks M, M, on the trestle, built adjacent to, and extended from both sides of the standing frame A, A. The trestle is constructed in such manner as to cause the tracks M, M, to assume the same inclination as is assumed by the track K on the platform D. This inclination is suffi-

ciently acute to compel the cars loaded or unloaded, to run down the incline when unimpeded.

Between the rails on the platform there is mounted a spring-actuated locking bar 8. This is constructed in the bar-like form shown particularly in Fig. 2 of the drawings, and has a central cut-away portion which forms shoulders 9, 9. The bar 8 is raised into normal and engaging position by a leaf spring 10. At each end the said bar is recessed to receive the holding straps 11, 11, and beyond the same is provided with an extension 12, 12. From the holding straps 11 to the top of the shoulder 9, the upper surface of the bar 8 is inclined. The purpose of this bar 8 is to receive and hold both the axles N of the car C.

The car C in passing from the upper section of the inclined track M on to the platform D depresses that end of the bar 8 which first comes in contact with the said bar, causing it to yield, pivoting on the strap 11 disposed at the other end of the platform. The axles N, N, in this manner each over-ride the forward incline of the bar 8 and are disposed as shown in Fig. 2 of the drawings, when the forward axle strikes upon the shoulder 9 of the bar 8 set up in front of the said axle. In this position, both of the axles are within the recess between the two shoulders 9, 9. The spring 10 being unimpeded, instantly forces the bar 8 into the position shown in Fig. 2, wherein the axles N, N, are engaged by the two shoulders 9, 9, and the car C is held immovably upon the track K on the platform D. This is the position of the car during its ascent and descent.

In passing from the upper section of the inclined track M on to the section K on the platform, the car is released from its fixed position, which is illustrated in Fig. 2 of the drawings, the car Z being held in the said fixed position. The member for thus holding the car is a rod 13, mounted in the framework to be protruded in the path of the wheels L of the successive cars. The rod 13 is pivotally mounted upon a lever 14 at 15 and is held in its forward position by a spring 16 so disposed as to receive the thrust of the rod 13 and thereby relieve the impact of the moving car.

The lever 14 is pivotally mounted at 17 upon the frame and is hingedly connected at 18 with a second upright bar 19. At the upper end of the bar 19 there is hingedly connected at 20 a section 21 of the track M, the same being hinged at 22 thereon. At the forward end of the lever 14 it is bent to form a foot 23 which is extended into the path of the sill 24 of the frame of the elevator cage. The lever 14 is raised to the position shown in Fig. 2 of the drawings, wherein the bar 13 is extended into the path of the wheel L by the heavy spring 25, which compels the lever 14 to assume the position shown in Fig. 2 of the drawings whenever the sill 24 of the elevator cage is removed from the foot 23.

When the elevator is in its lowered position as shown in Fig. 1 of the drawings, the sill 24 depresses the foot 23 to the lowered position, the foot 23 forming a part of the support on which the elevator rests when in its lowermost position. In this position of the foot 23, the lever 14 is caused to assume the position shown in Fig. 1, wherein the rod 13 has been withdrawn from in front of the wheel L and the track section 21 has been raised to prevent the succeeding car Z from advancing to the position from which the car C has just been moved. The removal of the car C is caused by the inclination of the track M. With the removal of the bar 13 there is nothing interposed to prevent the car from rolling down the track M and upon the track K of the platform D.

When the elevator, having received the car C starts on its ascent, the foot 23 of the lever 14 is raised by the spring 15 until the track section 21 is level with the track M. In this position of the track section 21, the car Z which has been arrested, is now free to move down the track M toward the shaft. Simultaneous with the operation which places the track section 21 in level position, the bar 13 has been placed in the raised position shown in Fig. 2 of the drawings, so that when the car Z, being released by the lowering of the track section 21 is permitted to move to the position shown in Fig. 2 of the drawings, it is arrested by the bar 13.

Extended upward in the path of the axle of the cars C and Z is a lever 26, pivotally mounted at 27 on the frame of the track trestle, and hingedly connected at the lower end at 28 with a draw rod 29. The draw rod 29 is connected at its opposite end to an extension 30 mounted on a block 32 pivotally mounted at 33 upon a bar 34 which is fixedly connected to the shaft of a gear 37. The extension 30 is formed of metal, while the block 32 is preferably formed of wood. Whether formed of metal or wood, however, it is disposed with reference to the extension 30 to provide a recess 31 which, in actual practice, is about two inches in height.

When the elevator is raised as shown in Fig. 2 of the drawings, the block 32 is raised to the position shown upon the end of the bar 34. In the descent of the elevator cage simultaneously with the rail 24 striking the foot 23 of the lever 14, a sill 35 makes contact with the block 32 and depresses the same to the lowered position shown in Fig. 1 of the drawings. In thus depressing the block 32 and the arm 34 connected therewith, the elevator cage has caused an arm 36 to impinge upon the extension 12 on the bar 8, causing it to depress the lower in-

clined end of the said bar 8 until the lower shoulder 9 releases the car which has descended with the elevator, from engagement with the said bar 8. In this position, the track K being inclined and registering with the lower section of the track M also inclined, there is nothing to retain the car upon the track K, and the same immediately passes from the platform D in the direction opposite that from which the cars are received on the platform D.

The action above described is caused by the chain of gears 37, 38 and 39, which are suitably mounted. It will be observed that the final gear 39 which is fixedly connected with the shaft on which the arm 36 is mounted, is somewhat smaller in diameter than the gears 37 and 38 and, therefore, rotates proportionately faster than the said gears.

In its disengaged position the arm 36 assumes the position shown in Fig. 2 of the drawings, while the bar 34 and the block 32 assume the position likewise shown in the said view. When now the bar 34 and block 32 are depressed through the arc of their movement, the arm 36 is caused to travel a somewhat greater arc, and consequently somewhat faster than the bar 34 and block 32. This action causes the end 40 of the said arm 36 to move more rapidly than the elevator cage, and after engagement by the said end 40 with the extension 12 of the bar 8. During the remainder of the movement of the car, and of the block 32 and bar 34, the arm 36 depresses the extension 12 until the shoulder 9 on the inclined side of the bar 8 is removed from its position interposed in the path of the axles N, N, of the car. The bar 8 remains in this position, which we will call the empty car delivering position, until the succeeding and loaded car strikes the lever 26.

With the moving of the lever 26 from the position shown in Fig. 1 in the drawings, to that shown in dotted lines in Fig. 2, the lower end of said lever draws the draw rod 29 which rotates the block 32 from under the sill 35. As the block 32 is thus moved from engagement with the sill 35, a heavy spring 41 is permitted to elevate the arm 36 thereby raising the end 40 from the extension 12 and permitting the bar 8 to assume its normal position against both of the rods 11, 11, prior to the oncoming car reaching the position on the platform where the axle N depresses the upper end of the said bar 8. The lower shoulder 9 is now in position to buffer the oncoming car, and to arrange it in position on the platform D.

Immediately after the car has moved past the end of the lever 26, a spring 42 compels the same as far as possible to assume the position shown in Figs. 1 and 2 of the drawings in full lines. In this effort the spring 42 is prevented by the side of the recess 31 on the block 32, the side striking against the vertical side of the sill 35 of the elevator cage frame. When the elevator has ascended, the sill 35 being removed, the spring 42 draws the extension 30 so that the block 32 is advanced to its original position to receive the downcoming elevator.

The loading and unloading of the cars upon the platform D is automatic, and accomplished by the mechanism thus far described. The hoisting is manually controlled, and the hoisting mechanism is of any approved type. It is to warn the operator of the fact that a car has been loaded upon the platform that I have provided the line 43 and bell crank 44. The bell crank 44 is mounted upon a bracket 45 set on the side of the standing frame A. The pull end of the bell crank 44 is suitably attached to the line 43 which is guided in a pulley 46 mounted upon the said standing frame A. The line 43 is suitably led to any suitable announcing device such as a bell or whistle. The bell crank 44 is extended into the path of a pin 47 set out from the side of the car, so that whenever the car passes on to the track K, the pin 47 strikes upon the free arm of the bell crank 44, causing, through the line 43, the signal to be given to the hoisting operator, who then is at liberty to raise the elevator cage, knowing the same to be loaded. At the end of the car C is fixed another pin 47^a, also adapted to contact with the free arm of the bell-crank 44, so that if occasion requires, two signals may be sounded, one by the pin 47 and the other by the pin 47^a.

On the side of the tracks there are mounted guard rails 48, which are extended from above the hinged position of the section 21 to below the position of the rod 13. The rails 48 are mounted upon uprights 49 which are rigidly secured to the track bed. The object of the rails 48 is to extend over the wheels L, L, to prevent the same jumping from the track M.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A car handling mechanism comprising a permanently inclined track bed adapted to deliver the cars from an elevator cage; an elevator cage having a normally level floor and tracks; a device for holding the cars upon the elevator cage embodying a spring-operated detent; means for tilting the said cage at the delivery station; and a releasing mechanism for said cars adapted to be operated by the said elevator cage and to disengage the said detent from the said cars.

2. A car handling mechanism comprising a permanently inclined track bed adapted to deliver the cars from an elevator cage; an elevator cage having a normally level floor and tracks; a device for holding the cars

upon the elevator cage embodying a spring-operated detent; means for inclining the said cage at the delivery station for said cars; a pivotally mounted arm adapted to impinge upon the said detent to disengage the same from the said cars; and an operating mechanism for said arm actuated by the said cage and embodying means for increasing the operating speed of said arm relatively to the speed of travel of said cage.

3. A car handling mechanism comprising a permanently inclined track bed adapted to deliver the cars from an elevator cage; an elevator cage having a normally level floor and tracks; a device for holding the cars upon the elevator cage embodying a spring-operated detent; means for inclining the said cage in the delivery station for said cars; a pivotally mounted arm adapted to impinge upon the said detent to disengage the same from the said cars; an operating mechanism for said arm embodying a lever extended in the path of said cage; connecting means for controlling the action of said pivotally mounted arm to move the same with greater speed than said lever; and means for releasing the said lever and said detent.

4. A car handling mechanism comprising an elevator cage having a normally level floor and tracks thereon; shaft framing members; a guide rail for the said elevator cage mounted on said framing members and having an inclined extension at the receiving and delivering station; a section of track bed inclined from the said track upward; a section of track bed inclined from the said shaft downward; devices for holding the car on the said cage; devices for holding the car upon the inclined track extended upward from said shaft in position to be delivered to said cage; and releasing devices adapted to be operated by the descending car to remove the holding devices for the car on the cage and the car on the track in unison.

5. A car handling mechanism comprising an elevator cage having a normally level floor and tracks thereon; shaft framing members; a guide rail for the elevator cage mounted on said framing members and having an inclined extension at the receiving and delivering station; a section of track bed inclined from the said shaft upward; a section of track bed inclined from the said shaft downward; and a suitable mechanism for delivering cars from and to the said cage simultaneously, said mechanism being operated by the said cage.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALPHONSE JOSEPH LAFAYETTE, Jr.

Witnesses:
F. M. Ferrell,
Hilda Boudinot.