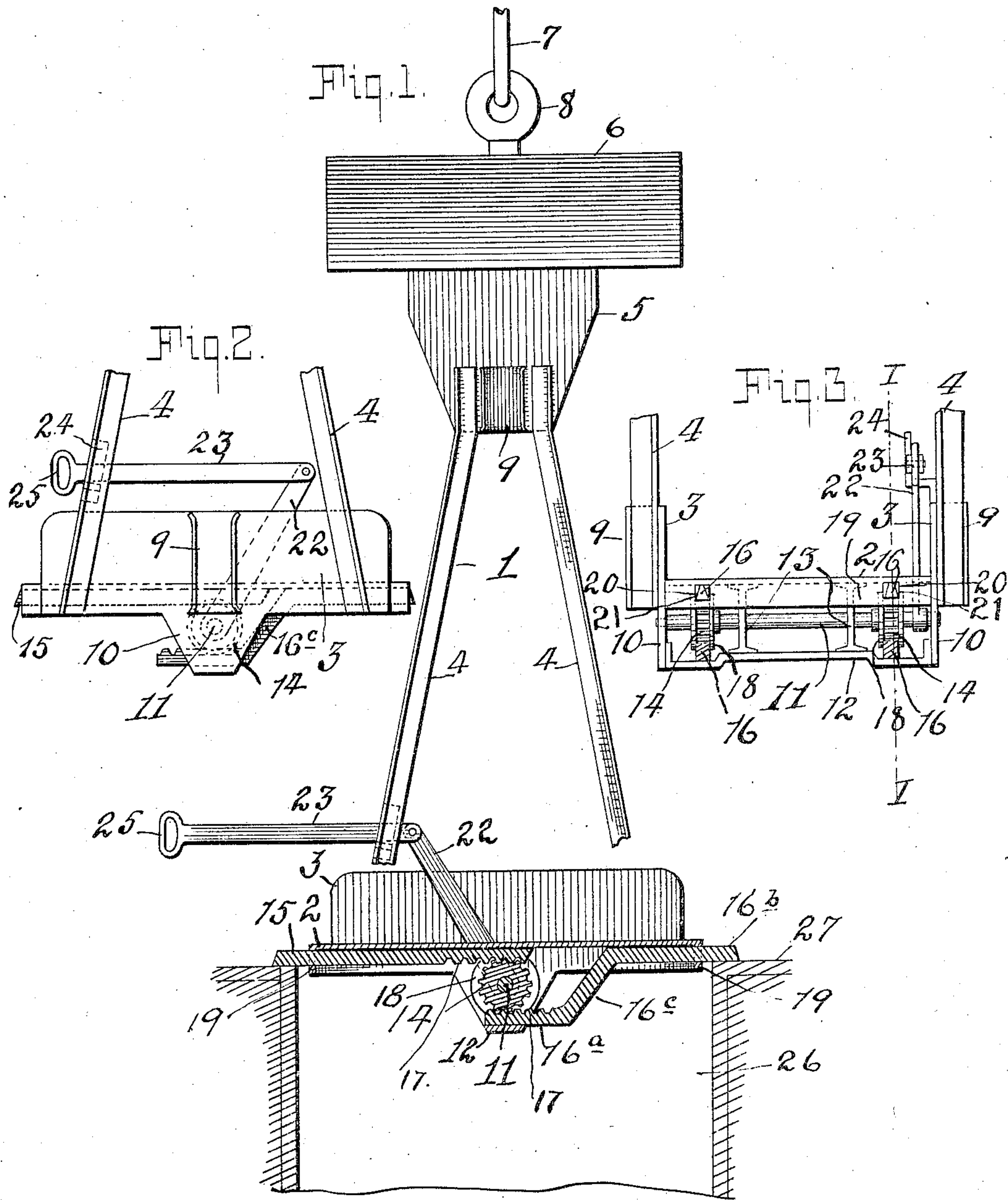


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W. BURKART & H. A. WILLIAMS.  
LANDING CHAIR FOR HOISTING MECHANISMS.  
APPLICATION FILED MAY 14, 1904.



Witnesses:

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# UNITED STATES PATENT OFFICE.

WILLIAM BURKART AND HARVEY A. WILLIAMS, OF DENVER, COLORADO.

## LANDING-CHAIR FOR HOISTING MECHANISMS.

SPECIFICATION forming part of Letters Patent No. 789,838, dated May 16, 1905.

Application filed May 14, 1904. Serial No. 207,896.

*To all whom it may concern:*

Be it known that we, WILLIAM BURKART and HARVEY A. WILLIAMS, citizens of the United States, residing at the city of Denver, in the county of Denver and State of Colorado, have invented or discovered new and useful Improvements in Landing-Chairs for Hoisting Mechanism, of which the following is a specification.

In the accompanying drawings, Figure 1 is a vertical section along the line 1 1 in Fig. 3, showing a mine-cage fitted with our improved landing-chair, the said invention being shown in its operative position. Fig. 2 is a partial side elevation of a cage looking toward the right of Fig. 3, showing the mechanism partially in dotted lines in its retracted or inoperative position; and Fig. 3 is an end view of the lower portion of said cage looking toward the left in Fig. 2, the angular section 16° of bar 16 being broken away to show the teeth of the pinions 14 14.

Our invention, generally speaking, consists of a new and improved landing-chair for mining-cages or hoisting devices in general; and more particularly it consists in the illustrated means normally retained in a contracted position within the line of the cage, but capable of being extended at will outwardly to give a firm foundation for the hoisting device.

The mechanism is primarily intended as means for supporting a mine-cage over the mouth of a shaft while the same is being unloaded; but it is evident that it may readily be adapted to many kindred purposes.

The following is a detailed description of our invention as illustrated in the accompanying drawings.

1 is a mine-cage of any usual design and consists generally of a floor 2, splash-boards 3 3, uprights 4 4, side plates 5 5, and hood 6. The cage is suspended by means of cable 7, engaging clevis 8, which is connected through hood 6.

9 9 are the usual shoes attached to the structure of the cage and adapted to slide on the vertical guides (not shown) fixed in the mine-shaft.

10 10 are vertical plates, being preferably downwardly - extending prolongations of

splash-boards 3 3 and of the general shape indicated in the drawings.

11 is a cross-shaft journaled at its ends in said plates 10 10.

12 is a horizontal plate connecting the lower edges of plates 10 10. 13 13 are sections of I-beams between said plate 12 and the floor 2 of the cage intended to stiffen and strengthen the construction. Said I-beams may be perforated for the passage of shaft 11, so that they may extend on both sides of said shaft.

14 14 are pinions rigidly keyed or otherwise attached to shaft 11.

15 and 16 indicate pairs of slide-bars, one pair to each pinion, adapted to engage, by means of their racks 17 17, the upper and lower sides, respectively, of the pinions 14 14. Said pinions are provided with flanges or shrouds 18 18 to retain the bars in alinement and engagement with the teeth of said pinions. The upper slide-bar 15 is substantially straight and engages said pinion from above, as shown, while the other bar, 16, to enable it to engage said pinion from below to receive motion therefrom reverse to that given bar 15 we prefer to construct of two substantially horizontal sections 16<sup>a</sup> and 16<sup>b</sup> and an angular connecting-section 16<sup>c</sup>. The rack 17 is on section 16<sup>a</sup> and engages the pinion from beneath, as shown.

19 19 are end plates, downwardly extending from floor 2 and provided with perforations 20 20, through which the outer extremities of bars 15 and 16 respectively protrude and slide.

The bars 15 and 16 are preferably provided with upwardly-tapered sides 21 21 adjacent to their outer extremities to prevent clogging and binding in the apertures 20 20.

22 is a rock-arm rigidly attached to shaft 11 and extending up through a suitable slot (not shown) in the floor of the cage. The upper end of arm 22 is pivotally engaged by the inner end of hand-lever 23, which lever reciprocates in keeper 24, attached to one of the uprights 4 of the cage.

25 is a hand-grasp for the end of lever 23.

The parts are so assembled that when hand-lever 23 is shoved into the position shown in Fig. 2 the arm 22 is forced over in the same



direction, thus rotating shaft 11 and pinions 14 14. The rotation of said pinions draws inwardly the bars 15 and 16 to the position shown in said figure, the extremities of said bars resting in perforations 20 20.

As will be seen, the handle 23 and the extremities of bars 15 and 16 are so retracted that they do not protrude to catch on the sides of the mine-shaft 26 as the cage is raised and lowered. When the cage has reached the top of the shaft and is to be held stationary for unloading or other purposes, the handle 23 is drawn out into the position shown in Fig. 1, drawing over the arm 22 and rotating shaft 11, thus rotating the pinions 14 14 in the reverse manner from that above described. By this means the bars 15 and 16 are forced outwardly, so that they protrude beyond the side of the shaft and rest upon the floor of the shaft-house 27. The cage now rests on said bars and is firmly and securely supported while the cage is being unloaded. When it is desired to lower the cage, the lever 23 is pushed inwardly, thus reversing the operation last described and retracting the bars 15 and 16 into the position shown in Fig. 2, this permitting the cage to be lowered without interference.

It is evident from the above that we have produced a very reliable and efficient landing-chair for the use described; but it is evident that by slight modifications, which would present themselves readily to those skilled in the art, our invention could be used for many kindred purposes, such as a safety device to prevent the cage from falling in the shaft, the bars being arranged to catch the sides of the shaft or suitable recesses provided therein and lock the cage in a stationary position. It is evident that any number of pinions may be supplied to a cage or other hoist, each with its pair of chair-bars, or, if desired, each chair-bar may have its individual controlling-pin; but we prefer the construction shown as simple and strong.

We have shown the mechanism applied to a vertical shaft-mine; but it is evident that our invention may be applied to a hoist of any

character operated in a slope, the direction of the movement of the chair-arms being preferably modified to be at substantially right angles to the movement of the hoist. The invention is not only adapted to use in mining operations, but may be used with advantage in any case where hoisting is carried on either vertically or otherwise.

Although for the sake of clearness we have described the specific mechanism shown in the drawings, we do not wish to limit ourselves thereby; but

We claim—

1. In hoisting mechanism, a hoist having a slot in each end thereof, a shaft secured to said hoist, a lever secured to said shaft, a pinion secured to said shaft having a shroud on each side thereof, said shrouds extending radially beyond the teeth of said pinion and racked, slidable chair-bars adapted to be operated by said pinion and extending through said slots.

2. In hoisting mechanism, a hoist having a substantially rectangular slot in each end thereof, a shaft secured to said hoist, a pinion secured to said shaft having a shroud on each side thereof, said shrouds extending radially beyond the teeth of said pinion and slidable chair-bars adapted for the purpose described extending through the slotted ends of said hoist.

3. In hoisting mechanism, a hoist, plates downwardly extending from each side of said hoist, a transverse plate connecting the lower extremities of said side plates, a shaft journaled in said side plates having pinions secured thereto, an intermediate support between said pinions connecting said transverse plate and said hoist and chair-bars adapted to be operated by said pinion as and for the purpose described.

Signed at Denver, Colorado, this 7th day of May, 1904.

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Witnesses:

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