

(No Model.)

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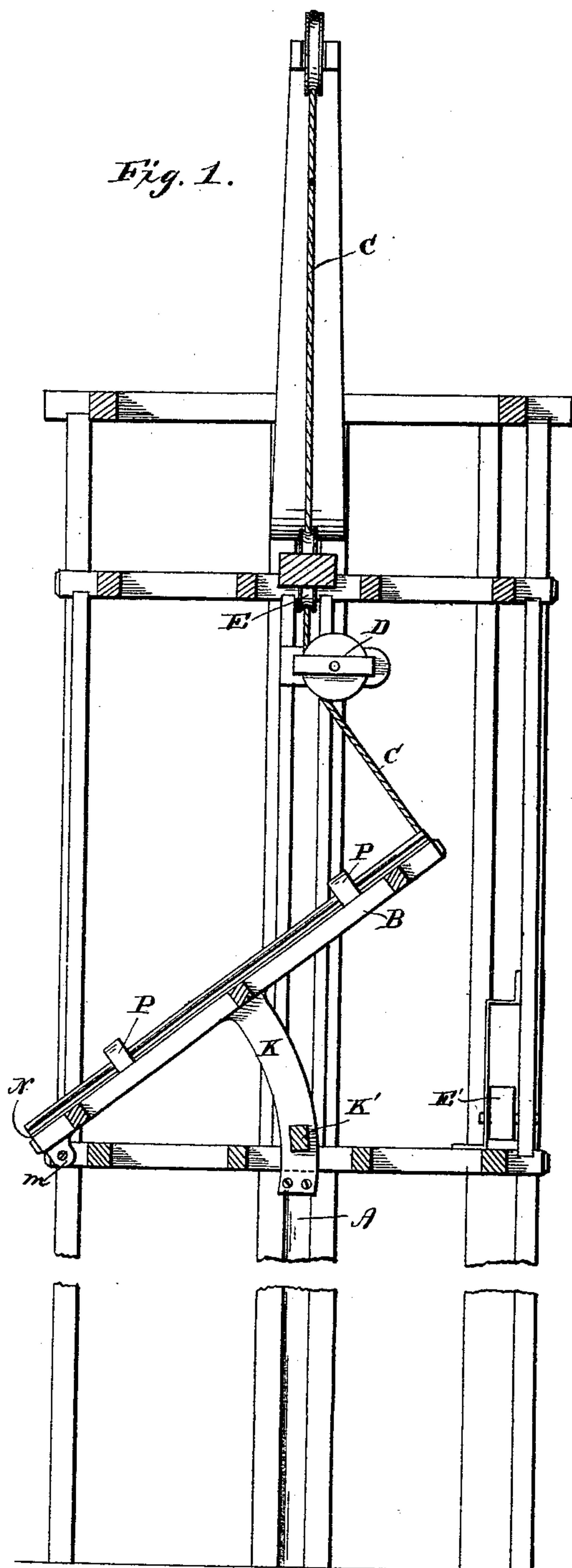
R. B. CAMPBELL.

COAL CAGE.

No. 414,139.

Patented Oct. 29, 1889.

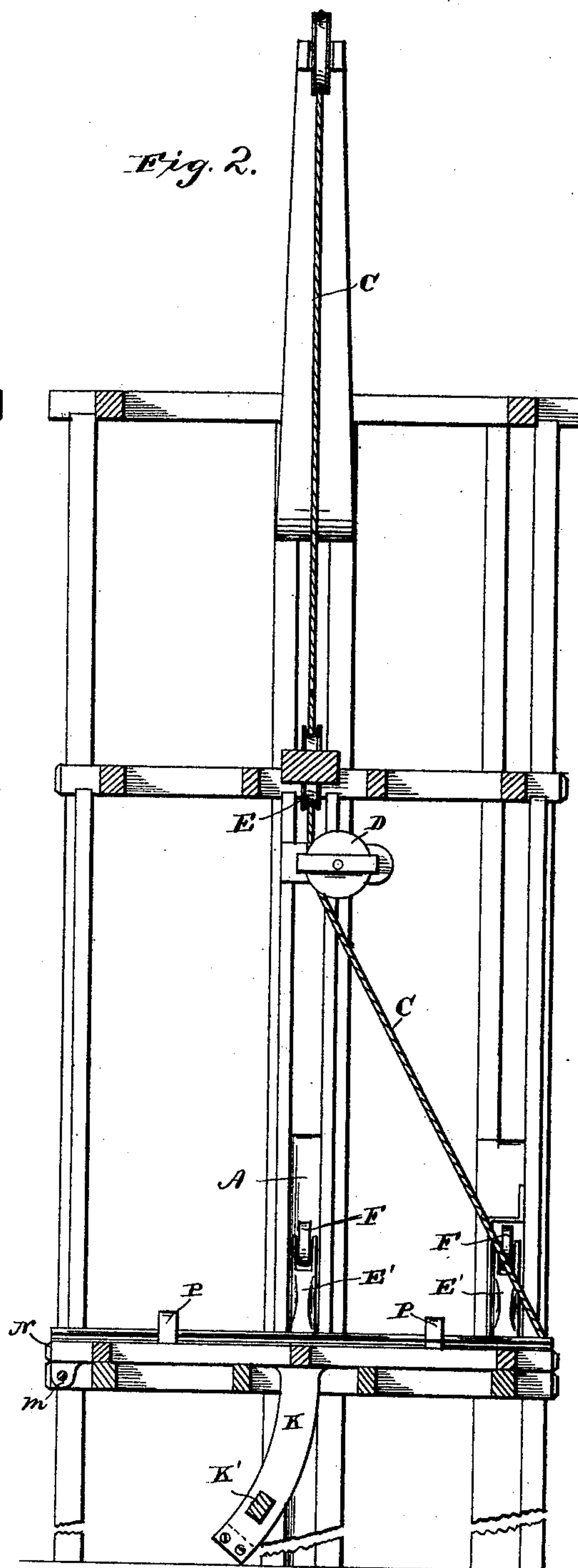
Fig. 1.



Witnesses.

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Fig. 2.



Inventor.

Ralph B. Campbell  
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his Attorneys.

(No Model.)

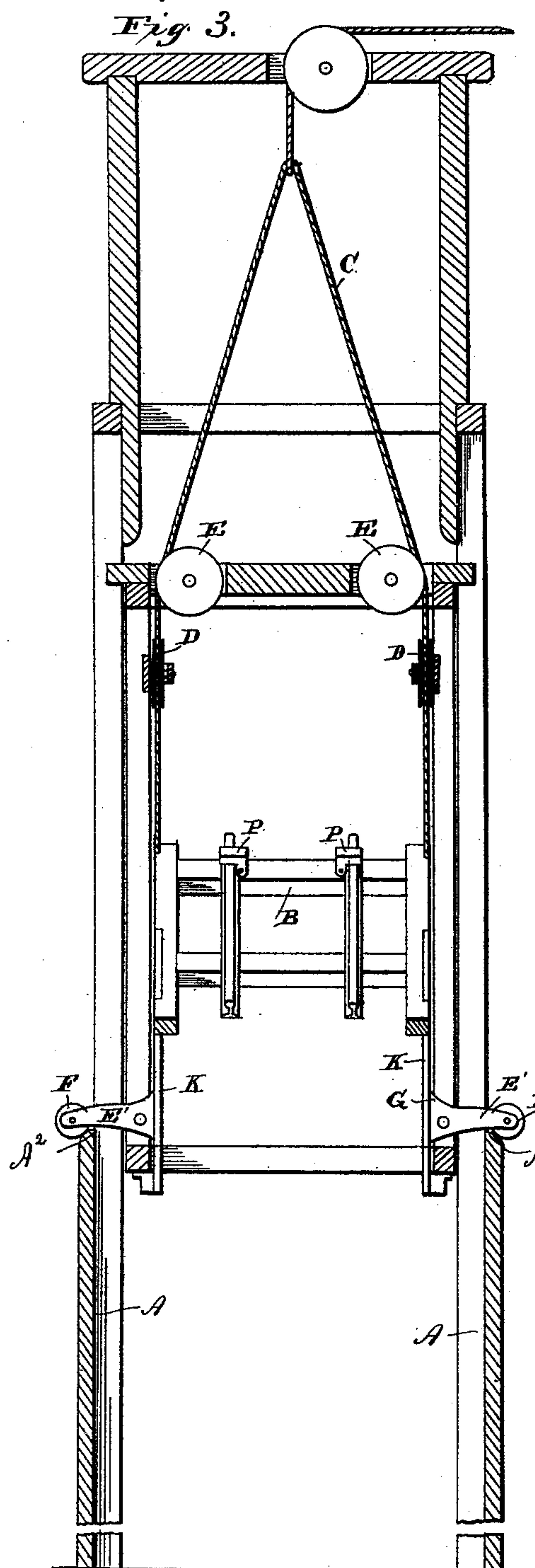
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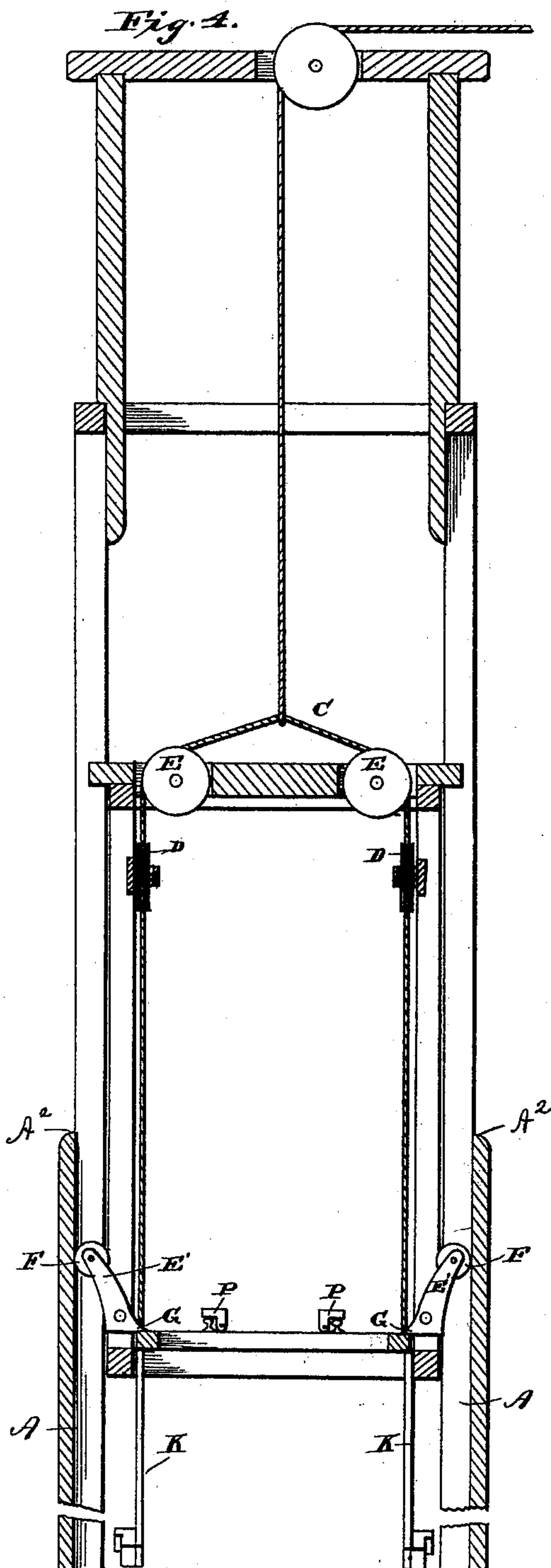
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# UNITED STATES PATENT OFFICE.

RALPH B. CAMPBELL, OF STREATOR, ILLINOIS.

## COAL-CAGE.

SPECIFICATION forming part of Letters Patent No. 414,139, dated October 29, 1889.

Application filed December 18, 1888. Serial No. 294,011. (No model.)

*To all whom it may concern:*

Be it known that I, RALPH B. CAMPBELL, of Streator, in the county of La Salle and State of Illinois, have invented certain new and useful Improvements in Coal-Cages, of which the following is a specification.

This invention relates to certain improvements in coal cages or elevators designed to hoist the coal from the bottom of the mine-shaft or from any lower to a higher point, whether at the mine or elsewhere; and it consists in an improved arrangement of dumping mechanism whereby the coal is automatically dumped when the top of the shaft is reached and the cage held elevated until the car assumes normal position, when it is permitted to descend.

The invention further consists in certain novel features of construction and combinations and arrangements of parts, all as will be hereinafter described, and pointed out particularly in the claims at the end of this specification.

In the accompanying drawings, Figures 1 and 2 are sectional views showing, respectively, the cage at the top, with the parts in position for dumping and in position for lowering or raising. Figs. 3 and 4 are similar views taken at right angles to Figs. 1 and 2.

Similar letters of reference in the several figures indicate the same parts.

The guides A for the cage B may be of the ordinary or any approved style, and the cage itself may be provided with any desired form of safety-clutch, such as are usually employed. Within the cage is provided a false bottom B, pivoted at one side to the framing of the cage, which is adapted to support the car containing the coal, suitable tracks being secured thereon, which, when the cage is at the bottom, register with the mine-tracks in order to facilitate the loading of the cars into the cage. The hoisting-rope C passes around pulleys D E in the top of the cage and is connected to the free edge of the false bottom. In order now to resist the tendency of the hoisting-rope to raise and tilt the false bottom, I provide a locking mechanism—such as dogs or catches—co-operating with the side guides at each side, which are automatically released at the top of the shaft, permit-

ting the false bottom to tilt, while the dogs or catches themselves engage the ways and prevent the downward movement of the cage until the false bottom assumes normal position. The dogs or catches referred to consist, in the present instance, of dogs E', pivoted in the sides of the cage-frame, and are in the form of substantially right-angle or bell-crank levers, the large arm of which carries an anti-friction roller F, which bears against the guides A, the opposite or shorter arm G resting above the false bottom, and, so long as the rollers F are in engagement with the guides, preventing the elevation of said false bottom, thus forming a complete locking mechanism for retaining the bottom depressed while in the shaft, as will be readily understood upon referring to Fig. 4. The guides against which the rollers bear terminate at the top of the shaft at approximately the height it is desired that the coal shall dump, forming substantially horizontal bearings A<sup>2</sup>, and as the dogs are permitted to fall outward at that point the false bottom will be raised by the hoisting-rope and the coal dumped. While in elevated position, it will be seen from Fig. 3, the shorter arms of the dogs bear against the side of the false bottom and prevent any downward movement of the cage until the false bottom returns to normal position, the longer arm of the dogs resting on top of the guides or substantially horizontal bearings or catches at the top thereof. As it is usually necessary that the false bottom be elevated above the shorter arms of the dogs in order to secure the proper angle for dumping, I preferably secure segments K to each side of the false bottom and connect the ends of the segments by a cross-piece K', to afford the necessary lateral strength. Said segments also form a smooth bearing, against which the shorter arms of the dogs may work, and said arms, as is obvious, may be provided with anti-friction rollers, if desired. By preference four pivoted dogs are employed, two at the free end of the false bottom and two at the center, said pairs of course being oppositely arranged. Two only of said dogs need be relied on for retaining the cage elevated while dumping, as shown, although it is ob-



vious the others may be similarly arranged. The false bottom is preferably pivoted as shown in Fig. 1—that is to say, two downward extensions *m* are formed thereon, and the pivots are formed in the ends of these extensions below the top level of the timbers on which the false bottom rests. Thus when the false bottom is elevated the edge *N* will project beyond the line of the shaft, permitting the coal to dump away from the shaft and out of danger of falling back into the same.

Any suitable means may be employed for retaining the car in position on the false bottom—such as stops *P*—and, if desired, hooks or retaining devices may be arranged to engage the rear end of the car to prevent its being thrown from the cage.

The operation will be readily understood. The car having been secured in position on the false bottom, the cage is elevated, the pivoted dogs engaging the false bottom and preventing the tilting of the latter until the top of the shaft is reached, when the dogs swing outward, permitting the false bottom to be tilted, said dogs then bearing against the sides of the bottom and resting on the top of the guides, thus preventing any backward movement of the cage itself while the hoisting-rope is raising the false bottom. After the coal is dumped the hoisting-rope is slackened and permits the false bottom to descend to normal position, the pivoted dogs being immediately swung in over the same, affording the necessary support for the cage.

It is obvious that other well-known forms of devices may be substituted for the pivoted dogs, and that the details of the mechanism employed may be changed considerably without departing from the spirit of my invention.

Having thus described my invention, what I claim as new is—

1. In a coal-hoist, the combination, with the cage having the movable false bottom and the hoisting-rope connected to said bottom, of the locking mechanism for retaining said bottom depressed while the cage is being raised or lowered, substantially as described.

2. In a coal-hoist, the combination, with the cage having the movable false bottom and the hoisting-rope connected to said bottom of the dogs or catches engaging the side guides and projecting above the false bottom to retain the same depressed while being raised or lowered, substantially as described.

3. In a coal-hoist, the combination, with the cage having the movable false bottom and the hoisting-rope connected thereto, of the dogs or catches pivoted on the cage, one arm of each of said dogs engaging the side guides and the other projecting above the

false bottom to retain the same depressed while being raised or lowered, substantially as described.

4. In a coal-hoist, the combination, with the side guides having the substantially horizontal bearings at the top, and the cage having the movable false bottom, of the dogs engaging the side guides and projecting above the false bottom to retain the same depressed while rising or lowering, and also engaging the substantially horizontal bearings at the top of the side guides to support the cage while the false bottom is being moved, substantially as described.

5. In a coal-hoist, the combination, with the vertical side guides having the substantially horizontal bearings at the top, the cage having the pivoted false bottom to which the hoisting-rope is connected, and bearings for the inner ends of the dogs at the side of said bottom, of the dogs pivoted on the cage, each dog having an arm projecting above the false bottom and another arm engaging the vertical side guides to retain the false bottom depressed while the cage is being raised or lowered, and also engaging the substantially horizontal bearings, and the side bearings on the false bottom to support the cage while the false bottom is being tilted, substantially as described.

6. In a coal-cage, the combination, with the vertically-movable false bottom and the locking mechanism to retain the bottom depressed while in the shaft, of the horizontal bearings at the top of the shaft, with which dogs on the cage engage to support the cage in elevated position, substantially as and for the purpose specified.

7. In a coal-cage, the combination, with the movable false bottom and the locking mechanism to retain the bottom depressed while in the shaft, of the horizontal bearings, with which dogs on the cage engage to retain the cage elevated, and the segments secured to the false bottom to keep the dogs in engagement with the horizontal bearings while the false bottom is elevated, substantially as described.

8. In a coal-hoist, the combination, with the cage having the movable false bottom, of the downward extensions secured to said bottom at one side, and the pivots at the end of said extensions, below the top level of the supporting-timbers, whereby when the bottom is tilted the edge of the bottom will be projected beyond the pivotal point to dump the coal away from the shaft, substantially as described.

RALPH B. CAMPBELL.

Witnesses:

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