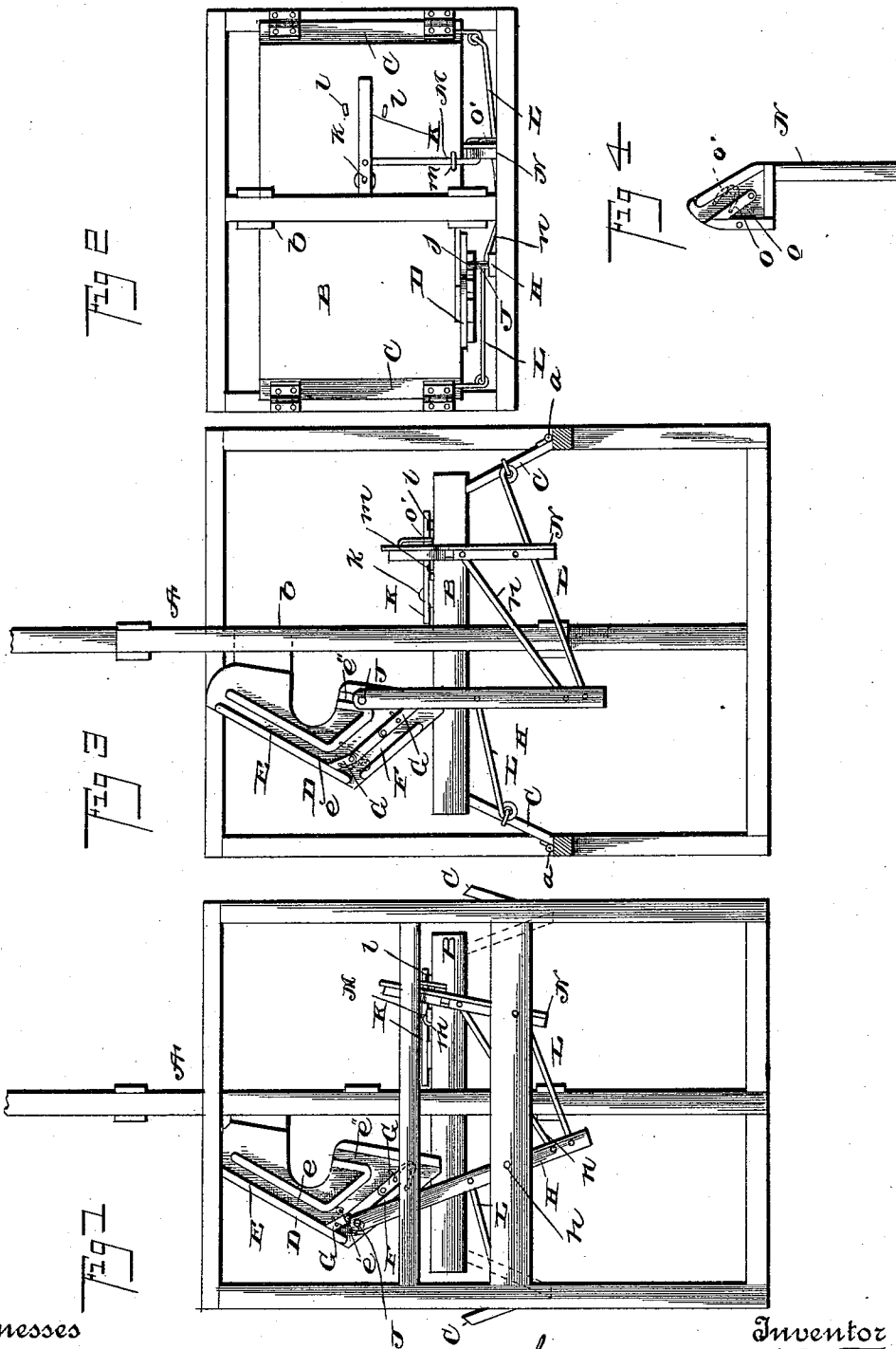


(No Model.)

I. C. WELTER.
HOISTING DEVICE.

No. 470,730.

Patented Mar. 15, 1892.



Witnesses

John Danie
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UNITED STATES PATENT OFFICE.

ISAAC CONRAD WELTER, OF LUZERNE, PENNSYLVANIA.

HOISTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 470,730, dated March 15, 1892.

Application filed September 5, 1891. Serial No. 404,875. (No model.)

To all whom it may concern:

Be it known that I, ISAAC CONRAD WELTER, a citizen of the United States, residing at Luzerne, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Hoisting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to hoisting apparatus, and is designed primarily for use in a coal-shaft for the purpose of taking coal from the veins to the top of the breaker, and is in the nature of an improvement on the device for which Letters Patent of the United States were granted me on the 5th day of May, 1891, numbered 451,716; and it consists in the novel construction, arrangement, and combination of parts hereinafter fully described, and afterward definitely pointed out in the claim, due reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a side elevation of my improved device. Fig. 2 is a top plan view with the upright guides and a portion of the guides broken away. Fig. 3 is a side elevation with portions of the frame-work removed. Fig. 4 is a detail view of the latch.

Referring to said drawings, the letters A A indicate the uprights or supports between which the elevator-platform B is suspended, being guided by said uprights, and arranged to be raised and lowered in any suitable manner.

To any fixed support are pivoted the supports C, pivoted on suitable pivots *a* and arranged to swing thereon at right angles to the uprights A, being pivoted at their lower ends, as seen best in Fig. 1. These supports are free to swing easily on their pivots and are under the control of the cam-block, soon to be described and with which they are connected.

D is a cam-block rigidly secured to one of the upright guides *b* of the platform B and at its bottom to the platform itself. Said cam-block upon its outer face is provided with a groove or path E, inclined downwardly and outwardly for a portion of its length, as at *e*, and is thence inclined inwardly, as at *e'*,

for a suitable distance, and thence vertically upward, as at *e''*. Parallel with the groove *e'* is formed a groove F, open at its lower end, and communication is provided between said groove and the groove E by means of pivoted switches G G, arranged to open in opposite directions, the one at the upper end of the path opening upward and the other opening downward, suitable springs being provided for normally holding the switches closed.

H indicates a lever, pivoted at *h* to any suitable support and connected to the supports C by rods I or equivalent connection, said rods engaging the lever H upon opposite sides of its pivot *h* and equidistant therefrom, to cause the supports to approach toward and recede from each other in unison. Projecting inwardly from the upper end of the lever H and engaging the grooves formed on the face of the cam-block D is a short rod J, preferably provided with a roller *j* to reduce friction and render its passage through said grooves easy.

Upon the elevator-platform I provide any suitable means for locking the coal-car thereon during the movement of the platform up and down and arrange means for automatically unlocking the same as the elevator-car reaches the top of the shaft.

K is the lever, which is designed to be connected with and operate the locking device, which may be of any of the known forms. This lever is pivoted at *k* on a vertical pivot and works between stops *l* upon the upper face of the platform, as seen in Fig. 2. It has pivotally connected therewith a lateral rod M, which works through guide loops or staples *m*, and at its outer end, which extends beyond the side of the platform, is turned at right angles to its length, as seen in Figs. 2 and 4.

N is an arm pivoted at its lower end to any suitable part of the frame-work of the shaft, and between its end pivotally connected with the lower end of the lever H by a rod or link *n*. This arm has an inwardly-projecting horizontal extension, which is provided with a grooved face, in which is arranged a pivoted latch O, forming a path *o*, through which travels the bent end of the rod K, as will hereinafter be described. The latch O is held normally closed by a spring *o'*.

The operation of my device is as follows: When the elevator-platform is at the bottom

of the shaft, the supports or doors C assume the position indicated by the innermost dotted lines in Fig. 1. As the platform nears the top of the shaft the projecting rod J engages the upper portion *e* of the groove E of the cam-block, and as the platform travels upward the said rod, following the said path or groove, as indicated by arrows, Fig. 1, causes the lever H to turn on its pivot, and through the medium of the rods L the supports C are simultaneously thrown outward into the position shown by full lines, Fig. 1, at which time the rod J has traveled the length of the portion *e* of the groove E. Upon the platform continuing to ascend, the rod enters the groove *e'*, when the lever H will be turned upon its pivot in an opposite direction and will swing the supports inward until the rod has reached the lower end of said groove, when the supports will be in the position shown by the innermost dotted lines, Fig. 1. The platform is now lowered, when the rod J enters the groove *e''* and the lever H remains stationary without affecting the position of the supports C, and the platform rests upon said supports. As the platform ascended between the supports the arm N, through the medium of the rod *n*, was swung outwardly upon its pivot out of the path of the rod M, said rod projecting out beyond the side of the platform when the car is locked thereon. When the rod J enters the groove *e'*, the lever H swings the arm N inwardly, and as the platform starts to descend to rest upon the supports the bent end of the rod M enters the inclined part of the groove *o* in the face of the arm N, and as the platform descends the said rod is pulled out and disengages the car from the platform. The car is now emptied, and the same or another empty car is locked in place upon the platform, the bent end of the rod M being retracted by the operation until it rests immediately beneath the pivoted latch O of

the arm N. The platform is now raised for a short distance, the rod J traveling in the vertical groove *e''* of the cam-block and the lever H remaining stationary. As the platform ascends, the bent end of the rod M raises the pivoted latch and the car-locking mechanism remains undisturbed. As the platform descends, the rod J opens the lowermost switch G and enters the groove F, and, upon the continued descent of the platform, turns the lever H upon its pivot and swings the supports outward to permit of the passage therethrough of the platform and at the same time swings the arm N out of the path of the arm M, and as the rod J travels up the groove *e* the supports C and the arm N are again swung inwardly into position for the next ascent of the platform.

Having described my invention, what I claim is—

The combination, with the elevator-frame, of the fixed cam-block carried by said platform and provided with a downwardly and outwardly inclined groove *e*, a downwardly and inwardly inclined groove *e'*, communicating with the groove *e*, a vertical groove *e''*, communicating with the groove *e'*, and a groove F, parallel with the groove *e'*, pivoted switches arranged between the groove F and the grooves *e e' e''*, opening in opposite directions and affording communication between said grooves, the pivoted lever H, provided with a projecting rod J, working in said grooves, and the hinged supports C, connected to and operated by said lever, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ISAAC CONRAD WELTER.

Witnesses:

MARTIN L. KURTZ,
ROBT. C. WALLACE.