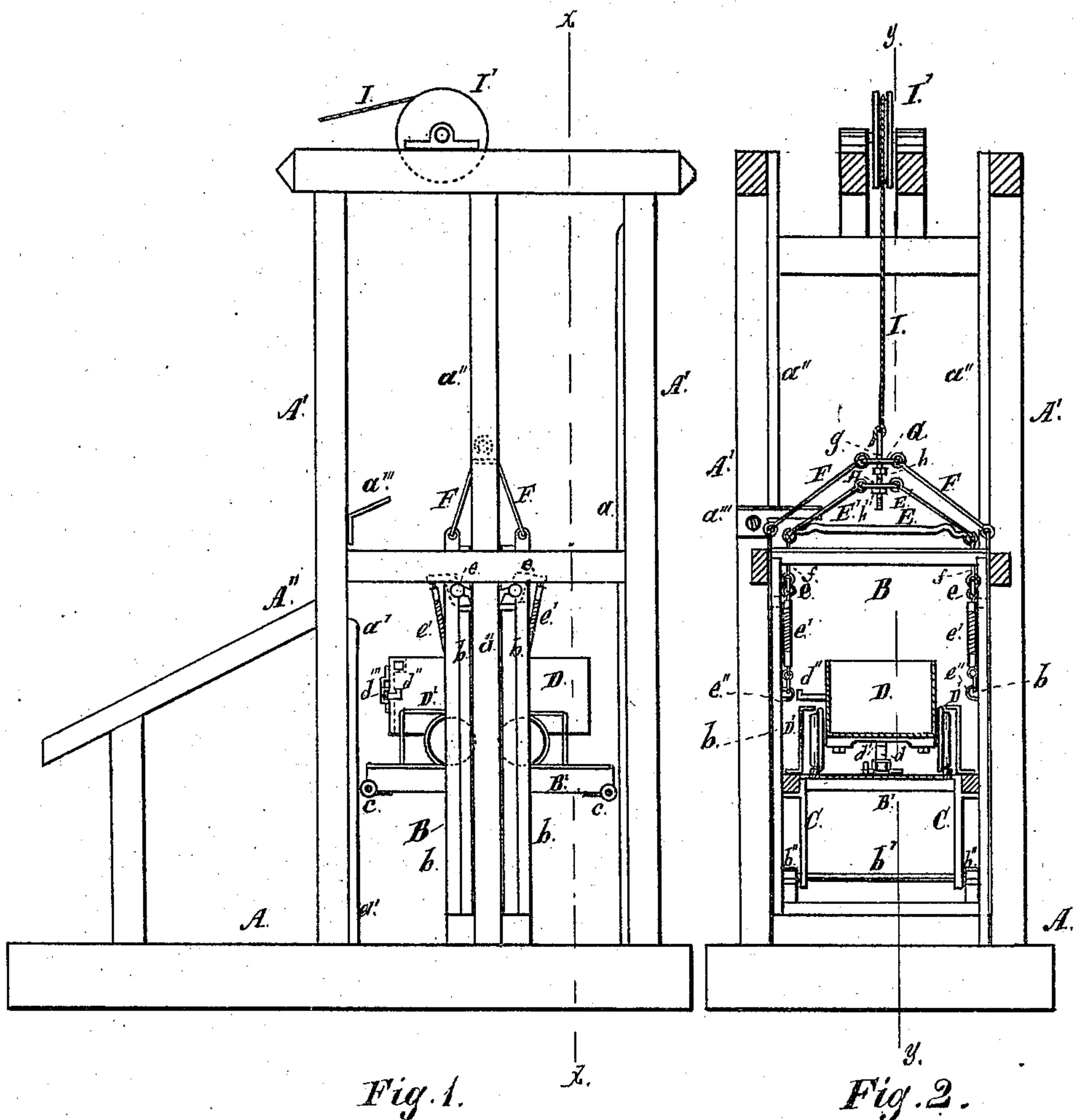


W. S. CHERRY.

HOISTING AND DUMPING APPARATUS.

No. 176,738.

Patented May 2, 1876.



Witnesses:

Heinrich F. Bruns.
L. A. Bunting

William S. Cherry,
Inventor.

By Coburn & Thacher
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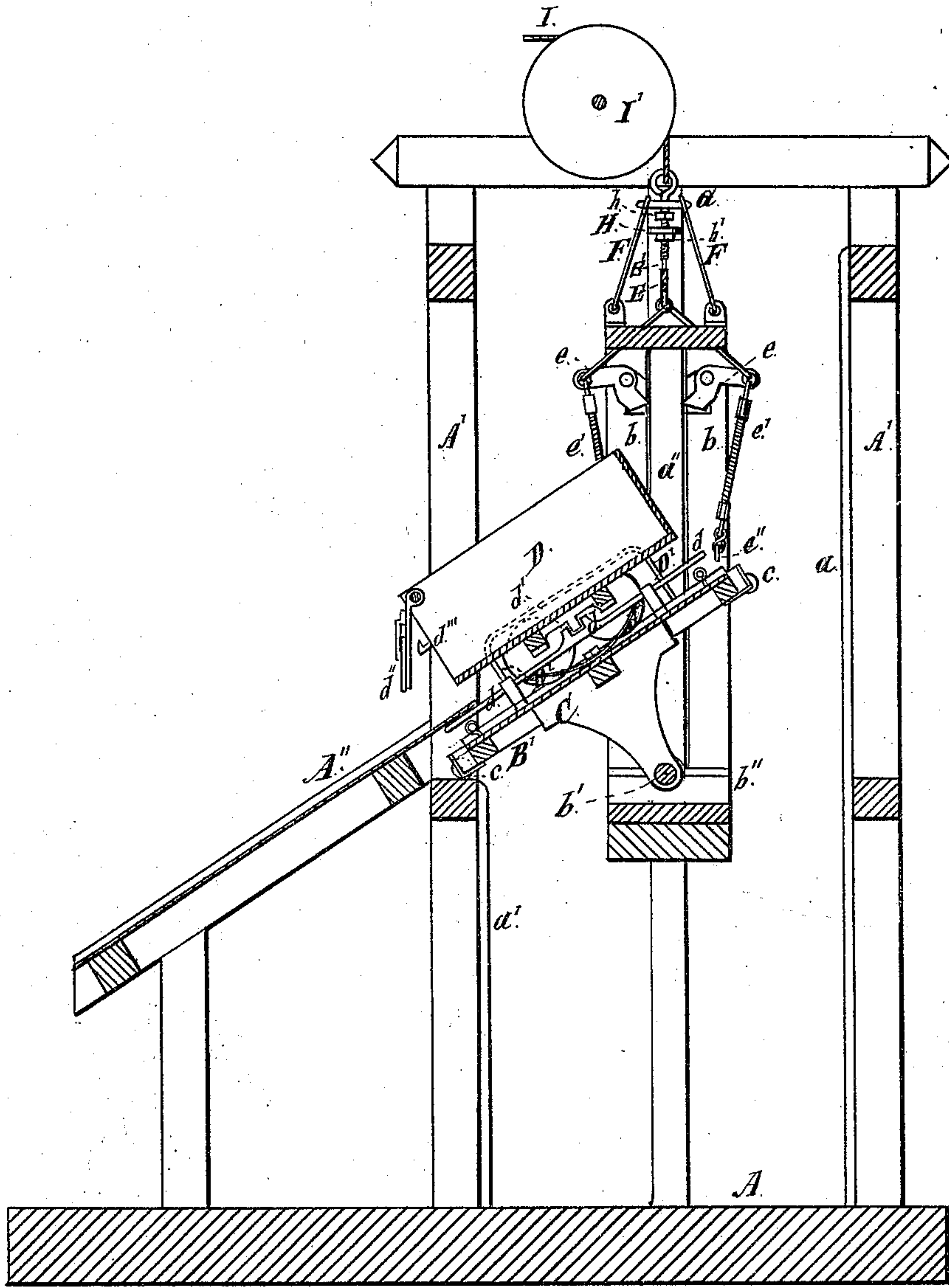


Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM S. CHERRY, OF STREATOR, ILLINOIS.

IMPROVEMENT IN HOISTING AND DUMPING APPARATUS.

Specification forming part of Letters Patent No. 176,738, dated May 2, 1876; application filed December 2, 1875.

To all whom it may concern:

Be it known that I, WILLIAM S. CHERRY, of Streator, in the county of La Salle and State of Illinois, have invented a new and useful Improvement in Hoisting and Dumping Apparatus, which is fully described in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a side elevation of my machine; Fig. 2, a sectional view, taken on the line *x x*, Fig. 1, looking from the rear of the apparatus; and Fig. 3, a cross-section of the machine, taken on the line *y y*, Fig. 2, with the rear portion of the apparatus restored.

My invention is intended for use at coal-mines and elsewhere, for the purpose of hoisting coal-cars, and dumping their contents with ease and safety.

The invention consists, first, in the method of supporting and guiding the tilting platform on which the car is placed; second, in a guard extending over the wheels of the car to prevent its rising; third, in devices for opening the door of the car automatically; and, fourth, in certain devices by which the cage is supported and attached to the hoisting-rope, whereby safety is secured in case of accident.

In the drawings, A and A' represent the base and upright portion of the frame, which is necessary to support and guide the hoisting apparatus. Within this frame, and at the corners thereof, are secured, in any suitable manner, guide-strips *a a* and *a' a'*, the latter being shorter than the former, and terminating just below the upper end of the chute A". B is the hoisting-cage, the side piece *b b* of which embraces the guide-strips *a' a'*, which are located about midway of the main frame, to which they are properly secured. A platform, B', is supported on a rock-shaft, *b'*, which extends across the lower end of the cage, and has bearings resting upon blocks *b'' b''*. The platform is raised considerably above the shaft by means of plates C C, to which it is secured, and by which it is supported on the shaft *b'*. At the four corners of the platform are attached small rollers *c c*, which bear against the guide-pieces *a a* and *a' a'*, to serve as guides and relieve friction when the cage

is raised and lowered. Upon the platform is placed a suitable track for the reception of the car D, and also a spring-catch, *d*, a notch in which engages with a projection, *d'*, on the bottom of the car, and thus holds the latter from moving back and forth on the platform. Guards D' D' are provided on each side of the platform, which extend upward as high as the car-wheels, and are then turned inward and extended over the wheels, so as to prevent the raising of the car when the platform is tilted. The front end or door of the car is secured by a bar, *d''*, which is pivoted thereto, and the ends of which are secured by notched keepers *d'''* attached to each side of the car. At one side the bar *d''* projects considerably beyond the car, so that it will engage with the inclined plate *a'''*, which is attached to one of the corner posts A' in such a position that it will release the catch as the car is tilted to discharge its load. To each of the side pieces *b* of the cage B is pivoted, upon the inside thereof, a dog, *e*, the lower ends of which are provided with a projection extending outward through slots in the pieces *b*, so as to bite against the guide-piece *a'' a''* on each side thereof, the ends of the dogs being beveled, so as to present a sharp edge for this purpose. To the outer ends of these dogs are attached springs *e'* of any suitable construction, the lower ends of which are fastened to staples *e''* in the side pieces of the cage *b b*. Rods *f* are also attached to the outer ends of these dogs, which are carried upward through the top of the cage, and are inclined toward each other, their upper ends being brought together about midway of the cage, and attached to the ends of a bar, E, as seen in Fig. 2.

To the four upper corners of the cage are attached rods F, which are carried upward and inward, and hooked to a disk, G, over the center of the cage. To the ends of the bar E are attached rods E', which are inclined upward and inward, and are fastened to a disk, H, just below the disk G. These disks have holes, through which the rod *g* passes, and this rod has a screw-thread cut upon it, and is provided with threaded nuts *h h'*, one of which is located below each of the disks G and H. To

the upper end of the rod *g* the hoisting-rope *I* is attached, which passes over a pulley, *I'*, at the top of the main frame.

The operation of my machine is as follows, viz: The center of the car, when the latter is driven upon the platform, is carried a little forward of the shaft *b'*, so that the center of gravity of the platform and car will be outside of the shaft. The guide-pieces *a a*, against which the friction-rollers on the platform bear, prevent the latter from tilting; but when the rollers on the front end of the platform have reached the upper ends of the short guide-pieces *a'*, there is no longer anything to prevent the tilting of the platform with its load, and the center of gravity being forward of the shaft, the platform is tilted, as seen in Fig. 3, and the door having been released by the action of the inclined plate *a'''* upon the bar *d''* the coal is discharged upon the chute. When the springs *e'* act with their full force upon the dogs *e*, they cause the latter to bite so sharply against the guide-pieces *a''* as to hold the cage firmly in position wherever it may be, and even heavily loaded; but the disks *G* and *H* are so adjusted relatively to each other by means of the screw-nuts *h* that, when the cage is being elevated by the rope *I*, the pull upon the disk *H* is just sufficient to release the dogs from the posts *a''*, this result being accomplished by means of the rods *E'* and *f*, which form a direct connection between the disk *H* and the dogs. If, however, an accident occurs, such as the breaking of the hoisting-rope, the strain upon the disk *H* being suddenly relieved, the springs *e'* bring the dogs into action instantaneously, and the cage is stopped and securely held from descending.

It will thus be seen that my invention is not only a hoisting and dumping apparatus, but also a safety-cage.

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

1. The combination of the tilting platform *B'*, elevated above its pivotal support, and the short guideways *a'*, substantially as and for the purposes set forth.
2. The combination, substantially as described, of the platform *B'*, rock-shaft *b'*, and guides *a a'*, for the purposes set forth.
3. The guards *D'*, extending above and over the wheels of the car, substantially as and for the purpose set forth.
4. The combination of the latch-bar *d''* and inclined plate or stop *a'''*, substantially as and for the purpose set forth.
5. The combination of the dogs *e*, pivoted to the sides of the cage, the guide-posts *a''*, and the springs *e'*, constructed and operating substantially as and for the purposes set forth.
6. The combination, substantially as described, of the dogs *e*, springs *e'*, rods *E' f*, and hoisting-rope *I*, for the purpose set forth.
7. In a hoisting apparatus, the combination, substantially as described, of an elevating device and a safety attachment, the latter being adjustably connected to the former, for the purpose set forth.
8. The combination, substantially as described, of the dogs *e*, rods *f* and *E'*, adjustable disk *H*, and draft-rod *g*, provided with screw-nut *h'*, for the purposes set forth.
9. The combination, substantially as described, of the rods *F*, attached to the cage, rods *E'* and *f*, attached to the dogs *e*, disks *G* and *H*, and draft-rod *g*, provided with screw-nuts *h h'*, for the purposes set forth.

WILLIAM S. CHERRY.

In presence of—

R. D. FLETCHER,
FRANCIS MURPHY.