

(No Model.)

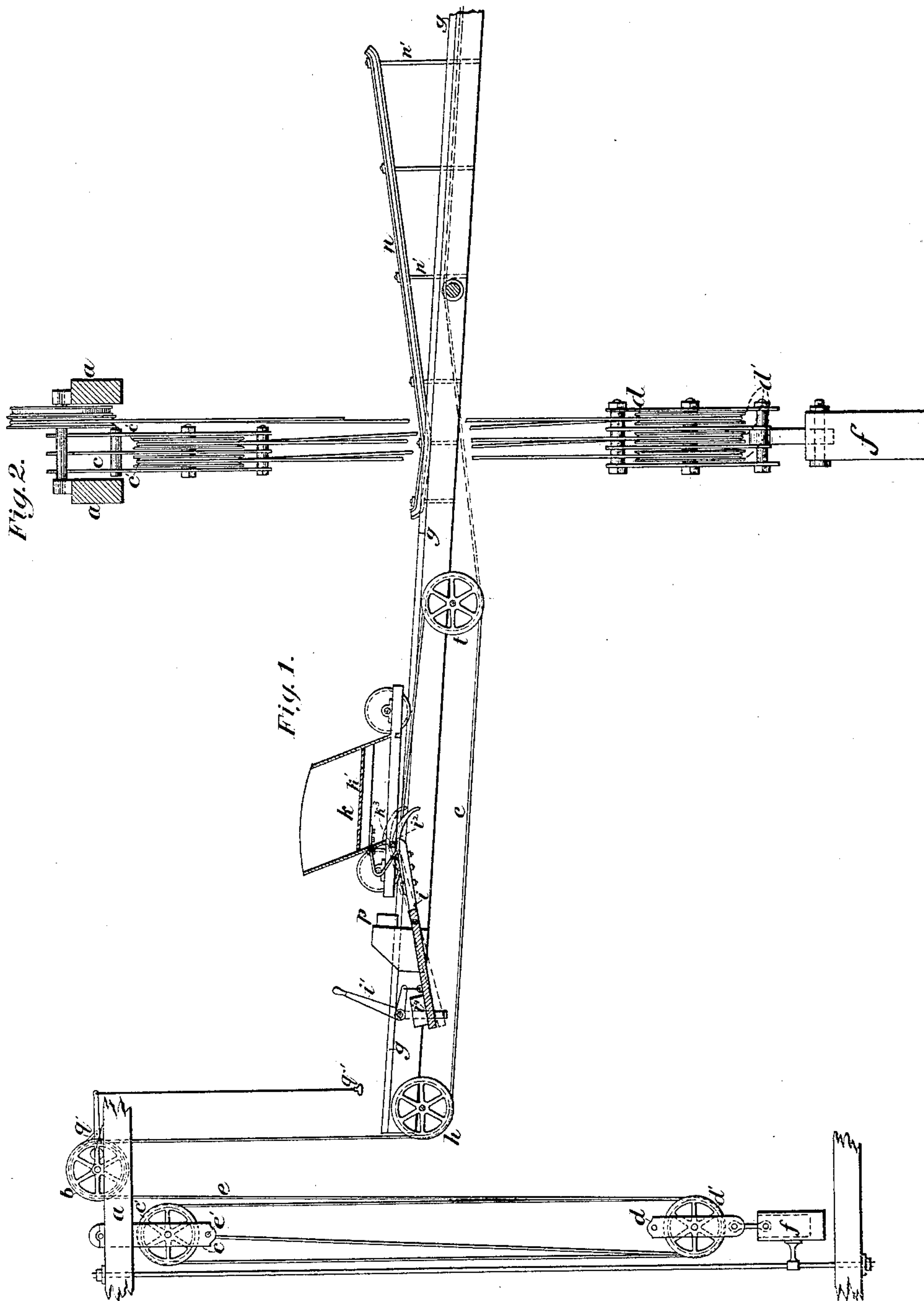
2 Sheets—Sheet 1.

T. McCARTY, G. E. TENER & J. McAFEE.

COAL AND ORE SHIFT.

No. 318,488.

Patented May 26, 1885.



Witnesses.

H. B. Corwin
John H. Smith

Inventor.

Thomas M. Carty
James McAfee
George E. Tener
by their attys
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Fig. 4.

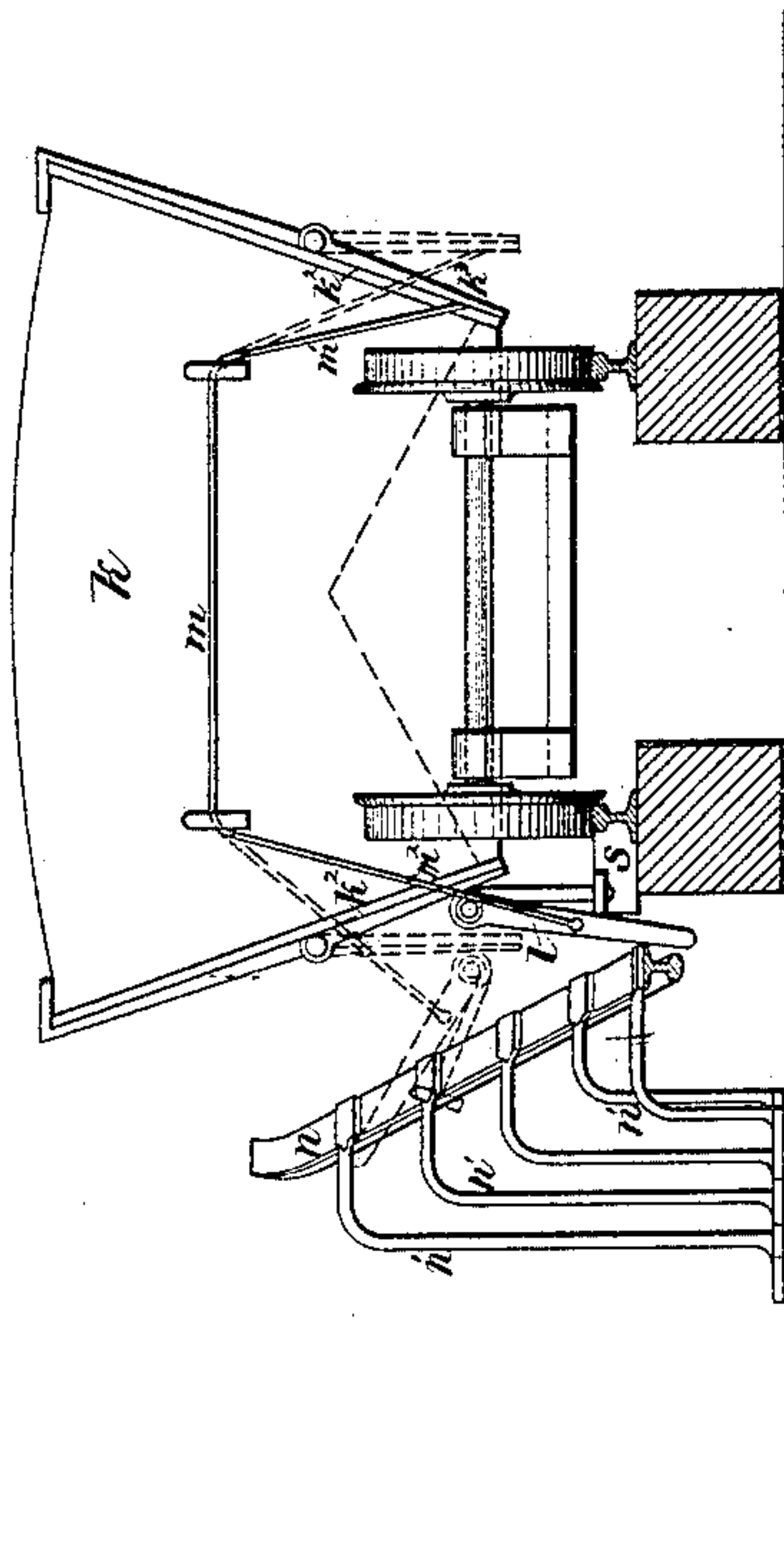
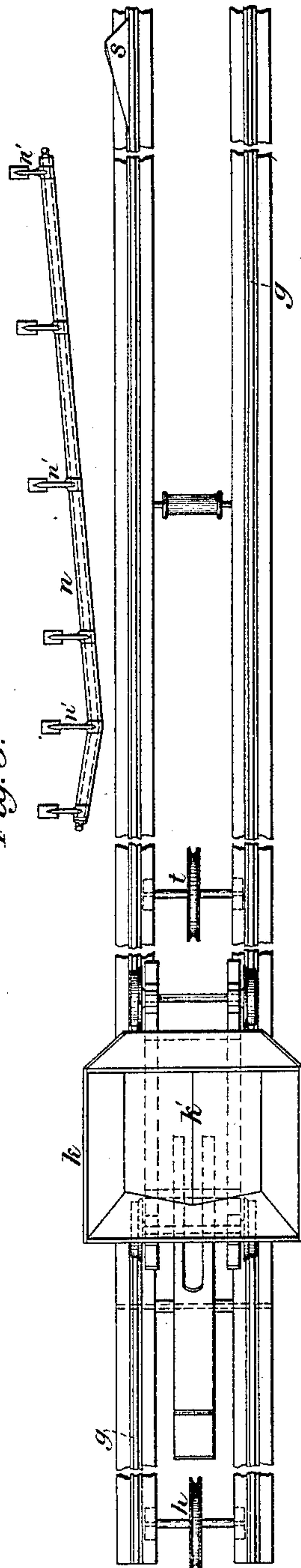


Fig. 5.



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UNITED STATES PATENT OFFICE.

THOMAS McCARTY, GEORGE E. TENER, AND JAMES McAFEE, OF PITTSBURG, PENNSYLVANIA.

COAL AND ORE SHIFT.

SPECIFICATION forming part of Letters Patent No. 318,488, dated May 26, 1885.

Application filed March 27, 1885. (No model.)

To all whom it may concern:

Be it known that we, THOMAS McCARTY, GEORGE E. TENER, and JAMES McAFEE, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Coal and Ore Shifts; and we do hereby declare the following to be a full, clear, and exact description thereof.

Various devices have heretofore been used in transferring and distributing cargoes of vessels and railroad-cars and for loading the same. These devices are extensively used in connection with ore-banks, coal-yards, mills, and other places where ore and coal have to be moved and distributed to various points. Among the constructions for this purpose has been an inclined track extending from the raising-tower or elevator and provided with a car, which received its load at the tower, and then ran down the incline to the various tracks leading to the points of discharge. In this apparatus the loaded car on its descent gripped a suspended weight, which was so proportioned to the load and momentum as to overcome the latter and stop the car at the proper point of discharge, and heavy enough to draw back the empty car up the incline and project it toward the loading-point at the head of the same. It was found in practice, however, that while under the best conditions the apparatus would work as described, yet it was open to grave disadvantages and other conditions which militated against its efficiency and usefulness. For instance, when a wind was blowing against its ascent, the car would not reach the top of the incline, and the attendants would have to meet it and draw it up. If the wind was in the opposite direction, the car acquired too much momentum, and frequently broke the rope connected with the weight. This also occurred when there was an excessive load on the car, and sometimes when the car had its proper load. Any variations in the weight of the car, which were very apt to occur, affected the operation of the apparatus.

Our improvement is designed to overcome the defects of this and other appliances known to us for this purpose; and to enable others skilled in the art to make and use it, we will now describe it by reference to the accompa-

nying two sheets of drawings, where it is shown as applied to a coal-shift, and in which—

Figure 1 is an elevation. Fig. 2 is an edge view of the block-and-tackle appliances. Fig. 3 is a plan. Fig. 4 is a section at $x x$, looking in the direction of the arrow when the car is on that part of the track.

Like letters of reference indicate like parts.

Situate in the elevator-tower, by which the coal is raised from the cars or boats, is a horizontal frame, a , upon which is journaled a sheave, b , and suspended therefrom is a block and tackle, which, if desired, may be differential, in the present instance the upper block, c , being provided with two sheaves, c' , and the lower block, d , with three sheaves, d' . The rope e passes up over the sheave b , thence down to the first sheave d' , thence up and down over the other sheaves, and, finally, is fastened to the lower end of the block c at e' . Suspended from the lower block, d , is a weight, f .

Extending downward from the elevator-tower to the proper place or places of discharge is an inclined track, g , at the upper end of which is a sheave or pulley, h , around which the traction-rope passes from the sheave b .

At the upper end of the track g is a pivoted lever, i , provided with a handle, i' , and inclined stops i'' .

On the track g is a car, k , having a body hopper-shaped in cross section, a double-inclined bottom, k' , the inclines meeting at an apex in the center and extending down to the lower edges of the sides, and hinged doors k'' at the sides. Pivoted to one side is a lever, l , and pivoted to the end is a bent rod, m , one end, m' , of which bears against a flange, k^3 , on the edge of one of the doors k'' , and the other end, m^2 , of which is pivoted to the lever l beyond the point at which the latter is attached to the door k'' . When the lever l is thrown inward, so that the pivotal point of the arm m^2 is inside of the pivotal point of the lever l , the doors k'' of the car will be tightly closed against the sides, and when the lever l is thrown outward beyond its pivotal point the rod m is turned on its axis, so as to cause the doors k'' to be thrown open. This movement is effected automatically to open the car at the place of discharge by means of a wedge-shaped incline, s , Fig. 3, secured to the side of the track in

the path of the lever l when in a closed position. The end of the lever l strikes the incline as the car descends, and is thereby thrown outward beyond its pivotal point, and thus opens the doors k^2 .

The doors are closed as the car nears the head of the incline in the following manner: A rail, n , is secured on standards n' at the side of the track, so as to be inclined both horizontally and to the line of the track, as indicated in Figs. 1 and 3. When the car k is ascending, the doors k^2 being open and the lever l consequently projecting outward from the side, the end of the lever will encounter the higher end of the rail n , which is curved upward to insure proper engagement with the lever, and as the car ascends the track against the descending angle of the rail n the lever will be turned downward, and by reason of the converging of the rail n toward the side of the track it will be forced inward until its lower end passes a plane bisecting its center and the pivotal point of the arm m^2 , as indicated in Fig. 4. The sides of the car are then closed, and will remain so until thrown over the center by the trip device s at the lower end or discharging-point of the incline. When the lever l is thrown past the center, the weight of the load forces the doors k^2 open and permits of a free discharge. The car k is attached to the draft-rope e , which then runs from the tackle around the sheave h , and then under the sheave t , situate below the lever i . The weight f is sufficient to draw the empty car back to a loading position, as indicated in Fig. 1. It acquires considerable momentum in ascending, which momentum is sufficient when the car reaches the sheave t to cause it to pass the same and attain the leading position shown in Fig. 1, where it is caught by the stops i^2 , as hereinafter described, the car after passing the sheave t dragging on the rope e and checking the descent of the weight f . The position of the sheave t is regulated to cause the momentum of the car to act against that of the falling weight f , so as to bring the former to rest at about the proper position for loading. This construction enables us to check the weight and car gradually without jar or strain, and reduces the wear and tear of the apparatus. On the bottom of the car is a cross-bar, k^3 , or suitable projections to engage the stops i^2 . The stops i^2 project above the surface of the rails of the track g , so that they will encounter the bar k^3 , and when the latter passes over they will spring up back of said bar, preventing its descent. These stops are held in position by the weight i^4 until, by the operation of the lever i , they are thrown down below the truck or frame of the car to permit it to be started on its descent. It is apparent that the same end may be accomplished by other obvious means, so that, while we prefer them, we do not limit ourselves to the use of the pivoted lever i , handle i' , and weight i^4 for operating the stops i^2 . At a suitable

point back of the stops i^2 is a spring-buffer, p , which is designed to prevent the car from going up too far.

In order to guard against accident and effect the exact regulation of the movement of the car, when necessary, we have provided a brake, q , having a cord and handle, q' , extending down within reach of the operator, which brake consists of the friction-band q , and can be used to check the movement of the car at any time.

Practical experience with the use of our apparatus has demonstrated that it is open to none of the objections mentioned with regard to the former appliances used by us. The tension on the draft-rope e is preserved at all times. The car can be brought to the top of the incline, whatever may be the conditions of weather or weight of the load.

The apparatus is automatic in many respects. It reduces the number of attendants and the labor of operating such appliances to a minimum, such labor being usually limited to the manipulation of the hinged platform a and the management of the brake. It is rapid, efficient, and positive in its operation, simple in its construction, and not liable to get out of order. If desired, the draft-rope may extend directly from the car to the sheave h .

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a coal and ore shift, the combination of an inclined track, a block and tackle provided with a falling weight, a traction-rope connected with and operated by the block and tackle, and a car mounted on the track and connected to the traction-rope, substantially as and for the purposes described.

2. In a coal and ore shift, the combination of an inclined track, a car, a traction-rope, a falling weight connected to the traction-rope to raise the car, and a sheave beneath which the rope passes, placed below the upper stopping-place of the car, substantially as and for the purposes described.

3. In a coal and ore shift, the combination of a car having doors at the sides, a pivoted lever connected to the doors, the end of which is capable of turning inward past its pivotal point to lock the doors shut and outward beyond such point to release them, an inclined and converging rail arranged alongside of the track in the path of the lever to effect such inward motion, and a tripping device arranged at the side of the track at the discharging-point in the path of the lever, to effect the outward or releasing motion, substantially as and for the purposes described.

In testimony whereof we have hereunto set our hands this 21st day of March, A. D. 1885.

THOMAS McCARTY.
GEORGE E. TENER.
JAMES McAFEE.

Witnesses:

THOMAS B. KERR,
W. A. SCHMIDT.