(No Model.) 2 Sheets—Sheet 1.

C. A. MORRIS.

ELEVATING AND DISCHARGING APPARATUS.

No. 395,502. Patented Jan. 1, 1889.

Fig. 1.

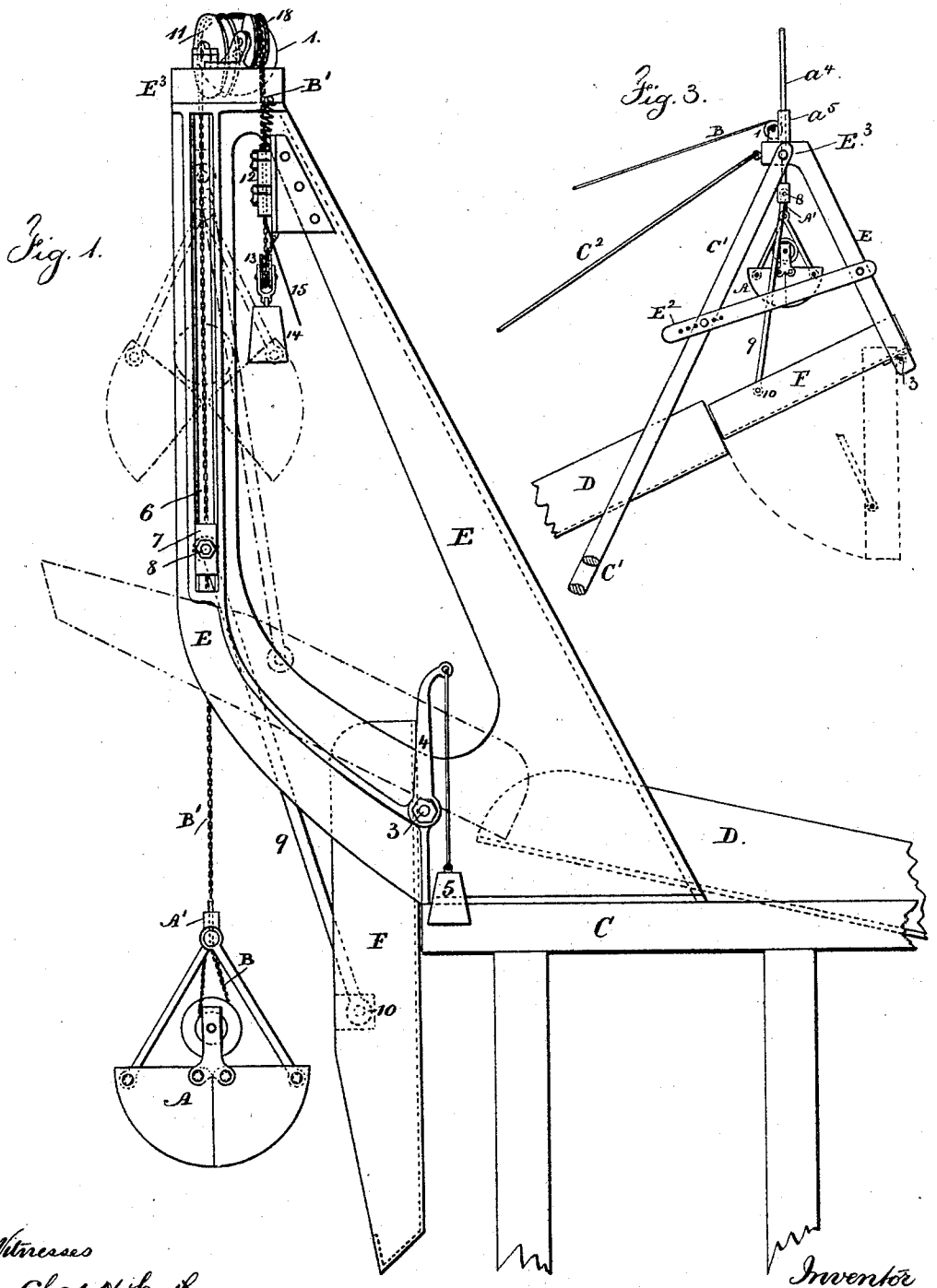

Fig. 3.

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(No Model.) 2 Sheets—Sheet 2.

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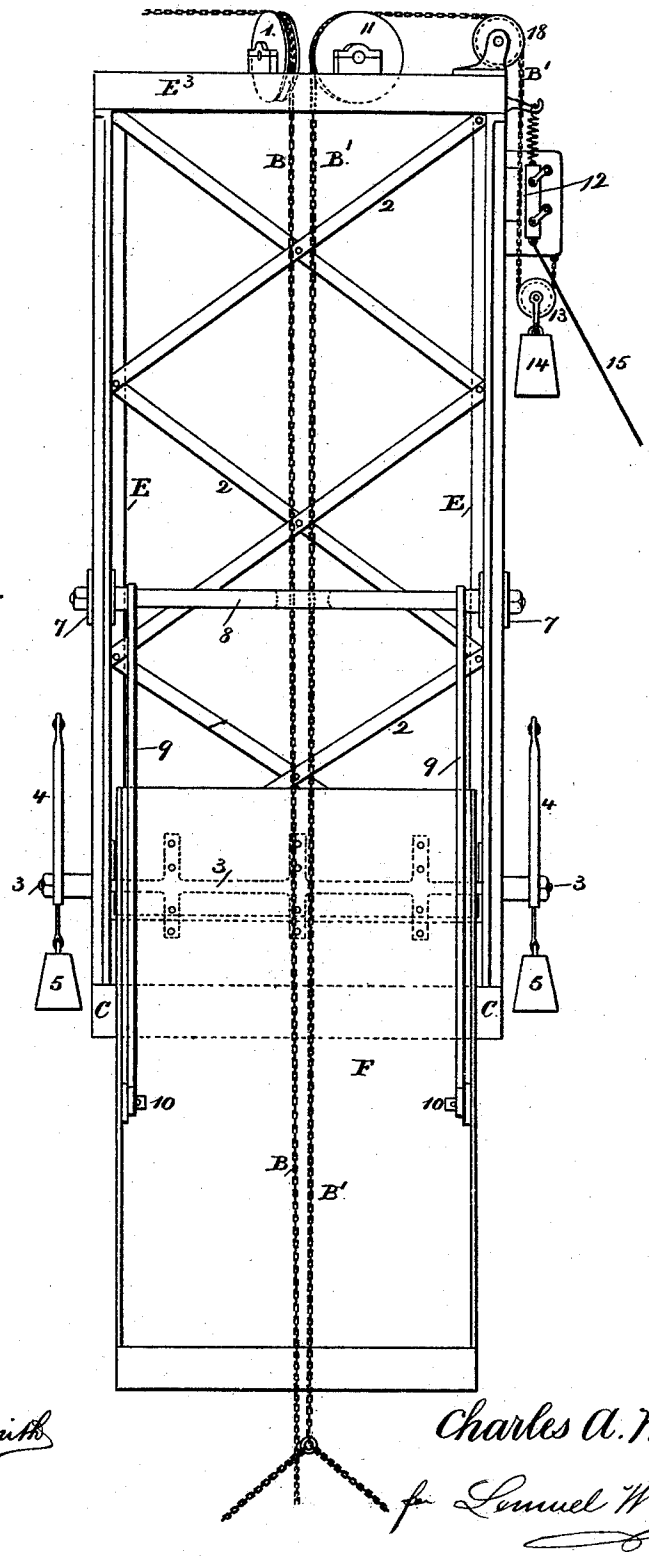
Fig. 2.



Witnesses,
Chas. H. Smith
J. Stahl

Inventor
Charles A. Morris.
per Samuel W. Serrell
Atty.

UNITED STATES PATENT OFFICE.

CHARLES A. MORRIS, OF BLOOMFIELD, NEW JERSEY.

ELEVATING AND DISCHARGING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 395,502, dated January 1, 1889.

Application filed August 17, 1886. Renewed June 1, 1887. Again renewed July 11, 1888. Serial No. 279,673. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. MORRIS, of Bloomfield, in the county of Essex and State of New Jersey, have invented an Improvement in Apparatus for Elevating and Discharging Coal or other Materials, of which the following is a specification.

Elevating-buckets have been made use of for hoisting and delivering coal and other materials; but usually such buckets have to be swung around or moved along laterally after they have been hoisted so as to come above the chute or other receptacle into which the material is to be discharged.

In my present improvements I make use of a swinging chute which is drawn up beneath the hoisting-bucket by the same devices that are made use of to hoist the bucket, and this chute is held in position while the bucket is opened and discharged, and then said chute swings down again out of the way as the empty bucket descends.

In the drawings, Figure 1 is a side elevation of the bucket, chute, and the frame supporting the parts. Fig. 2 is a front elevation of the same. Fig. 3 represents, in smaller size, a modification in the position of the fulcrum of the swinging chute.

The bucket A is made in two parts, that swing open for discharging the contents and are drawn together for inclosing the coal or other material to be elevated. This bucket may be of the form shown in Letters Patent No. 5,966. Any other suitable form may be made use of, the same being known as the "clam-shell" bucket. The hoist-rope B for this bucket passes over the pulley 1 to any suitable drum and hoisting-engine.

The frame C is usually of wood and of a sufficient height to allow the coal or other material as it is discharged into the inclined chute D to run down into the bin, cart, or other receptacle for the same; and upon this frame C is the bracket-frame E, preferably made of iron, and having braces 2 for strengthening and supporting the same, and the pulley 1 is at the top of this bracket-frame E.

The swinging chute F is preferably of sheet-iron, and it is pivoted at the cross-shaft 3 to the bracket-frame E. The position of this cross-shaft 3 is such that when the chute F hangs down vertically beneath the said cross-shaft it will be entirely out of the way of the bucket A as the same is raised or lowered, and when said chute F is swung up it will occupy an inclined position above and as a continuation of the inclined chute D.

There are lever-arms 4 extending out from the shaft 3 and in line with the bottom of the shorter end of the chute F, and to these arms 4 weights 5 are hung, that partially counterpoise the chute F and cause it to swing easily.

In the vertical portions of the bracket E there are slots 6, that receive slide-blocks 7 at the end portion of the yoke 8, and from this yoke 8 links 9 pass down to pivots 10 on the sides of the swinging chute F.

The hoist-rope B of the bucket A passes freely through a central opening in this yoke 8, and when the bucket is being drawn up the top portion thereof comes up against the under side of the yoke 8 and lifts the same bodily, and by the links 9 the chute F is swung up beneath the hoisting-bucket, and the end of such chute extends out sufficiently far to catch the coal or other material dropped from the bucket as said bucket is opened or discharged, and the inclination of the chute F is sufficiently steep for such material to run down rapidly and be discharged into the inclined chute D.

In clam-shell buckets the discharge is usually effected by lowering upon the hoisting-rope or by drawing upon a second rope. If a second rope is made use of leading to a hoisting-drum, then the bucket may be opened in the ordinary manner; but in consequence of making use of the swinging chute to come up beneath the hoisting-bucket I am able to simplify the hoisting devices in the manner next described.

A second rope or chain, B′, passes up from the cross-piece A′ of the bucket A, through the opening in the yoke 8, over the pulleys 11 and 18, down through a clamp, 12, beneath a pulley, 13, having a weight, 14, and passes up, and the end of the rope or chain B′ is fastened upon the frame E. This clamp 12 is preferably opened by a spring and closed by a rope, 15, leading to the engineer or attendant.

It will be apparent that the weight 14 only falls half the distance that the bucket is drawn up, in consequence of the use of the

pulley 13; but if this pulley 13 was dispensed with the weight 14 might be attached to the end of the rope B′. Under any circumstances this weight 14 is only sufficient to keep the bucket open while it descends, and as soon as the hoisting-rope B is drawn upon it closes the bucket and grasps the coal or other material and hoists the same. As the bucket is drawn up, the weight 14 takes up the slack of the rope B′, and when said bucket A has drawn up beneath it the chute F, as aforesaid, the attendant, by the clamp 12, grasps the rope B′ and lowers upon the rope, opening the bucket and discharging the contents. During this operation the rope B′ and clamp 12 sustain a portion of the weight of the bucket and the weight of the swinging chute.

If desired, the weight 14 may only be sufficient to take up the slack of the rope B′, and the bucket may be lowered in a closed condition after having discharged its contents. In this case the bucket will be open by grasping the rope B′ by the clamp 12 shortly before the bucket reaches the coal or other material to be grasped and elevated. When the fulcrum 3 of the swinging chute is located at the outer end of such chute F, as seen in Fig. 3, the chute will have to be swung a less distance than when located as in Fig. 1. The frame E can then be connected to the upper ends of poles or shears C′, sustained by guys C^2, and the frame E is held in the proper position relatively to the shears by the braces E^2, thus rendering the apparatus portable. The yoke 8 can be guided by rods a^4, that slide through tubular sleeves a^5 in the head-block E^3, the parts remaining unchanged and the swinging end of the chute F being raised sufficiently high for the coal or other material to slide off upon the stationary chute D.

I claim as my invention—

1. The combination, with an elevating-bucket having sections that swing in opening and closing and a rope or chain for hoisting the same, of a swinging chute, a yoke and links for drawing the chute up beneath the bucket, and a second rope or chain whereby the contents of the bucket are discharged into such swinging chute, substantially as specified.

2. The frames E, in combination with the swinging chute F, the cross-shaft for supporting the same, the yoke 8, guided at its ends in the frame E, the links 9, extending from the yoke to the chute, and the hoisting-rope and bucket having sections that swing in opening and closing for elevating the coal or other material, one rope or chain for closing and hoisting the bucket, and means for holding up the cross-head and parts as the rope is lowered to open the bucket, substantially as specified.

3. The combination, with the elevating-bucket and its hoisting-rope, of a second or discharge rope, a pulley over which the same passes, a weight to take up the slack of the rope, and a clamp for holding the said rope and bucket while the hoisting-rope is slackened for opening the bucket, substantially as set forth.

4. The combination, with the hoisting-bucket having sections that swing in opening and closing and the rope or chain for the same, of a hoisting-pulley over which the rope or chain passes, a frame for supporting such pulley, a chute pivoted upon the frame, and connecting-links for swinging the chute up beneath the hoisting-bucket, and a weight to partially counterpoise the chute, and a stationary chute for receiving the materials from the swinging chute, and mechanism for sustaining the chute and other parts while the bucket is lowered and the sections swung open, substantially as set forth.

Signed by me this 1st day of June, A. D. 1886.

C. A. MORRIS.

Witnesses:
GEO. T. PINCKNEY,
WILLIAM G. MOTT.