(No Model.) 2 Sheets—Sheet 1.

C. W. BALL & T. DAVIS.

HAY STACKER.

No. 265,560. Patented Oct. 10, 1882.

Fig. 2.

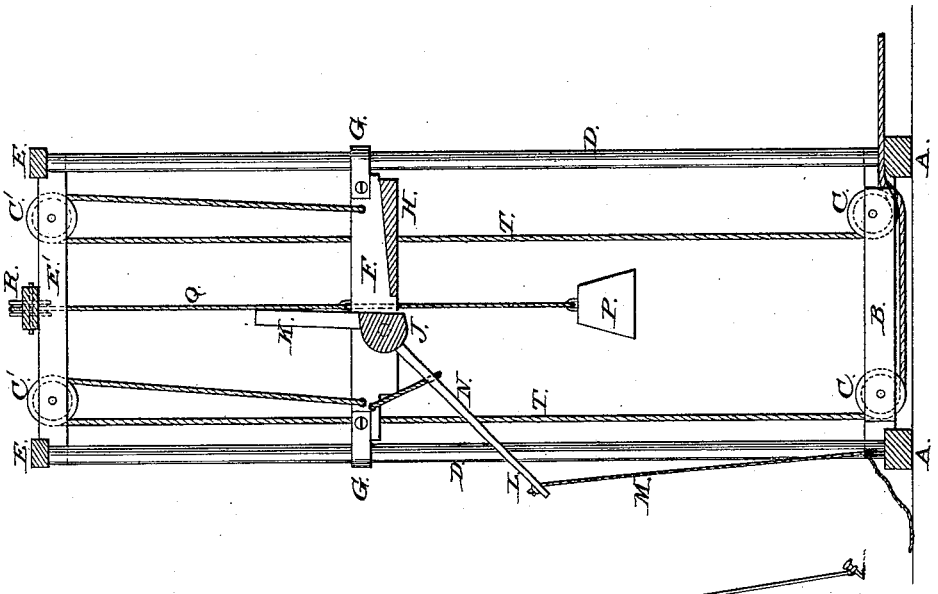
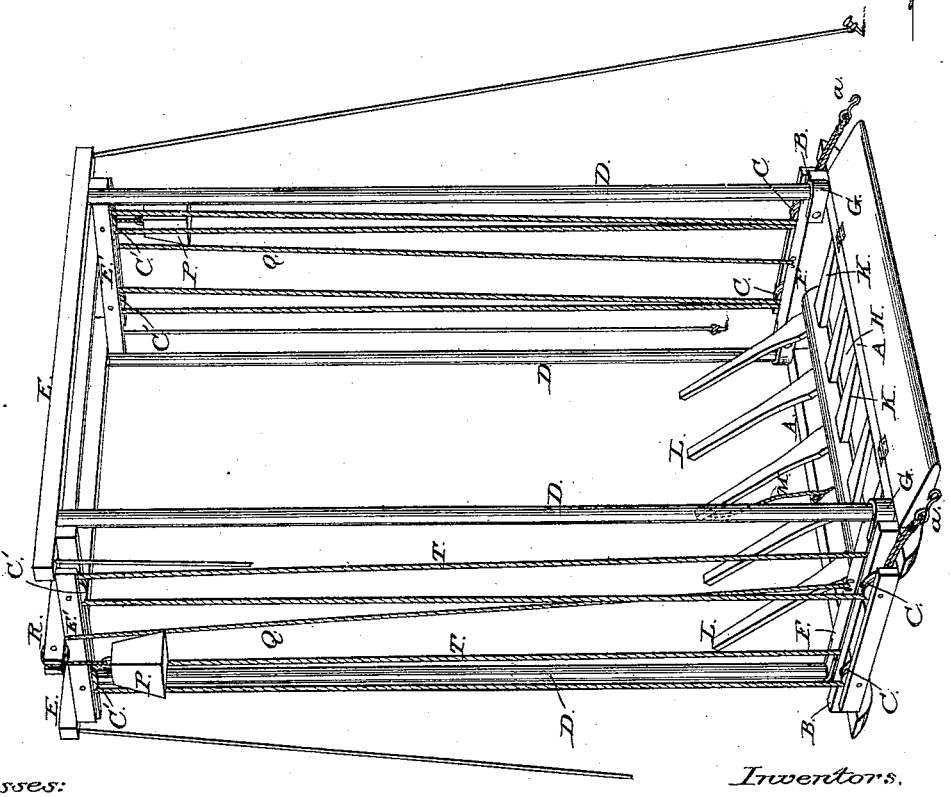


Fig 1.



Witnesses:

John A. Ellis.

C. F. Lamont.

Inventors.

Charles W. Ball

Thomas Davis

By David Arburr

Attorney.

(No Model.) 2 Sheets—Sheet 2.

C. W. BALL & T. DAVIS.

HAY STACKER.

No. 265,560. Patented Oct. 10, 1882.

Fig. 4.

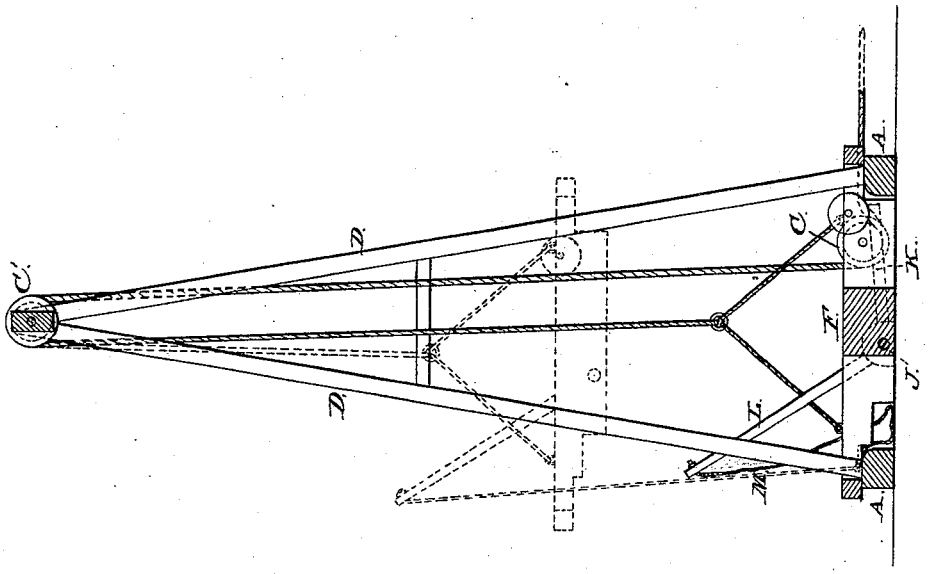
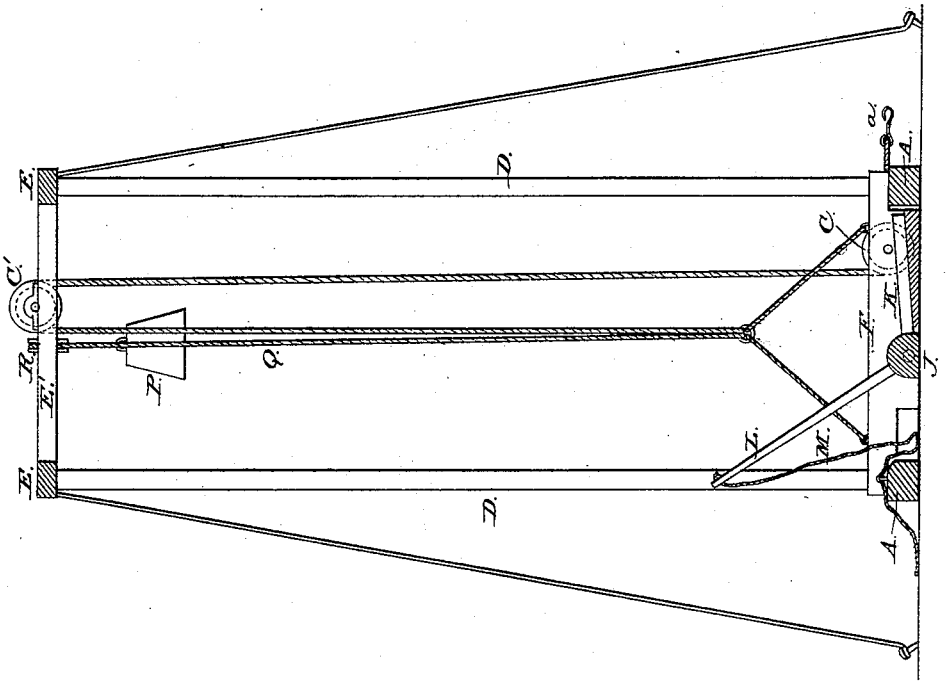


Fig. 3.



Witnesses:

John A. Ellis

C. F. La Mont

Inventors

Charles W. Ball

Thomas Davis

By David A. Burr

Attorney.

UNITED STATES PATENT OFFICE.

CHARLES W. BALL AND THOMAS DAVIS, OF MACON, ILLINOIS.

HAY-STACKER.

SPECIFICATION forming part of Letters Patent No. 265,560, dated October 10, 1882.

Application filed August 2, 1882. (No model.)

To all whom it may concern:

Be it known that we, CHAS. W. BALL and THOMAS DAVIS, both of Macon, in the county of Macon and State of Illinois, have invented new and useful Improvements in Hay-Stackers; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

Our invention relates to an apparatus for loading and stacking hay in the field, and has for its object the construction of a simple effective device by which the hay carried to the machine by a field-rake and delivered directly upon an elevator upon one side will be automatically dumped therefrom upon the other side at any desired height from the level of the ground up to the extreme top of a stack.

It consists of a frame of suitable height, constructed to be drawn over the field upon runners forming part of its base, and which is adapted to guide the vertical ascent and descent of a dumping-cradle formed of two sets of long teeth projecting at an angle with each other from the opposite sides of a rock-shaft, so journaled into the end pieces of a suitable carriage or elevator made to move up and down between the posts of the main frame as that the cradle may tilt thereon from one side to the other. The necessary movements of the cradle are produced by means of cords and pulleys, the whole being constructed and arranged as hereinafter more fully described.

In the accompanying drawings, Figure 1 is an elevation in perspective of our improved hay-stacker in one form thereof. Fig. 2 is a central vertical section of the machine in a plane transverse to the axis of the cradle. Figs. 3 and 4 are similar sections, illustrating modifications in the construction of the machine.

The foundation or bed-frame of the machine is constructed of longitudinal string-pieces A A, upon which are bolted at either end solid cross-timbers B B. The longitudinal beams A A are fashioned to serve as runners, upon which the machine may be drawn from place to place across the field. The ends of the cross-beams B B are slotted to receive pulleys C C, pivoted therein, as shown in Fig. 1. From the four corners of the solid bed-frame, at or near the ends of its cross-beams, spring upright posts D D, which by preference, in order to secure sufficient strength with comparative lightness, are made of iron tubing. These support at a proper elevation a top frame, E E′, constructed of longitudinal beams E and cross-pieces E′, corresponding substantially to those of the bed-frame beneath, although made lighter. The ends of the cross-pieces E′ E′ are fitted with pulleys C′ C′, corresponding to those in the bed-frame.

Between the upright posts D D movable cross-beams F F are fitted to traverse freely up and down thereon, their ends being confined to the posts to move readily thereon by means of straps G G or other suitable device. The two traversing beams are connected to form an elevator-platform by means of a heavy board or flat timber, H, (see cross-section thereof in Fig. 2,) which is placed at one end of the beams, so as to leave room for a central rock-shaft, J, which is journaled at each end in suitable bearings in the beams F F. This rock-shaft is armed upon one side with a series of flat radial bars, K K, adapted to rest upon the connecting-plate H of the platform, and upon the other with a counterpart series of long teeth or rods, L L, projecting radially at an angle of about one hundred and thirty degrees, more or less, with the radial bars K, the bars K and teeth L serving together to form a cradle for the reception of the hay to be elevated. The bars K are made so much heavier than the teeth L as to counterbalance them, and thus operate automatically to keep the latter in an elevated position, as shown in Fig. 1. The rock-shaft J, from which they project, permits the teeth to be tipped over toward the side of the elevator opposite to that upon which the load is received, and this is accomplished and the contents of the cradle automatically dumped by means of an adjustable cord, M, fastened at one end to one of the teeth and at the other to the side bar of the bottom frame, as shown in Fig. 2. The height at which the load shall be dumped is determined by the length of this cord, which is adjusted for the purpose as occasion requires.

To prevent the cradle from tipping over too far a slack rope, N, is led across from one side of the elevator-platform to the other under the teeth L, upon which they will rest when tipped, as illustrated in Fig. 2.

The platform carrying the cradle is elevated by means of cords T T, led from each end thereof over the pulleys C′ C′ on the top frame, and thence down under the pulleys C C in the bottom frame and out together upon the loading side of the machine, if the platform is to be elevated by the horses drawing the rake, or on the opposite side when one or more horses are used exclusively for working the platform.

To prevent a too rapid fall of the elevator and cradle after the load is dumped and the hoisting rope slackened, one or more counterbalance-weights, P P, may be employed. These weights are suspended by means of cords Q Q, which are led from each end of the platform over the pulleys upon the ends of a central longitudinal bar, R, secured on top of the frame-work.

The machine may be staked to the ground to steady it, and in case of heavy winds is braced by means of guy-ropes secured to pins driven in the ground.

An inclined apron may be hinged to the loading side of the lower frame to carry the rake-teeth up to the level of the cradle.

In operation the hay is brought to the stacker with a long field-rake drawn by two horses, one at each end. The rake is drawn to the side of the stacker and the teeth run up the incline V in between the posts, while the horses pass along the ends. When the rake is on the horses are turned about, ready to pull the rake back. The rake is then dumped into the cradle, and the ends *a a* of the hoisting-ropes T T are fastened to the rake, so that as the horses move off they will pull upon the hoisting-ropes, and thus carry up the elevator. As the elevator approaches the proper height for a discharge of its load the rope M, previously adjusted for the purpose, draws upon the teeth L of the cradle, causing it to tip over, as shown in Fig. 2, so that its load will slide off therefrom. The hoisting-ropes T T are then detached from the rake, and the elevator will descend to its lower level, the weight of the bars K K serving to tip the cradle back to its first position.

When the elevator-platform is to be drawn up by a horse constantly hitched to the hoisting-ropes for this purpose alone the ropes are led out on the side opposite to that upon which the rake is dumped, and in this case the counterbalance-weights will not be needed, as the descent of the elevator will be regulated by the backing of the horse.

Instead of carrying the hoisting-ropes from the four corners of the elevator over four pulleys on the top frame, as shown in Fig. 1, the ropes may be brought together at each end centrally from the corners and carried over a single central pulley upon the end of the top frame, as shown in Fig. 3.

In the modification of our invention illustrated in Fig. 4 the posts at each end are inclined toward each other, so that their upper ends shall meet, as shown in the drawings. These upper ends are connected by a single longitudinal top bar or beam, upon which are secured the pulleys carrying the hoisting-ropes. The end beams of the elevator-platform are slotted longitudinally, (see Fig. 4,) to permit them to move up between the posts, and by placing a friction-roller to bear against the inner side of the upright on the loading side of the platform, the platform, as it rises, may be thrown out toward the stack or wagon upon which the hay is to be dumped, as is shown by the dotted lines, Fig. 4.

The ability to unload at any height is an important feature in our stacker, as it permits its use in windy weather, and enables the hay to be deposited evenly and systematically just as and where required.

Not only the upright posts, but also the principal parts of the frame, may, if preferred, be made of iron, and may also be jointed to fold into a close compact form for transportation. When found desirable, the bottom frame may be mounted on wheels instead of runners, although the sled-bottom is found practically efficient and is less expensive.

We claim as our invention—

1. The combination, with a movable upright guiding and supporting frame, and with an elevator adapted to traverse vertically up and down between the posts of said frame, of a rock-shaft, J, carried by said elevator and fitted with two sets of radial teeth, K L, projecting therefrom at an angle with each other more or less obtuse, to form a tilting cradle which shall receive the hay on one side and deliver it automatically on the other, substantially in the manner and for the purpose herein set forth.

2. The combination, in a hay-stacker, with a tilting cradle, J L K, and its elevator F H, of an adjustable cord, M, attached at one end to an arm or tooth of the cradle and at the other to the frame of the stacker, substantially in the manner and for the purpose herein set forth.

3. The combination, in a hay-stacker, with a tilting cradle, J L K, and its elevator F H, of an adjustable cord, N, extended and secured under the teeth L of the cradle, substantially in the manner and for the purpose herein set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHARLES W. BALL.
THOMAS DAVIS.

Witnesses:
ISAAC DAVIS,
ROBT. H. WOODCOCK.