

(No Model.)

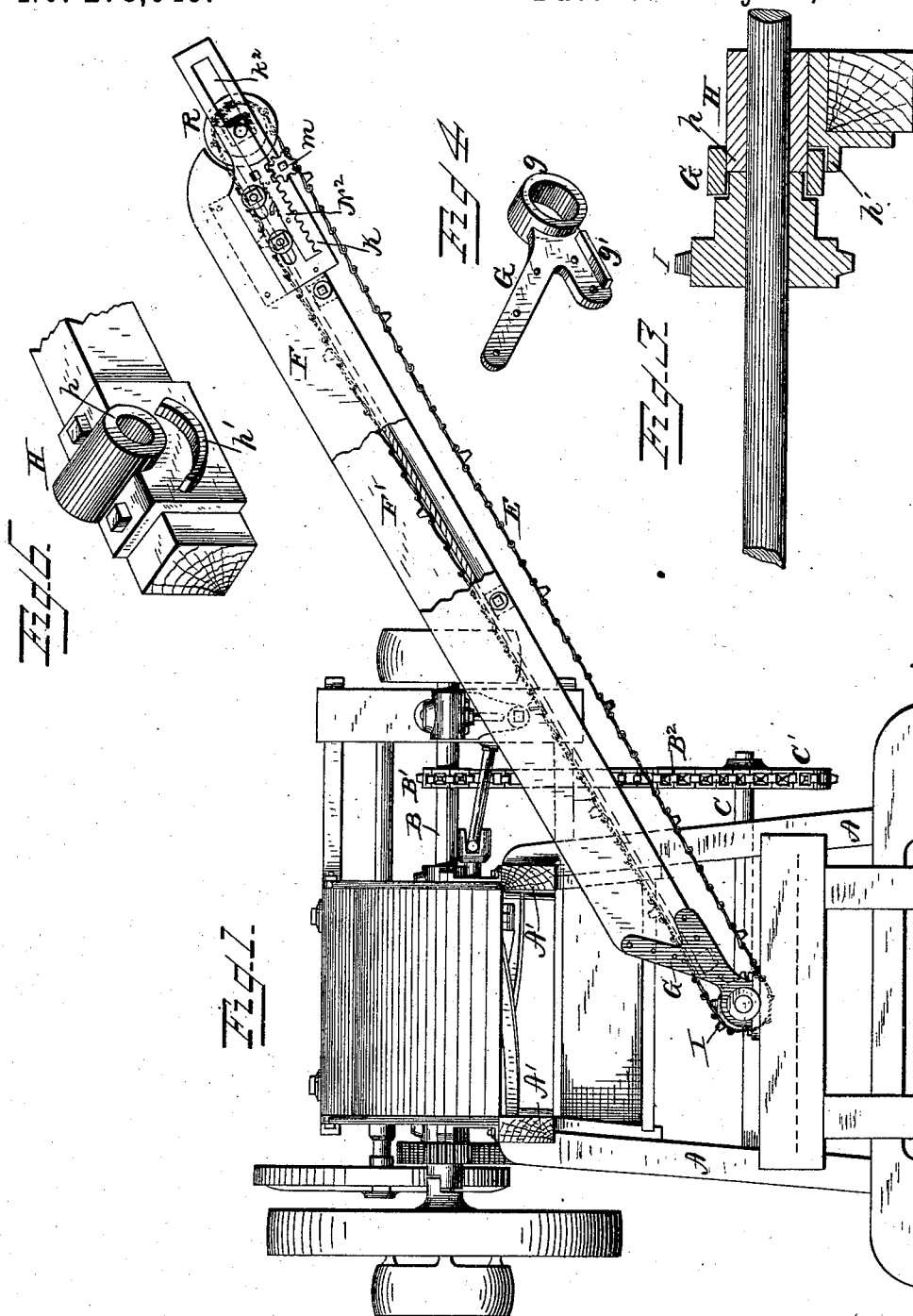
2 Sheets—Sheet 1.

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ENDLESS CARRIER AND ELEVATOR.

No. 278,049.

Patented May 22, 1883.



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ENDLESS CARRIER AND ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 278,049, dated May 22, 1883.

Application filed March 1, 1883. (No model.)

To all whom it may concern:

Be it known that I, ELMORE W. ROSS, of Fulton, county of Oswego, and State of New York, have invented a new and useful Improvement in Endless Carriers and Elevators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to that class of endless carriers or elevators employed for conveying straw, cut hay, feed, and other materials to the desired point or place of deposit, whether for feeding to or removing from machines for operating upon such materials, or for other purposes; and will be understood from the following description and claims, reference being had to the accompanying drawings, in which—

Figure 1 represents my improved carrier and elevator in side elevation connected with and actuated from the main or cutter shaft of a straw-cutter. Fig. 2 is a plan view of the carrier and its actuating mechanism. Fig. 3 represents a section through one of the box-bearings of the elevator-shaft and through one of the hinges connecting the frame of the elevator with said bearing. Fig. 4 is a perspective view of one of the elevator-frame hinges detached. Fig. 5 is a perspective view, showing the means for taking up the slack or adjusting the tension of the endless carrier; and Figs. 6, 7, 8, and 9 show certain parts hereinafter described in detail.

My improved carrier is designed mainly for use in connection with a machine for cutting hay, straw, stalks, &c., and for conveying the material to be operated upon to or away from said machine, and I have therefore shown it applied to such a machine for the purpose of conveying away the cut material to any desired point or place of deposit; but it will be apparent that it may be used for other purposes.

In the drawings, A represents the frame of the straw-cutter, made in any usual or preferred form, and provided on its upper longitudinal timbers, A' A', with bearings for the main band-wheel and cutter-shaft B, and on its lower longitudinal timbers, A² A², with bearing for a shaft, C, arranged below and par-

allel with the shaft B. The shaft B is provided with a sprocket-wheel, B', and serves, through an endless chain, B², to communicate motion to a sprocket-wheel, C', fast on the shaft C, and the latter has also keyed to it a bevel-pinion or miter-wheel, C², from which motion is imparted to a corresponding wheel, D', fast on the driving-shaft D of the endless carrier. By this arrangement the shaft D is brought into a position at right angles to the shafts B and C, and the endless carrier E, actuated from said shaft D, is thus made to move in a path at right angles to the path of movement, through the cutting-machine, of the material operated upon, and is brought into the desired relation for receiving and acting upon said material by a very simple, compact, and economical arrangement of gearing connecting it with the main driving-shaft of said cutting-machine. As shown in Fig. 1, facing the delivery end of the cutting-machine, the carrier is shown adapted to carry the material received by it to the right; but by facing the bevel-wheel C' on the shaft C in the reverse direction it would operate the carrier arranged to carry the material to the left-hand side, and by making the shaft D of the endless carrier removable from its bearings, and adapting it to be turned end for end, and providing it at each end with a bevel-wheel, the carrier E may be readily changed from one side of the machine to the other, as required.

The carrier-frame is composed of longitudinal side boards, F and F', set on edge and connected at suitable distances by transverse bars F², upon which is secured a flooring, F³, which serves to uphold the upper carrying portion of the endless carrier and its load and to prevent sagging. Where the carrier is made of canvas or other close material the flooring may be omitted.

To the lower ends of the side boards, F and F', are secured angular brackets G, one to each board, said brackets terminating at their outer ends in short transverse sleeves g, which surround the projecting tubular ends h of the boxes H and H', in which the shaft D has its bearings, and also the adjacent sleeves or hubs of the sprocket-wheels I and I', the ends h forming pivotal bearings for the carrier-frame

concentric with the shaft D, actuating the carrier and adapting said carrier-frame to be adjusted around said shaft as a center for varying its angle of relation to the ground, but removed from frictional contact with said shaft. By projecting the hubs of the sprocket-wheels I and I' within the sleeves *g* as explained and shown displacement of the shafts D by the tension of the endless carrier is prevented when said shaft is removed from its bearings for transportation or for changing it from one side of the machine to the other. The brackets G (see Fig. 4) are provided at their lower edges each with a flange or lip, *g'*, upon which the ends of the side boards of the carrier-frame rest, relieving the bolts or screws securing said brackets to said side boards of the weight which would otherwise have to be sustained by them. The boxes H, in the sleeve portions of which the shaft D has its bearings, are provided each with a pendent lip or flange, on which is formed a rib, *h'* (see Fig. 6,) curved in the arc of a circle concentric with said shaft, and in which the outer face of the sleeve *g* rests, relieving the boxes in part of the weight of the carrier, and the ends *i* of the hubs of the sprocket-wheel, projecting within said sleeves *g*, are slightly less in external diameter than the internal diameter of said sleeves, so as to be removed from frictional contact therewith when in operation. The sprocket-wheels I and I' are secured to and revolve with the shaft D, serving to actuate the endless chains E' and E² of the carrier E, which chains are connected by transverse slats or buckets of any suitable form adapting them to the work required of them.

The outer or swinging end of the carrier-frame has slotted adjustable plates K and K' secured to it, one of which is shown attached in Figs. 5 and 7. These are provided with horizontal ledges *k*, on which the ends of the side boards rest, and with slots *k'* *k'*, through which the bolts pass, securing them to said side boards, said bolts passing also through plates L, attached to the inner faces of the side boards of the carrier-frame, and which serve to stiffen and strengthen the attachment of the plates K and K', and prevent the weight of the carrier from splitting the side boards, F and F', and tearing the plates K and K' loose therefrom, the strain falling on said plates and not on the side boards. The plates K and K' are provided with pendent perforated ears *k*², forming bearings for a transverse shaft, M, having spur-pinions *m* and *m'* on its ends, for a purpose which will presently be explained, and the outer ends of said plates K and K', projecting beyond the side boards of the carrier-frame, are provided with slots K², in which the sliding and adjustable boxes N of the outer shaft, P, of the endless carrier are secured. One of these boxes is shown detached in Fig. 8, and consists of a short box or sleeve forming the bearing for the shaft P, and provided on its inner end with a flange or collar, *n*, which overhangs the walls of the slot K², on

the inner side of plate K or K', for preventing the escape outward through the slot of said box, and on its outer end with an arm or rack-bar, N², which rests outside of the plate and parallel therewith in a guiding loop or hook, *h*³, and has a toothed rack on its lower edge at *n'*, with which the pinion *m* or *m'* engages for effecting the adjustment of the boxes N and N'. The shaft M has its ends squared or otherwise adapted to receive a crank, M', for operating it for adjusting the racks N² N², and the latter have ratchet-teeth formed on their upper edges at *n*², pawls *q*, pivoted to the plates K and K' directly above said rack-bars or arms, engaging with said ratchet-teeth and holding the arms N² and the boxes and shaft P, connected therewith, at any desired adjustment. By rotating the shaft M, with its pinions *m* and *m'*, both ends of the shaft P will be simultaneously adjusted, whether for taking up slack in the endless carrier or for increasing or diminishing the tension on its endless chains.

Where the endless carrier is actuated from sprocket-wheels at its inner end, as explained, I prefer to make the wheels or rollers over which the carrier-chains pass at the outer end in the form of flanged pulleys R, as shown—that is to say, with flanges on their outer side—which serve to hold the carrier in proper working relation to the rollers. Where the shaft at the outer end is made the driving-shaft, as under some circumstances is necessary, the relation of the sprocket-wheels and flanged pulleys will be reversed, it being essential that the sprocket-wheels should be on the shaft actuating the carrier.

The carrier has been described as arranged to carry the material to one side of the cutter or other machine with which it is connected; but it will be apparent that it may be applied as a "straight-away" carrier, or one carrying the material to or from the machine with which it is connected on a line or plane parallel with that on which it passes through said machine, or at any desired angle thereto.

Having described my invention, what I claim as new is—

1. The combination, with the endless carrier and its supporting-frame, of the hinge-brackets G, provided with the sleeves *g*, and driving sprocket-wheels having their hubs journaled in said sleeves, substantially as described.
2. The combination, in an endless carrier, of the hinging-sleeves *g*, the sprocket-wheels journaled in said sleeves, the shaft actuating said sprocket-wheels, and the boxes in which said shaft is journaled, provided with sleeves *h*, forming pivots for the sleeves *g*, substantially as described.
3. The combination, with the endless carrier, of the sleeve-brackets G, the sprocket-wheels having their hubs journaled in said brackets and fast on their actuating-shaft, and the bevel-wheels for actuating said shaft from either side of the machine to which the carrier may be applied, all substantially as described.

4. The combination of the endless carrier and its driving sprocket-wheel shaft with the boxes H, provided with the pivotal sleeve projections h and the segmental flanges h' , substantially as and for the purpose described.

5. The combination, with the frame of the endless carrier, of the hinging-brackets G, provided with the sleeves g and the flanges g' , substantially as and for the purpose described.

10 6. The combination, with the carrier-frame, of the slotted and adjustable plates K and K', the adjustable boxes N and N', provided with the racks N², the shaft M, with its pinions, and the retaining-pawl q , substantially as and for
15 the purpose described.

7. The combination, with the sides of the carrier-frame, of the slotted and adjustable outer plates, K and K', the inner clamping-plates, L, and the through-bolts uniting said plates, substantially as and for the purpose described. 20

8. The combination, with the carrier-frame, of the plates K and K', provided with the flange k , slots k' and K², and bearing-lugs k^2 , substantially as described.

In testimony whereof I have hereunto set my 25 hand this 16th day of February, A. D. 1883.

ELMORE W. ROSS.

Witnesses:

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EDW. W. DEKNIGHT.