S. WINSLOW & T. GOLDSMITH.

Coal and other Elevators.

No. 161,584. Patented March 30, 1875.

Fig. 1.

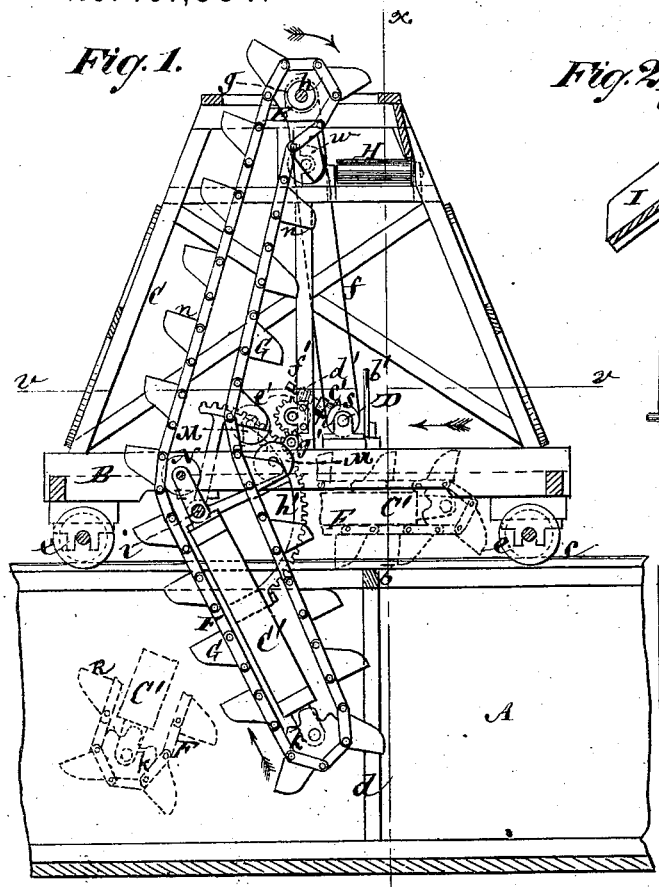


Fig. 2.

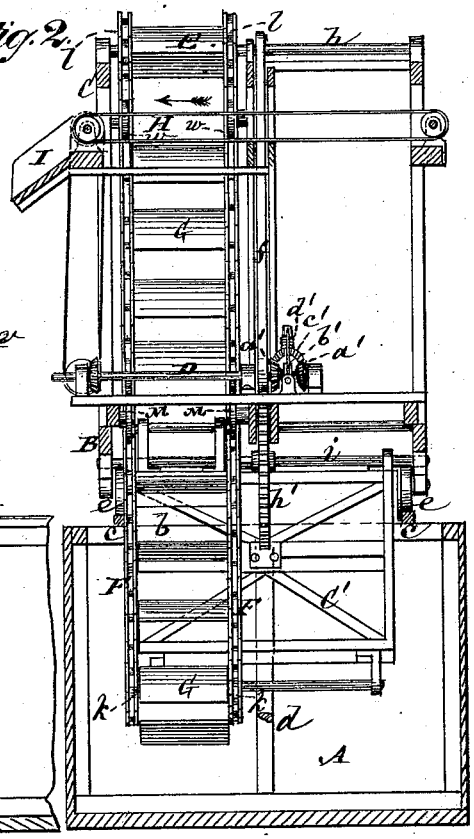


Fig. 3.

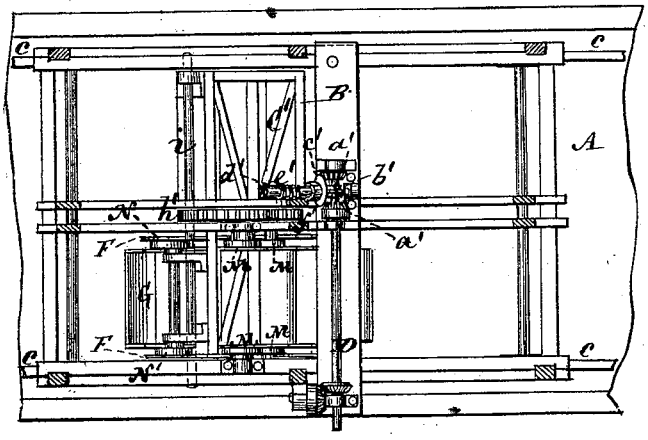


Fig. 4.

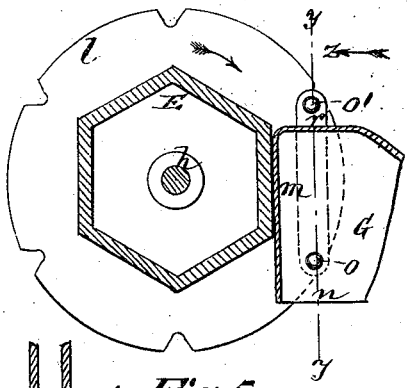
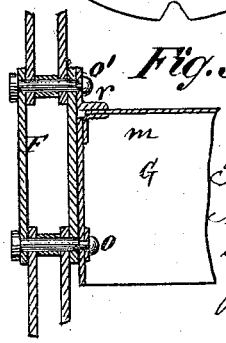


Fig. 5.



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UNITED STATES PATENT OFFICE.

STEWART WINSLOW, OF RUTHERFORD PARK, NEW JERSEY, AND THEODORE GOLDSMITH, OF NEW YORK, N. Y.

IMPROVEMENT IN COAL AND OTHER ELEVATORS.

Specification forming part of Letters Patent No. **161,584**, dated March 30, 1875; application filed October 23, 1874.

To all whom it may concern:

Be it known that we, STEWART WINSLOW, of Rutherford Park, in the county of Bergen and State of New Jersey, and THEODORE GOLDSMITH, of the city, county, and State of New York, have invented certain new and useful Improvements in Coal and other Elevators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing forming part of this specification.

This invention, although applicable in part or in whole to different purposes, or for operation on different substances, is mainly designed to be used for discharging coal from scows or boats, as in coaling steamers and for other storing purposes, and in which the coal is discharged by being first raised and then allowed to descend, by chute or otherwise, to the place of deposit.

The invention consists in an elevator composed of one, two, or more series, arranged side by side, of endless traveling chains, in pairs, with the buckets in between them. These buckets are so pivoted to or connected with the links of the chains, for operation in connection with a many-sided upper drum, over which the buckets travel, that, while the sides of the drum serve to support the buckets, the latter are prevented at their backs from forming angular receptacles to catch the contents of the buckets during their discharge onto (by preference) an endless traveling belt or apron, which does away with breakage of the coal. The invention also consists in a hinged attachment of the lower portion of the frame which carries the endless chains of buckets to the upper portion thereof, and in a certain relation of such joint or hinge to a truck carrying the elevator, in order that the angle of the lower portion of the endless chains of buckets may be changed to adapt the elevator to its work, and to close up when required to run the elevator over obstructions beneath, for the purpose of working the elevator at different places in the length of the scow or receptacle from which the discharge is to be made. The invention likewise consists in a combination, with such a hinged endless-chain bucket-frame, of rollers or pulleys for guiding the chains and preventing them from dragging or sagging when the hinged portion of said frame is adjusted into different positions or closed beneath the track.

Figure 1 represents a partially-sectional side view of my improved elevator as applied to the discharge of coal from a scow; Fig. 2, a transverse section of the same on the line *x x;* Fig. 3, a horizontal section on the line *v v;* Fig. 4, a transverse section, on a larger scale, of the upper drum and a bucket, as attached to a link on either side of the endless chains. Fig. 5 is a vertical section, in part, taken at the line *y y*, and looking in the direction of the arrow *z*, of a bucket and one side chain.

A is a coal-scow, on the combings or over the cross-beams *b* of which are arranged longitudinal rails *c c*, the beams *b* being supported by uprights or stanchions *d*. B is the truck, which carries or forms part of the elevator, and the wheels *e* of which run on the rails *c c*, to provide for discharging from different parts or places in the length of the scow. On said truck is mounted a frame, C, which supports the working parts of the elevator, including a main or driving shaft, D, to which rotary motion is communicated by any suitable means, and which, by a pulley, *s*, thereon, is connected, by a belt or band, *f*, with a pulley, *g*, of an upper drum-shaft, *h*, on which are one, two, or more drums, E, according to the number of endless chains of buckets it is proposed to operate. The frame C and body of the truck virtually form the upper portion of the frame, which carries the endless chains of buckets, a hinged or pivoted attachment, C′, forming the lower part thereof. This hinged portion C′, which has its pivot or rocking shaft *i* on the truck portion of the frame, carries at its lower end pitched chain-pulleys *k*, for the endless chains F F of each vertical row or series of buckets to gear with and travel around. These endless chains F F are arranged in pairs, and are parallel with each other, with the buckets G G in between them, and, preferably, not closer to each other than every other link of the two chains. The upper drum E, for each pair or set of endless chains F F, has its shaft

h fitted with pitched pulleys *l*, for said chains to gear with and run over. The chains F F travel, as indicated by arrow in Fig. 1, and as the buckets G, attached to them, pass around the drum E, the coal lifted from the scow A by the buckets G is discharged onto an endless traveling cross-belt or apron, H, which serves to prevent breakage of the coal, and to conduct the latter to a chute, I, which communicates with the coal-bunker or place of deposit. The drum E is a many-sided one, so that as the buckets G pass over it their bottoms *m* (see more particularly Figs. 4 and 5) have a broad or steady bearing on the sides of said drum; and said buckets G, which are connected, near their front ends *n*, in a direct manner, with the advance chain-pins O of each bucket-carrying pair of links, are connected, by projections *r* in rear of their backs *s*, with the rear pins *o'* of said links.

By this attachment of the buckets to the chain-pins, which gear with the notched pulleys *l*, the buckets, when discharging their contents as they ride over the drum E, have their backs in line with the angles formed by the sides of the drum, and are thus prevented from forming angular spaces with the drum beneath the back ends of the bottoms of the buckets for the coal from a rear bucket to discharge into, and lodge within, and pass back into the scow, instead of, as this mode of attaching the buckets provides for, being delivered over the back of the next bucket in advance.

The cross-belt or apron H, onto which the coal is discharged from the buckets, and which conducts the discharged coal to the chute I, may be driven from the main shaft D by gevel-gears, pulleys, and belt, as represented, or by any other suitable means.

The hinged or pivoted lower portion C′ of the frame, which carries the endless chain of buckets, admits, by adjusting or rocking it on its pivot or shaft *i*, either of being raised into a horizontal position or shut up beneath the truck, as represented by dotted lines to the right-hand side of Fig. 1, or of being made to dip at any desired angle down into the scow, as represented in part by full and dotted lines in the same figure. These swinging adjustments of the portion C′ of the frame may be effected by means of a reverse pair of bevel-pinions, *a' a'*, connected with the shaft D through the intervention of a clutch, *b'*, a bevel-wheel, *c'*, a screw, *d'*, a worm-wheel, *e'*, and gears *f' g'*, the latter one, *g'*, of said gears meshing into a curved rack, *h'*, fast to the pivot or rock-shaft *i;* or any other suitable operating mechanism may be used. By such adjustments we are enabled either to swing the lower portion of the bucket-frame C′ up out of the way, so as to clear the beams *b*, when running the truck B along the rails *c c*, from one part of the scow to the other, for the purpose of working the elevator at different points in the length of the scow, to expedite the discharge of the contents of the latter, or are enabled to set the lower portion of the bucket-frame C′ at different angles, not only to work at different depths, according to the gradually-diminishing load of coal, but so that the buckets may be projected to work close up to or alongside of the stanchions *d*. As, however, such adjustment of the portion C′ of the frame has the effect of varying the tightness or slackness of the chains F F, and as it is important that the latter should always be equally taut, and should not sag or hang when the hinged portion C′ of the frame is raised or closed under the truck B, we provide the truck or upper portion of the frame with guide-pulleys M, having fixed centers, for the one length of each chain on their outside faces to run against, and inside guide-pulleys N, attached to an upper extension of the swinging frame portion C′, for the other length of each chain on their inside faces to bear or run against, by which combination and arrangement of pulleys the chains are kept equally taut, or nearly so, in or during all adjustments of the portion C′ of the frame.

The upper portions of the chains F F are directed by guide-rollers *w w*, to insure the delivery of the coal onto the endless traveling belt or apron H.

We claim—

1. The combination, with the buckets G, connected to the chains F F by the upper and lower pins *o o'*, of the drum E, having a plurality of sides, and provided at each end with a pulley, *l*, having notches, with which the chain-pins *o o'* engage, substantially as described, and for the purposes set forth.

2. The combination, with the movable truck-frame B and section C of elevating-buckets mounted upon said truck-frame, of the bucket-carrying section C′, pivoted upon a shaft, *i*, mounted in the frame B, substantially as described, whereby the said section C′ may be moved or adjusted to a horizontal, vertical, or angular position, for the object specified.

3. The combination, with the endless chains F, section C of buckets, and pivoted bucket-carrying section C′, of the rollers M, having fixed centers, and the rollers N, attached to the upper extensions of the swinging-frame section, substantially as described.

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