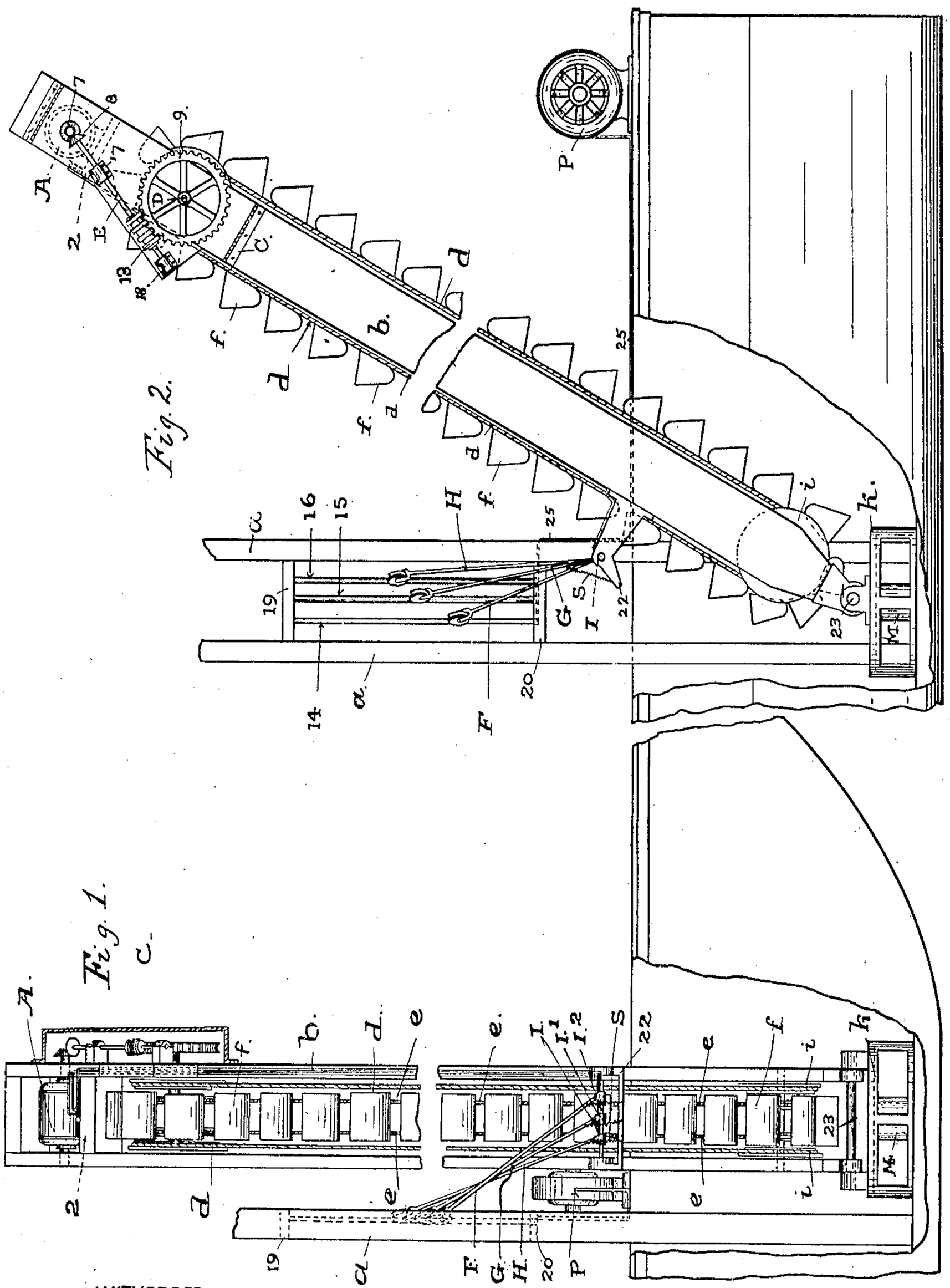
No. 876,019. PATENTED JAN. 7, 1908.

J. ROSS.

BUCKET ELEVATOR.

APPLICATION FILED FEB. 20, 1907.

2 SHEETS—SHEET 1.



WITNESSES

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INVENTOR

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2 SHEETS—SHEET 2.

Fig. 4.

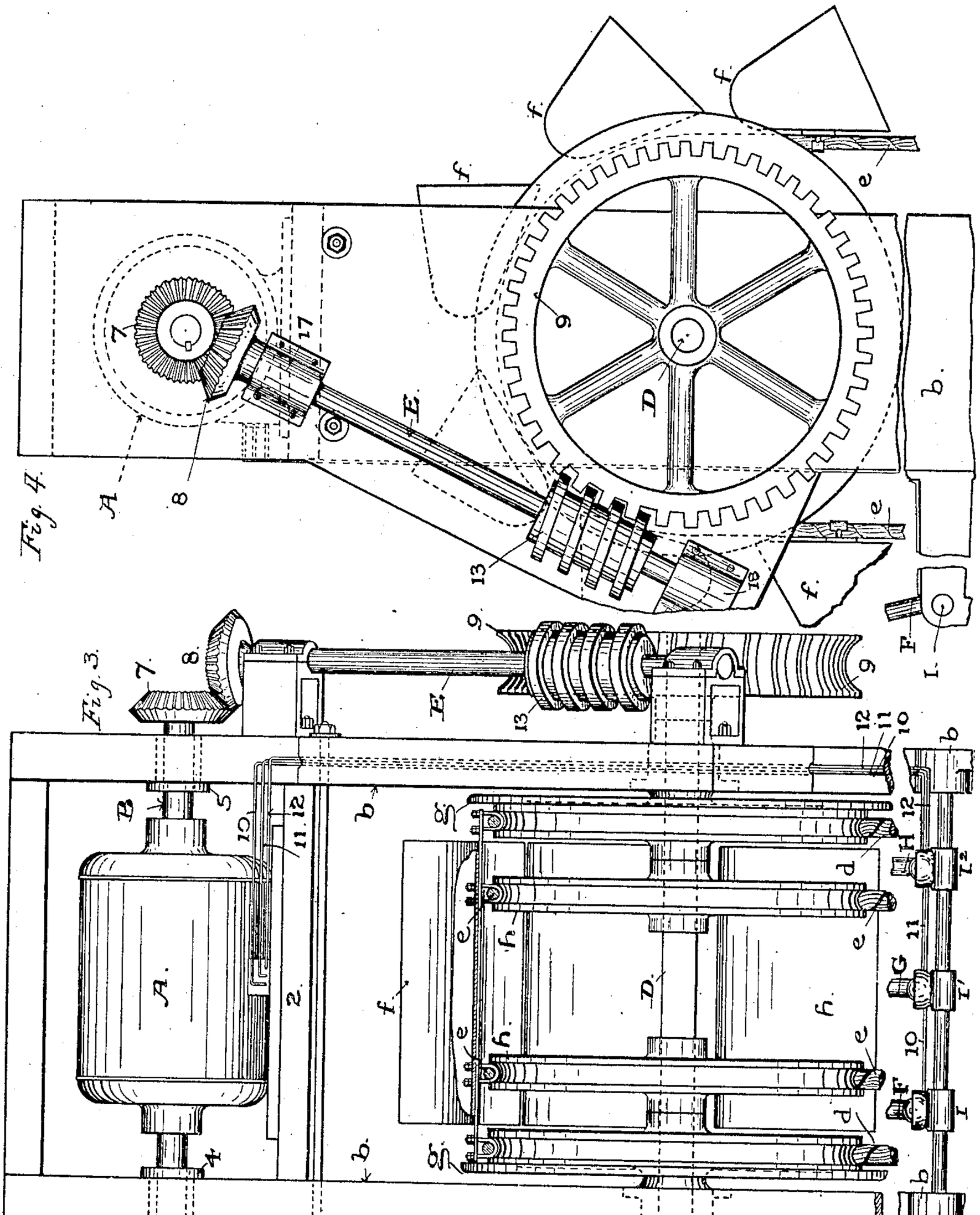

Fig. 3.

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JOHN ROSS, OF TIBURON, CALIFORNIA.

BUCKET ELEVATOR.

No. 876,019. Specification of Letters Patent. Patented Jan. 7, 1908.

Application filed February 20, 1907. Serial No. 358,372.

To all whom it may concern:

Be it known that I, JOHN ROSS, a citizen of the United States, resident of Tiburon, Marin county, and State of California, have invented new and useful Improvements in Bucket Elevators, of which the following is a specification.

This invention relates to improvements made in bucket-elevators of the type in which the frame that carries the endless chain of buckets is adjustable in a vertical plane on a pivot or center situated at the foot of the frame and is movable also in a horizontal plane about such center, for the purpose of enabling the delivery end of the chain of buckets to set at varying heights and in different positions around the base.

The object of the invention is to enable the driving-power for the chain of buckets to be placed on the swinging-frame and so connected with the sheaves of the endless-chains that the frame can be adjusted in both planes without disturbing the connection between the power and the driving-sheaves, and the mechanism, heretofore required to make the connection with the power, can be greatly simplified.

The following description explains at length the nature of my said invention, and the manner in which I proceed to produce, apply and carry out the same; reference being had to the accompanying drawing that illustrates an operating mechanism of my invention combined with a bucket elevator mounted on a scow.

Figure 1 is a front-elevation with the front of the scow partly broken away, exposing the turn-table on which the foot of the swinging-frame is pivotally mounted, the swinging-frame being set over to its extreme position at the right side, and the lower portion of the upright stationary frame being seen in front-elevation. Fig. 2 is a side-elevation taken from the right side of Fig. 1. Fig. 3 is a front-view, on an enlarged scale, of the operating mechanism on the top end of the swinging-frame and the driving pulleys of the bucket-carrying cables to which the operating mechanism is connected. Fig. 4 is a side-view taken from the right side of Fig. 3.

The parts illustrated in the above views are designated in the following description as the stationary upright frame *a*, the swinging-frame *b*, the endless cables *d—d*, *e—e*; the buckets *f* secured on the cables; the cable-carrying sheaves *g—g*, *h—h* at the top, and the sheaves *i* at the bottom of the swinging-frame.

In the general construction and arrangement of these parts the elevator herein shown is not different from other apparatus of the same character now in use. But instead of driving the carrying-cables of the buckets by applying the power to the lower set of sheaves as heretofore, the power is applied to the upper set by mounting an electric motor on the swinging-frame and gearing, or otherwise connecting the driving-sheaves of the bucket-carrying cables into it. In my present improvement the electric motor A is mounted on the frame *b* in such position in relation to the driving-sheaves *g—g*, that connection can be made directly between the motor shaft B and the axle D of the sheaves by a counter-shaft E.

A novel feature of an endless-chain bucket elevator of my invention, consists in mounting an electric motor directly upon the swinging-frame in close relation to the upper set of sheaves *g—g*, and connecting the motor on the elevator-frame with a dynamo or generator on the scow, by sliding or otherwise adjustable conductors or connections, the connections being of such character that the swinging-frame is capable of being moved in both places and set in any required position for work without disturbing the working of the elevator.

The drawings show a construction in which the motor employed to run the elevator is one of a three-phase type. It is mounted on a support 2 on the stationary-frame, over the top set of sheaves *g—h*, and its commutator-shaft is provided with bearings in boxes 4—5 on the uprights *b* of the frame. Connection between the motor-shaft and the shaft of the sheaves or wheels *g—h* by bevel-gears 7—8, a counter-shaft E and a worm 13 and worm-wheel 9. The counter-shaft E is carried in bearings 17, 18 on the outside of the upright *b*, and the parts are usually covered by a protecting casing C as indicated in Fig. 2. The conducting wires 10, 11, 12 are laid from the motor A along the side of the upright *b*, and carried downward to the lower part of the fixed frame *a*, where each conductor is connected with or into a rod or wire set between two cross-bars or supports 19—20 that are fixed

across the frame. These rods 14—15—16 form separate terminals of the conductors 10—11—12 leading from the motor, and they are insulated from one another for that purpose. Connection between each rod and a conductor running from the swinging-frame to the generator is made by a trolley-pole, attached to the swinging-frame by a hinged joint, from which point of attachment the pole extends to the conducting rod on the fixed frame.

In the present construction that calls for three separate conductors from the generator to the motor, the three trolleys F, G, H are pivotally attached to the swinging-frame at I, I^1, I^2, and from these points of attachment they extend to the rods 14—15—16 on the fixed frame. Each trolley is of proper length to touch the fixed conducting rod in any position that the swinging-frame may assume under its adjustment in a vertical arc on the pivots I, X, and also in a horizontal plane as the turn-table K is moved in its pivotal point M. A spring *s* attached to each trolley-pole and to a fixed point 22 on the swinging-frame holds the trolley against the rod in all the varying angular positions in which it may be set by raising or lowering the top end of the swinging-frame, or swinging it from side to side. This manner of connecting the motor on the swinging-frame with the generator of the scow affords ample scope of adjustment or change of the swinging-frame in both planes, without disturbing the conductors or requiring special adjustment of the connecting parts or mechanism.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In an endless-chain bucket elevator, a stationary frame, a swinging-frame, sheaves on the swinging-frame carrying the chain of buckets, an electric motor mounted on the swinging-frame above the upper set of sheaves, means connecting the axle of the sheaves with the shaft of the motor, conducting rods on the stationary frame, conductors for connecting the rods with a source of electric power, and a trolley-connection on the swinging-frame adapted to connect the motor in circuit with the source of power through the conducting-rods on the stationary frame in every position of the swinging-frame.

2. In an endless bucket-elevator, a stationary frame, a swinging-frame adjustable at varying angles to the stationary frame, sheaves on the swinging frame for operating the buckets, an electric motor mounted on the swinging-frame, means connecting the motor with said sheaves to drive the same, electrical conductors on the stationary frame, a source of electric power connected thereto, conductors on the swinging-frame connected to the motor and means for maintaining connection between the conductors on the swinging-frame and those on the stationary-frame in all positions of the swinging-frame when in operation.

JOHN ROSS.

Witnesses:
EDWARD E. OSBORN,
L. FRANK.