

F. J. FELDT.

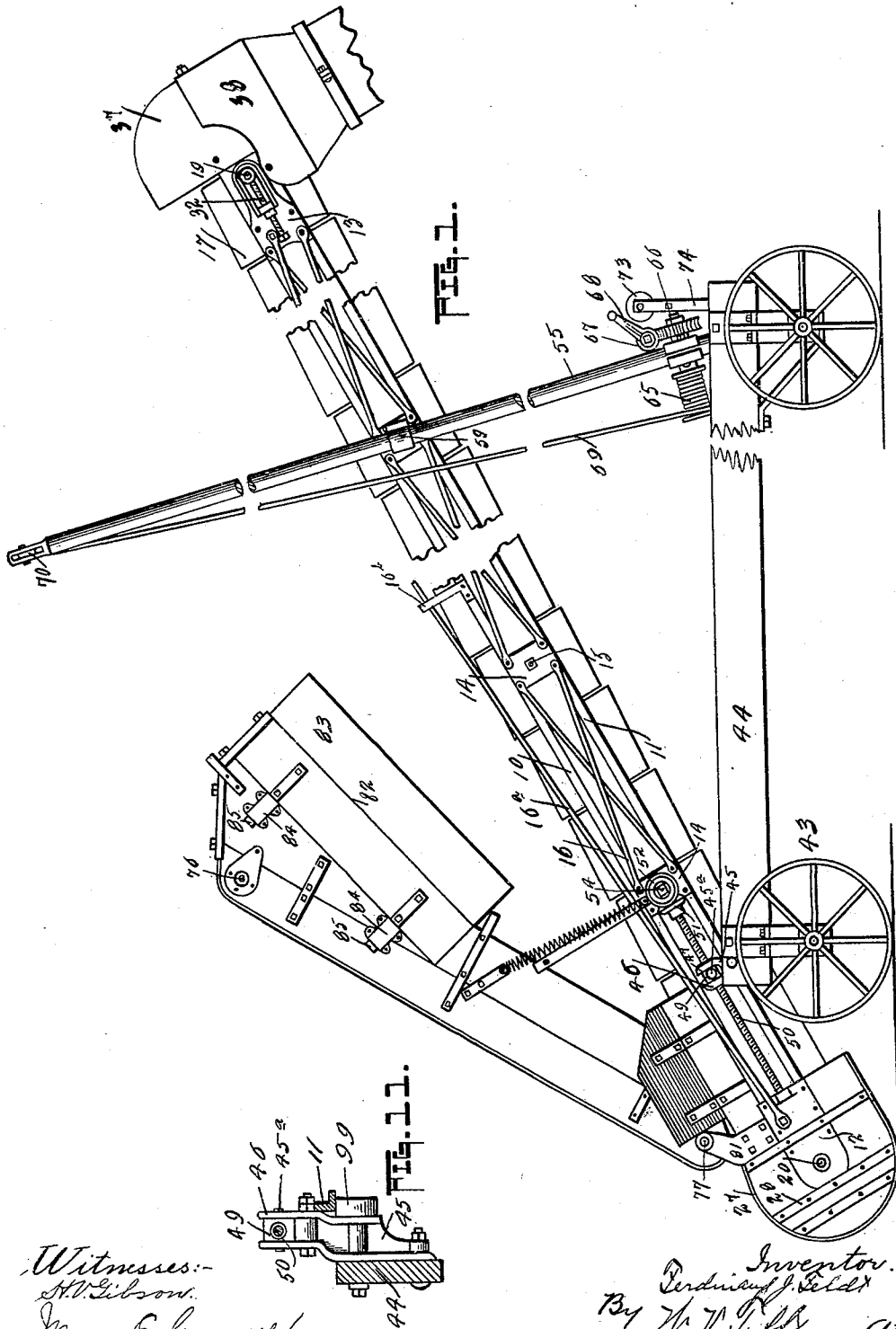
ELEVATOR.

APPLICATION FILED MAR. 13, 1908.

Patented Dec. 6, 1910.

3 SHEETS-SHEET 1.

977,518.

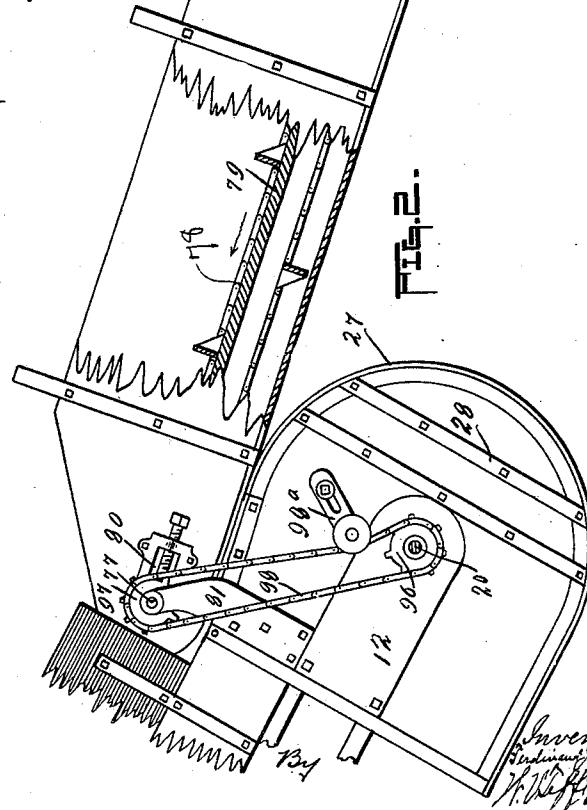
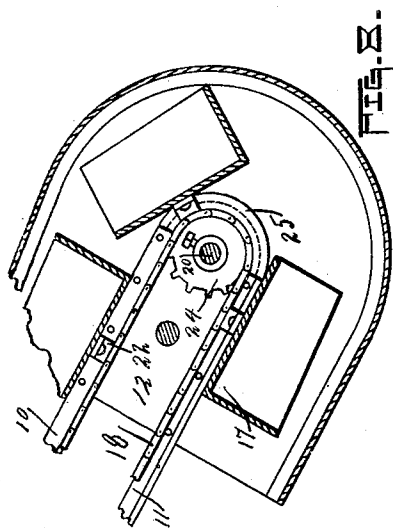
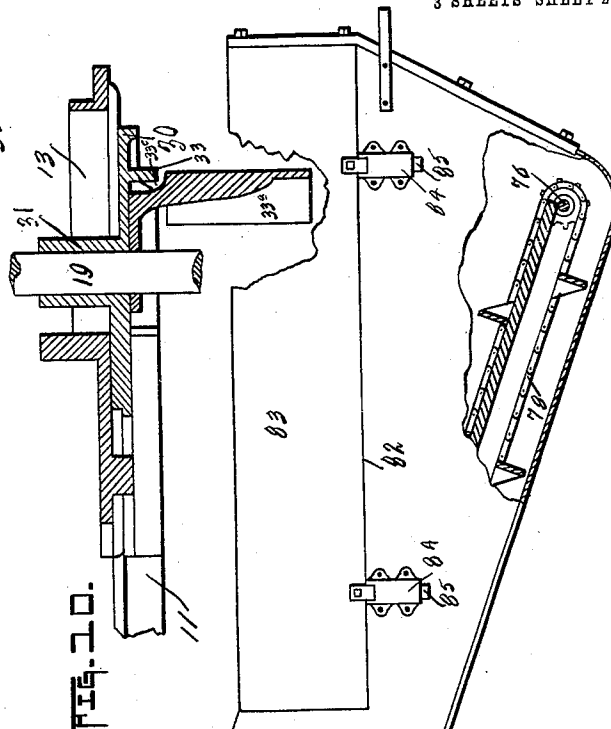
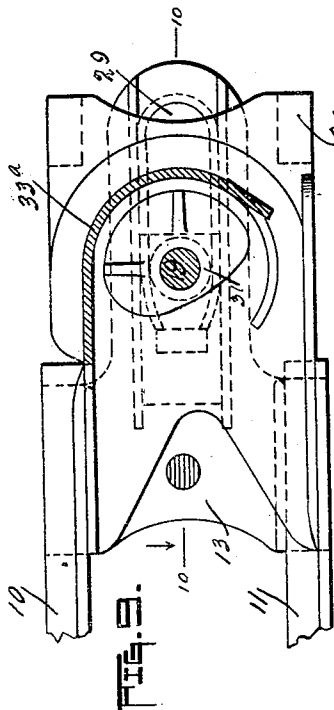


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Witnesses:-
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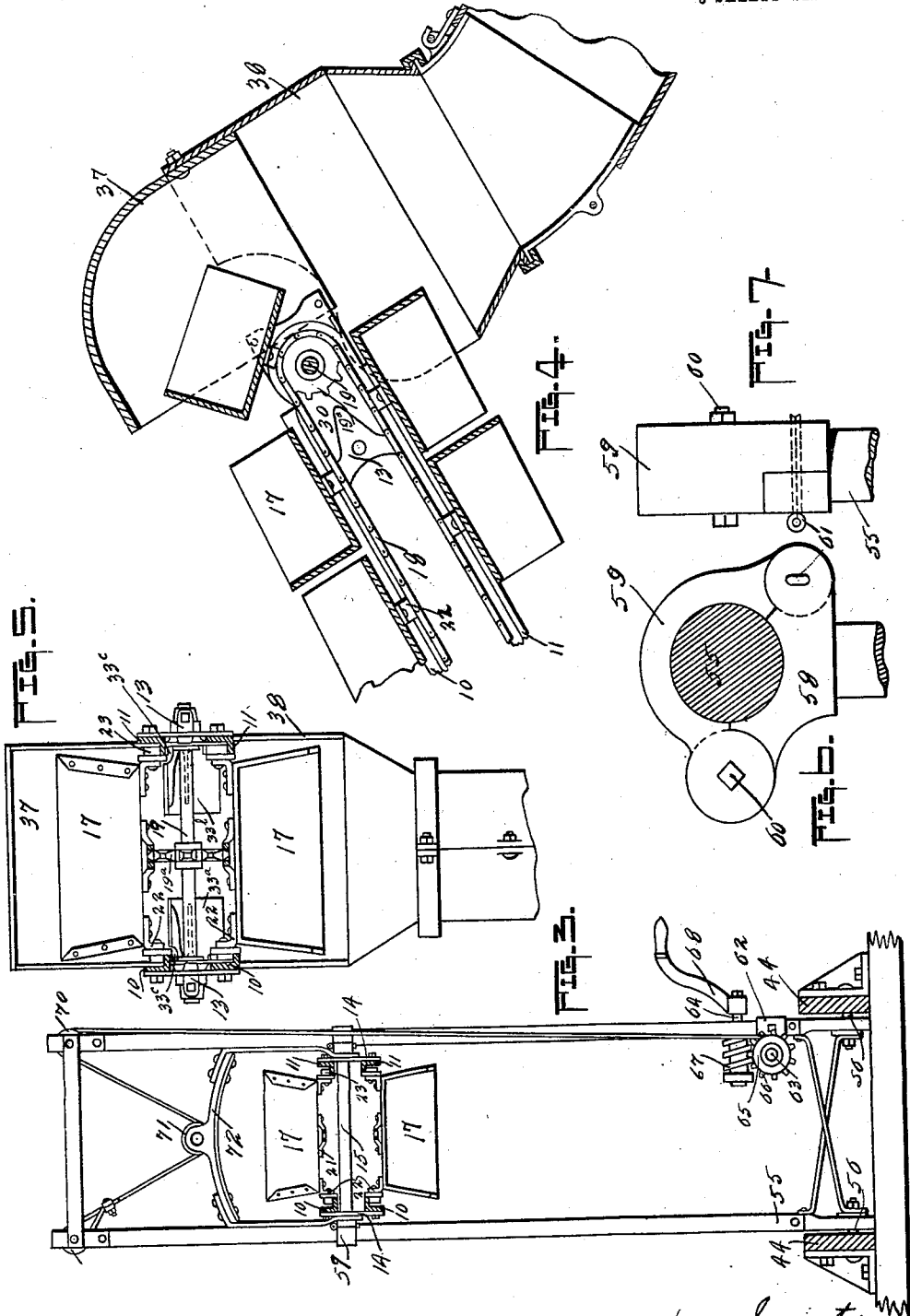
ELEVATOR.

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3 SHEETS—SHEET 3.

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UNITED STATES PATENT OFFICE.

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ELEVATOR.

977,518.

Specification of Letters Patent.

Patented Dec. 6, 1910.

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To all whom it may concern:

Be it known that I, FERDINAND J. FELDT, citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Elevators; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has reference more particularly to portable elevators for receiving grain or other material as it is dumped from a wagon, and conveying the same to a bin or other receptacle.

The objects of my invention are to provide conveying mechanism which operates with comparatively little friction; to provide means for supporting and adjusting the receiving end of the elevator; to provide new means for supporting and adjusting the delivery end of the elevator and to provide details of construction.

In the accompanying drawings, which illustrate my invention, Figure 1 is a side elevation of the complete machine portions thereof being broken away to permit an enlarged view to be shown, the receiving box which delivers to the elevator being shown therein in raised position; Fig. 2 is a large side view of the receiving hopper and the lower end of the elevator, portions of the hopper being broken away to show detailed parts; Fig. 3 shows the standard and the manner of supporting the elevator body in connection therewith, the same being shown pivoted upon the framework of the truck. Fig. 4 is a vertical longitudinal sectional view of the outer or delivery end of the elevator; Fig. 5 is an enlarged cross section through the outer or delivery end of the elevator; Fig. 6 is a detailed view of the clamp, whereby the elevator is secured at its outer end to the supporting standards; Fig. 7 is a detailed view of the same clamp as shown in Fig. 6; Fig. 8 is an enlarged vertical longitudinal sectional view of the lower end of the elevator; Fig. 9 is a detailed view showing the particular construction of the upper end of the elevator; Fig. 10 is a detailed sectional view of the same part; Fig. 11 is a detail view showing the manner of supporting an elevator in connection with a truck.

This elevator consists of a plurality of pans or buckets which are supported on a frame and connected with the endless carrier so as to travel from end to end of the frame. The frame supports the pans and has the upper and lower pair of angle irons 10 and 11 respectively which form a track, each of said angle irons being arranged with one flange extending vertically upward, and the other flange which forms the track extending inwardly from the vertical flange. The angle irons 10 and 11 at each side of the elevator are connected and held apart by means of the end plates 12 and 13 at the respective ends and intermediate plates 14, which are secured to the vertical flanges of the angle irons and each of said plates is connected with its corresponding plate on the opposite side of the elevator by means of the rods 15, and the intermediate space between the several plates is braced by means of the cross rods 16. The truss rod 16^a connected with the end plates 12 and 13 and carried over the upwardly extending arms 16^b is provided as an additional brace which has been found desirable when the elevator is extended to a considerable length.

A series of pans are provided which are indicated at 17 and are open at the top and forward ends and are connected with the chain 18 which passes around the shaft 19 at the delivery end of the elevator, and the shaft 20 at the receiving end of the elevator, and is disposed half way between the sides of the elevator. This chain is provided at suitable intervals with links 21 which are connected at the under side to the conveyer pans intermediate of the width and approximately half way from the rear to the front so that the forward end of each pan is in close relation to the rear end of the preceding pan. On the bottom of each of these pans, at the sides thereof and on a line with the connection of the pan with the chain, is a bracket 22 which has the flanged roller 23 secured to the end thereof by means of an axial pin, said rollers being disposed in connection with each of said pans in such a position as to engage the inwardly extending flange of the angle irons, which forms a support therefor. The shaft 20 at the receiving end of the elevator is journaled in the side plates 12 and has the sprocket 24 intermediate of the side plates, which carries the chain 18 and each of said plates is

provided on the inner face thereof with an articulate flange 25 which forms a continuation of the inwardly extending flange of the lower angle iron, and is formed around the shaft 20 as a center, there being a similar plate to plate 12 on the opposite side of the receiving end of the elevator having a similar flange to flange 25 and supporting the other end of shaft 20. The receiving end of the elevator is also provided with the shield 27 which incloses the lower end of the elevator and is secured by means of strap irons 28 to the plate 12.

The plates 13 at the outer end of the elevator, to which the angle irons 10 and 11 are secured, are provided with the slots 29, which extend lengthwise of the elevator intermediate of the angle irons 10 and 11, and a plate 30 is provided adjacent the inner face of each plate 13, the latter being provided with a stud projecting through a slot of the former and being provided with a central opening within which the shaft 19 is adapted to be supported and around which chain 18 passes, and said plates are movable lengthwise of the elevator. This shaft extends beyond the outer side of each plate 30 through the bearing or stud 31 which is movable lengthwise of slot 29 and each of said bearings 31 is engaged by the threaded member 32 suitably supported in a threaded lug upon the side of each of the plates 13, whereby the shaft and plates 30 may be adjusted lengthwise of the elevator for regulating the tension of chain 18. Each of the plates 30 is provided on the inner face thereof with the flange 33 which extends inwardly and bears in the same plane as the inwardly bearing flange of angle iron 10 and describes an arc around shaft 19 and serves as a bearing for roller 23.

To prevent the escape of grain from the buckets at the upper end of the elevator, there is provided a shield comprising the plates 33^a and 33^b which extend around the shaft 19 as a center, there being one of such provided on each side of the chain wheel which is located at the central points on shaft 19 between the two sides of the elevator and suitably secured to the side plates 30. A portion of the closure plates 33^a and 33^b is cut away as at 33^c, as shown in Fig. 10, to provide space for the passing of the flanges of the rollers 23 on the carrier pans, the plates 33^a and 33^b forming the shield, serve to prevent grain from being carried back, and to direct it to the outlet opening.

The hood 37 is carried by the plates 30 at the upper end of the elevator, and the hopper 38 is connected therewith but as the hopper and the swiveled and pivoted conveyer spout which are partially shown in the drawings are no part of my present invention. I will not describe those structures in detail.

The elevator is supported by the truck 43 which has the side rails 44. Each of said side rails has a bracket 45 on the inner face thereof and secured thereto adjacent the receiving end of the elevator, and each of said brackets is provided with a roller 99 Fig. 11 on the inner face thereof which engages the under face of the inwardly extending flange of the angle irons 11, and thereby support the receiving end of the elevator.

For the purpose of moving the elevator lengthwise of the roller 99 to adjust the elevator to and from the ground, one of the brackets 45 is provided with a forked extension 46 above the roller at one side of the elevator, the arms of which are slotted vertically as at 47. At the same side of the elevator there is provided a screw 50 which extends lengthwise of the elevator and is journaled in the end of the plates 12 and the adjacent plate 14. This screw passes between the arms of the forked extension 46 and is provided intermediate of said arms with a collar 49 which is threaded thereon and provided with trunnions 45^a which rest in the slots 47 of said extension 46. At its upper end, the screw 50 is provided with the beveled gear 51 which meshes with the beveled gear 52 which is journaled on a short shaft supported in plate 14, which said short shaft has the squared end 54 to which a crank may be applied to turn the short shaft for the purpose of operating screw 50. As is apparent, as the screw is turned, the collar 49 being held stationary by its engagement with the slots of the forked extension 46 moves lengthwise of the said screw, thereby moving the elevator lengthwise of the rollers 99.

At the opposite end of the truck from that upon which the elevator is mounted, a standard is provided for raising and lowering the outer end of the elevator, which said standard comprises the frame bars 55, one at each side of the elevator, which are pivoted to the side rails as at 56 and fastened together at their upper ends above the elevator. At each side of the elevator, adjacent the standard is a clamp which is horizontally pivoted to one of the plates 14 on the side of the elevator and loosely embraces the bars 55 to slide lengthwise thereof. This clamp as is shown in Fig. 6, comprises the part 58 which is pivoted to the side of the elevator and has a part 59 pivoted thereto as at 60 and adapted to embrace the bars 55 and to be secured together by cotter pin 61 which passes through the free ends of the part 59 and a lug on the part 58 as shown. To the lower end of one of the bars 55 is secured a bracket 62 which supports the drum and worm wheel shaft 63 and the worm shaft 64. The drum shaft has the drum 65 thereon and the worm wheel 66 which is engaged by the worm 67 on the shaft 64 and said

shaft is provided at its outer end with a crank 68 whereby the worm may be turned to operate the drum. A cable 69 is coiled around the drum, passing over the sheave 70 at the top of the standard, thence downwardly around the sheave 71 on the bracket 72 which is pivotally secured to the elevator, thence upwardly to the top of the standard and secured to the opposite side of the standard from the sheave 70. As is apparent, by the turning of the shaft 64, the delivery end of the elevator is raised or lowered, the clamp in such movement sliding up and down the bars 55. When the elevator is to be transported it may be let down until the lower side rails thereof engage the rollers 73 on the bracket 74 when the clamp may be unfastened and the standard dropped down until it comes to rest on the elevator.

For receiving the grain or other material as it is dumped from the wagon, the receiving box is provided, which delivers to the elevator. This receiving box in the normal receiving condition, is inclined as shown in Fig. 2 and has a shaft 76 at its lower end and shaft 77 at its upper end around which is passed endless conveyer 78, the upper length of which operates in the direction shown by the arrow in Fig. 2, over the floor 79 of the receiving box. The shaft 77 at the upper end of the receiving box projects through slots 80 in the sides of the receiving box and is movable in said slots by means of the tightening screws for tightening and loosening the endless conveyer. This receiving box is horizontally pivoted to the brackets 81 of the elevator by means of the shaft 77 which passes through bearings in said brackets so that the receiving box may be readily swung from the position shown in Fig. 2 to the position shown in Fig. 1. At the outer end, the receiving hopper is cut away at each side as shown at 82 to provide for the chute 83 which may be secured on either side of the receiving box as heretofore shown. At the lower edge of the cut away place 82 and near each end thereof is provided a plate 84 which is grooved as at 85 on the inner face to receive a flat rod. This chute which is preferably of sheet metal is adapted to have a pivotal or hinged connection with the body of the conveyer trough and the chute portion 88 is adapted to be detachably connected with the receiving box so that it may be changed from one side thereof to the other.

The shaft 20 in the bottom of the elevator is designed to receive the application of power by being connected with the tumbling rod of a horse power or other suitable motor. The elevator buckets are driven directly from the shaft 20 and for operating the endless conveyer in the receiving box, a sprocket wheel 96 is provided on shaft 20 and a sprocket wheel 97 on shaft 77 of the endless

conveyer and the chain 98 passed around both of said sprockets. The belt tightener 98^a is adjustably supported upon the lower end of the elevator casing as shown in Fig. 2.

What I claim is:—

1. In a device of the class described, the combination with an elevator and a supporting truck, of means for supporting and moving the elevator along the truck comprising a pair of brackets upon the truck, one bearing on each side of the elevator, a roller journaled upon each bracket for supporting the elevator, a threaded collar pivoted in connection with one of the brackets, a screw bearing lengthwise of the elevator and suitably connected therewith and bearing in the threaded opening of the collar, and means for turning the screw.

2. In a device of the class described, the combination with an elevator and a supporting truck, of means for supporting and moving the elevator along the truck comprising a pair of brackets upon the truck, one bearing on each side of the elevator, a roller journaled upon each bracket for supporting the elevator, a threaded collar pivoted in connection with one of the brackets, a screw bearing lengthwise of the elevator and suitably connected therewith and bearing in the threaded opening of the collar, a bevel gear wheel upon said screw and a gear wheel supported in connection with the elevator provided with attached means for turning the screw.

3. In an apparatus of the class described, the combination of a portable support provided with a pair of rollers upon the side frame parts thereof, an elevating body supported upon the rollers on the portable support containing a carrier, a threaded screw extending longitudinally of said body and suitably supported to be turned, a furcated bracket provided with slots therein, a nut supported on said screw and provided with trunnions for bearing within the slotted portions of said bracket, and means for turning the screw for the purpose of moving the elevator body lengthwise.

4. In an apparatus of the class described, the combination of an elevator body and a support therefor of rollers upon the supporting body to support the lower end of the elevator in a manner to be raised or lowered upon said rollers acting as a fulcrum and to facilitate its being moved lengthwise, of means for moving the elevator lengthwise comprising a screw upon the elevator body extending a short distance along the same, a nut upon the screw provided with trunnions, a furcated slotted bracket secured to the supporting body adapted to receive the trunnions of the nut, means for turning the screw to move the elevator body lengthwise, a support for the outer end of the elevator and

means for raising and lowering the outer end thereof.

5. In a device of the class described, the combination with an elevator and with a portable support therefor, of rollers upon the portable support for supporting and fulcruming the lower end of the elevator body and to facilitate easy longitudinal movement thereof, a screw journaled upon the elevator body and extending a short distance along the same, a nut upon the screw provided with laterally extending trunnions, a furcated slotted bracket attached to the portable support and adapted to receive the trunnions of the nut, means for turning the screw to move the elevator longitudinally upon its support, a support for the outer end of the elevator and means for raising and lowering the outer end, substantially as described.

6. In an elevator, the combination with a longitudinal frame, a plurality of pans, provided with bearings at each side thereof, which engage the said frame for supporting the pans, an endless carrier connected with the pans for moving said pans lengthwise of the frame, a plate at each side of the frame at one end thereof movable lengthwise of the frame, each of said plates being provided with an arcuate flange extension from the adjacent lower rail for directing the bearings from one pair of rails onto the other pair of rails, a shaft mounted on said plate extensions for supporting the endless carrier and means for adjusting said plates lengthwise of the frame for adjusting the tension of the endless carrier.

7. In an elevator, the combination of a longitudinal frame comprising an upper and lower pair of parallel angle irons, each of said angle irons being arranged with one flange extending vertically upward and the other flange extending inwardly from the vertical flange, a plurality of conveyer pans provided with roller bearings adapted to engage the inwardly extending flanges of the angle irons for supporting said pans, an endless carrier connected with said pans for moving the said pans lengthwise of the frame, a plate at each side of one end of the conveyer connecting the angle irons, a shaft journaled in said plates for supporting the endless carrier, a plate at each side of and at the other end of the frame, connecting the angle irons, each of said last mentioned plates being provided with a corresponding

slot extending lengthwise of the frame, a movable plate adjacent the inner face of each slotted plate, and movable lengthwise of the frame, said movable plates being provided with arcuate flanges forming extensions of the inwardly extending flanges of the adjacent angle irons for directing the bearings of the pans from one pair of angle irons to the other pair of angle irons, a shaft journaled in said movable plate for supporting the endless carrier, said shaft being passed through the slots in the slotted plates, and means for moving the shaft, and supporting plates lengthwise of the frame for adjusting the tension of the carrier.

8. In a device of the class described, a portable frame, an elevator, rollers upon the portable frame adapted to support the rear end of the elevator, means connecting the portable frame with the elevator to hold the same from longitudinal movement and to permit the said elevator to rock up and down upon the rollers, a screw supported upon the elevator frame and extending longitudinally thereof, threaded means connected with the portable support adapted to engage said screw and means for turning the screw to cause the elevator to be moved longitudinally upon its roller supports.

9. In an elevator, the combination with a longitudinal frame, a plurality of pans provided with bearings at each side thereof, which engage the said frame for supporting the pans, an endless carrier connected with the pans for moving said pans lengthwise of the frame, a carrier shaft in the delivery end of the elevator, plates slidably related, one pair on each side of the delivery end thereof, one fixed to the angle iron frame and slotted longitudinally, the other movable and provided with a stud for journaling the carrier shaft, and an arcuate bearing flange meeting the top angle iron frame parts and means for moving the plates with relation to each other, guard plates connected with the movable plates adapted to cover the space between the end of the elevator frame and the carrier shaft and bearing over the latter to form a shield.

In testimony whereof I affix my signature, in presence of two witnesses.

FERDINAND J. FELDT.

Witnesses:

MARY E. COMEGYS,
H. V. GIBSON.