

No. 810,010.

PATENTED JAN. 16, 1906.

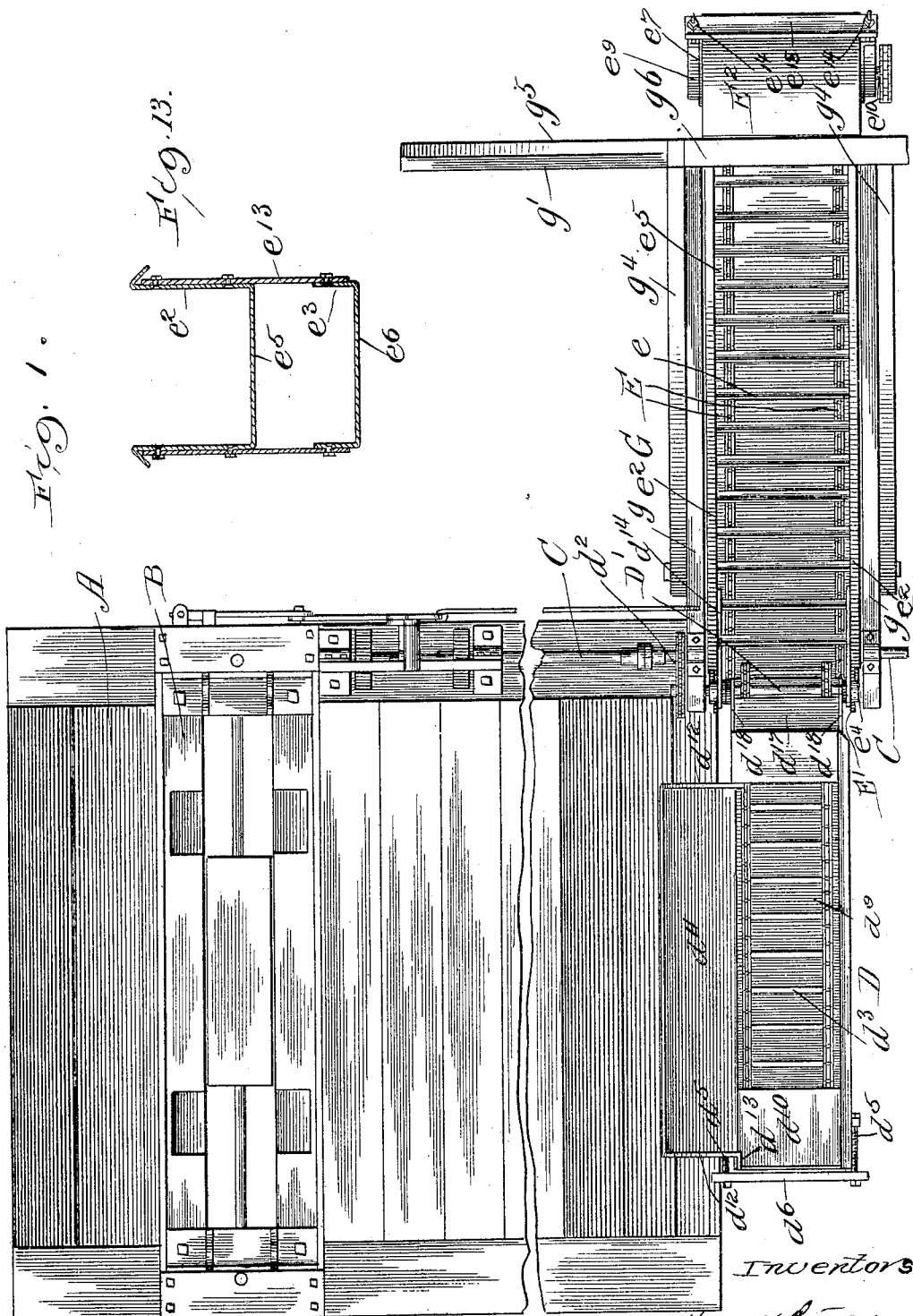
G. WENZELMANN & E. H. OVERHOLT.
PORTABLE GRAIN ELEVATOR AND CONVEYER.

APPLICATION FILED JUNE 24, 1903.

3 SHEETS—SHEET 1.

Fig. 1.

Fig. 13.



Witnesses:
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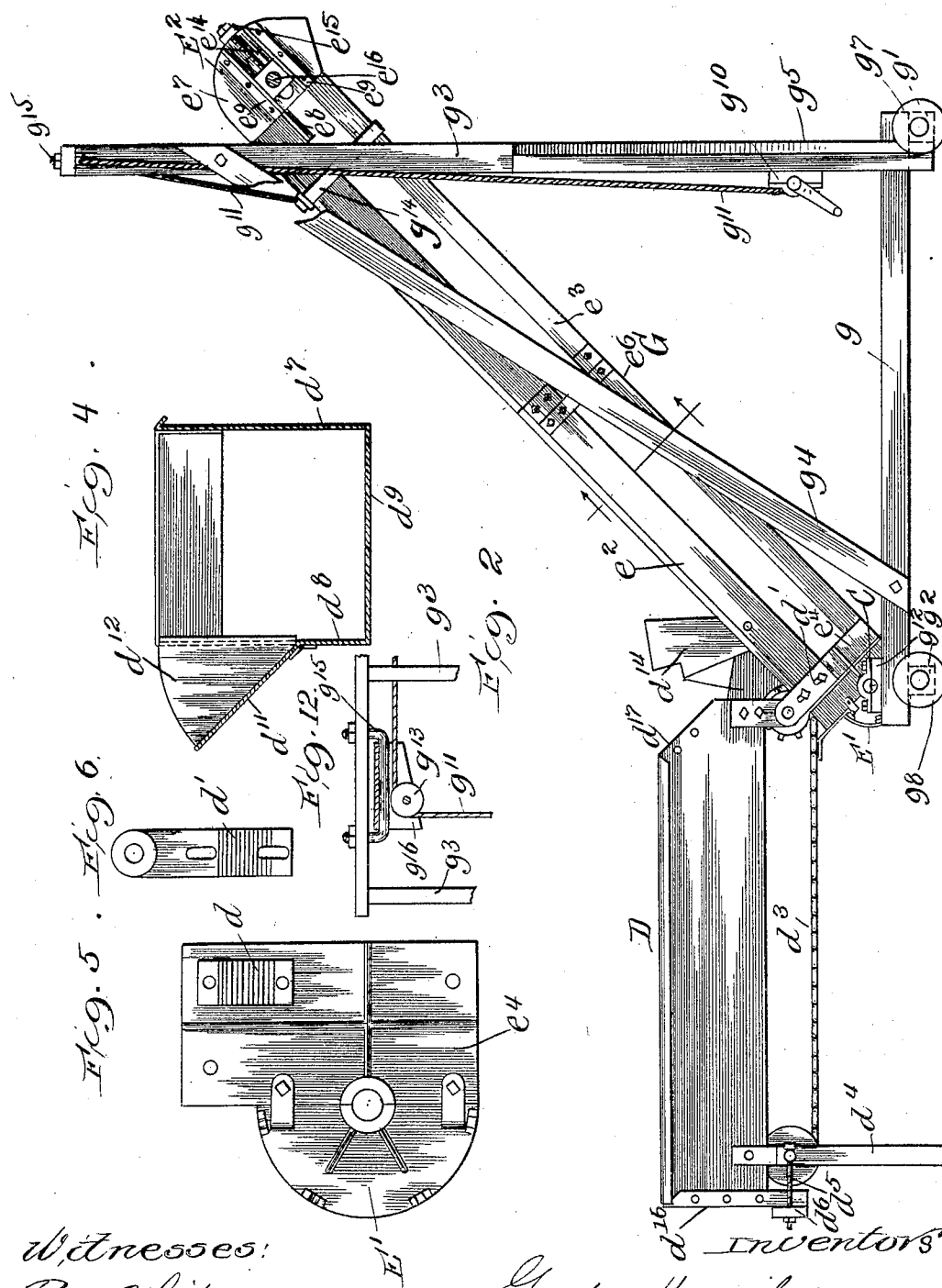
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3 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

GUSTAVE WENZELMANN AND EDWARD H. OVERHOLT, OF STREATOR, ILLINOIS, ASSIGNORS TO THE WENZELMANN MANUFACTURING COMPANY, A CORPORATION OF ILLINOIS.

PORTABLE GRAIN ELEVATOR AND CONVEYER.

No. 810,010.

Specification of Letters Patent.

Patented Jan. 16, 1906.

Application filed June 24, 1903. Serial No. 162,866.

To all whom it may concern:

Be it known that we, GUSTAVE WENZELMANN and EDWARD H. OVERHOLT, citizens of the United States, and residents of Streator, in the county of LaSalle and State of Illinois, have invented certain new and useful Improvements in Portable Grain Elevators and Conveyers; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in portable corn and grain elevators and conveyers adapted to be conveniently moved from place to place to facilitate the unloading of grain, corn, or the like into cribs or granaries. Heretofore most of the devices of the kind have been unnecessarily heavy and complicated and are neither so made as to enable the parts to be quickly arranged for moving nor provided with suitable means to enable the move to be made with small expenditure of power.

The object of this invention is to provide a compact and strong construction of as little weight as possible, having the parts so connected as to enable the same all to be quickly arranged on one of the parts provided with wheels to enable the same to be easily moved from one point to another.

The invention embraces many novel features; and it consists in the matters hereinafter described, and more fully pointed out and defined in the appended claims.

In the drawings, Figure 1 is a fragmentary top plan view of a device embodying our invention. Fig. 2 is a side elevation of the elevator and receiving-conveyer. Fig. 3 is a fragmentary enlarged vertical longitudinal section of the same. Fig. 4 is a transverse section of the receiving-conveyer. Fig. 5 is an enlarged side elevation of the lower end of the elevator casing or boot. Fig. 6 is a detail face view of one of the bearing-straps on which the receiving-conveyer is pivoted or hinged on the elevator. Fig. 7 in an enlarged fragmentary section illustrating the detail of the joints between the parts of the elevator-trough. Fig. 7^a is a similar view showing the bolt set up. Fig. 8 is an enlarged detail side

elevation of the guide and guard for the chain and through which the lower elevator-shaft passes. Fig. 9 is a top plan view of the same. Fig. 10 is a view similar to Fig. 8, but of the guide and guards for the upper run of the elevator-chain. Fig. 11 is a top plan view of the same. Fig. 12 is a sectional detail of the hoisting-pulley at the top of the derrick. Fig. 13 is a transverse section of the elevator-spouts.

As shown in said drawings, the elevator and conveyer is shown as generally used—that is to say, in connection with an unloading device or wagon-dump, such as that set forth in my application for patent "Wagon-dump," executed of even date herewith and bearing Serial No. 162,865. Said wagon-dump comprises a platform A, as shown in Fig. 1, and upon which may be driven a loaded wagon or the like. A vertically-movable carriage B extends transversely of the platform and is adapted to elevate the front end of the wagon-box to a height sufficient to permit the grain, corn, or other material in the wagon-box to flow into a receiving-conveyer D, adjusted at the rear end of the wagon to receive the same. Said carriage may obviously be actuated from any desired source of power. Preferably, however, and as shown in Fig. 1, the same is actuated from a tumbling-rod C, which also actuates the conveyers and the elevator, hereinafter described. Said tumbling-rod may conveniently be actuated by means of horse-power or any convenient source of power. At the rear end of and extending at a right angle from the power side of the platform A, as shown, is the elevator and conveyer, comprising an elevator (indicated as a whole by G) and a receiving-conveyer (indicated by D and located at the rear end of the platform.) Said elevator, as shown, is supported in a portable frame, comprising parallel sills *g g*, rigidly secured at their front ends to the elongated transverse sill *g'* and at their rear ends connected with a relatively short transverse sill *g''*, as shown in Figs. 1, 2, and 3. Supported at the outer or front end of the sill *g* are the parallel vertical ways *g''*, which are braced rearwardly to the sills *g* by braces *g''* and laterally to the sill *g'* by braces *g''*. Said ways are connected at their tops by the transverse beams *g''* in a fa-

miliar manner. At the outer ends of the sill g' are the wheels g^7 , having a small diameter, but broad tread-surface, which, together with the pivot-wheels g^8 at the opposite ends of the sills g , enables said derrick or frame to be moved from place to place, as preferred or necessity may require. Secured at said end of the sills g are boxes g^{12} , in which the tumbling-rod C is journaled and which, as before stated, actuates the carriage B. Said tumbling-rod is provided with sprocket-wheels whereby is driven an endless elevator-chain provided with upwardly-projecting transverse lags e . A double elevator-trough of sheet-steel, one for each run of the chain, is pivoted at its lower end on said tumbling-rod and inclines upwardly between said ways, and sprocket-wheels e' are journaled at the upper end of and between the elevator-troughs and over which said chain is trained.

The elevator-troughs are each formed of sheets of metal bent to form an integral bottom and sides, as shown more fully in Figs. 2, 3, 5, and 7, and comprise the lower end portion E' , which is rounded and of sufficient radius to permit the chains to pass freely around the elevator sprocket-wheels on the tumbling-rod C and which is rigidly connected with the lower end of the side walls e^2 e^3 of the trough by means of a properly-formed or bent sheet of metal e^4 , to which said ends are rigidly bolted. The adjacent trough-sections are connected through the bottoms e^5 e^6 of said trough-sections and the overlapping integral side walls e^2 e^3 by lapping the metal where the sides and bottoms join each other, with the inner laps directed with the travel of the run of the chain therein, thereby preventing the lags e catching on the ends of the side walls or bottom plates. The ends of the sheets at the laps are apertured and a countersunk washer e^{11} secured beneath the same, and a screw-bolt e^{12} , having a flat head conical on the under side, such as an ordinary stove-bolt, is secured therein, as shown in Figs. 3 and 7, 7^a , drawing the metal into said washer, countersinking the head therein. Said troughs are connected intermediate their ends by straps e^{13} , of sheet metal, which are secured thereto by means of the bolts which connect the side members of the troughs. The upper ends of said elevator-troughs are connected together by means of the sheet-metal hood E^2 , which, as shown, comprises the two side plates e^7 , rounded at the end and open at the bottom, so that material carried up the trough by the upper run of the chain is dumped through said hood into any convenient receiving means. As shown, the sprockets e' , journaled in said hood at the upper end of said elevator-trough, are provided with a guide e^8 for the chains, which acts to prevent the same from kinking. Said guide is of cast metal or other suitable material, slidably secured below the bottom plate

e^5 of the upper trough, and affords a bearing for the shaft e^{16} of the sprocket-wheels e' and affords a smooth surface continuous with the bottom for the material to slide over and is rounded at the end to direct material elevated thereto by the chain past the shaft of the upper sprocket. The bottom of said elevator-trough is provided with a similar guide g^9 , rigidly bolted to the bottom plate e^5 and through which the tumbling-rod C is journaled. Said guide is also of cast metal and enables any material to be carried out of the end of the conveyer which might fall therein. Said elevator-troughs and contained parts are supported in said frame or derrick by means of a rope or other flexible connection g^{11} , which leads through a suitable pulley g^{13} in the top of said derrick and is secured to the upper end of the elevator-troughs by means of a bail g^{14} , as shown in Fig. 3. The other end of said line extends downwardly along the frame and is secured to a winch g^{10} , to enable the upper end of said conveyer to be adjusted for height as preferred. Conveniently said pulley g^{13} is hung from the top of the derrick by means of a barrel-staple or U-bolt g^{15} , over which is secured a strap of metal g^{16} , also bent in U shape and between the sides of which the pulley is journaled.

Means are provided for adjusting the tension of the elevator-chain E, comprising guides e^9 , secured on the outer side of each of the side plates e^7 of the hood, and between which the bearing e^{10} for the shaft of the upper sprocket-wheels have sliding engagement. A threaded adjusting-bolt e^{14} engages each of said bearings and passes at its outer end through a suitable strap e^{15} , extending transversely of the hood. Nuts are provided on each of said bolts on the outer side of said strap, whereby said bearing e^{10} may be drawn outwardly to secure a desired strain on the elevator-chain. Plates e^4 on the lower end of said elevator-casing are each provided on its upper edge with transversely-corrugated plates d , rigidly bolted thereto and adapted to engage with a complementally-corrugated bracket d' , provided with slotted apertures for purposes of adjustment and which is rigidly bolted thereto, as shown in Fig. 2. Said brackets are apertured and afford a bearing for a transverse shaft D' , provided with sprocket-wheels, which drive the chain d^3 of the receiving-conveyer D and on which the receiving-conveyer is pivoted in such manner that the entire conveyer may be turned upwardly into the elevator to permit the passage of the team upon the platform A, or when it is desired to move the device. One end of said shaft D' projects beyond the bracket d' sufficiently to permit a driving sprocket-wheel to be secured thereon which receives the driving-chains d^2 , trained over a suitable sprocket on the tumbling-rod C, as shown in

Fig. 1 and in dotted lines in Fig. 3. The upper run of the conveyer-chain d^3 moves along the bottom of a box or receptacle adapted to receive the grain or corn from the wagon when dumped and passes around corresponding sprocket-wheels journaled on the legs d^4 , which are pivoted on and support the outer end of said box. The bearings are provided each with a rearwardly-extending bolt d^5 on each side of said box, the outer ends of which are threaded and which extend through a transverse beam d^6 , whereby a nut on the outer end of each bolt acts to adjust the tension on the conveyer-chain, as before described, for the elevator-chain. Said receiving-box, as shown, is constructed of sheet metal and comprises side walls d^7 d^8 and the bottom section d^9 , which extends rearwardly to a point beyond the rear sprocket-shaft. A complementary bottom section d^{10} extends forwardly above the chain and lags thereon to a point beyond said sprocket-shaft, thereby preventing any material in said box from passing outwardly at any other point excepting at the point of delivery to the elevator. The middle part of the side d^8 of said box is relatively low, and hinged thereto is the hopper-section d^{11} , provided with integral end members d^{12} , the inner edges of which are bent inwardly, forming flanges d^{13} , which engage against the inner side of the box at each end. Said hopper-section when turned outwardly, as shown in Figs. 3 and 4, is supported by said flanged ends. The rear end of the box is formed by a sheet of metal d^{16} , which flanges over the sides and forms a stay therefor. The front end of the box is of course open, but is partly covered on the top by a sheet of metal d^{17} , which extends downwardly part way over the inclined end portion, as shown in Figs. 2 and 3, and is securely riveted in position. The metallic side walls of said receiving-box may be flanged, corrugated, or formed in any desired manner to increase the strength, and chute-boards d^{14} are pivoted on the side wall e^2 of the elevator-trough and are adapted to be turned inwardly and downwardly, as shown in Figs. 2 and 3, along the sides of the receiving-box to direct all material therefrom into the elevator-trough. Said chute-boards are turned upwardly when it is desired to turn the receiving-conveyer into the elevator, as before described.

The operation is as follows: The device may be drawn by a single team upon the road or elsewhere with the receiving-conveyer D turned upwardly into the elevator. When desired for use, the platform having been adjusted as shown in Fig. 1, the elevator is suitably adjusted by means of the winch and the device is ready for use. After erecting the device and adjusting the same for use the receiving-conveyer being turned up into the elevator out of the way, a loaded wagon may

be driven upon the platform until the front wheels rest on the carriage B and the rear end of the box is positioned to dump the contents thereof into the receiving-conveyer. The receiving-conveyer is then turned down to the position shown in Figs. 1, 2, and 3 and the elevator and conveyer started by means of the tumbling-rod C, which also actuates the carriage. The hopper side of the receiving-conveyer is turned downwardly below the rear end of the box of the wagon and (the tail-gate of the wagon being removed) as the front end of the wagon rises the grain, corn, or other material flows rapidly into the receiving-conveyer and is then delivered to the elevator, from whence it is delivered to the granary or crib.

The construction of the chain-tightening devices is exceedingly simple and effective, affording perfect and quick adjustment, while the general construction of the elevator and conveyer troughs is such as to prevent the corn, grain, or other material clogging therein during its passage therethrough. The chain-guards prevent kinking the chains, whether the device is operated empty or full. Obviously many details of construction may be varied without departing from the principles of this invention.

We claim as our invention—

1. The combination with a supporting-frame, of supporting-wheels, a main driving-shaft journaled on the frame on a chain elevator pivoted at one end thereon, means for adjusting the free end of the elevator to a desired height, a shaft journaled on the lower end of the elevator, a receiving chain conveyer pivoted on the shaft and positioned to turn upwardly into the elevator, legs pivoted at the outer end of the receiving-conveyer and on which one of the shafts for the conveyer is journaled, means for adjusting the tension of the conveyer-chain comprising bolts acting to swing said legs on their pivots.
2. The combination with a supporting-frame, of wheels beneath the same, a main driving sprocket-shaft journaled transversely at one end of the frame, metallic elevator-trough pivoted at one end thereon, endless chains provided with transverse lags and passing around the sprocket-wheels on said driving-shaft, and similar sprockets at the outer end of the conveyer-troughs, a sprocket-shaft journaled transversely on the lower end of the elevator, a receiving-conveyer pivoted thereon in position to turn upwardly into the elevator, said conveyer comprising a sheet-metal box open at the top and the end adjacent to the elevator, legs at the outer end of the same, a sheet-metal hopper hinged in one side of said conveyer and provided with flanged ends acting to engage the side walls thereof when turned outwardly, a conveyer-chain having transverse lags thereon driven from the sprocket-wheels on said shafts and

means for tightening the conveyer-chain operated by movement of the legs thereof on their pivots.

3. In a device of the class described the combination with a wheeled frame, an elevator pivoted therein at one end and comprising conveyer-troughs having integral sheet-metal bottom and side walls bent to form trough-sections and rigidly bolted together with the butts directed upwardly in the upper and downwardly in the lower trough, a strap of metal connecting corresponding side walls of the upper and lower troughs at the joints, washers countersunk on the inner sides engaging the outer sheet at the joints and conical headed bolts engaging through the top and acting to draw the sheet inwardly thereby countersinking the bolt-head therein.

4. The combination with upper and lower conveyer-troughs of sheet metal having integral bottom and side walls, of a sprocket-shaft at each end and between the troughs, endless chains secured over the sprockets thereon and connected by transverse lags and a rigid extension on the bottom of the upper trough filling the space between the chains above and below and bearing on the upper shaft and acting to prevent material clogging the elevator.

5. The combination in an elevator of two sheet-metal troughs built of sectional lengths secured together at the ends, sprocket-shafts journaled at the ends and between the troughs, endless transversely-connected elevator-chains extending around said sprockets, an adjustable guide at the upper end of said trough, said troughs each comprising a solid shell of metal joined with the butts directed with the travel of the chain, a receiving-conveyer comprising a sheet-metal box open at the top and one end and pivoted on the lower end of the elevator and conveyer chains movable therein and acting to deliver the contents into the elevator.

6. The combination with an elevator of the class described, of a receiving-conveyer pivoted on the lower end thereof and adapted to be turned upwardly into the elevator and comprising a box open at the top and at the end adjacent the elevator, legs at the outer end of the conveyer, a hinged outwardly-swinging side on the box forming a hopper, an endless conveyer-chain movable along the bottom of the box, means for tightening the conveyer-chain operated by movement of the conveyer-legs, and chute-boards also pivoted on the elevator and extending up on the sides of the receiving-conveyer and acting to direct material into the elevator.

7. In a chain elevator the combination with a sheet-metal trough comprising a plurality of trough-sections each having integral bottom and side walls and having the transverse lap of the sections directed with the

travel of the chain, of sprocket-shafts journaled at the top and bottom thereof, sprocket-chains operated thereby, a metallic fitting engaged on the shaft and forming a continuation of the bottom of the trough, a hood at the upper end of the elevator, parallel guide-slides on each side of the same extending parallel with the troughs, a sliding block between said guide-slides and in which the shaft is journaled, bolts secured on said blocks, a transverse bar at the outer end of the hood through which the bolts extend and nuts engaged on said bolts and acting to move the shafts longitudinally of the troughs and tighten the chain.

8. In a chain elevator the combination with a sheet-metal trough comprising a plurality of trough-sections each having integral bottom and side walls and having the transverse lap of the sections directed with the travel of the chain, of sprocket-shafts journaled at the top and bottom thereof, sprocket-chains operated thereby, a metallic fitting engaged on the shaft and forming a continuation of the bottom of the trough and shaped to support the chain to and from the sprocket-wheels and acting to prevent kinking thereof, a hood at the upper end of the elevator, parallel guide-slides on each side of the same extending parallel with the troughs, a sliding block between said guide-slides and in which the shaft is journaled, bolts secured on said blocks, a transverse bar at the outer end of the hood through which the bolts extend and nuts engaged on said bolts and acting to move the shafts longitudinally of the troughs and tighten the chain.

9. The combination in an elevator, of sprocket-chains, parallel sheet-metal troughs therefor comprising sections having integral bottom and side walls and having the laps directed oppositely in the respective troughs and with the travel of the chain therein, a sprocket-shaft at one end of the conveyer on which the same is pivotally supported, a hood at the opposite end of the trough, a sprocket-shaft adjustably journaled therein and over which the chain is trained, means for adjusting the tension of said chain by movement of the upper sprocket-shaft and a fitting forming a continuation of the bottom of the upper trough and secured on the sprocket-shaft between the laps of the chains and serving to direct the chain around the sprockets without kinking.

10. The combination with a sheet-metal receiving-conveyer, of a hinged side flanged at the ends forming a hopper, a driving-shaft on which said conveyer is pivoted, sprocket-wheels thereon, legs at the outer ends of the conveyer, a sprocket-shaft journaled thereon, endless, transversely-connected chains trained over said sprocket-wheels with the upper run thereof movable over the bottom of the conveyer and means operated by ad-

justment of the legs of the conveyer for tightening the chains.

11. The combination with a sheet-metal receiving-conveyer, of a side thereon adapted to turn outwardly and forming a hopper, a sheet-metal elevator pivotally connected with said conveyer, a driving-shaft on which the elevator is pivoted at the end adjacent to said conveyer, sprocket-wheels on said shaft, a sprocket-shaft at the upper end of the elevator, endless, transversely-connected elevator-chains passing around the sprocket-wheels on the driving-shaft and the upper sprocket-shaft and a guide at each end of the conveyer provided with a rounded end and affording a continuation of the bottom.

12. The combination with a sheet-metal receiving-conveyer, of a side thereon adapted to turn outwardly and forming a hopper, a sheet-metal elevator adjustably engaged thereon, pivotally-supported means on said elevator adapted to direct material thereinto a driving-shaft on which the elevator is pivoted, sprocket-wheels on said shaft, a sprocket-shaft at the upper end of the elevator, endless, transversely-connected elevator-chains passing around the sprocket-wheels on the driving-shaft and the upper sprocket-shaft, a guide rigidly secured at the lower end of said elevator and a movable guide at the upper end, said guides being provided with rounded outer ends.

13. In a device of the class described the combination with a receiving-conveyer, of a chain elevator adjustably connected therewith, a double trough adapted to carry said chain, means for adjusting said chain, a guide rigidly secured at the lower end of said elevator and a movable guide at the upper end thereof projecting from beneath the upper trough and provided with a downwardly-turned outer end.

14. In a device of the class described the combination with a receiving-conveyer, of a double trough adjustably engaged thereon, a sprocket-shaft journaled at each end of said

trough, an endless-chain conveyer carried on said sprockets, a transverse guide slidably engaged beneath the upper trough and having a rounded end adapted to direct material thereover and a downwardly-opening hood at the upper end of said trough.

15. In a device of the class described the combination with a receiving-conveyer positioned for a wagon-box to dump its contents directly thereinto, of an elevator positioned to receive the material therefrom, a sprocket-shaft at the top of the elevator, extensible adjusting-rods supported on each end thereof, a sprocket-shaft journaled at the lower ends of said adjusting-rods and driving-chains trained over the sprockets on said shafts and tightened by the extension of the adjusting-rods.

16. In a device of the class described an upper and a lower elevator-trough each comprising a plurality of overlapping sections having integral bottom and side walls, countersunk washers in suitable apertures in the overlapping ends of said sections, bolts provided with conical heads adapted to seat in said washers flush with the upper surface of said troughs and straps connecting corresponding sections of said troughs at the joints.

17. In a device of the class described the combination with upper and lower connected conveyer-troughs each comprising a plurality of overlapping sheet-metal sections, of countersunk washers seated in the overlapping ends of said sections, bolts securing said sections together and provided with conical heads adapted to seat in said washers flush with the upper surface of the troughs and a conveyer adapted to travel in said troughs.

In testimony whereof we have hereunto subscribed our names in the presence of two subscribing witnesses.

GUSTAVE WENZELMANN.
EDWARD H. OVERHOLT.

Witnesses:

H. W. LUKINS,
N. M. WHITING.