A. F. MEYER.

GRAIN ELEVATOR.

APPLICATION FILED JUNE 19, 1911.

1,152,371.

Patented Aug. 31, 1915.

4 SHEETS—SHEET 1.

Fig. 1.

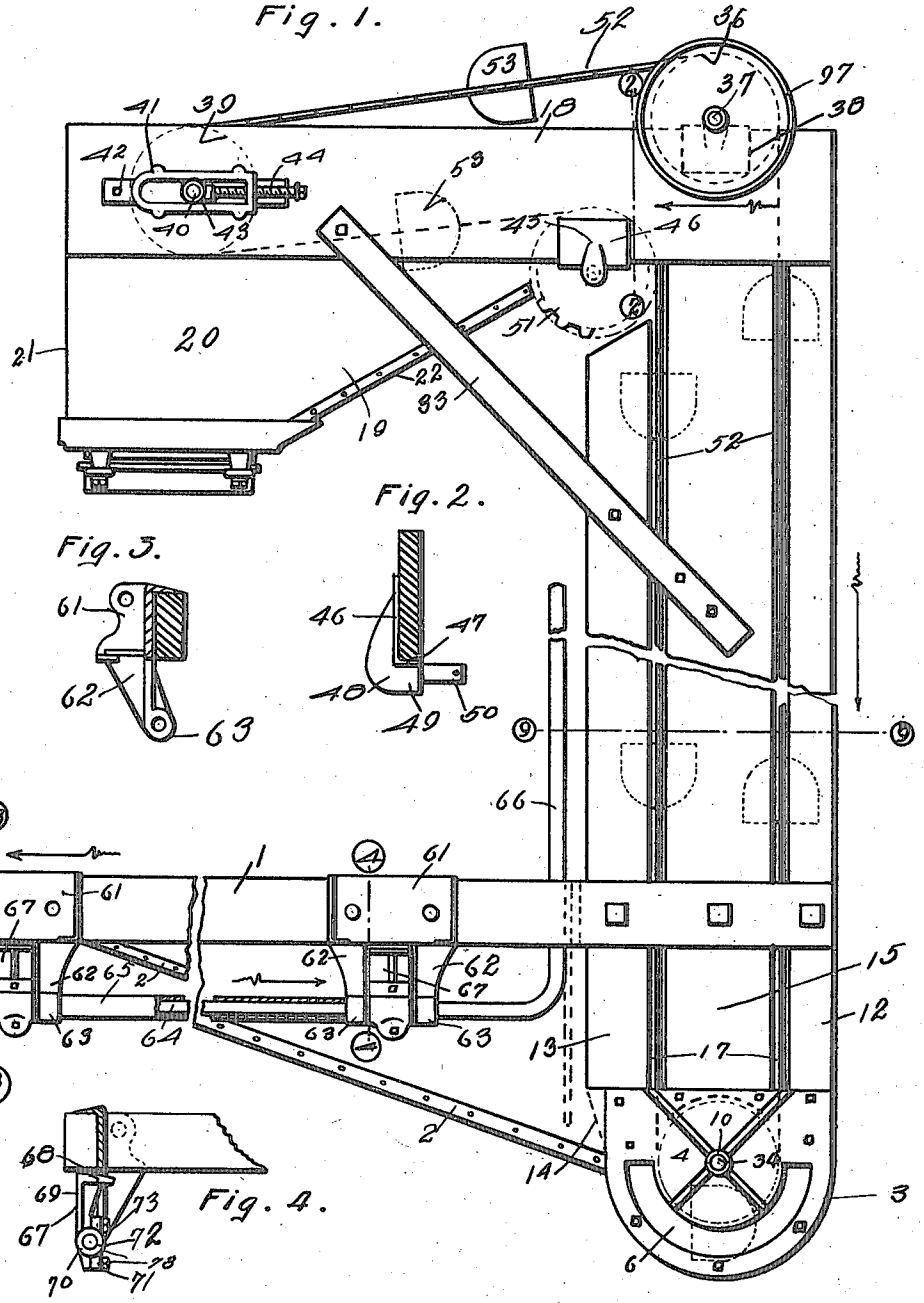


Fig. 2.

Fig. 3.

Fig. 4.

WITNESSES.

J. W. Naylor.

E. M. Barnhardt

INVENTOR.

A. F. Meyer

By LaPorte & Bean

ATTYS.

A. F. MEYER.

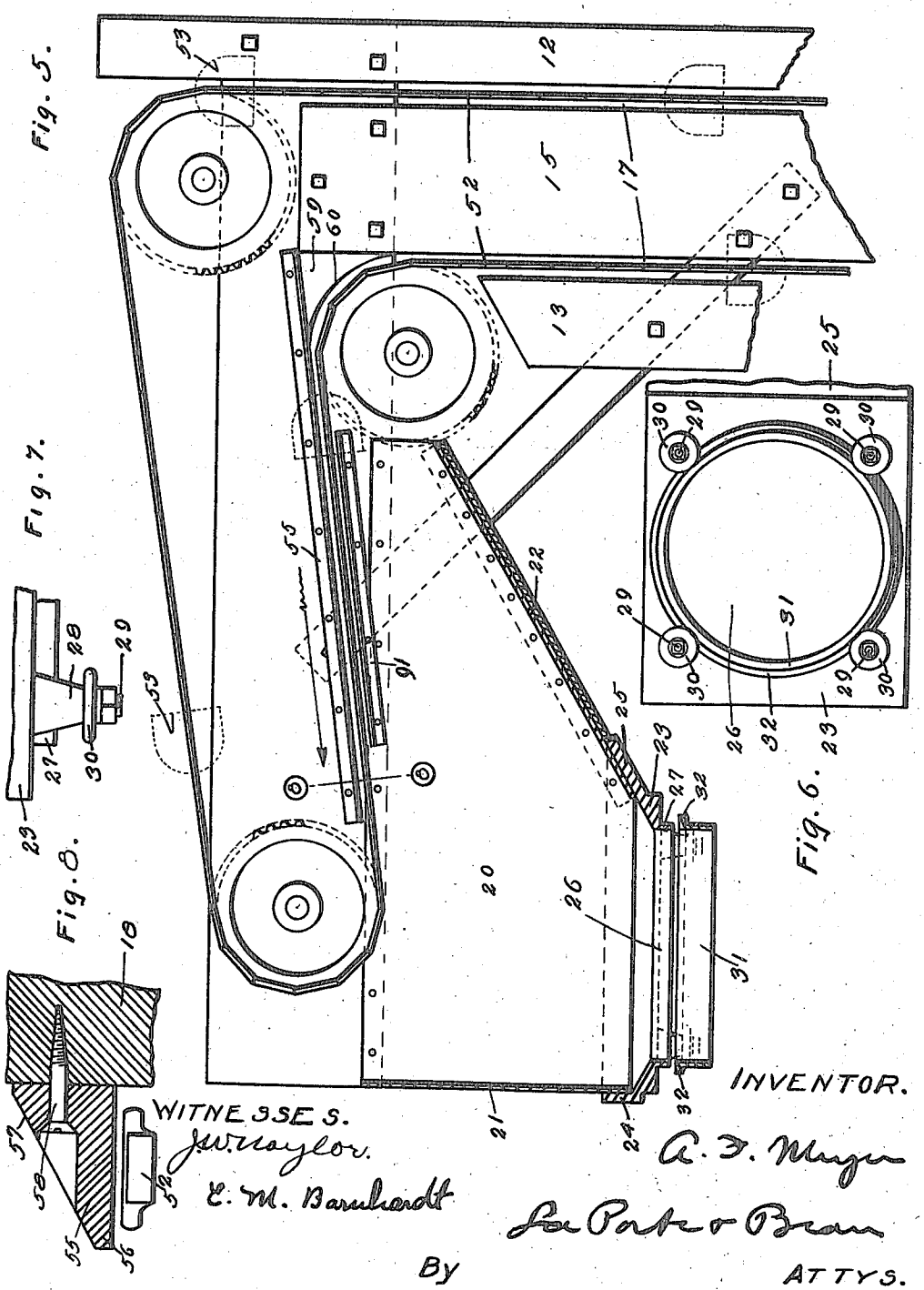
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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

Fig. 15.

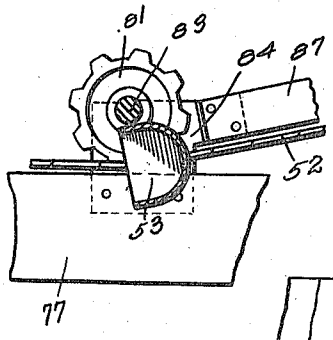


Fig. 9.

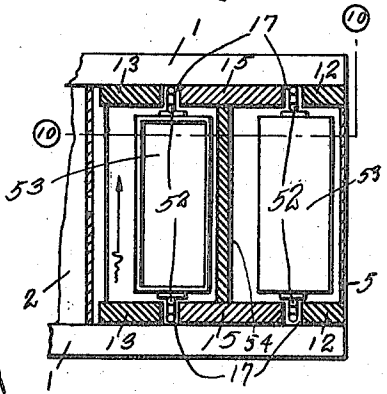
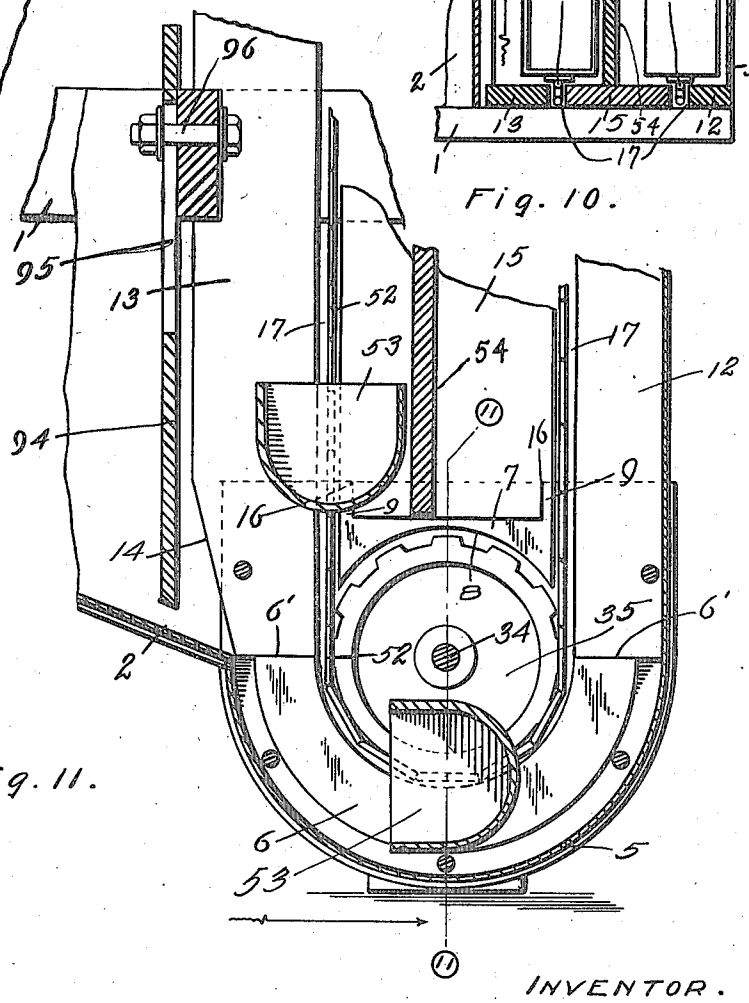


Fig. 10.



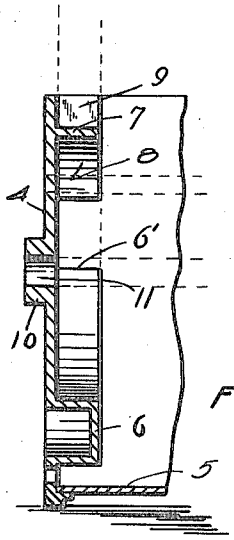


Fig. 11.

WITNESSES.

J. W. Taylor.

E. M. Barnhardt

INVENTOR.

A. F. Meyer

LaPorte & Bean.

By ATTYS.

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4 SHEETS—SHEET 4.

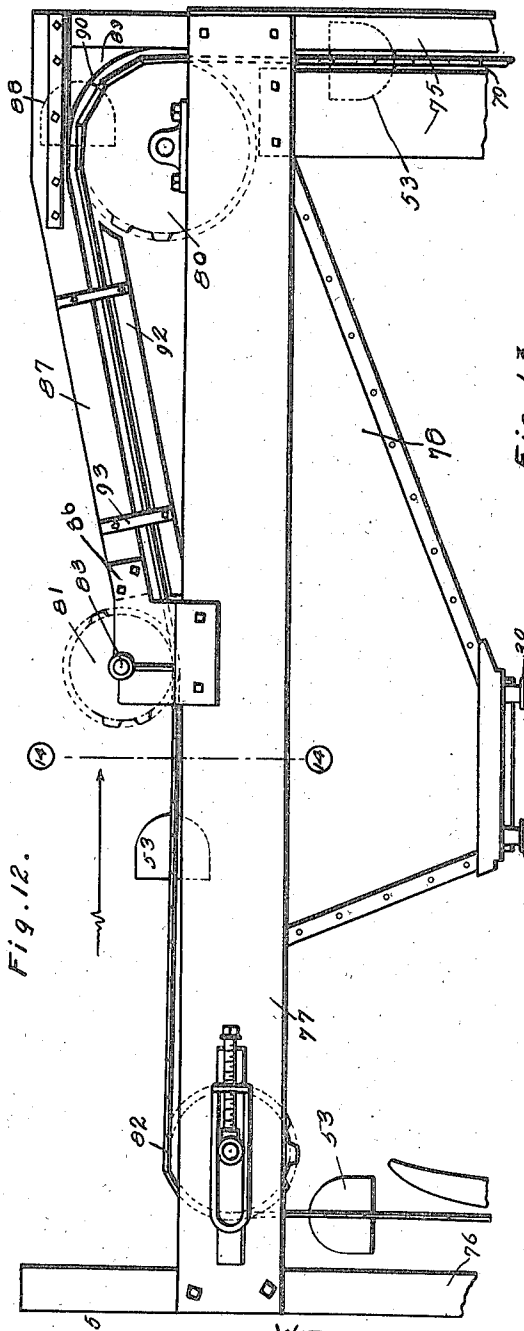


Fig. 12.

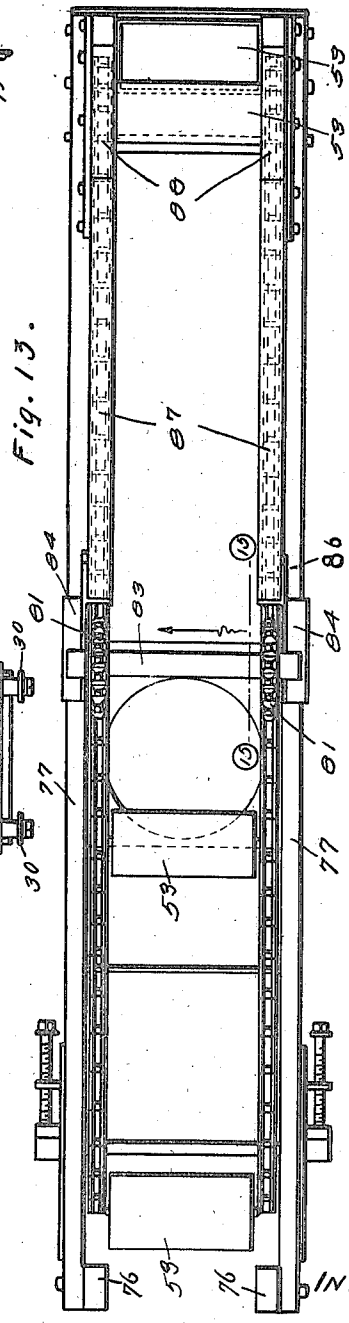


Fig. 13.

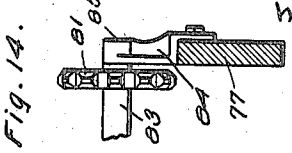


Fig. 14.

WITNESSES.

E. M. Barnhardt

INVENTOR.

A. F. Meyer

By La Porte & Brown

ATTYS.

UNITED STATES PATENT OFFICE.

ALFRED F. MEYER, OF MORTON, ILLINOIS.

GRAIN-ELEVATOR.

1,152,371. Specification of Letters Patent. Patented Aug. 31, 1915.

Application filed June 19, 1911. Serial No. 634,170.

To all whom it may concern:

Be it known that I, ALFRED F. MEYER, a citizen of the United States, residing at Morton, in the State of Illinois, have invented certain new and useful Improvements in Grain-Elevators, of which the following is a specification.

This invention has reference to elevators for receiving and conveying grain to a position to be discharged into the bins, hoppers or receptacles of a crib or granary.

This invention has for its object to improve certain details of construction in machines of this character as shown in my copending application, Serial No. 584,876.

To the accomplishment of the foregoing and such other objects as may hereinafter appear my invention consists in the combination, construction and arrangement of parts and details hereinafter described and then set forth in the appended claims, reference being had to the accompanying drawings forming a part hereof which represent a preferred embodiment of my invention, and also one modification of the same.

In the drawings, Figure 1 is an elevation of my improved elevator. Fig. 2 is a sectional view on line 2—2 of Fig. 1 looking in the direction of the arrow. Fig. 3 is a sectional view on line 3—3 of Fig. 1 looking in the direction of the arrow. Fig. 4 is a sectional view on line 4—4 of Fig. 1 looking in the direction of the arrow. Fig. 5 is an interior elevation of the upper part of the elevator, parts being shown in section. Fig. 6 is a bottom plan view of the discharge opening. Fig. 7 is a perspective view of the manner of mounting the rollers which support the spout. Fig. 8 is a section on line 8—8 of Fig. 5. Fig. 9 is a cross-section through the vertical leg of the elevator showing the position of the buckets on line 9—9 of Fig. 1. Fig. 10 is an internal elevation of the boot and lower end of the vertical leg, parts being shown in section on line 10—10 of Fig. 9. Fig. 11 is a section taken on line 11—11 of Fig. 10 looking in the direction of the arrow. Fig. 12 is an elevation of the top portion of a modified form of my invention utilizing two vertical legs. Fig. 13 is a top plan view of Fig. 12. Fig. 14 is a section taken on line 14—14 of Fig. 12, looking in the direction of the arrow, and, Fig. 15 is a section on line 15—15 of Fig. 13 looking in the direction of the arrow.

In the drawings like characters of reference are used to designate corresponding parts in the various figures.

Referring to Figs. 1 to 11 inclusive which illustrate the preferred embodiment of my invention, 1 designates the horizontally extending base timbers or supports between which is provided the inclined floor 2 leading to the boot 3. This boot is formed of the two side members or castings 4 and the semi-circular bottom or covering 5. These castings or members 4 are of peculiar formation and have the inwardly projecting semi-circular portion or flange 6 in the lower part thereof. In the upper part is formed the horizontally extending flange 7 which is formed with a curved lower edge 8 and vertically projecting extremities 9. The semi-circular flange 6 terminates in the horizontal abutments 6′. Each casting 4 is further provided with a boss 10 having a central opening 11 in which is journaled a shaft to be hereinafter described. Secured to these castings are the vertical members which form the vertical leg of the elevator comprising the member 12 which is mounted on one of the abutments 6′ of the circular projection or flange 6 and the member 13 which is mounted on the other abutment 6′ of said circular flange or member 6. It is to be noted that the member 13 is wider than the circular flange or projection 6 and its abutment 6′ and has the inclined edge 14 to reduce the width of the lower extremity thereof to approximate that of the circular flange and its abutment. Secured to this casting 4 intermediate the members 12 and 13 is the member 15 which rests upon the horizontal flange 7 and has cut-out portions 16 to fit said vertical portions 9 of the flange 7. Attention is called to the fact that the members 12 and 13 are each spaced from the member 15 as shown at 17 to allow the passage of the links of the conveyer chain to be hereinafter described.

Secured to the upper ends of the members 12 and 15 are the horizontally extending upper supports or timbers 18, which extend over the base timbers or supports 1. Secured to these horizontal members 18 is the receiving hopper 19 which is formed of the sides 20, the vertical end 21 and the inclined end 22, the lower portion thereof being open. To this lower portion is secured the member 23 which is provided with a vertical flange 24 on three sides thereof and the in-

clined flange 25 on the side thereof which is secured to the inclined end 22 of the hopper. This member 23 is provided with a circular opening 26 having a circular flange 27 surrounding said opening. Secured about said circular flange are the frusto-conical projections 28 which project downwardly and have secured therein the pins or bolts 29 on which are rotatably mounted the rings or rollers 30. Mounted to rotate beneath the opening 26 is the ring 31 which has the horizontally extending flange 32 which bears on said rings or rollers 30, to allow of ready rotation of said ring 31, it being understood that the flexible discharge spout which is ordinarily used with this devise is attached to said ring 31. The upper horizontal supports 18 are braced by means of the support or bracket 33 which connects to the central vertical member or board 15 as shown.

The conveyer chain and its various adjuncts will now be described. Journaled in the hub or boss 10 is the shaft 34 on which is secured at each end the sprocket wheels 35. These sprocket wheels are of such diameter as to fit within the circular space formed by the curved lower edge 8 of the flange or abutment 7 and the curved edge of the circular portion or flange 6. Mounted directly above these sprocket wheels on top of the upper horizontal members 18 are the sprocket wheels 36 which are secured on shaft 37 supported by brackets 38. Between the extremities of these members 18 are mounted the sprocket wheels 39 on shaft 40 which shaft is adjustably mounted as follows: Secured to the exterior of the members 18 are the yokes 41 and beneath said yokes are the sliding plates 42, each having a boss 43 formed thereon and having a screw bolt 44 connected with said boss and with said yoke whereby upon adjustment of said screw bolt the shaft 40 will be adjusted. Mounted on the outside of the members 18 near the corner formed by the junction of the members 18 with the vertical members 15 are the brackets 45 each of which have the face portions 46 and the right angled flange 47, as well as the boss 48 which extends under the flange 47 as at 49 and terminates in the stud shaft 50 which projects inwardly from the inner face of the horizontal member 18. On these stud shafts 50 are mounted the sprocket wheels 51. Mounted to travel about these sprocket wheels 51, 39, 36 and 35 are the sprocket chains 52, which chains have the buckets 53 which are of ordinary form and construction secured thereto at regular and convenient intervals. It is understood that these chains and buckets run around under the sprocket wheels 35 upon the inside of the vertical leg over the sprocket wheels 51, under around and over the sprocket wheels 39, over the sprocket wheels 36 and down to the sprocket wheels 35 again on the outside of the vertical leg. A vertical partition 54 is provided between the central vertical members 15 to form a guide and support for the buckets during the upward movement to prevent their tilting when loaded.

One particular feature of my invention consists in a guiding means for the chain during its run over the receiving hopper 19 into which the buckets are discharged. Guiding strips 55 are provided and extend from close proximity to the sprocket wheels 39 over the sprocket wheels 51 into close proximity with the sprocket wheels 36, being located in an inclined position on the inside of the upper horizontal members 18 so as to immediately over-lie the discharge run of the chain. These strips 55 are provided with the lower horizontal portion or face 56 and the upper inclined face 57, the latter being provided so that any material that may drop upon the strips from above will slide thereover over the chain 52 which runs immediately under the horizontal face 56. These strips are secured in position by the counter-sunk screws 58. An additional guiding means is provided immediately below the end portion of these strips which over-lies the sprocket wheels 51 and comprises the triangular member 59 having the curved inner face or surface 60, corresponding in curvature to the curve of the sprocket wheel 51. This curved face or surface 60 runs into the lower face or surface 56 of the guiding member 55. These triangular members 59 are located at the upper turning point of the chains and buckets and prevents any material from dropping from above upon the chains.

The horizontal base supporting timbers 1 and the portions of the elevator located beneath the same are embedded in a concrete base or foundation as shown in my co-pending application hereinbefore referred to. I disclose herein an improved construction for operating the dump logs. Secured to the horizontal timbers 1 are the brackets 61 having the depending members 62 which are spaced apart as shown and provided at their lower end with sleeves or bearings 63. Mounted to turn in these sleeves or bearings 63 is the shaft 64 provided with a protecting sleeve 65 and having the operating handle 66 in one end thereof. Mounted on this shaft intermediate the spaced depending members 62 of the bracket 61 are the supporting members or lugs 67 which comprise two parts. The larger part or member is formed with a horizontal extension 68 and the vertical body portion 69 having a semi-circular bearing 70 formed in the lower end thereof. Secured to the larger member is the smaller member 71 having the complementary semi-circular bearing 72. The two

parts are clamped together about the shaft 64 by bolts 73. The horizontal portions 68 of the lugs 67 form the supporting means for the end of the dump logs. The wagon is backed on to the dump logs while they are held by means of these lugs 67 and then the lugs are turned by means of said shaft 64 and the handle 66 so as to withdraw them from under said dump logs when the weight of the wagon will turn the dump logs on their pivots and thus dump the material from the wagon into the chute.

In that type of device in which the elevator straddles the drive-way and has two vertical supports with a horizontal support there-between having the discharge hopper secured thereto, as illustrated in my co-pending application hereinbefore referred to and as disclosed in Figs. 12 to 15 of the drawings I have also applied various features of this invention. The upper part or discharge portion of the elevator will only be described as that is all that is deemed necessary. The two vertical legs or supports 75 and 76 are provided which straddle the drive-way. The horizontal members 77 connect these legs at their upper parts and secured to these horizontal members 77 is the discharge hopper 78 of similar construction of the hopper hereinbefore described. In this form of the device the chain moves in the space 79 between the vertical members forming the legs 75 over the sprocket wheels 80, under the sprocket wheels 81 and over the sprocket wheels 82. These latter sprocket wheels 82 are adjustably mounted in the same manner as the sprocket wheels 39 hereinbefore described. The sprocket wheels 81 are mounted on the shaft 83 which is journaled in the vertical supporting brackets 84 which are provided with the journals 85 for that purpose. These brackets or supports have the extension 86 to which is secured the inclined guide strip or member 87, which extends over the sprockets 80 as shown, and is connected to the vertical leg or member 75 by means of the strip or member 88. In addition to this inclined guiding member is provided the additional guiding member 89 in the form of a triangle having a curved inner surface 90 corresponding in curvature to the sprocket wheel 80. It is to be understood that these guiding members are duplicated on opposite sides of the head. It is obvious that this structure forms a guiding means for the chain in its upward movement over the sprocket wheel 80 and that the members 87 further guide the chain in its movement from the sprockets 80 by the sprockets 81. In this construction it is found necessary to provide a means for wiping material which may be on the outside of the buckets in order to prevent it from clogging the chain. This is accomplished in a very simple and efficacious manner by so proportioning the various parts of the apparatus that the buckets 53 in moving under the shaft 83 are wiped on the upper part of their exterior surface by said shaft 83 and any material thereon is removed. This is shown specifically in Fig. 15.

It is further to be noted that I have also provided a lower guide or supporting member for the discharge run of the chain as designated by the numeral 91. This feature is also illustrated in the modification disclosed in Fig. 12 where the lower guiding strip 92 is shown as supported by brackets 93 from the upper guiding strip 87.

I also provide a valve or cut-off 94 for the discharge trough or bottom 2. A slot 95 is provided in this cut-off and a bolt 96 is detachably secured therethrough to the base of the elevator, whereby the cut-off or valve may be adjusted as desired. If the material being elevated is large, for example ear corn, the valve is adjusted a considerable distance away from the bottom 2, but when the material is small as, for example shelled corn, it is moved nearer to the bottom 2. When the device is not in use the valve or cut-off may be moved down into engagement with the bottom 2 when it will not project above the base timbers 1 and will thus be out of the way.

A conventional driving pulley 97 is shown for driving the device and is illustrated as having operative connection with the upper shaft 37.

It is obvious then that I have provided improvements in several details in the machine illustrated in my prior applications, notably in providing a guiding means for the conveyer chain in turning over the upper discharge sprocket wheel and in providing further guiding means to direct the movement of the conveyer from that sprocket wheel to the next sprocket wheel. I have further provided a new and improved means of assembling and constructing the vertical legs of the elevator which means also forms a protection for the sprocket wheel which is mounted therein. I have also provided an improved method of constructing and arranging the discharge spout connection. Further I have disclosed a novel arrangement of details for operating the dump log.

What I claim is:—

1. In an elevator having a vertical leg, a chain having lifting and discharge runs, strips over-lying discharge run of the conveyer chain to form a guiding means therefor and a triangular member having a curved edge to guide the conveyer chain from the lifting run to the discharge run.

2. In an elevator having a vertical leg and upper horizontal supports, sprockets mounted between said horizontal supports

approximate the upper portion of the vertical leg, additional spockets mounted between the horizontal supports, a conveyer chain having a lifting run and a discharge run, running over said first mentioned sprockets and under said additional sprockets, inclined strips secured on the inner sides of the horizontal members to over-lie and guide the chain in its discharge run and a triangular member secured to said horizontal members approximate the upper end of the vertical leg, said triangular member having a curved edge to guide the chain from its lifting run to its discharge run.

3. In an elevator a vertical leg formed of end members and intermediate members, said end members being spaced from said intermediate members to form guide-ways, a conveyer chain mounted to run in said guide-ways, said chain having buckets thereon, a partition or member connecting said intermediate members and so disposed as to form a guide and support for said buckets.

4. In an elevator having a vertical leg, chains with lifting and discharge runs having conveyer buckets connected thereto, guiding means for the discharge run of said chains, said guiding means being positioned above said discharge run of said chains and being triangular in cross-section, the discharge run of the chain being positioned approximate the horizontal face thereof and the inclined surface of the guiding means being adapted to protect said chain from any of the material discharged.

5. In an elevator having a leg portion and a head portion, a conveyer chain mounted in said leg and head and having its lifting run in said leg and its discharge run in said head, a discharge receptacle mounted in said head to receive material from said conveyer, guiding means in said head portion for guiding said conveyer chain during its discharge run, said guiding means including members located in said head portion on opposite sides of the discharge run of said chains and positioned approximately parallel thereto, the upper member being triangular in cross-section, having its widest face approximate the discharge run of the chain and having its inclined face arranged so as to protect the chain from any of the discharged material.

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

ALFRED F. MEYER.

Witnesses:
CHAS. N. LA PORTE,
E. M. BARNHARDT.