

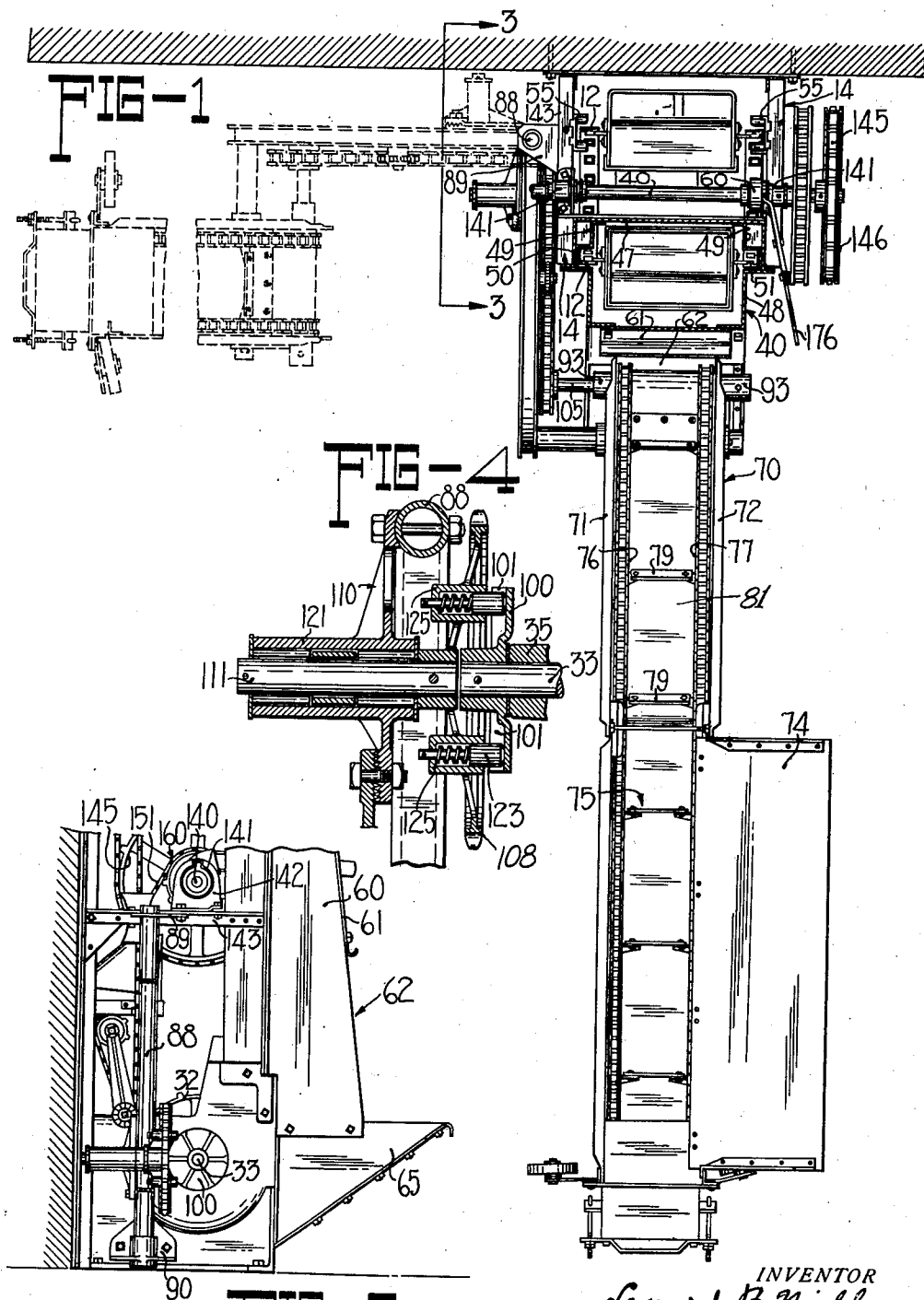
June 15, 1937.

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2,083,857

ELEVATOR

Original Filed March 31, 1933 3 Sheets-Sheet 1



WITNESS.  
Edward Melin

FIG-3

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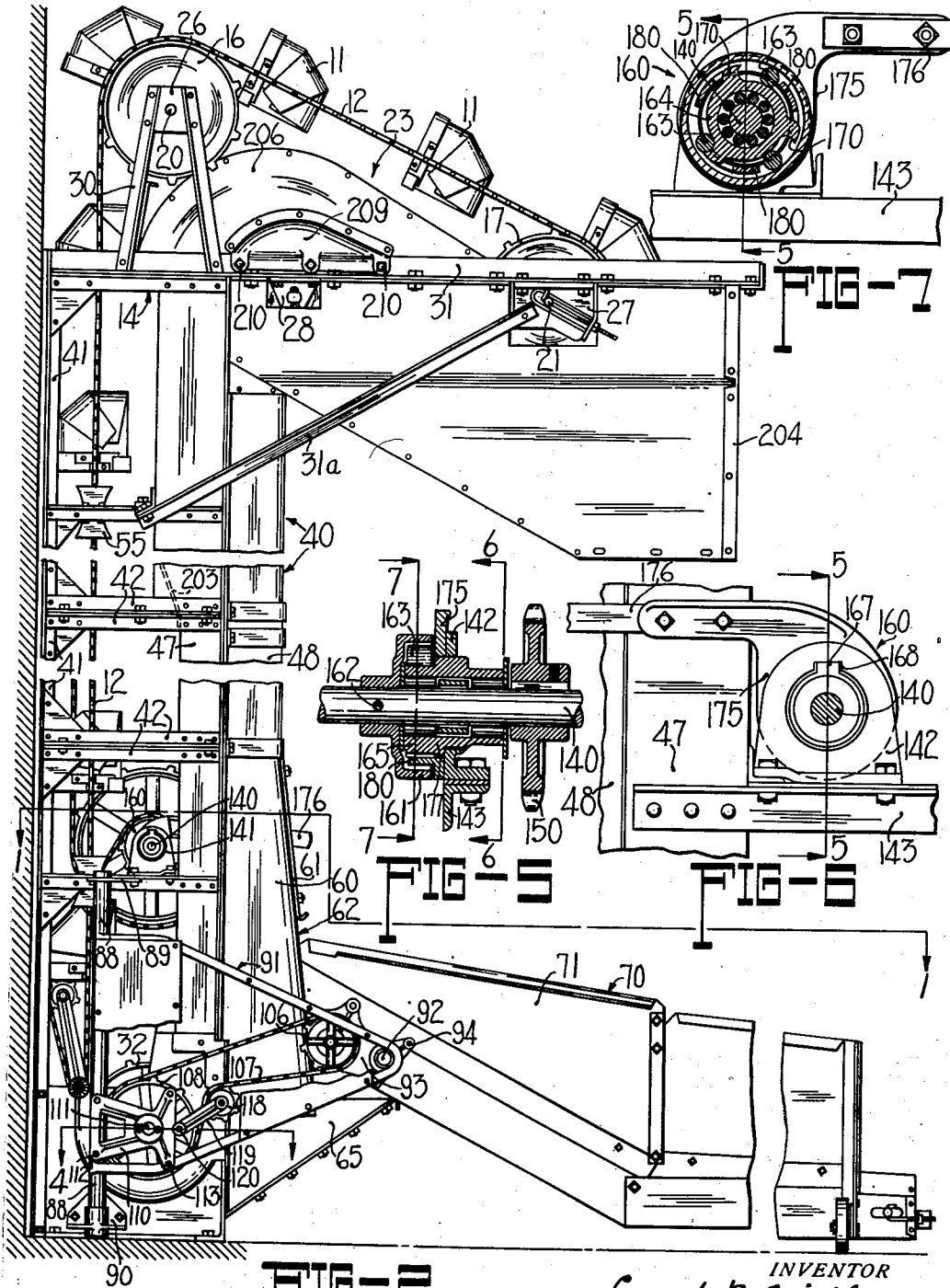
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ELEVATOR

Original Filed March 31, 1933 3 Sheets-Sheet 2



WITNESS.  
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FIG-2

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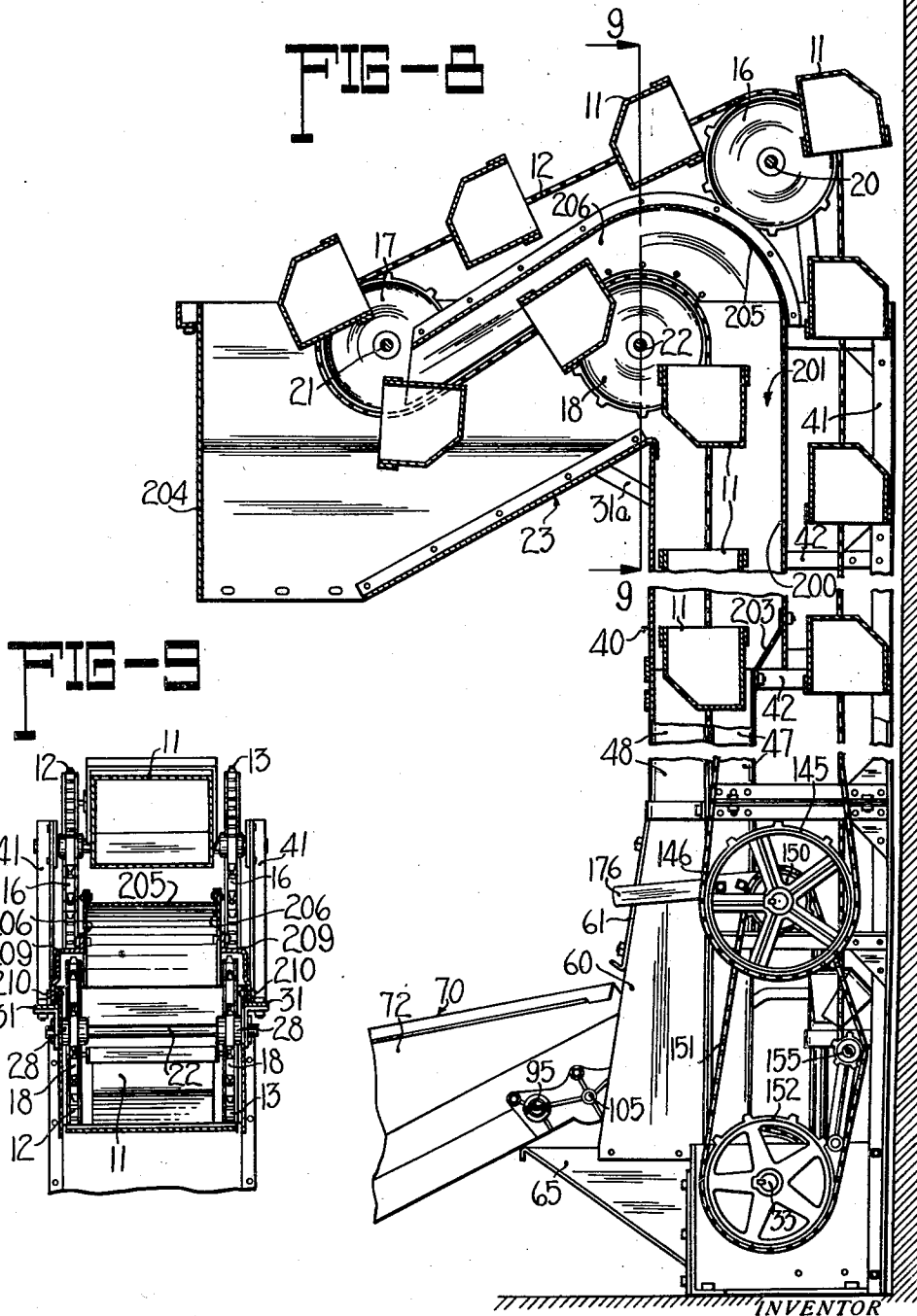
**June 15, 1937.**

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**2,083,857**

**ELEVATOR**

Original Filed March 31, 1933 3 Sheets-Sheet 3



## UNITED STATES PATENT OFFICE

2,083,857

## ELEVATOR

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Original application March 31, 1933, Serial No.  
663,685. Divided and this application Novem-  
ber 27, 1933, Serial No. 699,839

## 11 Claims. (Cl. 198—140)

This application is a division of my copending application, Serial No. 663,685, filed March 31, 1933, patented Jan. 7, 1936, No. 2,026,794.

The present invention relates generally to elevators and particularly to elevators of the type used in cribs, granaries and the like for receiving grain from wagons and other vehicles and elevating the grain to the top of the crib or granary from which the grain is distributed to the desired places by gravity.

Cribs, granaries and similar structures are commonly provided with a central driveway at or near the ground level with bins or compartments for receiving grain at either side of the central driveway as well as on the floor or floors above the driveway. Elevators of the type with which the present invention is particularly concerned are usually disposed in the driveway along one wall thereof and are adapted to receive the grain from the wagon and to raise it to a point near the roof of the crib or granary from which the grain flows to the proper storage compartment by gravity.

The principal object of the present invention is the provision of improved elevator structure which includes a framework in which the casing surrounding the ascending series of elevator buckets also serves as the supporting frame or at least the main portion thereof. By virtue of this construction, wherein the casing is made rigid enough to withstand the greater portion of the compression stresses incident to the weight of the elevator and the load carried thereby, a simplified framework is provided.

More specifically, the present invention is concerned with the provision of a vertical enclosure for the up-going flight of the elevator which is so constructed and arranged that said enclosure itself forms the main part of the framework of the elevator.

In connection with the casing which surrounds the ascending flight or buckets, the present invention contemplates a construction wherein the possibility of grain, especially ears of corn, becoming wedged back of a bucket or between the elevator chain and one of the upper sprockets is eliminated. Briefly, the present invention contemplates forming the upper portion of the casing with a set-back to allow any excess grain, such as ears of corn and the like, which may have been shaken off of a cup or bucket and which is carried up between the cup and the back of the casing, to fall away from that bucket and to be directed into the next lower bucket, and if this bucket is full the excess material will

be directed by the set-back portion into the next lower bucket, and so on. Thus, no excess material will be carried up into the head of the elevator and it therefore becomes practically impossible for such material to interfere with the turn at the upper end. In addition, the present invention contemplates the provision of a special guard around the upper sprockets over which the elevator chain is trained, these guards serving to house the sprockets and to prevent grain, especially ears of corn, from coming in between the sprockets and the elevator chains.

Another important object of the present invention is the provision of a novel one-way brake in the drive for the elevator. It sometimes occurs that the power operating the elevator is suddenly or accidentally interrupted, and in such cases the weight of the filled buckets, overbalancing the weight of the empty buckets on the down-run, causes the elevator to run backwards, and when this is permitted each bucket empties itself into the bottom boot of the elevator until the boot becomes filled and jammed. This prevents further backward rotation of the elevator but may cause damage to the mechanism thereof. Further, in any case, it is not an easy task to clear the elevator and to remove the jammed material so as to put the elevator back into operation.

However, there are times when it is necessary and desirable to let the elevator run backwards a certain amount. For example, should the elevator chains break at some point on the ascending run, allowing the buckets below the break to fall down into the boot, it is desirable to run the elevator backwards slowly while cleaning out the hopper at the same time to prevent clogging.

With these factors in mind, the present invention contemplates the provision of a one-way brake in the drive for the elevator so as to prevent it from running backwards except when desired, and it is also the further object to provide means whereby the amount of backward movement can be controlled.

These and other objects of the present invention will be apparent from the following description of the preferred structural embodiment, taken in conjunction with the accompanying drawings illustrating such embodiment and in which:

Figure 1 is a top view taken along the line I—I of Figure 2 below the upper dumping head of the elevator and looking downwardly on the receiving hopper, the latter being shown in full lines in its front or discharging position, while in

dotted lines the hopper has been indicated in its lateral position when it has been swung to one side of the elevator to permit the passage of a wagon or other vehicle into position adjacent the elevator, the wagon being drawn up from left to right as viewed in Figure 1;

Figure 2 is a side elevation of the elevator shown in Figure 1 and illustrating the receiving hopper in position to discharge grain into the front of the elevator chute;

Figure 3 is a fragmentary elevation corresponding to a view taken along the line 3—3 of Figure 1 and similar to Figure 2 but showing the position of the pivot frame of the hopper when the latter has been swung to one side of the elevator away from the front thereof so as to permit drawing a wagon or other vehicle alongside the elevator;

Figure 4 is a fragmentary horizontal section taken through the automatically releasable driving connections between the driving means for the elevator and the driving means for the conveyor of the hopper and corresponding to a section taken along the line 4—4 of Figure 2;

Figure 5 is a section taken along the line 5—5 of Figures 6 and 7 through the one-way clutch interposed in the driving connections for the elevator;

Figure 6 is a section taken along the line 6—6 of Figure 5;

Figure 7 is a section taken along the line 7—7 of Figure 5;

Figure 8 is a vertical view, partly in section and partly in elevation and looking toward the right hand side of the elevator; and

Figure 9 is a section taken along the line 9—9 of Figure 8.

Referring now to the drawings, the elevator of the present invention comprises the usual form of cups or buckets 11 fixed at their ends to two endless elevated chains 12 and 13 arranged at opposite sides of the frame 14 of the elevator. The frame 14 is disposed in a vertical position and thereby positions the buckets 11 in a vertically arranged series having an ascending flight or run adapted to convey material upwardly and a descending or down-run. At their upper portions the elevator chains 12 and 13 are trained over pairs of supporting sprockets 16, 17 and 18, see Figures 2 and 8, journaled on shafts 20, 21, and 22, respectively. These shafts are mounted in the framework of the elevator head 23 by suitable bearing means 26, 27 and 28 (Figure 2) of more or less conventional construction, the bearings 26 being carried by bracket means 30 supported upon the horizontal angle member 31 of the elevator head 23 while the bearing means 27 is preferably constructed and arranged to be adjusted so as to maintain the proper tension in the elevator chains 12 and 13. At their lower portions the elevator chains 12 and 13 are trained over a pair of driving sprockets 32 fixed on a driving shaft 33, the latter being journaled in bearings 35 in the lower end of the elevator, as best shown in Figure 4.

The framework 14 consists principally of a vertically disposed casing 40 arranged to enclose the vertical series of ascending interconnected buckets 11, this casing being reinforced by suitable vertical angles 41 and horizontal bars 42. Preferably, the casing 40 consists of a plurality of sections, each of which is formed of two parts 47 and 48, and each part is of U-shaped cross section, the flanges or sides of which are bolted together to form the completed casing section, as

best shown in Figure 1. The inner casing part 47 is somewhat wider than the casing part 48, and in the corners of the casing part 47 there are provided angularly bent filler members 49. These members serve not only to give the casing 40 greater column strength but also to form a substantially rectangular shaped enclosure with recesses 50 and 51 for receiving the elevator chains 12 and 13.

By virtue of this construction the bucket casing, comprising the members 47, 48, and 49, forms a rigid structure having sufficient strength and stiffness to withstand the compression stresses involved incident to the support and operation of the elevator mechanism. Preferably, the casing 40 is so arranged so as to support the major portion of the weight of the elevating mechanism but, as pointed out above, the angle bars 41 and 42 serve to add further rigidity to the elevator frame, serving as side frame members in connection therewith, and also provide means for securing the elevator to the side wall of the crib so as to provide a passageway for the descending run of buckets. The various sections of the casing 40, which may be separate before assembly, preferably have corresponding sections of the vertical angle bar 41 secured thereto at the bottom and top thereof by the short transverse bars 42. When the elevator frame is assembled, the horizontal legs of the transverse angle bars 42 serve as convenient securing means for fastening the sections together. In this way, elevators of various heights may be constructed from substantially the same sections. The vertical and horizontal angle bars connected with the various casing sections are preferably braced and connected together by suitable gusset plates or the equivalent. Certain of the transverse bars 42 may also be utilized as convenient supports for guides 55 for the descending run of elevator chains, as best shown in Figure 2.

The lower portion of the casing 40 terminates in an elevator boot 60, and this boot has an open front partially closed by a cover plate 61 and providing a grain receiving opening 62. A chute 65 is secured to the lower end of the boot 60 and serves to direct grain discharged into it to the ascending buckets 11.

The horizontally disposed receiving hopper, which is adapted to receive grain from wagons and other vehicles drawn alongside the elevator and to discharge the same into the chute of the elevator boot, is indicated in its entirety by the reference numeral 70. The receiving hopper 70 comprises the usual side walls 71 and 72, either of which is adapted to receive a reversible chute 74 arranged to direct material into the receiving hopper, and between the walls 71 and 72 a conveyor mechanism 75 is provided.

The conveyor 75 is more or less of conventional construction and comprises a pair of endless chains 76 and 77 connected together by transverse members 79 which operate over a bottom 81. Preferably, the reversible chute 74 is pivotally connected so as to be swung to a vertical position to provide additional clearance when the conveyor is arranged to one side of the elevator in its inoperative position, as indicated in dotted lines in Figure 1.

As best shown in Figures 2 and 8, the inner end of the hopper 70 is inclined upwardly and is positioned to deliver material into the chute 65 in the lower section of the elevator boot. The inner end of the receiving hopper 70 is pivotally supported on the lower end of the elevator proper

to accommodate the horizontal swinging movement of the hopper from its operative or grain receiving position to its inoperative position at one side of the elevator and closely adjacent the wall of the crib to which the elevator frame is secured. For this purpose, the inner end of the hopper 70 is supported on the lower section of the elevator through means which is more specifically set forth in detail and claimed in the parent application mentioned above. It is sufficient here to note that such means includes a vertically disposed pipe member 88 which is journaled in bracket members 89 and 90 adapted to be secured to either side of the elevator frame, the hopper 70 being shown in Figure 2 as connected to the left side. A substantially V-shaped frame 91 is fixed to the pipe member 88 and is provided with a transversely and horizontally disposed pipe section 92 fixed thereto at the apex of the V-shaped frame. The horizontal pipe section 92 forms a pivotal support for the receiving hopper 70, and for this purpose the latter is provided with a bearing member 93 at each side thereof and securely fixed thereto by bolts 94 or the like. The conveyor 70 is held in position on the supporting pipe 92 by means of a cotter pin 95 or the like.

The receiving hopper 70, by virtue of having its inner end supported on the pivot frame 91, can be swung from its inoperative position, shown in dotted lines in Figure 1, to its operative position, shown in full lines, there being a driving connection from the drive shaft 33 of the elevator to the conveyor 75 so that when the hopper 70 is in its receiving position the conveyor 75 is actuated, but when the hopper 70 is in its inoperative position such driving connections are automatically interrupted. This automatically releasable driving connection is best shown in the aforesaid parent application which includes claims directed to this feature. Preferably, the drive for the conveyor 75 is derived from one end of the drive shaft 33. To this end of the drive shaft 33 there is secured a plate 100 (Figures 3 and 4) which has a plurality of radial flanges 101 disposed in axial planes on the outer face of the plate.

The conveyor chains 76 and 77 are trained over two sprockets which are fixed to a drive shaft 105 journaled in the bearing members 93 and to one end of which is fixed a sprocket 106, as best shown in Figure 2. This sprocket is driven from a drive chain 107 trained around it and around a driving sprocket 108 journaled in a supporting casting 110 by means of a stub shaft 111. The casting 110 is fixed in position by being bolted to the pipe member 88 and to one leg of the V-shaped frame 91, as by bolts 112 and 113. To take up the slack in the driving chain 107, an idler sprocket 118 is provided and which is mounted on an arm 119 pivoted to the casting 110, as by means of a bolt 120.

The casting 110 is provided with an outwardly extending journal portion 121 (Figure 4) and is fixed in position so as to dispose the stub shaft 111, which is rotatably mounted in said journal portion, in substantially axial alignment with respect to the driving shaft 33, as best indicated in Figure 4. This disposes the sprocket 108 closely adjacent the plate 100 described above. Suitable cooperative clutch elements are provided so as to non-rotatably connect these parts, and in the preferred construction these clutch elements include the radial flanges 101 and suitable spring pressed plungers 123 slidably received in sockets

125 formed in the body of the sprocket 108 and biased for outward movement therein by spring means 126. As pointed out in the aforesaid parent application, the stub shaft 111 can be out of alignment with respect to the driving shaft 33 to a considerable extent without materially affecting the driving connections by which the conveyor of the receiving hopper is driven from the elevator mechanism.

When the receiving hopper 70 is swung from its inoperative position, shown in dotted lines in Figure 1, to its operative position, as shown in full lines in Figures 1, 2, and 4, the plungers 123 are brought into the spaces between the ribs 101, so that when the driving shaft 33 is rotated, the sides of the flanges will engage the plungers 123 and cause the sprockets 108 to rotate with the shaft 33, thereby driving, through the chain 107, the conveyor mechanism 75 of the hopper. The sockets 125 are arranged to permit the plungers 123 to recede therein in case the plungers engage the edges of the flanges 101 when the conveyor is first moved into its operative position. As is obvious, as soon as the receiving hopper is pivotally swung away from its operative position in front of the elevator, the driving connection between the shaft 33 of the elevator mechanism and the conveyor mechanism 75 is automatically interrupted by virtue of the plungers moving with the sprocket and out of engagement with the plate 100 fixed to the driving shaft 33.

The elevator buckets are driven from a jack shaft 140 journaled in bearings 141 supported in brackets 142 carried by two angle bars 143 forming a part of the frame of the elevator, and both having means, as will be described later, for receiving the plate or bracket 89. Power may be delivered to the shaft 140 in any desired manner, as for example, by means of a drive sprocket 145 mounted on the shaft and driven by means of a drive chain 146 connected with any convenient source of power.

Power is delivered from the jack shaft 140 to the driving shaft 33 of the elevator mechanism by means of a sprocket 150 mounted on the jack shaft 140 and connected by means of a driving chain 151 with a sprocket 152 fixed to the shaft 33, as best shown in Figure 8. A chain tightener 155 is provided for the purpose of maintaining the proper tension in the driving chain 151. Thus, whenever power is applied to the driving chain 146, the shaft 33 is rotated, causing the sprockets 32 to drive the elevator chains 12 and 13.

As mentioned above, in ordinary elevators if the power driving the same is suddenly interrupted the series of interconnected buckets tends to move backwardly, due to the weight of the material in the buckets on the ascending flight. If this is permitted to occur, the result is that the boot at the lower end of the elevator becomes clogged and jammed and there is considerable likelihood that the elevator will become damaged. To prevent the elevator from running backwards in case the power goes off, the present invention contemplates the provision of a one-way brake associated with one of the shafts driving the elevator chains and so arranged that no backward rotation of these shafts is permitted unless such backward movement is actually desired.

The one-way brake is indicated in its entirety by the reference numeral 160 and comprises, as best shown in Figures 5, 6, and 7, a ring 161 fixed to the shaft 140 by a pin or key 162 inserted in suitable openings in the shaft 140 and in the hub of the ring member 161. A series

of rollers 163 are disposed between the inner circumferential portion of the ring member 161 and cam sections 164 formed on the outer circumference of the hub portion 165 of the bearing 141. The bearing 141 is held against rotation with respect to the elevator frame by means of a lug 167 formed integral therewith and engaging a notch 168 provided in the bracket 142 supporting the bearing.

The cam sections 164 are separated by abutment lugs 170, the cam sections 164 being arcuate eccentrically with respect to the axis of the ring member 161, and the low points of the cam sections are spaced from the inner circumference of the ring member 161 a distance somewhat greater than the diameter of the rollers 163, but the high points of these sections are spaced from the inner circumference of the ring member 161 a distance which is slightly less than the diameter of the rollers 163. As a result of this arrangement, the shaft 140 with the ring member 161 attached thereto is free to turn in one direction with respect to the relatively fixed bearing support 141, this direction being indicated by the arrow in Figure 7, but the shaft 140 and the ring member 161 is prevented from turning in the opposite direction by virtue of the rollers 163 wedging in between the inner circumference of the ring portion 161 and the high points of the cam sections 164 when backward rotation tends to occur, thereby preventing any appreciable rotation of the shaft 140 backwardly. The direction in which the shaft 140 is free to rotate is, of course, that direction in which the elevator and the conveyor will be operated properly. Thus, should the power to the elevator be suddenly interrupted for any reason, the one-way brake will immediately act to prevent any backward movement of the filled buckets.

There may be times, however, as explained above, when it is desirable to permit the elevator to run in the opposite direction, and to provide a construction permitting the controlled backward movement of the elevator, the present invention provides a release device arranged to disable the one-way brake. This release device comprises a rotatable member in the form of a plate 175 provided with an operating arm 176 and journaled over an enlarged portion 177 of the bearing 141. This plate carries projecting fingers 180 which extend between each of the rollers 163 and the high point of the associated cam section 164.

The plate member 175 can be rotated into the position shown in Figure 7 in which the fingers 180 are withdrawn sufficiently from the roller 163 to allow them to wedge between the ring member 161 and the bearing 141, or the plate 175 may be rotated in a counterclockwise direction, as viewed in Figure 7, so that the rollers 163 can be held against the separating lugs 170, thereby preventing the rollers from wedging in between the ring member 161 and the bearing 141. When the rollers are held in such position, the shaft 140 is free to rotate in either direction.

Referring now more particularly to Figure 8, it will be observed that the back wall of the casing part 47 is disposed closely adjacent the back wall of the ascending series of buckets 11, and it will also be observed that the top section or head 200 is set back beyond the position of the rear wall of the intermediate and lower sections to provide a space 201 between the rear side of the buckets and the wall section 200. The lower end of the section 200 is connected with the rear wall of the next lower section by means

of an inclined plate 203. This arrangement permits grain, and particularly ears of corn and the like, which may have been carried up between the rear side of a bucket and the rear wall of the section 47, to escape past that bucket and move into the space 201, being directed by the wall 200 and the inclined portion 203 thereof into the next succeeding bucket. If that bucket is completely filled the excess material escapes therefrom and is directed into the next lower bucket. By virtue of this construction there is little likelihood that any material, other than that actually contained within the buckets, will be carried upwardly into the upper head of the elevator.

The head frame 23 of the elevator is provided with a dumping hood 204, this hood being supported from the horizontal bars 31 and the brace members 31a thereof, and a distributing spout of conventional construction is adapted to be secured to the discharge opening of the dumping hood 204. The casing surrounding the ascending run of buckets is continued into the dumping hood 204 by virtue of a scroll sheet or curved enclosure 205 and side walls 206 connected therewith. To each of the horizontal bars 31 at the sides of the elevator frame is secured a supporting casting 209 by bolt means 210, as best shown in Figure 2, and these castings embrace the adjacent sprockets 18 and support the side walls 206 so as to dispose them in planes which are spaced inwardly of said sprockets. The side walls or side members 206 are fixed to the inner side of the castings 209 and extend downwardly in parallel relationship with respect to the lower run of the elevator chains 12 and 13 inside the sprockets 17 and to a point adjacent the shaft 21 carrying these sprockets, as best shown in Figure 8.

As will be clear from Figure 8, as the ascending buckets 11 move upwardly and over the sprockets 18 to discharge material into the dumping hood 204, the side members 206 effectively prevent ears of corn and the like from falling in between the lower run of the chains 12 and 13 and the sprockets 17.

The operation of construction described above is believed to be apparent from the foregoing description. As the wagon or vehicle containing grain to be stored is brought up to position alongside the elevator, the receiving hopper 70 is disposed up against the crib wall, as indicated in dotted lines in Figure 1. The pivotal connections between the receiving hopper 70 and the elevator frame are such that the hopper may be optionally supported from the other side of the elevator frame, if desired, in which case the hopper can be swung against the crib wall at the right side of the elevator. After the wagon has been brought to its proper position, the hopper 70 is swung around to a position in front of the elevator, which position automatically engages the drive for the conveyor of the hopper with the driving mechanism for the elevator. The drop side or chute 74 may, of course, be disposed on either side of the hopper 70, depending upon how the hopper is pivotally connected with the elevator frame. The operation of the conveyor mechanism in the hopper feeds material into the chute 65 of the elevator hood, from which point the material is discharged into the ascending series of buckets 11. Rotation of the driving shaft of the elevator mechanism causes the buckets in the casing 40 to be moved upwardly and, while passing around the sprockets 18, the buckets are dumped to discharge their

contents into the hopper or dumping head 204.

If, at this time, the power should be suddenly interrupted, the one-way brake 150 is immediately operative to prevent the backward movement of the filled buckets, the elevator mechanism being held in the position it occupied at the moment the power was interrupted. If, for any reason, it should be desirable to permit or to move the normally ascending series of buckets 11 downwardly, the lever 176 can be raised, which movement swings the fingers against the rollers 163 and frees the ring member carried by the shaft 140 from the relatively stationary member 141, thereby allowing the shaft 142 to rotate backwardly.

Any material spilling over from any of the buckets from the forward edge is directed downwardly by the forward casing sections 48 back into the chute 65, and any grain spilling over the rear of the buckets after they pass the inclined wall 203, or any ears of corn or the like which have been carried upwardly by the ascending buckets moving the same up the inner wall of the sections 47, will spill over into the space 204 from which such excess material will be directed by the set-back section 200 into one of the next lower buckets. The side walls 206, being disposed in planes inside of the sprockets 18, serve to keep any material from getting in between the sprockets 17 and the elevator chains 12 and 13.

While I have described above the preferred structure in which the principles of my invention have been embodied, it is to be understood that my invention is not to be limited to the specific means shown and described but that, in fact, widely different means may be employed in the practice of the broader aspects of my invention.

What I claim, therefore, and desire to secure by Letters Patent is:

1. An elevator for grain and the like, comprising a vertically disposed series of generally rectangular elevator buckets, a casing for the ascending flight of buckets, said casing comprising pairs of mating sections, one section of each pair being wider than the other section at the point of junction therewith and having interiorly facing shouldered portions at said points, whereby when said sections are secured together they form a generally rectangular space for the elevator buckets with closed chain receiving recesses at the points where the mating sections are connected, sprocket means mounted on the upper end of said casing, and chain means carried by said sprocket means and disposed in said recesses for supporting said buckets in said rectangular space.

2. An elevator for grain and the like comprising a vertical series of interconnected elevator buckets, a supporting frame therefor comprising a rigid vertically disposed casing for the ascending run of said buckets, said casing consisting of interconnected sections U-shaped in cross section and vertical reinforcing angle members connected therewith on the interior of said sections to strengthen the same and to provide recesses therein, and sprocket means disposed on the upper and lower sections of said casing and including chains disposed in said recesses and serving to support said elevator buckets.

3. An elevator for grain and the like comprising a pair of vertically disposed elevator chains, elevator buckets supported by said chains, means serving as a supporting frame for said chains

and buckets and comprising a substantially rigid casing for the ascending run of buckets, said casing consisting of a plurality of mating U-shaped casing sections enclosing the ascending run of said chains and buckets, sprocket means at the upper and lower ends of said elevator chains for supporting said buckets on the casing, and reinforcing angle members arranged vertically and disposed in the corner of said casing sections adjacent the ascending portions of said chains and serving to strengthen said casing and to provide recesses for receiving said chains.

4. An elevator for grain and the like comprising a vertical series of elevator buckets and interconnecting means therefor, a vertically disposed casing closely embracing the ascending run of said buckets to prevent loss of material therefrom, and means at the lower end of said casing serving as a hopper for feeding material into said buckets, the upper end of said casing including a portion above said receiving hopper and spaced outwardly of the path of movement of said buckets to receive excess material therefrom and to direct the same downwardly toward a succeeding bucket.

5. An elevator for grain and the like comprising a vertically disposed series of elevator buckets and a pair of elevator chains connecting said buckets, frame means supporting said buckets and chains and including a vertically arranged casing adapted to enclose the ascending buckets, a head frame supported on the upper end of said casing and including sprocket means over which said chains are trained, and a casing for the upper buckets including side walls having recessed portions receiving said sprocket means, whereby said sprockets operate in closely spaced relation with respect to said side walls.

6. An elevator for grain and the like comprising a vertically disposed series of elevator buckets, elevator chains connecting said buckets, a frame therefor including a vertically arranged casing having reinforcing means and arranged to enclose the ascending buckets, one wall of said casing being arranged in closely spaced relation with respect to the ascending buckets and terminating upwardly in a section spaced away from said buckets so as to receive excess material from the ascending buckets and including a downwardly inclined portion serving to direct the excess material into a lower bucket, sprocket means journaled at the upper end of said casing and supporting, at least in part, said ascending buckets, and a hood enclosing the upper ascending buckets and joining said spaced section of said casing and including side walls having recesses to receive said sprockets disposed alongside said buckets to prevent grain from falling into said sprockets and having recesses to receive the sprockets.

7. An elevator for grain and the like comprising a pair of vertically disposed elevator chains, elevator buckets supported by said chains, means serving as a supporting frame for said chains and buckets, a head frame carried at the upper end of said supporting frame and having a forwardly extended dumping hood, a shaft carried by the head frame, spaced sprockets on the shaft for supporting said chains so that the ascending buckets discharge into said hood, and side members carried by said head frame and extending over the lower run of the chain at this point and within close proximity to said shaft to prevent material from entering into the space between the lower run of the chain and said spaced sprockets.

8. An elevator for grain and the like comprising a pair of vertically disposed elevator chains,

elevator buckets supported by said chains, means serving as a supporting frame for said chains and buckets and comprising a substantially rigid casing for the ascending run of buckets, a head frame 5 carried at the upper end of said supporting frame and having a forwardly extending dumping hood, a pair of shafts carried by the head frame, spaced sprockets mounted on each shaft for supporting 10 said chains so that the ascending buckets discharge into said hood, bracket members carried by said hood frame and partially embracing the sprockets on one of said shafts, and side members carried by said bracket members and extending 15 down to within close proximity to the other shaft and over the lower run of said chains to prevent material from falling between said lower run and said last named sprockets.

9. A bucket elevator for grain and the like comprising the combination of a rigid self-sustaining 20 vertically disposed casing for the ascending run of said buckets, a generally vertically disposed angle iron frame structure spaced from said casing, said casing consisting of pairs of interconnected sheet metal mating sections U-shaped in 25 cross-section, one section of each pair having vertical reenforcing sheet metal members connected on the interior thereof to strengthen the sections, and means connecting the vertically disposed casing and the angle iron frame structure, said con-

necting means comprising horizontal angle members secured to the U-shaped casing sections having the vertical reenforcing sheet metal members and to said angle iron frame structure.

10. An elevator for grain and the like, comprising a vertically disposed series of generally rectangular elevator buckets, a casing for the ascending flight of buckets, said casing comprising 5 pairs of mating sections, one section of each pair being more narrow than the other, filler members disposed in the corners of the wider section of each pair and cooperating with the narrow 10 section to form interior chain receiving recesses, a pair of rotatable sprockets journaled on the upper end of said casing and serving to support said elevator buckets on said casing, and chains 15 for supporting said buckets trained over said sprockets and disposed in said recesses.

11. In an elevator for grain and the like comprising a series of generally rectangular chain 20 supported elevator buckets, a casing for the ascending flight of buckets, said casing comprising pairs of mating sections, one section of each pair being more narrow than the other, and filler 25 members disposed in the corners of the wider section of each pair and cooperating with the narrow section to form interior chain receiving recesses.

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