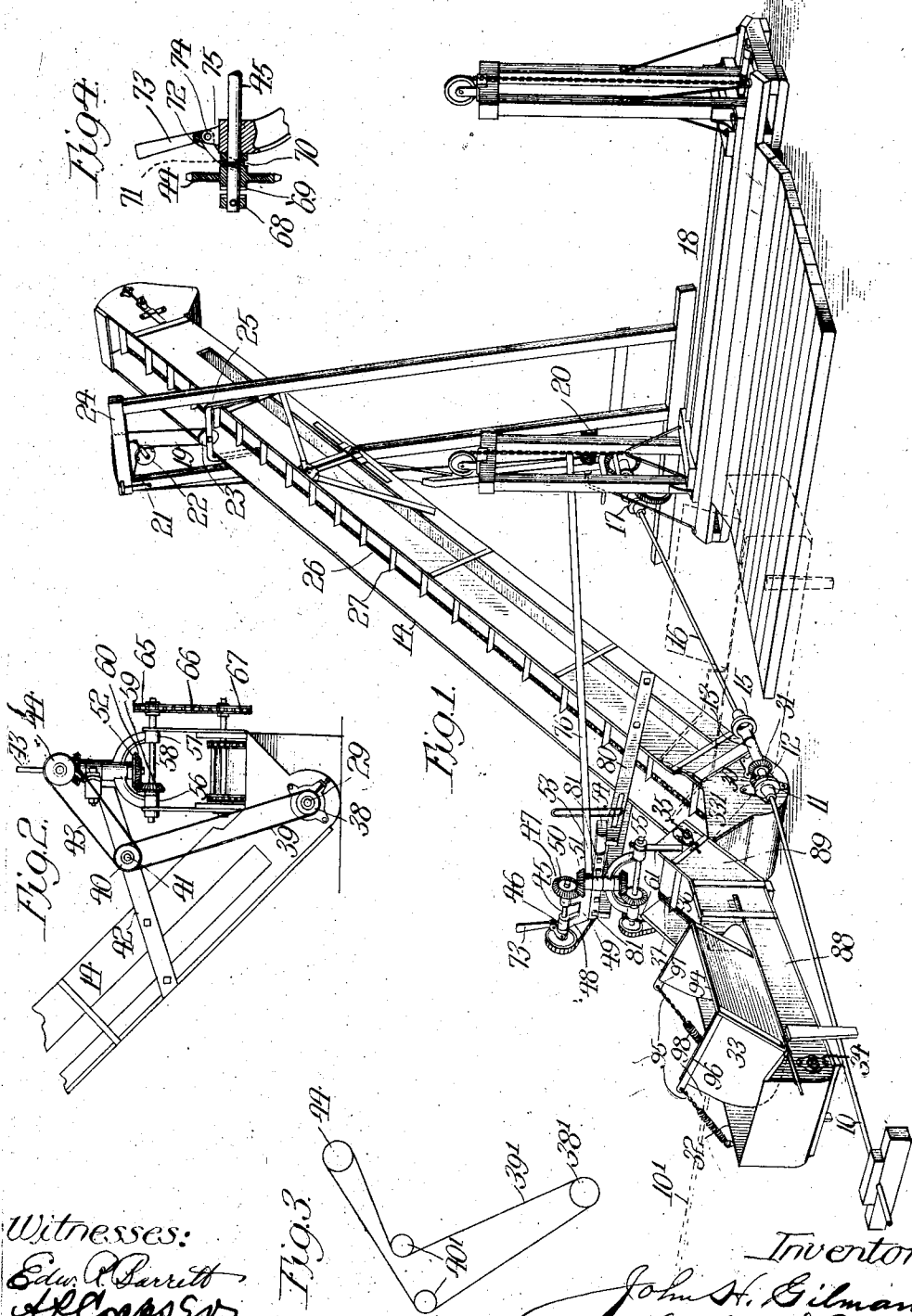


J. H. GILMAN,
CONVEYING APPARATUS.
APPLICATION FILED OCT. 9, 1905.

947,592.

Patented Jan. 25, 1910.

3 SHEETS—SHEET 1.

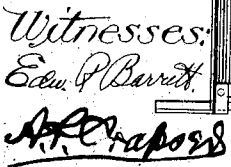


Witnesses:
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Inventor:
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by John Howard McElroy
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947,592.

3 SHEETS—SHEET 2.



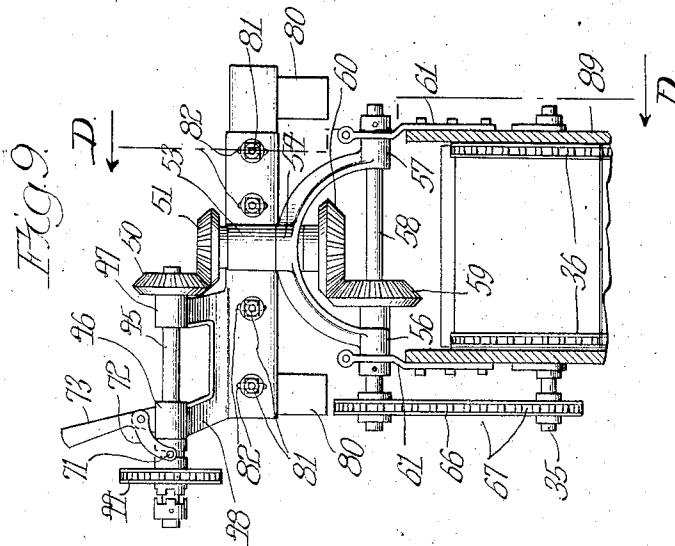
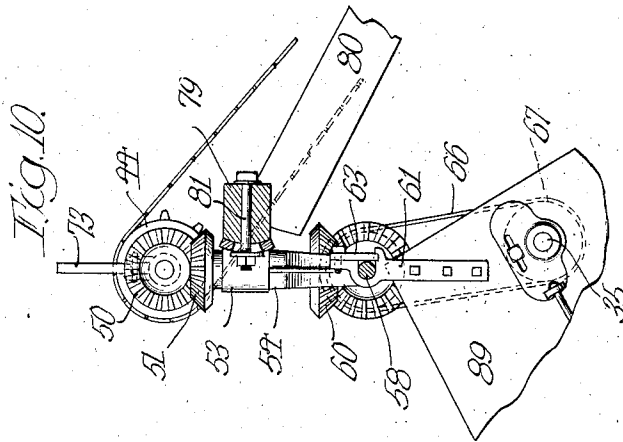
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

JOHN H. GILMAN, OF OTTAWA, ILLINOIS, ASSIGNOR TO KING & HAMILTON COMPANY,
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CONVEYING APPARATUS.

947,592.

Specification of Letters Patent.

Patented Jan. 25, 1910.

Application filed October 9, 1905. Serial No. 281,978.

To all whom it may concern:

Be it known that I, JOHN H. GILMAN, a citizen of the United States, and a resident of Ottawa, in the county of LaSalle and State of Illinois, have invented certain new and useful Improvements in Conveying Apparatus, of which the following is a specification.

My invention is concerned with certain new and useful improvements in such apparatus and said improvements are intended to be applied to what are known as portable elevators where the contents of a wagon or other receptacle are automatically dumped into conveying or elevating mechanism which carries away the contents of the wagon as rapidly as they are discharged therefrom by the dumping action.

To illustrate my invention, I annex hereto two sheets of drawings in which the same reference characters are used to designate identical parts in all the figures and of which:

Figure 1 is a perspective view of the complete apparatus. Fig. 2 is a side elevation of a portion of the elevator proper with the drag shown as turned around into operating position. Fig. 3 is a diagrammatic view illustrating a different arrangement of the sprocket gearing. Fig. 4 is a detail in section showing the clutch mechanism for throwing the drag out of operation. Fig. 5 is a side elevation of the drag on an enlarged scale. Fig. 6 is a sectional view thereof on the line A—A of Fig. 5. Fig. 7 is a detail in section on the line B—B of Fig. 5; Fig. 8 is a detail in section on the line C—C of Fig. 5. Fig. 9 is a view, on a larger scale, of the gearing connecting the drag and the elevator; and Fig. 10 is a sectional view of the same on the line D—D of Fig. 9. Fig. 11 is a perspective view of a plate on the lower end of the elevator trough.

The power for driving the apparatus may be applied through the shaft 10, which may be connected by a universal joint 11 with the short shaft 12 journaled in the bearing 13 secured on the side of the lower end of the elevator 14. This shaft 12 is connected by the universal joint 15 with the shaft 16 which extends to and operates the driving mechanism 17 of the wagon jack 18 by which the front end of the wagon is lifted in the customary manner.

As any desired form of a wagon jack may be employed, I will not describe the one shown in detail, as it is the same as that shown in my application #223,489 filed September 6, 1904, to which reference is made for any desired information relative to the construction and operation thereof.

The elevator 14, except as hereinafter described, may be of any desired construction, and has its upper end raised and lowered to secure the desired elevation thereof by any desired mechanism, such for instance as the rope 19, which is wound upon the drum 20 and passes over the guiding sheaves 21 and 22 and around the pulley 23 and thence to the top of the supporting frame 24 where it is secured. The pulley 23 is mounted in the yoke 25 which is pivotally secured to the sides of the elevator trough near the upper end so that as the rope is wound up or unwound, as the case may be, the end of the elevator trough may be raised or lowered, as desired.

The elevator is of course supplied with the customary conveyer, preferably consisting of the pair of sprocket chains 26 connected by the flights 27. These sprocket chains pass over the customary sprocket wheels at the top and bottom of the elevator trough, the ones at the bottom, shown in Fig. 5, being there designated by reference character 28, and secured to the shaft 29 which is journaled in suitable bearings therein. The shaft 29 has secured on the outer end thereof, adjacent the shaft 12, the miter gear 30 meshing with a corresponding miter gear 31 secured on the shaft 12, so that the rotation of the shaft 10 operates the jack to discharge the contents of the wagon into the elevator by way of the drag 32 and at the same time operates the conveyer in the elevator and drag to carry away its contents as rapidly as they are discharged therefrom. It is of course not absolutely essential that the shaft 10 be extended along the line of the elevator, but it may extend at right angles thereto and in that case would be connected to the other end of the shaft 29, as indicated in dotted lines at 10'. This arrangement of the shafts and the miter gears 30 and 31 enables me to place the elevator alongside of the wagon, if desired, instead of at right angles thereto, as has been the practice heretofore, and I can by this arrangement place

the entire apparatus inside of the drive-way through the ordinary crib so as to deliver the contents of the wagon into said crib, preferably employing for that purpose the form of elevating mechanism shown in my joint application #274,975 filed August 21, 1905. For this arrangement, it becomes necessary to provide means for placing the drag 32 at right angles to the elevator 14 so that the contents of the wagon being lifted by the dump will be discharged from the rear end of said wagon into the drag and thence into the hopper 331 of the elevator. As these devices have been constructed prior to my invention, the drag has been hinged to the lower end of the elevator so that it could be swung up vertically out of the way, or has been arranged so that it could slide up on the elevator and in that manner be gotten out of the way of the wagon as it is driven up on the dump. With my invention, I hinge or join the drag to the bottom of the elevator in such a manner that the drag can be swung horizontally, so as to extend at right angles thereto on either side, as may be desired, or straight out therefrom, as shown in full lines in Fig. 1. With the arrangement shown in said figure, it will be apparent that the drag 32 will be swung into the position there shown in full lines when the wagon is being driven upon the dump, and will then be swung around into the dotted-line position of said figure, which is the same as is shown in full lines in Fig. 2, so that the swinging side board 33 of the drag will be directly beneath the end-gate of the wagon so that as the front end thereof is raised up, its contents will be delivered into the drag.

The drag 32 is of the same general construction as the elevator, it consisting of a trough and having journaled in the ends thereof the shafts 34 and 35 which carry the customary sprocket wheels which operate the customary pairs of sprocket chains 36 connected by the flights 37 by which the corn or other material being delivered is moved along the drag and into the hopper 331 of the elevator.

The mechanism for driving the shafts of the drag from the shaft 29 of the elevator is shown in Figs. 1, 2, 5, 9 and 10, where it will be seen that the shaft 29 has on the outer end thereof the sprocket-wheel 38 driving the sprocket-chain 39 which drives the double sprocket-wheel 40 journaled upon the stud-shaft 41 projecting from the supporting arm 42 secured to the side of the elevator 14. The other one of the double sprocket-wheels 41 has thereon the sprocket-chain 43 which coöperates with the sprocket-wheel 44, which is preferably clutched upon the shaft 45 journaled in the bearings 46 and 47 terminating in the upper yoke portion 48 of the casting 49. The shaft 45 has secured on

the other end thereof the miter gear 50 meshing with the miter gear 51 secured on the top of the vertical shaft 52 journaled in the vertical bearing 53 formed on the casting 49. Pivotally mounted on this shaft 52 just beneath the bearing 53 is the bearing 54 of the yoke 55 which terminates in the bearings 56 and 57 in which are journaled the shaft 58, which has secured thereon the miter gear 59 meshing with the miter gear 60 secured on the lower end of the shaft 52. The drag 32 is provided with the straps 61 projecting upwardly from the inner end thereof and terminating in the hooks 62, best shown in Figs. 5 and 8, which have the swinging latches 63 pivoted thereon so that the ends of the drag can be hung upon the outer ends of the shaft 58 inside of the collars 64. The shaft 58 has on one end thereof the sprocket-wheel 65 which through the medium of the sprocket-chain 66 coöperating with the sprocket-wheel 67 on the outer end of the shaft 35, drives the drag conveyer, and this no matter at what angle the drag may be placed to the elevator, the placing of the drag at any position being the object of providing the gearing shown. It is to permit the drag to be swung around at either side thereof that I employ the off-set arrangement of the sprocket-chains 39 and 43, and it will be apparent that I might secure the same result by employing a single sprocket-chain 39', as shown in Fig. 3, and substituting for the double sprocket-wheel 40, two sprocket-wheels 40' placed on different shafts, the sprocket-wheels 40' in this latter construction operating merely as guide-rollers.

As above stated, I preferably clutch the sprocket-wheel 44 on the shaft 45, and for this purpose, the outer end of the shaft 45 has rigidly secured thereon the clutch member 68 which is adapted to engage with the coöperating clutch member 69 formed on the hub of the sprocket-wheel 44, which is otherwise loose on the shaft 45. The other end of the hub is provided with the customary annular channel 70 into which extends the pins 71 of the yoke 72 formed on the lower end of the lever 73 pivoted at 74 in the ear 75 formed on the top of the bearing 46. Any suitable means may be employed for holding the wheel 44 into or out of engaging position; I having shown for this purpose the lever 73 as pivoted so that it will be swung to one side or the other of the center in either position so as to be held therein by gravity. By the use of this clutch mechanism, I can throw the drag out of operation in case it should become clogged up and at the same time by operating the shipper bar 76 extending back to the clutching mechanism of the wagon jack 18, I can throw it out of operation to prevent its further rise and to stop the discharge of the

corn therefrom as its continued discharge depends upon the continued rise of the forward end of the wagon. The gearing 17 is connected with the shipper-bar 76 in a suitable manner, such as is shown in my above mentioned application, so that the wagon jack may be unclutched automatically as the wagon reaches the limit of its upward or its downward movement, and also at any desired intermediate point, so that the operator stationed at the drag has complete control of the apparatus to insure its working with the best results.

As the angle of the elevator 14 is changed in different positions thereof, it becomes necessary to make provisions for keeping the shaft 52 in a vertical position, no matter what angle the elevator 14 assumes, and for this purpose, the casting 49 is provided with the cylindrical bearing surface 77 adapted to cooperate with the correspondingly curved bearing surface 78 formed on the cross-piece 79 which extends from the supporting-arm 42 to the companion supporting-arm 80. The casting is secured to the cross-piece 79 by the bolts 81, and to permit of the desired adjustment to keep the shaft 52 perpendicular, the apertures 82 in the casting 49, through which the bolts pass, are slightly elongated as shown, so that they can be adjusted as may be necessary.

It will be noted that the conveyer chains 26 of the elevator 14 are driven from the sprocket-wheels 28, and as there is a certain amount of looseness in the chains, and as they tend to follow the sprocket-wheels, there is a chance of their buckling as they start upward, and to overcome this difficulty I provide the mechanism shown in Figs. 5 and 7, where it will be seen that the bottom board 83 of the conveying portion of the elevator trough has secured on the lower end thereof the preferably metallic plate 84, which is provided with the ribs 85 and 86 in the proper position, so that the side bars of the links of the chains 26 will ride up on said ribs. The plate between the ribs is recessed, as at 87, to permit the sprocket-wheels 28 projecting close enough to the plate 84, and the lower end of each of the ribs 85 is extended downward and curved as shown, so as to engage the side bars of the links at the proper time before any possible buckling of the chain can occur.

Prior to my invention it has been the practice to make the drags 32 horizontal throughout their length, so that the conveyer runs horizontally, and is high enough to discharge into the hopper 331, but for wagons in which the beds are low down and where they extend back beyond the hind wheels for a considerable distance, so that when the front end is lifted, the rear end is very materially lowered, the old form of drag has been found to be too high and to remedy this dif-

ficulty, I have invented the form of drag shown, where the main or body portion 88 thereof is low down, and it is provided with an inclined portion 89 on the inner end by which the contents are elevated up and into the top of the hopper 331. Such a construction in order to prevent the rising of the chains 36 at the upper angle, necessitates the employment of the guides 90, which are metallic plates secured to the inner walls of the side pieces of the drag and provided with the inwardly projecting and preferably curved flanges 91 extending over the chains 36 and serving to hold them down as they pass the angle.

To prevent the possibility of an ear of corn or other material which might have failed to drop into the hopper 331 and which might have worked back underneath the return portion of the conveyer clogging it, I provide in the bottom of the forward end thereof, the removable section 92 which is removed when the apparatus is in use, so that any material tending to work back will drop through the aperture formed by the removal of this section of the bottom. This bottom piece can be slid into position in guide ways or can be secured by the turn buttons 93, as indicated in Fig. 5.

To insure the side board 33 of the drag resting with its edge 94 against the bottom of the wagon in all positions thereof, it is pivotally mounted to the side 88 of the drag trough by means which will presently be described, and is connected through the chains 95 secured to the corners of the sides 96 and 97 with the helically coiled contractile springs 98, the other ends of which are secured to the other side of the trough so as to draw the side board 33 forwardly as shown. The side 97 has the notch 99 cut therein to accommodate the forward flow of the corn or other material being handled, even if the side board is drawn forward into the position shown in Fig. 6. To hinge the side board, I secure on the bottom thereof the rod 100 which passes through an eye 101 formed in the bottom of the strap 102 secured on the angle 103 of the end of the drag trough, while its other end passes through an eye formed at 104 on the inner face of the metallic strap 105 secured on the side of the box. It is also desirable to adjust the hopper longitudinally so as to bring it exactly in line with the wagon, even if the latter should be driven to one side of the center, and for this purpose the rod 100, as seen, is considerably longer than the side board, so as to permit of the side board being moved back and forth along the drag. To accommodate this movement and at the same time prevent the side of the trough being opened, I employ in connection therewith the sheet metal plate 106, which has the end piece 107 extending at right angles

thereto so that no opening is made when the side board is swung back and forth. A pin 108 projecting up from the rod 100 engages the end piece 107, so that the plate 106 moves back and forth with the side board as it is adjusted longitudinally. The forward end of the plate is guided by the angle-iron pieces 109 and 110. The piece 109 is secured on the top of the side piece and its vertical flange is at a sufficient distance therefrom so as to make a guide-way for the top of the plate 106 and the lower angle-iron 110 has its horizontal flange set into the side of the trough as shown, and its vertical flange at a suitable distance therefrom so as to furnish the channel for the lower portion of the plate 106. The side of the trough has the channel 111 cut therein, as shown, to accommodate the end of the rod 100 as the side board is shoved toward the discharge end of the drag.

It will be apparent that the side board 33 of the cross conveyer constitutes a shiftable chute on one side thereof which coöperates with the stationary side portion 88, which, with its straps 102 and 105, constitutes a supporting and guiding member of greater length than the chute supported thereby; and that the opposite side of the trough constitutes a vertical fixed stop board at the other side of the conveyer.

While I have shown and described my invention as embodied in the form which I at present consider best adapted to carry out its purposes, it will be understood that it is capable of modifications, and that I do not desire to be limited in the interpretation of the following claims except as may be necessitated by the state of the prior art.

While I have herein shown and described my novel conveying apparatus in a novel combination with a dump, I do not herein claim said novel combination, as I have made that the subject-matter of my divisional application, No. 467751, filed Dec. 16, 1908.

I am aware of the existence of the somewhat similar device shown in Patent No. 675,119 to Wagner, but in said device the drag is supported from the mast or derrick, and not from the elevator, as in my construction, and I do not claim the structure shown in said Wagner patent, but

What I do claim as new and desire to secure by Letters Patent of the United States, is:

1. In a device of the class described, the combination with the drag, of the longitudinally adjustable side board pivoted thereto.

2. In a device of the class described, the combination with the drag, of the longitudinally adjustable spring-held pivoted side board attached thereto.

3. In a device of the class described, the combination with the drag, of the pivoted side board having a rod secured to the bot-

tom thereof and adapted to rest on one side of the drag trough, and means for hinging the rod to the drag.

4. In a device of the class described, the combination with the drag, of the side board having the rod secured to the bottom and extending beyond the ends thereof, and means for hinging the rod to one side of the drag.

5. In a device of the class described, the combination with the drag having a portion of one side thereof fixed, with a longitudinally adjustable side board adapted to occupy the remaining portion of said side, and connections between the fixed side and the side board to prevent the side being opened when the section is adjusted longitudinally.

6. In a device of the class described, the combination with a drag, one side of which has a fixed portion, of a longitudinally adjustable pivoted side board adapted to constitute the remaining portion of said side, and connections between the fixed portion and the side board to permit of the movement thereof longitudinally or transversely without opening the side of the drag.

7. In a device of the class described, the combination with the drag, having a portion of one side fixed, of the side board longitudinally adjustable thereon and having a metallic plate 106 coöperating with the fixed portion of the side of the drag, substantially as and for the purpose described.

8. In a device of the class described, the combination with the drag having a portion of one side thereof fixed, of the longitudinally adjustable side board pivoted thereto, and the connection between the fixed portion of the side and the side board consisting of the plate 106 having the rearward extension 107 adjacent the side board.

9. In a device of the class described, the combination with the conveyer, of the yoke carried thereby, the horizontal shaft journaled in said yoke, the drag, the hooks carried by said drag and adapted to engage the shaft, the latches for said hooks, and means for operating the drag from the shaft.

10. In a device of the class described, the combination with the conveyer having the shaft at the bottom thereof and the counter shaft above the hopper, of the drag adapted to discharge into said hopper, and having a driving shaft, and a counter shaft above the driving shaft, a vertical shaft carried by the conveyer, a yoke pivoted on said vertical shaft and carrying the drag and drag counter shaft, and gearing connecting said shafts, substantially as described.

11. In a device of the class described, the combination with the conveyer having the driving shaft at the bottom thereof and the counter shaft above said driving shaft, gearing connecting said conveyer shafts, of the drag having the driving shaft and the counter shaft above said driving shaft, gear-

ing connecting said drag shafts, the vertical shaft carried by the conveyer, the yoke journaled on the vertical shaft and carrying the drag counter shaft, and miter gears connecting said counter shaft and the vertical shaft, substantially as described.

12. In a device of the class described, the combination with the elevator adapted to be set at various angles, of the drag cooperating therewith, gearing connecting the drag and elevator comprising the vertical shaft, the bearing for said shaft carried by the elevator, and means for adjusting the position of the bearing to keep the shaft vertical in any position of the elevator.

13. In a device of the class described, the combination with the elevator adapted to be set at various angles, of the drag cooperating therewith, gearing connecting the drag and elevator comprising the vertical shaft, the bearing for said shaft carried by the elevator, means for adjusting the position of the bearing to keep the shaft vertical in any position of the elevator, said means consisting of the cross-piece having the convex surface, and the casting for the bearing having the concave surface cooperating therewith and means for securing the casting to the cross-piece in any relative position.

14. In a device of the class described, the combination with the elevator adapted to be set at various angles, of the drag cooperating therewith, gearing connecting the drag and elevator comprising the vertical shaft, the bearing for said shaft carried by the elevator, means for adjusting the position of the bearing to keep the shaft vertical in any position of the elevator, said means consisting of the cross-piece having the convex surface and the casting for the bearing having the concave surface and the bolts adapted to pass through the cross-piece and through elongated apertures in the casting.

15. In a device of the class described, the combination with the elevator, of the drag secured thereto by a vertical pivot, a driving shaft for the drag carried by the elevator above the end of the drag, the elevator driving shaft beneath the drag driving shaft, and the off-set sprocket gearing connecting said shafts for the purpose described.

16. In a device of the class described, the combination with the elevator, of the drag

secured thereto by a vertical pivot, a driving shaft for the drag carried by the elevator above the end of the drag, the elevator driving shaft beneath the drag driving shaft, the off-set sprocket gearing connecting said shafts for the purpose described, and consisting of intermediate sprocket-wheels between and at one side of the sprocket-wheels carried by said shafts, and sprocket chain connecting said wheels.

17. In a device of the class described, the combination with the elevator casing, of the guiding shaft journaled in the bottom thereof, the sprocket wheels on said shaft, the chains driven thereby, and a plate having the ribs thereon for the purpose described, the space between the ends of the ribs being open so that the teeth of the sprocket wheels can pass between said ends.

18. In a device of the class described, the combination with the elevator casing, of the driving shaft in the bottom thereof, the sprocket wheels secured thereon, the chains driven thereby, and the guiding ribs for the purpose described, supported from said elevator casing, the space between the ends of the pair of ribs at each side being open so that the teeth of the sprocket wheels can pass between said ends.

19. In a device of the class described, a grain-receiving conveyer having a shiftable chute or side board at one side and a supporting and guiding member on the side of the conveyer for carrying said chute, the same being of greater length than the chute, for the purposes described.

20. In a device of the class described, a grain-receiving conveyer having a shiftable chute or side board at one side and a supporting and guiding member on the side of the conveyer for carrying said chute, the same being of greater length than the chute for the purposes explained, and a vertical fixed stop board at the other side of the conveyer, substantially as described.

In witness whereof, I have hereunto set my hand and affixed my seal, this 7th day of October, 1905.

JOHN H. GILMAN. [L. S.]

In the presence of witnesses:

JOHN H. McELROY,
EDW. R. BARRETT.