

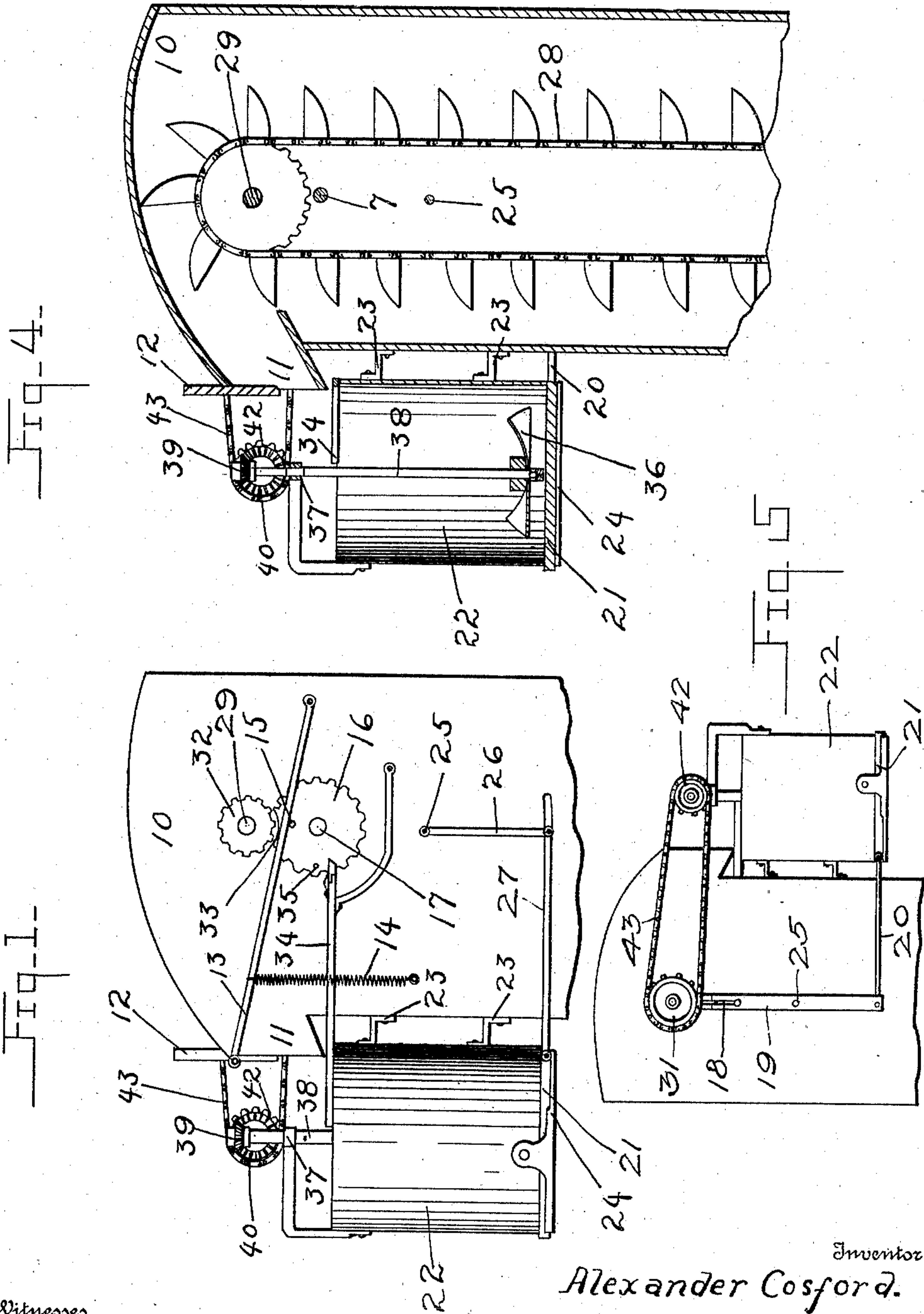
A. COSFORD.  
GRAIN MEASURE.

APPLICATION FILED SEPT. 21, 1908.

Patented Aug. 16, 1910.

2 SHEETS—SHEET 1.

967,172.



Witnesses  
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Inventor  
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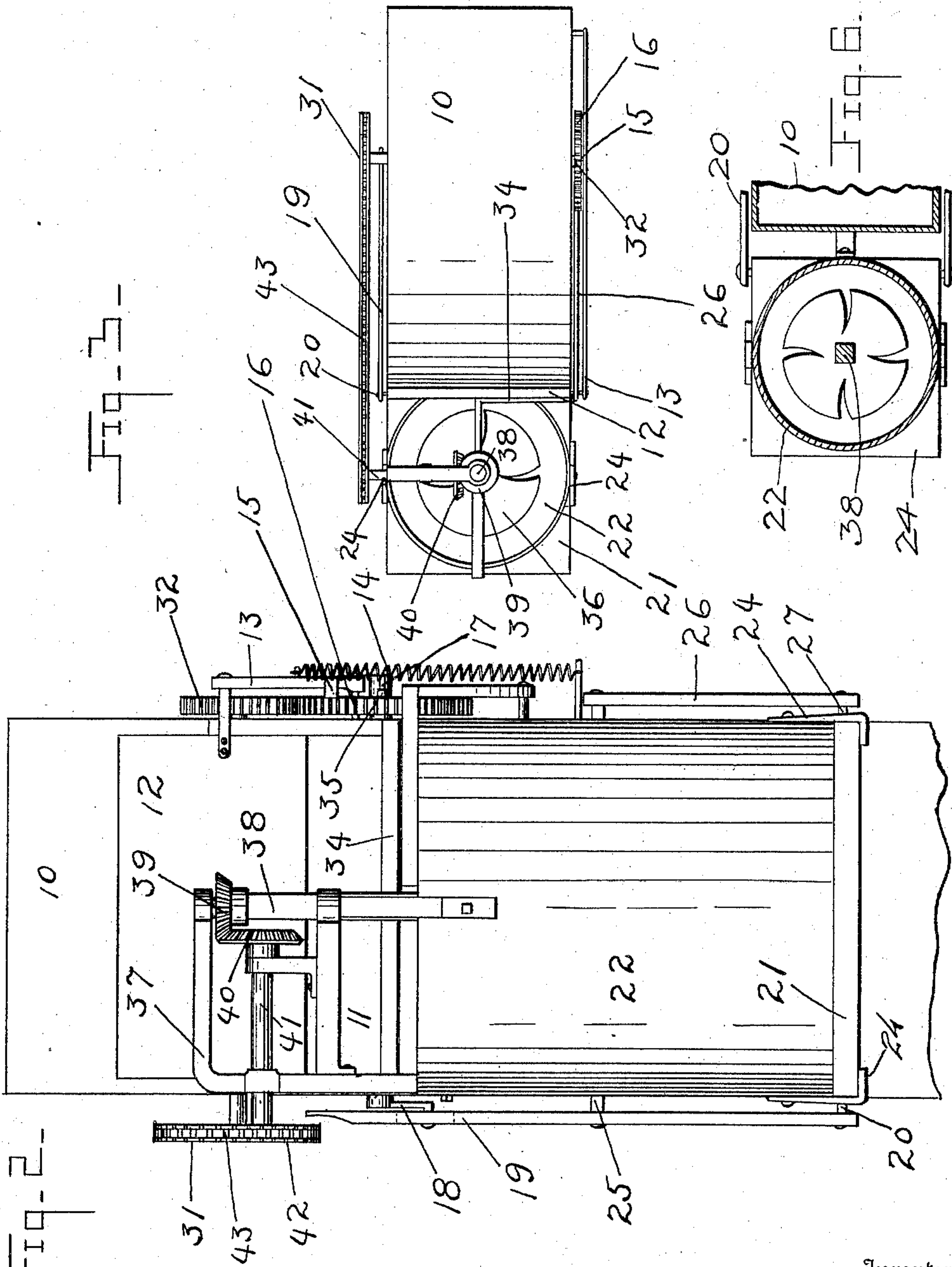
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# UNITED STATES PATENT OFFICE.

ALEXANDER COSFORD, OF OAK LAKE, MANITOBA, CANADA.

GRAIN-MEASURE.

967,172.

Specification of Letters Patent.

Patented Aug. 16, 1910.

Application filed September 21, 1908. Serial No. 453,996.

*To all whom it may concern:*

Be it known that I, ALEXANDER COSFORD, a subject of the King of England, residing at Oak Lake, in the Province of Manitoba and Dominion of Canada, have invented certain new and useful Improvements in Grain-Measures, of which the following is a specification.

This invention relates to measuring instruments having special reference to a device for measuring quantities of grain.

An object of this invention is to construct a receptacle to be positioned against the open end of a conveyer for the purpose of receiving the grain therefrom and shutting off the flow of grain from the conveyer when the receptacle has been filled.

A further object of this invention is the provision of means in combination with the conveyer for releasing the grain from the receptacle and of closing the receptacle automatically for the reception of another quantity of grain from the conveyer.

The invention has for a still further object a device of this character which comprises but few parts, is of simple structure and is durable and strong so as to produce a grain measure which will give greater satisfaction than any of such devices heretofore produced.

Other objects and advantages will be apparent from the following description, and it will be understood that changes in the specific structure shown and described may be made within the scope of the claims without departing from the spirit of the invention.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a side elevation of the complete device, Fig. 2 is a front elevation of the same, Fig. 3 is a top plan view, Fig. 4 is a longitudinal section of the apparatus, Fig. 5 is a side elevation in detail of the device, from a direction opposite to that of Fig. 1, Fig. 6 is a horizontal transverse section through the receptacle 22.

Referring to the drawings, 10 designates a grain elevator having an outlet spout or duct 11 formed at its upper end in the forward face thereof, which is adapted to be closed by a gate 12 hingedly supported upon a rod 13 pivoted upon the side of the elevator 10. The rod 13 is normally held in a depressed position by a spring 14 secured

at its opposite ends to the rod 13 and to the elevator 10. The spring 14 serves to keep the gate 12 at a normal closed position. The rod 13 is raised by means of a wrist pin 15 which is carried upon the outer face of a gear 16 which when rotating engages the rod 13 and raises the same against the tension of the spring 14. The gear 16 is mounted upon a shaft 17 which extends through the conveyer 10 and supports at its opposite extremity a crank arm 18 which carries the longitudinally slotted end of a reciprocating lever 19 which is pivoted centrally to the adjacent side of the elevator 10 as at 25. The lower extremity of the lever 19 carries pivotally a rod 20 which is pivotally connected to the adjacent side of the bottom 21 of a receptacle 22. The receptacle 22 is secured to the face of the elevator 10 adjacent to the outlet 11 thereof and is held in such position by braces 23. The bottom 21 is slidably supported upon guides 24 which are positioned at the opposite sides of the receptacle 22 and allow free reciprocating movement of the bottom 21. The lever 19 is secured intermediately of its length upon the extremity of a rod 25 extending through the elevator 10 and having attached to its opposite extremity a pendent arm 26 which extends downwardly in parallel with the lever 19 and pivotally supports a rod 27 which is pivoted intermediately upon the adjacent side of the bottom 21. The endless chain conveyer 28 which is positioned in the elevator 10 is supported at the upper end of the elevator upon a shaft 29 carrying a small gear 32 meshed with the gear 16, the shaft 29 extending through the elevator 10 and carrying upon its extremity, a large sprocket 31.

The gear 16 is provided with a notch 33 in one edge thereof which admits of the passage of the teeth of the gear 32 without actuating the gear 16. This arrangement prevents the teeth of the two gears from meshing and the gear 16 is permitted to mesh with the gear 32 only by raising the forward extremity of the lever 34, which is pivoted to the elevator 10 and extends upwardly and rearwardly therefrom. In its upward movement it engages as shown against a block 35 formed upon the outer face of the gear 16 to serve the purpose of carrying the gear 16 forwardly to mesh the same with the gear 32.

The lever 34 extends centrally of the re-



ceptacle 22 where it is engaged by a float or controller 36 which is actuated in said receptacle. The receptacle is provided with a bracket 37 which is positioned across its upper open end and supports a vertical shaft 38 centrally of the receptacle 22 upon which the float 36 is loosely mounted. The shaft 38 is of rectangular cross section and consequently the float 36 is caused to rotate when the shaft 38 is actuated and the float 36 is permitted to travel upwardly under the pressure of the substance which is poured into the receptacle 22 and which rises beneath the float 36. The shaft 38 is provided with a beveled gear 39 which meshes with a second gear 40 disposed upon a stub shaft 41 which supports at its outer extremity a sprocket 42 disposed in alignment with the sprocket 31. A chain 43 is disposed about the two sprockets 31 and 42 for the purpose of connecting the same and of transmitting motion from one to the other.

The operation of the device is as follows: The chain conveyer 28 in the elevator 10 is set in motion to cause the conveying of grain to the top of the elevator 10 and to deliver the same through the spout 11 into the receptacle 22. When the chain 28 is actuated, the shaft 29 is revolved and the sprocket 31 is thereby actuated and caused to operate a chain 43 to rotate a sprocket 42 which sets in motion the shaft 38 through the medium of the stub shaft 41 and the gears 40 and 39 respectively. This arrangement causes the float 36 to travel around on the surface of the grain contained in the receptacle 22 and to remain on the surface as the quantity increases owing to the upwardly curved edges of the wings of the float 36 and to the fact that the float 36 is slidably mounted upon the shaft 38.

When the receptacle is filled with grain the float 36 is positioned at the top of the receptacle 22 and it is caused to strike the forward end of the lever 34 which raises the same and causes it to strike the block 35 and to rotate the gear 16 sufficiently to allow the same to mesh with the gear 32 and to be actuated thereby. When the gear 16 is rotated the lever 13 is released from its upward position by reason of the displacement of the wrist pin 15 from beneath the same and the lever 13 is drawn downwardly under the tension of the spring 14 and caused to slide the gate 12 into a closed position and to prevent the further flow of grain from the extremity of the spout 11. The spring 14 is used to insure the fall of the gate 12 when the pin 15 has moved a sufficient distance to allow the lever 13 to fall. When the gear 16 is rotated the shaft 17 is carried therewith and the crank arm 18 is caused to revolve and to reciprocate the upper extremity of the lever 19 owing to its

slotted engagement therewith. As the lever 19 is rigidly secured upon one extremity of the rod 25 and as the arm 26 is similarly secured upon the opposite extremity of the rod 25 the lower extremities of the lever 19 and the arm 26 are caused to oscillate in parallel and to slide the bottom 21 of the receptacle 22 owing to their pivotal connection therewith through the medium of the rods 20 and 27. As the wrist pin 15 and the crank arm 18 are disposed on the same radius of the shaft 17, the gate 12 will be closed upon the opening of the bottom 21 and the flow of grain will be stopped during the emptying of the receptacle 22.

What is claimed is:

1. A device of the class described comprising a duct member having a delivery opening, a revoluble shaft carried thereby, said shaft having a gear at one end, a second shaft disposed beneath the first shaft, a gear carried by the second shaft and adapted to mesh with the first gear at times and carrying a lateral projection, a gate disposed over the delivery opening, a lever carried by the duct member, said lever resting upon said projection normally and supporting the gate, said projection being arranged to permit the gate to be lowered when the gear is rotated, a receptacle arranged to receive material from said delivery opening, and means for bringing the second gear into engagement with the first gear at times.

2. A device of the class described including an elevator, a revoluble transverse shaft, a sprocket on one extremity of said shaft, a receptacle adjacent said elevator, a float therein, a bracket on said receptacle, a stub shaft on said bracket, a sprocket on said stub shaft, a chain disposed about said sprockets, a gear on said stub shaft, a vertically disposed transversely angular shaft mounted centrally in said receptacle, a gear on said vertical shaft adapted to mesh with said first gear, a gear carried by the first shaft, a shaft disposed beneath said first shaft, a gear carried upon one extremity of said last named shaft adapted to mesh at times with the last named gear, a lever disposed on said elevator for meshing said gears on said elevator, said lever being arranged and adapted to be actuated by the float in said receptacle.

3. A device of the class described including a duct member, a closure thereon, an operating lever engaged with the closure, yielding means tending to hold the closure in closed position, a receptacle disposed to receive material from the duct, a revoluble gear mounted adjacent the lever and having a wrist pin thereon adapted to engage the lever for opening of the closure, said gear having a notch therein, a second gear mounted revolubly adjacent the first gear and adapted for engagement with said first gear



at times but normally rotating freely in the notch, means for rotating the last named gear, and a controlling member adapted to be affected by material discharged into the  
 5 receptacle from said duct, and operative connections between said controlling member and the first gear for bringing said first gear into engagement with the last named gear when the receptacle contains a prede-  
 10 termined quantity of material

4. A device of the class described comprising a duct member, a closure carried thereby, an operating member carried by the closure, an actuating member adapted to  
 15 engage the operating member at times, operative means for the actuating member normally out of engagement therewith, said actuating member being adapted to be thrown into engagement with said operative  
 20 means at times, a receptacle disposed in position to receive material from the duct, a closure in the base of the receptacle, an operating member engaged with the last named closure, means connecting the operating  
 25 member with the actuating member, a float member disposed within the receptacle and adapted to be raised by material discharged thereinto, and operative connections between the float member and said actuating member  
 30 for bringing the latter into engagement with said operating means to actuate both of the closures for checking of the passage of material from the duct and discharge of material from the receptacle.

5. In a device of the class described, the combination with a duct member, of a closure therefor, an operating member engaged with the closure for opening the same, an actuating member for the operating member,  
 40 motive means for the actuating member normally out of engagement therewith, a receptacle disposed adjacent the duct for reception of material therefrom, said receptacle having a closure at its bottom, an  
 45 operating member engaged with the closure, means connecting said operating member with said actuating member, a movable member disposed within the receptacle and adapted to be engaged by material dis-  
 50 charged thereinto, and means adapted to be engaged by the movable member when material in the receptacle is at a predetermined height for bringing said actuating member into engagement with the motive means for  
 55 closure of the duct and discharge of the receptacle.

6. In a device of the class described, the combination with a duct member, a closure therefor, an oscillating rod engaged with  
 60 the closure for closing operation thereof, a revoluble gear having a lateral pin engaged with the rod to hold the same normally in open position, said gear having a notch therein, an operating gear disposed in posi-  
 65 tion to move freely in the notched portion,

a receptacle disposed in position to receive material from the duct, said receptacle having a closure at its bottom, operative connections between the closure and the  
 70 notched gear, a movable member disposed within the receptacle and adapted to be moved by material discharged thereinto, an engaging member disposed adjacent the notched gear and arranged to be engaged by said movable member when raised to a  
 75 predetermined height for rotation of the notched gear into engagement with the operating gear for actuation of the two closures, for the purpose described.

7. In an article of the class described, the combination with a duct member having a  
 80 closure, an operating rod engaged with the closure, means normally tending to force the closure into closed position, a revoluble gear disposed adjacent the rod and having a lateral pin engaged with the rod to hold the  
 85 closure normally in open position, said gear having a notch therein, an operating gear disposed adjacent the first gear and adapted normally to rotate freely in the notched portion, a revoluble shaft engaged with the second gear, a sprocket carried thereby, a receptacle arranged to receive material from  
 90 said conducting member, said receptacle having a closure at its bottom, normally in closed position, operative connections between the closure and the notched gear for opening of the closure at times, a vertical transversely angular revoluble shaft dis-  
 95 posed within the receptacle, a vertically slidable block carried thereby, radial transversely inclined blades carried by the block, operative connections for the shaft for rotation of the blades to engage against material discharged into the receptacle for raising  
 100 of the block, above the surface of such material, and a starting member projecting over the receptacle and adapted to be engaged by the block when at a predetermined height, said starting member being adapted  
 105 to engage the notched gear when actuated to cause the engagement of the gear with the operative means and actuation of the closures for the purpose described.

8. In a device of the class described, the combination with a duct member, a closure  
 115 therefor, an operating rod for the closure, means tending to hold the closure in closed position, a revoluble shaft, a gear carried thereby, a peripherally notched gear disposed therebeneath and having a lateral pin adapted to engage the operating rod to hold  
 120 the closure normally in open position, said first named gear being normally movable freely in the notch of the second gear, a receptacle arranged to receive material from the duct, a closure at the base of the receptacle, operative connections between the closure and said notched gear, a vertical trans-  
 125 versely angular shaft mounted revolubly



within the receptacle, a float member slid-  
ably engaged thereon and adapted to be  
lifted upon the surface of material dis-  
charged into the receptacle, a starting mem-  
5 ber arranged to be engaged by the float when  
at a predetermined height for movement of  
the notched gear into engagement with the  
first named gear, a beveled gear carried at  
the top of said vertical shaft, a horizontal  
10 shaft carried by the receptacle, a gear car-

ried thereby in mesh with the first named  
beveled gear, and operative connections be-  
tween said last named shaft and the first  
named revoluble shaft.

In testimony whereof I affix my signature, 15  
in presence of two witnesses.

ALEXANDER COSFORD.

Witnesses:

DONALD McBETH,

JAMES EDWIN SLIMMON.