(No Model.) 2 Sheets—Sheet 1.

J. O. WYMAN & O. L. EUGEN.

GRAIN METER.

No. 489,776. Patented Jan. 10, 1893.

Fig. 1.

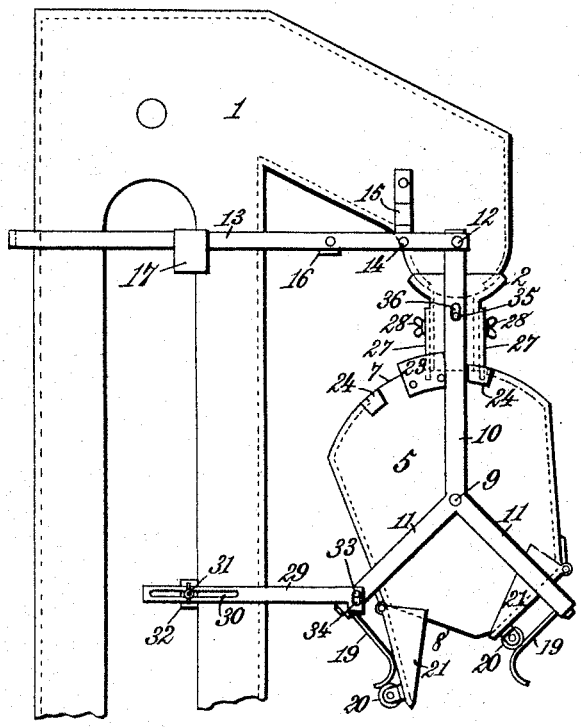

Fig. 3.

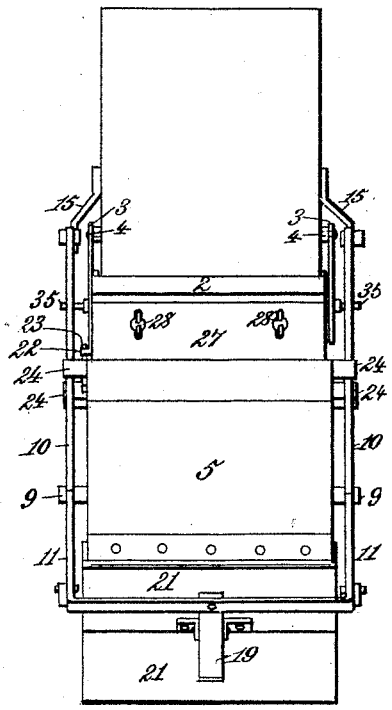

Fig. 2.

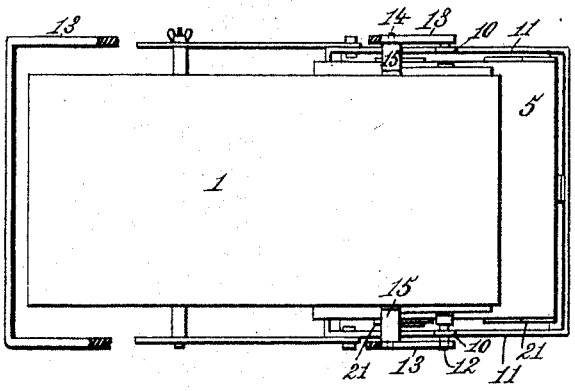

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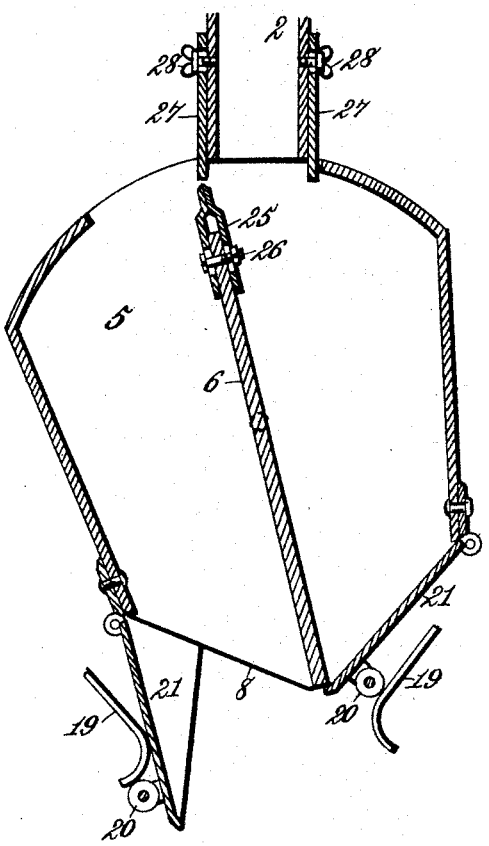
Fig. 4.



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UNITED STATES PATENT OFFICE.

JACOB O. WYMAN AND OLE L. EUGEN, OF FARGO, NORTH DAKOTA.

GRAIN-METER.

SPECIFICATION forming part of Letters Patent No. 489,776, dated January 10, 1893.

Application filed April 26, 1892. Serial No. 430,711. (No model.)

To all whom it may concern.

Be it known that we, JACOB O. WYMAN and OLE L. EUGEN, citizens of the United States, residing at Fargo, in the county of Cass and State of North Dakota, have invented new and useful Improvements in Grain-Meters, of which the following is a specification.

This invention relates to improvements on the grain meter for which Letters Patent No. 453,305 were granted to J. O. Wyman June 2 1891, and has for one of its objects to provide a simple and effective means of providing and maintaining a proper operative relation between an oscillatory measuring bucket and the discharge portion of a grain elevator irrespective of any deviation of the elevator from a plumb position when mounted on the separator platform of a thrashing machine.

Another object of the invention is to provide a means for adjusting or varying the capacity of the measuring bucket to measure more or less grain at a time, as required.

The invention also has for its object to provide a simple and inexpensive device for automatically locking the oscillatory measuring bucket in an inclined position until one of its compartments is filled when it is released and oscillated to discharge the grain from the filled compartment while the other compartment is in turn filled and discharged.

To these ends the invention consists in the construction, combination and relative arrangement of devices in a grain meter as hereinafter more particularly described and claimed.

In the annexed drawings illustrating the invention—Figure 1 is a side elevation of a grain elevator and meter embodying our improvements. Fig. 2 is a plan of the same. Fig. 3 is an end elevation of the grain meter. Fig. 4 is a sectional detail view of the measuring bucket.

Referring to the drawings, the numeral 1 designates the upper end portion of a grain-elevator. Beneath the discharge end of the elevator, and communicating therewith, is suspended an adjustable hopper 2 by means of vertical bars 3 that are secured to opposite sides or ends of said hopper and extended above the same. The upper ends of these suspending bars 3 are pivotally attached by means of pivot-pins 4 to the opposite sides of the elevator to permit a swinging adjustment of the hopper and measuring bucket that will compensate for deviations from a proper vertical position of the elevator which are liable to occur when the elevator is mounted on the separator platform of a thrashing machine. For the purpose of maintaining communication between the elevator and hopper in any position to which the latter may be adjusted the discharge portion of the elevator is preferably rounded or convexed from front to rear, as shown in Fig. 1, and the hopper is provided with a correspondingly rounded or concaved inlet end to fit on and co-operate therewith.

The oscillatory measuring bucket 5, which receives the grain from the hopper, may be of the usual well known form and is provided with a diametrical partition 6 that divides the bucket into two equal compartments each of which is open both at top and bottom. By this construction the measuring bucket is provided with two inlet ports 7 at the top and two outlet ports 8 at the bottom. This oscillatory measuring bucket 5 is mounted on pivots or centers 9 carried by suspending bars 10 having divergent arms 11 at their lower ends. The upper ends of the bars 10 are connected by pivot pins 12 with the forward ends of weighted levers 13 that are fulcrumed at 14 to the lower ends of brackets 15 secured to opposite sides of the elevator. As shown in Fig. 2 the rear ends of the levers 13 may be extended toward each other and be connected, integrally or otherwise, at the rear of the elevator. The levers 13 may also be connected by a bar 16 Fig. 1, below the discharge portion of the elevator. On each lever 13 is placed a weight 17 that may be made adjustable or slidable on said levers.

The diverging arms 11 are connected in front and rear of the oscillatory measuring bucket 5 by horizontally arranged bars or arms 18 from the central portions of which are suspended the curved spring tracks 19 that converge below the measuring bucket as shown in Fig. 1. These spring tracks are adapted to serve as supports and guides for rollers 20 attached to the swinging doors or gates 21 that are hinged to the lower portion of the oscillatory measuring bucket 5 in position to automatically control its discharge ports as

the bucket is swung from one side to the other by the accumulation of grain in one compartment while that in the other is being discharged.

On the lower end of one of the bars, 3, by which the hopper 2 is suspended, is a locking lug or projection 22 and on an adjacent portion of the oscillatory bucket 5 is a centrally arranged projection or plate 23 which by the action of the weighted levers 13 is normally held on one side or the other of the said lug 22 thereby locking the bucket 5 in an inclined position and causing one of its doors 21 to be kept closed by the engagement of its roller 20 with the adjacent track 19 while the compartment on that side of the bucket is receiving grain from the hopper. When a sufficient quantity of grain has accumulated in one compartment of the measuring bucket 5 to over balance the weights 17 on the levers 13 the said bucket and its supports will descend until the plate, lug or projection 23 falls below the stationary locking lug 22 and thus allows the weight of the grain to oscillate the bucket on its centers 9 until stopped by shoulders 24 striking against the rods or bars 10 by which the measuring bucket is suspended. Both sides or ends of the bucket 5 may be provided with these shoulders or stop-lugs 24 or they may be employed only in connection with one of the suspending bars of the bucket. This oscillatory movement of the measuring bucket having closed the door at the bottom of the empty compartment and opened the discharge port of the filled compartment so that it will be relieved of the weight of grain therein the bucket will be raised by the action of the weighted levers 13 and the plate or projection 23 will then engage the other side of the lug 22 and again lock the bucket in an inclined position so that one of its discharge ports will remain closed and the other open until the bucket is again oscillated to discharge its contents.

The upper end of the bucket partition 6 is provided with a vertically adjustable regulating slide 25 to increase or diminish the capacity of the measuring bucket. This slide 25 may be adjustably attached to the partition 6 by means of slots and bolts 26 and is arranged to correspond with vertically adjustable slides 27 on the parallel sides of the hopper 2 by which said hopper can be lengthened or shortened according to the adjustment given to the bucket partition. The slides 27 may be adjusted by means of slots and thumb screws 28 or other suitable devices. To lessen the capacity of the measuring bucket the slides 25 and 27 are secured in a lowered position and to measure more grain or increase the capacity of the bucket the said regulating slides are raised.

For the purpose of adjusting and securing the hopper and the measuring bucket in a plumb position irrespective of deviations of the elevator frame from the perpendicular the arms 11 adjacent to the elevator are connected to horizontally arranged rods or bars 29 provided with slots 30 for passage of adjusting thumb-screws 31 that are fastened in the ends of a transverse bar 32 secured to the elevator frame. The bars or rods 29 are attached to the arms 11 by means of bolts 33 passed through vertical slots 34 in the ends of said bars 29 to permit the necessary vertical movement of said arms 11 corresponding with the vertical movements of the measuring bucket. By means of this arrangement of devices the hopper and measuring bucket can be readily adjusted and retained in proper line with each other without regard to whether the elevator frame is in a correct perpendicular position. This is an important feature because if the measuring bucket is not plumb one side will hold more grain than the other and consequently the device will not measure accurately. As it is not always possible to retain the elevator frame in a plumb position on the grain separator platform the necessity of providing some means for adjusting the hopper and measuring bucket to compensate for irregularities in the vertical position of the elevator will be apparent. With our invention it does not make any difference if the elevator is not plumb as by loosening the thumb-nuts or screws 31 the measuring bucket and co-operating devices can be readily adjusted as required. On the movable hopper 2 are pins 35 that extend through slots 36 in the suspending bars 10 of the measuring bucket. By means of these pins and slots the vertical center of the hopper is kept in line with the pivotal centers of the measuring bucket and at the same time the suspending bars 11 are allowed sufficient vertical movement to engage and disengage the locking devices of the bucket when the apparatus is in operation.

What we claim as our invention, is:—

1. The combination with a grain elevator, and a hopper adjustably suspended from the discharge portion of said elevator and in communication therewith, of an adjustable oscillatory and vertically movable measuring bucket suspended beneath and communicating with said hopper, a locking plate or projection secured to and moving with the bucket, and a stationary locking lug projecting from one of the suspending bars of the hopper and adapted to be engaged on its opposite sides by the locking plate on the bucket to hold said bucket in position until filled, substantially as described.

2. The combination with a grain elevator, of a hopper provided with vertical bars or hangers by which it is adjustably suspended beneath the discharge portion of the elevator, an oscillatory and vertically movable measuring bucket suspended beneath and communicating with said hopper, vertical bars or hangers provided with centers or pivots for the measuring bucket and having vertical slots to engage pins on the hopper, horizontally arranged weighted levers fulcrumed on the elevator and to which the said suspending bars

of the measuring bucket are attached, and slotted adjusting bars or rods connecting the suspending bars or hangers of the measuring bucket to the elevator frame and provided with thumb-screws for securing the hopper and measuring bucket in their adjusted positions, substantially as described.

3. The combination with a hopper provided on opposite sides with vertically adjustable slides, of an oscillatory measuring bucket suspended beneath said hopper and having a central partition provided at its upper end with a vertically adjustable regulating slide to co-operate with the slides on the hopper for varying the capacity of the measuring bucket, substantially as described.

4. The combination with a grain elevator having a rounded or convexed discharge portion, of an adjustable hopper suspended beneath the discharge portion of said elevator and provided with a rounded or concaved inlet, and an oscillatory and vertically movable measuring bucket adjustably suspended beneath said hopper, substantially as described.

5. The combination with a grain elevator, and a hopper adjustably suspended from the discharge portion of the elevator and provided with horizontally projecting pins and a stationary locking lug, of an oscillatory and vertically movable measuring bucket provided with suspending bars or hangers having vertical slots that engage the pins on the hopper, stop-lugs carried by said bucket to impinge on the suspending bars of the bucket and limit its oscillations, and a locking plate or projection attached to and moving with the bucket and adapted to alternately engage the opposite sides of the stationary locking lug on the hopper to hold the bucket in position while being filled, substantially as described.

6. The combination with the elevator and the weighted horizontally arranged levers fulcrumed thereon, of a hopper adjustably suspended from the discharge portion of the elevator, an oscillatory and vertically movable measuring bucket provided with suspending bars or hangers depending from said weighted levers and provided with vertical slots to engage pins on the hopper, said measuring bucket having two compartments provided with inlet and outlet ports and automatically operated gates controlling the discharge from said outlet ports, automatic locking devices on the bucket and hopper to hold said bucket in an inclined position until the required quantity or weight of grain is received therein to overbalance the weighted levers from which the bucket is suspended, and adjusting bars or rods connected with the suspending bars of the bucket and with the elevator frame to secure the hopper and measuring bucket in vertical alignment irrespective of any deviation of the elevator from a perpendicular position, substantially as described.

In testimony whereof we have hereunto set our hands and affixed our seals in presence of two subscribing witnesses.

JACOB O. WYMAN. [L. S.]
OLE L. EUGEN. [L. S.]

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C. A. GETTUM.