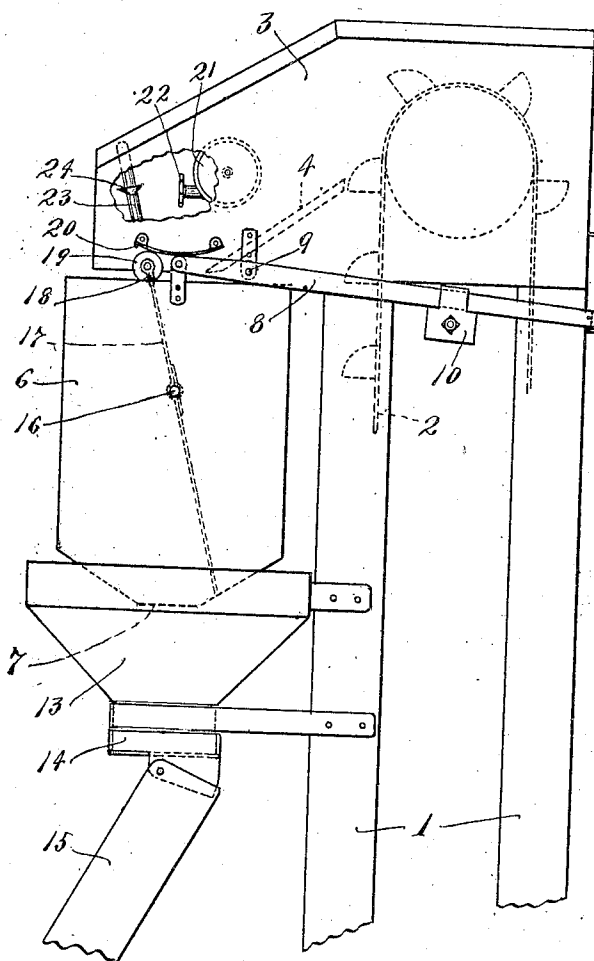


No. 834,446.

PATENTED OCT. 30, 1906.

E. O. BERG.
AUTOMATIC GRAIN WEIGHING DEVICE.
APPLICATION FILED MAY 11, 1906.

Fig. 1.



2 SHEETS—SHEET 1.
Fig. 2.

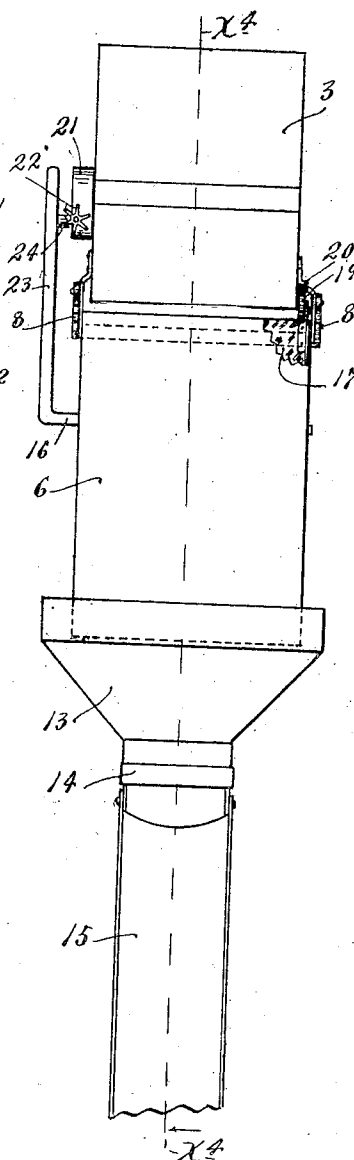
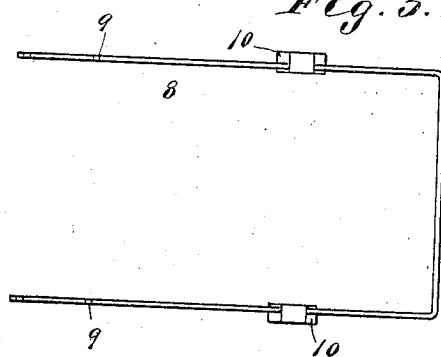


Fig. 3.



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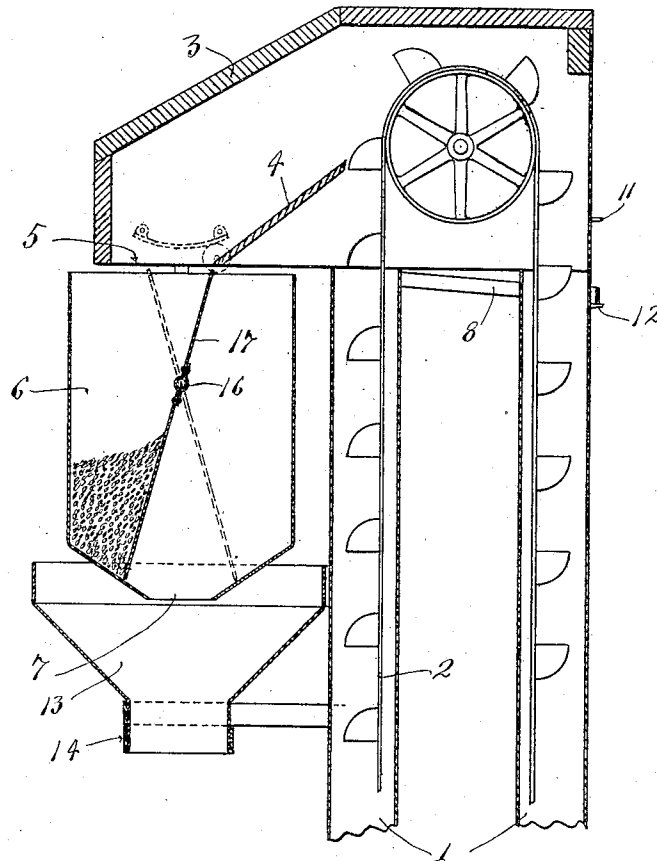
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2 SHEETS—SHEET 2.

Fig. 4.



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UNITED STATES PATENT OFFICE.

ELLING O. BERG, OF MADISON, MINNESOTA.

AUTOMATIC GRAIN-WEIGHING DEVICE.

No. 834,446.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed May 11, 1906. Serial No. 316,281.

To all whom it may concern:

Be it known that I, ELLING O. BERG, a citizen of the United States, residing at Madison, in the county of Lac qui Parle and State of Minnesota, have invented certain new and useful Improvements in Automatic Grain-Weighing Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its especial object to provide an improved automatic grain-weighing device for use in grain-elevators and elsewhere where grain is transmitted from one point to another.

To the above ends the invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Referring to the drawings, Figure 1 is a view in side elevation, showing my invention applied to an ordinary elevator-leg, some parts being broken away. Fig. 2 is a front elevation of the parts shown in Fig. 1. Fig. 3 is a plan view showing in detail a yoke-like hopper-supporting lever, and Fig. 4 is a vertical section taken on the line $x^4 x^4$ of Fig. 2.

The numeral 1 indicates an elevator-leg in which runs an endless cup-equipped elevator-belt 2, both of the usual construction, the said leg having at its upper portion a hood 3, provided within with a deflecting-board 4, arranged to direct the grain from said conveyor to a discharge-opening 5 in the bottom of the projected portion of said hood.

The grain-measuring hopper 6 is open at its top and at its bottom is formed with a contracted discharge-passageway 7. This hopper 6 is located in a position with its open upper end directly underlying the discharge-passageway 5 of the hood 3, and it is supported in such position with freedom for limited vertical movements by the forwardly-projecting prongs of a yoke-like lever 8, which lever embraces the hood 3 and elevator-leg 1 and is pivoted to the former at 9. On the rearwardly-projecting portions of the sides of the yoke 8 are adjustable weights 10. The transverse rear portion of the said yoke or lever 8 is adapted to engage stop-pins 11 and 12 on the rear of the hood 3 and leg 1,

respectively. These pins 11 and 12 limit the extreme movement of the lever 8, and hence the upward and downward movements of the hopper 6.

Directly underlying the lower end of the hopper 6 is a receiving-hopper 13, that is fixed to the elevator-leg 1. As shown, a collar 14 is swiveled on the depending neck portion of the hopper 13, and to this collar is pivoted a discharge-spout 15.

A rock-shaft 16 extends transversely through the hopper 6 and is pivoted to the sides thereof. To this rock-shaft 16 is secured a vibratory partition-plate 17, that extends from the bottom to the top of the hopper. To the upper edge of one side of the partition-plate 17 is secured an upwardly-projecting bearing 18, to which is journaled an antifriction wheel or roller 19. This wheel 19 engages and runs against the under surface of a curved cam-plate 20, secured on the same side of the hood 3. This cam-plate 20 intersects an arc struck from the center of the rock-shaft 16, tangent to the upper portions of the wheel 19, the hopper being positioned as shown in Fig. 1. It therefore follows that the said wheel 19 cannot travel against the under surface of the cam-plate 20, and hence the partition-plate 17 cannot be moved from one position to the other (indicated by full and dotted lines in Fig. 4) without requiring a downward movement of the hopper 6.

The adjustable weights 10 on the sides of the lever 8 should, of course, be set to counterbalance the hopper 6 and the desired weight of grain therein. This being done, the hopper 6 will be held upward and the partition-plate 17 held in one or the other of its extreme positions until the predetermined accumulation of grain in the hopper overcomes the said weights and forces the said hopper downward, whereupon the weight of the grain against the lower portion of said partition-plate will cause the said partition-plate to move from one side to the other of its extreme positions. When the partition-plate is thus moved—say from the position shown by full lines in Fig. 4 to the position shown by dotted lines in Fig. 4—it will immediately permit the discharge of the accumulated grain on the left-hand side of the hopper, and while the grain is still escaping from that side of the hopper said plate will direct the grain from the hood into the right-hand side of the hopper, so that there is no lost time

and no waste of grain. The discharge of the grain from the hopper will be more rapid than the supply of grain thereto, and hence the load of the hopper being lightened the hopper will again be raised and the wheels 19 will be again engaged with the cam-plates 20, thereby securing the partition-plate 17 in its last set position.

To register the amount of grain weighed and passed through the hopper by the above-described means, a suitable tally should be provided, and means should also be provided for automatically actuating such tally or register. Almost any of the well-known forms of tally may be employed. In the drawings the numeral 21 indicates the tally or register, having the well-known form of actuating star-wheel 22 exposed at the exterior thereof. This tally is shown as secured to one side of the hood 3. At that side of the device to which the tally is secured the rock-shaft 16 projects and is provided with an upwardly-extending arm 23. This arm 23 carries approximately a V-shaped cam-leg 24, which under both directions of movement of the arm 23 will engage one of the arms of the star-wheel 22 and impart thereto a one-step movement always in the same direction, and thereby cause the said tally to record the number of vibratory movements of the arm 23, and hence of the partition-plate 17. With the device set to weigh bushels of grain each vibratory movement of the said arm and partition-plate will represent one bushel of grain weighed and passed through the hopper. In some cases it will be desired to make the arm quite heavy, so that it will assist in holding the partition-plate in its extreme positions, the said arm being given movement from one

side to the other of a vertical position under vibratory movements of said partition-plate.

The device above described, while extremely simple, has in practice been found very efficient for the purposes had in view.

I claim as my invention—

1. The combination with a weighing-hopper yieldingly supported for vertical movements, means for delivering grain into the upper end of said hopper, a partition-plate pivotally mounted within said hopper and provided at its upper portion with a wheel, and a fixed cam-plate with which said wheel engages, the said wheel and cam-plate tending to hold said partition-plate in either of its two extreme positions when the said hopper is held in its uppermost position, and a tally arranged to register the number of vibratory movements of said partition-plate, substantially as described.

2. The combination with an elevator-leg having a hood and an endless conveyer working therein, of a weighted lever 8 pivoted to said hood, a hopper 6 supported by said lever, a partition-plate 17 intermediately pivoted within said hopper and provided at its upper portion with a wheel 19, a cam-plate 20 fixed on said hood and cooperating with said roller to hold said partition-plate in either of its extreme positions when said hopper is raised, an arm mounted to vibrate with said partition-plate, and a tally arranged to be actuated by said arm under movements thereof in both directions, substantially as described.

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

ELLING O. BERG.

Witnesses:

LOUIS O. BERG,
ERVIN J. HANSON.