A. J. HARTLEY.

ELEVATOR.

APPLICATION FILED SEPT. 4, 1915.

1,170,445.

Patented Feb. 1, 1916.

2 SHEETS—SHEET 1.

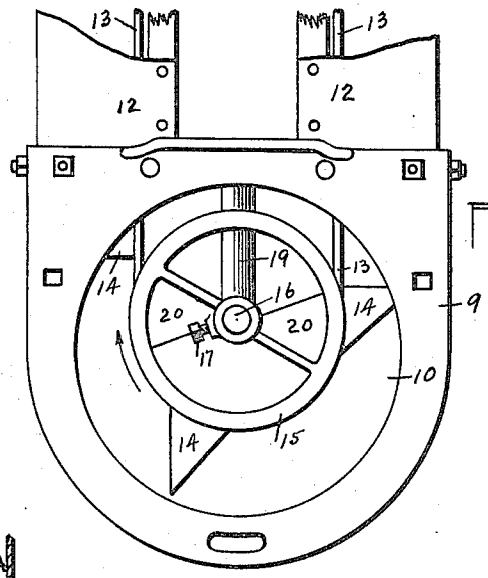


FIG. 1.

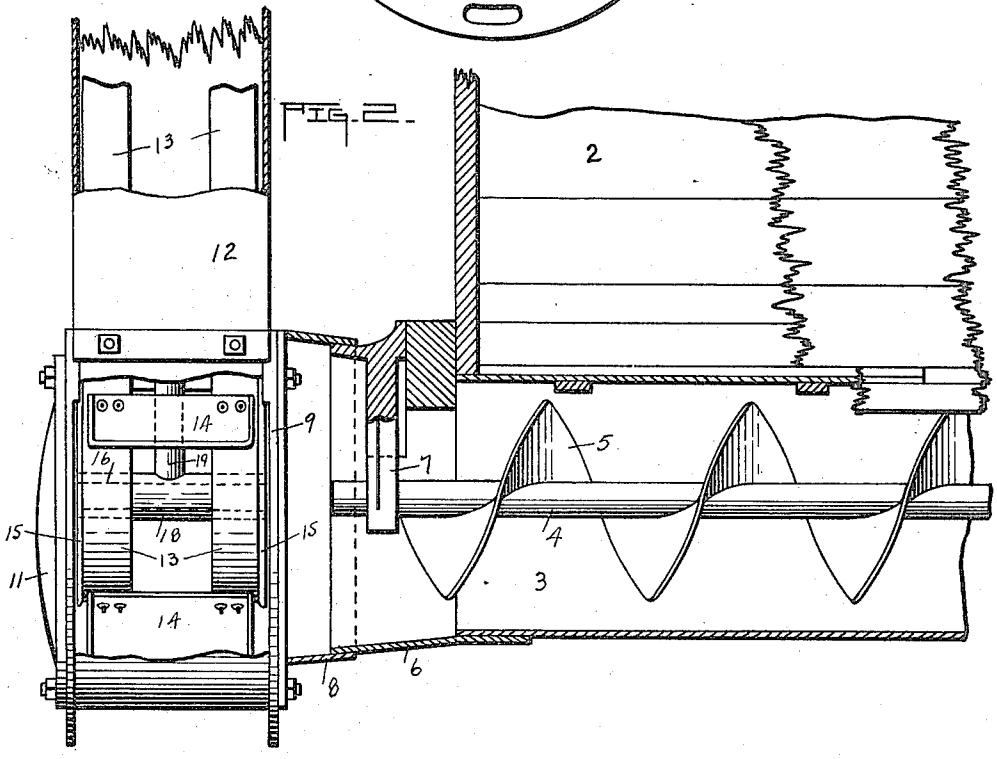


FIG. 2.

WITNESSES:-

H. W. Gibson.

Mary E. Comegys.

INVENTOR.

Arthur J. Hartley

BY H. F. Lafferty

ATT'Y.

A. J. HARTLEY.

ELEVATOR.

APPLICATION FILED SEPT. 4, 1915.

1,170,445.

Patented Feb. 1, 1916.

2 SHEETS—SHEET 2.

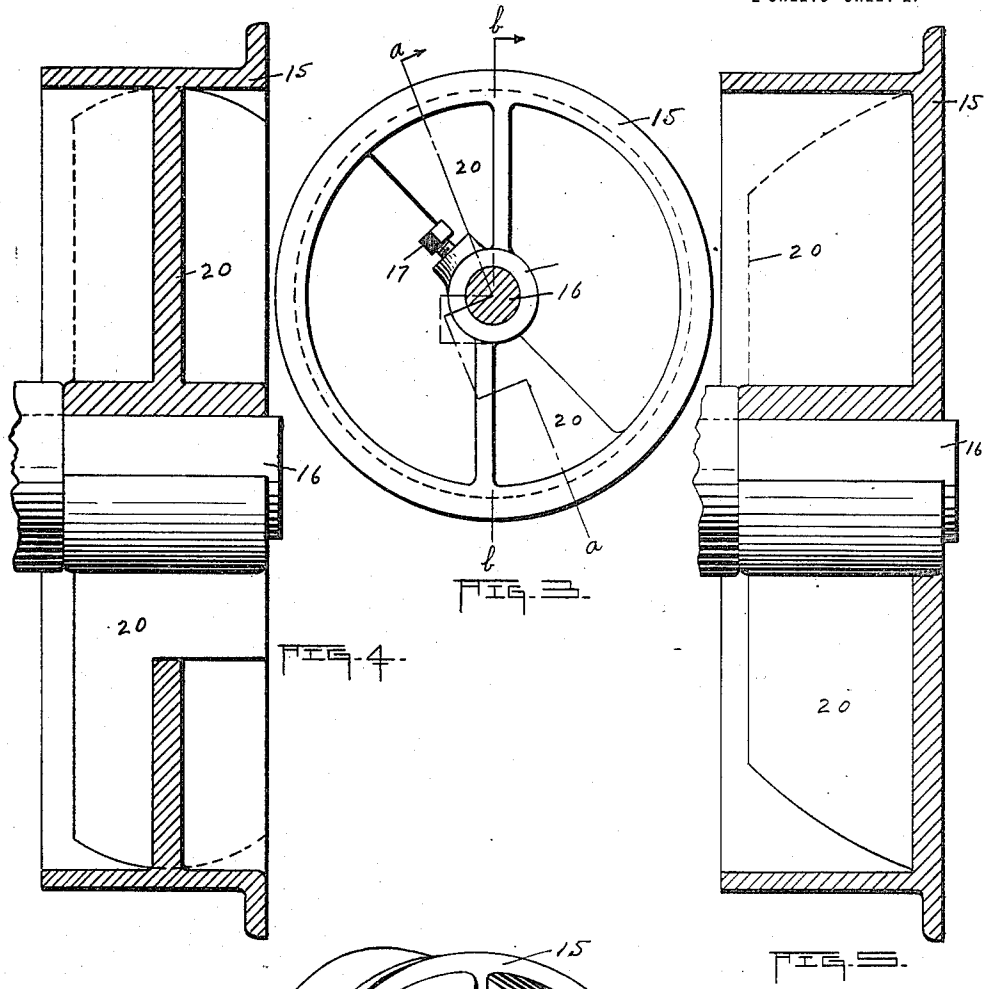


FIG. 3.

FIG. 4.

FIG. 5.

FIG. 6.

WITNESSES

H. V. Gibson.

Mary E. Comegys.

INVENTOR.

Arthur J. Hartley

BY

A. V. Lefft

ATT'Y.

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ARTHUR J. HARTLEY, OF PEORIA, ILLINOIS, ASSIGNOR TO HART GRAIN WEIGHER CO., OF PEORIA, ILLINOIS.

ELEVATOR.

1,170,445. Specification of Letters Patent. Patented Feb. 1, 1916.

Application filed September 4, 1915. Serial No. 48,944.

To all whom it may concern:

Be it known that I, ARTHUR J. HARTLEY, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Elevators, of which the following is a specification.

My invention relates to elevators, and has special reference to an elevator used in conjunction with a threshing machine or separator.

The object of my invention is to provide supplementary means to the ordinary auger used in connection with the cross conveyer of a separator, in aid of the feeding of grain into the boot of the elevator.

My invention lies in the provision of deflector members in conjunction with belt carrying wheels for conveyer members of an elevator, to take the place of ordinary spoke members of such wheels.

My invention also includes the relative arrangement of the deflector members of each of said belt wheels to cause opposite deflection, that is, that each may deflect grain toward the vertical center of the boot of the elevator.

My invention also comprehends detail arrangement and formation of parts auxiliary to and in aid of results sought to be obtained.

Referring to the drawings—Figure 1 is a side elevation of the lower portion of an elevator; Fig. 2 is a front view of the lower section of an elevator with parts broken away to show interior construction and arrangement of parts, and also showing in section a portion of the structure of a separator including an auger conveyer and the connection between the auger conveyer or housing, and the boot of the elevator; Fig. 3 is a detail front elevation of the belt wheel and including a showing of the manner of fixing the same upon a shaft; Fig. 4 is a sectional view on the line *a*—*a* of Fig. 3; Fig. 5 is a sectional view on the line *b*—*b* of Fig. 3; Fig. 6 is a detail perspective view of a belt wheel.

I have had an extended experience in the manufacture of grain weigher attachments for threshing machines, such attachments including an elevator adapted to receive the discharge from a thresher. In the organization or arrangement of the auger feed and the elevator, it is necessary to extend the conveying elements of the elevator to a point close to the bottom of the boot portion and the necessary belt carrying wheel members are therefore required to be disposed in the line of discharge within the elevator boot. I have learned from my experience that the ordinary spoke members of the wheels or the wheel adjacent the receiving inlet of the boot, very materially interfere with the entrance of grain when the wheel is in rapid motion. As a result of such experience, and, in some grain sections, the failure of elevators to meet requirements as to capacity, I was led of necessity to either enlarge the elevator or find means for increasing the feed to the elevator boot. This led to my present invention, which involves substitution of deflector members for the ordinary spoke members, such deflector members being formed substantially in the shape of auger blades, and the wheels containing such members being disposed in the line of travel of the grain act to deflect it and convey it instead of obstructing its passage, as in the instance of ordinary spoke members.

To facilitate the positioning of the elevator at either side of the machine in accordance with the provided means of discharge in connection with different makes of separators, I have provided similar wheels, with similar deflector or auger blade members, in connection with both belt carrying wheels, but reversing the position or bearing of the blade members to accommodate the difference in the direction of the discharge. In both instances of application, the feed is toward the vertical center of the boot of the elevator. Also, the provision of oppositely bearing deflector members in connection with the two belt supporting wheels produces a beneficial result in that the opposite deflector members from the inlet side of the elevator serves to prevent the banking of grain at the opposite side of the boot from such entrance, and in fact acts functionally as an auger to deflect the grain similarly toward the vertical center of the boot.

In the drawings, 2 refers generally to the

ordinary hopper member of a separator; 3 to an auger trough disposed below the hopper; 4 to an auger shaft and 5 to the ordinary and usual auger member.

6 is a partially truncated conical member extension from trough member 3. 7 is a hanger in said member adapted to support one end of the auger shaft.

8 is a truncated conical shaped cast member adapted to be bolted or properly secured to the side of boot member 9 of the elevator and about the entrance opening 10 into said boot. 11 is a cap or closure member for an opening on the opposite side of the boot similar to opening 10, said cap being applied interchangeably to one side or the other of the elevator boot, according as the elevator may be placed on one side of the separator or the other.

12 are the ordinary lug members of an elevator.

13 are the ordinary bucket or conveyer belts provided with bucket members 14 secured at intervals of its length. Belt 13 is adapted to be supported in the usual manner in the upper or head portion of the elevator body and to be driven from such support.

15 are wheels about which belt members 13 are adapted to travel at the lower reach of the conveying element, said wheels being fixed to shaft 16 by means of set screw 17. Shaft 16 is supported in sleeve member 18, the same being spaced between the hub members of wheels 15. Sleeve 18 is integrally or otherwise securely connected with bracket member 19, the upper end of which said bracket member is fixed to the elevator framing in position to properly dispose wheel members 15 for proper working relation.

Referring now particularly to wheel members 15, it will be noted that I have provided deflector or auger members 20, said members being comparatively thin and extending substantially the full width of said wheels, and such deflector auger members have opposite bearing or inclination respectively in the two wheel members. The deflector auger members 20 having an angular disposition with relation to the axis of wheels 15 and being flush with such face, has the effect to present a rather sharp or cutting edge in the direction of travel of said wheels so that as the wheels are revolved the rear sharp edge of the auger members of said wheels are presented to the grain and produce the least possible friction or deflecting tendency, then, as the grain passes the edge and meets the gradually tapering surface of the blade members, the revolution of the wheel serves to force or deflect the grain toward the interior of the boot member. Similarly, as the grain is forced through the wheel on the entrance side of the elevator boot and to the opposite side of said boot, and in contact with the oppositely disposed wheel, any banking upon said opposite side will be prevented by the action of the deflector or auger members of said wheel, the same acting to deflect the grain back toward the interior of the boot.

In operation, the parts being positioned relatively as disclosed in the drawings, with the wheel member 15 disposed as it necessarily must be, within the area of the inlet or opening 10 into the boot member of the elevator, the grain separator auger acts to force the grain into the elevator boot, under some conditions of flow from the separator, part of it, when the auger trough runs full, passing below the wheel member 15 and part through the wheel member 15, the deflector auger blade members of said wheel serving, as hereinbefore described, to present a carrying and deflecting surface, which greatly facilitates the travel of grain through the wheel. The conveyer elements of the elevator act and operate in the same manner as they do generally in elevators of this character.

I have shown herein two deflector members in the belt supporting wheel members of the conveying element of the elevator. However, I do not wish to confine myself to any particular number of such deflector members, but wish to employ any number that may be found efficient in practical use.

What I claim is:—

1. In a device of the class described, in combination, an elevator housing including a boot member, the latter provided with an opening thereinto, grain carrying members in said housing including belt members, wheel members in the elevator boot coöperating with the belt members, and one of said wheel members disposed within the area of the opening leading into said boot, said wheel member being provided with deflector members correspondingly disposed at an angle with the axis of said wheel member and extending across the inner face of said wheel substantially its entire width.

2. In a device of the class described, in combination, an elevator housing, including a boot, the latter provided with inlet openings, conveyer members including belt members driven from a suitable source, wheel members coöperating with the belt members disposed in the boot in spaced relation, and in proximity to the inlet openings, said wheel members being provided each with deflector members intermediate their axial centers and circumference, said deflector members of each wheel being correspondingly inclined at an angle from the axis of said wheel and extending approximately the width of said wheels, the deflector members of the respective wheels being oppositely inclined, a chute or lead communicating op-

tionally with one or the other inlet opening, and a closure member for the opening not in use as an inlet.

3. In a device of the class described, in combination with an elevator housing, an inlet opening into the boot portion thereof, a trough member communicating with said opening into the elevator, a conveyer therein, elevating mechanism within the elevator housing including belt members driven from a suitable source of power, wheels coöperating with and driven by said belt members and disposed in spaced relation and each respectively in partial register or alinement with the inlet opening, the wheel member adjacent the inlet opening being provided with deflector members interposed between its axial center and circumference, and inclined at an angle from the axis of said wheel and extending substantially the width of the wheel.

4. In a device of the class described, in combination with an elevator housing, an inlet opening into the boot portion thereof, a trough member communicating with said opening into the elevator, a conveyer therein, elevating mechanism within the elevator housing including belt members driven from a suitable source of power, wheels coöperating with and driven by said belt members and disposed in spaced relation and each respectively in partial register or alinement with the inlet opening, said wheel members being provided each respectively with deflector members interposed between their axial centers and circumference, and inclined from said axis and extending substantially the width of said wheels.

5. In a device of the class described, in combination, an elevator housing provided with an inlet into the boot portion thereof, a conveyer, elevating mechanism within the elevator housing, including plural belt members driven from a suitable sourse of power, wheels in said boot member coöperating with the belt members, one of which is disposed in partial register with the inlet opening, said wheel being provided with deflector members intermediate its axial center and circumference and inclined from the axis of said wheel and in a direction opposite from the direction of movement thereof.

6. In a device of the class described, in combination, an elevator housing provided with an inlet into the boot portion thereof, a conveyer housing communicating with said inlet, an auger member therein, elevating mechanism within the elevator housing including plural belt members driven from a suitable source of power, wheels in said boot member coöperating with the belt members, one of said wheels being positioned within the area of said inlet opening and in partial register therewith, said wheel being provided with deflector members intermediate its axial center and circumference and inclined from said axis and in a direction opposite from the direction of movement thereof.

7. In a device of the class described, in combination, an elevator housing provided with an inlet into the boot portion thereof, a conveyer housing communicating with said inlet, an auger member therein, elevating mechanism within the housing, including belt members driven from a suitable source of power, a wheel in said boot member cooperating with the belt member, said wheel disposed adjacent said opening in the boot, auger acting means associated with and actuated by said wheel member, whereby the action of the conveyer is supplemented by the auger acting members of the wheel in aid of the conveyance of grain into the boot.

8. In a device of the class described, in combination, an elevator housing provided with an inlet into the boot portion thereof, a conveyer housing communicating with said inlet, an auger member therein, elevating mechanism within the housing, including belt members driven from a suitable source of power, a wheel in said boot member cooperating with the belt member, said wheel disposed adjacent said opening in the boot, auger acting means forming a part of and moving with said wheel member, whereby the action of the conveyer is supplemented by the auger acting members of the wheel in aid of the conveyance of grain into the boot.

9. In a device of the class described, in combination, an elevator housing provided with inlets at each side of the boot portion thereof adapting said elevator housing for disposition at either side of a grain separator, a cap member for closure of the disused opening, a conveyer housing communicating at will with either of said inlets, a conveyer member therein, elevating mechanism within the elevator housing including plural belt members driven from a suitable source of power, wheels in said boot member coöperating with the belt members spaced apart and each positioned adjacent one of said inlet openings, auger members associated with and actuated by the movement of said wheels and disposed with relation to said wheels each to deflect toward the vertical center of the elevator housing.

10. In a device of the class described, in combination, an elevator housing provided with inlets at each side of the boot portion thereof adapting said elevator housing for disposition at either side of a grain separator, a cap member for closure of the disused opening, a conveyer housing communicating at will with either of said inlets, a conveyer therein, elevating mechanism within the elevator housing including plural belt members driven from a suitable source of power, wheels in said boot member coöperat-

ing with the belt members, spaced apart and each positioned adjacent one of said inlet openings, auger members forming a part of and moving with said wheel members, and disposed with relation to said wheels each to deflect toward the vertical center of the elevator housing.

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

ARTHUR J. HARTLEY.

Witnesses:
PAUL E. MONTGOMERY,
FRANK H. VOLZ.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."