No. 824,840.

PATENTED JULY 3, 1906.

C. BRADFORD.

MEANS FOR ATTACHING AND DRIVING ELEVATORS.

APPLICATION FILED OCT. 28, 1904.

2 SHEETS—SHEET 1.

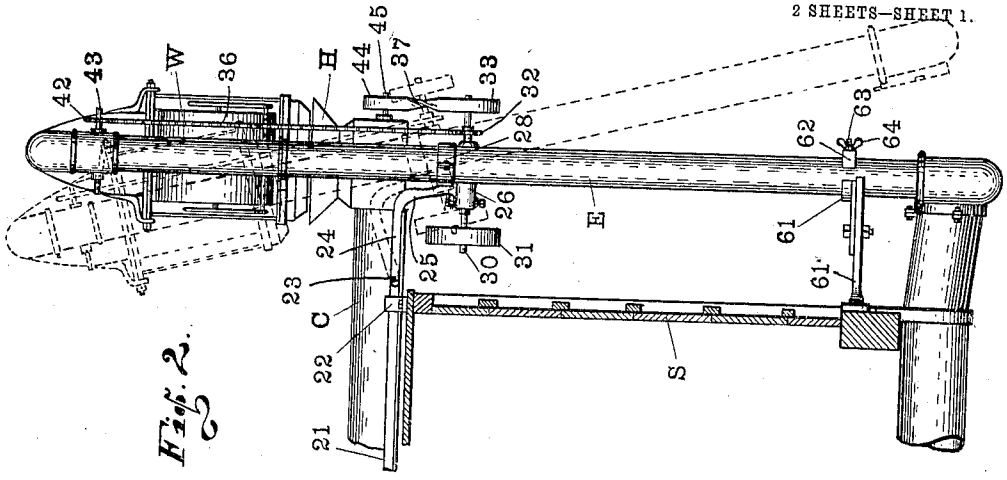


Fig. 2.

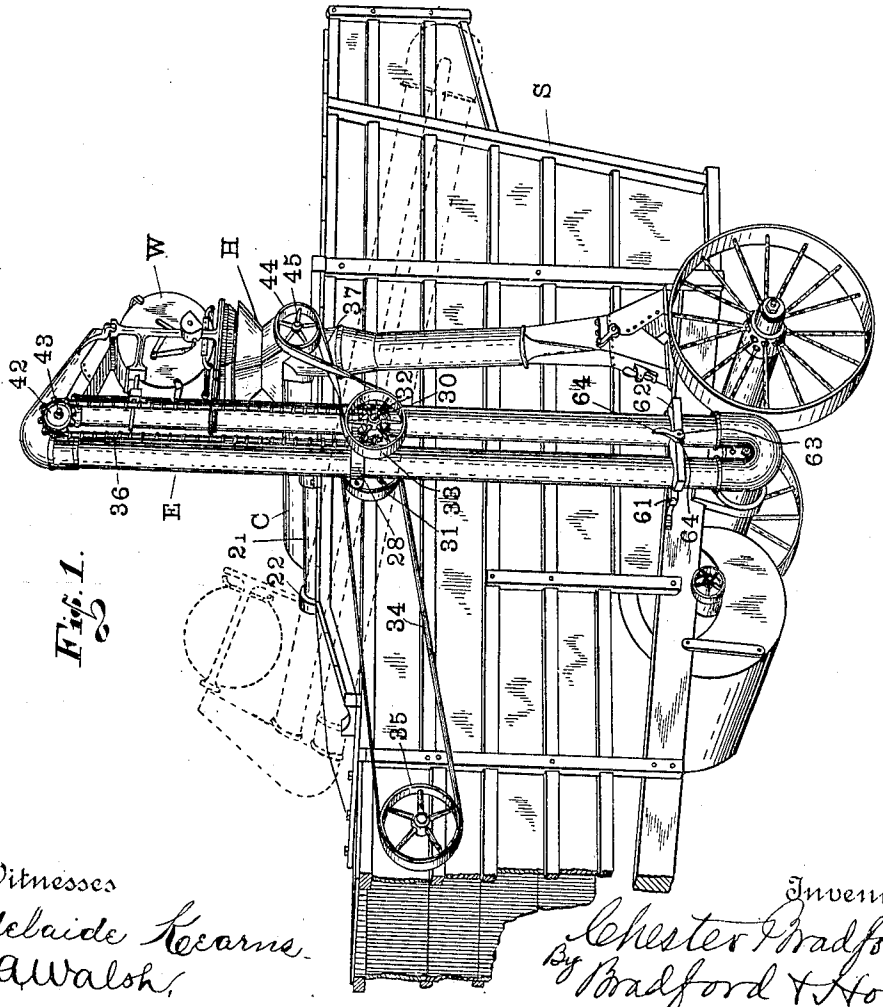


Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 3.

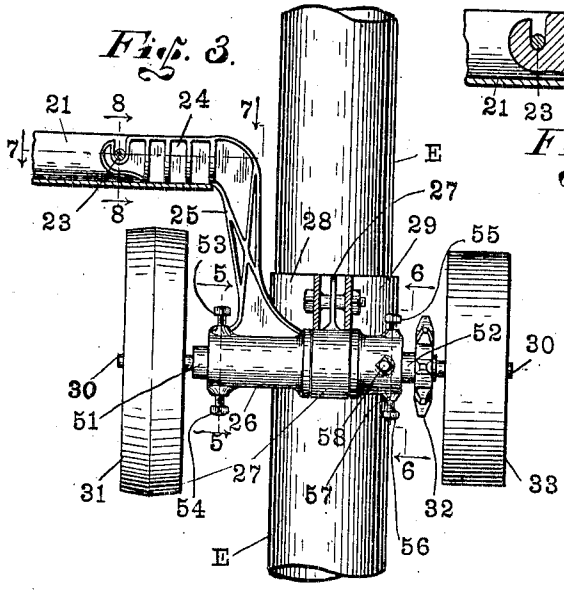


Fig. 4.

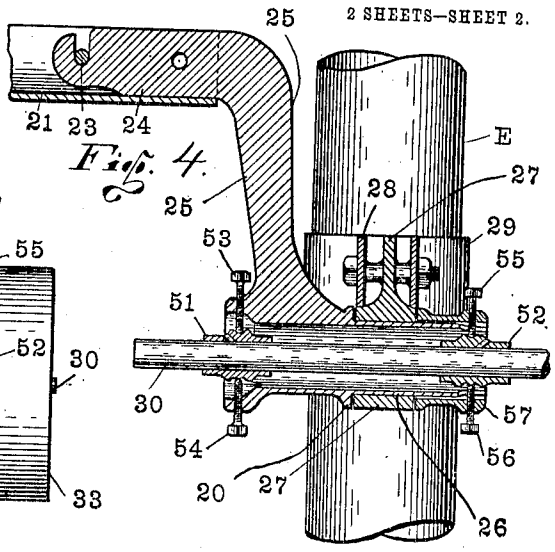


Fig. 5.

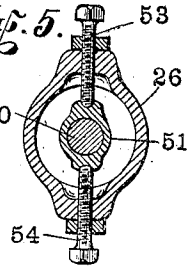


Fig. 7.

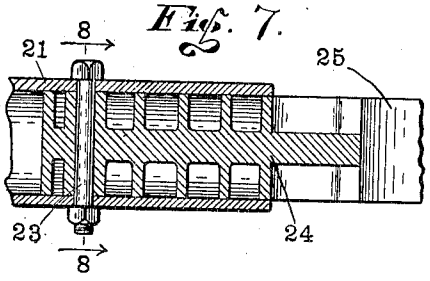


Fig. 8.

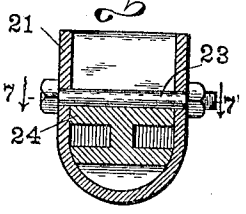


Fig. 6.

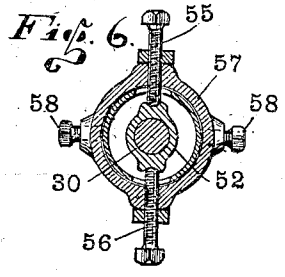


Fig. 9.

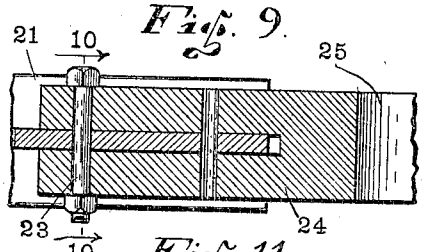


Fig. 10.

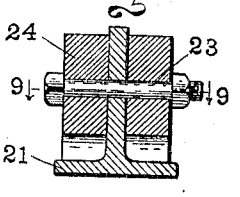
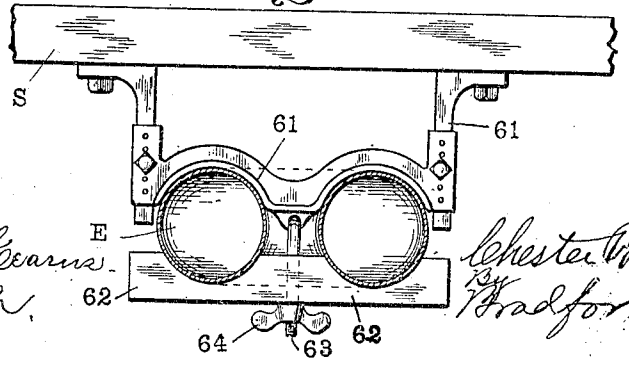


Fig. 11.



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UNITED STATES PATENT OFFICE.

CHESTER BRADFORD, OF INDIANAPOLIS, INDIANA.

MEANS FOR ATTACHING AND DRIVING ELEVATORS.

No. 824,840. Specification of Letters Patent. Patented July 3, 1906.

Application filed October 28, 1904. Serial No. 230,379.

To all whom it may concern:

Be it known that I, CHESTER BRADFORD, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Means for Attaching and Driving Elevators, of which the following is a specification.

That variety of elevators and weighers which are used with threshing-machines frequently require to be folded down for purposes of transportation or in order that the thresher may pass into low barn-doors, &c. Heretofore when it became necessary to so fold such a machine it has been necessary to remove the belts by which the same is driven and frequently to manipulate other parts, these matters varying according to the various styles of machines and the means and methods employed for attaching and operating them.

A leading object of my invention is to provide a means for attaching a machine of this class to a thresher in such a manner that it may be readily folded down for transportation and raised again into operative position without, in the preferred arrangement, removing the driving-belts or materially disturbing any of the adjacent or attached parts.

A further object is to provide a means whereby a counter-shaft may be mounted so that its axis is substantially coincident with the axis of rotation upon which such a machine is swung as it is folded down and raised.

A further object is to so mount said machine upon its hanger that when the complete machine embodies a cross-conveyer, as in the illustration embodied in this present application, the preliminary swinging out of the bottom of the elevator will have a tendency to raise rather than lower the part which is arranged immediately above the hopper of the cross-conveyer when in position for operation, thereby giving greater room for and freedom of movement.

Said invention consists, therefore, in the combination with a thresher and an elevator or weigher and its driving means of an attaching means so constructed and arranged as to permit the necessary manipulation to carry out these objects.

Referring to the accompanying drawings, which are made a part hereof, and on which similar reference characters indicate similar parts, Figure 1 is a perspective view of an elevator and weigher and a considerable portion of the thresher to which it is attached when attached in accordance with my present invention, the upright or operative position of the elevator being shown in full lines and the folded-down position being shown by means of dotted lines; Fig. 2, an elevation, on a somewhat enlarged scale, showing by means of full lines the relation of the elevator, the cross-conveyer, and the separator when in position for use and by means of dotted lines the tipped-over position to which the elevator is moved preparatory to being folded down to the position indicated by the dotted lines in Fig. 1; Fig. 3, a fragmentary detail sectional view, on a still further enlarged scale, illustrating the construction of the parts in which my invention especially resides more clearly; Fig. 4, a detail sectional view similar to Fig. 3, except that the section-line is taken at a different point; Figs. 5 and 6, detail transverse vertical sectional views as seen when looking in the directions indicated by the arrows from the dotted lines 5 5 and 6 6 in Fig. 3, respectively; Fig. 7, a detail horizontal sectional view as seen when looking downwardly from the dotted line 7 7 in Fig. 3; Fig. 8, a detail transverse vertical sectional view at the point indicated by the dotted line 8 8 in Fig. 3; Figs. 9 and 10, views similar to Figs. 7 and 8, but illustrating a construction wherein a T-bar is used as the supporting-bar instead of a U-bar; and Fig. 11, a plan of one means which I have selected as a desirable variety to illustrate in this case, whereby the elevator is connected to the separator at the lower end.

The thresher or separator, as S, and the elevator, as E, are not in themselves peculiar to this present invention, although the elevator and the weigher W, which is attached to it, are of the type illustrated more in detail in my copending application, Serial No. 205,699. The present machine, however, is shown as embodying what is called a "cross-conveyer" C, having a hopper H, which is arranged immediately below the weigher-drum W.

At the top of the thresher I provide a suitable support. This I have shown as a transverse bar 21, mounted in suitable bearings 22, secured to the deck of the thresher with its end projecting outward a short distance toward the elevator E. A hanger member 25 is carried from the support and extends laterally therefrom a short distance sufficiently

to permit a pulley mounted on a shaft having the same or approximately the same axial line as the bearing portion of said hanger to swing free from the support by which the hanger is carried, and hence substantially horizontally, the horizontal portion forming a gudgeon or bearing 26, upon which a second hanger member 27, which is secured to the elevator-tubes, (as by means of clamp-bands 28 and 29,) may operate to support the elevator when in position. This hanger member 27 is formed to rock or swivel upon the hanger member 26. In the preferred form of my present invention I arrange a shaft 30 centrally within the opening through the hanger member 26, so that the axes of said shaft and of said hanger member are substantially or approximately coincident when the parts are operatively arranged. Said shaft 30 bears the several pulleys or wheels 31, 32, and 33. From the pulley 31 a belt 34 runs to another pulley 35 on a convenient shaft of the threshing-machine, and by means of these pulleys and this belt the shaft 30 is driven. A belt 36 (chain or otherwise, a sprocket or chain belt being shown) runs from the sprocket-wheel or pulley 32 to a similar sprocket-wheel or pulley 42 on the shaft 43 at the upper end of the elevator, which shaft drives the usual elevating chain and cups. Another belt or chain 37 runs from the pulley or wheel 33 to a corresponding wheel or pulley 44 on the end of the cross-conveyer shaft 45, so that the elevator and the cross-conveyer are both driven from the shaft 30, which, as above stated, is mounted in the drop-hanger which carries the elevator, so that the axes of the bearing portion of said hanger and of said shaft are substantially coincident. This enables me when it becomes necessary to fold down the elevator for transportation or otherwise to do so merely by loosening the fastenings at the bottom (presently to be described) and swinging out the bottom of the elevator slightly, when it will swing over upon its support without requiring removal of or disturbing the belts or any other of the connections.

The hanger members 25 26 also has an upper arm 24, which is secured to the bar 21 by means of a pivot-bolt 23. This bar 21 I have shown in certain of the views as a U-bar with its open side upward, and the bar 24 of the drop-hanger is shown as resting within the U. When the elevator is in operative position, as shown by the full lines in Fig. 2, then this arm 24 fits closely within this U-shaped cavity and is there held firmly and rigidly. The pivotal point (as pivot-bolt 23) is, however, located at such a point in relation to the other parts that when the structure is swung outwardly, as shown by the dotted lines in Fig. 2, it raises that portion of the elevator or weigher which is immediately above the hopper of the cross-conveyer somewhat, (in the construction shown the frame of the weigher-drum W,) giving room for the other folding operations. It is highly desirable when the elevator is in position for use that the discharge-mouth of the elevator or weigher should be quite close to this hopper in order to prevent grain from escaping over its edges at the time of discharge from one into the other. I am enabled to secure this arrangement and still provide sufficient room for the folding and unfolding operation by the means above described.

It will of course be understood that the particular form of transverse bar 21 may be different from that shown, in which case the form of the upper horizontal member 24 of of the hanger would be varied accordingly. The U-shaped form, however, is a very convenient one, as it provides a nest into which the attached portion of the hanger will closely fit and by means of which it will be held with considerable rigidity. In Figs. 9 and 10 I have shown said bar as a T-bar, and this also I consider as an excellent form, as it likewise provides a double bearing-surface for the adjacent portions of the hanger to bear against. It is even preferable in some respects to the U-bar form.

It is also quite desirable to provide independent means for adjusting the countershaft 30 in order to keep the belt 36 at the proper tension. To this end I make the bearings 51 and 52 separate from the hanger member 26, although contained therein, and provide devices—as, for example, pivot-screws 53, 54, 55, and 56—by means of which the position of said bearings may be somewhat adjusted from time to time. The adjustment does not need to be very great, as any considerable adjustment can be effected by removing a link of the chain belt 36, and the small adjustment required, while causing some departure from the coincidence of the axes of the shaft and the bearing which surrounds it is not sufficient to interfere with the operativeness of the device, as the belt 34 will of course yield the slight amount necessary to permit this to be done.

The hanger member 27 is held from longitudinal movement on the hanger member 26 by means of collars appropriately located thereon, one of which, as 20, may be formed integrally therewith. The other I prefer for convenience to make a combined collar and bearing-support. This last-named structure 57 receives the pivot-screws 55 and 56, which are inserted in suitable screw-threaded perforations therein and pass thence down through slots formed in the outer end of the hanger member 26 and engage with the bearing 52, as shown. By providing this combined structure I am able to avoid thickening the walls of the hanger member 26, which, if done, would require a recessing of the separate collar which would (in that case) need to

be provided. This combined collar and bearing-support is held in place on the hanger member in the usual way by one or more set-screws 58.

The elevator may be secured at the bottom in any desired manner. I have shown it as secured by means of a bolster 61, which is shown as bolted to the sill of the separator and formed with suitable concave surfaces to receive the adjacent portions of the elevator-tubes, and a saddle 62, similarly formed, the two being connected together by a bolt 63, which is provided with a nut 64. Said nut is preferably of a variety which may be easily removed and replaced by hand. When this kind of an attachment is provided, all that is necessary is merely to unscrew this nut, remove the saddle 62, pull out the bottom of the elevator sufficiently to free it from contact with the adjacent parts, and swing it over upon its bearing on the drop-hanger, as before described.

I have shown pulleys and belts and sprocket-wheels and chains as the means of transmitting the power from and to the various shafts; but any suitable power-transmission devices may of course be employed at the choice of the constructor.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a thresher, and a grain-elevator, of a hanger for said elevator mounted upon the thresher and extending laterally a short distance and thence outwardly where it is provided with a bearing upon which the elevator is mounted and may be swung, said hanger also constituting a support for a central shaft passing therethrough, said shaft, and power-transmission devices extending from a driver on the separator to said shaft, and from said shaft to a shaft of the elevator, whereby said elevator may be folded (for transportation or otherwise) and unfolded without disconnecting said power-transmission devices.

2. The combination, with a thresher, and a grain-elevator, of a hanger member for said elevator having a fastening portion to be attached to the separator and having a substantially horizontal bearing portion upon which the elevator is swiveled, said bearing portion being offset with relation to the fastening portion, and a counter-shaft journaled in said bearing portion and capable of carrying pulleys at each end, whereby power-transmission devices may connect the separator and elevator through the counter-shaft and the elevator may be swung upon the journal portion without disconnecting the power-transmission devices.

3. The combination, with a thresher, and a grain-elevator, of a hanger member secured to the thresher and embodying externally a bearing upon which the elevator is hung and internally-bearing devices for a counter-shaft, a second hanger member secured to the elevator and resting upon the bearing on said hanger member, and collars on said bearing alongside said second hanger member and between which the same may swivel as the elevator is swung in and out and folded down and raised up in manipulation, said counter-shaft, a driver on the thresher, and connections between the driver and the counter-shaft and the counter-shaft and a shaft of the elevator.

4. The combination of a thresher, an elevator mounted thereon, a hanger constituting the mounting means, and power-transmission devices whereby the elevator is driven from the thresher embodying a counter-shaft mounted centrally in the hanger by means of which the elevator is supported from the thresher, whereby the elevator may be swung on said hanger without disconnecting said power-transmission devices.

5. The combination, with a thresher and a grain-elevator, of a hanger member for said elevator supported on the separator and having a substantially horizontal hollow portion, a second hanger member secured to the elevator, bearings for a counter-shaft adjustably secured within said hollow hanger portion, and a counter-shaft in said bearings.

6. The combination of a thresher, an elevator mounted thereon, a hanger constituting the mounting means consisting of a suitable support mounted on the separator, and a second member pivotally secured thereto upon which the elevator is immediately mounted, the pivot-point being relatively arranged as described whereby when the lower end of the elevator is swung outwardly the discharge portion thereof may be swung free from the hopper of the cross-conveyer, and said cross-conveyer.

7. The combination of a thresher, an elevator mounted thereon, mounting means comprising a supporting-bar, a Z-shaped hanger member whose upper end is pivotally connected to said supporting-bar, and another hanger member connected to the elevator and mounted upon the lower end thereof.

8. The combination of a thresher, a bar secured upon said thresher, a hanger member pivoted to said bar, an elevator, and another hanger member on said elevator mounted upon the hanger member carried by the bar; said bar and the hanger member mounted thereon being provided with pairs of substantially vertical contacting surfaces whereby tendency to sideway movement between them is counteracted.

9. The combination of a thresher, a bar secured upon said thresher, a hanger member pivoted to said bar, an elevator, and another hanger member mounted upon the hanger member carried by the bar and connected immediately to the elevator; said bar and the

hanger member mounted thereon having contacting surfaces at right angles to the pivot, and means whereby said surfaces are held into contact whereby tendency to sideway movement between said bar and said hanger member is counteracted.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 15th day of October, A. D. 1904.

CHESTER BRADFORD. [L. S.]

Witnesses:
JAMES A. WALSH,
ARTHUR M. HOOD.