April 12, 1927. 1,624,703

G. W. WITTE

FLOATING ELEVATOR FOR HARVESTERS

Filed Nov. 26, 1924

Fig. 1.

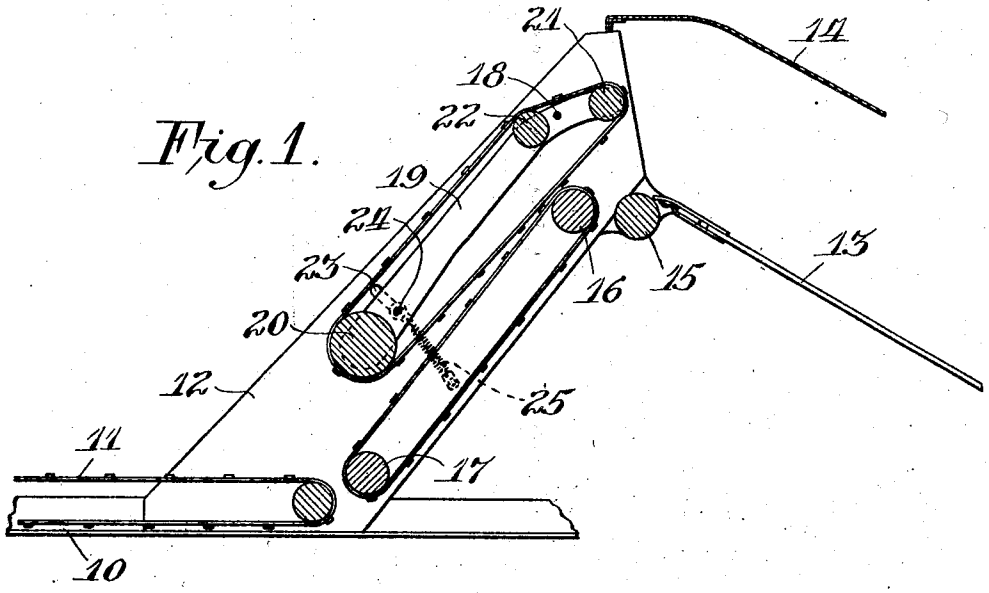


Fig. 2.

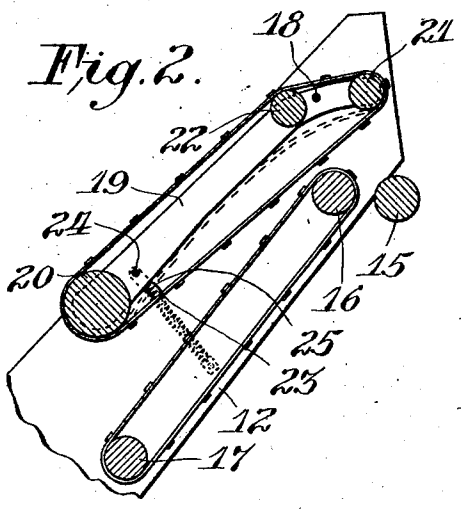
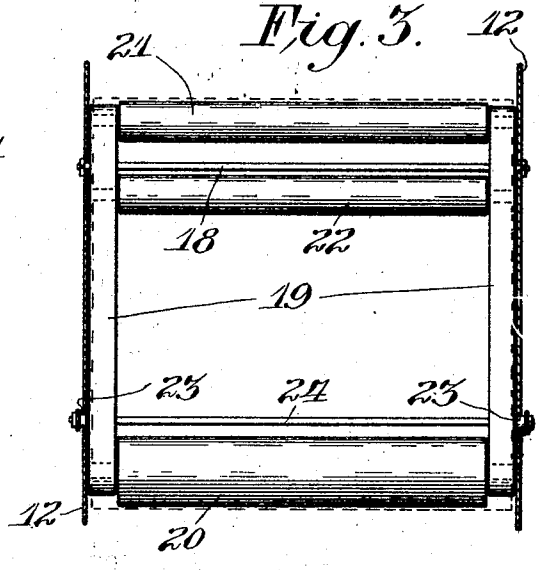


Fig. 3.



Inventor.
Gustav W. Witte,
By M. Daniels
Atty.

Patented Apr. 12, 1927. 1,624,703

UNITED STATES PATENT OFFICE.

GUSTAV W. WITTE, OF CHICAGO, ILLINOIS, ASSIGNOR TO INTERNATIONAL HARVESTER COMPANY, A CORPORATION OF NEW JERSEY.

FLOATING ELEVATOR FOR HARVESTERS.

Application filed November 26, 1924. Serial No. 752,281.

The present invention relates to harvesting machines and particularly to elevating mechanisms therefor which elevate the grain or other material from the platform of the harvester to the binder deck thereof where the same is tied in the usual manner into sheaves. These elevating mechanisms comprise, as is well known in this art, an upper and lower endless apron conveyer between which the material is delivered from the platform and elevated to the binder deck.

In grain binding harvesters and especially in the push machine type which cut a wide swath, a great burden is imposed upon the elevating mechanism. It is with much difficulty at times that the elevating mechanism will handle the material delivered from the platform and properly deliver it to the binding mechanism.

With this in mind, it is an object of this invention to improve an elevating mechanism of the type described which will efficaciously handle varying volumes of grain or other material and properly deliver these varying volumes to the binding mechanism of the machine.

It is another object to provide an upper and lower endless apron conveyer wherein the upper conveyer is so disposed and arranged that its lower end may yield upwardly to increase the throat between it and the lower apron to accommodate a large increment of cut material, while its upper end moves downwardly in response to this yielding movement properly to discharge the material in line with the binder deck. Generally then, this object is to lower automatically the line of discharge of the material with respect to the binder deck as the volume of incoming material increases and raises the lower end of the upper apron.

Another object is to combine with an elevating mechanism of the force feed type, which discharges material in line with the binder deck, with a yielding receiving end to accommodate varying quantities of cut material.

These objects are accomplished by pivoting the frame members carrying the upper apron intermediate their ends in the elevator main frame so that the upper apron may swing on a pivot disposed substantially above the upper end of the upper apron, whereby its upper end which is angularly bent may swing downwardly to a line substantially paralleling the plane of the binder deck when its lower end, which is resiliently mounted in the elevator main frame, moves upwardly away from the lower apron to increase the space between them to accommodate large increments of material coming from the platform.

In the accompanying drawings wherein like characters of reference indicate similar parts,—

Fig. 1 is a front elevation taken in section substantially through the center of the platform, elevator, and binder deck of the grain harvester;

Fig. 2 is a similar view but illustrating only the elevating mechanism when the upper apron thereof has yielded upwardly at its lower end with a belly formed in its under side as indicated in dotted lines to show how the device functions when a large volume of grain passes therethrough; and

Fig. 3 is a side elevational view showing the frame members and the rollers with the aprons removed as viewed when looking toward the right in Fig. 2.

The invention is illustrated in connection with a conventional grain harvester having a cutting platform 10 carrying the usual platform conveyer 11. At the discharge end of the conveyer 11 are the usual upwardly inclined side frame members 12 to which is affixed in any suitable manner the binder deck 13 which supports the binding mechanism, not shown, and also carry at their upper ends the binder deck protecting and grain deflecting shield 14. The binder deck 13, as is usual, extends downwardly at an angle from the discharge end of the elevator frame and has disposed at the angle between the frame and deck the longitudinally extending roller 15 for preventing loss of the material or grain between them during the operation of the machine. Suitable, longitudinally extending, upper and lower rollers 16 and 17 are journaled respectively at the upper and lower ends of the frame members 12 and carry an apron to form the usual lower fixed endless apron conveyer of the harvester elevating mechanism.

Carried in the side frame members 12 at a point substantially vertical above the roller

16 is a rod 18 on which is pivoted a pair of frame bars 19, one of each of which is disposed adjacent each frame member. The upper ends of these bars 19 are angularly bent downwardly and in the direction of the binder deck while the part of the bars disposed below the pivot is extended generally in a line parallel with the elevator frame members 12. The frame bars 19 carry at their lower ends a relatively large roller 20, and at their upper ends, a smaller roller 21, and intermediate of their ends adjacent the pivot rod 18, another small roller 22. Stretched around these rollers is a conventional apron forming the upper endless apron of the elevating mechanism. The side frame members 12 are provided with arcuate slots 23 in which is slidably mounted a second rod 24 connecting the two pivoted frame bars 19 at their lower ends. This bar has connected to its ends outside of the side frames 12, springs or resilient members 25, which are fixedly connected at their opposite ends to the frame members. It will thus be seen that the lower end of the upper apron is floatingly or yieldably mounted in the side frames and that in response to a large volume of incoming grain from the platform conveyer it may move upwardly a distance equal to the length of the arcuate slots 23 while the upper, overhanging, angularly bent end of the upper conveyer may swing downwardly. While this is happening the lower side of the upper apron may flex inwardly with respect to the roller 22 and form a belly, as illustrated in dotted lines (Fig. 2), which functions as a force feed arrangement better to direct the elevated material in a line paralleling the plane of the binder deck. By means of this arrangement the tendency of the grain which is elevated between the aprons to move in a line extending from the line of inclination of the elevator and strike the shield 14 is effectively overcome, and the grain is properly directed where it may be efficiently handled and tied into sheaves by the binding mechanism. The pivoted supporting bars 19, it will thus be seen, successfully permit combining a yielding or floating action at the lower end of the apron with a responsive downward movement of the angular, force feed arrangement at the upper end of the conveyer, whereby varying increments of grain may be efficiently elevated and properly directed to the binding mechanism.

It will be appreciated that by the present invention applicant has succeeded in embodying in a simple structure a very desirable and improved form of elevating mechanism.

While I have shown the preferred form of the invention it is to be understood that various changes in form and construction and arrangement of parts may be made by those skilled in the art without departing from the spirit of the invention as disclosed in the subjoined claims.

What is claimed as new is:

1. In a harvester having a platform and a binder deck, the combination of means for elevating material from the platfrom to the deck, comprising upper and lower inclined endless aprons, the lower end of the upper apron adapted yieldably to move away from the lower apron to increase the space between them at the lower end only, the upper end of the same apron being simultaneously movable downwardly about a fixed axis to direct the elevated material in a line substantially with the binder deck.

2. In a harvester having a platform and a binder deck, the combination of means for elevating material from the platform to the deck, comprising upper and lower inclined endless aprons, the upper apron extending beyond and overhanging the upper end of the lower apron, the lower end of the upper apron adapted yieldably to move away from the lower apron to increase the space between them, the upper end of the same apron simultaneously moving downwardly to direct the elevated material in a line with the binder deck.

3. In a harvester having a binder deck, an elevator comprising upwardly inclined side frame members, spaced upper and lower endless aprons operatively mounted in the frame members, and means attached to the frame members and to the upper apron permitting the lower end thereof to move away from the lower apron while the upper end of the upper apron moves downwardly to direct the elevated material in a line with the binder deck.

4. In a harvester having a binder deck, an elevator comprising upwardly inclined side frame members, spaced upper and lower endless aprons operatively mounted in the frame members, the upper apron extending beyond and overhanging the upper end of the lower apron, and resilient means attached to the frame members and to the upper apron permitting the lower end thereof to move away from the lower apron while the overhanging end of the upper apron moves downwardly to direct the elevated material in a line with the binder deck.

5. In a harvester having a binder deck, the combination of an elevator comprising upwardly inclined side frame members, an endless apron operatively mounted in the frame members, a second endless apron carried on angularly bent bars pivoted to the frame members and spaced from the lower apron, means connected to the frame members and bars permitting the lower end of the upper apron yieldably to move away from the lower apron while the upper end of the upper apron moves downwardly to

direct the elevated material in a line with the binder deck.

6. In a harvester having a binder deck, the combination of an elevator comprising upwardly inclined side frame members, an endless apron operatively mounted in the frame members, a second endless apron carried on angularly bent bars pivoted to the frame members and spaced from the lower apron, said upper apron extending beyond and overhanging the upper end of the lower apron, resilient means connected to the frame members and bars permitting the lower end of the upper apron to move away from the lower apron while the overhanging end of the upper apron moves downwardly to direct the elevated material in a line with the binder deck.

7. In a harvester having a binder deck, the combination of an elevator frame carrying upper and lower endless apron conveyers, the lower apron being fixedly mounted in the frame, the upper apron being carried in bars pivotally mounted in the elevator frame and so arranged that its upper end overhangs the upper end of the lower apron, means connecting the bars and frame permitting the lower end of said upper apron to move away from the lower apron upon passage of an abnormally large mass of material, the upper end of the upper apron being so constructed that a belly may form in its under side while swinging downwardly to deflect the elevated material in a line with the binder deck.

8. An elevator for harvesters having a binder deck, comprising a frame, an endless apron conveyer fixedly journaled in said frame, angularly shaped side bars pivoted in the frame above the apron, rollers journaled in the bars at their ends and at the bend in the bars adjacent their pivots, an apron around the rollers to form a second endless apron, and means carried by the frame and attached to the bars permitting the lower end of the upper apron to move away from the lower apron while the upper end of the upper apron swings downwardly and has a belly formed in its under side to direct the elevated material in a line with the binder deck.

9. In a harvester having a binder deck, the combination of an elevator comprising a frame and a pair of spaced endless aprons, the lower apron being fixed in the frame, the upper apron being pivoted intermediate its ends in said frame on a pivot above the upper end of the lower apron, and having its upper end beyond the pivot angularly bent to overhang the upper end of the lower apron whereby a belly may form in its under side to direct the elevated material in a line with the binder deck.

10. In a harvester having a binder deck, the combination of an elevator comprising a frame and a pair of spaced endless aprons, the lower apron being fixed in the frame, the upper apron being pivoted intermediate its ends in said frame on a pivot above the upper end of the lower apron and being yieldably supported at its lower end so that it may move away from the lower apron to increase the throat between them, and having its upper end beyond the pivot angularly bent to overhang the upper end of the lower apron whereby a belly may form in its under side and the overhanging part may move downwardly as the lower end of the apron yields upwardly to direct the elevated material in a line with the binder deck.

11. In a harvester having a binder deck, the combination of an elevator therefor comprising upper and lower spaced endless aprons, the upper apron being yieldably mounted at its lower end while its upper end is angularly bent and may swing downwardly to direct the elevated material in line with the binder deck.

12. In a harvester having a binder deck, the combination of an elevator therefor comprising upper and lower spaced endless aprons, the upper one being pivotally mounted and having its upper end angularly bent so that in response to an inflow of a large volume of material its lower end may float upwardly while its upper end may swing downwardly to direct the material in a line with the binder deck.

13. In a harvester having a binder deck, the combination of an elevator comprising a frame and a pair of spaced endless aprons, the upper apron being pivoted at its upper end on a pivot above the upper end of the lower apron, and having its upper end bent to overhang the upper end of the lower apron, and a yielding connection for the upper apron adjacent its receiving ends, whereby the incoming material may move the upper apron upwardly and may belly the upper apron adjacent its discharging end to direct the material in line with the overhanging end of the upper apron and the binder deck.

In testimony whereof I affix my signature.

GUSTAV W. WITTE.