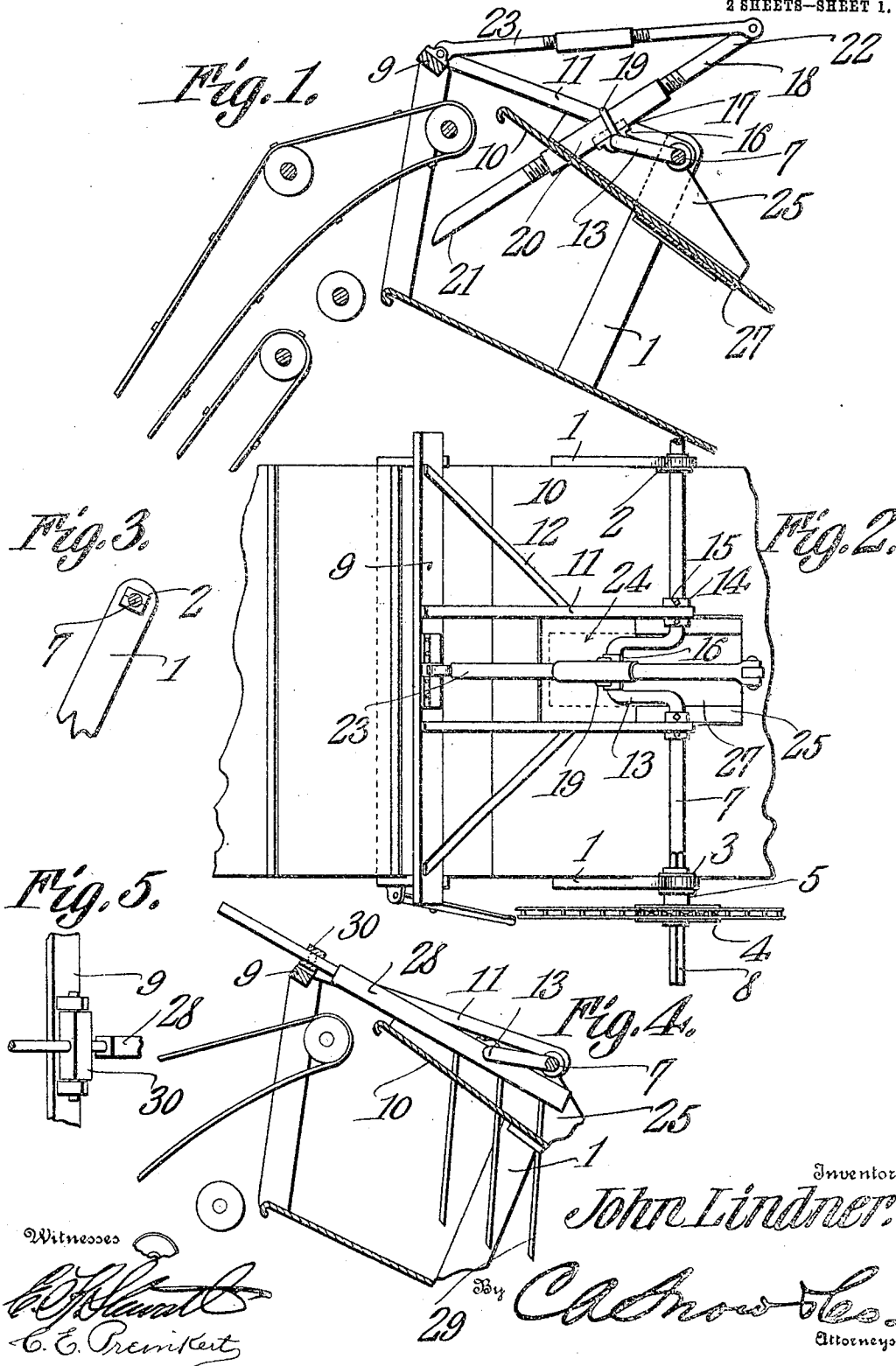


J. LINDNER.
FEEDER FOR GRAIN BINDERS.
APPLICATION FILED JULY 6, 1909.

943,978.

Patented Dec. 21, 1909.

2 SHEETS—SHEET 1.



Inventor

John Lindner

Witnesses

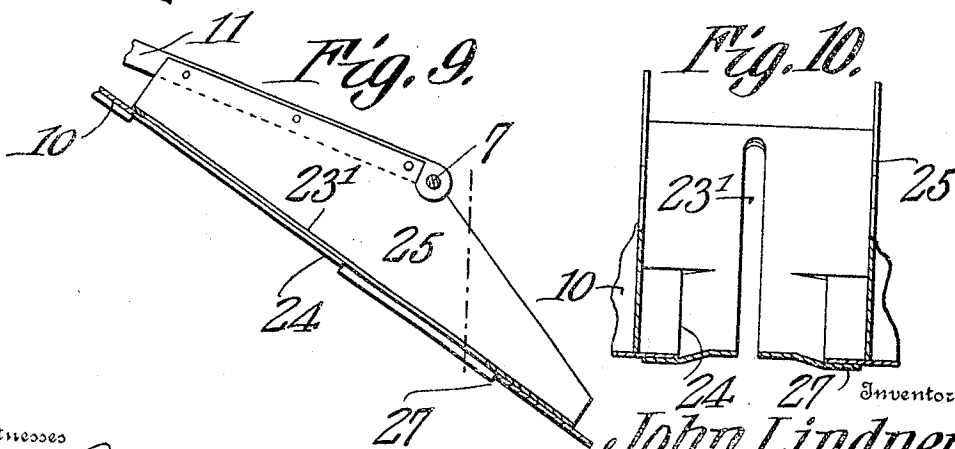
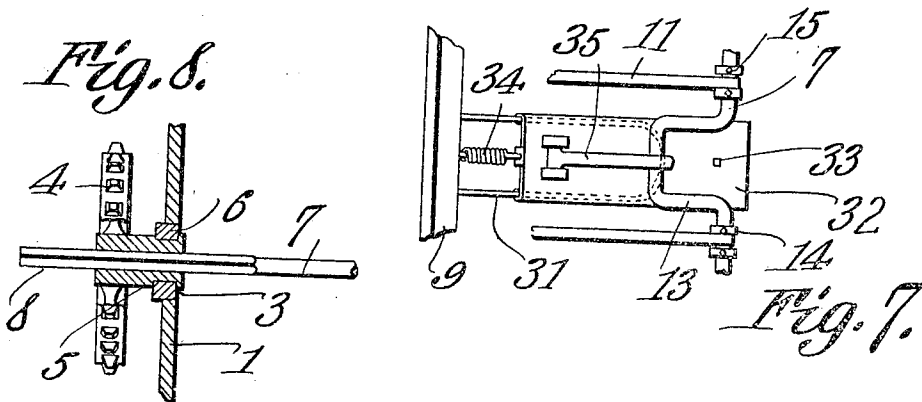
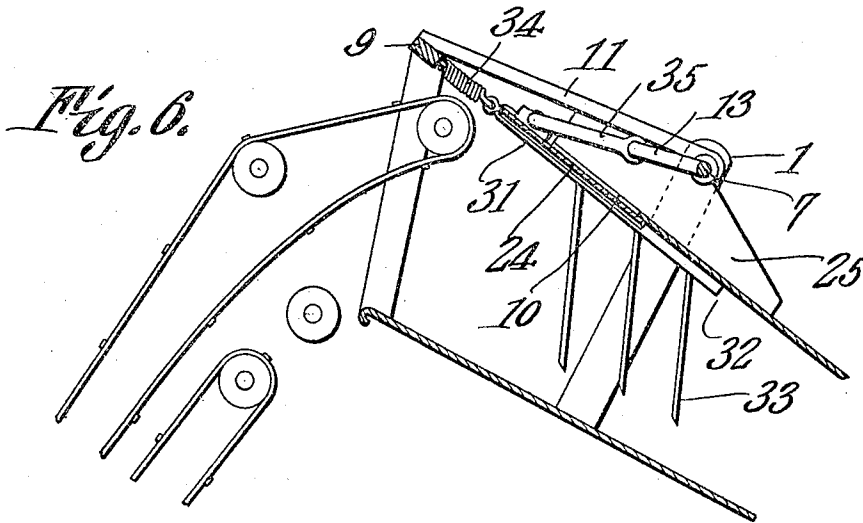
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UNITED STATES PATENT OFFICE.

JOHN LINDNER, OF WACONIA, MINNESOTA.

FEEDER FOR GRAIN-BINDERS.

943,978.

Specification of Letters Patent. Patented Dec. 21, 1909.

Application filed July 6, 1909. Serial No. 506,141.

To all whom it may concern:

Be it known that I, JOHN LINDNER, a citizen of the United States, residing at Waconia, in the county of Carver and State of Minnesota, have invented a new and useful Feeder for Grain-Binders, of which the following is a specification.

The object of the invention is to provide a feeder adapted to positively move the grain along the grain deck of a binder to the binding mechanism.

In self-binding harvesters now generally in use the grain is delivered from the cutting apparatus by an elevator upon the top of a downwardly inclined grain deck at the lower end of which is arranged the binding mechanism. When the grain being harvested is damp, and when it has fallen down and is short and thin it will not readily feed down the grain table to the binding mechanism after it has been deposited upon the top of the grain table or deck by the elevator. Such grain tends to adhere to the deck and to choke the binding mechanism. The present invention overcomes this objectionable feature, and can be readily applied to any form of harvesting machine now in general use.

In the accompanying drawings:—Figure 1 is a sectional view of one form of the grain feeder. Fig. 2 is a plan view of the same. Fig. 3 is a detail view of a standard used in the feeder. Fig. 4 is a sectional view of another form of the feeder. Fig. 5 is a perspective view of a portion of the feeder shown in Fig. 4. Fig. 6 is a sectional view of still another form of the feeder. Fig. 7 is a plan view of a portion of the form of feeder shown in Fig. 6. Fig. 8 is a sectional view of a sliding bearing for the shaft used in the feeder. Fig. 9 is a longitudinal sectional view of an apron used in the feeder. Fig. 10 is a cross sectional view of said apron.

The grain feeder includes standards 1, which are adapted to be secured at their lower end portions to the frame-work of the binder to which the attachment is applied. One of these standards 1 is provided with a bearing 2, while the other standard 1 is provided with a bearing 3, somewhat larger in diameter than the bearing 2. A sprocket wheel 4 is provided with a laterally disposed hub or boss 5, which, in turn, is provided with an annular groove 6, which is journaled in the bearing 3. The sprocket

wheel 4 is geared up or engaged by the chain of the harvester which operates the binding mechanism. A crank-shaft 7 is journaled at one end portion in the bearing 2, and at its other end portion is squared or non-circular as at 8 and is slidably mounted in the hub of the sprocket wheel 4. The said shaft 7 is also slidably mounted in the bearing 2. By this arrangement it will be seen that the crank-shaft 7 may move longitudinally with relation to the bearing 2 and the sprocket wheel 4, and that the said sprocket wheel is held in a relatively fixed position upon the standard 1, but is free to rotate and may also rotate the shaft 7.

A cross-bar 9 is slidably mounted above the head-plate 10 of the binder, and arms 11 project laterally from the said cross-bar over the grain deck of the binder. Braces 12 are interposed between the cross-bar and intermediate points of the said arms. The outer ends of the arms 11 are journaled or are provided with bearings which receive intermediate portions of the crank-shaft 7 at the opposite ends of the crank 13 thereof. Collars 14 are located upon the intermediate portions of the crank-shaft 7 and are held in adjusted position by means of set screws 15. One of said collars is located at each side of each of the arms 11, and thus means is provided for causing the cross-bar 9 to move longitudinally as the shaft 7 is shifted in a similar manner through the bearings provided upon the standards 1.

A bearing 16 is journaled upon the crank 13 of the shaft 7. A grain-forcing member 18 is located upon the bearing 16 and is held thereon by means of a U-shaped clamp-bolt 19, which straddles the intermediate portion of the said grain-forcing member 18 and is secured by means of nuts to the said bearing 16. The member 18 preferably consists of an intermediate sleeve portion 20, in the lower end of which is screw-threaded a finger 21, and in the upper end of which is screw-threaded a rod 22. The portion 20 is adjustably secured in position upon the bearing 16 by the U-bolt 19. The sleeve 20 serves practically as a turn-buckle connection between the finger 21 and the rod 22, and it is apparent that, by rotating the said sleeve 20 with relation to the said rod and finger, the member 18 may be longitudinally extended or contracted. Thus it will be seen that means is provided for adjustably securing the member 18 with rela-

tion to the bearing 16, and also means is provided for elongating or contracting the said member 18. Therefore, means is provided whereby the parts may be adjusted
 5 so that the grain feeder may be applied to binders of different makes, or to binders of the same make which are operating upon grain under different conditions. A bar member 23 is pivotally connected at one
 10 end with the upper end of the rod section 22 of the member 18, and at its other end is pivotally connected with the cross-bar 9. The said member 23 is also made up of sections in a manner similar to that described
 15 for the construction and arrangement of the several parts constituting the member 18, and thus the mounted member 23 is capable of being extended longitudinally or contracted, for the purpose of enabling the
 20 appliance to be used upon binders of different makes, as indicated.

To apply the attachment to a binder an opening 24 is cut in the board 10, and it is through this opening that the finger section
 25 21 of the member 18 projects. An apron 25 is approximately U-shaped in cross-section and is attached at its ends to the inner sides of the arms 11. Said apron 25 is provided, at an intermediate point, with an elongated
 30 slot 23', which is located over the opening 24 in the board 10. The finger section 21 of the member 18 passes through the slot 23' of the apron 25. The major portion of the said apron 25 lies upon the outer side of the
 35 board 10, but at its lower end portion the said apron 25 is provided with flanges 27, which pass through the opening 24 and lie against the under surface of the board 10. The board 10 is held in fixed position above
 40 the grain deck of the binder, but the apron 25 moves with the movable portion of the binder mechanism and also with the cross-bar 9 and its attachments, and the finger section 21 of the member 18 is at all times
 45 in the same vertical plane as that occupied by the needle of the binding mechanism of the harvester.

From the above description it is obvious that as the crank-shaft is rotated through
 50 the instrumentality of the movable portion of the binder having contact with the wheel 4, the crank 13 of the shaft is rotated about the axis of the shaft, and the finger section 21 of the member 18 is reciprocated back and
 55 forth along the slot 23' in the apron 25, and the member 18 is also moved longitudinally, so that the lower end of the finger section 21 moves in an orbit substantially in the form of an ellipse, and the said finger section 21
 60 engages the grain as it passes from the delivery end of the grain-elevator upon the grain table, and the grain thus engaged is forced down along the grain table toward the binding mechanism. Inasmuch as the
 65 member 18 is in the same vertical plane as

the needle of the binding mechanism, the grain, as the bundle approaches maturity, receives compression at that point where the needle surrounds the bundle and carries the
 70 twine around the same. Thus, when the bundle is completed, the grain straw has been compressed to such an extent that the liability of the straw slipping from the twine loop is reduced to a minimum. Also, should
 75 the grain straw be damp it is impossible for the same to lodge upon the grain deck and choke or otherwise interfere with the operation of the binding mechanism.

While the above form of arrangement of parts of the grain feeder is preferred, there
 80 are other forms of assemblage of parts which may accomplish the same purpose. In another form of the invention the member 18, bearing 16 and member 23 is dispensed with, and, in lieu thereof, a bar 28 is pivotally
 85 connected with the crank 13 of the shaft 7, and is provided with a series of teeth 29, which are adapted to project down through the slot 23' of the apron 25. The other end of the said bar 28 is slidably mounted in a bolster
 90 30, which is pivotally mounted upon the cross-bar 9. In this form it will be seen that as the shaft 7 rotates, the teeth 29 upon the bar 28 are moved in an orbit, and that they may force the grain down the grain deck of
 95 the binder in a manner similar to that above described.

In another form of the invention a guide 31 is fixed to the cross-bar 9, and a bar 32 is slidably mounted upon the said guide 31.
 100 Teeth 33 are fixed to the bar 32 and a coil spring 34 is connected at one end with the bar 32, and at its other end with the cross-bar 9. A pitman 35 is pivotally connected at one end with the crank 13 of the shaft 7, and at
 105 its other end is pivotally connected with the bar 32. In this form it will also be seen that as the shaft 7 rotates the pitman 35 will be reciprocated and such reciprocatory movement will be transmitted to the bar 32, and
 110 the teeth 33 thereof will force the grain down the deck of the harvester. As the bar 32 moves away from the bar 9 the tension of the spring 34 is increased, and upon the retractive stroke of the bar 32 the tension of
 115 the said spring 34 assists the pitman 35 in drawing the bar 32 toward the bar 9.

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

1. In combination with a binder a cross-bar mounted upon the binder-head, a crank-shaft journaled for rotation upon the binder and slidably mounted in its bearings, means
 125 connecting the crank-shaft with the cross-bar to cause the same to move longitudinally simultaneously, a longitudinally extensible bar pivoted upon the crank of the shaft, and a member operatively connecting one end of
 130 the said bar with the first said bar.

2. In combination with a binder a cross-bar mounted upon the head of the binder, a crank-shaft journaled for rotation upon the binder, and slidably mounted in its bearings, means connecting the crank-shaft with the cross-bar to cause the same to move longitudinally simultaneously, a longitudinally extensible member pivotally mounted upon the crank of the said shaft, and a longitudinally extensible member operatively connecting one end of the first said extensible member with the said cross-bar.

3. In combination with a binder a cross-bar mounted upon the binder-head, a crank shaft journaled upon the binder and slidably mounted in its bearings, means connecting

the crank-shaft with the cross-bar to cause the same to move longitudinally simultaneously, a bearing mounted upon the crank of said shaft, a longitudinally extensible member adjustably connected with said bearing, and a longitudinally extensible bar connected at one end with one end of the said longitudinally extensible member, and at its other end with the said cross-bar.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOHN LINDNER.

Witnesses:

F. J. EFFERTZ,

J. B. RANEN.