

No. 745,091.

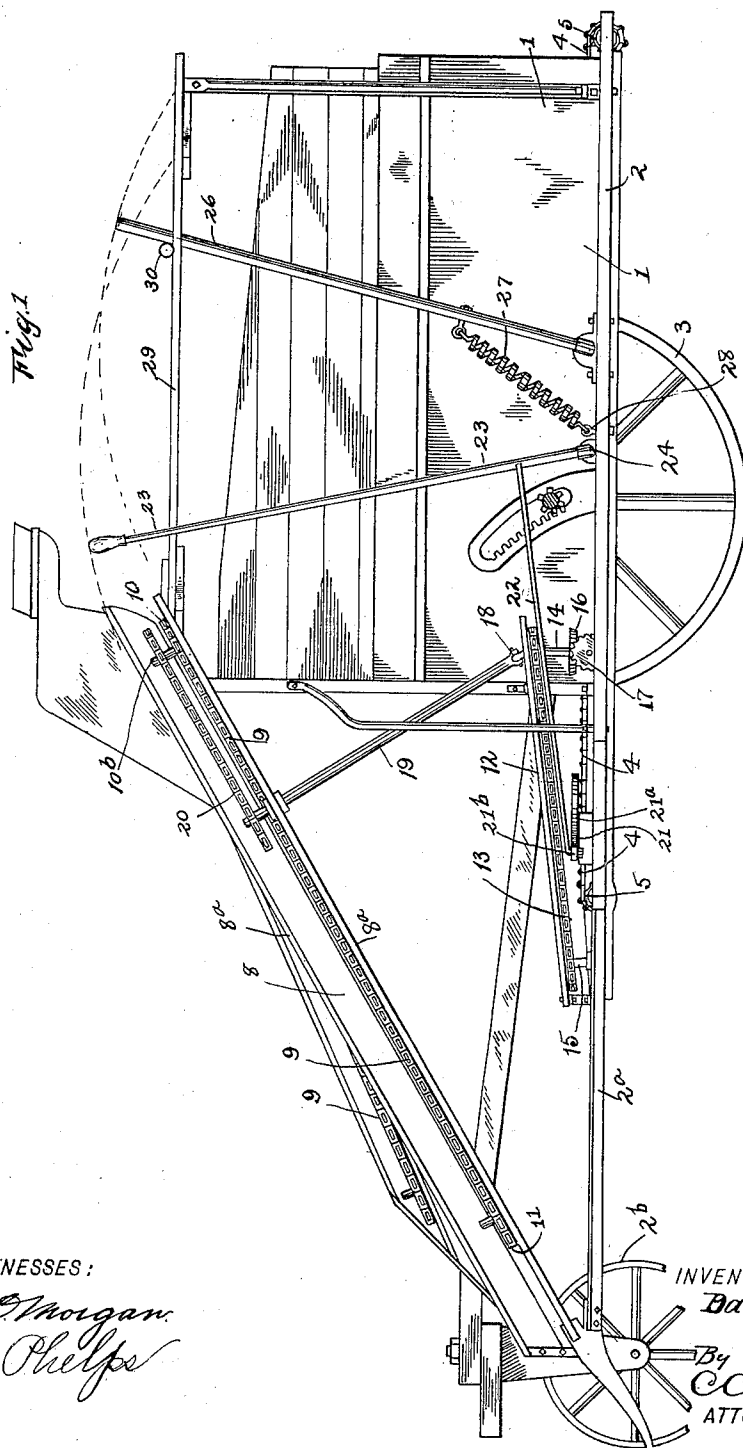
PATENTED NOV. 24, 1903.

D. BINNS.  
CORN HARVESTER.

APPLICATION FILED NOV. 10, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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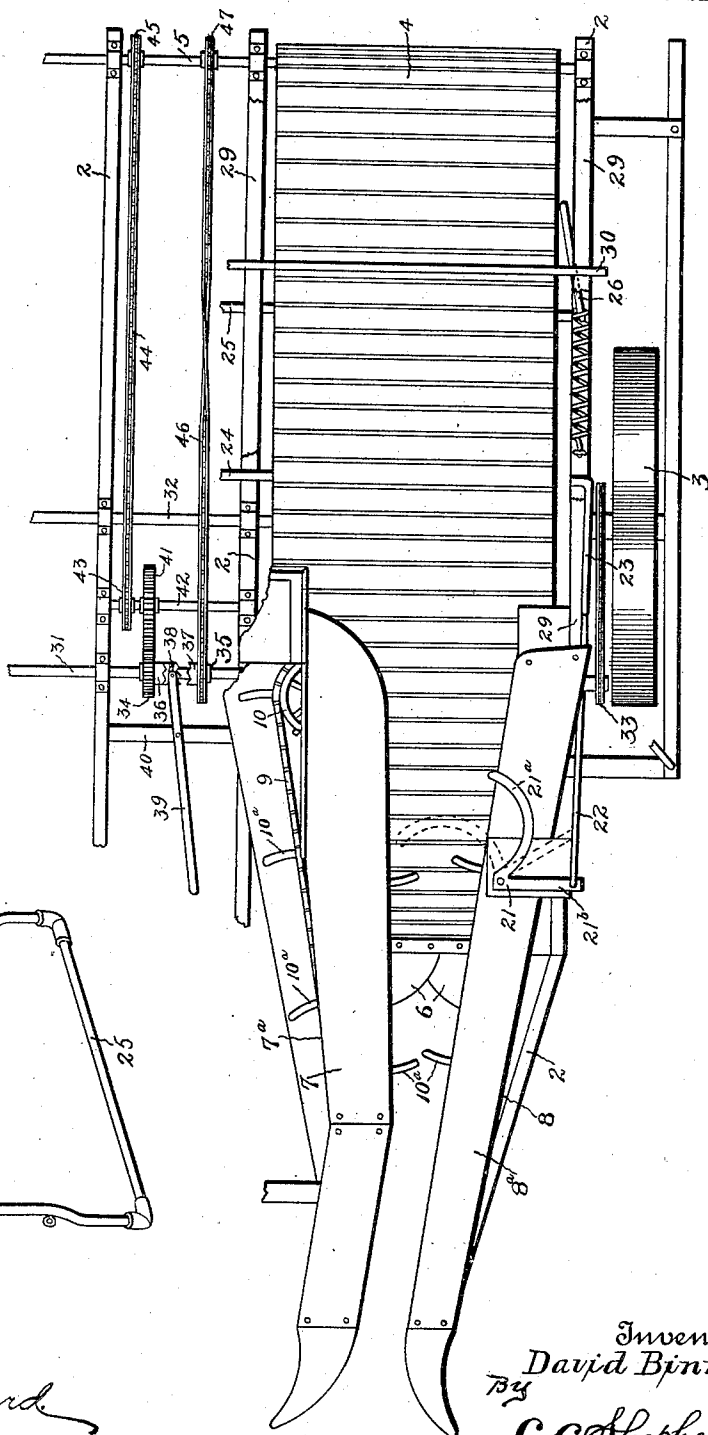
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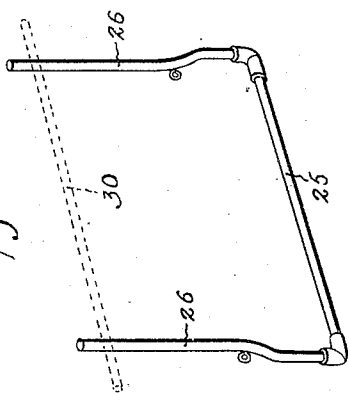
NO MODEL.

2 SHEETS—SHEET 2.

*Fig. 2.*



*Fig. 3.*



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## UNITED STATES PATENT OFFICE.

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## CORN-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 745,091, dated November 24, 1903.

Application filed November 10, 1902. Serial No. 130,678. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID BINNS, a citizen of the United States, residing at Campchase, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Corn-Harvesters, of which the following is a specification.

My invention relates to the improvement of corn-harvesters, and has particular relation to the improvement of the construction shown in my former patent, No. 677,927, issued under date of July 9, 1901, in which an endless carrier adapted to be moved at a slow speed during the cutting and assembling of the stalks and adapted to move at a rapid speed in setting off the shock at the rear end of the machine is employed.

The objects of my present invention are to provide, in conjunction with a machine of the class above mentioned, improved means for retarding the movement on the carrier or endless apron of the stalks which are cut during the rapid shock-discharging movement of the carrier; to provide improved yielding means for holding the accumulated stalks or shock in an upright position on the carrier, said improved stalk or shock holder being so arranged and constructed as to afford a desirable degree of resistance to the shock, and to produce other improvements the details of which will be more fully pointed out hereinafter. These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved corn-harvesting machine. Fig. 2 is a plan view of one-half the machine, parts being broken away to show the fast and slow driving mechanism; and Fig. 3 is a detail view in perspective of the stalk supporting and resisting frame.

Similar numerals refer to similar parts throughout the several views.

As in my said former patent, I employ a body-framework comprising suitably formed and connected parallel frame sides 1 and a bottom frame 2, this framework or body being mounted upon journaled ground-wheels 3 at each side of the machine, one of these ground-wheels, as well as the means for contributing motion from the latter to the feeding mechanism, being omitted from Fig. 1 of

the drawings for the sake of clearness in illustration. The lower side frame bars 2 are extended, as indicated at 2<sup>a</sup>, toward the front of the body of the machine, and between their outer end portions is provided the usual small journaled advance or ground wheel 2<sup>b</sup>.

As in my said former patent, I also employ suitable forms and constructions of endless carrying-aprons, one of which has been shown at 4, the latter being arranged within the lower portion of the frame, one on each side of the center of the width thereof. The endless apron is carried on transversely-journaled rollers, such as are indicated at 5, and suitable means, to be hereinafter described, are provided for imparting at the will of the operator a slow or comparatively rapid movement to the traveling aprons, and although but one of these aprons is indicated in the drawings it will be understood that the second apron is employed, as in my said former patent, in that half of the machine which is broken away in Fig. 2 and that the various parts and mechanism employed in the half of the machine shown in said figure are duplicated in said remaining half in order that two rows of corn may be operated upon and handled simultaneously.

At the forward end of each of the traveling aprons I provide the usual or desirable forms of cutters, such as are indicated at 6 in Fig. 2, and extending forwardly and downwardly from the upper portion of each half of the machine are inner and outer converging guide-frames 7 and 8, consisting of parallel guide-boards 7<sup>a</sup> and 8<sup>a</sup>, within or between which are arranged endless feed-chains 9. These feed-chains follow the inclines of the guides and run over sprocket-wheels 10 and 11, said feed-chains being provided at intervals with outwardly-projecting feeding-fingers 10<sup>a</sup>, as shown in Fig. 2. Extending forwardly and inclining downwardly from the lower portion of the main frame of the machine beneath each of the guide-frames 8 and 9 is a fixed guide-board 12, and beneath each of these guide-boards 12 is arranged longitudinally an endless feed belt or chain 13, which runs over sprocket-wheels carried on short vertical and suitably-journaled shafts 14 and 15. Rotary motion is communicated to the shafts 14, and thence to their sprocket-wheels and the chains

13, preferably through a bevel gear-wheel 16, which meshes with a second bevel-gear 17 at right angles therewith, which is suitably driven from the ground-wheels 3. Each of the shafts 14 at its upper end is connected through the medium of a universal joint 18 with the lower end of an upwardly-extending and forwardly-inclined shaft 19, which, passing through the lower member 8<sup>a</sup> of the guide-frame 8, carries on its upper end a sprocket-wheel, about which passes a driving-chain 20, said driving-chain also passing about a sprocket-wheel carried on a central pin projection 10<sup>b</sup> of the sprocket-wheel 10. It will be understood that this chain-operating construction applies not only to all of the lower feed-chains 13, but to each of the four upper feed-chains.

The construction above described is substantially that of my said former patent, and I have therefore avoided describing the same in detail.

In carrying out my present invention I pivotally mount upon the framework on each side of the machine in front of the body and adjacent to one edge of each of the carriers 4 a hook-body 21. Each of these hooks, which has its inner arm 21<sup>a</sup> curved, as shown in Fig. 2, has the outer end of its remaining and preferably straight arm 21<sup>b</sup> connected through the medium of a rearwardly-extending rod 22 with the lower portion of an upwardly-extending lever 23, the latter extending on the outer side of the main framework of the body 1 and having its upper termination in the form of a suitable handle, as shown. The levers 23 have their lower ends connected with a transverse rod 24, which extends across and is journaled in the lower framework of the machine. I also journal in the lower framework of the machine a transverse rod 25, the latter preferably being arranged in rear of the rod 24 and having extending upward from each end thereof an arm 26, which rod-arm is connected at a point 28 in front of the same with the frame 2 through the medium of a spring 27. The upper portion of each of the rod-arms 26 is adapted, as shown in the drawings, to project above the main frame of the machine and to be moved in the arc of a circle. (Indicated by the dotted line touching the same in Fig. 1.) Above the side frames of the machine I employ parallel horizontal frame-bars 29, and upon these frame-bars are adapted to be supported the end portions of a removable transverse rod or bar 30, the normal position of the latter being against the forward sides of the rod-arms 26.

As shown in Fig. 1 of the drawings, the feed-chains 9 and 13 are driven from a drive-shaft 31, and the latter, as indicated in Fig. 2, is in turn driven from the supporting-axle of the machine by means of a sprocket-chain 33, disposed between the wheel 3 and the adjacent side of the main frame of the machine.

It has been hereinbefore indicated that it is designed to drive the endless carrier 4 at fast

and slow rates of speed and to accomplish this result the middle portion of the drive-shaft 31 has been provided with a gear 34 and a sprocket-wheel 35, which are loose upon the shaft and have their inner hub portions extended and formed into clutch members 36 and 37, respectively. Between the gear and the sprocket is a clutch member 38, which is splined or otherwise secured upon the drive-shaft to rotate simultaneously therewith and capable of sliding longitudinally thereon. For the convenient manipulation of the movable clutch member alternately into and out of engagement with respect to the gear 34 and sprocket 35 a lever 39 has been provided, with its rear end swiveled upon the movable clutch member and its intermediate portion fulcrumed upon a suitable cross-bar 40, which is supported upon the center sills 2 of the main frame of the machine. The gear 34 is in mesh with a larger gear 41 in rear of the drive-shaft 31 and carried by a counter-shaft 42, journaled upon the center sills 2. Upon the counter-shaft 42 is a sprocket 43, over which runs a sprocket-chain 44, that also runs over a sprocket 45 upon the rear roller or shaft 5, which drives the endless conveyer 4. Another endless sprocket-chain 46 runs over the sprocket 35 on the drive-shaft 31 and also over a sprocket 47 upon the rear roller or shaft 5, this drive-chain being intermediately twisted or crossed in order that both drive-chains may turn the shaft or roller 5 in the same direction, and consequently always drive the conveyer in one and the same direction. Normally the movable clutch member 38 is in engagement with the gear 34, thereby to drive the conveyer at a normally slow rate of speed. When it is desired to drive the conveyer at a greater rate of speed, the movable clutch member 38 is shifted into engagement with the sprocket 37, whereby the conveyer may be conveniently driven at different rates of speed.

As prescribed in my said former patent the machine is so driven as to cause the cornstalks to be embraced between the pairs of cutting-frames 7 and 8, the movement of the machine against the cornstalks resulting in a cutting contact of the blades 6 with said stalks and in the carrying of the latter in substantially upright positions upon the rearwardly-moving upper half of the endless carrier 4. The rod arms or levers 26 being thrown to their forward positions and the feeding of the stalks onto the carrier being facilitated by the engagement therewith of the feeding-fingers 10<sup>a</sup>, it will be understood that the cut stalks will be carried rearward against the rod 30, exerting such pressure upon the latter as to force the same toward the rear of the machine. Owing to the resistance of the springs 27, however, it is obvious that the movement of the rod 30 toward the rear end will be comparatively slow and that said rod will serve to retain the stalks in a substantially upright position until a sufficient number have accu-

mulated upon the carrier to permit of their being bound into shock form, this being accomplished after a temporary stoppage of the machine. The shock having been bound, the rod 30 may be removed temporarily, the rod-arms again moved toward the front of the machine, and the rod again placed in front of said arms. The machine is now moved forward and a comparatively rapid motion imparted to the carrier 4, which will result in the shock being quickly set off on to the ground at the rear of the machine. The shock being thus discharged, a comparatively slow motion is again imparted to the carrier. It is obvious, however, that during the comparatively rapid movement of the carrier and the forward movement of the machine certain numbers of the stalks will be cut and moved onto the carrier at the front thereof, and in order to prevent the stalks cut during this rapid operation of the machine from being moved to the rear on the carrier at an undesirable speed I have provided the hook-lever 21, which at the beginning of the rapid movement of the carrier is by moving the lever 23 thrown with its curved arm 21<sup>a</sup> over the forward portion of the carrier and into position to receive and retard the motion of the newly-cut stalks, this position of said hook-lever being shown in dotted lines in Fig. 2 of the drawings. When the comparatively slow motion is again imparted to the carrier, it is obvious that the hook-lever may by a proper movement of the lever 23 be again thrown outward and the stalks in front of the same permitted to move to the rear at the usual speed.

The advantage of a horizontally-swinging arcuate cut-off lever will here be apparent, as it is obvious that such a lever will swing in behind the stalks without interference thereby or damage thereto, and in the event of the stalks lying in the path of the lever the latter will work its way endwise in between the stalks without damage thereto and without being stopped by the stalks until it has reached its operative position. Furthermore, the arm 21<sup>a</sup> of the lever extends rearwardly from the fulcrum thereof in order that it may swing in behind the stalks instead of in front thereof.

From the construction and operation described it will not only be seen that improved means are provided for receiving and holding the stalks in position for binding in shock form, but that improved means are provided for retarding the rearward movement of the stalks which have been cut during the rapid discharging movement of the carriers.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a harvesting-machine, the combination with stalk-cutting means, stalk-feeding means leading to and inclined upwardly and rearwardly over the cutting means, and an endless traveling conveyer located below the feeding means and leading rearwardly from

the cutting means, of a stalk-holding lever located below the feeding means, above and adjacent to the upper side of the conveyer and in rear and adjacent to the cutting means, said lever being fulcrumed at its forward end at one side of the conveyer and capable of being swung across the conveyer, and means connected to the lever for swinging the same into a position transversely across the upper side of the conveyer and holding the same in the path of the butt-ends of the cut stalks.

2. In a harvesting-machine, the combination with cutting means, stalk-feeding means leading to and inclined upwardly and rearwardly over the cutting means, and an endless traveling conveyer located below the feeding means and leading rearwardly from the cutting means, of a stalk-holding bell-crank lever located below the feeding means, above and adjacent to the upper face of the conveyer and in rear and adjacent to the cutting means, said lever being intermediately fulcrumed at one side of the conveyer, one arm of the lever being arcuate and capable of being swung across and adjacent to the upper face of the conveyer, the other arm of the lever being normally projected away from the conveyer, an upstanding controlling-lever, and a link connection between the controlling-lever and said other arm of the bell-crank lever.

3. In a corn-harvester, the combination with a framework, an endless carrier, a cutting device for said carrier, and means for feeding the cut stalks on to said carrier, of a rod journaled in the lower portion of the machine, said rod having upwardly-extending arms, a removable cross-rod adapted to bear upon the upper framework of the machine and means connected with said rod-arms for imparting yielding resistance thereto against rearward movement.

4. In a corn-harvester, the combination with a framework, an endless carrier, a cutting device for said carrier, and means for feeding the cut stalks on to said carrier, of a rod journaled in the lower portion of said machine, end arms extending therefrom as described, springs connecting said end arms with the machine-frame and imparting a yielding resistance to said arms, and a rod removably supported upon the upper side of the framework and adapted to bear against the forward sides of said rod-arms, substantially as specified.

5. In a harvesting-machine, the combination with the frame thereof, cutting means thereon and a conveyer leading from the cutting means, of upright members located at opposite sides of the conveyer and pivoted upon the frame to swing in a direction front and rear thereof, a spring to resist the rearward spring of the members a cross-bar slidably and removably supported upon the frame transversely across the conveyer and engaging the pivotal members, a lever fulcrumed upon the frame at one side of the conveyer,

located in front of the pivotal members and disposed to be swung transversely across the conveyer into the path of the material carried thereby, an upstanding controlling-lever 5 fulcrumed upon the frame, and a link connection between the controlling-lever and the first-mentioned lever.

6. In a harvesting-machine, the combination with cutting means and a conveyer leading therefrom, of tensioned means disposed transversely across the conveyer for engagement by the cut material and yieldable rearwardly under the pressure thereof to retard the rearward movement of said cut material, 10 and also movable out of the path of the material, and means to drive the conveyer at a relatively fast rate of speed to discharge the cut material after the said tensioned means has been moved out of the path of the cut 20 material.

7. In a harvesting-machine, the combination with cutting means and a conveyer leading therefrom, of rearwardly-yieldable stalk-retarding means disposed across the conveyer 25 in the path of the stalks and also movable out of the path of the stalks, means to drive the conveyer at a relatively fast rate of speed when the stalk-retarding means has been removed, and means in front of the stalk-re-

tarding means to prevent rearward movement 30 of the stalks that are cut during the relatively fast movement of the conveyer.

8. In a corn-harvesting machine, the combination with a wheeled frame, of stalk-cutting means, an endless conveyer leading rearwardly from the cutting means, front and 35 rear conveyer-shafts, a drive-shaft in operative relation to the wheels of the frame, a gear and a sprocket loose upon the drive-shaft and provided with clutch members, another 40 clutch member fixed upon the shaft to rotate therewith and shiftable into alternate engagement with the clutch members of the gear and sprocket, a crossed sprocket-chain running over the sprocket and one of the conveyer-shafts, a counter-shaft, a gear thereon 45 in mesh with the first-mentioned gear, a sprocket upon the counter-shaft, an endless sprocket-chain running over said sprocket and the conveyer-shaft, removable and rearwardly-yieldable stalk-retarding means disposed across the conveyer, and means to prevent rearward movement of the cut material 50 when the stalk-retarding means is removed.

DAVID BINNS.

In presence of—

C. C. SHEPHERD,  
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