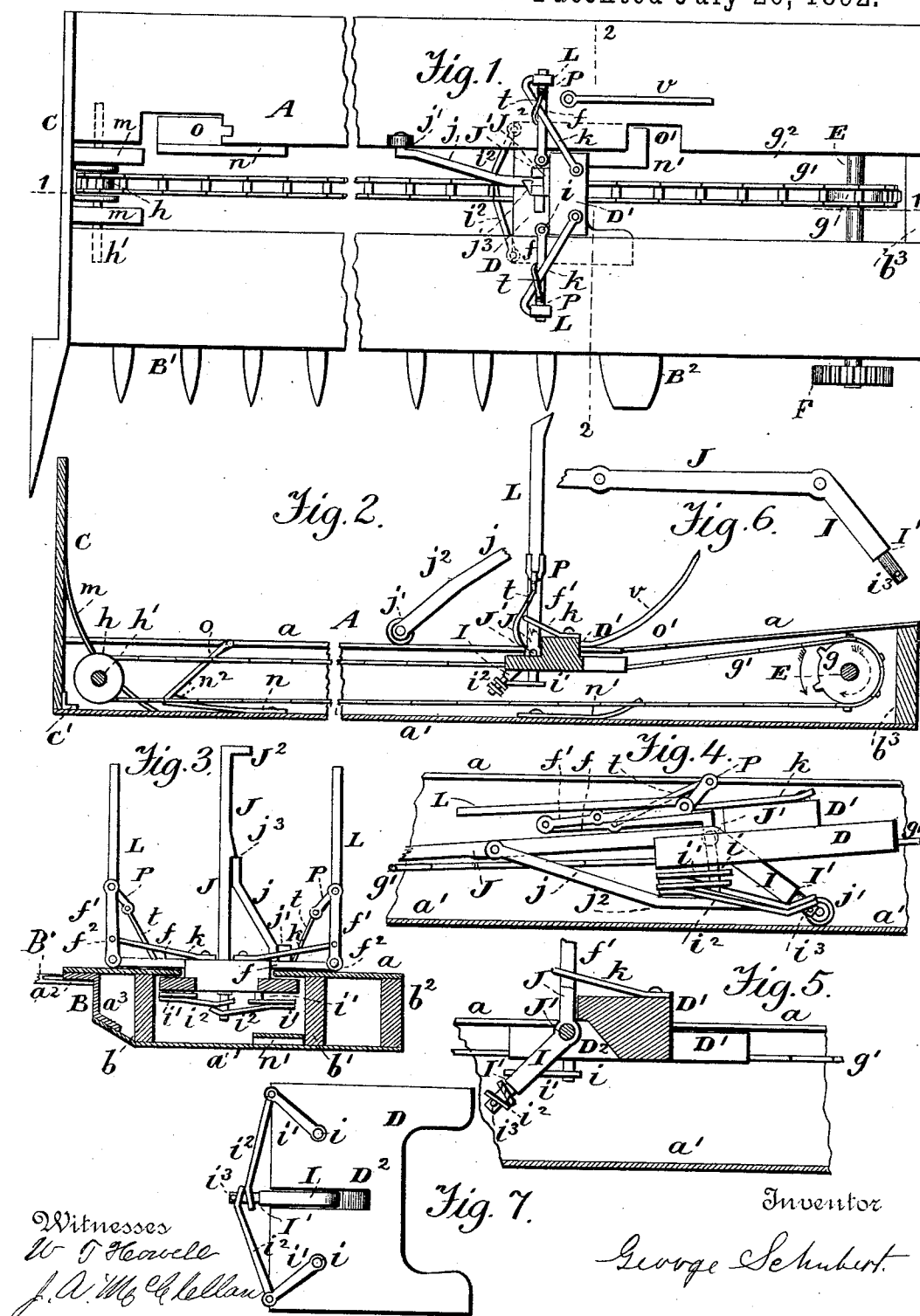


(No Model.)

G. SCHUBERT.
GRAIN CONVEYER FOR BINDERS, &c.

No. 479,467.

Patented July 26, 1892.



UNITED STATES PATENT OFFICE.

GEORGE SCHUBERT, OF WALNUT, TEXAS.

GRAIN-CONVEYER FOR BINDERS, &c.

SPECIFICATION forming part of Letters Patent No. 479,467, dated July 26, 1892.

Application filed March 27, 1891. Serial No. 386,705. (No model.)

To all whom it may concern:

Be it known that I, GEORGE SCHUBERT, a citizen of the United States, residing at Walnut, in the county of Bosque and State of Texas, have invented certain new and useful Improvements in Grain-Conveyers for Binders, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in reciprocating grain-conveyers for binders and harvesters in which arms fold for the rearward movement of the conveyer and unfold for the forward movement to shift the grain on the platform to the inner end or off the inner end of the platform.

The objects of my improvements are, first, to provide the vertical side arms with extensions hinged to said vertical arms so that the upper ends of said side arms will fold grainward and so that they can be unfolded at the grainward end of the platform from beneath the cut grain on the platform; second, to construct the conveyer-block so that the connecting-rods connecting the vertical side arms to the block will swing over the pivots of the lateral arms when said arms are folded and lie on the inner side of said arms, permitting the pivots of said lateral arms to be placed farther apart without widening the slot in the platform; third, to construct the central arm so that it will operate the side arms by connecting-rods and cranks so arranged that the pressure from the grain on the side arms will pitch the central arm forward against the grain, so that after the arms are once unfolded they will remain so regardless of the pressure from the grain, thus producing no friction on the platform. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a harvester-platform provided with my improved conveyer. Fig. 2 is a sectional view on line 1 1, Fig. 1, showing a side view of the conveyer-chain, the central arm J and the rod j being broken away. Fig. 3 is a sectional view on line 2 2, Fig. 1, showing a stubbleward-side view of

the conveyer. Fig. 4 is an enlarged view of the conveyer folded for the retreating movement. Fig. 5 is an enlarged side view of the central arm with its upper portion broken away, the conveyer-block being shown in section. Fig. 6 is a detail view of the central arm detached; and Fig. 7 is a view of the lower side of the conveyer-block, showing the central arm and the cranks and connecting-rods in position as seen when the arms are unfolded.

Referring to the drawings, A designates the platform, which is formed of upper and lower plates *a* and *a'*, which are braced by intervening strips *b*, *b'*, and *b²*, to which plates *a* and *a'* are secured. Two of said strips *b* and *b'* form walls for the passage-way of the conveyer. An opening is left between the upper plates *a* for the conveyer and the devices carried by it. The forward upper plate *a* is secured to the upper flange *a²* of the finger-bar B and the lower plate *a'* is secured to the lower flange *a³* of the finger-bar B. The rear strip *b²* forms the rear sill of the platform and the strip *b³* forms a cross-sill at the inner end of the platform.

C designates the grain-board, secured to the plates *a* and *a'* by corner-irons *c'* or in any other suitable manner.

The finger-bar B is provided with the usual guard-fingers B' and a shoe B².

E designates a shaft located near the inner end of the platform, with its front bearing secured to the finger-bar B and extending through the strips *b* and *b'*, with its rear bearing in the sill *b²*. Said shaft is provided with a pinion F on its front end and a sprocket-wheel *g*, located in the slot *g²*, provided with a chain *g'*, extending over an idler *h*, which is secured to a shaft *h'*, which has its bearings in the strips *b* and *b'* at the outer end of the slot *g²*.

mm are guides curved about, as shown, and secured to the plate *a'* and the grain-board C.

o is a switch formed by cutting a part of the rear plate *a* and hinging it at its stubbleward end, as shown in Figs. 1 and 2, and of sufficient length, so as to meet with the spring *n*, as seen in Fig. 2, when said switch is down and located near the outer end of its slot *g²*.

o' is a notch formed in the rear plate a a suitable distance from the inner end of the platform.

n and n' are spring-bars secured to the plate a' in the passage-way of the conveyer. The spring n is located near the outer end of the slot g^2 , with its free end projecting grainward and elevated to meet with the switch o .

n^2 is a projection secured to the spring n to form a rest for the switch o . The spring n' projects stubbleward, with its free end projecting to about the center of the opening o' , with its free end elevated, as shown in Fig. 2. The spring n' is to detain the rod j to close the arms of the conveyer, while the spring n is to detain said rod j until the switch o has descended, by which the said arm j will be guided to the top of plate a , thus completing the unfolding of the arms of the conveyer, as hereinafter described. The switch o is elevated by the block D.

D designates the conveyer-block, with its stubbleward end cut out, as shown in Fig. 7, and its grainward end slotted at D^2 to receive the lever J and provided with a projection D' , to which are pivoted the connecting-rods $k k$. The lever J is pivoted on a fulcrum J' in the slot D^2 , near the upper edge of the block D, said fulcrum J' being secured in the block D. The lever J is provided with an extension I, extending below said block D and grainward when its upper end is elevated. The end of said extension I is reduced, as shown, forming the shoulder I' to receive the connecting-rods $i^2 i^2$, which are secured by a pin i^2 .

$f f$ designate side arms, which are pivoted in the block D. To the lower ends of the pivots $i i$ of the arms $f f$ are secured the cranks $i' i'$, which I prefer to place in relation to the arms $f f$ at an acute angle of about forty degrees, as shown in Fig. 1. The said cranks $i' i'$ are connected to the extension I by the connecting-rods $i^2 i^2$, as seen in Fig. 7, of sufficient length. The extension I is long enough so as to move the connecting-rods beyond the line of connection of the rods $i^2 i^2$ to the cranks $i' i'$, as seen in Fig. 7.

To the free ends of the lateral arms $f f$ are hinged the vertical arms $f' f'$, connected to the projection D' on the block D by the rods $k k$. Said rods $k k$ are pivoted to the arms $f' f'$ a suitable distance from the joints $f^2 f^2$ and to the projection D' a suitable distance stubbleward from the pivots of the arms $f f$, so as to fold the arms $f' f'$ as the lateral arms $f f$ are folded toward the grainward end of the platform.

L L are extensions pivoted to the free ends of the arms $f' f'$ and provided with a knee or projection P P, to which are linked the wires $t t$, with their ends pivoted to the arms $f f$ a suitable distance from the joints $f^2 f^2$, so that the extensions L L will be started to fold and fold grainward while the arms $f' f'$ fold stubbleward as the arms $f f$ are moved parallel with the platform or slot.

j designates a rod pivoted to the lever J, as

shown in Figs. 1, 3, and 4, and provided with an anti-friction roller j' at its lower end and crooked near its center, as seen at j^2 , to permit of its proper folding beneath the block D, as seen in Fig. 4.

j^3 is a shoulder on the lever J to permit the rod j to unfold grainward to only a certain extent. The lever J is crooked or curved at its upper end, as seen at J^2 in Fig. 3, so as to engage one of the guides $m m$, as hereinafter stated. The upper end of lever J may be reduced in size, as it has but little pressure to withstand.

v designates a spring-wire secured to the plate a a suitable distance grainward from the notch v' , as seen in Fig. 1. One or more such wires can be employed. The wires yield to the pressure of the grain when shifted forward by the conveyer and rise again as the grain and the conveyer have passed over them. They are to prevent the grain from falling too far stubbleward, so as to secure room for the arms of the conveyer to fold. The rods $k k$ will lie on the inside of the arms $f f$ when they are folded, and the wires $t t$ will lie on the inside of the rods $k k$. The said wires will spring enough to allow the rods $k k$ to come to the desired position.

The operation may be summarized as follows: As the conveyer moves stubbleward with its arms unfolded, shifting the grain to the inner end of the platform until the roller j' reaches the notch o' and descends by reason of its gravity. As the rod j is loosely pivoted to the lever J, it will swing to near a vertical position or to the block D. Said rod j is of sufficient length so that the roller j' will now be near the lower plate a' , so as to pass over and engage the stubble end of the spring n^2 while the lever J is yet in a vertical position. At this time the movement of the conveyer is reversed by mechanism. (Not shown in the drawings.) As the conveyer moves stubbleward, the roller j' is first detained by the spring n' , and extending below the block D it will draw the lever J grainward, thus folding all the arms by reason of the connection between the extension I and the cranks $i' i'$, as stated, and as the rod j is folded down the lower end of said rod will depress the spring n' until the roller j' is drawn over the same. The conveyer is now folded, as seen in Fig. 4, where it will be seen that the weight of the conveyer mostly rests on the roller j' , which now extends stubbleward. The weight of the arms extending in the opposite direction will cause them to sink below the plate a until the lever J rests on the chain g' , and as the conveyer thus folded nears the outer end of the slot the projection J^2 on lever J will come in contact with one of the guides $m m$, by which said lever will be partly unfolded to near a vertical position, thus drawing the roller j' from under the block D and past the spring n and opening the arms $f f$, which will cause the arms $f' f'$ to also open. The extensions L L will have also come in contact

with the guides *m m* and partly unfolded, and will finally be straightened out by the wires *t t* as the arms *f' f'* are unfolded. When the roller *j'* has passed the spring *n*, the grainward movement of the conveyer ceases, and as the conveyer is started on its stubbleward movement the roller *j'* is detained by the spring *n* until the conveyer has moved far enough stubbleward to allow the switch *o* (which has been elevated by the block D) to descend. At this time the rod *j* will have expanded from the lever J to its full extent when the said rod will be drawn stubbleward, thus causing the roller *j'* to ascend on the switch *o* to and on the upper plate *a*, and thus completing the unfolding of the arms, as heretofore described. The free end of the spring *n* should not project from the plate *a'* any farther than necessary to detain the roller just long enough to allow the switch *o* to descend. Said spring *n* should come in contact with the roller *j'* only, which will readily ascend on the switch when drawn stubbleward. The extension I is of sufficient length so as to move the connecting-rods *i² i²* beyond the dead-centerline of pressure, so that pressure from the grain on the side arms *ff* will press the central lever J stubbleward, which will rest against the projection D' if sufficient pressure is not produced by the grain, thus producing no friction on the platform. The rod *j* and roller *j'* are more for the purpose of folding and unfolding the arms of the conveyer than for any other purpose. The connection of the connecting-rods *i² i²* to the extension I is made large enough so that they will adjust themselves to the different positions. The chain can be secured to each end of the block D in any suitable manner.

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

1. In a grain-conveyer, the combination of a platform A, comprising the plates *a*, projecting inwardly over the side walls or strips *b* and *b'* and leaving a slot *g²* in the platform, a notch *o'* in one of the projecting edges, a spring below said slot *g²* near the notch *o'*, a conveyer-block D, moving in said slot *g²*, a lever J, pivoted in said block, with the extension I extending down below said block, arms *f f*, mounted on vertical pivots

having a rotary movement in said block D, cranks *i' i'*, rigidly secured to said pivots, connecting-rods *i² i²*, connecting said cranks to the extension I, as shown, and the lever J, provided with a rod *j*, all as shown, and for the purpose described. 55

2. In a grain-conveyer, the combination of a platform A, comprising the plates *a*, projecting inwardly over the side walls or strips *b* and *b'* and leaving a slot *g²* in the platform, notches *o'* in one of the projecting edges, a spring *n'* below the slot *g²*, projecting to near the notch *o'*, a conveyer-block D, moving in said slot *g²*, a slot D² in said block D, as shown, a lever J, pivoted in the block D, with the extension I extending down below said block D and grainward, as shown, arms *ff*, mounted on vertical pivots having a rotary movement in the block D, cranks *i' i'*, rigidly secured to the lower end of said pivots *i i*, connecting-rods *i² i²*, connecting said cranks to the extension I, substantially as shown, and the lever J, provided with a rod *j*, all for the purpose described. 60 65 70 75

3. In a grain-conveyer, the combination of a platform A, a slot *g²* therein, a switch *o* in the projecting plate *a* near the outer end of the slot, a spring *n* below said slot *g²*, projecting grainward with its free end to near the switch *o*, a conveyer-block D, moving in said slot *g²*, a lever J, pivoted in said block, provided with the downward-projecting arm I, arms *ff*, mounted on vertical pivots, cranks *i' i'*, secured to said pivots *i i*, connecting-rods *i² i²*, connecting the cranks *i' i'* to the arm I, arms *f' f'*, pivoted to the free ends of arms *ff* and connected to the block D by the rods *k k*, in connection with extensions L L, provided with arms or projections P P and pivoted to the free ends of arms *f' f'* and linked to the arms *ff* by wires or rods *t t*, as shown, and means to open said extensions at the right time with the lever J, provided with the rod *j* and crooked at its upper end, as shown, and for the purpose described. 80 85 90 95

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

GEORGE SCHUBERT.

Witnesses:

P. T. HICKMAN,
W. A. BAILEY.