2 Sheets—Sheet 1.

M. L. GORHAM, Dec'd.

H. M. GORHAM, Executrix.

Harvester.

No. 218,377. **Patented Aug 12, 1879.**

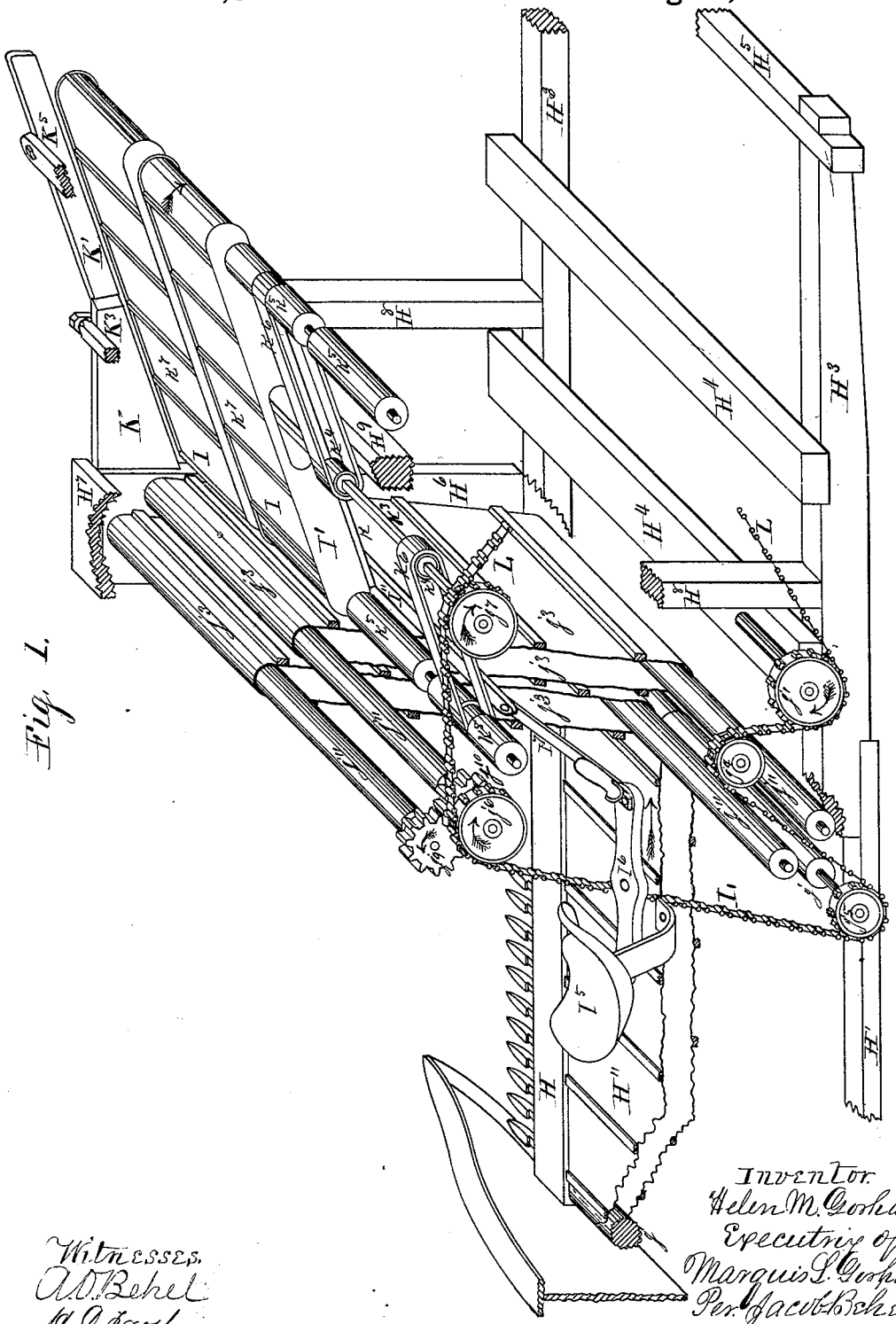

Fig. 1.

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2 Sheets—Sheet 2.

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Harvester.

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Fig. 1.

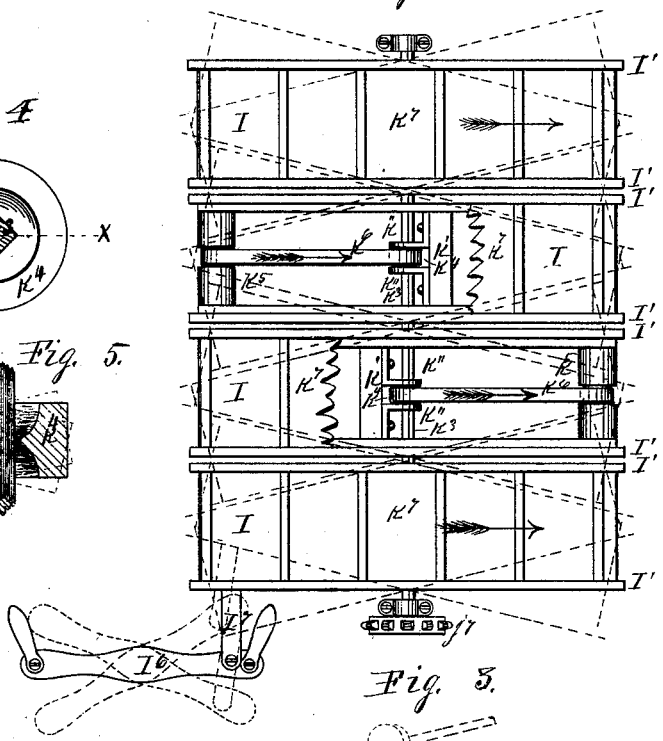


Fig. 4.

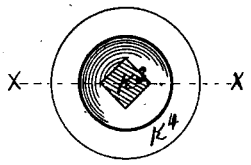


Fig. 5.

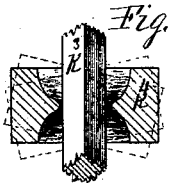
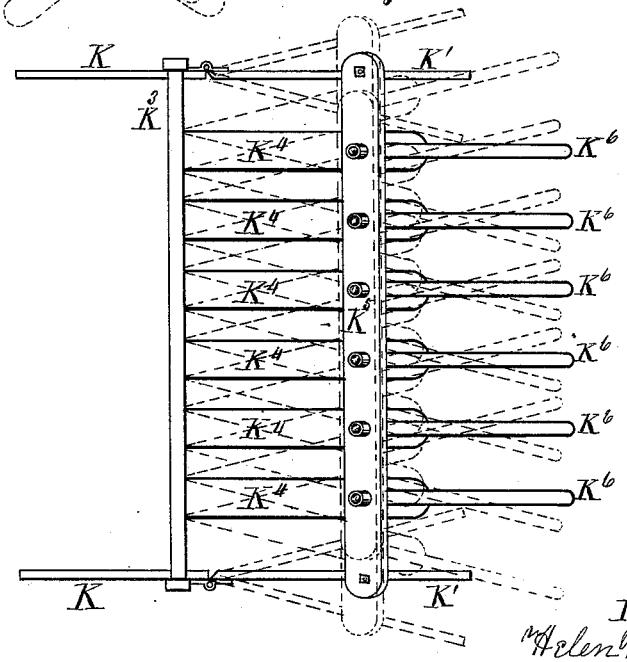


Fig. 3.



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UNITED STATES PATENT OFFICE.

HELEN M. GORHAM, OF ROCKFORD, ILLINOIS, EXECUTRIX OF MARQUIS L. GORHAM, DECEASED.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **218,377**, dated August 12, 1879; application filed July 23, 1878.

To all whom it may concern:

Be it known that MARQUIS L. GORHAM, deceased, late of the city of Rockford, in the county of Winnebago and State of Illinois, did in his life-time invent a new and useful Improvement in Harvesters, of which the following is a specification.

This invention relates to harvesters adapted to be employed in connection with an automatic grain-binding machine.

The object of this invention is to produce a harvester capable of delivering the grain as it is cut centrally to a binding device, whether long or short straw, and in proper order for binding.

In the drawings, Figure 1 is an isometrical skeleton representation of the harvester, in which many of the parts are broken away in part. Fig. 2 is a plan view of the carrier to deliver the cut grain into the receiving-chamber of the binding-machine, in which portions of the carrying-belts are broken away to show the pulleys and driving-belts. Fig. 3 is a plan view of the guard-finger frame placed over the carrying-frame. Fig. 4 is a side elevation of a driving-pulley employed to give motion to the endless carrying-belts, of which Fig. 5 is a central section on dotted line *x*.

In the figures, H represents the cutter-bar, to which finger-guards of the usual form are fixed in the usual manner. H′ represents the rear beam of the harvester-platform, which is of the usual size, and provided at its free end with the usual appliances of a divider and grain-wheel. This platform is also fitted with an endless carrying-apron, H″, provided with transverse slats, and is carried on rollers *i* at each end of the platform.

H^3 are sills, one on the front and the other on the rear edge of the machine, and extend in the direction of the driving-wheel end of the machine, in line or nearly in line with the cutter-bar and rear beam of the platform. These sills are connected by cross-beams H^4 and the outer end sill, H^5. This frame is designed to be mounted in the usual manner on a main driving or carrying wheel placed between the beams H^4 to revolve in bearings or supports fixed to the beams, and to be connected to the shaft of the crank-wheel *j′* by bevel-gear wheels, or in any desired manner, (not necessary to be represented in the drawings, as such detailed construction or arrangement of gearing forms no part of my invention.) The outer ends of this frame receive and support the binding-machine.

H^6 are vertical posts fixed to the front and rear sills of the harvester, and, in connection with the cap H^7, form the frame in which the vertical elevations are supported.

j″ are rollers fitted to revolve on journal-bearings in the posts of the vertical elevator-frame. j^3 are endless elevator-belts provided with transverse slats, and are carried on the rollers *j″* to move in opposite directions, as indicated by the arrows. H^8 are posts fixed to the front and rear sills H^3, from which they rise and receive the cross-beam H^9 on their upper ends.

At Fig. 2 is represented an inclined carrying-frame, composed of sections I, and in this instance the sections are constructed with side boards, I′, connected on their under edges by transverse boards *k*, and centrally by transverse bars *k′*. To these transverse bars, in alternate frames on opposite sides of the bars, are fixed angle-irons *k″*, having their outward-projecting arms perforated to freely admit the square shaft k^3. At k^4 are represented pulleys having concave sides to form a thin central web, in which is formed a central square opening of proper size to freely admit the square shaft k^3. These pulleys are placed between the arms *k″*, and in position to receive the square shaft. These frames are pivoted to the cross-beam H^9 in an inclined position, and at proper intervals on the beams, having the axis of their pivotal centers at right angles to their carrying-surface and in line with the geometrical center of the pulley k^4.

The side boards, I′, of these frames are also slotted lengthwise opposite the center of the pulley k^4 to freely receive the square shaft and permit of a limited oscillatory movement of the frames on their pivotal centers. These parts being constructed and in position as described and shown, the square shaft k^3 is passed transversely through the frames, the angle-irons, and pulleys, and is fitted to revolve in bearings on the outer ends of the cross-beam H^9. These several sections of this carrying-frame are fitted at each end with rollers k^5, journaled

in the sides of the frame, and one of these rollers in each frame is centrally grooved to receive the belts k^6, which connect the end rollers with the center roller of each frame alternately at opposite ends. k^7 are endless carrying-belts supported on the end rollers of the carrying-frame, and are provided with transverse slats, as is usual in such carrying-belts.

In Fig. 2 portions of the endless carrying-belts are broken away, which clearly shows the construction and arrangement of the parts.

From the foregoing it will be seen that if motion be imparted to the shaft k^3 it will impart motion to the carrying belts in the same direction, which will be transmitted from the shaft, through the belts k^6, to the carrying-belts. It will also be seen that this construction will permit of a free oscillatory movement of the several sections of the frame without cramping. The pulleys in connection with the shaft permit of the required action of a universal joint. This carrying-frame, in this instance, is so located relatively with the vertical elevators as to receive the cut grain as it is discharged therefrom to convey it to the binding-machine. The several sections of this carrying-frame are connected at their lower ends, on their under sides, by a bar, I″, pivoted to each section, to cause them to oscillate in unison when moved in either direction.

I^6 is a sway-bar pivoted to the platform I^4, in front of the driver's seat, and is fitted with foot-supports at each end to receive the feet of the operator. This sway-bar is connected with the carrying-frame by means of the connecting-rod I^7 in such a manner that the driver, by means of his feet, may impart an oscillatory movement to the sway-bar I^6, which will be imparted to the carrying-frame and cause it to incline to either the front or rear of the machine, as represented in the dotted lines in Fig. 2. By this means the direction of the current of the flowing grain may be changed to cause it to be delivered centrally to the binding-machine, whether the straw of the grain be long or short. Instead of the foot sway-bar, a hand-lever may be employed, by which the driver can operate the carrier. A finger-guard frame, consisting of sides in two parts, K and K^1, hinged to each other, are fixed at one end to the posts of the elevator-frame, and extend up the sides of the carrying-frame, and are connected at their outer ends loosely to the oscillating carrying-frame in such a manner that their outer portions K^1 will oscillate with the movements of the carrying-frame.

K^3 is a crosswise roller journaled to the sides K, and to this roller are pivoted the lengthwise slats K^4. K^5 is a cross-bar pivoted to the outer ends of the sides K^1. To this cross-bar the lengthwise slats are connected by bolts in such a manner as to have a limited independent vertical movement. K^6 are down-curving fingers fixed to the outer ends of the slats K^4, and extend over the outer end of the carrying-frame to deflect the current of grain flowing over the carrier. The outer portion of this finger-guard frame being connected to the oscillating carrying-frame, its lateral movement will be controlled by the movement of the carrying-frame. Its possible lateral movements are represented in the dotted lines in Fig. 3. The wrist-pin of the crank-wheel j' receives the pitman, which imparts motion to the sickle of the harvester. It is also provided with sprocket-teeth, which receive the links of a chain-belt, and becomes the driving-wheel of the grain-carrying devices.

From the crank-wheel j' the chain-belt passes over the sprocket-wheel j^4, which is a tightening-wheel made adjustable to keep the belt taut, from whence it passes over the sprocket-wheel j^5, thence over sprocket-wheel j^6, thence over sprocket-wheel j^7, and from thence over the sprocket-wheel on the driving-shaft of the binding-machine, and from thence to the crank-wheel, which completes the circuit. This, in connection with the gear-wheels j^9 and j^{10}, completes the connection of the movements of the grain carrying and binding devices. It is the purpose to provide the machine with the usual appliances of a vibrating sickle, a reel, pole, evener, and neck-yoke, and to be operated by a team, as common in such machines, and as the grain is cut it will fall on the endless carrying-apron of the platform moving in the direction of the arrow, which will carry the cut grain to the elevators, which will elevate the grain and deposit it on the inclined carrier, by means of which it can be centrally delivered to the binding device, whether long or short in the straw. This is accomplished by means of the capable oscillations of the carrying-frame controlled by the driver.

In this instance the machine is represented with the several sections of the carrier-frame pivoted in their centers and placed in connection with a vertical elevator, all of which has proven to be a satisfactory arrangement; but this invention is capable of other arrangements without departing from the gist of the invention. It is evident that the several sections may be increased or lessened in number, and are placed nearly in contact with each other, or separated to any practical distance from each other.

The several independent frames of the sectional grain-carrier may each be made of any practical width and length. I do not limit myself to the pivoting of the independent frames of a sectional grain-carrier at their central points, as said frames may be pivoted by means of the several universal-joint connections at any point of their length, and the several sections of the carrier connected together, so that one end of each carrier will be moved a greater distance transversely than their opposite ends. If each of the carrier-frames is pivoted at one end, then the center driving-belt may be omitted. This carrier may be employed in connection with the horizontal carrier of the harvester-platform to carry the cut grain centrally to the binder without the employment of any

intermediate device, and may be employed either in a vertical or inclined position, all of which is within the scope of this invention so long as the carrier is capable of changing the direction of the current of grain on its passage to deliver it centrally to the binding device, whether the straw is long or short.

What I claim is—

1. A grain-carrier mounted upon an axial pivot and suitable mechanism for imparting motion to the carrier, whereby the opposite ends of the same may be moved simultaneously and in opposite directions, substantially as set forth.

2. The combination, with an elevator for raising the grain from the harvester, of a grain-carrier mounted upon an axial pivot and suitable mechanism for imparting motion to the carrier, whereby its opposite ends may be moved simultaneously and in opposite directions, substantially as set forth.

3. A sectional grain-carrier having endless belts mounted on rollers journaled in separate frames, said frames mounted upon axial pivots and adapted to have an axial movement transverse to the line of travel of the grain, substantially as set forth.

4. The combination, with an elevator for raising the grain from the harvester, of a sectional grain-carrier, composed of endless belts mounted on rollers journaled in separate frames, which are mounted upon axial pivots and adapted to have an axial movement transverse to the line of travel of the grain, substantially as set forth.

5. The combination, with a sectional grain-carrier capable of a back-and-forth movement, substantially as herein described, of a foot sway-bar connected with the carrying-frame, whereby the driver can move the carrier with his feet back and forth to direct the grain centrally to the binder.

6. The combination, with a sectional grain-carrier, the several sections of which are each mounted upon an axial pivot and adapted to have an axial movement transverse to the travel of the grain, of means whereby the driver can adjust the carrier laterally to deliver the grain centrally to the binder, substantially as set forth.

7. The combination, with a sectional grain-carrier, the several sections of which are each mounted upon an axial pivot and adapted to have an axial movement transverse to the travel of the grain, of a guard-finger frame connected to the frame of the sectional grain-carrier, and adapted to be laterally adjusted in unison therewith, substantially as set forth.

8. A sectional grain carrier having endless belts mounted on rollers journaled in separate frames, said carriers being mounted on pivots and adapted to be moved transversely and in unison with each other, substantially as set forth.

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