(No Model.) 4 Sheets—Sheet 1.

M. E. BLOOD.

GRAIN DELIVERY DEVICE FOR HARVESTERS.

No. 307,374. Patented Oct. 28, 1884.

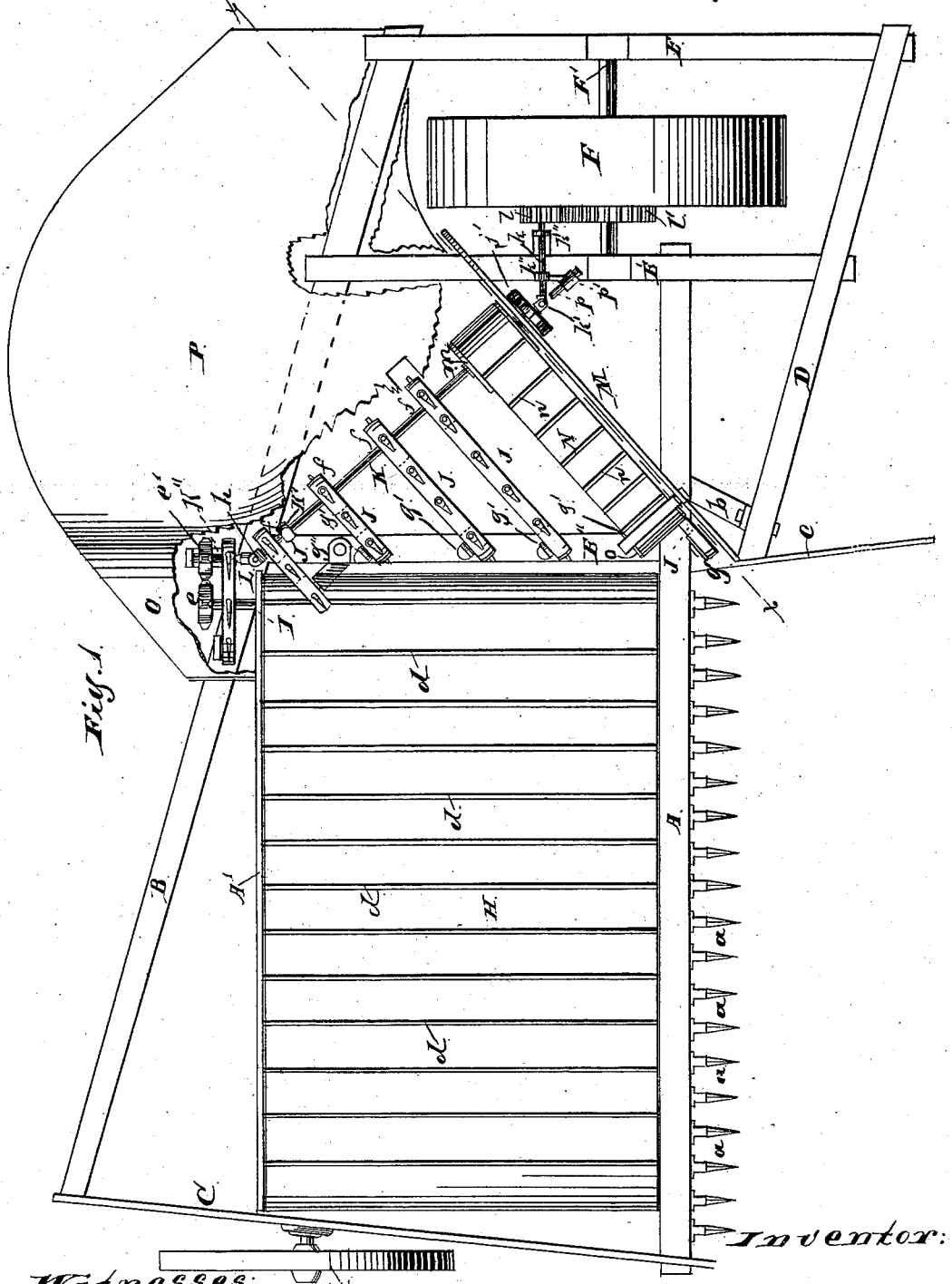

Fig. 1.

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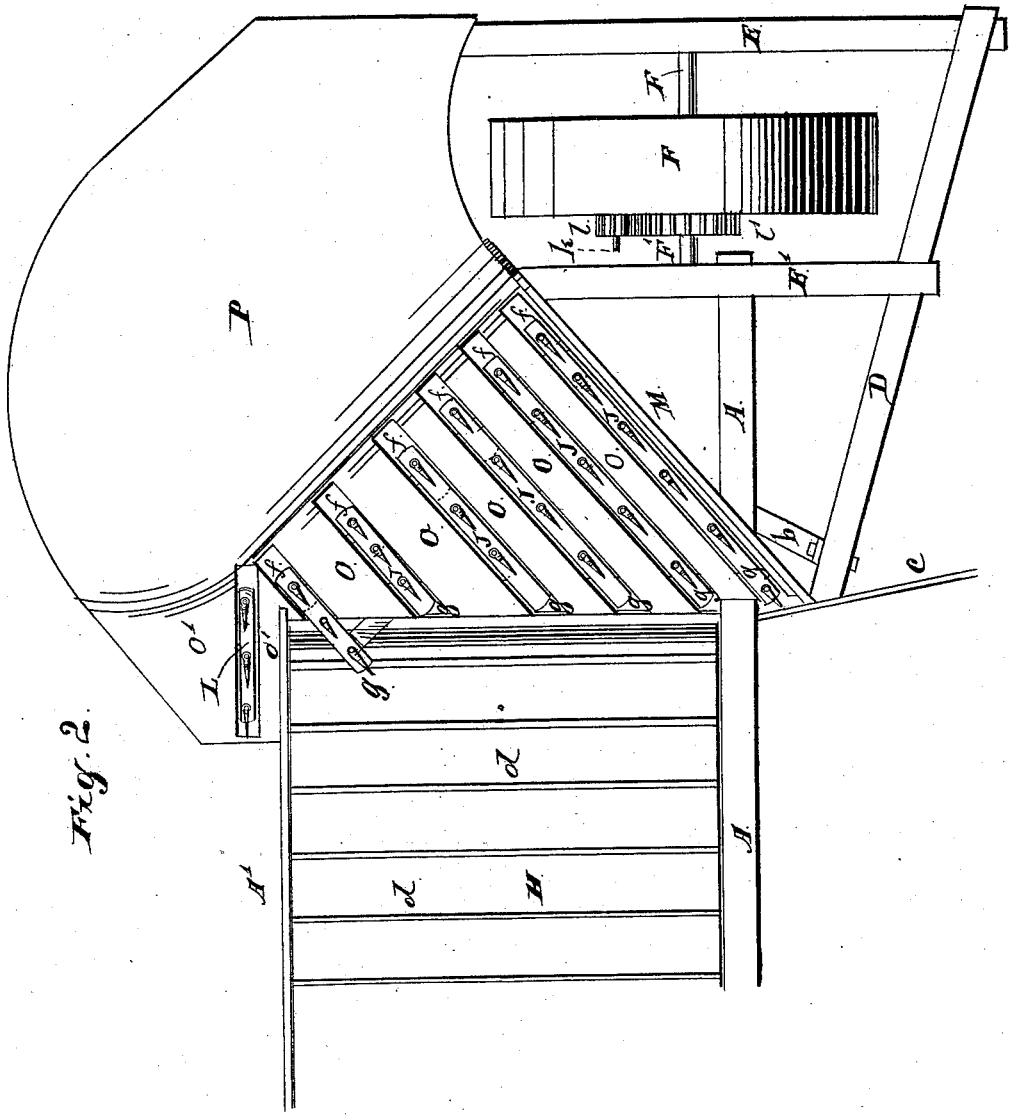

Fig. 2.

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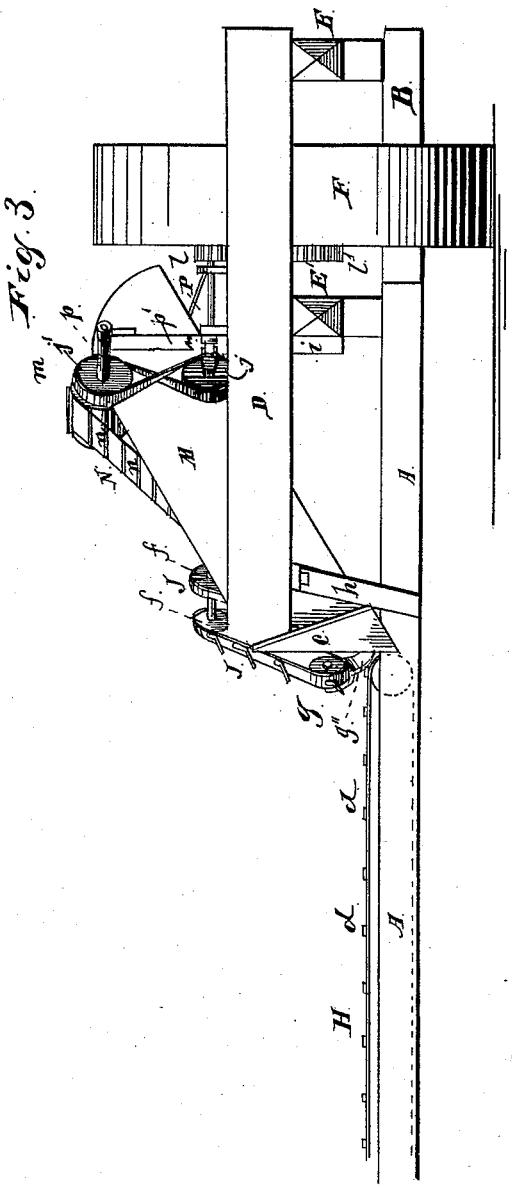
Fig. 3.



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(No Model.) 4 Sheets—Sheet 4.

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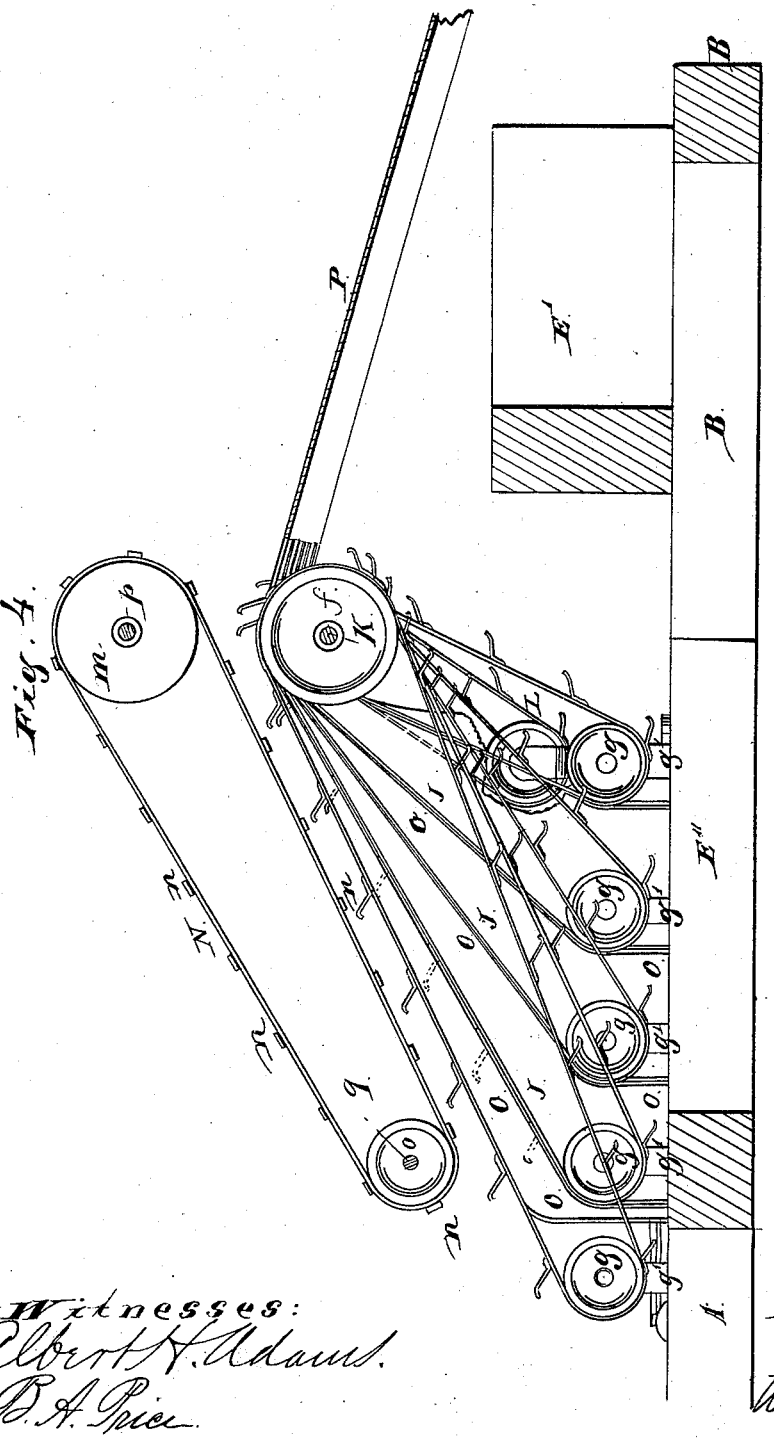

Fig. 4.

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UNITED STATES PATENT OFFICE.

MAURICE E. BLOOD, OF SYCAMORE, ILL., ASSIGNOR TO HIMSELF, AND CHARLES W. MARSH AND WILLIAM W. MARSH, BOTH OF SAME PLACE.

GRAIN-DELIVERY DEVICE FOR HARVESTERS.

SPECIFICATION forming part of Letters Patent No. 307,374, dated October 28, 1884.

Application filed November 27, 1882. (No model.)

To all whom it may concern:

Be it known that I, MAURICE E. BLOOD, residing at Sycamore, in the county of De Kalb and State of Illinois, and a citizen of the United States, have invented new and useful Improvements in Grain-Delivery Devices for Harvesters, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a top or plan view, with the apron or cover for the deflector and carrying-belts removed; Fig. 2, a detail showing a plan of the receiving and binding table, deflecting and elevating or carrying belts, and a portion of the carrier-platform, and the figure being on an enlarged scale; Fig. 3, a front end elevation, with the grain end of the carrier-platform broken off; Fig. 4, a section on line *x x* of Fig. 1 on a larger scale.

This invention relates to devices to be applied to a platform-harvester to deliver the grain to a self-binder, and has for its objects to construct and apply to this class of binders devices by which the grain will be taken from the receiving-platform, deflected and carried to a self-binder without passing over the main or drive wheel, the grain being deposited upon a binding table or platform at the rear of the main or drive wheel, so as to be there bound and afterward discharged at the rear of the main wheel, and securing a sufficient space for carrying, delivering, and binding the grain without much if any increase in the length of the machine, and secure in the machine the features of compactness, light draft, and perfect delivery of the grain at a point the most desirable for binding purposes; and it consists in the several devices and their combinations and arrangements, hereinafter described, and pointed out in the claims, for attaining the results above stated.

In the drawings, A designates the front sill or beam of a harvester-platform provided with ordinary finger-guards, *a*, for a sickle, which is to be located and operated in any of the usual and well-known manners. The main or drive wheel F is located between two parallel cross-sills, E E′, and to the front ends of the latter is secured one end portion of a front sill, D, such sill extending diagonally from the cross-sill E in a rearward direction to a brace or support, *b*, adjacent to the inner divider, *c*, which supports and connects the said sill to the front sill or beam, A. To the rear ends of the cross-sills is secured the end portion of the rear sill, B, which sill is parallel to the front sill—that is, it extends diagonally in a rearward direction from the rear ends of the cross-sills to the rear end of the outer divider, to which it is firmly attached, thus bracing the same.

It will be observed that the several parts are so disposed with relation to each other and to the grain-wheel, hereinafter mentioned, as to obtain nearly if not quite an equal balance of the entire structure.

G is the grain-wheel, located outside of the grain-divider C, and having its axle or spindle suitably supported from the divider.

H is the platform-carrier, located between the front or finger beam, A, and the rear piece, A′, attached to the divider C at one end and to the rear sill, B, at the other, or supported in any other suitable manner, so as to lie parallel with the finger-beam A. This platform-carrier H may be made of canvas provided with cross-strips *d*, and runs over rollers located at the outer and inner sides of the platform, or of some other suitable form of construction that will take the grain as deposited after being cut by the sickle and carry it across the platform, where it is to be taken by the deflecting and elevating carrier, as hereinafter described, and when toothed chains are used a slotted platform is to be used, as usual.

I is the shaft of the inner roller of the platform-carrier projecting beyond the rear supporting-piece, A′, and having on its end a sprocket-wheel, *e*, by which it is driven to operate the said platform-carrier.

J is a series of belts, each provided with teeth and forming the grain deflecting and elevating carrier, which is inclined relative to the platform-carrier, and has its lower end arranged to receive the grain from the platform-carrier, while its elevated end is arranged to deliver the grain to an elevated rear table, P, as hereinafter explained. The deflecting and elevating carrier is also inclined from front to rear—that is to say, its forward portion is

elevated above its rearward portion, which results from the difference in size of the carrying-wheels *f*, hereinafter explained.

K is a shaft supported and located above the plane of the platform-carrier and supported at one end by a standard, K′, or otherwise. This shaft is arranged on a line diagonal to the line of the delivery of the platform-carrier, and is provided, as shown, with a series of pulleys or wheels, *f*, decreasing in diameter from the front wheel to the rear one, over which pulleys and lower pulleys, *g*, the belts J pass. These wheels *g* shown are of the same diameter, and are each mounted in suitable arms or standards *g′*, extending up from the cross-piece E″, which standards are so arranged diagonally on the cross-piece as to bring the pulleys or wheels *g* in line with the pulleys or wheels *f*, and give the belts J a direct line of travel, which line of travel, however, is diagonal to the run or travel of the platform-carrier H. As shown, the rear belt, J, has its lower pulley, *g*, supported from an arm or bracket, *g″*, extending out rearwardly from the cross-piece E″ and over the platform-carrier, the object being to give a greater length of belt and a less vertical direction than if the pulley *g* was located directly on the cross-bar E″, and also bringing the belt over the end of the platform-carrier and insuring the removal of the grain from the said carrier, and, if necessary, some of the other belts, or all of them, might be supported at their lower end in a similar manner, so as to project over the end of the platform-carrier.

L is a toothed belt located outside of the rear line of the platform-carrier and traveling over pulleys or wheels, the upper one of which is located on a short shaft, K″, driven from the shaft K, and the lower one of which is supported by arms or standards extending up from the rear sill, B. The upper pulley or wheel is of larger diameter than the lower, to give the belt a rapid travel. The shaft K″ is connected to the shaft K by a suitable joint, *h*. As shown, the outer end of this shaft K″ is supported by a standard extending out and up from the rear sill, B, and its inner end is supported by the shaft K through the coupling or joint *h*. This shaft K″ has located thereon a sprocket-wheel, *e′*, in line with the sprocket-wheel *e* on the shaft I, over which sprocket-wheels *e e′* the chain for driving the shaft I passes; but the shaft I could be driven in some other suitable manner.

M is a guide-piece or guard located at the front end of the deflecting and elevating carrier. This guide M stands at right angles with the shaft K and diagonal to the finger-beam A, and is supported from the finger-beam and rear sill, B, and the cross-sill E′, as shown, or in some other suitable manner. Its outer end is supported above the cross-sill E′ by a standard, *i*, while its inner end is supported on the finger-beam, so that the board has an inclination upward as well as diagonal to the finger-beam. The shaft K is supported in the upper end of this guide-piece M, and the end of the shaft extends beyond the guide-piece, and has located thereon a pulley or wheel, *j*. This end of the shaft K is connected with a shaft, *k*, by a joint or coupling, *k′*, which shaft *k* is supported in suitable bearings in standards *k″* on the cross-bar E′, and its outer end has located thereon a gear-wheel, *l*, which meshes with the gear-wheel *l′* on the shaft F′ of the main or drive wheel. The wheel *l′* is driven by the forward travel of the main or drive wheel and rotates the wheel *l*, driving the shaft *k*, which shaft in turn drives the shaft K, rotating the pulleys *f* thereon, and driving the belts J.

N is a belt having cross-slats *n*, and located at the front of the deflecting carrier and over the first belt or front end of such carrier. This belt N is supported upon pulleys or wheels *m* and *o* at its upper and lower end, respectively, the upper wheel or pulley, *m*, being of greater diameter than the lower, to give the belt a greater speed. The pulley or wheel *m* is located on a short shaft, *p*, which has its bearings in the guide-board M, and the upper end of a standard, *p′*, extending up from the cross-piece E′. This shaft *p* has located thereon, in line with the pulley or wheel *j*, a pulley or wheel *j′*, over which and the wheel *j* a cross-belt passes for driving the shaft *p* and pulley or wheel *m*, for operating the belt N, and this belt N is driven so that its under face will have the same direction of travel as the upper face of the belt J. This belt N assists the first belt J in carrying the butts of the grain around, and also forms a traveling cover for holding the grain down while being deflected; and, if desired, the shaft *p* might be extended, and other belts similar to N be arranged over the belts J, or part of them, to assist in carrying and delivering the grain. The wheel or pulley *o* is located on an axis or shaft, *q*, which has its bearing in a bracket or support, *q′*, projecting out from the guide-board M, or in some other suitable manner, and in case other belts similar to N are used over the belts J they are to be mounted on pulleys located over the pulleys *g*, so as to bring the ends of such belts in line with the ends of the belts J, with which they coincide, and out of line of the grain as it falls on the platform and of the reel.

O represents strips of metal or other suitable material secured at their lower or inner ends to the cross-piece E″. These strips are located between the belts J, and run parallel therewith, and form a rest or platform, over which the grain travels, or is carried by the belts, and other strips, O′, are provided on each side of the belt L, to form a rest or support for the heads of the grain carried by the belt L.

P is a table of sheet metal or other suitable material extending from the upper or outer line of the belts J rearwardly, and forming a

platform on which the grain is deposited from the deflecting and elevating carrier J, and to the upper or inner end of which the outer or upper ends of the strips O are secured in any suitable manner, and, if desired, this table or platform P and the strips O might be made from the same piece, and the strips O′ may also be continuations of the table or platform P. This table or platform, as shown, is located above the frame-work of the machine, to leave a space for the location and operation of suitable packers and a binding-arm, and the table or platform P is to be suitably slotted for the operation of the packers and a binding-arm.

The self-binder is not shown, but may be of any of the well-known forms of construction and arrangement, having a binding-arm located and operating to carry the binding-cord around the bundle on the table and suitable tying mechanism co-operating therewith.

The operation is as follows: As the machine moves forward, the grain cut by the sickle falls upon the platform-carrier H, by which it is carried toward the deflecting and elevating carrier J, the teeth of which take the grain from where it is left by the platform-carrier. This deflecting and elevating carrier having a decreasing size from its front end to its rear, the front end thereof has a faster travel than the rear end, by which the butts will be carried forward faster than the heads, and the line of travel of this deflecting and elevating carrier being a diagonal one to that of the line of travel of the platform-carrier, the grain will be deflected from a straight line of travel and be given a line of travel in the direction of the rear of the machine, and, passing from the deflecting and elevating carrier, the grain will continue in this diagonal direction of travel and be deposited upon the receiving platform or table P, at the rear of the main or drive wheel, where it can be bound, and when bound be discharged clear of the machine and at the rear of the main or drive wheel. The diagonal frame B D brings the grain end of the machine farther back and the receiving end farther forward than usual, the result being that the grain-wheel can be located at the rear of the center of the platform-carrier, while the main wheel can be located forward of such center, the result being that the machine is carried and supported by these two wheels, dispensing with the use of a third wheel, and when the machine is complete by the attachment of the reel, tongue, and the binder, with the driver mounted on his seat forward of the main or drive wheel, a fore-and-aft balance of the machine is obtained, whereby the entire machine is balanced and carried.

The reel, tongue, and devices for driving the wheel are not shown, but may be of any of the usual and well-known forms of construction, the reel being located at the front of the machine and overhanging the platform-carrier, and the driver is to be mounted on his seat located forward of the main or drive wheel.

The main or drive wheel and the grain-wheel may be supported by adjustable bearings, to permit the machine to be raised or lowered to cut at different heights.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a traveling platform-carrier and a main drive-wheel, of the diagonal shaft K, elevated above the plane of the carrier at a point between the delivery end of the latter and the drive-wheel, independent belts J, having attached teeth and passing around wheels on the shaft, and also around wheels located adjacent to the delivery end of the platform-carrier to form a deflecting and elevating carrier, and a binding-table located at the elevated end of the deflecting and elevating carrier and projecting in rear of the same and in rear of the drive-wheel, whereby the grain is deflected and carried upward to the binding-table without passing over the drive-wheel, substantially as described.

2. In combination with a carrier-platform, two or more diagonal and elevating belts, J, adapted to receive the grain where it comes from the delivery end of the carrier-platform and convey it up an incline in a direction diagonal to the carrier-platform, and a binder-table at the rear of the main or drive wheel in a position diagonal to the drive-wheel, the forward end of the binder-table located adjacent to the upper or delivery end of the elevating-belts J, to receive the grain from the belts without elevating it over the main or drive-wheel, substantially as and for the purpose specified.

3. The combination, with a platform-carrier and a deflecting and elevating carrier, the latter operating in a line diagonal to the line of travel of the platform-carrier, of a carrier or belt located at the rear of the platform-carrier for carrying the heads of long or overhanging grain, substantially as described.

4. The combination of diagonal front and rear sills and a finger-beam with the main or drive-wheel located in front of the center of the platform-carrier for balancing purposes, substantially as described.

5. The combination, with diagonal front and rear sills and a finger-beam, of a grain-wheel and a main or drive wheel, said wheels being arranged on opposite sides of the center of the platform-carrier, whereby the machine is supported and carried by the two wheels only, substantially as described.

6. The combination, with a diagonal rear sill, B, platform-carrier H, and main or drive wheel F, of a diagonal deflecting and elevating carrier, and a receiving platform or table, P, for securing the grain as cut, and delivering

it to be bound and discharged at the rear of the main or drive wheel, substantially as described.

7. The combination of the platform-carrier, a main or drive wheel, F, and a series of diagonal deflecting and elevating belts, with a binder-table, all arranged and operating substantially as shown and described.

8. In a harvesting-machine, a main or drive wheel and a grain-wheel arranged on opposite sides of the center of the platform-carrier for balancing purposes, in combination with a series of deflecting-carriers, J, and a binder-table, P, the carrier J and binder-table P arranged diagonal to the drive-wheel, substantially as and for the purpose specified.

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