No. 618,546. Patented Jan. 31, 1899.

E. PRIDMORE.

GRAIN HARVESTER.

(Application filed Feb. 7, 1898.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 3.

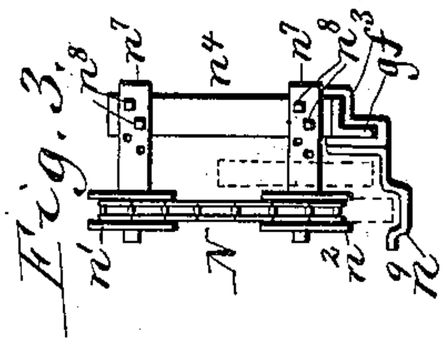

Fig. 1.

Fig. 2.

Witnesses:
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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3 Sheets—Sheet 2.

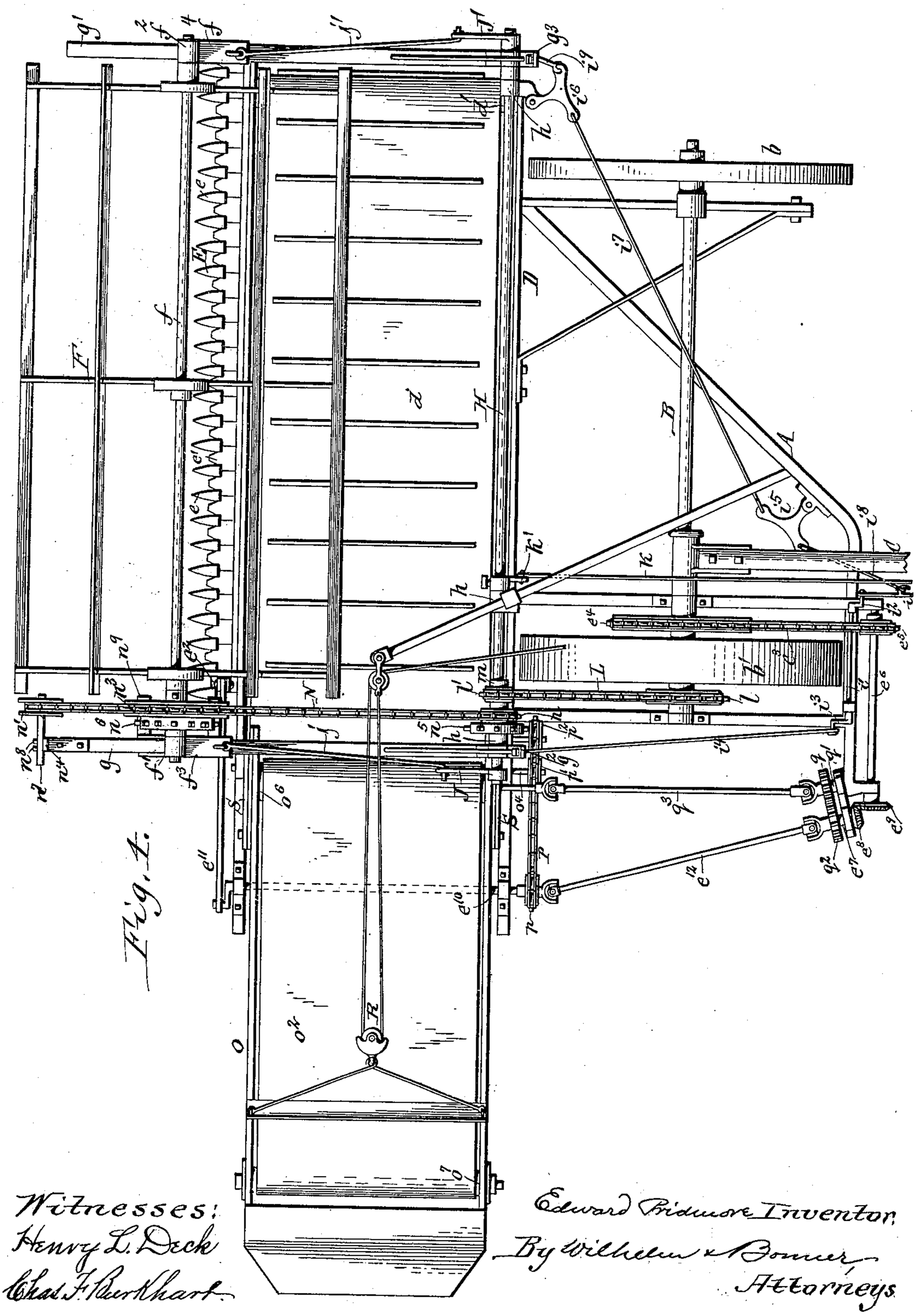

Fig. 4.

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3 Sheets—Sheet 3.

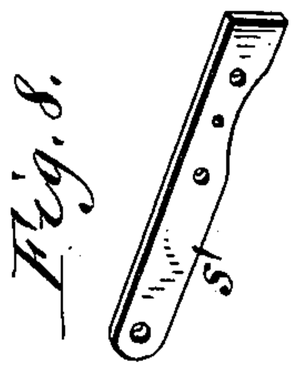

Fig. 8.

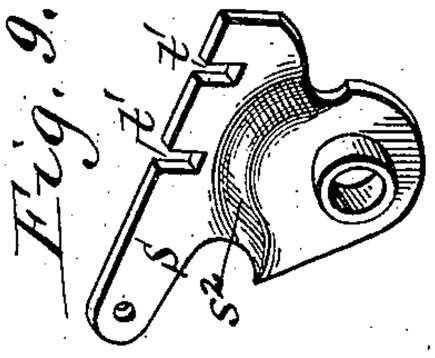

Fig. 9.

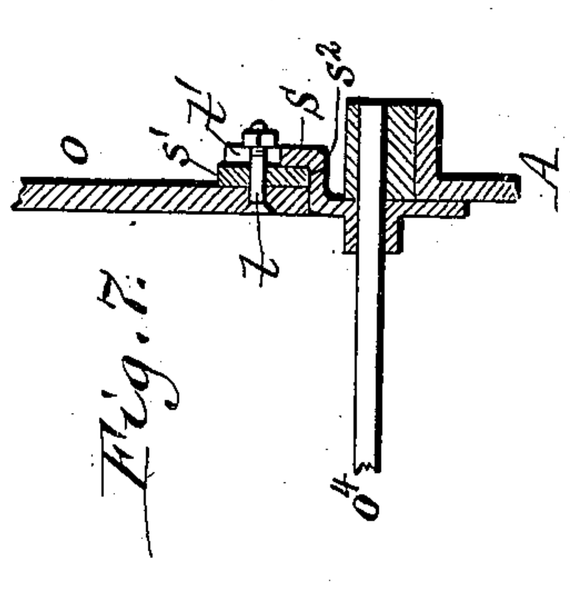

Fig. 7.

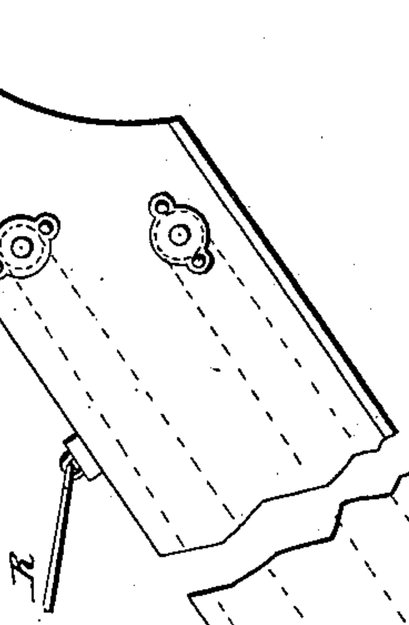

Fig. 5.

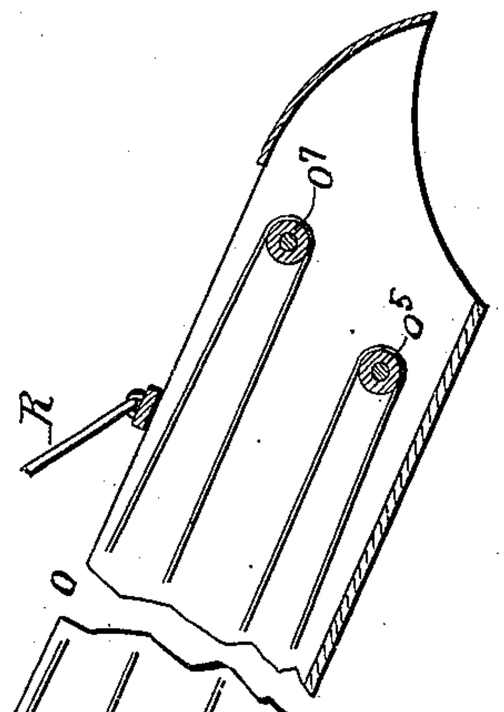

Fig. 6.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EDWARD PRIDMORE, OF BATAVIA, NEW YORK, ASSIGNOR TO THE JOHNSTON HARVESTER COMPANY, OF SAME PLACE.

GRAIN-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 618,546, dated January 31, 1899.

Application filed February 7, 1898. Serial No. 669,431. (No model.)

To all whom it may concern:

Be it known that I, EDWARD PRIDMORE, a citizen of the United States, residing at Batavia, in the county of Genesee and State of New York, have invented a new and useful Improvement in Grain-Harvesters, of which the following is a specification.

This invention relates more particularly to that class of grain-harvesters which are known as "headers" and which contain a rotating reel, which directs the grain toward the cutter and upon the platform conveyer, and an elevator whereby the cut grain is carried from the delivery end of the platform conveyer to an elevated receptacle.

One object of my invention is to provide a simple and reliable mechanism for adjusting the reel backwardly or forwardly to suit the condition of the grain.

Another object of my invention is to provide means whereby the elevator may be readily lowered within convenient reach of the operator for making repairs and adjusting the same.

In the accompanying drawings, consisting of three sheets, Figure 1 is a vertical longitudinal section of a grain-harvester provided with my improvements. Fig. 2 is a fragmentary side elevation of the reel-driving mechanism viewed from the side opposite to that shown in Fig. 1. Fig. 3 is a fragmentary front view of the belt guide-rollers and their support. Fig. 4 is a fragmentary top plan view of the harvester. Fig. 5 is a fragmentary front elevation of the elevator and adjacent parts, showing the elevator raised into an operative position. Fig. 6 is a sectional elevation of the same, taken lengthwise through the elevator and showing the latter in its lowered position. Fig. 7 is a fragmentary vertical section, on an enlarged scale, in line 7 7, Fig. 5. Fig. 8 is a perspective view of one of the elevator bearing-plates. Fig. 9 is a perspective view of one of the links which pivotally support the elevator.

Like letters of reference refer to like parts in the several figures.

A represents the main frame of the harvester; B, the axle, provided with the supporting and master wheels $b\ b'$; C, the draft-pole, connected at its front end with the frame and supported at its rear end by a caster-wheel c; D, the platform, arranged on the main frame in front of the master and supporting wheels, and d the transversely-movable platform conveyer or apron, passing with its receiving and delivery portions around receiving and delivery rollers $d'\ d^2$, journaled on the platform.

E represents the cutter, arranged along the front side of the platform and consisting of the usual fingers or guards e and blades e', secured to a reciprocating cutter-bar e^2. Motion is transmitted from the master-wheel to the cutter-bar by a chain belt e^3, passing around a sprocket-wheel e^4 on one side of the master-wheel, and a sprocket-wheel e^5, mounted on a shaft e^6, arranged transversely in rear of the master-wheel, a longitudinal rear shaft e^7, provided with a bevel gear-wheel e^8 meshing with a bevel gear-wheel e^9 on the shaft e^6, a longitudinal crank-shaft e^{10}, journaled in bearings adjacent to the delivery end of the platform and provided at its front end with a crank which is connected by a rod e^{11} with the cutter-bar, and an intermediate shaft e^{12}, connected by universal joints with the crank-shaft and the rear shaft e^7. The crank-shaft is arranged a sufficient distance from the cutter-bar to permit of employing a comparatively long connecting-rod, thereby causing the cutter to work easy and reducing the wear on the same.

F represents the reel, which is arranged over the platform and the cutter mechanism and which is journaled with the ends of its transverse shaft f in bearings $f'\ f^2$. These bearings are arranged on slides $f^3\ f^4$, which are guided on the forwardly-projecting front arms $g\ g'$ of two longitudinal supporting elbow-levers arranged at opposite ends of the reel. The rear arms $g^2\ g^3$ of these levers project upwardly, and the levers turn loosely on a rock-shaft H, which is arranged transversely in rear of the reel and journaled in bearings h on the main frame. The supporting-levers are turned for raising or lowering the reel by a hand-lever I, mounted on the rear portion of the draft-pole and connected with the supporting-levers by suitable intermediate mechanism. That shown in the drawings is of well-known construction and

consists of a longitudinal rod i, connected at its rear end with the hand-lever, a rock-shaft i', journaled on the main frame in rear of the master-wheel and having an arm i^2 at one end, which is connected with the front end of the rod i, and an arm i^3 at its other end which is connected by a rod i^4 with the rear arm g^2 of one of the supporting-levers, bell-crank levers i^5 i^6, pivoted on the main frame and connected by a rod i^7, a rod i^8, connecting one of the bell-crank levers with the connecting-rod i, and a rod i^9, connecting the other bell-crank lever with the rear arm g^3 of the other supporting-lever.

J J′ represent two upwardly-projecting rock-arms which are secured to opposite ends of the rock-shaft H and which are connected by rods $j\,j'$ with the slides f^3 f^4, carrying the bearings of the reel-shaft. Upon rocking this shaft in one or the other direction its rock-arms move the reel backward or forward on the front arms of the supporting elbow-levers. The rock-shaft is operated by a hand-lever K, which is mounted on the rear portion of the draft-pole and which is connected by a longitudinal rod k with a depending rock-arm k', secured to the rock-shaft.

The mechanism whereby the reel is rotated is constructed as follows:

L represents a chain belt passing around a sprocket-wheel l on one side of the master-wheel and a sprocket-wheel l', mounted on a driving-sleeve m, which turns loosely on the rock-shaft H.

N represents a chain belt passing upwardly around a sprocket-wheel n, secured to the driving-sleeve m, thence forwardly over an upper guide wheel or roller n', arranged in front of the reel-bearing f', thence downwardly around a lower guide wheel or roller n^2, arranged below the upper roller, thence rearwardly in engagement with the under side of a sprocket-wheel n^3 on the adjacent end of reel-shaft, and thence to the place of beginning. The guide-rollers are supported on a bracket n^4, which is secured to the front end of the supporting-arm g, the lower roller being arranged so high that the sprocket-wheel n^3 of the reel-shaft deflects the lower portion of the chain belt between the sprocket-wheel n and the lower roller n^2, while the upper guide-roller is arranged so high that the upper portion of the belt is held out of engagement with the upper side of the reel sprocket-wheel n^3. When the machine is in operation, the lower portion of the chain belt N moves rearwardly, whereby a direct pull is exerted on the sprocket-wheel n^3 for turning the reel. Upon shifting the reel backward or forward the sprocket-wheel n^3 rolls over the lower portion of the chain belt N without materially changing the tension of the latter. By this means of driving and adjusting the reel a tightener for the chain belt N is rendered unnecessary, thereby simplifying the construction and reducing the weight on the front arms of the supporting-levers to a minimum.

For the purpose of changing the speed of the reel the chain belt N is removed from the sprocket-wheels n and n^3 and placed around a sprocket-wheel n^5, arranged on the driving-sleeve m, adjacent to the sprocket n and of larger diameter than the latter, and around a sprocket-wheel n^6, arranged on the reel-shaft adjacent to the sprocket-wheel n^3 and of smaller diameter than the latter. The guide-rollers are also made laterally adjustable to suit the chain passing around the same, each roller being preferably journaled on a horizontal arm n^7, which is secured to the bracket n^4 by bolts n^8, passing through the bracket and one of two pairs of openings in the arm, as shown in Fig. 3. In order to hold the driving-belt N in engagement with the sprocket-wheel of the reel-shaft, the slide f^3 is provided with two guide arms n^9, which extend underneath the belt in front and in rear of the axis of the reel-shaft, thereby preventing the chain belt from becoming detached from the reel sprocket-wheels n^3 or n^6.

The mechanism whereby the grain is elevated from the delivery end of the platform conveyer is constructed as follows:

O represents the vertically-adjustable elevator-case, which inclines laterally from the delivery end of the platform conveyer, and o' o^2 represent the lower and upper elevator aprons or conveyers arranged in the elevator-case. The lower elevator conveyer passes with its receiving portion around a receiving-roller o^3, which is arranged between the delivery-roller of the platform conveyer and the crank-shaft e^{10} and which is mounted on a shaft o^4, journaled in bearings on the adjacent portion of the frame. The delivery portion of the lower elevator conveyer passes around a roller o^5, journaled in the elevator-case. The upper elevator conveyer passes with its receiving and delivery portions around receiving and delivery rollers o^6 o^7, journaled in the elevator-case.

The platform conveyer and the lower elevator conveyer are driven by a chain belt P, passing around sprocket-wheels p p' p^2, arranged, respectively, on the crank-shaft e^{10} and the shafts of the receiving-roller of the lower elevator conveyer and the delivery-roller of the platform conveyer, as shown in Fig. 4. The upper elevator conveyer is driven by a gear-wheel q, mounted on a short rear shaft q' and meshing with a gear-wheel q^2 on the rear shaft e^7 of the cutter-driving mechanism, and an intermediate shaft q^3, connected at its ends by universal joints with the rear shaft q' and the shaft of the receiving-roller of the upper elevator conveyer, as represented in Fig. 4.

R represents the tackle which is connected with the outer portion of the elevator-case and whereby the latter is raised and lowered.

The receiving or lower end of the elevator-case is pivotally supported on opposite sides by two links S S, which are attached to the outer sides of the case and each of which

turns with its lower end on the shaft o^4 of the lower receiving-roller o^3. Each link is pivoted at its upper end by a pin s to a bearing-plate s', which is secured to the outer side of the case. The upper portion of the link is offset outwardly, so as to form an upwardly-facing shoulder s^2, and the adjacent side board of the elevator-case and the bearing-plate s' overhangs this shoulder. In the raised position of the elevator the lower ends of its sides and the bearing-plates rest upon the shoulders of the links, as represented in Figs. 5 and 7. When lowering the elevator-case for the purpose of making repairs, the elevator and the links turn together on the shaft o^4 until the elevator-case strikes the crank-shaft e^{10}, in which position of the elevator its delivery end is not low enough to permit the operator to reach the same from the ground. In order to bring the delivery end of the elevator within reach of the operator after the elevator rests on the shaft e^{10}, the outer end of the elevator is depressed further and at the same time moved inwardly on the shaft e^{10}, whereby the inner end of the elevator is lifted from the shoulders of the links and the latter are swung upwardly and inwardly, as shown in Fig. 6. Upon raising the outer end of the elevator by means of the hoisting-tackle its inner end is depressed and turns on the pins s, connecting the links and elevator-case, until the elevator-case bears against the shoulders of the links, after which the links and the elevator swing upwardly together about the axis of the shaft o^4, and the elevator is lifted from the crank-shaft e^{10} into the desired position.

When the elevator is in use, the elevator-case, bearing-plates, and links may be fastened together by clamping-bolts t, passing through the bearing-plates and the side boards of the elevator-case and engaging with notches t' in the upper edge of the links. Preparatory to lowering the elevator the nuts of the clamping-bolts are loosened to permit the latter to lift out of the notches of the links. This means of supporting the inner or lower end of the elevator-case permits the crank-shaft e^{10} to be arranged underneath the elevator at a sufficient distance from the cutter-bar to permit of using a long connecting-rod between the crank and cutter-bar and at the same time permits the elevator to be lowered sufficiently to be accessible from the ground. In the lowered position of the elevator the slack in the lower elevator conveyer is taken up by the inner edge u of the bottom of the elevator-case engaging with the under side of the lower portion of this conveyer and by a transverse bar or roller u', secured to the sides of the elevator-case and engaging with the under side of the upper carrying portion of this conveyer, as represented in Fig. 6.

I claim as my invention—

1. The combination with the platform conveyer and the wheeled frame on which the same is mounted, of a transverse rock-shaft, reel-supporting arms hung on said rock-shaft, sliding bearings mounted on said arms, a reel journaled in said bearings, rock-arms secured to said rock-shaft and connected with said sliding bearings, an adjusting device mounted on said wheeled frame and connected with said rock-shaft to rock the same for adjusting the sliding bearings on the supporting-arms, and a reel-driving sprocket-wheel mounted on said rock-shaft and connected by a drive-chain with the sprocket-wheel of the reel, substantially as set forth.

2. The combination with the frame, the platform conveyer and the elevator, of links pivotally connecting the elevator to the frame, substantially as set forth.

3. The combination with the frame, the platform conveyer and the elevator, of links pivotally connecting the elevator to the frame and provided with shoulders which are engaged by the elevator, substantially as set forth.

4. The combination with the frame, the platform conveyer, the elevator-case, and the elevator conveyer passing with its receiving portion around a roller journaled on said frame, of links arranged on opposite sides of the elevator-case, each link being pivoted at one end to the elevator-case and at its other end to the journal of the roller and provided with a shoulder which is engaged by the elevator-case, substantially as set forth.

5. The combination with the frame, the platform conveyer the elevator-case and the elevator conveyer passing with its receiving portion around a roller journaled on said frame, of links arranged on opposite sides of the elevator-case, each link being pivoted at one end to the elevator-case and at its other end to the journal of the roller and provided with a shoulder which is engaged by the elevator-case and clamping-bolts connecting the links with the elevator-case, substantially as set forth.

6. The combination with the frame, the platform conveyer passing with its delivery portion around a roller, the cutter arranged along the front side of the platform conveyer and the crank-shaft having its crank connected by a rod with the bar of the cutter, of an elevator-case arranged over the crank-shaft, an elevator conveyer arranged in the case and passing with its receiving portion around a receiving-roller arranged between the delivery-roller of the platform conveyer and the crank-shaft, and links connecting the journal of the said receiving-roller with the elevator-case, substantially as set forth.

Witness my hand this 18th day of January, 1898.

EDWARD PRIDMORE.

Witnesses:
GEORGE O. VOLZ,
GEO. E. FARRALL.