(No Model.) 2 Sheets—Sheet 1.

LA VERNE W. NOYES.

HARVESTER RAKE.

No. 358,064. Patented Feb. 22, 1887.

Fig. 1.

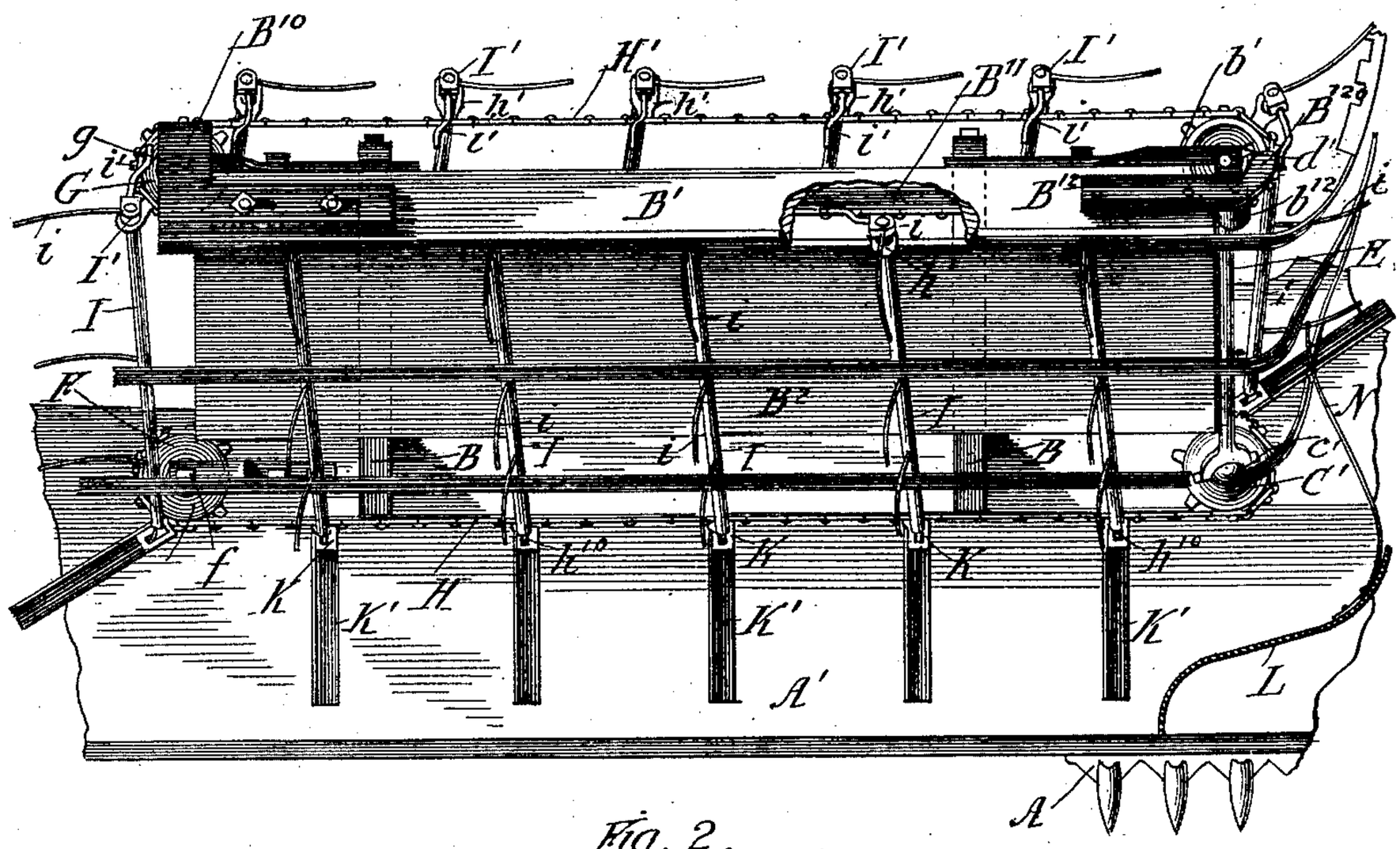


Fig. 2.

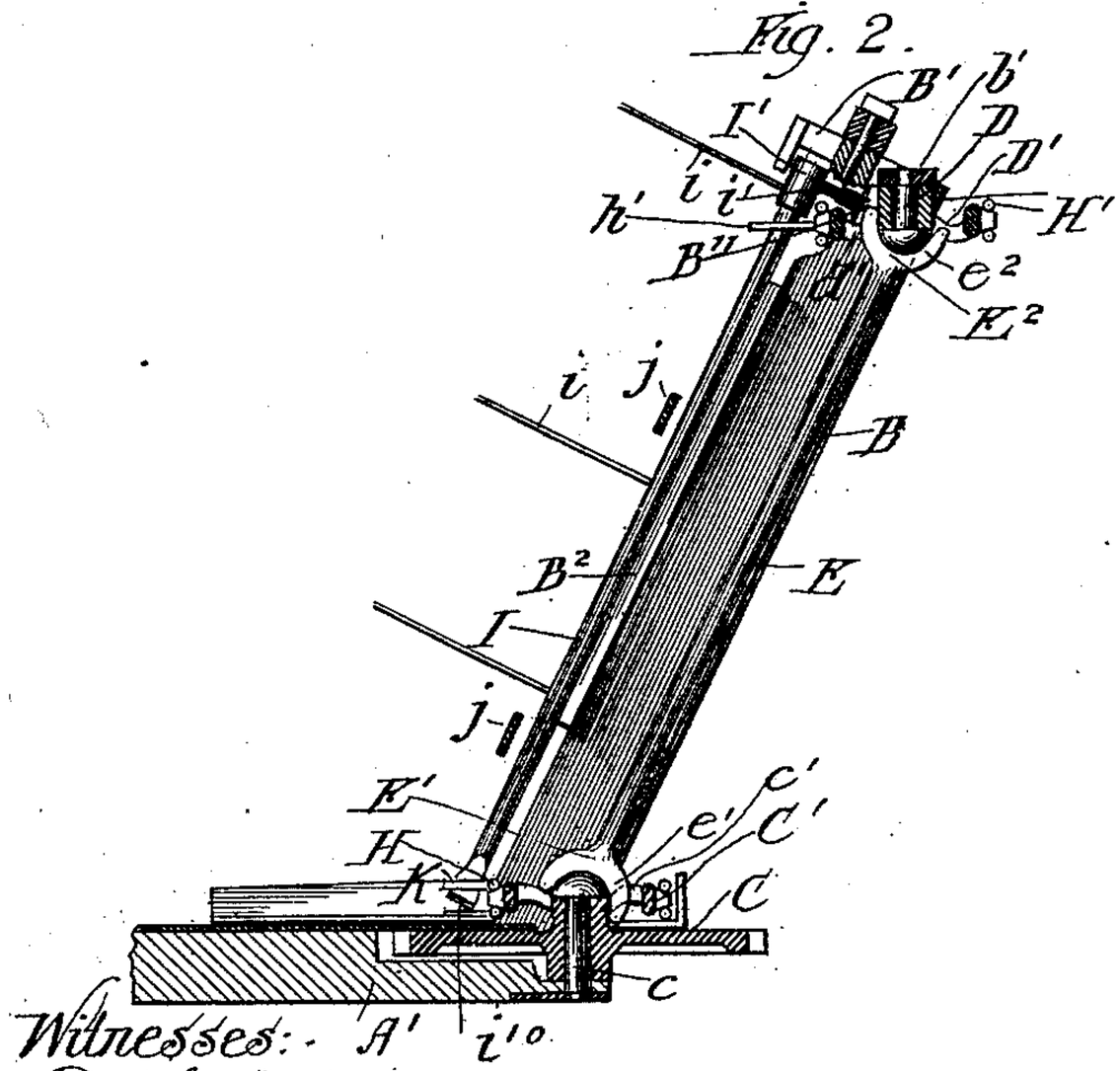
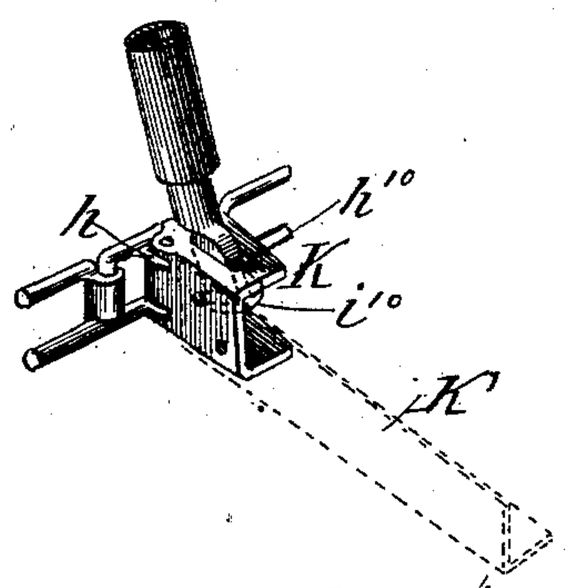


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

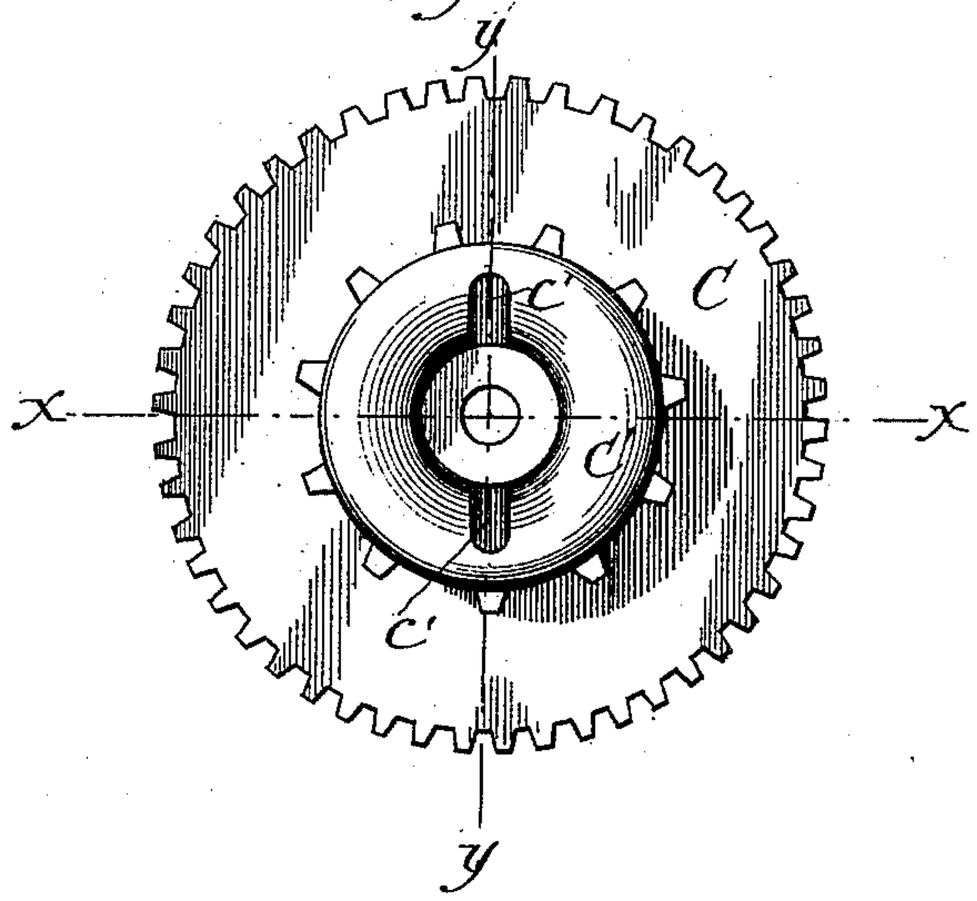


Fig. 5.

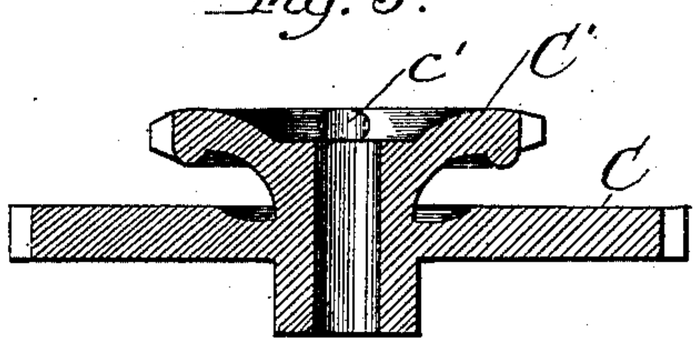


Fig. 6.

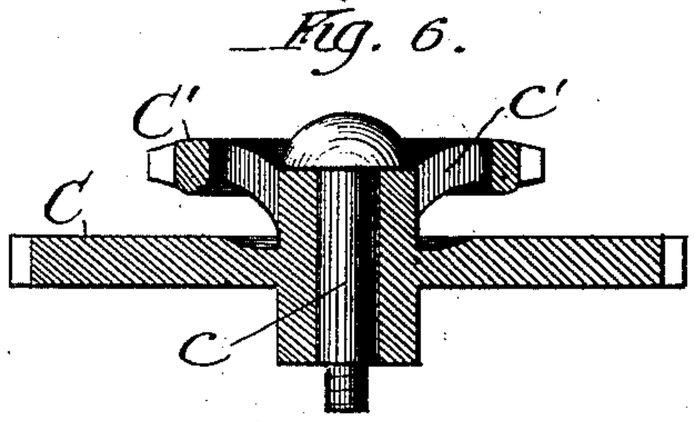


Fig. 7.

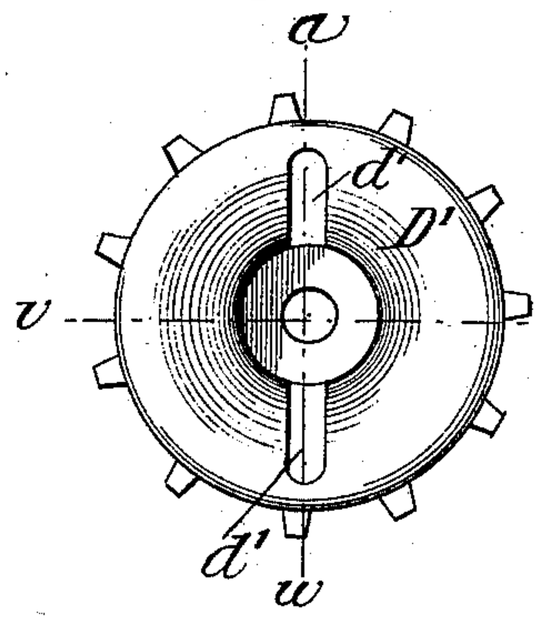


Fig. 8.

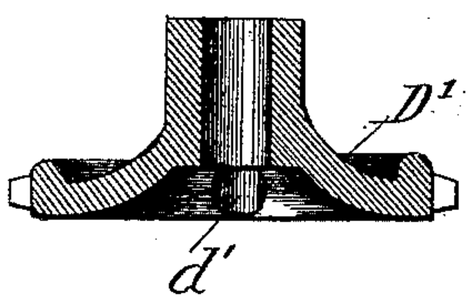
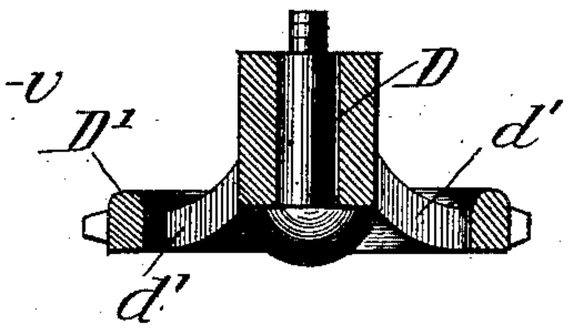


Fig. 9.



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UNITED STATES PATENT OFFICE.

LA VERNE W. NOYES, OF CHICAGO, ILLINOIS.

HARVESTER-RAKE.

SPECIFICATION forming part of Letters Patent No. 358,064, dated February 22, 1887.

Application filed December 28, 1885. Serial No. 186,925. (No model.)

To all whom it may concern:

Be it known that I, LA VERNE W. NOYES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Grain-Harvesters, which are fully set forth in the following specification.

This invention relates to harvesters which carry the grain on end from behind the sickle to a receptacle or discharge-point at the rear of one end of the cutter-bar; and it consists of improved devices for so carrying the grain and improved mechanism for actuating said devices.

In the drawings, Figure 1 is a plan of my improved conveyer, showing a portion of the sickle and the grain-supporting ledge in the rear thereof, whereon the said conveyer is also supported. Fig. 2 is a vertical section through the driving-pulleys or sprocket-wheels of said conveyer, showing their connecting-shaft and the conveyer in end elevation. Fig. 3 is a detail perspective of the butt-carrying arm or finger and its jointed connection with the driving-chain and finger-carrying rod. Fig. 4 is a plan of a gear and sprocket wheel through which motion is communicated to the conveying mechanism. Figs. 5 and 6 are vertical sections at the lines X X and Y Y, respectively, in Fig. 4. Fig. 7 is a plan of a sprocket-wheel employed to drive the upper conveyer-actuating chain. Figs. 8 and 9 are vertical sections at the lines V V and W W, respectively, in Fig. 7.

A is the sickle. A′ is the grain-supporting ledge in the rear thereof.

B B are uprights, and B′ is a horizontal bar secured to the upper ends of said uprights, the three constituting the conveyer-frame, which is supported upon the grain-ledge A′.

B^2 is a board secured to the front edges of the uprights B B, giving greater stiffness to the conveyer-frame and serving another purpose, hereinafter stated.

C is a horizontal gear-wheel, which is journaled on the stud-axle *c*, fixed to the rear portion of the ledge A′, and which may derive rotary motion in any convenient manner from the harvester-driving train. It has the horizontal sprocket-wheel C′, whose sprocket-rim is a little higher than the upper surface of the grain-ledge A′.

D′ is a horizontal sprocket-wheel equal in size to the sprocket-wheel C′, and journaled on the stud-axle D, which is fixed to and depends vertically from the block *b*′, which is secured to the upper frame-bar, B′. The two sprocket-wheels C′ and D′ are connected by the oblique shaft E, which is forked at the ends, said forks E′ E^2 striding the heads of the stud-axle *c* and D, respectively, and their prongs *e*′ and e^2 entering the apertures *c*′ and *d*′ in the webs of the sprocket-wheels C′ and D′, respectively. Said oblique shaft thus makes a universal joint with the said sprocket-wheels, whereby said shaft, although oblique to the plane of rotation of both said wheels, nevertheless communicates rotary motion from the former to the latter. At the opposite end of the conveyer, journaled upon stud-axles *f* and *g*, the former erected on the ledge A′ and the latter depending from the block B^{10}, secured to the upper frame-bar, B′, are the idle sprocket-wheels F and G, respectively, the former in the same horizontal plane with the sprocket-wheel C′ and the latter in the same horizontal plane with the sprocket-wheel D′.

Around the wheels C′ and F is driven the conveyer-chain H, and around the wheels D′ and G is driven the chain H′. Said chains are connected by the rods I, pivoted to the links at intervals, in a manner hereinafter explained in detail, and from said rods there are protruded the grain-carrying fingers *i i i*, projecting forward at different heights, overhanging the grain-ledge A′.

In front of the rods I, at a short distance only therefrom, so that the fingers *i* protrude between them to a considerable distance farther forward, are arranged the horizontal strips *j j*, which may be secured to any convenient portion of the harvester beyond the conveyer at both ends.

To the upper ends of the rods I are secured the clips I′, having the tails *i*′, standing approximately at right angles to the plane of the grain-carrying fingers *i i i*, and to the under side of the upper frame-bar, B′, is secured the rib or flange B^{11}, which has its front edge a little to the rear of the front ply of the chain H′ and forms a track for the said tails *i*′, which, resting upon it as the chains travel across the front of the conveyer, causes the rods I to stand in a position with their grain-carrying

fingers *i i i* protruded rigidly forward over the ledge A′.

To the upper side of the upper frame-bar, B′, at the discharge end, is fastened the block B^{12}, extending beyond the end of said bar B′, and having the roller b^{12} journaled on the stud-axle on its lower side. Said roller stands down into the track of the tails *i′* at the end of the rib B^{11}, so that before the tails *i′* run off said rib they run against said roller, which, being a little farther forward than the lip, throws the tails farther forward, rocking the rods I, and thus giving to their grain-carrying fingers a movement forward just at the instant when the chains begin to turn around the sprocket-wheels, and thereby hastening the movement of the grain slightly in turning the curve. The block B^{12} is produced toward the rear, to form the cam B^{120}, the front corner being flush with roller b^{12}, and as the chain travels around the sprocket-wheel the tail *i′*, moving, as does the chain, horizontally, rises relatively to the roller, and slides up on it and then off of it onto the cam B^{120}, slipping off the latter at its rear corner and allowing the grain-carrying fingers to withdraw from the grain longitudinally in the direction of the return ply of the chain H′. At the opposite end of the conveyer the block B^{10} serves as a cam to engage the tails *i′* and throw the fingers *i* into operative position as the chain passes around the sprocket-wheel G.

The connection or pivoting of the rods I to the upper chain, H′, is by means of the loops or staples *h′*, formed rigidly with links at intervals and loosely encircling the said rods below the clips I′. The connection of the said rods with the lower chain, H, is made by means of the clips or links K, which are employed in order to afford also a means of securing the butt-carrying fingers K′, so that they may operate as hereinafter described. Said links K are pivoted to lugs *h*, formed on links at intervals, their said pivots being vertical, so that said links swing in a horizontal plane and are adapted to fold back on the chain. Said links are preferably made, as illustrated, as of a plate folded to form three sides of a hollow parallelopipedon, the two parallel sides being horizontal and the connecting side being vertical. The upper horizontal side of each has an oblong slot, h^{10}, and the lower ends of the rods are flattened and inserted through said slots. A convenient and simple means of preventing the rods from escaping from said slots is to turn a flange or hook, i^{10}, on their flattened ends and hook them into the clips, respectively, before the latter are secured to the chain.

To the clips K are secured the butt-carrying fingers K′, which are made of angle-iron, and riveted onto the lower and vertical sides of the clips K, and thus embrace the latter in their angles, respectively, which open forward—that is, in the direction of travel of the chains A, the horizontal blade of the angle-iron lying upon the ledge A′ and the vertical blade standing up therefrom. In the return travel of the chain in the rear of the conveyer the butt-carrying fingers K′ lie parallel with the chain and run in the track guarded by the flange. The action of these butt-carrying fingers is to gather and carry the butts of the grain, which, standing on their horizontal blades, holds them down on the ledge A′, and so prevents the grain from being drawn under them. The grain is thus not only pushed forward, but is positively carried toward the discharge end of the conveyer.

The rods I are secured to the chains H and H′, so as to stand inclined, the lower end foremost, as seen in Fig. 1. From this result two advantages: first, the grain leans slightly to rest against the carrying-fingers *i i i*, and is less liable to fall forward prostrate on the ledge; second, the upper end carrying the clip I′, whose tail *i′* holds the rods with their fingers in operative position, passes around the sprocket-wheel a little later than the lower end, which carries the butt-carrying finger, so that said butt-carrying finger travels almost entirely around the sprocket-wheel C′ before the tail *i′* slips off the cam at the top, and by this means the butts of the grain may be effectually delivered within reach of whatever gaveling or binding mechanism may be located at the discharge end of the conveyer.

It will be observed that in order to carry the butts as far as they are carried by this arrangement, if the rods I were not leaned, as described, the upper end would be fully in the rear of the sprocket-wheel D′ before the tail would be allowed to leave the cam, and that at that point its own motion would not clear it—there being no change in its direction after that point—and some positively-actuated device would be necessary in order to effect the release of the tail from the cam.

L is the front-wall of the "throat" of the conveyer, behind which the grain is gathered by the conveyer-fingers.

In order to keep the grain from falling prostrate as it is carried around the end of the conveyer in this throat, there are secured to this wall L the spring fingers or arms N, which stand horizontally across the throat between the horizontal planes of the carrying-fingers *i i i*, and serve to keep the grain in the grasp of said carrying-fingers until it is stripped off them by the strips *j j*.

I claim—

1. In combination, substantially as herein-before set forth, the leaning conveyer-frame and the endless conveyer-actuating mechanism traveling in horizontal planes around the leaning frame.

2. In combination, substantially as herein-before set forth, the leaning conveyer-frame, the horizontal sprocket-wheels journaled at the top and bottom thereof, and the leaning shaft connecting said horizontal wheels by universal joints, and the endless conveyer-chains actuated in horizontal planes by said sprocket-wheels.

3. In combination, substantially as set forth, the leaning conveyer-frame, the horizontal