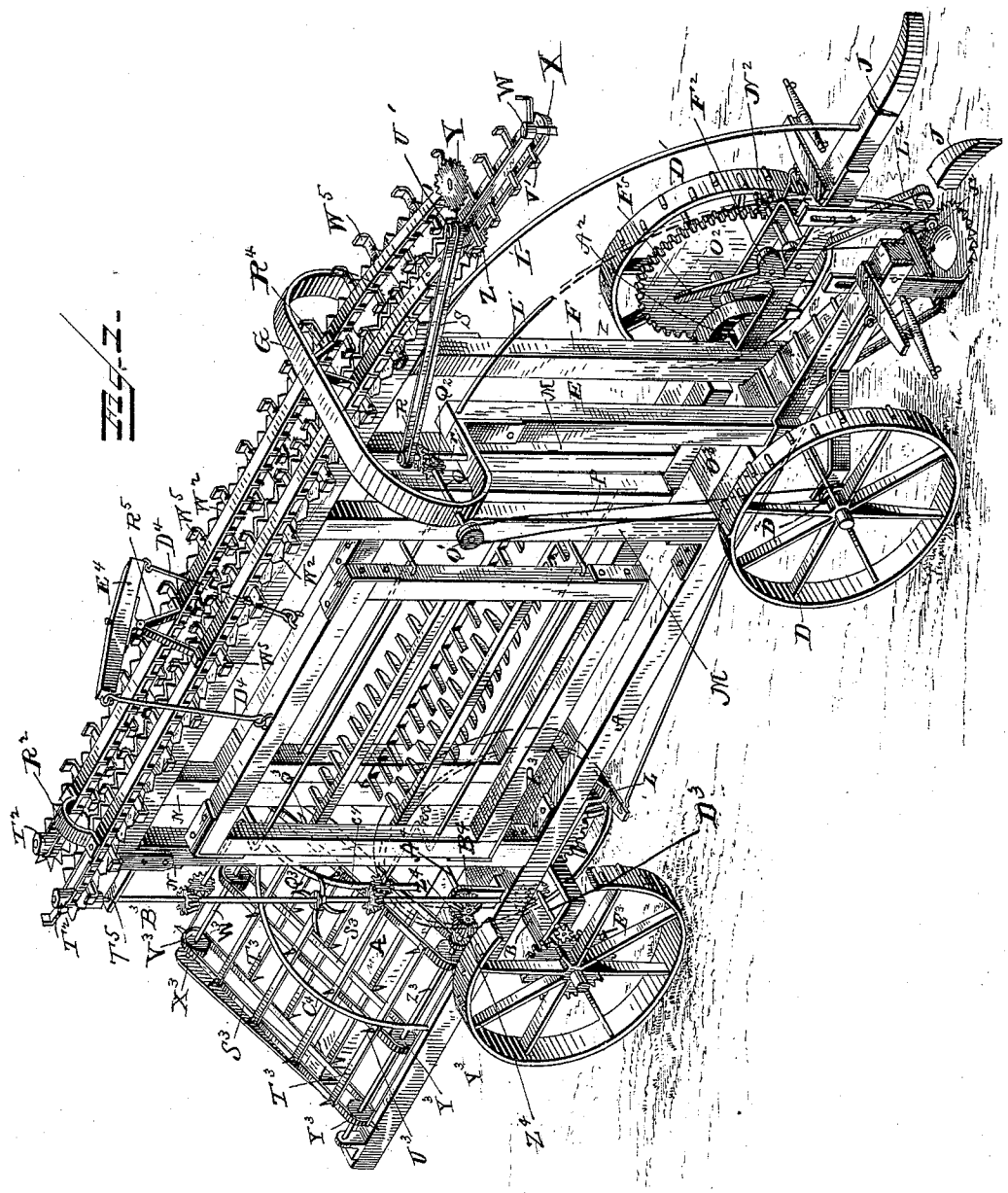
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H. FATIC.

SUGAR CANE HARVESTER.

No. 387,061. Patented July 31, 1888.



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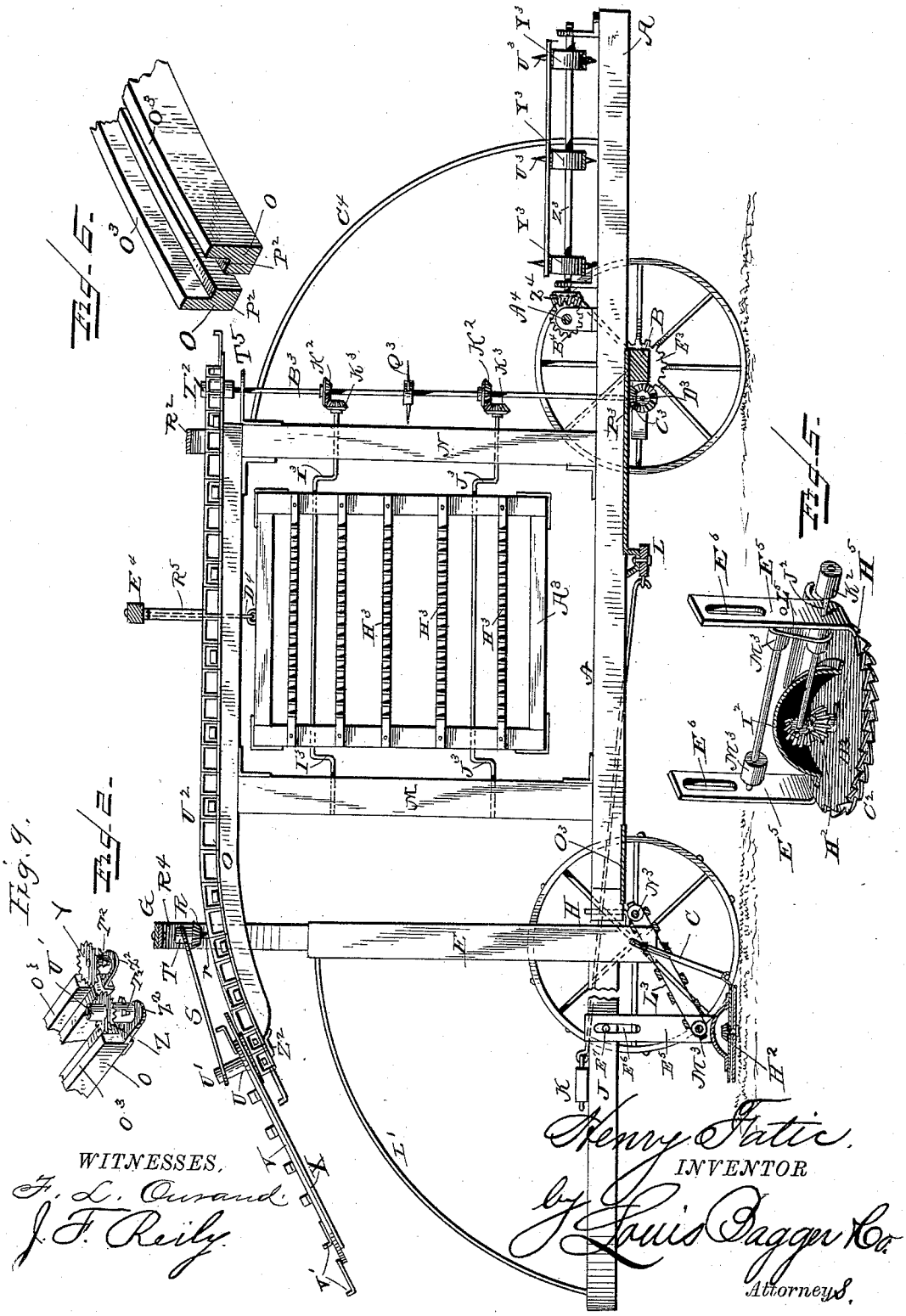
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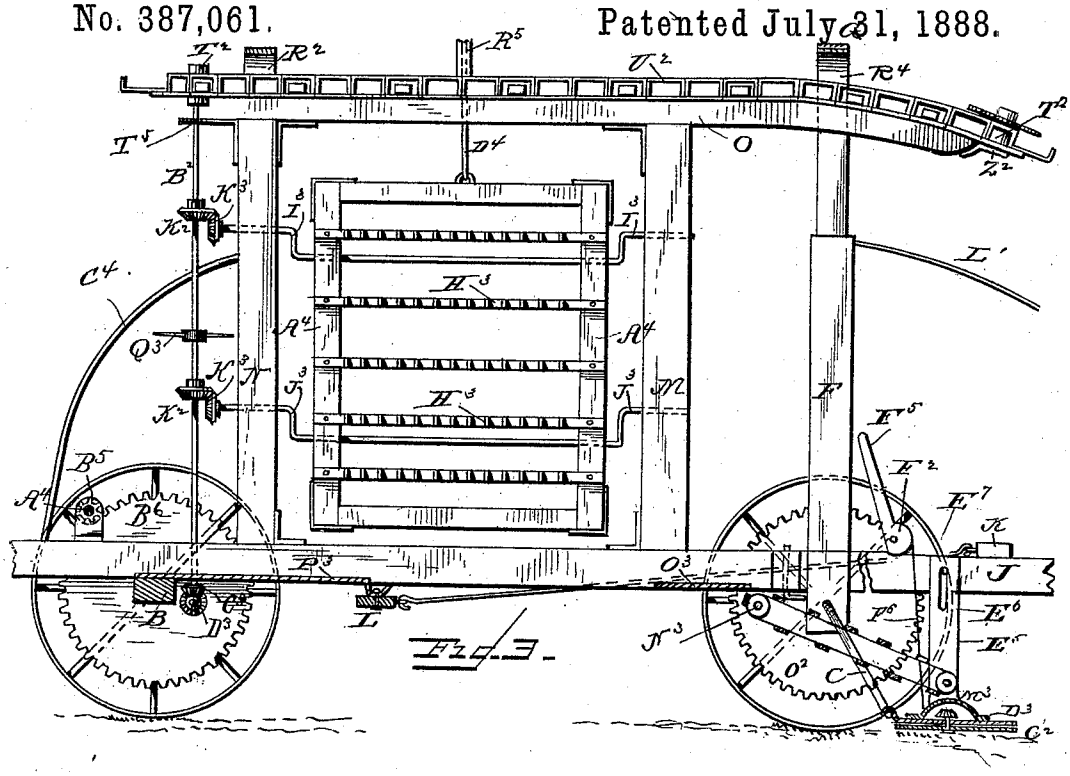


Fig. 3.

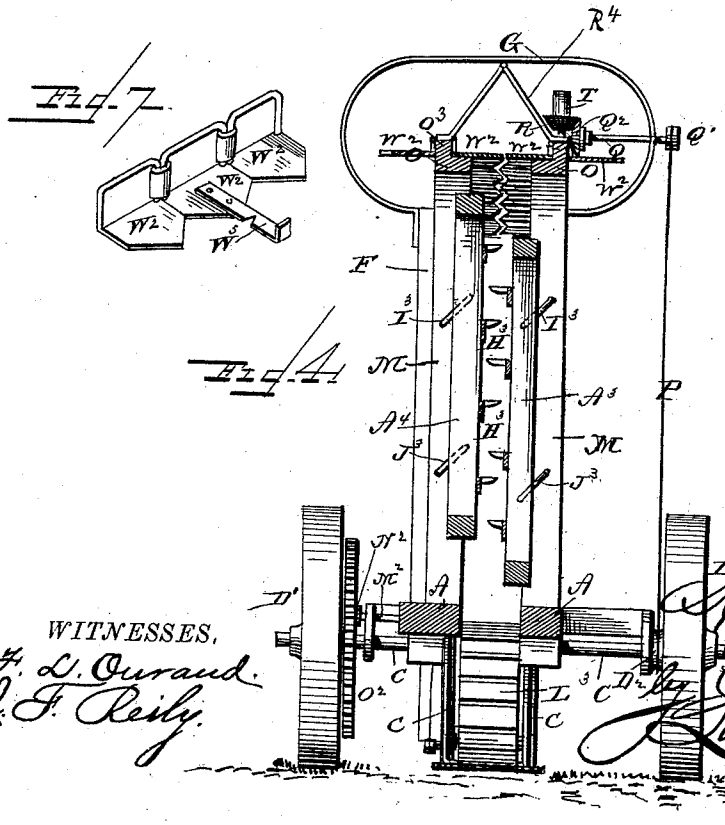


Fig. 4.

Fig. 7.

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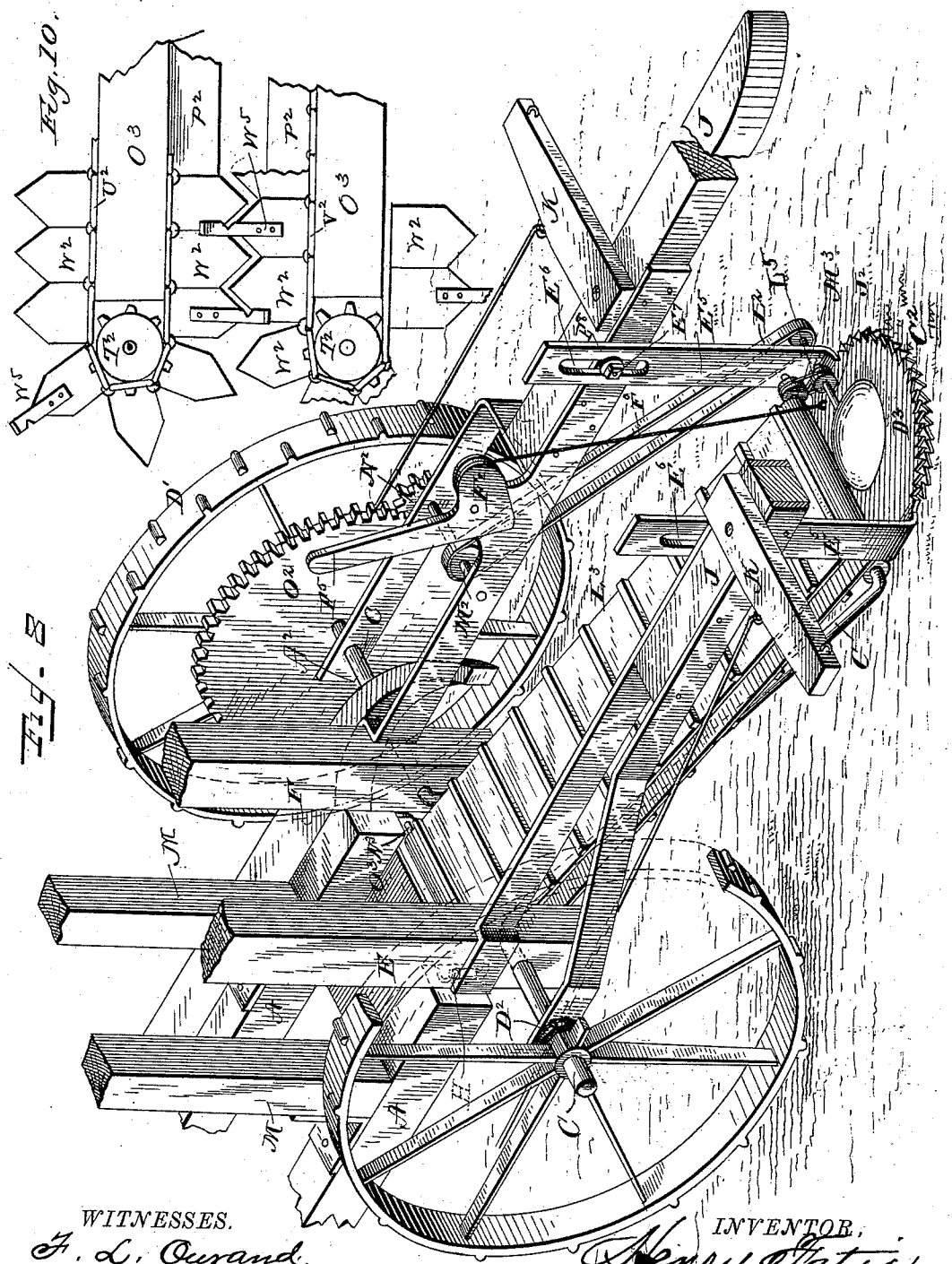
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UNITED STATES PATENT OFFICE.

HENRY FATIC, OF MIDDLETOWN, INDIANA.

SUGAR-CANE HARVESTER.

SPECIFICATION forming part of Letters Patent No. 387,061, dated July 31, 1888.

Application filed April 18, 1887. Serial No. 235,272. (No model.)

To all whom it may concern:

Be it known that I, HENRY FATIC, a citizen of the United States, and a resident of Middletown, in the county of Henry and State of Indiana, have invented certain new and useful Improvements in Sugar-Cane Harvesters; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of my new and improved cane-harvester. Fig. 2 is a longitudinal central vertical sectional view of the same. Fig. 3 is a longitudinal central vertical sectional view looking in the opposite direction to that shown in Fig. 2. Fig. 4 is a transverse vertical sectional view. Fig. 5 is a detail view of the lower circular cutters. Fig. 6 is a detail view of the forward ends of the top pieces, O O, hereinafter described. Fig. 7 is a detail view of a part of one of the carrier-belts. Fig. 8 is a perspective view, on an enlarged scale, of the front end of the machine. Fig. 9 is a detail perspective view showing the manner in which the pulley U′, hereinafter described, is journaled to the top piece, O; and Fig. 10 is an enlarged detail plan view of a portion of the carrier-belt.

The same letters of reference indicate corresponding parts in all the figures.

My invention consists in an improved sugar-cane harvester which cuts, tops, strips the blades from the cane, and loads the stripped cane on a wagon, and which is also adapted for use as a broom-corn-seed stripper; and my invention will be hereinafter fully described and claimed.

Referring to the several parts by letter, A A indicate the parallel longitudinal side pieces of the base of the machine-frame, which are supported near their rear ends upon the axle B, which is provided with drive-wheels formed, like the usual reaper-wheels, with exterior spurs on their periphery, which enter the ground, and thus prevent the drive-wheels from slipping or sliding along the ground without turning. These side pieces extend rearward of the axle B and support the loader-frame, which will be hereinafter described. A clear space is left between the side pieces, A, for their entire length in front of the rear axle, and they are supported at their forward ends upon an axle, C, journaled in the lower ends of uprights or posts E F, and formed with a central double crank, C′, which inclines forwardly. The outer ends of this forward axle, C, carry drive-wheels D D′, which are similar in construction to the drive-wheels of the rear axle, being formed on their periphery with exterior spurs. The forward ends of the side pieces, A A, are not supported directly upon the forward axle, C; but its (the axle's) straight ends pass through the lower ends of uprights E F, hereinbefore mentioned. These uprights are connected at their upper ends by an arched spring-bar, G, while the lower end of the upright E is pivotally connected to the forward end of the right-hand side piece A, as shown at H, Fig. 8, while the forward end of the left-hand side piece A has a curved horn or extension, A^2, on its front end, extending forward so as to lie over and rest upon the left-hand end of the forward axle, as shown in Fig. 8, whereby the forward ends of the side pieces are supported in such a manner as to admit of the forward axle turning readily with the tongues of the machine in turning the machine at the end of a row.

To the front sides of the uprights E and F and the straight ends of the axle C are rigidly secured the rear ends of the two tongues J J, which lie parallel to each other at a distance of about one foot apart. A draft-lever, K, is pivoted upon each tongue, near the rear end of the same, having a suitable hook or staple at its outer end for the attachment of a single-tree of the usual construction, one horse being thus attached on the outer side of each tongue. The draft-levers K K are connected, as shown, by links, chains, or the like to the ends of a lever, L, centrally pivoted to the under side of the machine-frame, near the rear axle of the same, so that as one draft-lever turns forward on its pivot the other will be drawn back, as will be readily understood.

The tongues J J are curved outwardly at their forward free ends, so that as the machine is drawn forward straddling a row the ends of the tongues will be sure to pass on each side

of the row of stalks, and thus bring the said row between tongues. Each tongue is connected to the top of the uprights E and F by the curved brace-rods L′ L′, which serve to brace the tongues, and the more important purpose of assisting in conducting the canes in a perfectly upright position to the cutter and carriers at the forward end of the machine-frame.

Upon the front and rear ends of the side pieces A are secured, respectively, the parallel uprights M and N, upon the upper ends of which are secured the longitudinal top pieces, O O, the forward ends of which are extended through the arched spring G, to project in advance of the uprights E F, and are curved somewhat downward at their forward ends, as most clearly shown in Figs. 2 and 3 of the drawings.

Upon the hub of the right-hand drive-wheel, D, is secured a pulley, D^2, and a drive belt or chain, P, passes around this pulley and over a small pulley, Q′, on the outer end of a short transverse shaft, Q, journaled in the arched spring G, and on the inner end of which shaft is mounted a miter-wheel, Q^2, which meshes with a similar miter-wheel, R, on a stud-axle, *r*. A drive belt or chain, S, passes around a pulley, T, secured or formed on this miter-wheel R, the said belt then passing forward and around a pulley, U′, on the upper end of a short vertical shaft, U, mounted in a bracket, Z^2, secured to the under forward side of the right hand top piece O. (Shown more clearly in Fig. 9 of the drawings.) Around this pulley U′ also passes the rear end of a feeding-belt, V, the forward end of which passes around a pulley, W, at the forward end of an extension, X, on that end of the right-hand top piece O. This belt V, which I term the "feeding-belt," is provided with a number of projecting teeth, V′, as shown. It will be seen that as the machine is driven forward, with the tongues straddling the row of sugar-cane, the tops of the canes (the canes being held in a perfectly upright position by the guide-rods L′ L′) will be pressed by the projecting teeth V′ of the feeding-belt V in between the top-cutters Y Z on the forward ends of the top pieces, O O. At the moment the stalks are thus fed to the carrier-belts U^2 and V^2, hereinafter described, their lower end comes into contact with a circular stalk-cutter, C^2. This circular stalk-cutter consists of an upper stationary cutter-blade, D^3, which is formed with the diametrically-opposite upwardly-extending arms E^5, which are provided in their upper portions with the longitudinal slots E^6 E^6, through which project the stationary bolts E^7, secured in the inner sides of the tongues J, and having screwed upon their projecting ends nuts E^8, by means of which the slotted arms E^5 are rendered vertically adjustable.

C^2 indicates the revolving lower circular cutter, which is secured in operative position below the stationary cutter D^3 by a short stub-axle, H^5, which passes from the center of the lower blade up through a central opening in the upper blade, and upon the upper end of which is secured a miter-wheel, H^2, which meshes with a similar miter-wheel, I^2, on the inner end of a transverse shaft, J^2. On the outer end of this shaft is secured a pulley, K^2, around which passes a belt, L^2, from a pulley on the inner end of a transverse shaft, M^2, journaled to the intermediate portion of the left-hand tongue J. On the outer end of this shaft M^2 is a toothed wheel, N^2, which meshes with a gear-wheel, O^2, secured concentrically to the inner side of the left-hand drive-wheel of the forward axle, as shown.

The circular stalk-cutter is raised and lowered by the lever F^2, fulcrumed upon the left-hand tongue J in advance of the shaft M^2 and having the operating-handle F^5, and to the forward end of this lever is secured the upper end of the cord F^6, which extends down and is secured at its lower end to the upper blade, D^2. Now, it will be seen that by drawing back the handle of this lever F^2 the upper end of the cord F^6 will be pulled up and the circular cutter will be raised, and can thus be adjusted up or down. The stalks of the cane will thus be cut close to the ground (or at any desired height, as the cutter may be raised when desired) at the moment when the top of the cane is fed in between the top-cutters Y Z, journaled in brackets Z^2, secured to the forward ends of top pieces O. The teeth of these cutters will cut the tops from the cane and then convey the stalks to the carrier-belts, which I will now proceed to describe.

The top pieces O are cut away on their upper sides, at the inner edge thereof, for their entire length, thus forming the longitudinal vertical rib O^3 and the longitudinal inner horizontal ledge, P^2, the pieces O being connected and braced at their rear ends by the yoke R^3 and at their forward ends by the yoke R^4, which supports also the central portion of the arched spring-bar G. The horizontal ledge P^2 is more clearly shown in Figs. 6 and 10 of the drawings. At each end of the vertical rib O^2 of each top piece O is journaled a roller, T^2, the rear ones of which are mounted upon the upper ends of the vertical shafts B^2 and B^3 at the rear of the machine, while the forward rollers are journaled in brackets Z^2 Z^2, secured to the under forward sides of the said top pieces O, as shown in Fig. 9 of the drawings.

Around the rollers or pulleys of each top piece O passes one of the carrier-belts, U^2 V^2, each of which is formed of L-shaped links or sections W^2, which engage the rollers or sprocket at each end of each top piece O, and which are pivoted together at their ends, so as to form an endless chain or belt, as clearly shown in Figs. 7 and 10 of the drawings, every third section having secured upon it a projecting notched catch or tooth, W^5, and the teeth of the two carrier-belts intermeshing though not touching on the inner sides of the top pieces O O, and it will be seen that the canes, after having been topped by the top-cutters Y Z,

which are journaled above the intermeshing teeth, the upper ends, which project above the teeth, will be caught and carried back through the machine through the two stripper-frames A^3 A^4, and will thus be firmly held in position by the intermeshing teeth against the downward pull of the strippers. The rear pulleys, mounted, as described, upon the vertical shafts B^2 B^3, have passed around them the carrier-belts U^2 V^2. These vertical shafts are provided at their lower ends below the machine-frame with miter-wheels C^3, meshing with similar miter-wheels on a transverse shaft, D^3, which extends beneath and across the under sides of the rear portions of the side pieces A A, as shown in Figs. 2 and 3 of the drawings. This shaft is rotated by having a pinion on its right-hand end meshing with a gear-wheel, E^2, secured concentrically on the inner side of the right-hand rear drive-wheel, and by this arrangement the carrier-belts are driven.

A^3 A^4 indicate the stripper-frames, which consist each of a rectangular frame, across the inner side of which is secured transversely a series (about five) of stripper-bars, H^3, which are arranged preferably parallel to one another. These frames are movably mounted between the uprights M N on upper and lower crank-shafts, I^3 J^3, the ends of which are journaled in the uprights M and N. The projecting rear ends of these crank-shafts are provided with miter-wheels K^3, which mesh with similar miter-wheels, K^2, on the vertical shafts B^2 B^3; and it will be seen that as the said vertical shafts are rotated from the rear drive-wheel the crank-shafts are rotated and the stripper-frames will be alternately swung in as they move down and will be swung outwardly on their upward movement.

Immediately above the rear part of the circular cutter C^2, and extending back and upward, is arranged a conveyer-apron, L^3, which passes around transverse rollers M^3 N^3, the forward lower one, M^3, of which is journaled in the arms E^5 of the circular stalk-cutter, while the rear upper one, N^3, is journaled in brackets secured to the side pieces A A, as shown more clearly in Fig. 8. The roller M^3 is rotated by the usual belt-gearing, L^5, which receives motion from the short transverse shaft J^2, hereinbefore described, and immediately back of the rear end of this conveyer, on the side pieces A A, is arranged a platform, O^3, over which the lower ends of the canes pass immediately after leaving the upper end of the conveyer apron L^3.

It will be seen that while the strippers are in operation the canes will be held firmly in position by the intermeshing teeth of the carrier-belts, which teeth securely clamp the canes and prevent them from being drawn downward while they are being stripped, as hereinbefore mentioned.

It will be seen that by the time the canes have passed through between the stripper-frames all the blades will have been stripped from them, and when they pass out through the rear ends of the carrier-belts and are free of the same they will fall upon the lower portion of the loader, which loads the stripped cane upon a wagon. A platform, P^3, is arranged at that point on which the lower ends of the stripped canes rest when they are freed from the teeth of the carrier-belts, and at the moment the lower ends of the canes alight upon this platform their tops are struck by the arms of reels Q^3, which are secured, as shown, on the vertical shafts B^2 B^3, and are formed, preferably, each with four arms; and it will be seen that these reels will operate upon the canes as they rest upon the rear platform, P^3, and throw them straight back upon and across the lower part of the loader.

This loader consists of three or more parallel belts, S^3, upon and across which are secured transversely strips or bars T^3, which are formed with outwardly-projecting fingers or teeth U^3. These belts pass at their upper ends around rollers V^3 on a shaft, W^3, which, journaled in the upper ends of the posts X^3, which incline to the left-hand side of the machine and upwardly from the left-hand extension of the side piece A at the rear of the uprights M and N, while the lower ends of these belts pass around rollers Y^3 on a shaft, Z^3, which turns in bearings on the right-hand extension of the said side piece A, as shown, and the inner end of this shaft Z^3 is provided with a miter-wheel, Z^4, which meshes with a similar miter-wheel, B^4, on one end of a shaft, A^4, which is journaled in suitable bearings on the rearward extensions of the side pieces A. The opposite end of this shaft A^4 is provided with a miter-wheel, B^5, which is driven by the cog-wheel B^6, fixed to the left-hand side of the rear axis, as shown more clearly in Fig. 3, thus imparting motion to the loader. A pinion, B^5, on the other end of this shaft meshes with a gear-wheel, B^6, secured concentrically to the inner side of the left-hand rear drive-wheel of the machine. By this arrangement the loader-belts are revolved around their pulleys.

Curved guide-rods C^4 extend from the upper part of the uprights M N down to the rear ends of the pieces A, and thus assist in guiding the stripped canes in their fall onto the loader. The left-hand one of these guide-rods does not extend as far rearwardly as the other one. Thus it will be seen that it will not interfere with the movement of the loader, as shown in Figs. 1 and 3. It will now be observed that, in operation, as the machine is drawn forward the stalks of the cane will be cut, their tops cut off, then carried back between the stripper-frames, which rapidly and effectively strip the blades from the cane-stalk, and the stripped stalks are then laid upon the loader, which raises and deposits them in a wagon which is driven along that side of the machine beneath the elevated end of the loader. The upper ends of the stripper-frames are connected pivotally by connecting-rods D^4 D^4 to the ends of the cross beam or walking-beam E^4, which is centrally and pivotally secured upon the yoke

R^5, which is secured to the top pieces O, the stripper-frames thus balancing each other in operation.

From the foregoing description, taken in connection with the accompanying drawings, the construction, operation, and advantages of my invention will be readily understood. It will be seen that it is exceedingly effective and rapid in its operation and strong and durable in its construction.

I claim—

1. The combination, with the machine-frame, of the tongues secured to the forward portion thereof, the stalk-cutter consisting of the stationary circular cutter-plate formed with teeth at its forward edge and provided at its sides with upward-extending arms, the upper ends of which are formed with longitudinal slots, bolts, and nuts for securing the same to the tongues, and the circular revolving cutter-plate having knives on its periphery and means, substantially as set forth, for rotating it.

2. The combination, with the machine-frame, of the tongues secured to the forward portion thereof, the curved guide-rods secured to said tongues with one end and extending upward and rearward and secured at their other ends to the upper part of the machine-frame, a rotary stalk-cutter supported by arms depending from saidtongues, a feed-belt at the top of the machine, provided with projections or teeth, the top cutters immediately in the rear of this feed-belt, and the intermeshing carrier-belts running along the top of the machine in the rear of the top cutters, and gearing, substantially as described, for operating the several parts from the drive-wheels of the machine.

3. The combination, with the machine-frame having the parallel tongues, of the rotary stalk-cutter, the carrier-belts, and the stripper-frames mounted on the crank-shafts, and gearing, substantially as described, for operating the several parts from the machine drive-wheels.

4. The combination, with the machine-frame, of the stalk-cutter, the feed-belt, the carrier-belts, and the stripper-frames mounted on the crank-shafts and pivotally connected to the centrally-pivoted walking-beam, and gearing, substantially as described, for operating the several parts from the machine drive-wheels.

5. The combination, with the machine-frame, of the stripper-frames mounted on the crank-shafts and pivotally connected to the centrally-pivoted walking-beam on the machine-frame and provided with the transverse bars formed with fingers or teeth, and means, substantially as described, for rotating the said crank-shafts.

6. The combination, with the machine-frame having parallel tongues, of the curved guides, the rotary stalk-cutter, the elevator, the feed-belt, the top-cutters, and the strippers mounted on the crank-shafts, and gearing, substantially as described, for operating the several parts from the machine drive-wheels.

7. The combination, with the machine-frame, of the rotary stalk-cutter, the elevator, the feed-belt, the top cutters, the carrier-belts, the strippers mounted on crank-shafts, the reels, the rear platform, and the loader, and gearing, substantially as set forth, for operating the several parts from the machine drive-wheels.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

HENRY FATIC.

Witnesses:
JENNIE FATIC,
JOHN FATIC.