2 Sheets--Sheet 1.

F. L. CERVANTES.

Cane-Harvesters.

No. 147,821. Patented Feb. 24, 1874.

Fig. 1.

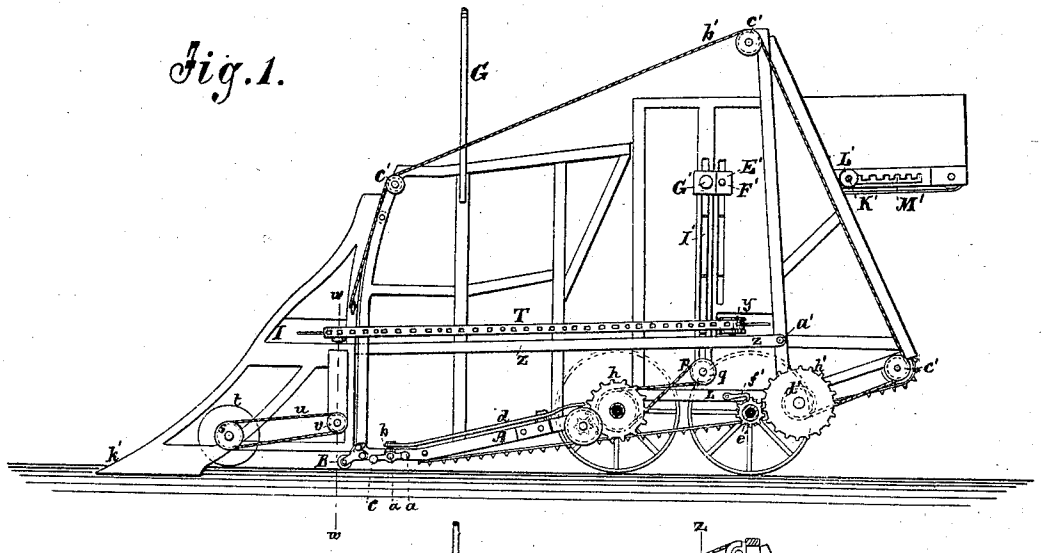


Fig. 2.

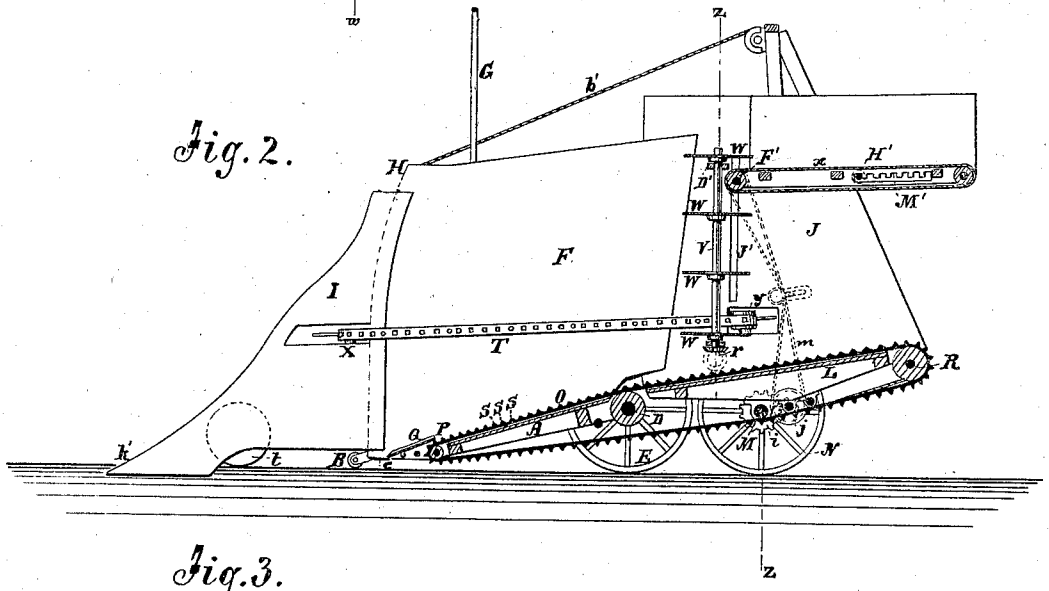
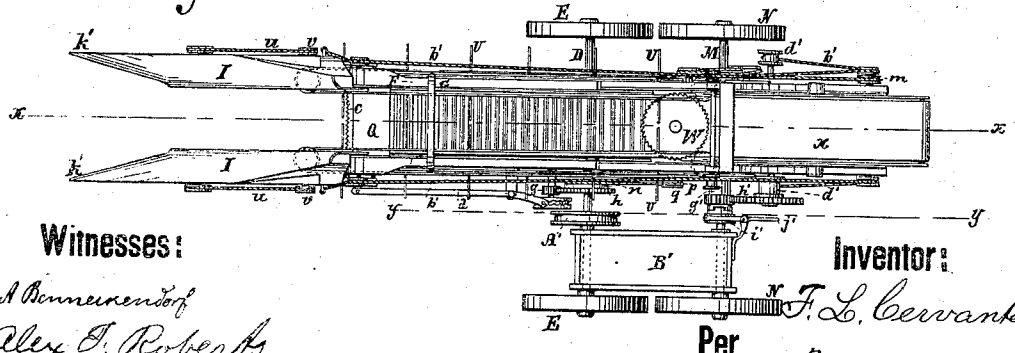


Fig. 3.



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2 Sheets--Sheet 2.

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Fig. 4.

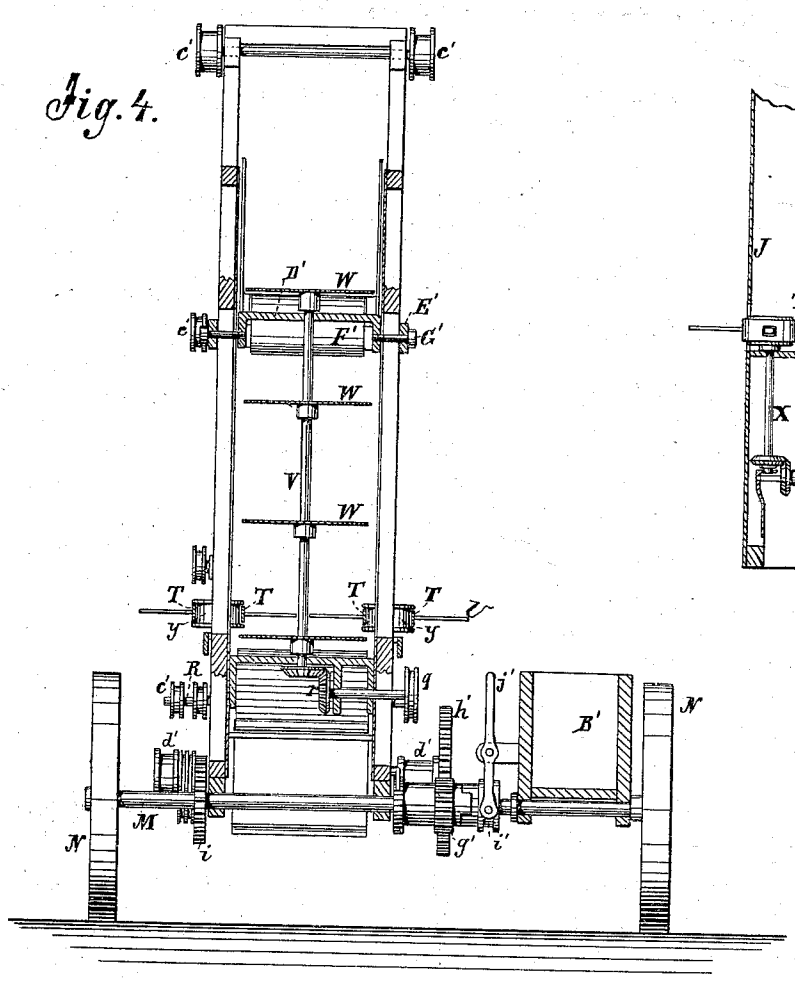
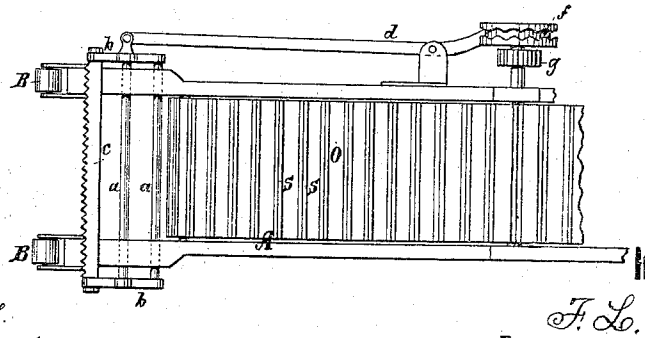


Fig. 6.

Fig. 5.



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UNITED STATES PATENT OFFICE.

FELIX L. CERVANTES, OF CARDENAS, CUBA.

IMPROVEMENT IN CANE-HARVESTERS.

Specification forming part of Letters Patent No. **147,821**, dated February 24, 1874; application filed August 23, 1873.

To all whom it may concern:

Be it known that I, FELIX L. CERVANTES, of Cardenas, in Cuba, have invented a new and Improved Sugar-Cane-Harvesting Machine, of which the following is a specification:

My invention consists of a harvester-cutter adapted for cutting a single row of cane, with an endless bottom carrier and two or more side carriers between two high sides of a supporting-case, which hold the cane vertically and carry it against a series of horizontal saws on a vertical shaft, which cut the cane into short sections for convenience in handling, also cut off the tops, and deliver them into a receptacle separate from the cane for fodder, while the cane is delivered into a wagon to be conveyed to the sugar-mill, all as hereinafter described.

Figure 1 is mainly a side elevation, and partly a sectional elevation, of a machine constructed according to my improvements, the section being taken on line Y Y of Fig. 3. Fig. 2 is a longitudinal sectional elevation taken on the line X X of Fig. 3. Fig. 3 is a plan view. Fig. 4 is a cross-section taken on the line Z Z of Fig. 2. Fig. 5 is a view of the bottom of the front portion of the machine, except the points which run along the sides of the row in advance of the cutter to gather up the fallen and leaning stalks, and Fig. 6 is a section of Fig. 1 on the line *w w*.

Similar letters of reference indicate corresponding parts.

A is a frame, corresponding in some respects with the apron of a grain-harvester, mounted on two small wheels, B, and carrying a reciprotating saw, C, at the front end. At the rear end it is mounted on the axle D of a pair of truck-wheels, E, and it has two side boards, F, rising up from its edges about two-thirds, more or less, of the height of the cane. Said sides are connected together at the top by a yoke, G, for supporting each other. At the front end they are curved a little, as shown by the lines H, and form rests for the reversely-curved sloping and pointed sides I, which project ahead of the cutter on each side to gather up the leaning and fallen stalks. At the rear ends of the sides F they overlap other still higher sides, J, of another bottom frame, L, mounted near its middle on the axle M of truck-wheels N, and at the front end jointed to the axle D. An endless carrier, O, runs over these two bottom frames A and L from the roller P, just behind the narrow plate Q at the saw, to the roller R at the rear end. Said carrier is provided with triangular-shaped cross-pieces, S, to keep the ends of the cut stalks of cane from sliding forward and backward. Above this bottom carrier are other endless carriers, T, in the sides of the case, with long fingers U, which meet, or nearly so, at the middle of the space and hold the cut stalks erect while carrying them along the case. These carriers extend from the sides I to about the middle of the sides J, terminating a little beyond the vertical shaft V, having a series of horizontal circular saws, W, against which the stalks are carried and cut into short pieces of suitable length for convenience in handling them. The tops of the cane are delivered onto the upper endless carrier X to be delivered into a receptacle separate from the pieces of the stalks, which are delivered over roller R into a wagon following the machine for receiving them. The saw C is attached to a frame consisting of two rods, *a*, and head-pieces, *b*, the rods being fitted in bearings in the frame A, so as to slide forward and back, and said frame is operated by the rock-lever *d* and cam-wheel *f*, the cam being geared with the axle D by pinion *g* and wheel *h*. The endless carriers O and X are driven from the shaft M of the truck by the wheel *i*, pinion *j*, pulleys *l*, and belts *m*. The saw-shaft V is driven by the large pulley *n* on shaft D, belt *p*, pulley *q*, and the shaft of the latter, which gears with the lower end of said shaft by wheels *r*. The endless carriers T are driven from the small traction-wheels *t*, on which the front portions of the stalk-gathering points I rest, by pulley *s*, belts *u*, and shafts *v*, the latter gearing with the vertical rollers X, around which the carriers work at the front of the machine.

The other rollers, *y*, of these carriers will, in practice, be mounted on the radius-bars *z*, by which the stalk-gatherers I are pivoted to the rear sides J, at *a'*, so that they can be raised and held up above the ground when the machine is moving from field to field, for which the ropes *b'*, pulleys *c'*, winding-drums *d'*, holding-ratchet *e'*, and pawl *f'*, are provided, the said ratchet being on a loose hub, *g'*, on the

axle M, gearing with the wheel h' on the shaft carrying the drums, and having a clutch, i, and clutch-lever j', for connecting it to the axle, to be turned by it whenever the points are to be raised. These points k' of the gatherers I are constructed like plow-points, and shod with iron or steel so as to run in the ground low enough to insure running under all the stalks; also to make smooth level tracks for the wheels t to run on, so that the points and the cutter will run smooth and free.

The rollers B are so attached to the front of the frame A that the cutter C can be adjusted higher or lower, as may be required.

I propose to draw this machine forward and backward across the field by wire ropes worked by stationary engines or horse-power fixed at the sides of the field, the ropes working over the grooved pulley A′, on the front axle D; and in order to avoid the side draft on the machine, which would occur in consequence of the arrangement of this wheel at one side of the machine, which must be to avoid interference with the stalks of cane in the middle of the machine, I extend the axles D and M far enough beyond the wheel A′ to provide a box, B′, for carrying ballast to neutralize the side draft.

As the cane varies considerably, in different localities and seasons, in height, I make the upper saw W and the carrier which delivers from it adjustable vertically to adapt them to the cane, so as to cut off the tops rightly for fodder.

For adjusting the saw, I make it so as to slide freely on the shaft, and have it rest on the cross-bar D′, in which the upper bearing of the shaft is fixed, and said bar I connect with the supports E′ in which the roller F′ of the carrier X is mounted, and these supports I make vertically adjustable. In this example they are clamped fast to the side J by the bolts G′, which pass through them, also through the slot I′, and screw into the cross-bar D′. The slots I′ allow bolts G′ to shift up and down, and other slots, J′, allow the shaft of roller E′ to shift in the same manner. The shaft of the roller E′ is the support for the carrier X, at the end next to the saws; the other support consists of the rod K′ with rollers L′, which rest on the inclined ends of the sides J, and is confined in the notches M′ in the sides of the carrier-frame, so as to be shifted readily from one to another as the carrier is shifted up and down.

By the construction of the sides of the case in two parts, also the bottom, and jointing them on the axle D, the machine works easier and with less cramping and straining than it would if made in one; but they may be so made, if preferred.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of a cutter, C, endless carrier O, and endless carriers T, in a machine having a bottom frame, A, and sides F, mounted on wheels, substantially in the manner herein described.

2. The overlapping truck sides and the bottom constructed in two parts, A F and L J, jointed together on the axle D, and the front part mounted on rollers B, and the hind part on wheels N, substantially as specified.

3. The said gathering-points suspended on the curved front ends of sides F, by the cords b' and radius-bars z, so as to be raised and lowered, substantially as specified.

4. The traction-wheels t, arranged to run in the furrows formed by the points k' and geared with the side carriers T, substantially as specified.

5. The arrangement of the cross-bar D′, upper saw W, bearing E′, roller F′, and bolts G′, together with the slotted sides J, substantially as specified.

6. The arrangement of the notched frame M′ of the carrier-rod K′, and roller L′ with the inclined ends of the case sides J, substantially as specified.

7. The arrangement and combination of points I k', cords b', pulleys c', drums d', wheel h', ratchet-pinion g', and clutch i', with the axle M, for raising the gathering-points, substantially as specified.

FELIX L. CERVANTES.

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