Oct. 9, 1923. 1,470,067

J. J. M. ELIAS

MACHINE FOR PLANTING CUTTINGS

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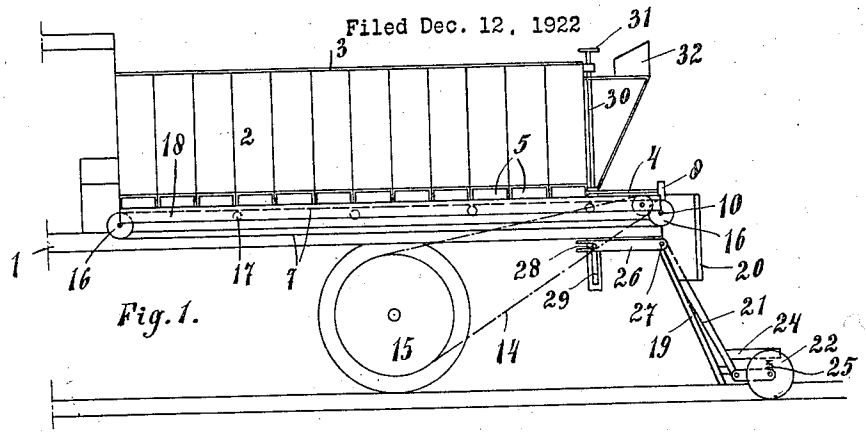


Fig. 1.

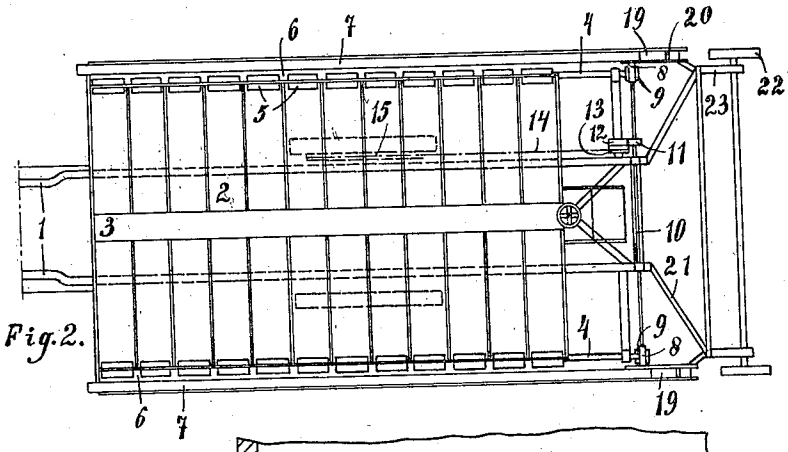


Fig. 2.

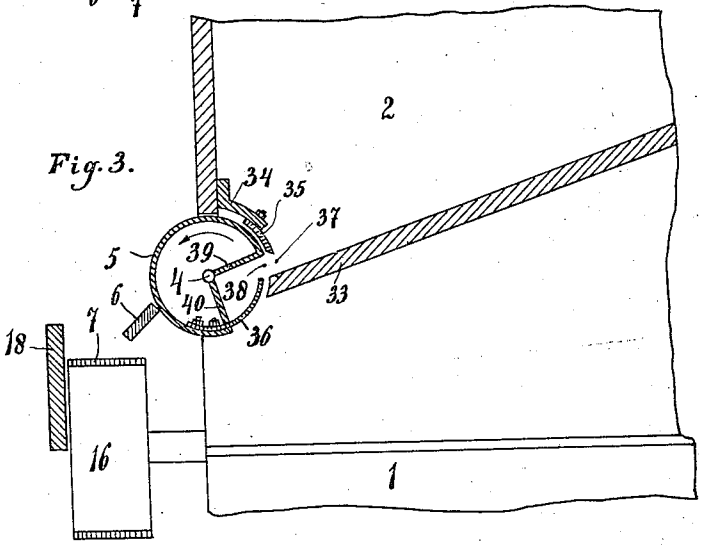


Fig. 3.

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UNITED STATES PATENT OFFICE.

JOAN J. M. ELIAS, OF BANJOEMAS, JAVA.

MACHINE FOR PLANTING CUTTINGS.

Application filed December 12, 1922. Serial No. 606,468.

To all whom it may concern:

Be it known that I, JOAN JACOB MARI ELIAS, a citizen of the Dutch East Indies, and a resident of the city of Banjoemas, Isle of Java, have invented a Machine for Planting Cuttings, of which the following is a full, clear, and exact specification.

My invention relates more particularly to a machine for planting sugar-cane-cuttings in a field which has been provided with irrigation- and planting-furrows ready to receive the cane-cuttings according to a prior application for patent of mine.

The present invention relates to the second step of a sugar-cane culture carried out in an entirely mechanical way.

Reference is to be had to the accompanying drawings forming a part of this specification in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 a side elevation,
Figure 2 a plan view and
Figure 3 a detail of the planting-machine.

In the drawings 1 designates a motor-carriage-frame, which carriage can be moved on by the motor which drives the hind-wheels in any known manner. The rims of the hind-wheels (the front-wheels are not shown) are provided with angle-iron strips (not shown) to prevent slipping.

On the carriage-frame is placed a container 2 of sheet-iron. This container is divided into twenty-four compartments by two longitudinal and twelve cross partition-walls. Each compartment is about 39 c. m. (± 15 à 15, 5 inch) long, being about the greatest length of a sugar-cane-cutting or sucker. In order to stiffen and to strengthen the whole construction of the container the edges of the walls and partition walls are provided with angle-iron strips.

The container rests on seven cross-bars of which the ends are connected to two longitudinal bars.

In the middle of the container is a footboard 3 in order to enable the examination and the survey of the position of the cuttings the axes of which must be arranged parallel with the longitudinal direction of the carriage.

The outer-bottom-corners of the partitions are provided with boxes through which pass shafts 4. On each of these two shafts 4 are mounted twelve drums 5 one drum for each compartment. Each drum projects for a certain part through the outer wall of the container for which purpose this wall is provided with suitable recesses. The drums which only extend partly into the inner of each compartment are not complete hollow cylinders, but one quarter of each drum is cut away and this part is replaced by two radial plates 39 and 40 (Fig. 3).

The bottom 33 of each compartment might be bent or inclined in such a way that the lowest point of the bottom is situated in the neighbourhood of the drum extending into the inner part of the compartment.

When by rotating the shafts 4 the open sector of a drum formed by the plates 39 and 40 comes opposite the innerside of the compartment a sugar-cane cutting will automatically slip into the drum. In order to prevent more than one cutting from slipping simultaneously, two bent plates 35 and 36 are provided. The plate 35, which is adjustably mounted in a support 34, fixed against the outer wall of the compartment, is provided with an outlet-opening 37 above the bottom of the compartment of such a width that a sugar-cane cutting can freely pass through it. The other plate 36, which is adjustably mounted in the drum is provided with a corresponding inlet opening 38 to the drum-sector.

The rim of the plate 36 of the drum, which is rotated in the direction as indicated by the arrow, might be bevelled at the front edge as indicated, in order that the first entering cane-cutting is immediately separated from the succeeding one and the latter being stopped.

As there are several kinds of sugar-cane cuttings the plates 35 and 36 must be adjustable in order to regulate the position of the plates in correspondence with the diameter of the cane-cutting of a certain kind.

The drum-shafts 4 are driven in the following way:

To one end of each shaft 4 is fixed a worm-wheel 8, engaged by worms 9 of a horizontal shaft 10. This shaft is driven by means of a driving-gear comprising two toothed wheels 11 and 12, two chain-wheels 13 and 15 and a chain 14, of which wheels the chain-wheel 15 is fixed on the hind-axle of the carriage and can be coupled to one of the hind-wheels of the carriage by means of a friction-coupling which can be operated from the seat of the operator at the back-side of the vehicle.

When the drums 5 are rotating, the picked up cane-cuttings will at a certain moment slide along the plates 39 and slipping down along an inclined guide-plate 6 will fall in series of twelve upon an endless transport belt 7, running along the outer-side of each series of drums. Both belts 7 are driven by rolls 16 placed on the ends of the shaft 10.

The proportion of the diameter of the driving-carriage wheels to the diameter of the rolls 16 of the belts 7 is eight to one. The pitch of the worms 9 and the worm-wheels 8 is so chosen that when the shaft 10 makes eight revolutions the shafts 4 make one revolution, so that when the carriage has advanced the length of the circumference of one hind-wheel, the belts 7 will each have received a new series of twelve cuttings.

The active length of the belts 7 is fourteen cuttings so that when twelve cuttings have been removed from each belt, on each belt two cuttings will remain. The transport-belts run over guide-rolls 17, which are placed on spindles fixed to the longitudinal side-bars of the container 2.

In order to prevent the cane-cuttings from falling off the belts 7, protecting-boards 18 are arranged along the outside of each belt and fixed to the free extremities of the spindles of the guide-rolls 17.

At one end of each belt the cuttings fall into an inclined runway 19, the cuttings being prevented from tumbling at the sides by a screen 20. The upper ends of the runways 19 are pivoted to the carriage-frame, whilst the lower ends are connected to a yoke 21. From the runways 19 the cane-cuttings are supplied to the planting ridges.

If the cuttings should be pressed down into the ground a heavy wooden wheel 22 provided with a massive india-rubber tire in order to protect the cuttings against injury, runs in alignment with each runway 19. The common shaft of these two wheels 22 bears in arms 23 which are hinged to the yoke 21. This yoke which is pivotally mounted in two blocks 27 fastened against the underside of the carriage-frame is provided with two fixed cross-arms 24 (Fig. 1) extending parallel above the arms 23, the free ends of these arms are connected by spiral-springs 25. In this way the wheels 22 are mounted yieldingly.

As the wheels 22 must be capable of being raised from the ground the yoke 21 is provided with two forward extending arms 26 ending in forks supporting two pins 28 sideways extending from a nut, the latter being guided in a case 29 and placed on a screw-spindle 30 provided at the top with a hand-wheel 31. By rotating this hand-wheel the wheels 22 and the lower-ends of the runways 19 can be raised.

It is evident that the cane-cuttings must be carefully supplied into the different compartments of the container as all cuttings should lie parallel in the longitudinal direction of the carriage.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

A machine for planting two rows of cuttings, simultaneously more particularly for planting sugar-cane-cuttings or suckers comprising a container mounted upon a motor-carriage-frame, divided by two longitudinal- and a great number of cross- partition-walls into a number of compartments, the bottom of each compartment being inclined towards the outer-bottom-corner, in which corner the outer-wall of the container is partly broken away in order to let partly pass a drum mounted on a rotary shaft, which extends through all the compartments situated at the same side of the container, each drum being provided with a chamber into which the cuttings piled up in the compartment can automatically slip over, which compartment and drum are provided with means to prevent that more than one cutting will slip into the drum, which cuttings are delivered in series by the rotary drums to endless travelling belts, running at the outer side along each series of drums, by which belts the cuttings are successively dropped into the planting-ridges.

In testimony whereof, I have signed my name to this specification.

J. J. M. ELIAS.