(No Model.) 4 Sheets—Sheet 1.

O. CARR.

APPARATUS FOR CHARGING SUGAR CANE CARRIERS.

No. 517,730. Patented Apr. 3, 1894.

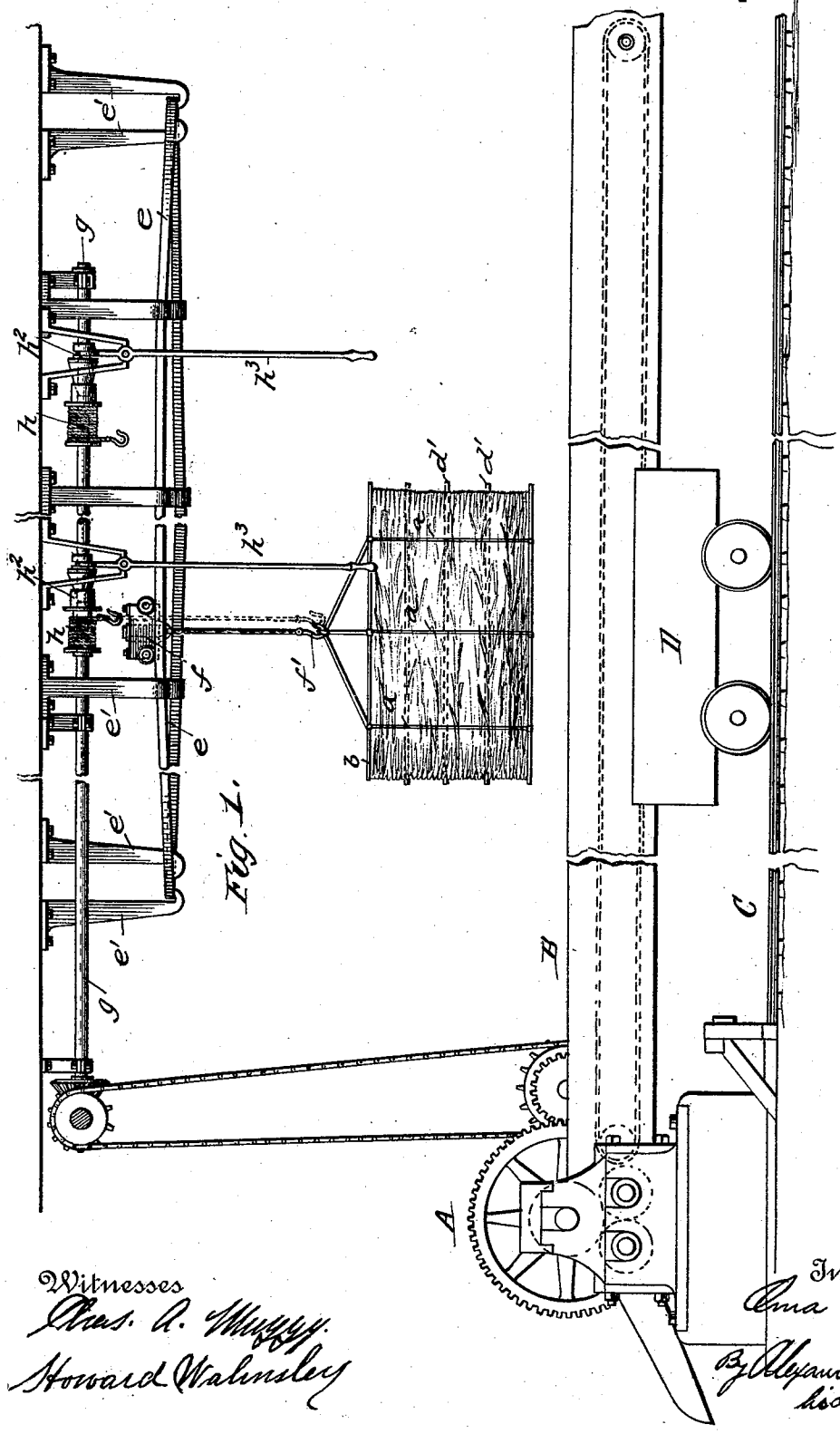

Fig. 1.

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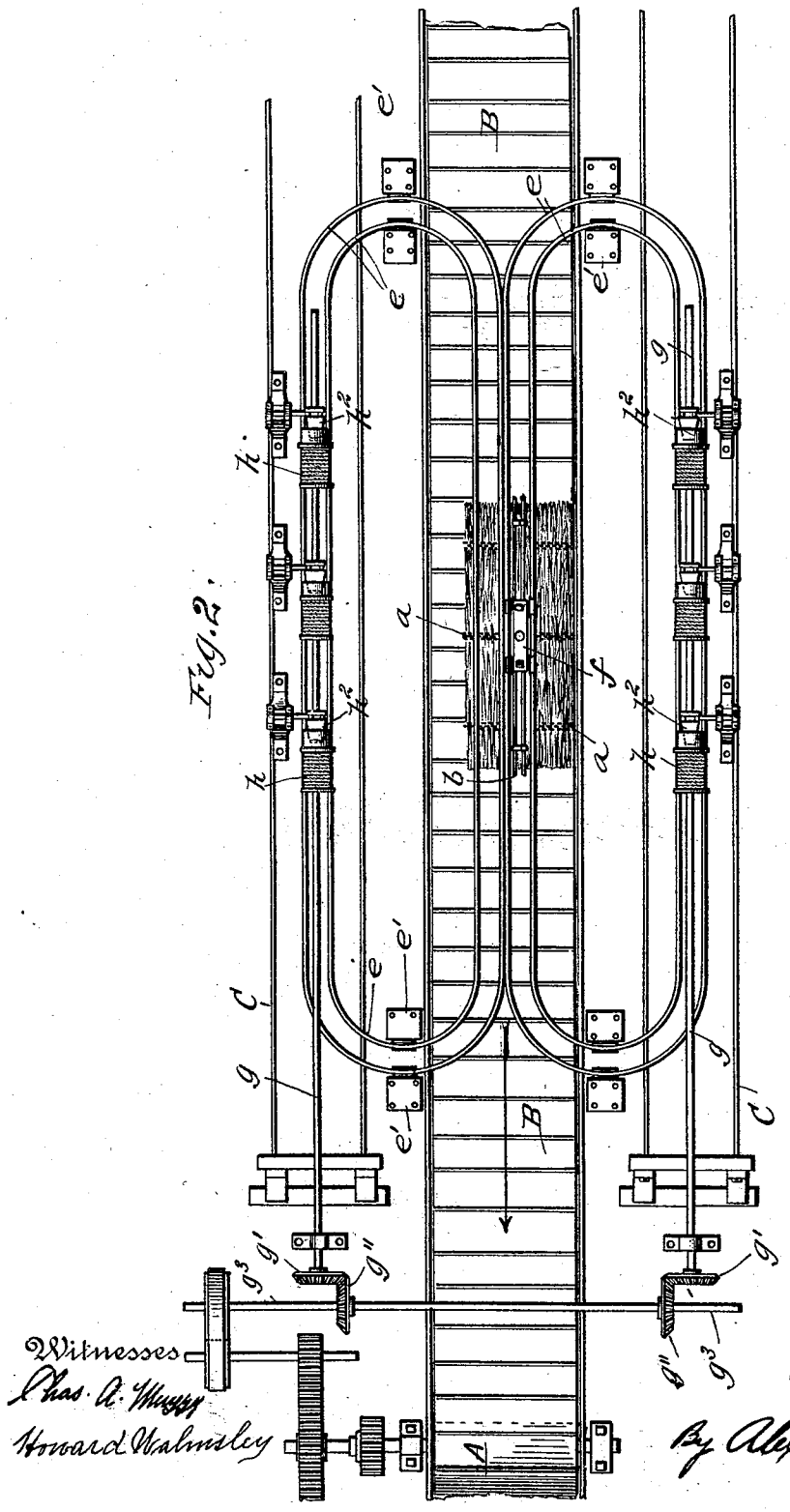
APPARATUS FOR CHARGING SUGAR CANE CARRIERS.

No. 517,730. Patented Apr. 3, 1894.



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O. CARR.

APPARATUS FOR CHARGING SUGAR CANE CARRIERS.

No. 517,730. Patented Apr. 3, 1894.

Fig. 3.

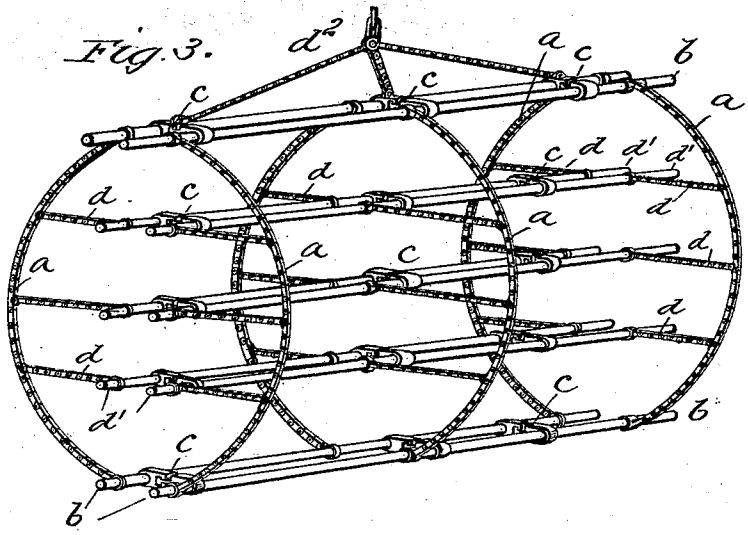


Fig. 4.

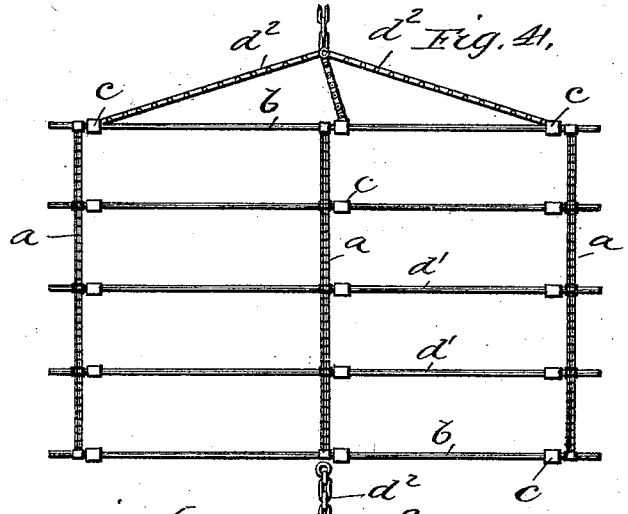
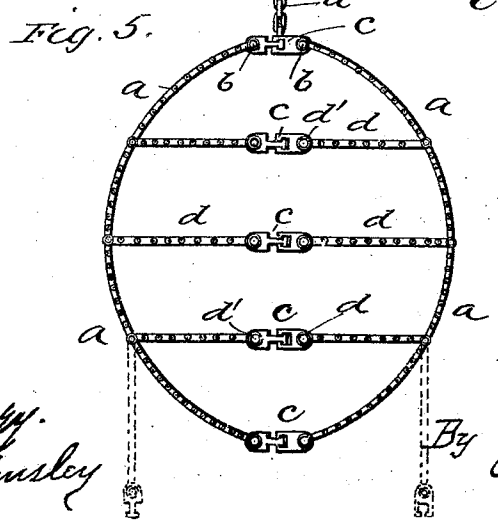


Fig. 5.



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(No Model.) 4 Sheets—Sheet 4.

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APPARATUS FOR CHARGING SUGAR CANE CARRIERS.

No. 517,730. Patented Apr. 3, 1894.

Fig. 6.

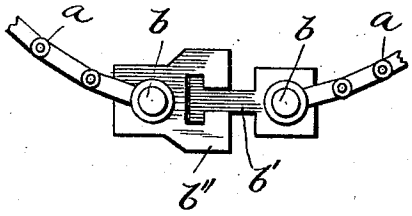


Fig. 7.

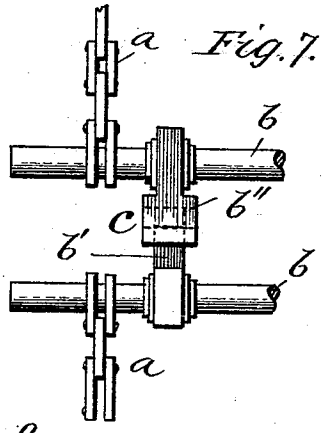


Fig. 8.

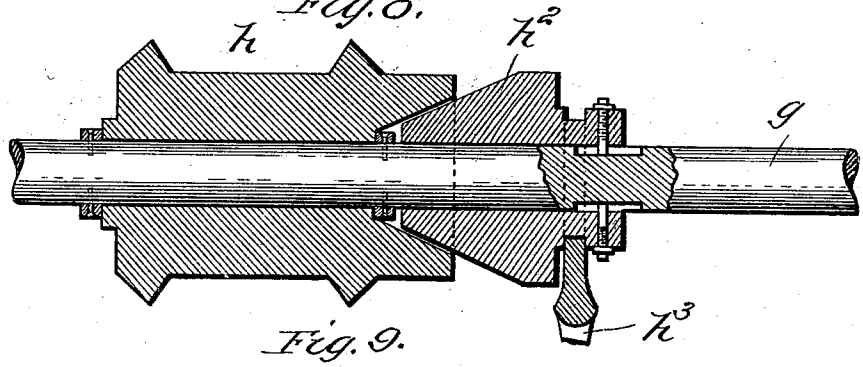


Fig. 9.

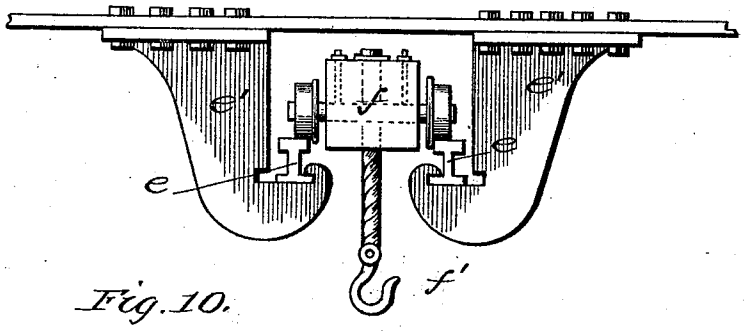
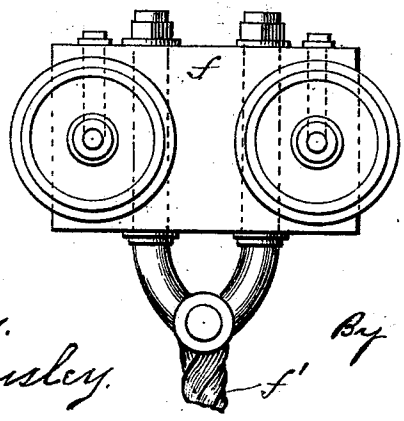


Fig. 10.



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UNITED STATES PATENT OFFICE.

OMA CARR, OF WASHINGTON, DISTRICT OF COLUMBIA.

APPARATUS FOR CHARGING SUGAR-CANE CARRIERS.

SPECIFICATION forming part of Letters Patent No. 517,730, dated April 3, 1894.

Application filed September 26, 1893. Serial No. 486,554. (No model.)

To all whom it may concern:

Be it known that I, OMA CARR, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Apparatus for Charging Sugar-Cane Carriers, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved apparatus; Fig. 2 a plan thereof, the supports of the overhead tracks and shafts being removed to better show the parts; Fig. 3 a perspective view of the improved bundle carrier; Figs. 4 and 5 respectively, side and end elevations thereof; Figs. 6 and 7 detail views of the detachable connection between the rods of the bundle-carrier; Fig. 8 a longitudinal section of one of the friction-drums, and Figs. 9 and 10, respectively, end and side elevations of one of the traveling blocks which convey the bundle-carriers.

This invention has reference to apparatus for the handling of sugar-cane and properly depositing and distributing it upon the main cane-carrier leading to the first mill. It is desirable to properly charge the cane-carrier in order, first, that the stress upon the carrier be uniform; secondly, that the mill feed be uniform; thirdly, that the shock and irregular mill and engine strains be decreased; fourthly, that the power and fuel be economized; fifthly, that the maximum extraction and yield be attained; sixthly, that the supply of juice be uniform; and, seventhly, that the regularity of the minimum steam consumption be maintained. All these results may be obtained by properly charging the carrier, and it is therefore the object of this invention to accomplish said results, the mechanism employed being comparatively simple, as fully described hereinafter.

It is also the design of the invention to greatly lessen the labor usually required in sugar mills, and thereby materially cheapen the product, as is hereinafter set forth.

The invention, as will be observed, is not confined to the specific construction and arrangement of apparatus herein shown and described, as the same may be greatly varied without departing from the spirit of the invention in the least.

In the drawings, A designates the first mill, B the main cane-carrier leading to the mill, C parallel tracks laid on each side of the carrier, and D one of the cars traveling on said tracks and suitably constructed to carry the bundles of cane.

All the foregoing parts are constructed in the ordinary or any improved manner.

The bundle-carrier, as shown on Sheet 3, is so constructed, of a series of chains and rods, as to form a series of (preferably four) compartments or tiers, each of which is adapted to hold a definite quantity of cane—in practice a quarter of a ton. The outside or encircling chains *a* are secured permanently at their upper and lower ends to horizontal bars *b*, three of these chains being employed to embrace each side of the bundle, and the upper pair as well as the lower pair of bars are detachably connected together by suitable fastening-devices *c*. Each of these fastening devices is preferably constructed as shown in Figs. 6 and 7, that is to say, one of the bars is provided with a horizontal projecting headed lug *b'*, which is adapted to enter a similarly shaped horizontal groove in a projection *b''* carried by the adjacent rod; by this construction, the bars of each pair, are readily detached by simply moving one of them endwise or by moving both bars in opposite directions. To form the compartments a series of short chains *d* are permanently connected to the outside chains, at suitable points, and extended inwardly and connected to rods *d'*, which latter are arranged in pairs and detachably connected in the same manner as the upper and lower pairs. A suitable lifting chain d^2 is connected to the upper bars, whereby the bundle may be handled.

The method of placing the cane in the compartments of the frame or carrier is preferably as follows:—The locks connecting all the bars except the lower pair are loosened and the chains and bars spread upon one of the cars or carts D, the right-hand encircling chains and their divisional chains and bars falling on one side of the car and the left-hand encircling chain and its connected parts falling on the other side of the car; the cane is then laid lengthwise along the center of the car, on the connected pair of bars, until enough has accumulated to fill the lower compart-

ment, whereupon the bars of the second pair are brought over and connected together; the second compartment is filled in the same way, and so on until all the compartments are filled and locked. The car, laden with the bundle, is then moved alongside the cane-carrier and the bundle is lifted from the car and suspended over the carrier, (while its compartments are being successively discharged) by mechanism which will now be fully described.

Directly over the cane-carrier are two endless overhead tracks *e*, which are suspended from the ceiling or rafters of the building by suitable hangers *e'* and are each arranged in an oval or elliptical shape. The inner or adjacent portions of these tracks are preferably arranged parallel and as nearly over the middle of the cane-carrier as is possible, and the outer portions are directly over the tracks on which the cars run. Mounted on the endless tracks are wheeled-blocks or carriages *f*, from which depend suitable strong hooks *f'* adapted to engage the lifting-ring of the bundle-carrier. Journaled in suitable bearings over each of the outside portions of the tracks is a long shaft *g*, provided with a bevel gear *g'* at one end, with which meshes a gear *g''* on a transverse shaft g^3, this latter shaft being operated by suitable mechanism connecting it to the engine, whereby said shafts *g* are continuously rotated. At suitable points along shafts *g* are loosely mounted drums *h*, around which are wound ropes or chains *h'* carrying hooks at their lower ends, the movement of each of said drums being controlled by a suitable friction clutch h^2 slidably mounted on the shaft alongside the drum and adapted to be operated in the usual manner from below by a hand-lever h^3. The form of clutch preferred is a cone-shaped one, adapted to enter a similar recess in the adjacent end of the drum, as shown in Fig. 8.

The operation of lifting the bundle out of the car and distributing the cane on the carrier is as follows:—The hook of one of the drum-chains is first pulled down and engaged in the lifting-ring of the bundle-frame, then by operating the adjacent friction clutch the drum will wind up its chain and lift the bundle from the car. As the bundle slowly rises, an attendant quickly engages the hook of one of the wheeled-carriages in the lifting-ring of the bundle-carrier and disengages the hook of the drum-chain; the bundle being now suspended from the carriage, it may be readily pushed around to a suitable point over the cane-carrier, as shown in Fig. 2. To facilitate the movement of the bundles from over the cars to a point over the carrier, the overhead tracks are inclined downwardly toward their inner portions, as shown in Fig. 1; by this arrangement the bundles will run by gravity around to the proper point over the carrier, which is advantageous on account of the great weight of the bundles. In discharging the cane on the carrier, the compartments are successively opened by simply striking sharply on the end of one of each pair of rods; the lowest compartment is first emptied, then the second, and so on until all the compartments are discharged. As the bars are detached the cane drops instantly upon the carrier and the loose chains swing down to opposite sides of the bundle, out of the way, as shown in dotted lines in Fig. 5. In this way the cane may be dropped on the conveyer and distributed properly and evenly along the same, with a minimum of labor.

By employing the double tracks and duplicating the drum arrangements and using a number of cars and bundle-frames, it will be seen that the process of charging the conveyer may be kept up continuously and uniformly.

Having thus fully described my invention, what I claim is—

1. A cane-bundle carrier having a series of compartments adapted to be successively opened to drop the cane bundle in installments, substantially as described.

2. The combination of a cane-carrier a bundle-carrier consisting of a series of compartments adapted to drop the cane in installments, and mechanism for suspending the bundle over the cane-carrier, substantially as described.

3. In combination with a cane-carrier, a bundle-carrier consisting of a series of superimposed compartments adapted to be emptied successively upon the cane-carrier, substantially as described.

4. A compartment bundle-carrier consisting of a series of encircling chains or bands detachably connected together and a series of detachable divisional chains or bands forming the compartments, substantially as described.

5. A compartment cane-bundle carrier consisting of encircling chains detachably connected together at their upper and lower ends, and a series of divisional chains connecting the encircling-chains at intervals, said divisional chains being formed in detachable sections, substantially as described.

6. A cane-bundle carrier consisting of two sets of encircling chains, each set having their upper and lower ends connected to rods, means for detachably connecting the adjacent rods, and a series of detachable divisional chains forming the compartments, substantially as described.

7. A cane-bundle carrier consisting of two sets of encircling chains, each set having their upper and lower ends connected to rods, means for detachably connecting the adjacent rods, substantially as described.

8. A cane-bundle carrier consisting of two sets of encircling chains, each set having their upper and lower ends connected to rods, means for detachably connecting the adjacent rods, and a series of detachable divisional chains forming the compartments, said divisional chains being formed in sections whose inner ends are connected to rods, and means

for also detachably connecting these adjacent rods, substantially as described.

9. In a cane-bundle carrier, the combination of the encircling chains connected at their ends to horizontal rods and the divisional chains connected at their free ends to rods, means for detachably connecting each pair of rods, said means consisting essentially of headed lugs projecting from one rod and recessed pieces projecting from the adjacent rod, substantially as described.

10. The combination of a conveyer, an endless overhead track having a portion of its length arranged directly over said conveyer and another portion to one side the same, blocks traveling on said track and carrying a bundle-engaging hook, bundle carriers adapted to be suspended from said hook, an overhead shaft and means for continuously revolving it, loose drums at intervals on said shaft and friction clutches controlling the drums, and ropes depending from the drums, substantially as described.

11. The combination of a conveyer, a pair of overhead endless tracks, said tracks having their inner portions parallel and directly over the conveyer and their outer portions alongside the conveyer, carriages or blocks on said overhead tracks, bundle-carriers adapted to be suspended from the carriages, overhead shafts on opposite sides of the conveyer, lifting drums on these shafts, and means for controlling the movements of the lifting-drums, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

OMA CARR.

Witnesses:
CHESTER J. LONG,
H. G. GOULD.