July 24, 1956 D. E. PRENVEILLE 2,755,929

CARROT-LENGTH GRADER

Filed Feb. 8, 1955

2 Sheets-Sheet 1

Fig 1

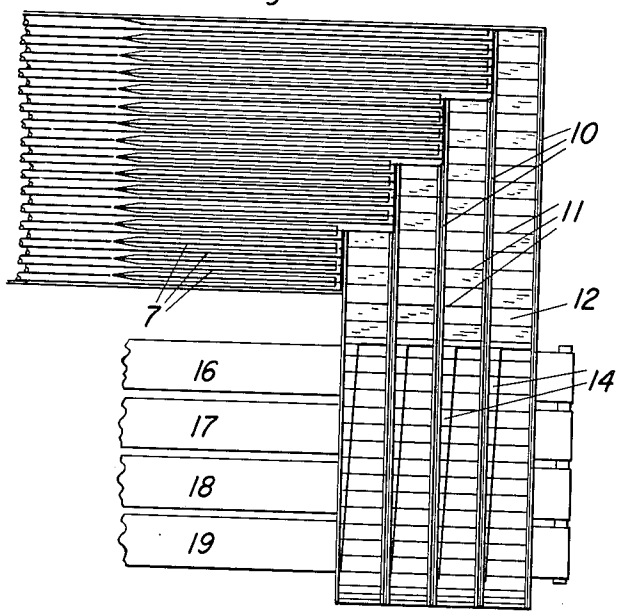
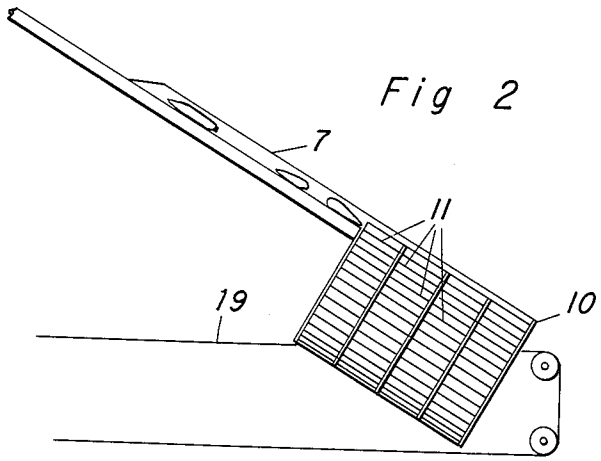



Fig 2



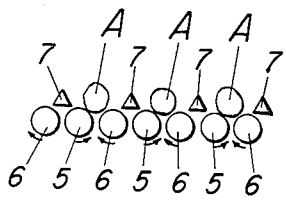




Fig 3

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Fig 4

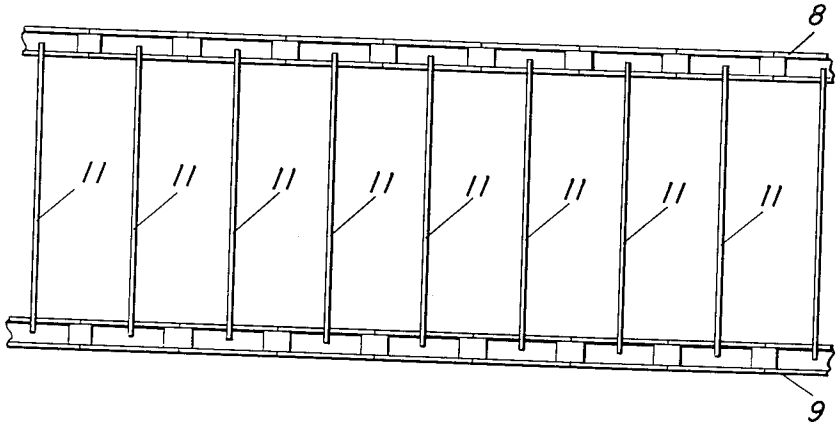



Fig 5

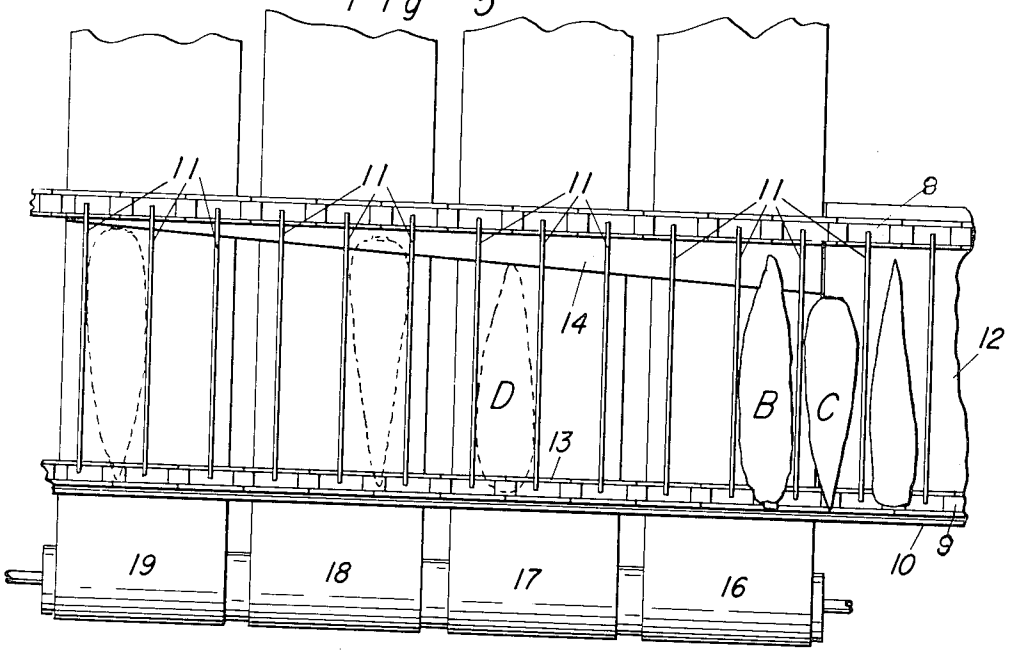
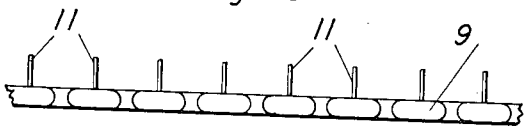



Fig 6




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2,755,929

# CARROT-LENGTH GRADER

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Application February 8, 1955, Serial No. 486,880

1 Claim. (Cl. 209—99)

This invention relates to improvements in devices for grading carrots and the like as to length.

The principal object of this invention is to provide automatic means for sorting vegetables such as carrots in a continuous manner so that they will be graded so as to enable the packaging of the carrots, all of the carrots in each package being of substantially the same length.

A further object is to produce a device of this character wherein the carrots may be delivered to the grader which will handle each carrot individually, irrespective of whether the carrot is presented to the machine root end first or stem end first.

A further object is to produce a machine of this character which is economical to manufacture and easy to use, as well as practical to install.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numbers are employed to designate like parts throughout the same.

Fig. 1 is a fragmentary top plan view showing the arrangement of delivery rollers, grader and conveyor belts;

Fig. 2 is a fragmentary end elevation of Fig. 1 looking from the bottom of the drawing;

Fig. 3 is a diagrammatic view showing the manner in which the carrots move down the straightening or delivery rollers;

Fig. 4 is a fragmentary top plan view of one of the drayper belts;

Fig. 5 is a fragmentary detail view of the drayper belt passing over the grader and conveyor belts; and

Fig. 6 is a front elevation of the drayper belt shown in Fig. 4 and on a reduced scale.

Many vegetables such as carrots and the like are now sold in cellophane bags and in order to present a more pleasing appearance to the purchaser, it is necessary to grade the carrots so that all of the carrots in each bag will be of substantially the same length.

Heretofore the carrots have been graded by grading as to diameter of the carrots, with the result being that some of the carrots, while fat, would be short, while others would be long.

Consequently, the appearance of such a group of carrots was not pleasing. It was found that in grading as to length a much more marketable product is presented to the customer.

Applicant has therefore devised a means whereby the carrots (and when the term "carrots" is used, it is to be understood that any other produce which can be graded in the same manner could be used) will be automatically presented to a continuously moving conveyor, sorted as to length, and deposited on individual conveyors, all of the carrots on each of said conveyors being substantially of the same length.

In the accompanying drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention, in Fig. 3 I have shown a series of pairs of parallel rotating rollers 5 and 6. Each pair of the rollers rotate in opposite directions. At 7 I have shown inverted V-shaped spacers which serve to direct the carrots, as shown at A, down the rollers. The purpose of these rollers is to straighten out the carrots as they proceed down the incline, as shown in Fig. 2.



When the carrots reach one of the tranverse drayper belts, they will fall into the spaces between the upstanding divisions thereof so as to be conveyed over the solid top of a table-like surface thereunder.

In Fig. 1 I have shown the use of four drayper belts, as this arrangement speeds up the sorting but as each drayper is identical, but one will be described.

Referring now to Fig. 4, it will be noted that the drayper consists of a pair of spaced chains as shown at 8 and 9, between which are spaced division plates 11, the result being that as the carrots fall off of the end of the straighteners 5 and 6, they will fall into one of the pockets between adjacent division plates. From this point on, as the draypers move toward the left of the drawing as viewed in Fig. 5, they will move off of the flat table-like surface 12 and the two ends of the carrots will then be supported by horizontal shelves 13 and 14 and against the wall 10. It will be here noted that the shelf 14 tapers from end to end, the wide end being adjacent the shelf 12 and the narrow end remote therefrom.

Supported beneath the drayper and its supporting shelves is a series of conveyors 16, 17, 18 and 19. Consequently, as the carrots move toward the left of the drawing, they will be supported only by their two ends, and as the draypers are disposed at an angle, the lower ends thereof will be riding on and held against the chain 9 and wall 10 through the effect of gravity.

Viewing the right-hand end of Fig. 5, it will be noted that the carrot B will have its crown supported on the shelf 13 and its tip on the shelf 14, and that when carrot C reaches the position of carrot B, it will, being shorter, not be supported by shelf 14 and consequently will fall through on to the conveyor 16.

The carrot B will progress toward the left of the drawing until it reaches the position D where it will no longer be supported by the shelf 14 and consequently it will drop through on to the conveyor 17.

Longer carrots will progress further and eventually be dropped on to conveyors 18 and 19, as the case may be.

Thus it will be apparent that each carrot, as it progresses through the machine, will be graded accurately as to its length.

It will thus be seen that applicant has devised a machine which will accomplish all of the results above set forth. It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same and that various changes relative to the material, size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claim.

Having thus described my invention, I claim:

A device of the character described, comprising a pair of spaced chains arranged at an angle of substantially 45 degrees and having spaced plates extending therebetween so as to form a movable drayper, a solid shelf positioned beneath one portion of said drayper, means for feeding articles of different lengths through gravity to a position between said plates, and supported on said shelf, a second pair of spaced shelves extending beyond and in the same plane as said solid shelf, one of said last-mentioned shelves being tapered towards its remote end to provide an increasingly elongated space between said last-mentioned shelves, whereby articles moved by said

drayper over said last-mentioned shelves will be moved off of one of said shelves and thereby graded as to length.

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