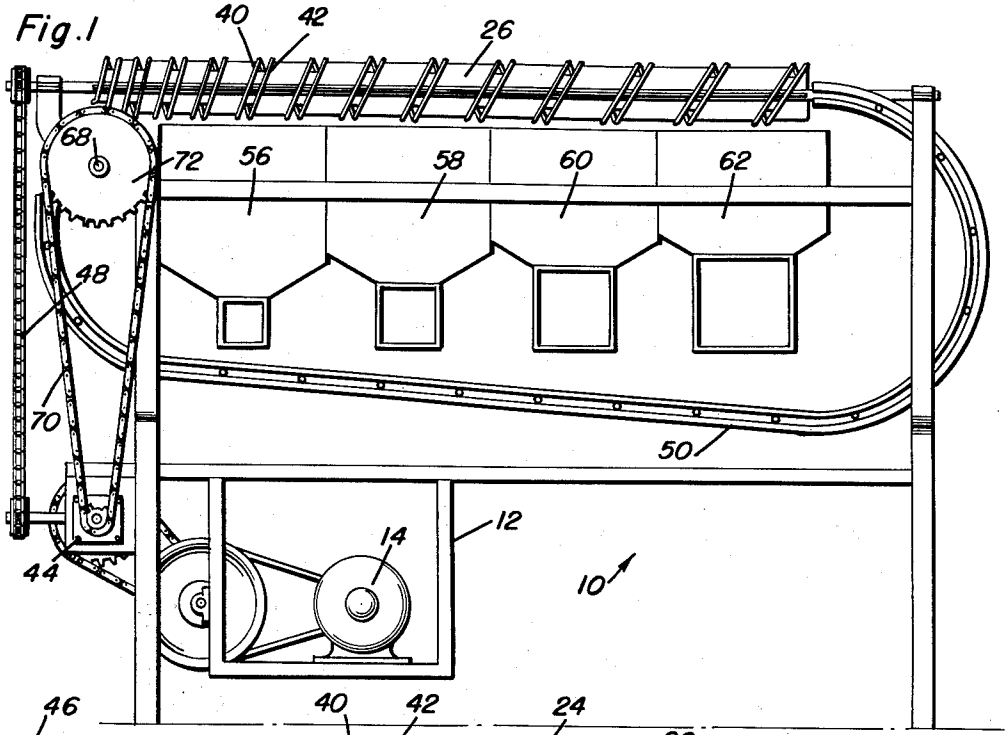
Nov. 15, 1955 L. C. PEABODY 2,723,749

LIFTING AND TIMING WHEEL AND A VARIED PITCH AUGER FOR A ROLLER GAUGE SORTING MACHINE

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Fig. 1



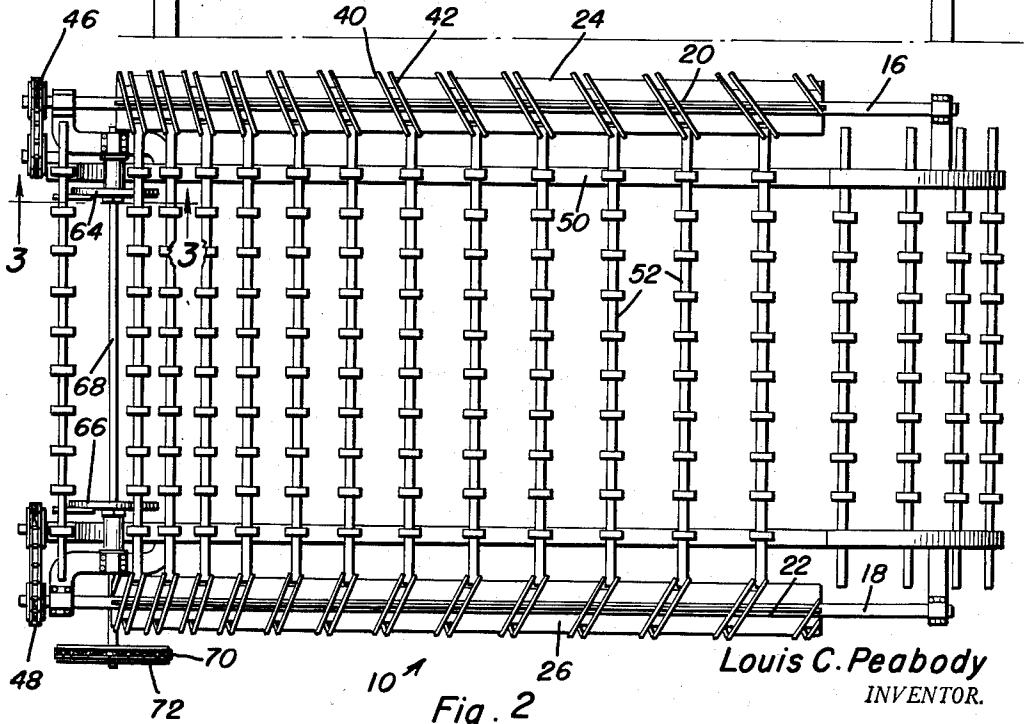




Fig. 2

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Fig. 3

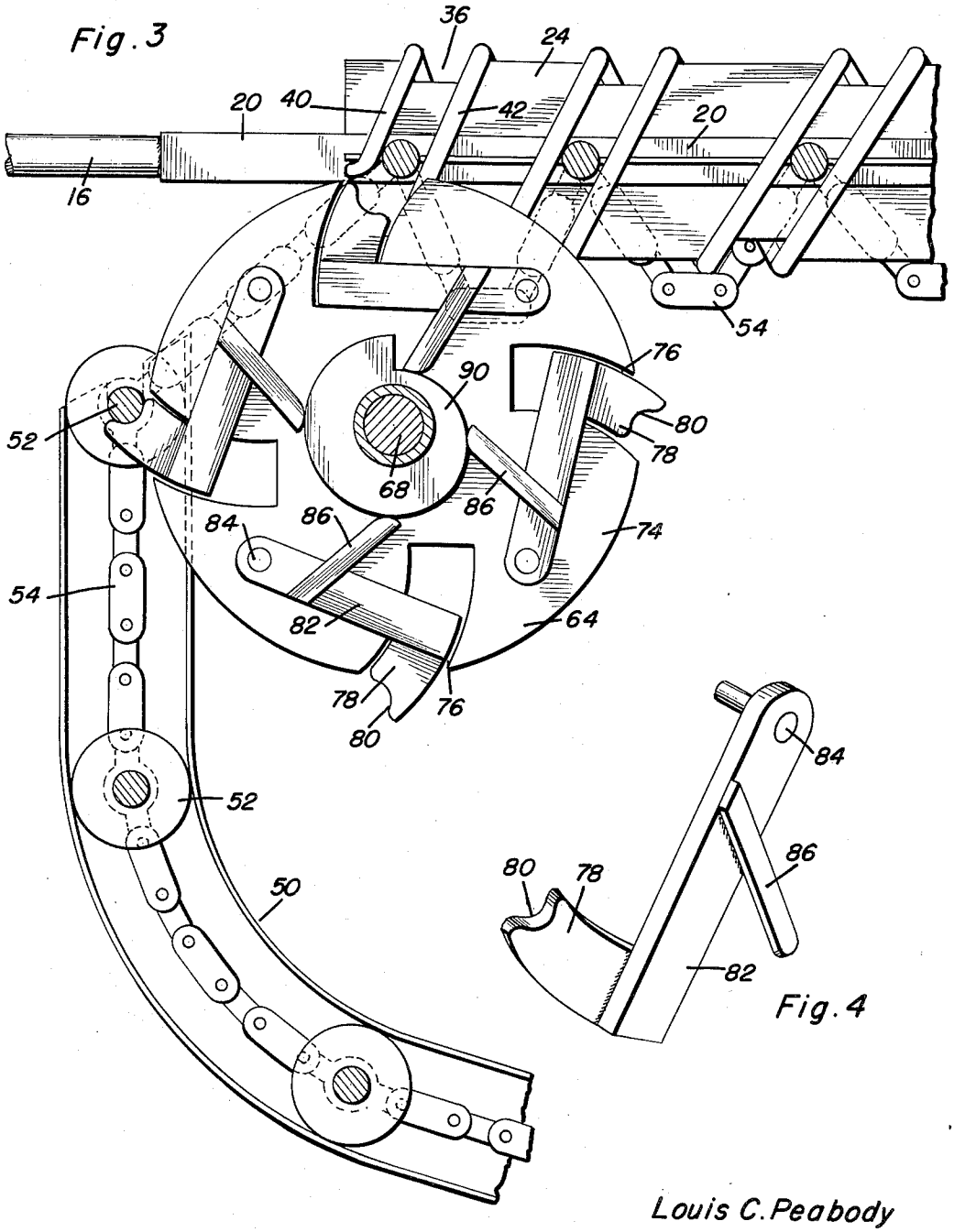






Fig. 4

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Fig. 6

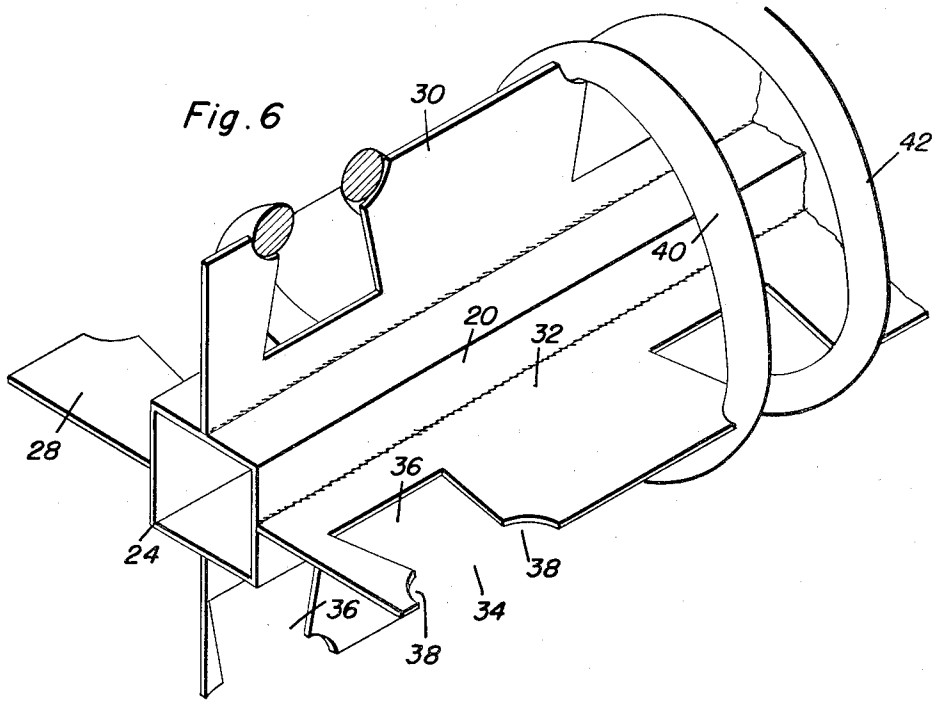
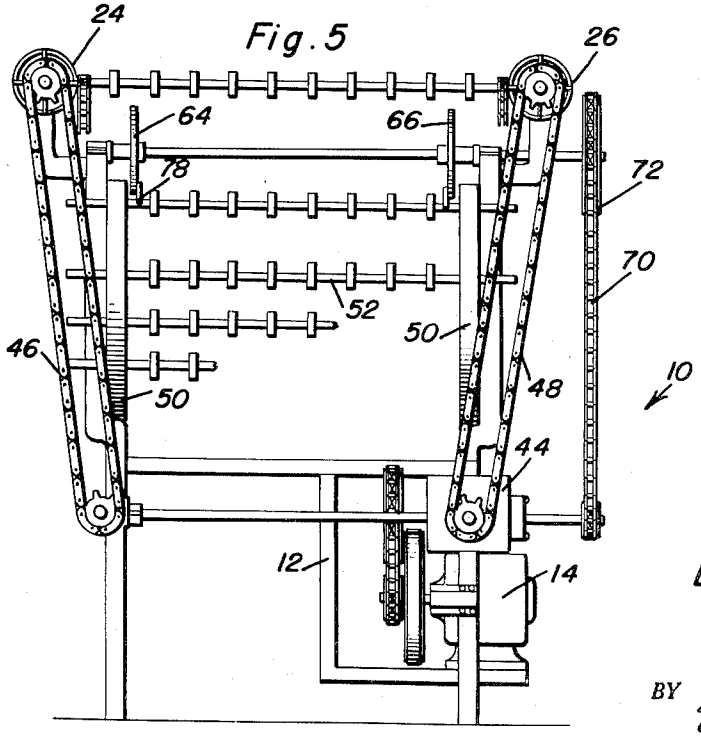



Fig. 5




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United States Patent Office 2,723,749 Patented Nov. 15, 1955



2,723,749

# LIFTING AND TIMING WHEEL AND A VARIED PITCH AUGER FOR A ROLLER GAUGE SORTING MACHINE

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Application May 25, 1954, Serial No. 432,088

8 Claims. (Cl. 209—106)

This invention relates to improvements in apparatus for sizing of fruits and vegetables and in particular is related to improvements over the sorting machine disclosed in Patent 2,582,545 to Louis Kerian, patented January 15, 1952.

The primary object of the present invention resides in the provision of a lifting and timing wheel adapted to be used in conjunction with a sizing apparatus, which timing wheel is adapted to raise the plurality of rollers successively into engagement with the spaced guides of a pair of spaced augers.

A further object resides in the provision of means for positioning the plurality of transverse horizontal rollers into engagement with the augers in a manner so that the length of the machine can be shortened to approximately one-half the length of the machine disclosed in the Kerian patent, 2,582,545; which will eliminate the slack which existed in the roller conveying chain while also assuring that the rollers will be correctly spaced.

Still further objects and features of this invention reside in the provision of a novel auger for use in conjunction with the lifting and carrying wheel so that the ends of the shaft may be readily engaged between the varied pitch helical guides.

The construction of the auger features utilization of a hollow tubular central element having plates extending outwardly from and normal to the central tubular element having dove-tailed recesses therein. The spaced helical guide rods of progressively varied pitch are welded to the plates in alignment with the dove-tailed recesses to ensure a clear path of travel for the ends of the transverse horizontal rollers.

The lifting and timing wheel is adapted to utilize the rotary action of the driving structure of the invention to engage and carry the transverse rollers into engagement with the helical guide rods utilizing cam actuated lifting dogs.

Still further objects and features of this invention reside in the provision of improvements for a vegetable and fruit sizing machine which are simple to install, inexpensive to construct, yet which are simple in operation and very durable.

These, together with the various ancillary objects and features of the invention which will become apparent as the following description proceeds, are attained by this lifting and carrying wheel and by the novel augers, a preferred embodiment of each thereof being shown in the accompanying drawings, by way of example only, wherein:

Figure 1 is a side elevational view of the complete sorting machine;

Figure 2 is a plan view of the sorting machine;

Figure 3 is an enlarged vertical sectional view as taken along the plane of line 3—3 in Figure 2;

Figure 4 is a perspective view of one of the lifting dogs;

Figure 5 is a front elevational view of the sorting machine; and

Figure 6 is a perspective view of one of the augers.



With continuing reference to the accompanying drawings wherein like reference numerals designate similar parts throughout the various views, reference numeral **10** generally designates the sorting machine comprising the present invention which includes an angle iron frame **12** on which a drive motor **14** is installed. Mounted on bearings carried by the frame **12** are shafts **16** and **18** to which the hollow tubular central elements **20** and **22** of augers **24** and **26** are attached. The augers **24** and **26** are each of similar construction, which can be best seen in Figure 6. Here, it will be seen that the auger **24** includes plates **28**, **30**, **32** and **34** which are welded to and extend normal from the central portion of each of the sides of the tubular central element **20**. Each of the plates has a plurality of dove-tail slots, such as is indicated by reference numeral **36**, therein, it being noted that the slots **36** in each of the varying plates **28**, **30**, **32** and **34** are not in the same position with respect to the various plates, but are adjusted for a varying helical pitch advance. Each of the recesses **36** opens into a cut-out portion, as at **36**, within which a pair of helical guide rods **40** and **42** of circular cross-section are seated and welded. The augers **24** and **26** are driven by the motor **14** interconnected through suitable gearing arrangements, as at **44**, and by endless chains **46** and **48**.

Positioned on the frame **12** and in alignment with the augers **24** and **26** are guide rails, as indicated at **50**, within which a plurality of transverse rollers **52** are engaged, the rollers being interconnected by links **54**. As can be readily understood, fruits and vegetables are positioned over the moving rollers **52** and when the rollers are far enough spaced apart so as to permit the fruits or vegetables to fall therebetween, the fruits and vegetables will be collected in the various containers **56**, **58**, **60** and **62** positioned beneath the rollers and in alignment with the augers. The rollers thus form an endless conveyor and the spacing between the rollers is adjusted by the augers **24** and **26**. In order to lift the respective rollers **52** into engagement with the augers **24** and **26**, there is provided a pair of lifting and timing wheels **64** and **66** mounted on shafts **68** driven by means of an endless chain **70** which engages a sprocket **72** mounted on the shafts **68**, the endless chain being connected by the gear box **44** to the motor **14**.

Each of the lifting and timing wheels **64** and **66** are of generally the same construction, and the lifting and timing wheel **64** comprises a disk **74** having a plurality of arcuate slots **76** therein within which lifting dogs **78** are positioned. The lifting dogs **78** have arcuate end portions **80** for engaging the rollers **52** and carrying the rollers **52**. The dogs **78** further include pivot links **82** pivotally mounted on pins **84** secured in the disk **74**. Cam engaging legs **86** are appended to the pivot links **82** and engage a rigidly mounted cam **90** mounted about the shaft **68** and held against rotation. Hence, as the disk **74** is rotated, each of the lifting dogs **78** will successively engage the rollers **52** and lift the rollers into engagement with the auger **24**. It is to be recognized that the gearing ratio for the shaft **68** is less than that of the augers **24** and **26** since each rotation of the shaft **68** will lift four rollers into the augers.

Since from the foregoing the construction and advantages of these improvements to sorting machines are readily apparent, further description is believed to be unnecessary.

However, since numerous modifications will readily occur to those skilled in the art after a consideration of the foregoing specification and accompanying drawings, it is not intended to limit the invention to the precise embodiment shown and described, but all suitable modifications and equivalents may be readily resorted to which fall within the scope of the appended claims.

What is claimed as new is as follows:

1. A varied pitch auger comprising a tubular central element, a plurality of plates secured to said central element and extending outwardly therefrom, a plurality of unequally spaced recesses in said plates, and helical guide rods of progressively varied pitch secured to said plates in alignment with said recesses.

2. A varied pitch auger comprising a tubular central element, a plurality of plates secured to said central element and extending outwardly therefrom, a plurality of unequally spaced recesses in said plates, and helical guide rods of progressively varied pitch secured to said plates in alignment with said recesses, said recesses being dove-tail in shape.

3. A varied pitch auger comprising a tubular central element, a plurality of plates secured to said central element and extending outwardly therefrom, a plurality of unequally spaced recesses in said plates, and helical guide rods of progressively varied pitch secured to said plates in alignment with said recesses, said central element being square in cross-section, said plates extending normal to said central element.

4. A varied pitch auger comprising a tubular central element, a plurality of plates secured to said central element and extending outwardly therefrom, a plurality of unequally spaced recesses in said plates, and helical guide rods of progressively varied pitch secured to said plates in alignment with said recesses, said central element being square in cross-section, said plates extending normal to said central element, said recesses being dove-tail in shape.

5. A lifting and timing wheel for use in conjunction with a varied pitch auger comprising a disk adapted to be positioned on a shaft, a cam, a plurality of slots in said disk, a plurality of lifting dogs slidably mounted in said slots and pivotally attached to said disk, and legs on said lifting dogs adapted to engage said cam.

6. A lifting and timing wheel used in combination with a plurality of transverse horizontal rollers to lift said rollers into engagement with a progressively varied pitch auger comprising a disk adapted to be positioned on a shaft, a cam, a plurality of slots in said disk, a plurality of lifting dogs slidably mounted in said slots and pivotally attached to said disk, and legs on said lifting dogs adapted to engage said cam, said lifting dogs engaging said rollers to lift said rollers into engagement with said auger.



7. A lifting and timing wheel used in combination with a plurality of transverse horizontal rollers to lift said rollers into engagement with a progressively varied pitch auger comprising a disk adapted to be positioned on a shaft, a cam, a plurality of slots in said disk, a plurality of lifting dogs slidably mounted in said slots and pivotally attached to said disk, and legs on said lifting dogs adapted to engage said cam, said lifting dogs engaging said rollers to lift said rollers into engagement with said auger, said auger comprising a tubular central element, a plurality of plates secured to said central element and extending outwardly therefrom, a plurality of unequally spaced recesses in said plates, and helical guide rods of progressively varied pitch secured to said plates in alignment with said recesses, the ends of said rollers seating between said guide rods.

8. A lifting and timing wheel used in combination with a plurality of transverse horizontal rollers to lift said rollers into engagement with a progressively varied pitch auger comprising a disk adapted to be positioned on a shaft, a cam, a plurality of slots in said disk, a plurality of lifting dogs slidably mounted in said slots and pivotally attached to said disk, and legs on said lifting dogs adapted to engage said cam, said lifting dogs engaging said rollers to lift said rollers into engagement with said auger, said auger comprising a tubular central element, a plurality of plates secured to said central element and extending outwardly therefrom, a plurality of unequally spaced recesses in said plates, and helical guide rods of progressively varied pitch secured to said plates in alignment with said recesses, the ends of said rollers seating between said guide rods, said central element being square in cross-section, said plates extending normal to said central element, said recesses being dove-tail in shape.

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