

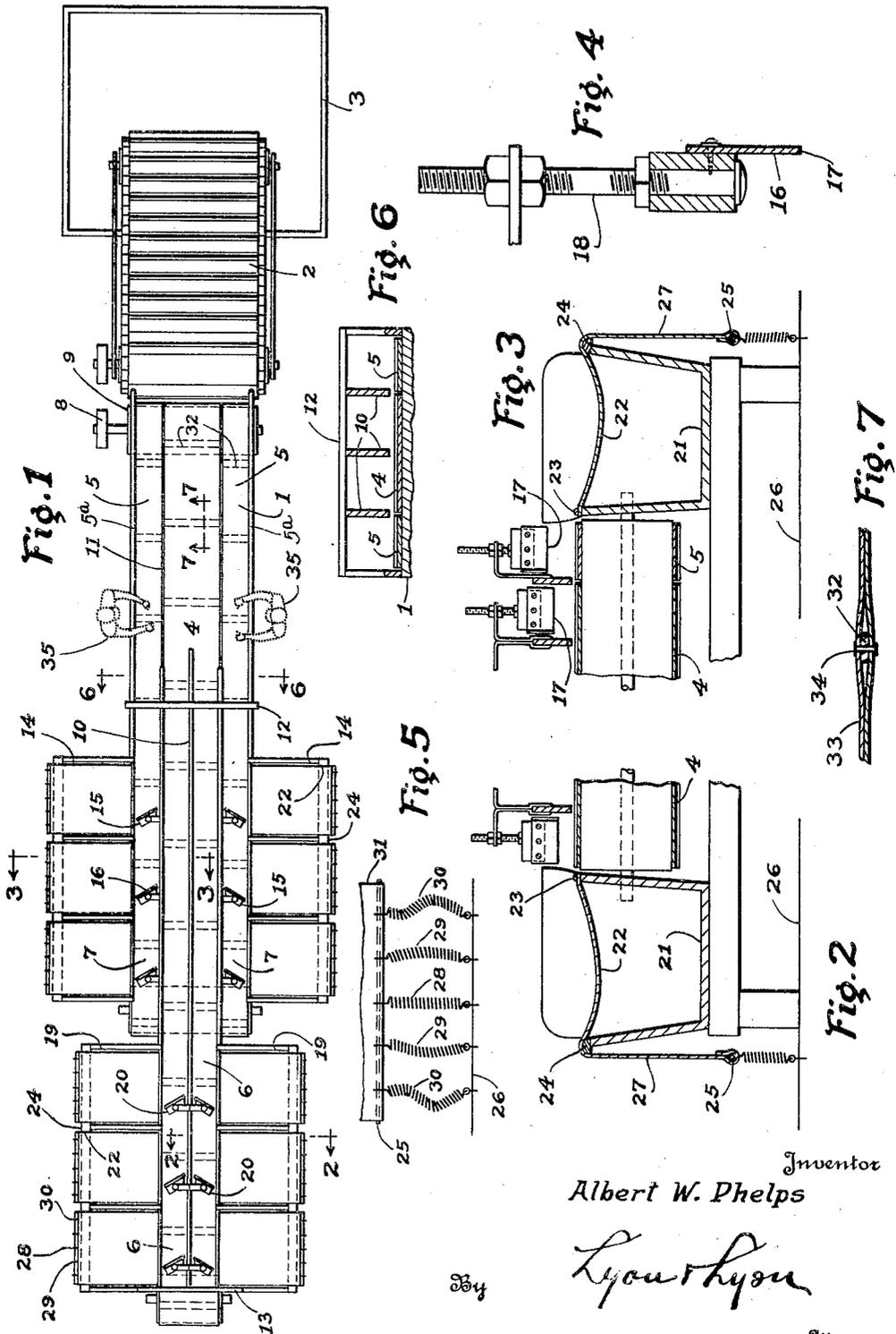
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A. W. PHELPS

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SIZING APPARATUS FOR FRUIT, MELONS, VEGETABLES, AND THE LIKE

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Inventor  
Albert W. Phelps

*Lyons & Lyons*

Attorney's

# UNITED STATES PATENT OFFICE

ALBERT W. PHELPS, OF LOS ANGELES, CALIFORNIA

SIZING APPARATUS FOR FRUIT, MELONS, VEGETABLES AND THE LIKE

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This invention relates to sizing apparatus for sizing fruit and particularly melons. In some aspects, the invention may be regarded as an improvement of the device disclosed in my Patent No. 1,696,554 issued to me on December 25, 1928, for sizing apparatus for fruit, melons, vegetables and the like. In the apparatus disclosed in my patent, I employed an arrangement of lateral belts taking the melons from a main conveyor belt and while this arrangement is satisfactory in many situations, it is not sufficiently compact for some packing houses. The general object of this invention is to provide improved apparatus for this purpose in which it is unnecessary to employ lateral conveyors for effecting the sizing and to provide an organization of parts which results in a long sorting and sizing table in which the fruit is conveyed past the sizers on longitudinally moving belts, that is to say, belts moving longitudinally with the longitudinal axis of the sorting table.

It is desirable in apparatus of this kind to provide means for collecting the sized melons or fruit without injury to it. The melons are usually collected in bins, but the falling of the fruit to the bottom of the bin is apt to injure it. In my patent referred to, I disclosed a bin having a flexible sagging false bottom in which the melons are collected. This flexible bottom is in the form of an apron extending across the opening of the bin and having the free edge suspended over one edge of the bin and weighted. As the melons collect on the sagging bottom, the weight rises to a higher elevation, permitting the apron to sag down further into the bin. One of the objects of this invention is to improve the apparatus with respect to these flexible bottoms and to provide a construction whereby the pull or tension in the apron adapts itself automatically to the weight of the load of melons which it supports.

A further object of the invention is to provide an improved construction for the endless belts to increase their efficiency in advancing the melons through the apparatus.

Further objects of the invention will appear hereinafter.

The invention consists of novel parts and combination of parts to be described hereinafter, all of which contribute to produce an efficient sizing apparatus for fruit, melons, vegetables and the like.

A preferred embodiment of the invention is described in the following specification, while the broad scope of the invention is pointed out in the appended claims.

In the drawing:

Figure 1 is a plan view of the apparatus embodying my invention.

Figure 2 is a section upon an enlarged scale taken about on the line 2—2 of Figure 1.

Figure 3 is a section taken about on the line 3—3 of Figure 1 but upon an enlarged scale.

Figure 4 is a detail illustrating the gauge device which I prefer to employ in this apparatus for sizing the melons.

Figure 5 is a diagrammatic view and a side elevation showing the lower edge of one of the supporting aprons or "bottoms" employed in the bins and particularly illustrating the means I prefer to employ for automatically developing tension in the apron corresponding to the load of melons which it supports.

Figure 6 is a cross section taken about on the line 6—6 of Figure 1.

Figure 7 is a section upon an enlarged scale taken about on the line 7—7 of Figure 1.

In practicing my invention I provide a long horizontal sorting table 1 on which I provide conveyor means which has its receiving end located at the right end of the table, as viewed in Figure 1, at which point the melons may be deposited by means of an elevator 2 which picks them out of a washing tank 3. The conveyor means is preferably in the form of a plurality of endless belts which pass around suitable rollers so that the upper runs of the belts lie on the upper face of the table. In the present instance, I employ a central belt 4 and two side belts 5. The center belt 4 is relatively long as compared with the side belts 5, so that it presents an extension 6 projecting beyond the delivery

end 7 of the short belts 5. These belts may be driven by a belt pulley 8 on the shaft of a driving roller 9 disposed at the receiving end of the table. Above the table I provide 5 guide means extending longitudinally of the table part of the way from the delivery end toward the receiving end and this means is preferably in the form of a plurality of rails 10. In the present instance, there are three 10 of these rails, one of which is disposed over the center line of the main belt 4 and two side rails which are disposed over the crack 11 between the side belts and the main belt. The sorting table is provided with side rails 15 5a. These rails 5a and 10 divide the upper side of the table into a plurality of runways immediately adjacent to each other and all within reach of an operator standing at either side of the table.

20 These rails are preferably supported on cross bars 12 and 13 (see Figures 1 and 6). On each side of the table each side belt is provided with a plurality of collecting bins 14 which are disposed in a row, and opposite 25 these bins I provide sizing devices 15, preferably constructed as described in my prior patent and as illustrated in Figure 4. The details of construction of the sizing device are immaterial, though I prefer to employ a 30 deflecting apron 16 of flexible material, such as soft rubber or leather. This sheet or apron 16 is held in an inclined position at a certain adjusted elevation above the belt, so that as the melons strike against the horizontal lower 35 edges 17 of the sizers, they will either be permitted to pass or will be deflected over into a corresponding bin. The sizing devices are adjusted by means of their adjusting stems 18, so that the larger melons will be deflected 40 by the first sizing devices in their paths.

As illustrated in Figure 1, the inside rails 10 are preferably three in number with the inner, or center rail extending further over the sorting table than the other two. This 45 facilitates the sorting operation as it enables the sorters to shove some of the melons over against the side of the innermost rail.

The side rails 10 may support the sizing devices for these side bins 14 and they co- 50 operate with the middle rail to divide the space above the conveyor belts into runways along which the belts advance the melons.

On each side of the extension 6 of the main belt 4 I provide bins 19 similar to the bins 55 14 and these bins have sizing devices 20 like the sizing devices 15, and operating in the same way to deflect melons over into the bins 19.

When a melon is deflected into a bin, it 60 does not fall upon the true bottom 21 of the bin, but is supported in a false bottom 22 of flexible material, such as a cloth or rubber apron. This apron is constructed so that it will sag down into the bin as it collects the 65 melons. For this purpose one or both of the

edges of each apron are permitted to hang down over the side edges of the bin. I prefer, however, to attach one edge of the apron, 22 indicated at 23, to the edge of the bin (see Figure 2) and permit the outer portion of 70 the apron to hang over a bolster 24 forming the outer edge of the bin and rounded and polished on its upper side so as to permit the apron to slide freely over it. The free edge 75 of the apron is provided with a batten 25 preferably attached in a hem at the end of the apron, and between this batten and the floor 26 I provide means operating in such a way that an increasing resistance is offered to the upward movement of the edge of the apron. 80 In other words, as the melons collect on the sagging "bottom", the tension on the curtain 27 of the apron is gradually increased. In order to accomplish this, I provide a plu- 85 rality of resistance elements that act in succession as the batten 25 is pulled up. I may employ weight elements for this purpose, but I prefer to employ a plurality of springs, such as illustrated in Figure 5, in- 90 cluding the main center spring 28 which is shorter than two secondary springs 29 disposed on each side of the center spring. In addition to this, I may provide two tertiary springs 30 that are still longer than the springs 29 and disposed toward the side edges 95 31 of the apron.

With this arrangement, it will be evident that as the batten 25 moves upwardly, the springs will come into active operation in 100 succession and when the bin is nearly full, all of the springs will be in tension and assisting to support the load.

In order to increase the efficiency of the belts in advancing the melons, I prefer to provide the belts with cross slats or battens 105 32. If desired, these battens can be attached to the upper face of the belt but I prefer to attach them to the belts in the manner indicated in Figure 7, that is to say, I prefer to construct the belt of two plies of fabric 110 33 with the battens 32 held between the plies and secured to them by small copper rivets 34. This arrangement covers up the edges of the battens so that they cannot injure the rind of the fruit but does not interfere with their 115 effectiveness as pushers to push the melons along the table.

Adjacent the receiving end of the table 1, operators 35 stand and they sort the melons roughly by hand, placing the larger melons 120 opposite certain runways and the smaller opposite to other runways. In this way, the operators sort the melons as to grade and the sizing apparatus corresponding to each run- 125 way sizes these sorted grades into three sizes. In this way, the melons can be readily sorted to different sizes and with a very compact sorting apparatus.

It is understood that the embodiment of the invention described herein is only one of 130

the many embodiments this invention may take, and I do not wish to be limited in the practice of the invention, nor in the claims, to the particular embodiment set forth.

5 What I claim is:

1. In apparatus of the character described, a collecting bin for collecting articles such as fruit, having a flexible apron forming a depressible bottom, means for fixedly supporting said apron at the upper edge of the bin wall, means for yieldingly supporting one or more of the edges of said apron to permit the apron to sag downwardly as the articles collect therein, said means consisting of a plurality of separate resistance elements connected with the apron, and mounted so as to come into active operation in succession as the edge of the apron moves to correspond with the increasing load of fruit on the depressible bottom.

2. In apparatus of the kind described, a bin for collecting articles such as fruit, having a flexible apron forming a depressible bottom, means for yieldingly supporting one of the edges of said apron to permit the apron to sag downwardly as the articles collect therein, said means including a plurality of springs connected to the edge of the apron so as to be extended in succession to increase the pull of the springs on the edge of the apron, as the edge of the apron moves under the action of the increasing load of articles on the bottom.

3. In apparatus for sizing fruit such as melons, the combination of a hand sorting table for the operator, said hand sorting table having a conveyer for advancing the fruit along the table and past the operator, said table having a plurality of guide rails extending part of the length of the conveyer from its delivery end toward its receiving end so that the inner ends of the rails are located adjacent the delivery end of the starting table and leaving a part of the sorting table unobstructed where the fruit may be moved transversely by the operator, said rails including a long center rail and relatively short side rails dividing the remainder of the sorting table into a plurality of runways adapted to receive the melons of different sizes, a plurality of receiving bins disposed alongside of the conveyer, sizing devices for sizing the melons located along the edge of the conveyer and operating to deflect the melons into their corresponding bins, said conveyer having an extension at its delivery end projecting beyond the location of the first-named bins, a plurality of bins located at the side of said extension with sizing devices corresponding to the last-named bins for deflecting melons of different sizes into the same.

Signed at Los Angeles, California this 21 day of May 1929.