

July 29, 1958

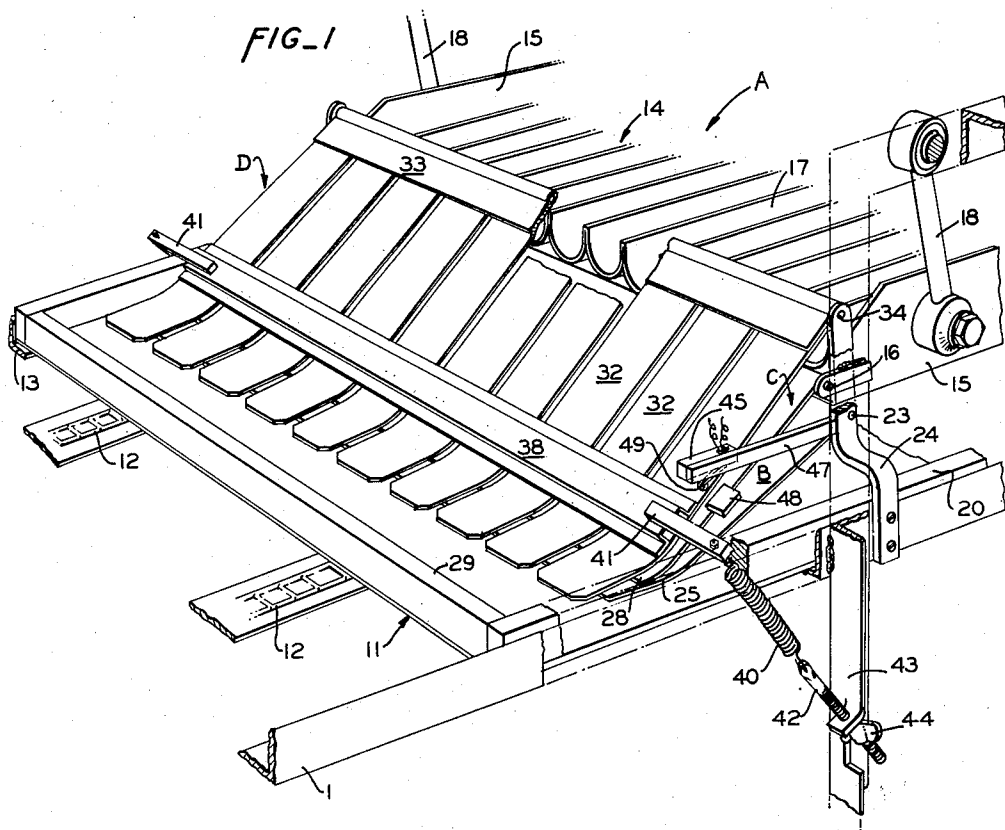
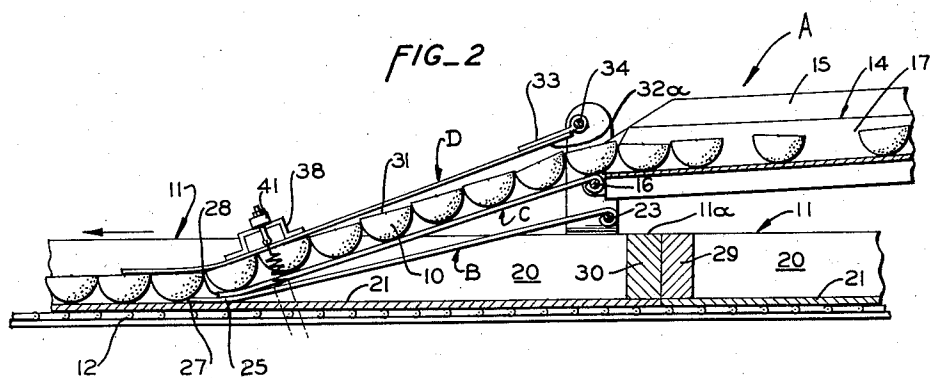
D. W. MATTOS

2,844,926

MACHINE FOR SPREADING HALVED FRUIT ON DRYING TRAYS

Filed April 13, 1956

2 Sheets-Sheet 1



INVENTOR.
DAVID W. MATTOS

BY
Hansen and Lane
ATTORNEYS

July 29, 1958

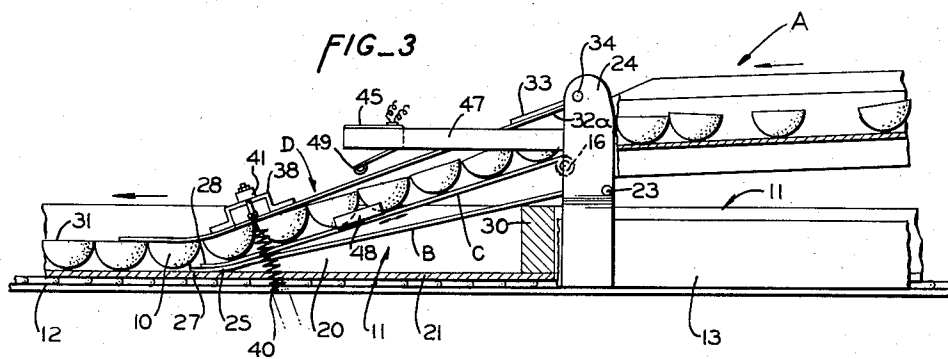
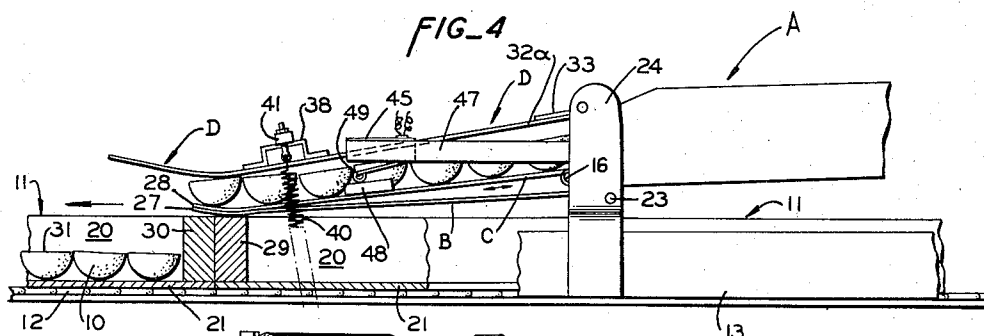
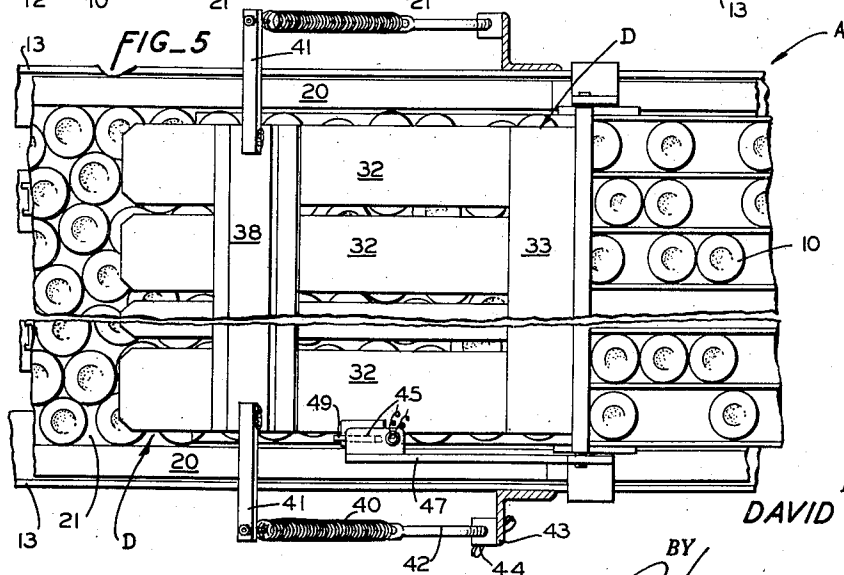
D. W. MATTOS

2,844,926

MACHINE FOR SPREADING HALVED FRUIT ON DRYING TRAYS

Filed April 13, 1956

2 Sheets-Sheet 2



INVENTOR.
DAVID W. MATTOS

BY
Olafsen and Lane
ATTORNEYS

1

2,844,926

MACHINE FOR SPREADING HALVED FRUIT ON DRYING TRAYS

David W. Mattos, San Jose, Calif.

Application April 13, 1956, Serial No. 578,128

7 Claims. (Cl. 53—160)

The present invention relates to mechanism for feeding halved apricots into drying trays, and pertains more particularly to a device for retaining the apricots in the cup-side-up condition in which they come from the shaker mechanism.

In drying apricots, after they have been halved and pitted, they usually are passed through a troughed shaker mechanism, wherein the troughs are agitated longitudinally of the direction of apricot travel through the trough. This tends to erect the apricot halves with their cupped sides upwardly. The apricots then are transferred down a sloping apron, which usually is connected to the shaker tray for movement therewith, into the drying trays which are carried along on a suitable conveyor.

Although the erecting mechanism is almost 100% successful in positioning the apricots cup side up as they leave the shaker, nevertheless during their travel down the apron and into the trays a substantial number of the apricots become inverted with their cup sides down. It is necessary, in order for the apricots to dry properly, that all of these inverted apricots be restored to their proper cup-side-up condition, and this is customarily done manually. It is difficult to do this in a tray that is properly filled with apricot halves, since in attempting to right one inverted apricot the girl must be careful not to invert some of the adjacent apricots.

Furthermore, in mechanisms wherein the transfer apron is connected to the shaker tray for longitudinal back and forth movement therewith, the lower end of the transfer apron frequently strikes a knot, broken board or nail in the bottom of a tray therebeneath, with the result that the edge of the apron and sometimes the tray becomes damaged hereby.

The present invention contemplates the prevention of inversion of the apricots as they move down the transfer apron from the shaker troughs into the drying tray.

The invention also provides an improved arrangement for preventing the reciprocating transfer apron from snagging projections on the trays.

The invention also provides an arrangement for feeding the apricots cup-side-up onto the drying trays in closely adjacent relation.

These and other objects and advantages of the invention will be apparent from the following description and the accompanying drawings, consisting of two sheets, wherein:

Fig. 1 is a fragmentary perspective view of an embodiment of the invention showing the discharge end of the shaker trough with the support plate, transfer apron and guide plate mounted thereover, portions being broken away.

Fig. 2 is a longitudinal sectional view through the portions of the mechanism illustrated in Fig. 1 with the reciprocating troughed shaker and attached transfer apron in their forward positions.

Fig. 3 is a side elevational view of the portions of the mechanism illustrated in Figs. 1 and 2, the transfer apron

2

being shown in its fully advanced position, portions being broken away.

Fig. 4 is a view similar to Fig. 3 showing the support plate, transfer apron and guide plate all in elevated condition as they ride over the abutting ends of a pair of drying trays.

Fig. 5 is a plan view of portions of the mechanism shown in Figs. 1 to 4 inclusive, an intermediate longitudinal portion being broken away.

Briefly, the present invention is illustrated herein as being mounted on a conventional apricot erecting and tray filling machine A, which receives halved and pitted fruit, which is herein referred to as apricot halves 10, erects the halved fruit to cup-side-up condition, and spreads the fruit in a single layer over the bottoms of drying trays 11. The trays are fed through the machine on conventional conveyor chains 12 which engage the bottoms of the trays and slidably advance them lengthwise of the machine along a pair of parallel angle iron tracks 13.

Principal features of the invention reside in the provision of a support plate B underlying the usual reciprocating transfer apron C of the machine to prevent damage by the apron, and a guide plate D to prevent inversion of the apricots and to control their feed rate onto the drying trays as they pass downwardly along the transfer apron.

The apricot erecting shaker 14 of the machine A consists of a rearwardly downwardly inclined frame 15 having a plurality of longitudinally extending, parallel troughs 17 thereon. Each trough 17 is of substantially semi-circular cross sectional shape, and is of a size to receive therein the largest size of apricot to be advanced therethrough. The shaker 14 is suspended on usual parallel support links 18 and reciprocated longitudinally back and forth in rapidly recurring short strokes which causes the apricots to roll to cup-side-up condition.

As the apricots reach the lower ends of the troughs 17 they are discharged in cup-side-up condition onto the transfer apron C, which is hingedly connected at 16 to the lower end of the troughed shaker 14. The rear end of the transfer apron C is free to gravitate downwardly, and is of a width to fit between the side walls 20 of the drying trays 11, as they are advanced in end-to-end contacting relation through the machine on the conveyor chains 12.

To prevent the lower end of the rapidly reciprocating transfer apron C from riding directly upon the bottoms 21 of the trays 11 passing therebeneath, which might result in damage to the trays and to the apron, the non-reciprocating support plate B is hingedly connected at 23 to a stationary frame member 24. The lower end 25 of the support plate B is curved to ride tangentially along the bottoms 21 of the drying trays as they are conveyed along therebeneath. The trailing edge 27 of the support plate B when riding on the tray bottoms 21 is slidably ahead of the trailing edge 28 of the reciprocating transfer apron C when the latter is at the terminal end of its rearward stroke cycle as shown in Fig. 3.

On each forward stroke of the troughed shaker 14, the transfer apron C connected thereto is drawn slidably forward along this support plate to the position shown in Figs. 1 and 2. The hinged mounting of the support plate B permits it to ride up over abutting tray end members 29 and 30 as the latter pass beneath the support plate during the advance of the trays by the conveyor.

The upper guide plate D rides on the upper or cut faces 31 of the apricots as they travel down the transfer apron C, and prevents the apricots from becoming inverted during such transfer period. The upper guide plate D is an assembly consisting of a plurality of parallel, co-planar strips 32 of sheet metal. The strips

3

32 are connected at their upper ends by a metal hinge strip 33, which in turn is journaled on a rod 34 extending between the upper ends of the stationary frame members 24. The strips 32 also are interconnected adjacent their lower ends by a rigid, inverted, channel member 38.

The lower ends of the strips 32 are subjected to adjustable downward spring bias by a pair of coil springs 40, each of which is connected in tension between an extension arm 41 secured onto the channel member 38, and an eye bolt 42 passing through a hole provided therefor in a fixed frame member 43. A wing nut 44 threadably mounted on each eye bolt 42 permits axial adjustment of the eye bolt, and thereby controls the tension of the springs 40.

The forward or upper ends 32a of the guide strips 32 are spaced upwardly from the transfer apron C by a distance somewhat greater than the height of the cupped apricots, as shown in Figs. 2, 3 and 4, but less than the diameter of the minimum size apricot to be processed. Therefore, although at their upper ends the guide strips 32 do not interfere with the progress of the halved apricots downwardly across the transfer apron, they do prevent the apricots from becoming inverted during such progress.

The downward bias of the spring 40 on the lower ends of the guide plate D causes it to act as a sort of valve, which prevents individual or sparsely arranged apricots from being fed rearwardly onto the drying trays, and holds the apricots until there are several rows of them along the lower end of the transfer apron C before they will pass through the space between the transfer apron and the guide plate. This insures that the trays will be well filled and with minimum open spaces.

Regulation of the tension on the spring 40 is used to control the ease with which the fruit passes between the lower ends of the apron C and the guide plate D. Increase in spring tension makes it more difficult for the fruit to feed through.

The rate of progress of the trays 11 through the machine is controlled by an attendant to correspond to the feed rate of the apricots from beneath the guide plate D onto the trays.

A control switch 45 is provided for automatically stopping reciprocation of the erecting shaker 14 and the transfer apron C connected thereto as the abutting end members 29 and 30 (Figs. 3 and 4) of adjoining trays pass therebeneath. The illustrated switch 45 is a conventional, normally closed, microswitch and is mounted on an arm 47 secured to extend horizontally from the stationary upright frame member 24. A switch actuating block 48 is mounted on a side of the transfer apron C in a position to engage the switch actuating arm 49 upon a predetermined upward swinging movement of the transfer apron.

As the trailing end member 30 of each tray 11 engages the non-oscillating but pivotally mounted support plate B (Fig. 3), the latter is swung upwardly to the position shown in Fig. 4, carrying the transfer apron C and the guide plate D with it. This elevates the switch actuating block 48 into engagement with the switch arm 49, opening the normally closed switch 45, and thereby arresting longitudinal reciprocation of the shaker 14 and the transfer apron C connected thereto until the abutting tray end members 29 and 30 pass beyond the rear ends of the support plate B, thereby allowing the support plate with the transfer apron C and guide plate D thereon to drop back to the position shown in Fig. 3. This restores the switch 45 to its normally closed condition and thereby causes the shaker 14 and connected transfer apron C to resume their reciprocating movement.

The operation of the mechanism described herein is as follows:

The halved and pitted apricots 10 are fed in a conventional manner into the erecting troughs 17 of the conventional longitudinally reciprocating shaker 14.

4

Here the apricots are erected to cup-side-up condition and are advanced rearwardly along the troughs 17 in a usual manner.

As they arrive at the rearward or discharge end of the erecting troughs 17 in cup-side-up condition they pass beneath the upper end of the pivotally mounted guide plate D and onto the reciprocating downwardly and rearwardly sloping transfer apron C.

The drying trays 11 are conveyed along the tracks 13 by the conveyor chains 12, the curved rear end of the pivotally mounted support plate B riding on the bottoms of the trays 11 and supporting the rear end of the apron free from contact with the trays. The guide plate D prevents inversion of the apricots as they travel down the apron C, and the lower portion of the guide plate rides on the top or cut faces of the apricots 10 which are lubricated by the fruit juices present on these cut faces which facilitates their passage therebeneath.

The convergence of the lower ends of the guide plate D with the transfer apron C tends to restrain the discharge of apricots therebetween onto the trays 11. When only a few apricots are present between the guide plate D and the apron C they will not be discharged onto the trays, but will be retained until the space transversely of the lower end of the plates is well filled with apricot halves and they are backed up slightly along the apron, whereupon the action of the reciprocating transfer apron C on the lower sides of the apricot halves will cause a separation of the guide plate D from the transfer apron C allowing the apricots to be discharged onto the tray.

Since the support plate B extends to the full rearward limit of the transfer apron C in its rearmost position, it is impossible for the lower end of the transfer apron to be driven against any projection which may be present on the bottoms of the trays, or against the end of a tray when the support plate B with the transfer apron C and guide plate D thereon are dropped adjacent the end of a tray with the trays in arrested condition.

The invention provides a simple, and in effect self-tending, mechanism for guiding the halved apricots in cup-side-up condition and in closely juxtaposed relation onto the drying trays. The reciprocally driven transfer plate C is protected by the lower support plate B against damage to the trays or to itself.

The reciprocation of the shaker 14 and the transfer apron C connected thereto is halted automatically as the end members of adjoining trays pass beneath the support plate B, and is automatically resumed when the tray ends have passed beyond the support plate so as to permit immediate resumption of feeding of the apricots into the trays.

While I have illustrated and described a preferred embodiment of the present invention, it will be understood however, that various changes and modifications may be made in the details thereof without departing from the scope of the invention as set forth in the appended claims.

Having thus described the invention, what I claim as new and desire to protect by Letters Patent is defined in the following claims.

1. Mechanism for transferring halved, pitted fruit cup-side up from the discharge end of a fore-and-aft reciprocating troughed shaker to drying trays mounted to pass in end to end abutting alignment therebeneath, said mechanism comprising a transfer apron hingedly connected to the rear or discharge end of the shaker for movement therewith and sloping downwardly and rearwardly therefrom, a non-reciprocating apron support plate hingedly mounted on a stationary member beneath the hinged connection of the apron to the shaker and extending substantially the full width of the transfer apron therebeneath, the support plate sloping downwardly and rearwardly and underlying the rear end of the transfer apron in its rearmost reciprocating position, and a guide plate hingedly mounted on a stationary member above

5

the hinged connection of the apron to the shaker and spaced therefrom by a distance greater than the radius of the largest fruit halves to be processed through the machine, and means biasing the lower end of the guide plate toward the transfer apron whereby the lower end portion of the transfer apron is urged into contact with the upper cut faces of halved fruit passing down the transfer apron to prevent inversion of the fruit and to resist the passage of single or sparsely scattered fruit on the transfer apron between the rear ends of the transfer apron and the guide plate.

2. An arrangement according to claim 1 wherein the guide plate comprises a plurality of sheet metal strips arranged in co-planar, side-by-side relation and are connected to each other by a stiff cross member extending transversely thereof near their terminal ends.

3. Mechanism for transferring halved, pitted fruit cup-side up from the discharge end of a fore-and-aft reciprocating troughed shaker to the floors of trays mounted to pass in end to end abutting alignment therebeneath, said mechanism comprising a transfer apron hingedly connected to the rear or discharge end of the shaker for movement therewith and sloping downwardly and rearwardly therefrom, and a smooth, rigid, non-reciprocating, downwardly and rearwardly sloping guide plate hingedly mounted above the hinged connection of the apron to the shaker and spaced therefrom at its forward end by a distance greater than the radius of the largest fruit halves to be processed through the machine, the rear end of the guide plate terminating above the rear end of the transfer apron, whereby the rear portion of the transfer apron contacts the upper cut faces of fruit halves passing between the guide plate and the transfer apron to prevent inversion of the fruit and to resist the passage of single or sparsely scattered fruit on the transfer apron from between the rear ends of the transfer apron and the guide plate.

4. An arrangement according to claim 3 wherein control means is provided for arresting movement of the shaker upon elevation of the rear end of the transfer apron.

5. In combination with a machine for erecting halved, pitted fruit cup-side-up and spreading it in a layer over a drying tray, wherein a multiple-troughed erecting member is mounted over a conveyor for drying trays, drive means are connected to the erecting member to reciprocate it longitudinally of the troughs therein, and a transfer apron is hingedly connected to the terminal end of the troughed erecting member for transferring erected fruit leaving the erecting member to a drying tray therebeneath; a guide plate hingedly mounted on a fixed axis at a height above the hinged connection of the apron to the erecting member to pass erected fruit between the guide plate and the apron, the guide plate overlying the

6

apron with its free end resting on the cut faces of the halved fruit passing between the guide plate and the apron, and a non-reciprocating apron support plate closely underlying the rear end of the transfer apron throughout its zone of reciprocation, and free for vertical movement therewith.

6. In combination with a machine for erecting halved, pitted fruit cup-side-up and spreading it in a layer over a drying tray, wherein a multiple troughed erecting member is mounted over a rearwardly moving conveyor for drying trays, drive means are connected to the erecting member to reciprocate it longitudinally of the troughs therein, and a transfer apron is hingedly connected to the terminal end of the troughed erecting member and slopes rearwardly therefrom in the direction of conveyor movement for transferring erected fruit leaving the erecting member to a drying tray therebeneath; a support plate hingedly mounted on a fixed axis beneath the hinged connection of the apron to the erecting member and extending downwardly and rearwardly therefrom, and terminating substantially in line with the rear end of the apron, a guide plate hingedly mounted on a fixed axis above the hinged connection of the apron to the erecting member and sloping downwardly and rearwardly therefrom at a height to pass erected fruit between the guide plate and the apron, whereby the free end of the guide plate rests on the cut faces of halved, erected fruit passing between the guide plate and the apron.

7. In combination with a machine for erecting halved, pitted fruit cup-side-up and spreading it in a layer over a drying tray, wherein a multiple troughed erecting member is mounted over a rearwardly moving conveyor for drying trays, drive means are connected to the erecting member to reciprocate it longitudinally of the troughs therein, and a transfer apron is hingedly connected to the terminal end of the troughed erecting member and slopes downwardly and rearwardly therefrom in the direction of conveyor movement for transferring erected fruit leaving the erecting member to a drying tray therebeneath; a support plate hingedly mounted on a fixed axis beneath the hinged connection of the apron to the erecting member and extending downwardly and rearwardly therefrom and terminating substantially in line with, and beneath, the rear end of the apron in its rearward limit of reciprocating movement.

References Cited in the file of this patent

UNITED STATES PATENTS

50	952,352	Pieper	Mar. 15, 1910
	1,278,291	Balwick	Sept. 10, 1918
	1,886,295	Morris	Nov. 1, 1932
	2,767,536	Forkel	Oct. 23, 1956