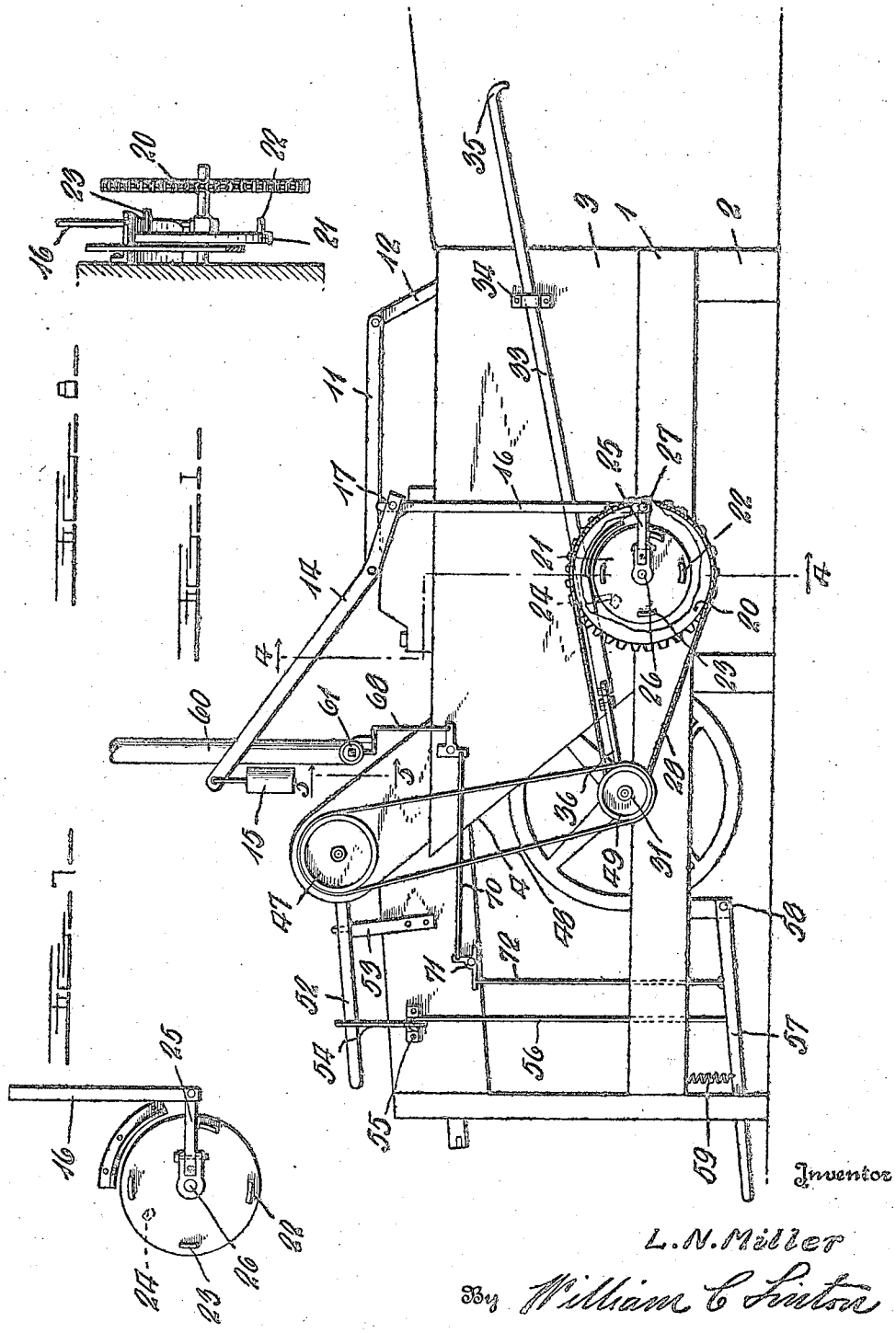
May 22, 1923. 1,456,456

L. N. MILLER

FRUIT WASHING MACHINE

Filed Dec. 21, 1922 4 Sheets-Sheet 1



Inventor

L. N. Miller

By William C Linton

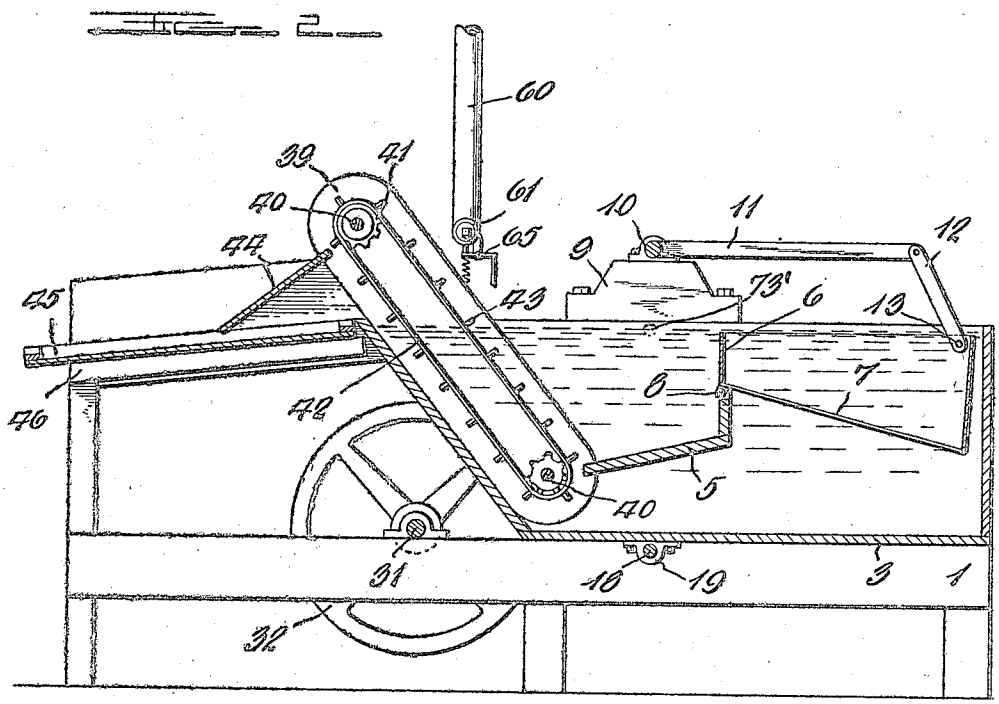
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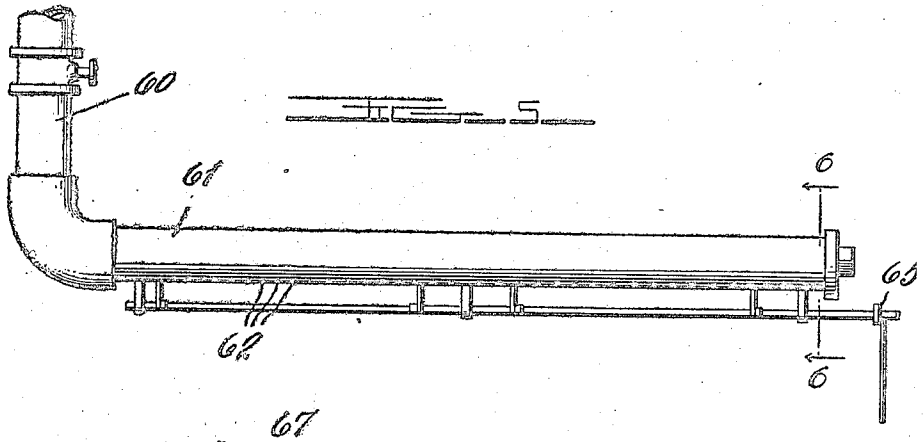
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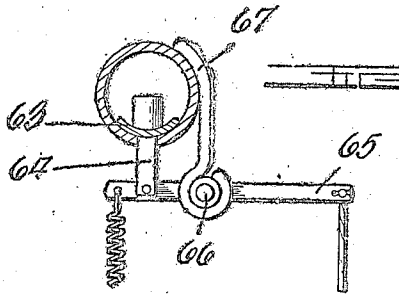
L. N. MILLER

FRUIT WASHING MACHINE

Filed Dec. 21, 1922 4 Sheets-Sheet 2







Inventor

L.N. Miller

By William C. Linton.

Attorney

May 22, 1923. 1,456,456

L. N. MILLER

FRUIT WASHING MACHINE

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Fig. 3.

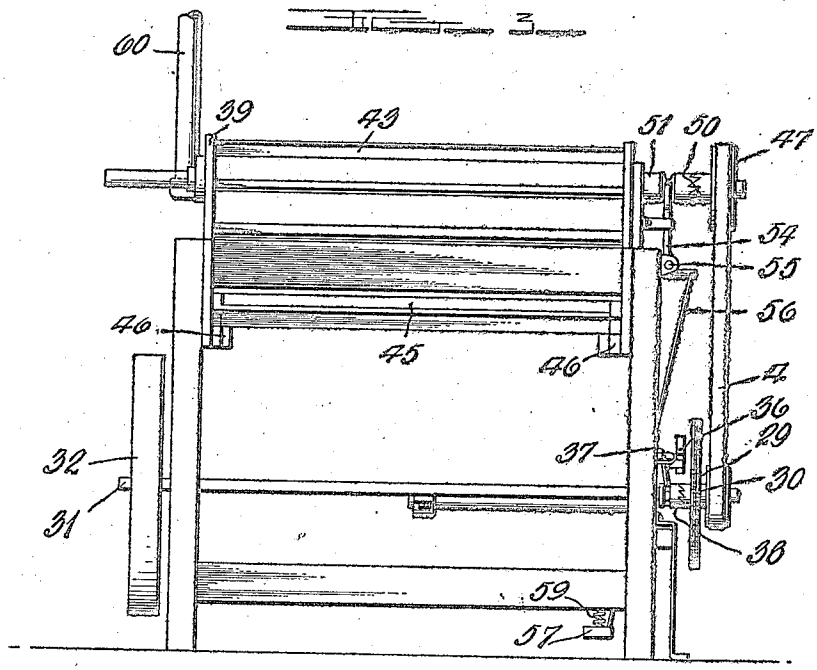
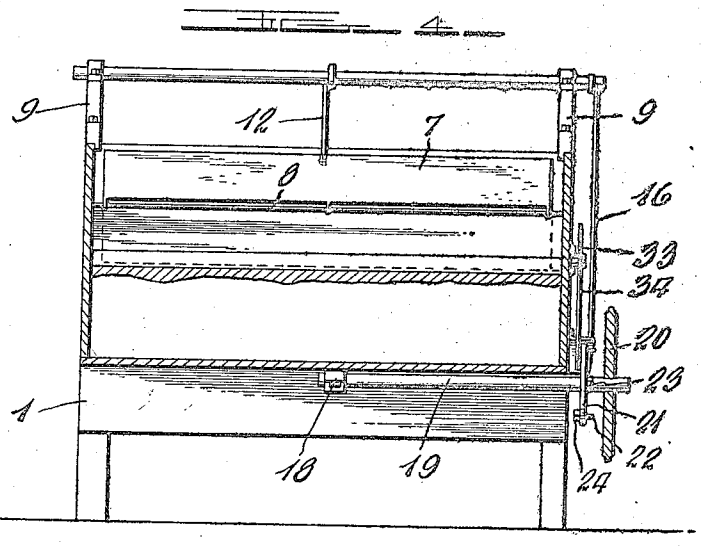


Fig. 4.



Inventor

L. N. Miller

By William C. Linton

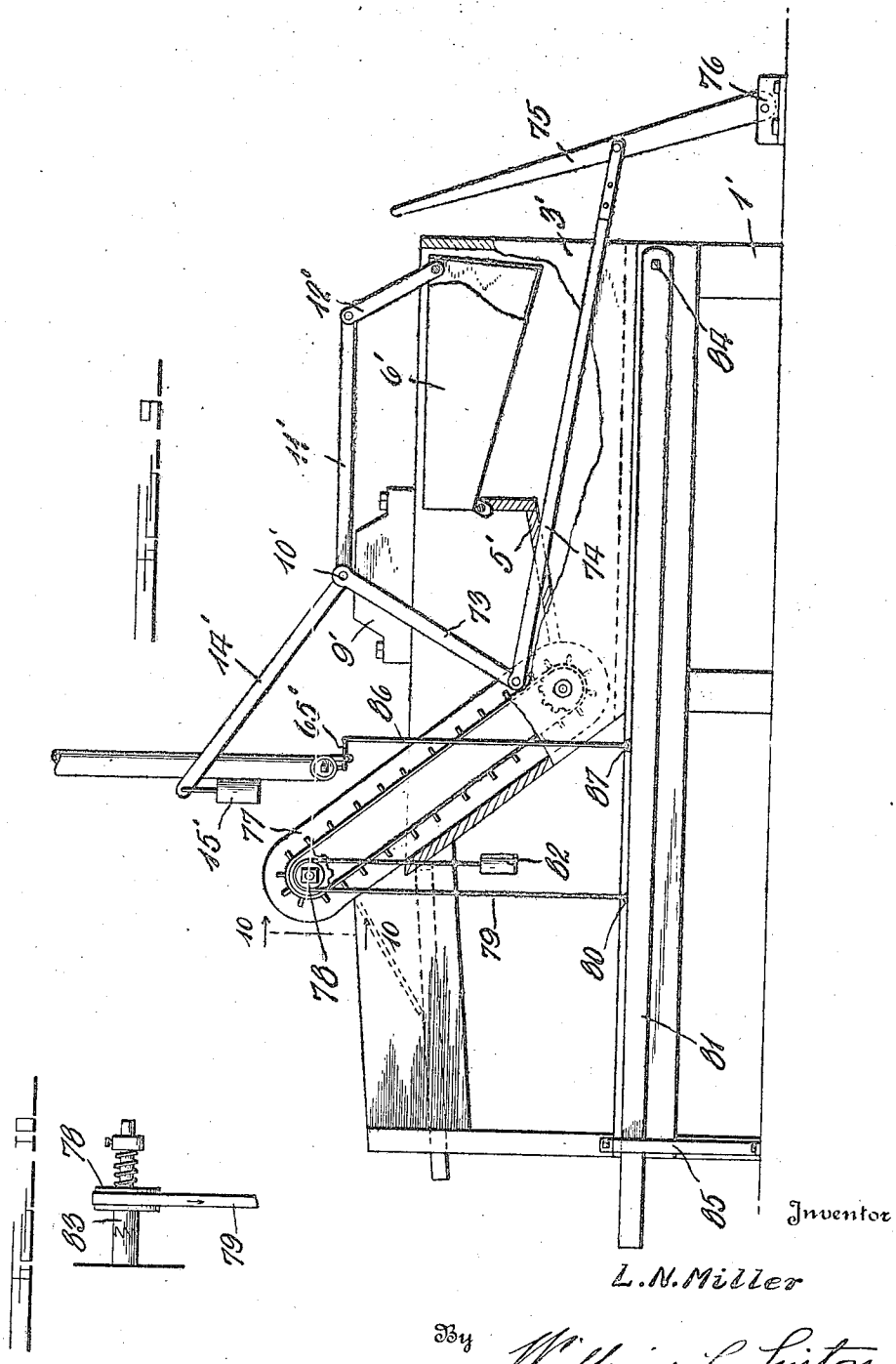
Attorney

May 22, 1923. 1,456,456

L. N. MILLER

FRUIT WASHING MACHINE

Filed Dec. 21, 1922 4 Sheets-Sheet 4



Inventor

L. N. Miller

By William C. Linton.

Attorney

Patented May 22, 1923. 1,456,456

UNITED STATES PATENT OFFICE.

LAURITZ N. MILLER, OF EUGENE, OREGON.

FRUIT-WASHING MACHINE.

Application filed December 21, 1922. Serial No. 603,271.

To all whom it may concern:

Be it known that I, LAURITZ N. MILLER, a citizen of the United States of America, residing at Eugene, in the county of Lane, State of Oregon, have invented certain new and useful Improvements in Fruit-Washing Machines; and I do hereby declare that the following is a full, clear, concise, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in apparatus for cleansing or washing fruit, having for an object to provide a machine for washing prunes and discharging the same onto trays for drying, comprehending means for receiving and agitating the prunes in process of being washed whereby to remove any and all foreign matter therefrom, the washed prunes being conveyed to a further cleansing bath and then delivered onto drying trays.

It is also an object of the invention to provide the device with means for imparting and controlling the transmission of motion to the conveying and agitating means thereof, the same being so arranged as to be operable with but a minimum number of attendants and in consequence, serving to effect a material saving on the part of a user.

Yet another object of the invention is to provide a machine of the character described employing a novel form of mechanism for imparting vibratory motion to the prune receiving and washing basket, whereby it will be caused to effectually agitate its contents and then to automatically discharge such contents therefrom onto the conveying means.

Among other aims and objects of the invention may be mentioned the provision of means for automatically controlling the discharge of a cleansing spray onto the washed prunes subsequently to their discharge from the receiving and washing basket and as the washed prunes are being conveyed therefrom onto the drying trays.

Other objects will be in part obvious and in part pointed out hereinafter.

In order that the invention may be readily understood by persons skilled in the art, I have in the accompanying illustrative drawings, and in the detailed following description based thereon, set out several possible embodiments of the same.

In these drawings:—

Figure 1 is a side elevation of the improved machine;

Figure 2 is a vertical longitudinal section therethrough;

Figure 3 is an end elevation of the same;

Figure 4 is a vertical transverse section taken on the line 4—4 of Figure 1;

Figure 5 is a fragmentary detail in elevation of the sprinkler or sprayer conduit;

Figure 6 is an enlarged vertical transverse section in detail taken on the line 6—6 of Figure 5 looking in the direction in which the arrows point;

Figure 7 is a detail in elevation of the means for imparting vibratory motion to the prune receiving and washing basket;

Figure 8 is a similar view taken at substantially right angles to the Figure 7;

Figure 9 is a side elevation, having a part thereof broken away and shown in longitudinal section of a modified form of the apparatus wherein the same is manually operated, and,

Figure 10 is a fragmentary detail in elevation of the driving connection between the manual operating means and the conveying means of the apparatus.

Having more particular reference to the drawings, in connection with which like characters of reference will designate corresponding parts throughout, the improved washing device may be stated to comprise a supporting frame generally indicated by the numeral 1, including legs 2 for an obvious purpose. Upon one portion of the supporting frame, there is arranged a tank 3 having an inclined forwardly disposed end 4, while a transversely disposed partition or deflecting board 5 is arranged within the tank 3 across its intermediate portion.

A prune receiving and agitating basket 6 is arranged in the rearward portion of the tank 3, having an inclined bottom composed of longitudinally disposed relatively spaced rods 7; the forward and shallower end of said basket having suitable bearings thereon

whereby the same may be pivotally supported adjacent one marginal portion of the deflecting board 5 as indicated at 8.

With a view towards providing means for imparting vibratory movement to the prune receiving and washing basket 7, bearing blocks 9 are arranged upon the upper marginal portions of the several sides of the tank 3, intermediate their ends, and serve to rotatably support therein a transversely disposed shaft 10, having a plurality of arms fixedly mounted thereon, one of which is indicated by the numeral 11 and extends longitudinally and rearwardly of the tank 3 to a point in proximity to the rearward or deeper end of said basket 6, whereat a link 12 is pivoted to the same and correspondingly connected at its opposite end as at 13, to a portion of said basket 6. Another arm 14 of angular formation is mounted intermediate its ends upon the transversely disposed shaft 10 and carries a counter-weight 15 upon its upper and forward end, while the opposite or rearward end of said arm is pivotally connected to the upper end of a connecting rod 16 is indicated at 17.

Mounted transversely of the intermediate portion of the supporting frame 1 and similarly disposed with relation to the bottom of the tank 3 is a shaft 18, the same being received in suitable bearings 19 secured to said tank bottom, as shown in the Figure 2 and having one end thereof extended beyond the adjacent or corresponding side of said tank, whereby a sprocket wheel 20 may be fixedly mounted thereon together with a disc 21, the latter being spaced inwardly with relation to the sprocket wheel 20 and having a plurality of circularly arranged and spaced tripping fingers 22 and 23 arranged upon one face thereof, while another tripping finger 24 is arranged upon its opposite or inner face for a purpose which will be hereinafter described. In this connection, it is to be noted that the finger 23 is of a length greater than the lengths of the three fingers 22, but that its outer end or marginal portion is inclined in a manner corresponding to the forming of the outer ends of said fingers 22. An arm 25 is loosely mounted through the medium of a yoke 26 upon the extended extremity of the shaft 18 and has pivotal connection as at 27 with the lower and adjacent end of the connecting rod 16, said arm 25 being so disposed with relation to the outer face of the disc 21 as to be engaged by the various fingers 22 and 23 during rotation of the shaft 18. However, it is to be noted at this point that the lengths of the fingers 22 are such as will impart upward thrusts to the arm 25 but at the same time, permit said arm 25 to become disengaged therefrom because of their inclined outer ends. The finger 23, however, is of a length sufficient to maintain its engagement with the arm 25 for a period of time greater than will be that of the finger 22 and in consequence, it will be understood that the upward movement of the arm 25 when engaged by said finger 23 will be greater and for a longer period of time. In consequence, it follows that with engagement of the finger 22 with the arm 25, a jigging or vibratory movement will be imparted to the connecting rod 16 by way of the arm 25. However, when the finger 23 engages said arm 25, the upward movement of the connecting rod 16 will be greater and in consequence, because of its connection with the prune receiving and washing basket 6 through the arm 11, said basket 6 will be raised to a substantially perpendicular position with respect to the tank 3, hence permitting its washed or cleansed contents to be discharged therefrom onto the deflecting board 5 for a purpose to be described.

Rotary motion is transmitted to the shaft 18 through the medium of a sprocket chain 28 passing about the circumferentially disposed teeth of the sprocket wheel 20 and likewise about a sprocket wheel 29 carried upon a clutch element 30 loosely mounted on one laterally extended end of a shaft 31 mounted in bearings upon the supporting frame 1 slightly beyond the inclined forward end of the tank 3 and disposed transversely of the same. Upon the opposite end of this shaft 31 there is mounted a pulley wheel 32 with which suitable belt gearing or the like is adapted to be engaged and connected with a suitable source of motive power, not shown.

In order that the transmission of rotary motion to the sprocket wheel 20 may be controlled at will by an operator or attendant of the machine located adjacent its rearward end and supervising operation of the prune receiving and washing basket 6, a lever 33 is slidably mounted upon one side of the tank 3, being received in suitable supporting brackets 34 and having its outer end provided with an extended handle 35 for an obvious purpose. The inner end of this lever 33 is pivotally connected to one of the right angular arms of a bell crank lever 36 pivotally mounted upon a bracket 37 secured to the rearward end of the corresponding side of said tank 3; the opposite end of the bell crank lever 36 being provided with a yoke engaging a slidable clutch 38 splined upon the shaft 31 and adapted to engage, at times, with the clutch element 29 loosely mounted upon the corresponding end of said shaft 31. Thus, it will be seen that by imparting a push to the lever 35, the bell crank lever 36 will be rocked in a direction to effect disengagement of the splined clutch element 38 from the loosely mounted clutch element 29 and because of this, the transmission of rotary motion to the sprocket wheel 20 will be interrupted. However, by imparting a pull to the lever 33, the bell crank lever 36 will

be rocked in an opposite direction and in doing so, will cause the splined clutch element 38 to be reengaged with the loosely mounted clutch element 29, thus reestablishing driving connection as between the same and the shaft 31, hence, permitting the sprocket chain 28 to transmit rotary motion to the sprocket wheel 20.

In order that the washed or cleansed prunes may be removed from the tank 3 subsequent to their discharge from the basket 6 onto the deflecting board 5, side members or supporting frames 39 are arranged adjacent the inner sides and the inclined forward end of the tank 3 and support at their opposite ends shafts 40 receiving sprocket wheels 41 thereon about which sprocket chains 42 are arranged; these sprocket chains having transversely disposed strips 43 arranged thereon whereby to afford forms of buckets or cups for receiving and retaining the washed prunes as they are delivered onto the conveyor so constituted from the inclined deflecting board 5. In this way, it will be understood that the washed or cleansed prunes will be elevated from the tank 3, whereupon they are discharged from the endless conveyor onto another inclined deflecting board 44 from whence they are directed into suitable trays 45 supported upon a table or rack 46 provided upon the forward or adjacent portion of the supporting frame 1. Such racks, upon being filled, may be removed from the supporting rack 46 in order that the contents thereof may be dried.

To transmit rotary motion to the endless conveyor constituted by the sprocket chain 42 and the transverse strips 43, one end of the uppermost of the shafts 40 is extended and has a fly wheel 47 fixedly mounted thereon, about which an endless belt 48 is engaged, the lower end of said belt passing about a pulley wheel 49 fixedly mounted upon the loosely mounted clutch element 30, heretofore described. Thus, it will be understood that rotary driving motion will be transmitted from the shaft 31 to the pulley wheel 30 and from thence, by way of the endless belt 48 to the pulley wheel 47 in order that motion may be imparted to the endless conveyor referred to.

It is desirable, however, that means be provided for regulating or controlling movement of the endless conveyor constituted by the sprocket chain 42 and the transverse strips 43, and to accomplish this, a clutch element 50 is loosely mounted upon the extended end of the uppermost shaft 40 and receives directly thereon the heretofore described pulley wheel 47. A second clutch element 51 is splined to the adjacent portion of the uppermost shaft 40 and is adapted to be engaged, at times, with the clutch element 50 whereby to effect a driving connection as between the same and said uppermost shaft 40. This splined clutch element 51 is controlled by means of a horizontally movable lever 52 pivotally supported as at 53 upon an adjacent portion of the supporting frame 1, the outer end of said controlling lever 52 being connected to one end of a bell crank lever 54 mounted as at 55 upon one side of the table or rack portion 46 provided on the supporting frame 1. To the remaining end of this bell crank lever 54 there is connected a rod 56 extending downwardly into engagement with a pedal or foot lever 57 pivotally supported as at 58 upon the lower forward portion of the supporting frame 1, as shown in the Figure 1; a contractile coiled spring 59 being connected to a portion of the same and to an adjacent portion of the supporting frame 1 for an obvious purpose.

A water supplying conduit 60 is extended into proximity to the upper portion of the endless conveyor heretofore referred to, whereat it is provided with a horizontally disposed elbow 61 having a plurality of perforations 62 formed in the lower side thereof and so disposed as to permit the spraying of water supplied from said conduit 60 onto the contents of the endless conveyor as the same are being elevated from the washing solution or fluid contained in the tank 3. Thus, a second cleansing bath will be directed upon the prunes prior to their delivery onto the drying trays 45. To control the spraying of water onto the prunes arranged on the endless conveyor, a valve 63 is provided, consisting of a strip of leather or similar material arranged within and directly adjacent the openings 62. Arms 64 are extended from this valve element downwardly into engagement with levers 65 carried upon a shaft 66 mounted in suitable bearing brackets 67 secured to portions of said elbow 61. Thus, it will be understood that with rocking of the levers 65 in the proper direction, the valve 63 may be moved away from or over the spraying openings 62 whereby to regulate or control the flow of water therethrough. A connecting rod 68 is pivotally secured at one end to the lever 65 as shown in the Figure 6, and has connection at its opposite end with one portion of a bell crank lever 69 pivotally mounted upon one side of the tank 3, the opposite end of said lever having pivotal connection with a second connecting rod 70, which in turn is connected through the medium of another bell crank lever 71 to yet another connecting rod 72 extending downwardly into engagement with a portion of the foot lever 57. Because of the connection of the lever 65 with the foot lever 57, it will be understood that with rocking of the latter, movement of the valve 63 onto or from the spraying openings 62

may be controlled by an operator or attendant of the machine.

The operation of the improved machine may be reviewed as follows:

A suitable cleasing solution or fluid is placed in the tank 3, overflow of the same being taken care of by way of an overflow port 73 adjacent the upper portion of the tank. Prunes to be washed are placed in the basket 6, whereupon the rotating shaft 31 is connected to the loosely mounted clutch element 29 by operation of the lever 33. At this time, rotary motion will be conveyed by way of the sprocket chain 28 to the sprocket wheel 20, thus rotating the shaft 18 and causing corresponding rotation of the disc 21 carrying the tripping fingers 22 and 23. With engagement of the tripping fingers 22 and 23 in their sequential order with the pivoted tripping arm 25, it will be understood that vibratory or jigging movement will be imparted to the basket 6 by way of the connecting rod 16, the lever 14 and the arm 11 through the link 12.

With engagement of the tripping finger 23 with the arm 25, the upward pivotal movement of the prune receiving and washing basket 6 will be greater than its prior movement due to engagement of the finger 22 with said arm 25 and at this time, said basket 6 will be raised to a substantially perpendicular position with respect to the tank 3, thus permitting its washed contents to be discharged therefrom onto the inclined deflecting board 5. With discharge of the washed contents of the basket 6 onto the inclined deflecting board 5, the same will be delivered onto the endless conveyor constituted by the sprocket chain 42 and the transverse strip 43, such conveyor being rotated at this time through its gearing to the pulley wheel mounted on the extended end of the shaft 31. However, in order that rotary motion may be directed to the uppermost shaft 40 of the endless conveyor, the foot lever 57 is depressed, thus causing pivotal movement of the lever 52 in a direction to effect engagement of the splined clutch element 51 with the loosely mounted clutch element 50 carrying thereon the upper pulley wheel 47. Thus, the washed prunes are conveyed upwardly on the endless conveyor and elevated from the tank 3. However, during their upward movement from the tank 3, a second cleansing bath from the spray coming from the openings 62 in the elbow 61 of the water supply conduit 60 is directed thereonto, such cleansing spray occurring with operation of the foot lever 57 because of the connection of the valve strip 63 therewith through the medium of the connecting rods 68, 70 and 72. With continued upward movement of the now thoroughly cleansed prunes on the endless conveyor, they will be discharged therefrom onto the inclined deflecting board 44 from whence they will be spread upon drying trays 45 arranged on the rack 46 provided therefor on the supporting frame 1. At this time, the cleansed prunes may be removed and placed in a suitable drying means.

In Figure 9, I have shown a slightly modified form of the invention wherein the washing device is manually operable, rather than automatically operable as in the preceding embodiment of the invention.

In this particular or modified embodiment of the invention, the prune receiving and washing basket 6′ pivotally supported in the rearward portion of the tank 3′ is connected by means of an arm 11′ and means 12′ to a transversely disposed shaft 10′ mounted in bearings 9′ upon the upper marginal portions of the several sides of the tank 3′; other arms 14′ being also fixedly mounted upon the shaft 10′ and having a counter weight 15′ arranged upon its upper free end. A second arm 73 is fixedly mounted at one end upon the shaft 10′ and is connected through a rod or bar 74 disposed longitudinally of and adjacent one side of the tank 3′ to a rocking lever 75 mounted in a suitable bracket 76 upon the floor or other support receiving the device in proximity to the rear end thereof. Thus, it will be understood that by rocking the lever 75, vibratory or jigging movement will be imparted to the prune receiving and washing basket 6′ and that when it is desired to dump or discharge the contents of said basket from the same onto the inclined deflecting board 5′, a greater pull or rocking of the lever 75 is effected, thus raising said basket 6′ to a substantially vertical or perpendicular position.

An endless conveyor 77 is arranged adjacent the forwardly inclined end of the tank 3′ and has a pulley wheel 78 fixedly mounted upon an extended end of the uppermost shaft thereof which pulley wheel receives a belt 79 thereover, having one end connected to a staple or similar device, as at 80 to a foot operated lever 81, while upon the opposite end of said belt, there is arranged a counter weight 82. Thus, with rocking of the foot lever 81, rotary motion will be imparted to the uppermost shaft of the endless conveyor whereby the conveying belt thereof may be moved for elevating the washed prunes discharged thereonto from the deflecting board 5′. However, in order that a uni-directional rotary movement may be imparted to the endless conveyor, I provide a slip clutch connection generally indicated by the numeral 83 and clearly shown in the Figure 10. By means of this slip clutch connection, a unidirectional rotary motion will be imparted to the endless conveyor, namely, with de-

pression of the foot lever 81. With return of said foot lever to its uppermost position under influence of the counter weight 82 arranged on the free end of the belt 79, slippage as between the uppermost shaft of the endless conveyor and the slip clutch 83 will occur, thus preventing the transmission of rotary movement in an opposite direction to said conveyor.

The foot lever 81 is arranged longitudinally of an adjacent one side of the supporting frame 1′ of the device, being pivoted thereto as indicated at 84, while the forward or free end of said lever is guided by means of a guide or bracket strip 85 secured to the adjacent portion of said supporting frame 1′. Hence, it will be understood that the upward pivotal movement of the lever 81 will be limited.

In order that the cleansing spray directed onto the prunes being elevated upon the endless conveyor may be controlled in unison with the transmission of rotary motion to the endless conveyor, a connecting rod 86 is pivotally connected to the valve operating lever 65′ and has its lower end connected as at 87 to a portion of the foot lever 81. Thus, with depression of said foot lever for transmitting rotary motion to the endless conveyor 77, the valve operated by the lever 65′ will be moved to open position for imparting a cleansing spray to the washed prunes being elevated from the tank 3′.

Manifestly, the construction shown is capable of considerable modification, and such modification as is within the scope of my claims I consider within the spirit of my invention.

I claim:

1. A prune washing machine comprising a supporting frame, a tank thereon, a prune receiving and washing basket pivotally supported in said tank, means for imparting vibratory motion to said basket and moving the same to dumping position at a predetermined time, conveying means for receiving the washed prunes from said basket and delivering the same from the tank, and spraying means in proximity to said conveying means for washing the prunes being elevated thereon.

2. A prune washing machine comprising a supporting frame, a tank thereon, a prune receiving and washing basket pivotally supported in said tank having the bottom thereof composed of a plurality of longitudinally disposed rods, means for imparting vibratory motion to said basket and moving the same to dumping position at a predetermined time, conveying means for receiving the washed prunes from said basket and delivering the same from the tank, a spraying means in proximity to said conveying means for washing the prunes being elevated thereon, and a common means for controlling movement of said conveying means and the passage of water from said spraying means.

3. A prune washing machine comprising a supporting frame, a tank thereon, a prune receiving and washing basket having a foraminated bottom pivotally supported in said tank, an inclined deflecting board arranged transversely of and within the tank, means for imparting vibratory movement to said basket and moving the same to dumping positions at a predetermined time, conveying means arranged adjacent one end of the tank extending therein into proximity to said deflecting board for receiving prunes from said basket and delivering the same from the tank, a sprayer disposed transversely of and arranged in proximity to the intermediate portion of said conveying means, valve means for said sprayer and a common means for controlling movement of the conveying means and movement of said valve to its open or closed position in said sprayer.

4. A prune washing machine comprising a supporting frame, a tank thereon, a prune receiving and washing basket pivotally supported in said tank, a rotatable disc mounted adjacent one side of said tank, a plurality of fingers arranged on one face of said disc, one of said fingers being of a length greater than the remaining finger, a tripping arm arranged in proximity to said disc adapted to be tripped by engagement with said fingers, means for connecting said tripping arm to the prune receiving and washing basket whereby to permit the transmission of vibratory motion thereto and the raising of the same to a dumping position at a predetermined time, conveying means arranged adjacent one end of said tank adapted to receive the washed prunes from said basket and deliver the same from said tank, a sprayer arranged in proximity to the intermediate portion of the conveying means, valve means for controlling the passage of water from said sprayer, and a common means for controlling movementof said conveyor means and of said valve in the sprayer.

5. A prune receiving and washing machine comprising a frame, a tank thereon, a prune receiving and washing basket having a foraminated bottom pivotally supported in and adjacent one end of said tank, an inclined deflecting board arranged transversely of and within said tank, conveying means arranged in the opposite end of said tank, a rotatable disc supported adjacent one side of the tank having a plurality of tripping fingers thereon, one of said fingers being of a length greater than the remaining fingers, a tripping arm adjacent said disc adapted to be engaged by said tripping fingers, means for connecting said tripping arm with the prune receiving and washing basket whereby to permit the transmission of vibratory motion thereto and the raising of the basket

to a dumping position upon engagement of the longer tripping finger with said tripping arm, a sprayer arranged in proximity to the intermediate portion of the conveying means, valve means within said sprayer for controlling the passage of water therefrom, and a common manually operated means for controlling the transmission of motion to the conveying means and the regulating of said valve means in the sprayer.

In witness whereof I have hereunto set my hand.

LAURITZ N. MILLER.