No. 807,362. PATENTED DEC. 12, 1905.

E. S. DE LONG.

FRUIT ELEVATOR.

APPLICATION FILED AUG. 22, 1904.

2 SHEETS—SHEET 1.

Fig. 1

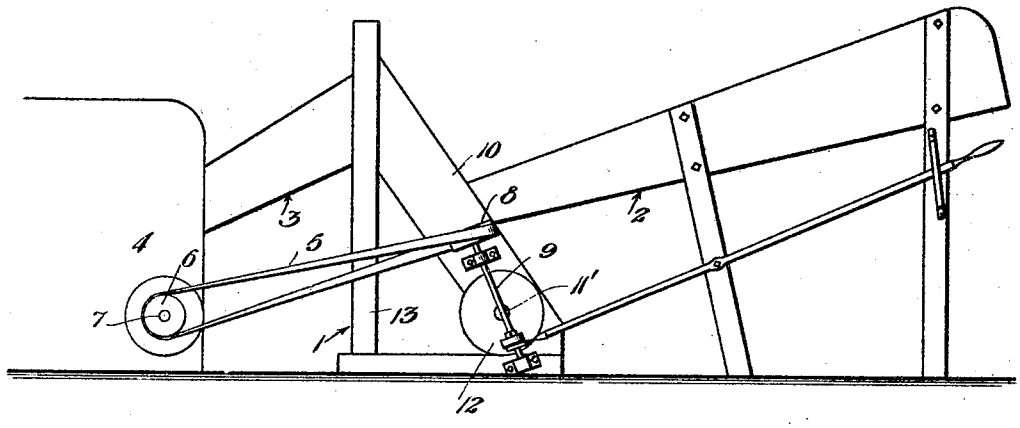
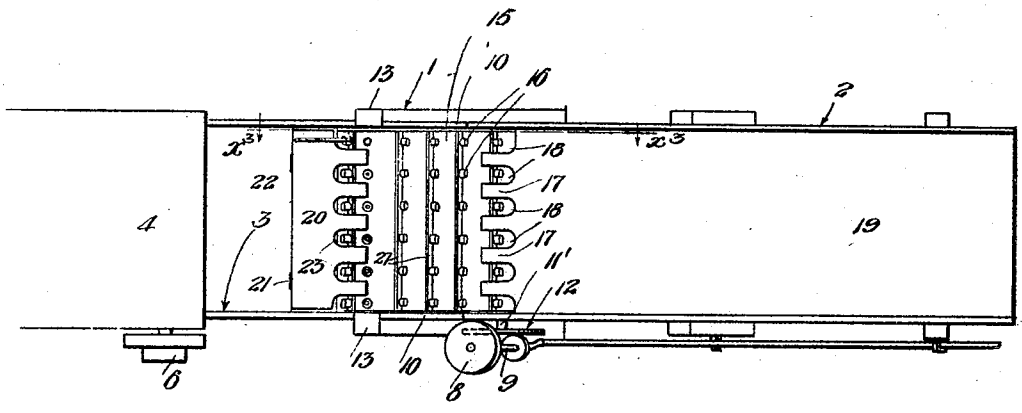


Fig. 2



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Fig. 3

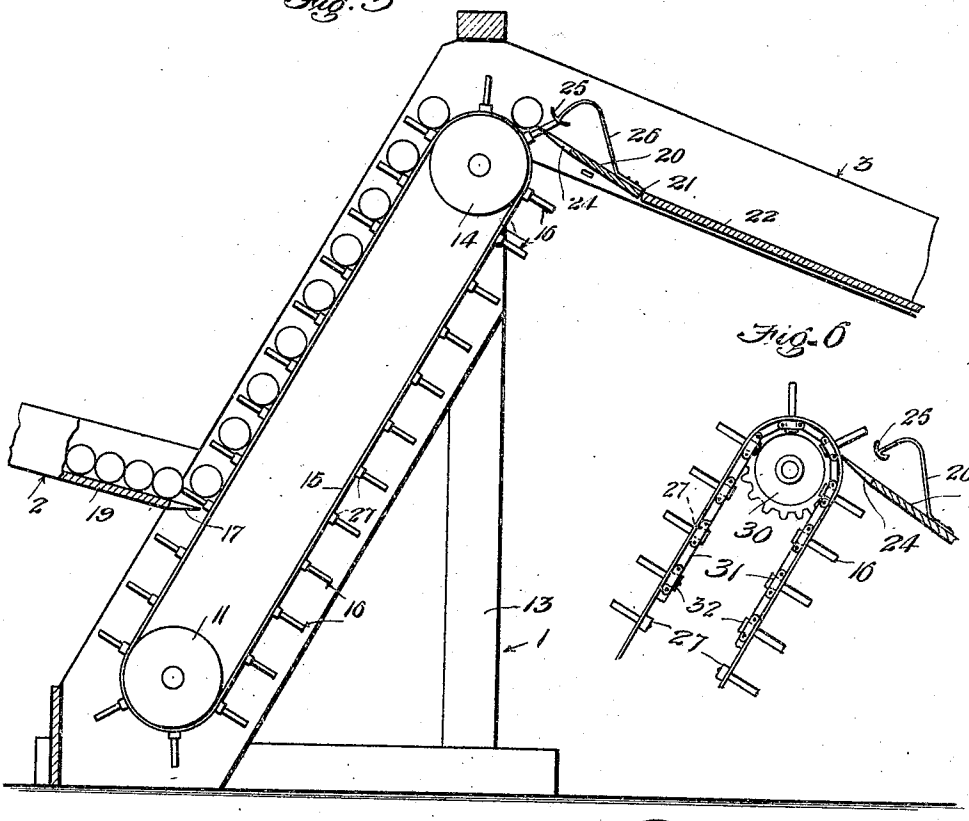


Fig. 6

Fig. 4

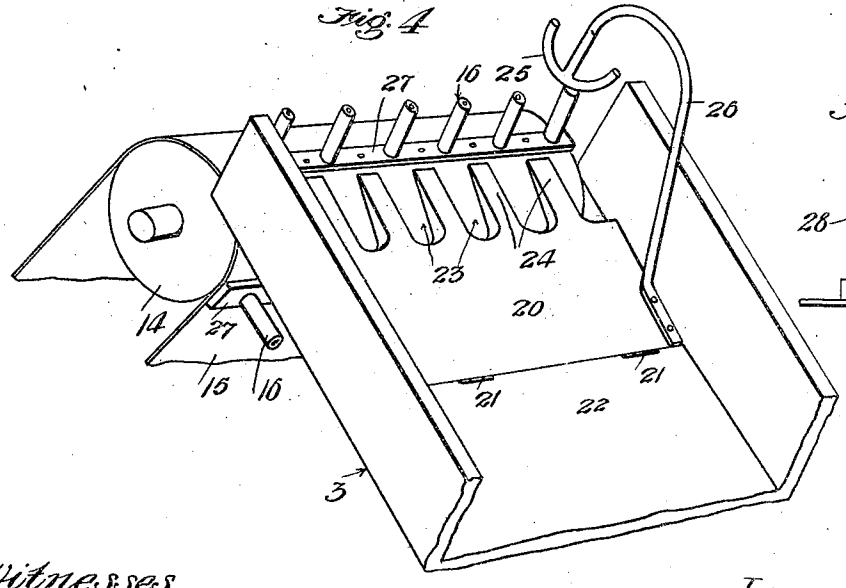
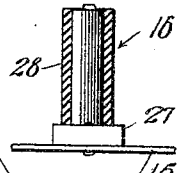


Fig. 5



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UNITED STATES PATENT OFFICE.

ERNEST S. DE LONG, OF UPLAND, CALIFORNIA, ASSIGNOR TO PACKING HOUSE EQUIPMENT COMPANY, OF UPLAND, CALIFORNIA, A CORPORATION OF CALIFORNIA.

FRUIT-ELEVATOR.

No. 807,362. Specification of Letters Patent. Patented Dec. 12, 1905.

Application filed August 22, 1904. Serial No. 221,642.

To all whom it may concern:

Be it known that I, ERNEST S. DE LONG, a citizen of the United States, residing at Upland, in the county of San Bernardino and State of California, have invented new and useful Improvements in Fruit-Elevators, of which the following is a specification.

One object of the invention is to provide improved means for depositing fruit on the elevator in such manner as to prevent any of the fruit from escaping or falling free of the elevator.

Another object of the invention is to provide means for taking the fruit off the elevator in the most effective manner.

A further object of my invention is to provide for moving the fruit on and off the elevator conveyer in a smooth easy manner without any dropping and consequent bruising of the fruit.

The accompanying drawings illustrate the invention.

Figure 1 is a side elevation of the fruit-elevator, together with the feed-trough therefor and a portion of an apparatus to which the elevator delivers the fruit. Fig. 2 is a plan. Fig. 3 is a vertical section of the elevator. Fig. 4 is a perspective of the upper end of the elevator, showing the means for taking the fruit therefrom. Fig. 5 is a detail of one of the fruit-engaging pins on the elevator. Fig. 6 is a detail sectional view of the upper part of a different form of conveyer.

In Fig. 1 the elevator is designated in a general way at 1, 2 indicating the feed-trough therefor, 3 the delivery-trough, and 4 a portion of the machine or apparatus to which the elevator is delivering the fruit. The elevator may be driven from such machine or apparatus, as by means of a belt 5, operated by a pulley 6 on the shaft 7 of said apparatus and driving a pulley 8 on a shaft 9, mounted on a side board 10 of the elevator, said shaft 9 driving the shaft 11′ of one of the elevator-drums 11 through a suitable speed-regulating gear, (indicated at 12.)

The elevator comprises two side frames or boards 10, which are supported at their ends in posts 13 and extend downwardly therefrom at an incline, their lower ends resting on the floor. Near the upper and lower ends of these side frames are journaled the elevator-drum rollers 11 and 14, which carry the elevator-apron or conveyer-belt 15. Said apron is preferably of canvas or other suitable flexible material and carries pins or projections 16, arranged in horizontal or transverse rows across the width of the pulley to form fruit-engaging flights, slats 27 being desirably fastened to the belt to carry these pins. Said pins are also arranged in rows extending longitudinally of the conveyer-belt, so that all the pins in each longitudinal row will move in the same path. To prevent any injury to the fruit, these pins are desirably surrounded with sleeves 28, of rubber or other elastic material, to serve as a cushion.

The floor 19 of feed trough or hopper 2 is provided at the end adjacent to the apron with a series of fingers 17, forming a comb, the respective fingers being arranged between the paths of movement of the respective pins 16, so that the pins in the movement of the conveyer-apron will pass through the slots 18 between said fingers.

The delivery-trough 3 extends from the upper end of the conveyer and is provided adjacent to the conveyer-apron with a pivoted comb-plate 20, hinged at 21 to the bottom part 22 of said feed-trough and extending at its free end adjacent to the conveyer-apron, where it passes around the top drum 14, the slots 23 of said comb-plate allowing the passage of the pins 16 and the comb-fingers 24 serving to carry off the fruit, as hereinafter described. To insure effective operation of this comb-plate in picking off the fruit from the conveyer and causing it to pass forward into the delivery-trough, it is desirable to impart a vibratory movement to this plate, and for this purpose it may be provided with a tappet or cam-surface 25, formed on an arm 26, extending from said plate, said tappet being arranged in the path of movement of one longitudinal row of pins 16, so that in the movement of the conveyer the said row of pins will successively strike said tappet and jog or vibrate the comb-plate to impel the fruit forward into the feed-trough. The conveyer may also be formed in other ways without departing from my invention. For example, as shown in Fig. 6, the slats 27 may be on the inner side of the conveyer-belt 15, and in place of drums for carrying same sprockets may be provided, one of which is indicated at 30, carrying a sprocket-chain 31,

having seats 32 for said slats. In this case the picker-off comb 24 may rest directly on the belt.

The machine is used as follows: The fruit is deposited in the feed-trough 2 and rolls down to the lower end thereof, coming to rest against the canvas belt 15. As each flight or horizontal row of pins or projections 16 rises through the slots 17 in the bottom of the feed-trough it will pick up the fruit that is resting against the canvas belt and will carry it upwardly and over the upper drum 14. As the fruit passes over the top of said upper drum it is rolled or slid onto the taking-off comb 24, the pins passing through the slots 23, so as to move away from the fruit. As each flight or horizontal row of pins deposits its fruit upon the comb 24 the latter is vibrated or jogged by impact of one pin of that row against the tappet 25, thereby insuring that the fruit will pass forward and down the delivery-trough 3.

What I claim is—

1. The combination with a fruit-elevating conveyer of delivery means for taking off the fruit therefrom, extending adjacent to the conveyer, mounted to have vibratory movement, and means on the conveyer for engaging and vibrating said delivery means.

2. The combination with a fruit-elevating conveyer of a delivery device to receive fruit therefrom, and projections on the conveyer for engaging and vibrating said delivery device.

3. A fruit-elevator comprising a conveyer-belt provided with projections arranged in transverse and longitudinal rows, a delivery-trough, a comb device pivoted thereto with its free end adjacent to the conveyer-belt and its teeth extending between the paths of movement of the projections, and means for vibrating said comb device.

4. A fruit-elevator comprising a conveyer-belt provided with projections arranged in transverse and longitudinal rows, a delivery-trough, a comb device pivoted thereto with its free end adjacent the conveyer-belt and its teeth extending between the paths of movement of the projections, and means for vibrating said comb device, consisting of a tappet on said device engaged by said projections.

5. In a fruit-elevator, a conveyer-belt provided with projecting pins, said pins having sleeves of elastic material.

In testimony whereof I have hereunto set my hand, at Upland, California, this 2d day of August, 1904.

ERNEST S. DE LONG.

In presence of—
H. D. BLAKESLEE,
M. F. PALMER.