April 13, 1926. 1,581,071

H. W. LOWE

TOMATO WASHING, SCALDING, AND PEELING MACHINE

Filed Feb. 23. 1922 2 Sheets-Sheet 1

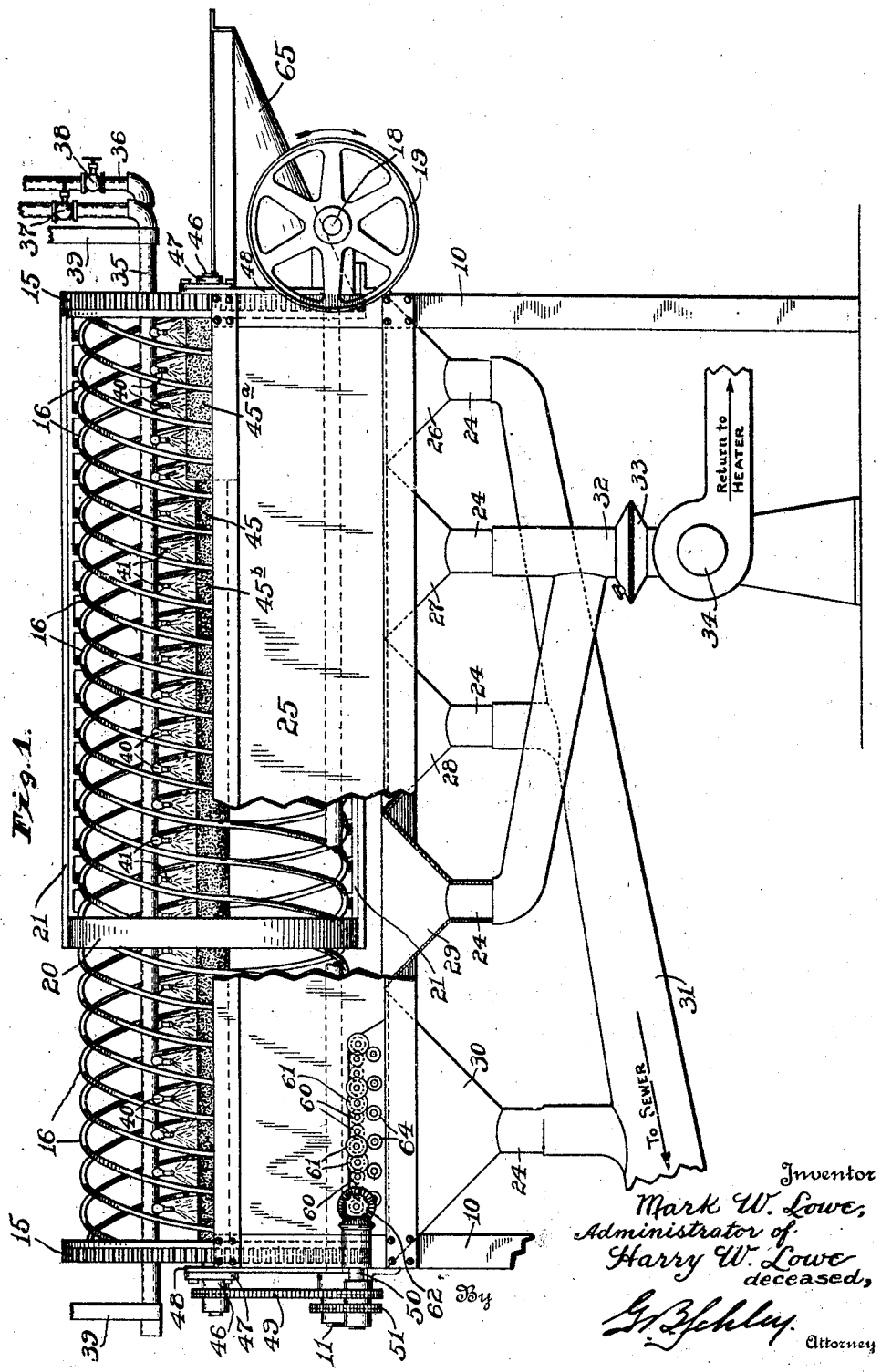


Fig. 1.

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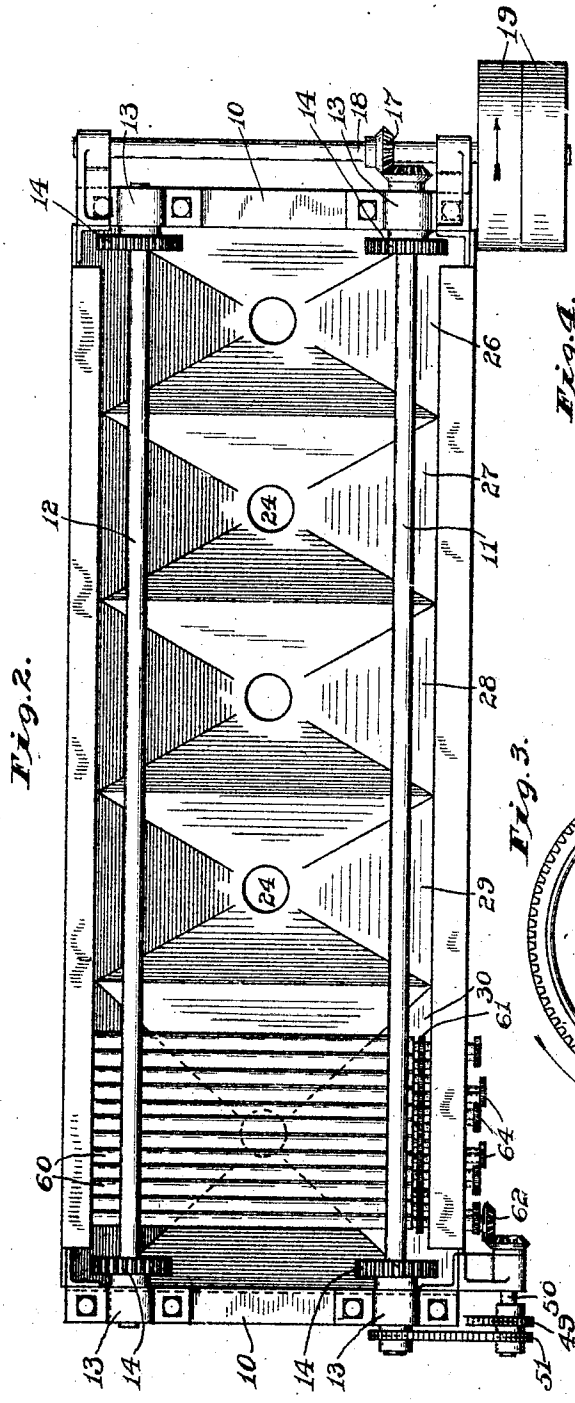


Fig. 2.

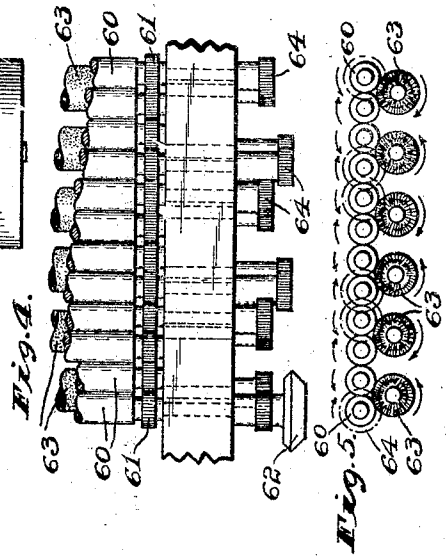


Fig. 4.

Fig. 5.

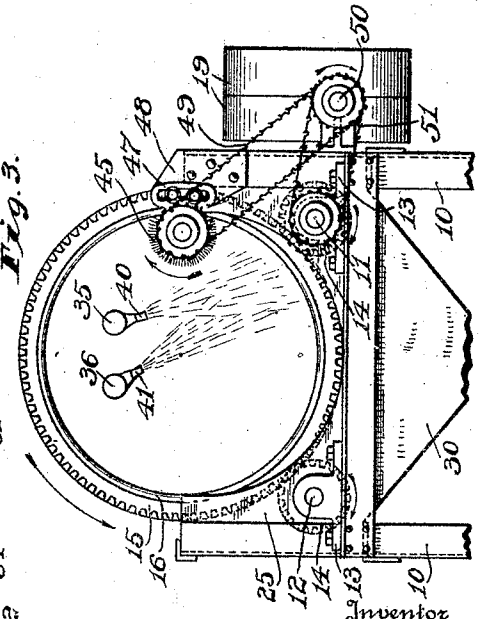


Fig. 3.

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Patented Apr. 13, 1926. 1,581,071

UNITED STATES PATENT OFFICE.

HARRY W. LOWE, DECEASED, LATE OF INDIANAPOLIS, INDIANA; BY MARK W. LOWE, ADMINISTRATOR, OF BUFFALO, NEW YORK.

TOMATO WASHING, SCALDING, AND PEELING MACHINE.

Application filed February 23, 1922. Serial No. 538,567.

To all whom it may concern:

Be it known that HARRY W. LOWE, deceased, who before his death was a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, invented a new and useful Tomato Washing, Scalding, and Peeling Machine, of which the following is a specification.

It is the object of the present invention to provide a machine for peeling tomatoes, and in the preferred form of the invention for preliminarily washing and scalding such tomatoes; and for treating other fruits and vegetables.

The accompanying drawings illustrate the invention: Fig. 1 is a side elevation, with some parts in section or broken away, of a tomato washing, scalding, and peeling machine embodying the invention; Fig. 2 is a plan of the machine, with the helical feeding cylinder removed; Fig. 3 is an end view of the machine shown in Fig. 1; Fig. 4 is a fragmental plan of the skin-removing rollers and their driving and cleaning mechanism; and Fig. 5 is a side elevation of the roller drive shown in Fig. 4.

The device as a whole is carried by any suitable frame 10, usually rectangular in plan, extending longitudinally of which near the side edges are two parallel shafts 11 and 12 mounted in suitable bearings 13 in the ends of the frame. The shafts 11 and 12 are provided at their ends with supporting pinions 14, one at each end of each shaft, and on the pairs of pinions 14 at the ends of the frame rest the end gears 15 of a feeding cylinder formed of such gears 15 and (in the preferred embodiment of the invention) a plurality of helixes 16 of wire or tubing of suitable size, but it is not essential that there be more than one such helix 16 although I have shown and prefer to use a plurality of them to get a greater pitch of the helix. The gears 15 are rings, with external gear teeth thereon, so that with the helixes 16 they form a hollow cylinder, with helical openings in the circumference of the cylinder between the wire helixes 16. The shaft 11 is connected by bevel gearing 17 to a transverse drive shaft 18, provided with tight and loose pulleys 19; and when the shaft 11 is driven it makes the cylinder 15—16 rotate in the direction of the arrow, the shaft 12 also rotating but serving merely as an idler shaft assisting in supporting the cylinder. The cylinder 15—16 is preferably provided with an intermediate reinforcing ring 20, located outside the helixes 16, and this intermediate ring 20 is connected with the ring gear 15 at the feed end of the cylinder by a plurality of longitudinal bars 21 to which the several turns of the helixes 16 are attached at their passing points. There are no bars 21, however, between the intermediate ring 20 and the ring gear 15 at the discharge end of the cylinder.

The lower half of the cylinder 15—16 is within a drain pan 25, suitably supported on the frame 10; and the bottom of this drain pan 25 is provided with a series of drain sections 26, 27, 28, 29, and 30, each of which sections is highest at its edges and converges downwardly to a center discharge pipe 24. The discharge pipes 27 are separate for the several drain sections. The sections 26, 28, and 30, which receive cold water as hereinafter explained, may be connected to a common drain pipe 31, which leads to any suitable discharge point, usually to a sewer; but the drain sections 27 and 29, which receive hot water as hereinafter explained, preferably discharge into a common discharge pipe 32 which leads through a strainer 33 to a pump 34 which acts to return the hot water to the boiler or water heater.

The hot and cold water above referred to is supplied by two pipes 35 and 36, provided with control valves 37 and 38, and extending longitudinally through the cylinder 15—16 in the upper portion thereof. The pipes 35 and 36 are suitably supported externally of the cylinder, as by end supporting straps 39, so that they are stationary. The cold water pipe 35 is provided with discharge nozzles 40 over the drain sections 26, 28, and 30; while the hot water pipe 36 is provided with similar nozzles 41 over the drain sections 27 and 29.

A rotatable cylindrical brush 45 extends longitudinally through the cylinder 15—16. This brush is located near that side of the cylinder which is rising, at an intermediate point in the height of the cylinder, as is clear from Fig. 3; and preferably it is carried in bearings 46 having slotted supports 47 (Fig. 3) by which they are adjustably mounted on extensions 48 of the frame 10, so that the height of the brush 45 may be adjusted. The brush 45 is preferably formed in two sections, the section 45ª

at the feed end having longer and softer bristles, while the section 45[b] (which extends the greater part of the length of the cylinder (15—16) is made with shorter and stiffer bristles. The longer bristle section 45[a] preferably extends only over the first drain section 26. The rotating brush 46 is connected by a chain 49 and suitable sprockets to a short shaft 50, suitably mounted in bearings on the frame 10, the chain 49 being varied in length when the rotating brush 45 is adjusted vertically. The shaft 50 is connected by a chain 51 and suitable sprockets to the shaft 11, so that when the main driving shaft 18 is driven to drive the shaft 11 and the cylinder 15—16 the power is also transmitted through the chains 51 and 49 and the shaft 50 to the shaft of the brush 45, to drive said brush 45 in the opposite direction from that in which the cylinder rotates, as is indicated by the arrows in Fig. 3.

A series of transverse rollers 60 is located beneath and in close proximity to the helixes 16 over the drain section 30, and between the intermediate ring 20 and the ring gear 15 which is at the discharge end of the cylinder. The rollers 60 lie close to one another, and are inter-connected by inter-meshing gears 61, so that adjacent rollers rotate in opposite directions. One of the rollers 60—the one at the end of the series as shown—is connected by bevel gearing 62 to the shaft 50, so that all the rollers 60 are driven whenever the cylinder 15—16 is rotating. A series of rotatable cleaning brushes 63 lie beneath the rollers 60, one brush 63 between each pair of rollers 60, and these brushes 63 are connected by gearing 64 to convenient ones of the rollers 60 so that all the brushes will rotate when the rollers are rotated, preferably so that adjacent brushes 63 will rotate in opposite directions, as is clear from Fig. 5.

In operation, the tomatoes are dumped into the feed hopper 65 at the feed end (the right-hand end in Fig. 1) of the machine, and from this hopper 65 the tomatoes roll through the adjacent ring gear 15 into the inside of the cylinder 15—16. These tomatoes are carried from the feed end of the machine to the discharge end of the machine by the feeding and guiding action of the helixes 16 as the cylinder rotates, and as they are thus fed the tomatoes roll over one another. The brush 45 assists in rolling the tomatoes over one another, as the tomatoes are carried up the side of the cylinder into contact with such brush, for this brush rolls the tomatoes in toward the center of the cylinders and brushes their surfaces in doing so. As the tomatoes travel along the cylinder 15—16, they pass through alternate sprays of cold and hot water, which both wash them and cause expansion and contraction of the tomato skin so that it will crack by the contraction of the cold water and will be loosened by the scalding action of the hot water. This alternate spraying with cold and hot water may be repeated any number of times, according to the number of groups of cold and hot water nozzles 40 and 41 provided, but ordinarily three sprayings with cold water with two interspersed sprayings of hot water are entirely sufficient; and in some cases fewer sprayings may be used. The first cold-water spray washes off the dirt, and the long bristles of the brush section 45[a] assists in removing this dirt without greatly affecting the skin of the tomatoes. As the tomatoes travel through the cylinder, under the alternate sprays of cold and hot water, the brush section 45[b] loosens the skin and to some extent peels it off. After the tomatoes have passed the intermediate ring 20, and have come over the final drain section 30, they pass on to the rollers 60, which as they rotate rub and pull off the loosened skin from the scalded tomatoes very effectively. The tomatoes project through the openings between the helixes 16 into contact with these rollers 60. The skin from the tomatoes adheres to the rollers 60, as such skin is pulled off, but the rollers are cleaned by the brushes 63 below them, and the removed skin, in fragmentary form, is carried down by the cold-water spray into the drain section 30 and out to the sewer. Such skin is also carried in the other drain sections 26 to 29, and is carried off to the sewer by the cold water from the sections 26 and 28, but is removed from the hot water by the strainer 33 so that the hot water which is returned to the boiler by the pump 34 may be free from such skin. The tomatoes free from skin, are discharged from the cylinder 15—16 after they have passed over the rollers 60, and after removal of the cores by other means, are ready for canning by the usual processes.

While the machine as shown performs the cleaning and scalding operations as well as the skin-removing operations, it is not essential that the cleaning and scalding be done in the machine itself, as that may be done beforehand, and the cleaned and scalded tomatoes passed over the skin-removing rollers 60 by the operation of the cylinder 15—16.

The invention claimed is:

1. A tomato peeler, comprising a plurality of rollers driven so that adjacent rollers rotate oppositely, and means for tumbling tomatoes over such rollers.

2. A tomato peeler, comprising a plurality of rollers, and means for tumbling tomatoes transversely over such rollers.

3. A tomato peeler, comprising a plurality of rollers driven so that adjacent rollers rotate oppositely, a hollow cylinder lying

above said rollers and having a helical slot through it to permit tomatoes within it to project through into contact with said rollers, the axis of said cylinder being transverse to the axes of said rollers, and means for driving both said cylinder and said rollers.

4. A tomato peeler, comprising a plurality of rollers, and means for rolling tomatoes over such rollers comprising a hollow cylinder lying above said rollers and having a helical slot through it to permit tomatoes within it to project through into contact with said rollers, the axis of said cylinder being transverse to the axes of said rollers, and means for driving both said cylinder and said rollers.

5. A tomato peeler, comprising a plurality of rollers, and means for rolling tomatoes over such rollers and rotating brushes below said rollers for cleaning them.

6. A device for peeling tomatoes, comprising means for breaking up and loosening the skins of tomatoes, said means including a rotating drum through which tomatoes may be passed, said drum having one or more helical slots; in combination with means located near the discharge end of said drum for removing the skins from the tomatoes before their discharge from the drum.

7. A device for peeling tomatoes, comprising means for breaking up and loosening the skins of tomatoes, said means including a rotating drum through which tomatoes may be passed, said drum having one or more helical slots; in combination with means for removing the skins from the tomatoes after they have been acted on by said skin loosening means but before they have been discharged from said drum.

8. In combination, a horizontally extending cylinder formed of one or more helical members to provide one or more helical slots between them, means for rotating said cylinder to cause tomatoes placed within it to travel from one end of the cylinder to the other, and means for providing alternate sprays of cold and hot water within said cylinder, and a series of rollers transverse to said cylinder and lying near its discharge end so that tomatoes are rolled over said rollers by the action of the cylinder.

9. In combination, a horizontally extending cylinder formed of one or more helical members to provide one or more helical slots between them, means for rotating said cylinder to cause tomatoes placed within it to travel from one end of the cylinder to the other, and means for producing sprays of hot and cold water within said cylinder at alternate points along it, and a series of rollers transverse to said cylinder and lying near its discharge end so that tomatoes are rolled over said rollers by the action of the cylinder.

10. In combination, a horizontally extending cylinder formed of one or more helical members to provide one or more helical slots between them, means for rotating said cylinder to cause tomatoes placed within it to travel from one end of the cylinder to the other, and means for providing alternate sprays of cold and hot water within said cylinder, and a series of rollers lying near its discharge end so that tomatoes are rolled over said rollers by the action of the cylinder, and means for rotating such rollers so that adjacent rollers rotate in opposite directions.

11. In combination, a horizontally extending cylinder formed of one or more helical members to provide one or more helical slots between them, means for rotating said cylinder to cause tomatoes placed within it to travel from one end of the cylinder to the other, and means for producing sprays of hot and cold water within said cylinder at alternate points along it, and a series of rollers lying near its discharge end so that tomatoes are rolled over said rollers by the action of the cylinder, and means for rotating such rollers so that adjacent rollers rotate in opposite directions.

12. In combination, a horizontally extending cylinder formed of one or more helical members to provide one or more helical slots between them, means for rotating said cylinder to cause tomatoes placed within it to travel from one end of the cylinder to the other, and means for providing alternate sprays of cold and hot water within said cylinder, and means near the discharge end of said cylinder for removing the skins from the tomatoes.

13. In combination, a horizontally extending cylinder formed of one or more helical members to provide one or more helical slots between them, means for rotating said cylinder to cause tomatoes placed within it to travel from one end of the cylinder to the other, and means for producing sprays of hot and cold water within said cylinder at alternate points along it, and means near the discharge end of said cylinder for removing the skins from the tomatoes.

14. In combination, a horizontally extending cylinder formed of one or more helical members to provide one or more helical slots between them, means for rotating said cylinder to cause tomatoes placed within it to travel from one end of the cylinder to the other, and means for providing alternate sprays of cold and hot water within said cylinder, and a rotating brush near the rising side of the cylinder for brushing the tomatoes and rolling them toward the center of the cylinder.

15. In combination, a horizontally extending cylinder formed of one or more helical members to provide one or more helical slots

between them, means for rotating said cylinder to cause tomatoes placed within it to travel from one end of the cylinder to the other, and means for producing sprays of hot and cold water within said cylinder at alternate points along it, and a rotating brush near the rising side of the cylinder for brushing the tomatoes and rolling them toward the center of the cylinder.

16. In combination, a horizontally extending cylinder formed of one or more helical members to provide one or more helical slots between them, means for rotating said cylinder to cause tomatoes placed within it to travel from one end of the cylinder to the other, and a rotating brush near the rising side of the cylinder for brushing the tomatoes and rolling them toward the center of the cylinder.

17. In combination, a horizontally extending cylinder formed of one or more helical members to provide one or more helical slots between them, means for rotating said cylinder to cause tomatoes placed within it to travel from one end of the cylinder to the other, and means for producing sprays of hot and cold water within said cylinder at alternate points along it, and a drain pan having separate drain-pan sections beneath the hot-water and cold-water sprays, and means for returning the water from the drain-pan sections below the hot-water sprays back to the water heater.

18. In combination, a horizontally extending cylinder formed of one or more helical members to provide one or more helical slots between them, means for rotating said cylinder to cause tomatoes placed within it to travel from one end of the cylinder to the other, and means for producing sprays of hot and cold water within said cylinder at alternate points along it, drain-pan sections beneath the hot-water sprays, and means for returning the water caught by said drain-pan sections back to the heater.

19. In combination, means for producing a series of hot-water and cold-water sprays, means for rolling tomatoes through said sprays so that they pass alternately through the hot-water and the cold-water sprays, and means for removing the skins from the tomatoes after they have passed through such sprays.

20. In combination, means for producing a series of hot-water and cold-water sprays, means for rolling tomatoes through said sprays so that they pass alternately through the hot-water and the cold-water sprays, and a series of rollers driven so that adjacent rollers rotate in opposite directions arranged so that the tomatoes are rolled over them after passing through sprays.

21. In combination, means for producing a series of hot-water and cold-water sprays, means for rolling tomatoes through said sprays so that they pass alternately through the hot-water and the cold-water sprays, and a series of rollers arranged so that the tomatoes are rolled over them after passing through sprays.

22. A tomato peeler, comprising a plurality of rollers driven so that adjacent rollers rotate oppositely, and means for rolling tomatoes over such rollers, a hollow cylinder having helical slots through it to permit tomatoes within it to project through into contact with said rollers, and means for driving both said cylinder and said rollers.

23. A tomato peeler, comprising a plurality of rollers, and means for rolling tomatoes over such rollers comprising a hollow cylinder having helical slots through it to permit tomatoes within it to project through into contact with said rollers, and means for driving both said cylinder and said rollers.

24. In combination, a horizontally extending cylinder formed of one or more helical members to provide one or more helical slots between them, means for rotating said cylinder to cause tomatoes placed within it to travel from one end of the cylinder to the other, and means for providing alternate sprays of cold and hot water within said cylinder, and a series of rollers lying near its discharge end so that tomatoes are rolled over said rollers by the action of the cylinder.

25. In combination, a horizontally extending cylinder formed of one or more helical members to provide one or more helical slots between them, means for rotating said cylinder to cause tomatoes placed within it to travel from one end of the cylinder to the other, and means for producing sprays of hot and cold water within said cylinder at alternate points along it, and a series of rollers lying near its discharge end so that tomatoes are rolled over said rollers by the action of the cylinder.

26. A tomato peeler, comprising a rotatably mounted hollow roller for carrying tomatoes within it, and skin-abrading means arranged to have the tomatoes in such hollow roller tumbled over and upon it by the rotation of such roller.

27. In combination, a horizontally extending cylinder formed of one or more helical members to provide one or more helical slots between them, means for rotating said cylinder to cause fruit and vegetables placed within it to travel from one end of the cylinder to the other, and means for providing alternate sprays of cold and hot water within said cylinder, and a brush so placed that such fruit or vegetables are rolled in contact with it by the motion of the cylinder.

28. In combination, a horizontally extending cylinder formed of one or more helical members to provide one or more helical slots between them, means for rotating said cyl-

inder to cause fruit or vegetables placed within it to travel from one end of the cylinder to the other, and means for producing sprays of hot and cold water within said cylinder at alternate points along it, and a brush so placed that such fruit or vegetables are rolled in contact with it by the motion of the cylinder.

29. In combination, a horizontally extending cylinder formed of one or more helical members to provide one or more helical slots between them, means for rotating said cylinder to cause fruit or vegetables placed within it to travel from one end of the cylinder to the other, and a brush so placed that such fruit or vegetables are rolled in contact with it by the motion of the cylinder.

30. In combination, a horizontally extending cylinder formed of one or more helical members to provide one or more helical slots between them, means for rotating said cylinder to cause fruit or vegetables placed within it to travel from one end of the cylinder to the other, and means outside of the cylinder for acting on said fruit or vegetables as they project through between the helical members during such travel along the cylinder.

31. In combination, a series of rollers arranged so that tomatoes may be tumbled over them, and means for breaking up the skins of such tomatoes before they are rolled over said rollers.

32. In combination, a series of rollers arranged so that tomatoes may be tumbled over them, and means for breaking up the skins of such tomatoes.

33. In combination a series of rollers, adjacent rollers of which series rotate in opposite directions, said rollers being arranged so that tomatoes may be tumbled over them, and means for breaking up the skins of said tomatoes.

In witness whereof, I have hereunto set my hand at Buffalo, New York, this 14th day of January, 1922.

MARK W. LOWE,
Administrator of the Estate of Harry W. Lowe, Deceased.