E. N. MAULL.

POLISHING MACHINE.

APPLICATION FILED FEB. 1, 1922.

1,418,666.

Patented June 6, 1922.

4 SHEETS—SHEET 1.

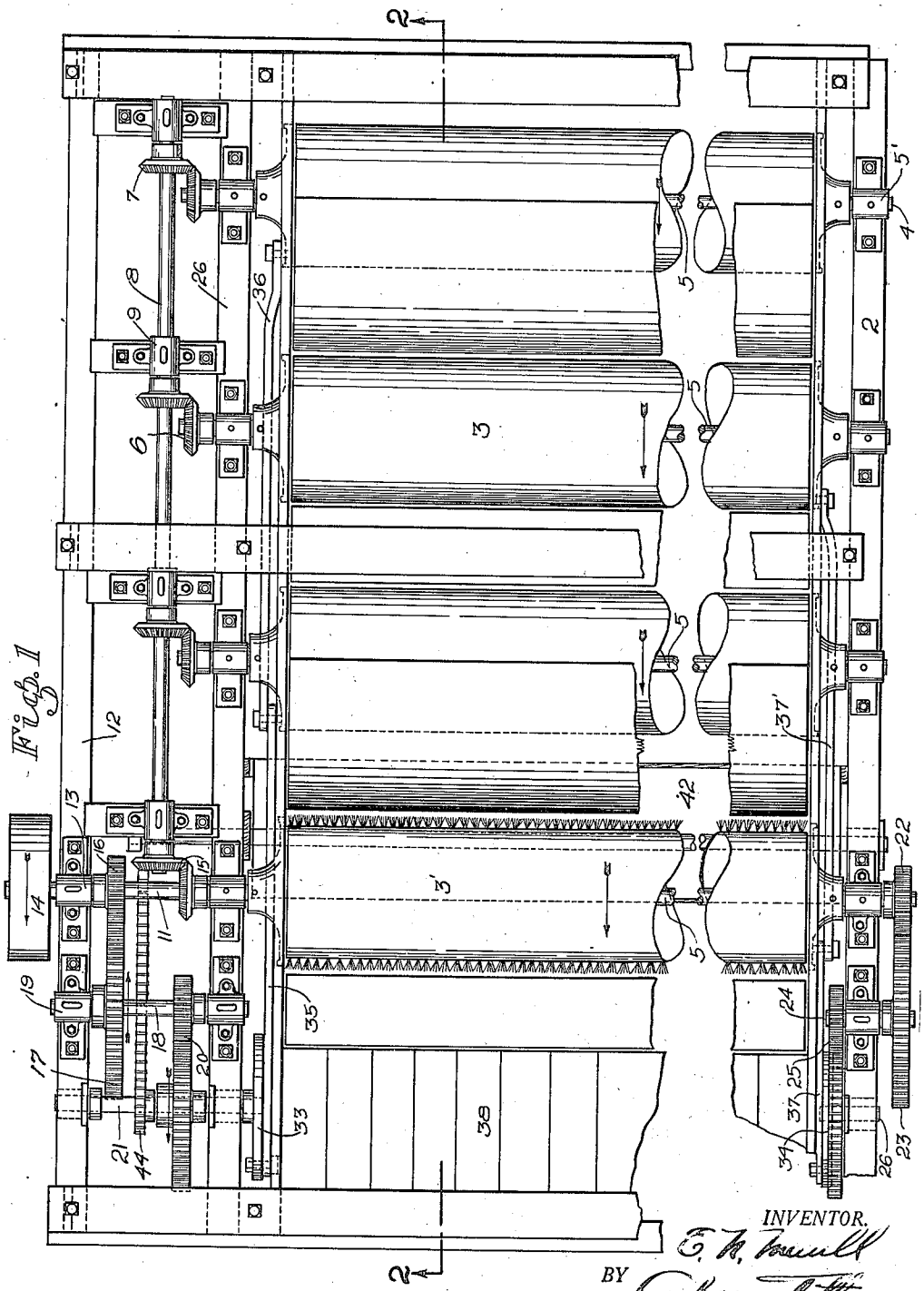


Fig. 1.

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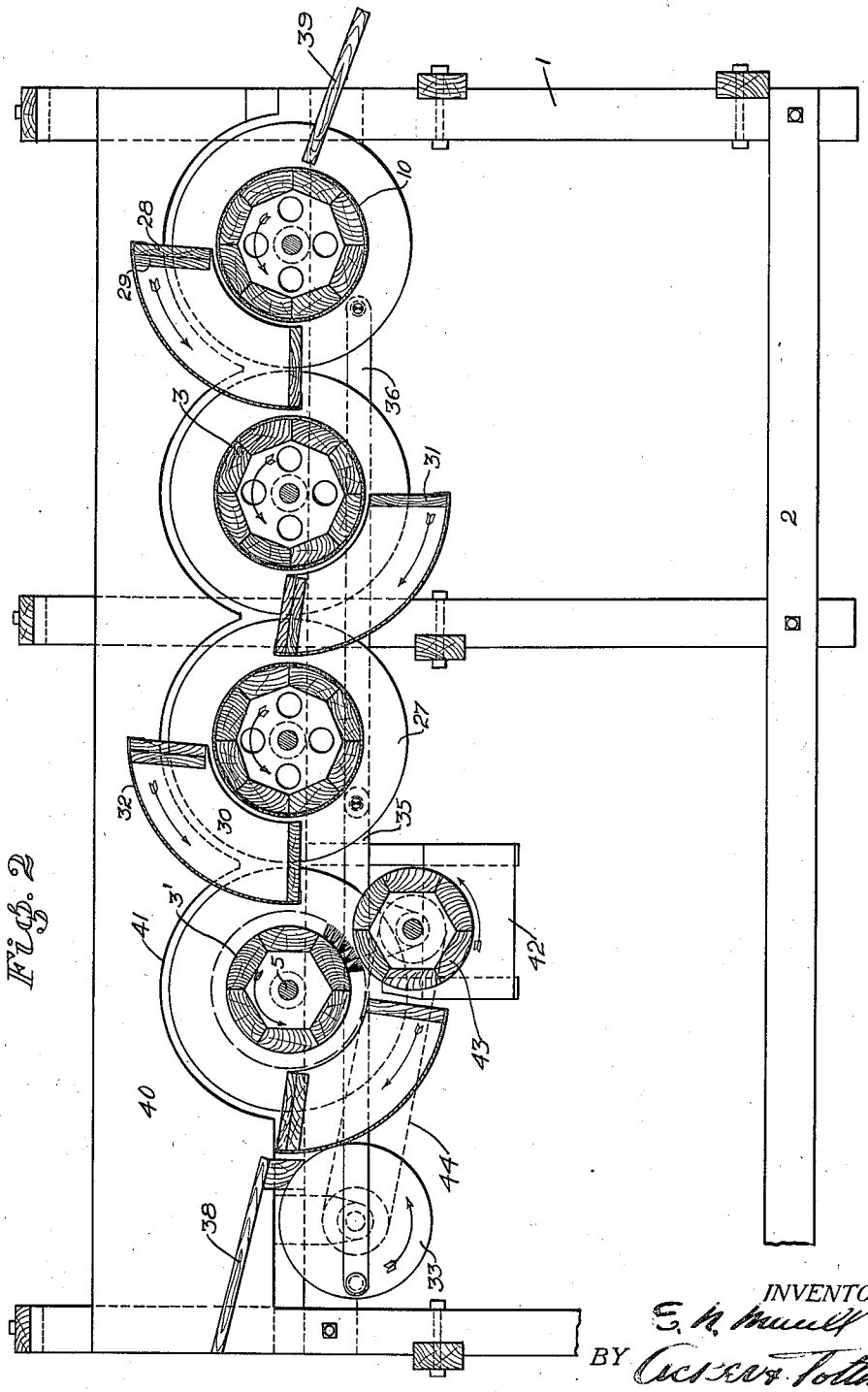


Fig. 2

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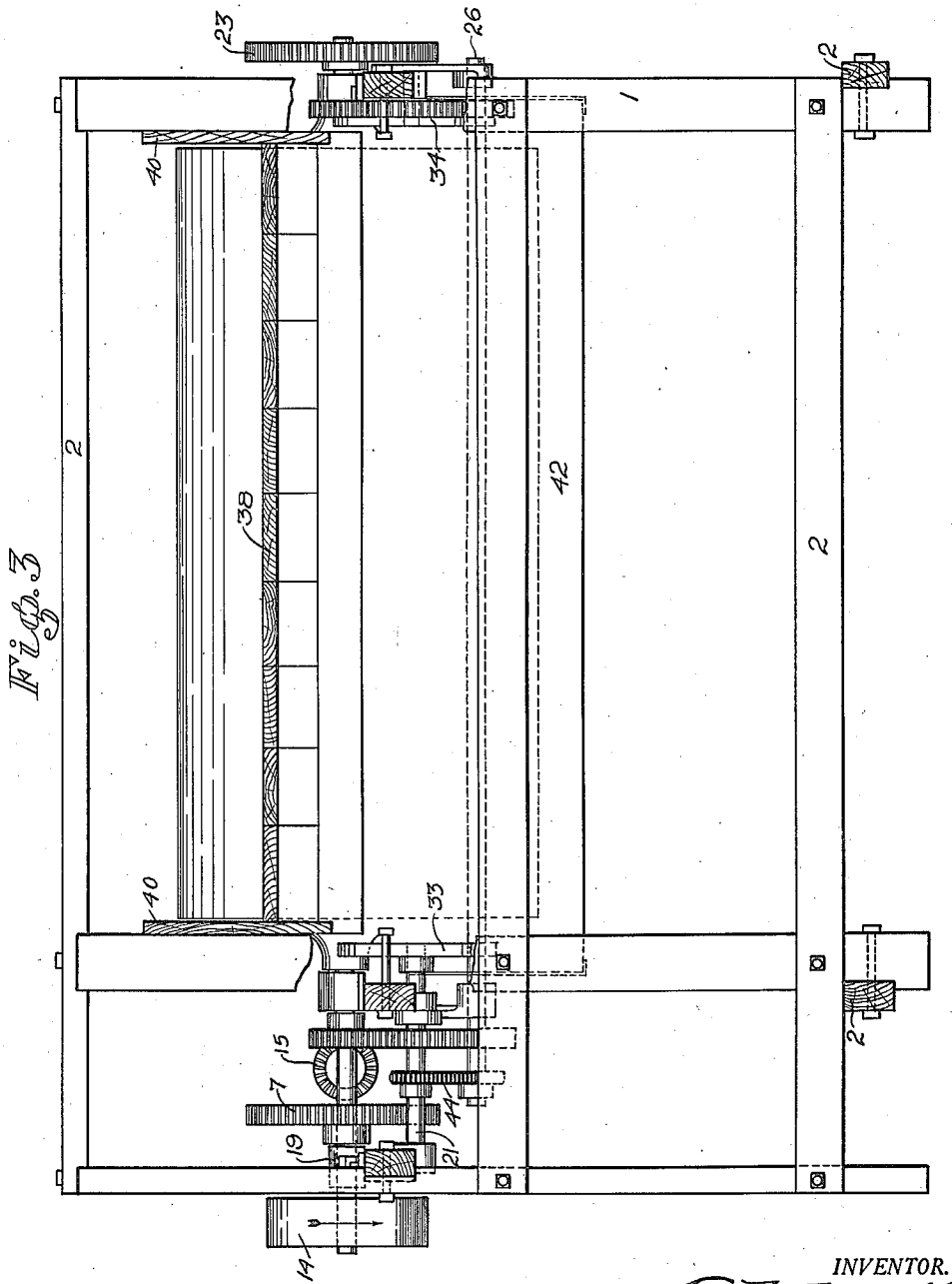
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4 SHEETS—SHEET 3.

Fig. 3



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4 SHEETS—SHEET 4.

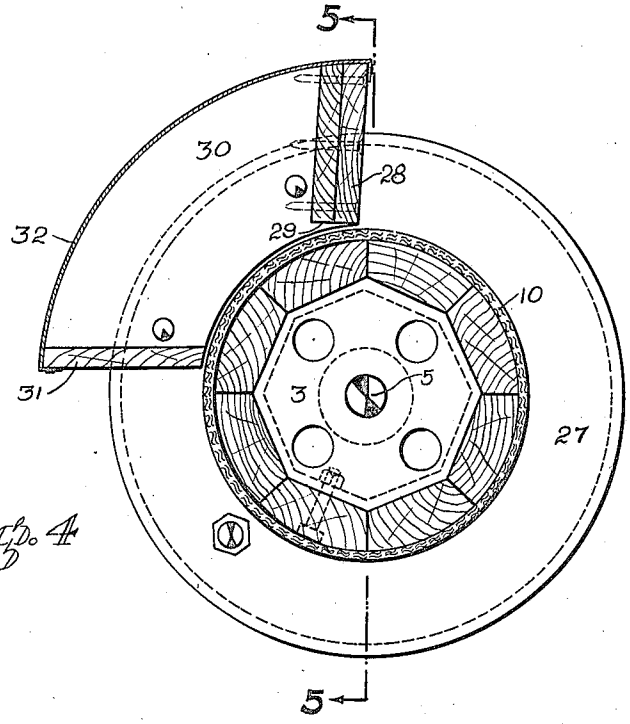


Fig. 4

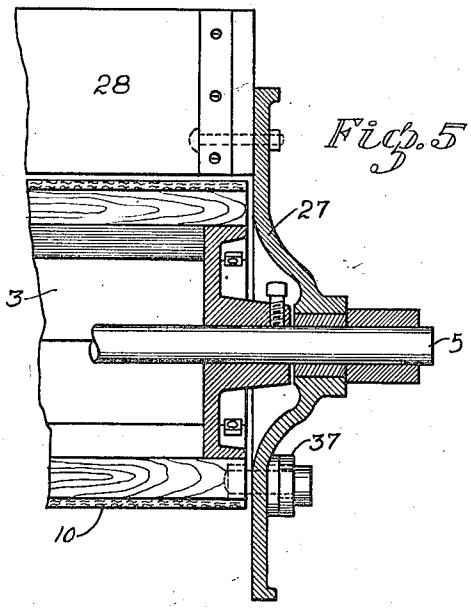


Fig. 5

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UNITED STATES PATENT OFFICE.

EDWARD N. MAULL, OF ORLANDO, FLORIDA, ASSIGNOR TO SKINNER MACHINERY COMPANY, OF DUNEDIN, FLORIDA, A CORPORATION OF FLORIDA.

POLISHING MACHINE.

1,418,666. Specification of Letters Patent. Patented June 6, 1922.

Application filed February 1, 1922. Serial No. 533,262.

To all whom it may concern:

Be it known that I, EDWARD N. MAULL, a citizen of the United States, residing at Orlando, in the county of Orange and State of Florida, have invented certain new and useful Improvements in Polishing Machines, of which the following is a specification.

The present invention relates to fruit treating machines, and more particularly to an apparatus for polishing fruit, as for example oranges.

The invention has for its objects to provide an apparatus wherein the fruit as polished, is conveyed at preferably right angles to the polishing member in a direction opposite to the direction of movement of the polishing members whereby the maximum polish for a limited travel is applied to the fruit; to provide oscillating transfer members movable axially of a rotating polishing member for receiving and conveying the fruit from one end of the apparatus to the other.

To provide means associated with one of the polishing members to apply a polish thereto.

Other objects are to provide a simple and efficient drive mechanism for the polishing members and transfer members whereby the same are operated in timed relation, alternate transfer members being operated in the same direction in unison.

The invention consists broadly in a polishing member adapted for rotative movement having associated therewith a fruit receiving and transfer member or conveyor axially oscillated about said polishing member to receive the fruit at approximately a horizontal position, and to elevate the same about the polishing member in a direction reverse to the direction of rotation of the polishing member to substantially the vertical center of said polishing member from which it rolls by gravity over the surface of the polishing member.

With the above mentioned and other objects in view, the invention consists in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings, and set forth in the claims hereto appended, it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

To more fully comprehend the invention, reference is directed to the accompanying drawings, wherein:—

Figure 1 is a view in plan of one embodiment of my invention.

Figure 2 is a longitudinal sectional view on line 2—2 of Figure 1.

Figure 3 is a view in elevation of the apparatus from the feed end.

Figure 4 is a view in end elevation of one of the polishing members with the transfer member illustrated in section.

Figure 5 is a section on line 5—5 of Figure 4.

Referring more particularly to the several views of the drawings wherein like characters of reference designate corresponding parts, 1 indicates an elongated supporting frame having the parallel side supporting bars 2, transversely of which extend the horizontally disposed parallel spaced polishing cylinders or members 3 outwardly from the ends of which extend the supporting trunnions 4 which are continuations of the ends of supporting shafts 5 passing longitudinally through each cylinder 3. The trunnions 4 of certain of the cylinders are mounted on the side frame members 2 to rotate in the bearings 5′, and corresponding trunnions carry a gear 6 intermeshing with the bevel drive gear 7 on a connecting shaft 8 rotatably mounted in bearings 9. The cylinders serve as polishing members or brushes and carry on their outer surface a suitable buffing surface 10 preferably in the form of bristle tufts, and in connection with the first polishing member of the apparatus, as illustrated in Figures 1 and 2 of the drawings. The first polishing member 3′ of the series is likewise mounted with its trunnions 4 to rotate in bearings 5, and one of said trunnions extends in the form of a shaft 11 laterally from the end of the polishing member to the outer side rail member 12 where it is rotatably supported in a bearing 13, and on its end carries a drive pulley 14.

The shaft 11 drives a shaft 8 through a bevel gear connection 15 and adjacent said

pulley 14 carries a pinion 16 intermeshing with the gear 17 on a countershaft 18 extending parallel with the shaft 11 and rotatably mounted at its ends in bearings 19. This countershaft 18 is in turn meshed through gears 20 with a final drive shaft 21 which is driven by the action of the countershaft and associated gears in the direction of the arrows Figures 1 and 2 of the drawings. The opposite end trunnion of the polishing member 3' also carries a pinion 22 intermeshing with the gear 23 on a countershaft 24, which shaft is in turn connected through gears 25 with a final drive shaft 26.

Positioned at the outer end of each cylinder 3 and mounted to oscillate about the trunnion between the end of the cylinder and the bearing 5' is a supporting plate or member 27 preferably of disk formation. A fruit receiving and transfer member 28 extends parallel with each polishing member 3 with its inner edge 29 in close proximity to the polishing or buffing surface of the cylinder, and said member 28 is disposed radially of the polishing member 3 with its ends secured to opposite supporting members 27. The members 28 are of a width approximating the distance between adjacent parallel spaced polishing members 3, and from said members 28 extend the arcuate segmental end members 30 connecting with a bottom or rear piece 31, to which is connected the lower edge of a plate 32 bent in an arc corresponding to the curvature of the exterior of the polishing member, and adapted to conform with the surface of an adjacent polishing member affording means to prevent passage of fruit to be polished downwardly between the same.

It will be observed that these fruit receiving and transfer members 28 are positioned one in advance of each polishing member, as particularly illustrated in Figure 2, and to cause a simultaneous oscillation of the members 28 about the respective polishing members with alternate transfer members moving in the same direction, the following mechanism is provided.

The respective shafts 21 and 26 on their inner ends carry the respective disks 33 and 34, and with the disk 33 is pivotally connected an operating link 35 which operates the second and fourth transfer member 28 from the feed end of the apparatus to a secondary link 36 to cause said transfer members to oscillate in unison about the respective polishing members. The disk 34 is likewise connected through links 37 and 37' with the transfer members 28 associated with the first and third polishing members 3 from the feed end of the apparatus to oscillate said members simultaneously, but in a direction reverse to the direction of movement of the members operated by the disk 33.

From this operation it will be observed that the fruit to be polished is deposited on the transfer member associated with the first polishing member, is raised thereby gradually over the polishing member in a direction reverse to the direction of rotation of the polishing member, and during this movement the transfer member 28 between the first and second polishing members is moving from a raised to a lowered position to receive the fruit from the first polishing member when the transfer member associated with said first polishing member arrives at the end of its upward stroke permitting fruit to roll downwardly over the other side of said first polishing member on to the transfer member positioned between the first and second polishing members. This action takes place throughout the entire length of the apparatus.

The fruit to be polished is fed to the apparatus by any suitable mechanism, and is deposited on an inclined runway 38 discharging on to the transfer member 28 associated with the first polishing member 3, and the polished fruit is discharged from the apparatus in any suitable manner as by being deposited from the last polishing member 3 on to an inclined discharge chute 39. Suitable end plates 40, scalloped or under-cut as at 41, and positioned, one at each end of the polishing members 3 prevents the fruit from rolling off the ends of said polishing members or said transfer members.

If it is found desirable, a suitable polishing substance or material, such as paraffin may be applied to the fruit during the polishing thereof, and in the present apparatus for accomplishing this purpose I have illustrated a suitable receptacle 42 positioned beneath and extending transversely of the frame members 2 adjacent the first polishing member 3, and said receptacle is provided with an open top in which is rotatably mounted a transfer cylinder 43 driven by a chain 44 operated from the shaft 21, and the periphery of said transfer cylinder 43, which it will be observed is rotated in the direction opposite to that of the polishing member, is adapted to contact with the surface of the first polishing member 3, and to apply any material picked up from the receptacle 42 to the surface of the first polishing member 3, which in turn applies the polishing material to the fruit as the same is delivered thereonto.

In the use of this invention, it will be observed that power applied to the pulley 14 to drive the same in the direction of the arrow, Figure 1, will rotate the polishing members all in the same direction, as is illustrated by the arrows Figure 1. This movement of the pulley 14 will also impart oscil-

lating movement to the receiving and transfer members 28 axially rotating all of said members about their associated polishing members with alternate transfer members travelling in relatively reverse directions, so that the fruit is conveyed transversely across said polishing members in a direction reverse to that of their rotation from the feed end of the apparatus to the discharge end thereof, and it will be apparent that while I have illustrated four polishing members, any number may be employed, and that I am not limiting the present invention to the exact form of receiving and transfer member illustrated in the drawing.

I claim:—

1. A fruit polishing apparatus including a pair of parallel spaced horizontally disposed polishing brushes rotating in the same direction, a pair of fruit receiving and transfer members one positioned in advance of each brush and mounted for axial oscillation about the same, and means for operating said members in relatively reverse directions for receiving fruit and for conveying the same over its associated brush against its direction of rotation.

2. A fruit polishing apparatus including a pair of parallel spaced horizontally disposed polishing brushes rotating in the same direction, a pair of fruit receiving and transfer members one positioned in advance of each brush and mounted for axial oscillation about the same, means for operating said members in relatively reverse directions for receiving fruit and for conveying the same over its associated brush against its direction of rotation, and means for applying a polishing medium to one of said brushes.

3. A fruit polishing apparatus including a pair of parallel spaced horizontally disposed cylindrical polishing brushes rotating in the same direction, a pair of fruit receiving and transfer members one mounted in advance of each brush and movable relatively thereto, and means for operating said member simultaneously in relatively reverse directions for receiving fruit and conveying the same over the adjacent brush.

4. A fruit polishing apparatus including a series of parallel spaced horizontally disposed polishing brushes rotating in the same direction, a series of fruit receiving and transfer members one positioned in advance of each brush and mounted for axial oscillation thereabout, and means for operating said members simultaneously in relatively reverse directions for receiving fruit and for conveying the same from one end of said series of brushes to the other.

5. A fruit polishing apparatus including a series of parallel spaced horizontally disposed polishing brushes rotating in the same direction, and means in advance of certain brushes of said series for receiving fruit and propelling the same axially over the brushes from one end to the other of the series in a direction opposite to that of the rotation of said brushes.

6. A fruit polishing apparatus including a series of rotatably mounted parallel spaced horizontally disposed polishing members, means for rotating said members in the same direction, and means associated with each member and mounted for axial oscillation about the same for receiving fruit and for propelling the same upwardly over said members from one end to the other of the series in a direction opposite to that of the rotation of said members.

7. A fruit polishing apparatus including a series of rotatably mounted parallel spaced horizontally disposed polishing members, a driving connection between said members for rotating the same in one direction, a series of transfer members one positioned in advance of each polishing member and mounted to oscillate axially of said polishing members, one on the axis of rotation of each polishing member, an operating connection between alternate transfer members of the series, and mechanism for operating said driving and operating connections for causing a simultaneous rotation of said polishing members and an axial oscillation of said transfer members thereabout.

8. A fruit polishing apparatus including a horizontally disposed rotatably mounted polishing brush, a fruit receiving and transfer member in advance of said brush and including end supporting members, one mounted at each end of the brush on its axis of rotation, a bar connecting said end members and disposed parallel with and in close proximity to said brush surface, and means for operating said end plates to oscillate said bar axially about said brush from an approximately horizontal position to approximately a vertical position, whereby fruit to be polished resting on said bar is conveyed over said brush in contact therewith and in a direction opposite to the direction of rotation of the brush.

9. A fruit polishing apparatus including a horizontally disposed rotatably mounted polishing brush, means for rotating said brush, a fruit receiving and transfer member disposed parallel with the brush and mounted for axial oscillation about the same for receiving fruit and for conveying the same over said brush in contact therewith in a direction reverse to its direction of rotation, and means for oscillating said receiving and transfer member.

10. A fruit polishing apparatus including a horizontally disposed rotatably mounted polishing brush, means for rotating said brush, a fruit receiving and transfer member disposed parallel with the brush and mount-

ed for axial oscillation about the same for receiving fruit and for conveying the same over said brush in contact therewith in a direction reverse to its direction of rotation, means for oscillating said receiving and transfer member, and means for supplying a polishing medium to the brush.

11. A fruit polishing apparatus including a cylinder, a polishing surface thereon, trunnions rotatably supporting the cylinder, means for rotating the cylinder, a fruit receiving and transfer bar disposed parallel with the cylinder in close proximity to its polishing surface, members mounting the opposite ends of said bar and rotatable on said trunnions, and means for operating said bar to cause the same to oscillate about said cylinder.

12. A fruit polishing apparatus comprising a movable fruit supporting member, a fruit propelling member disposed transversely of the supporting member in close proximity thereto and movable thereover in a direction reverse to its direction of movement, and a fruit polishing surface carried by one of said members, the fruit as propelled overy said supporting surface being caused to revolve by the action of one of said members against said polishing surface.

In testimony whereof I have signed my name to this specification.

EDW. N. MAULL.