

1,345,301.

W. I. WINCHESTER.
FRUIT PEEL DRIER.
APPLICATION FILED APR. 21, 1919.

Patented June 29, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

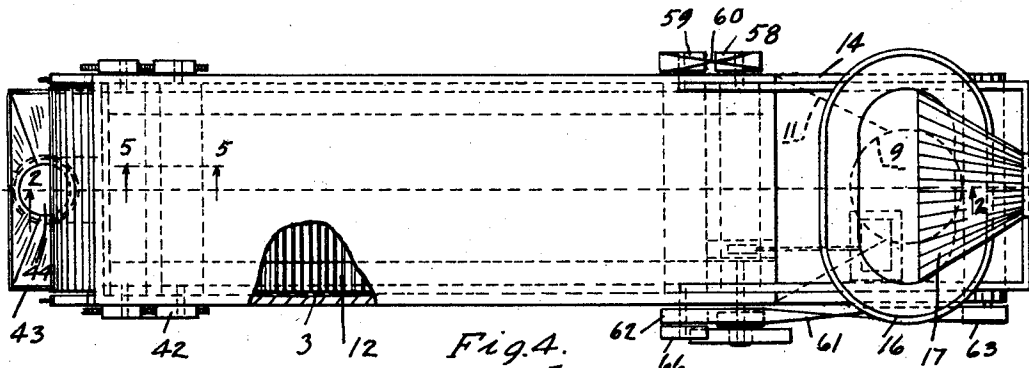


Fig. 2.

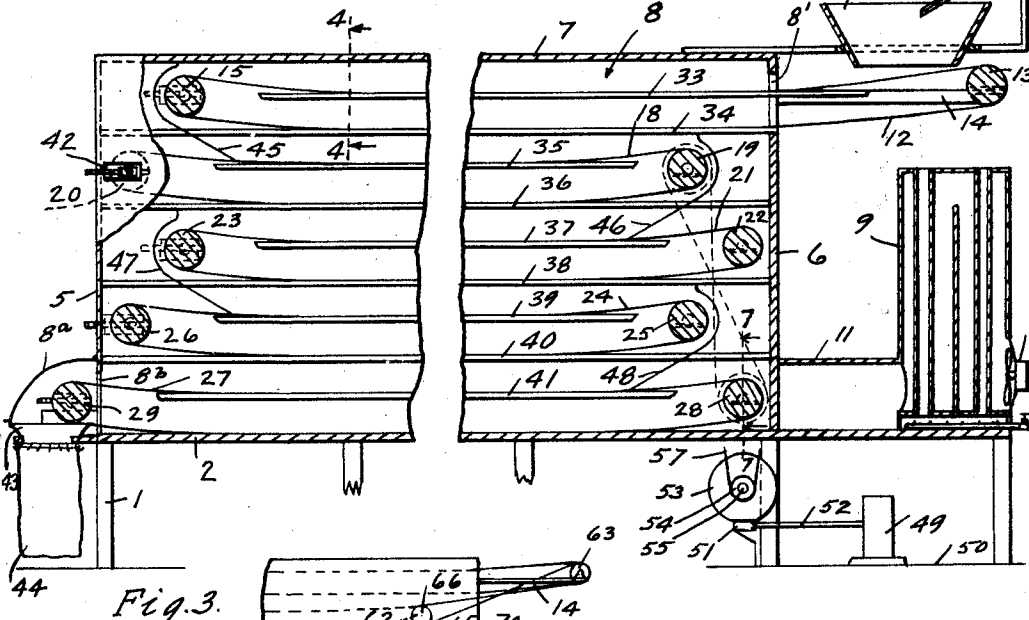
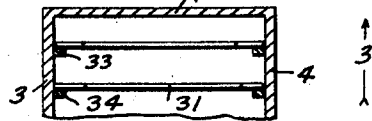
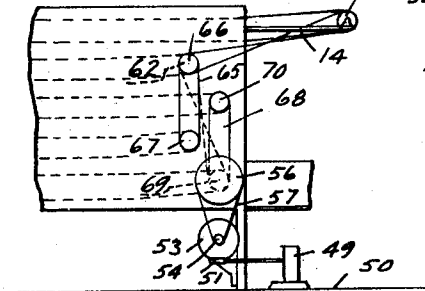


Fig. 3.



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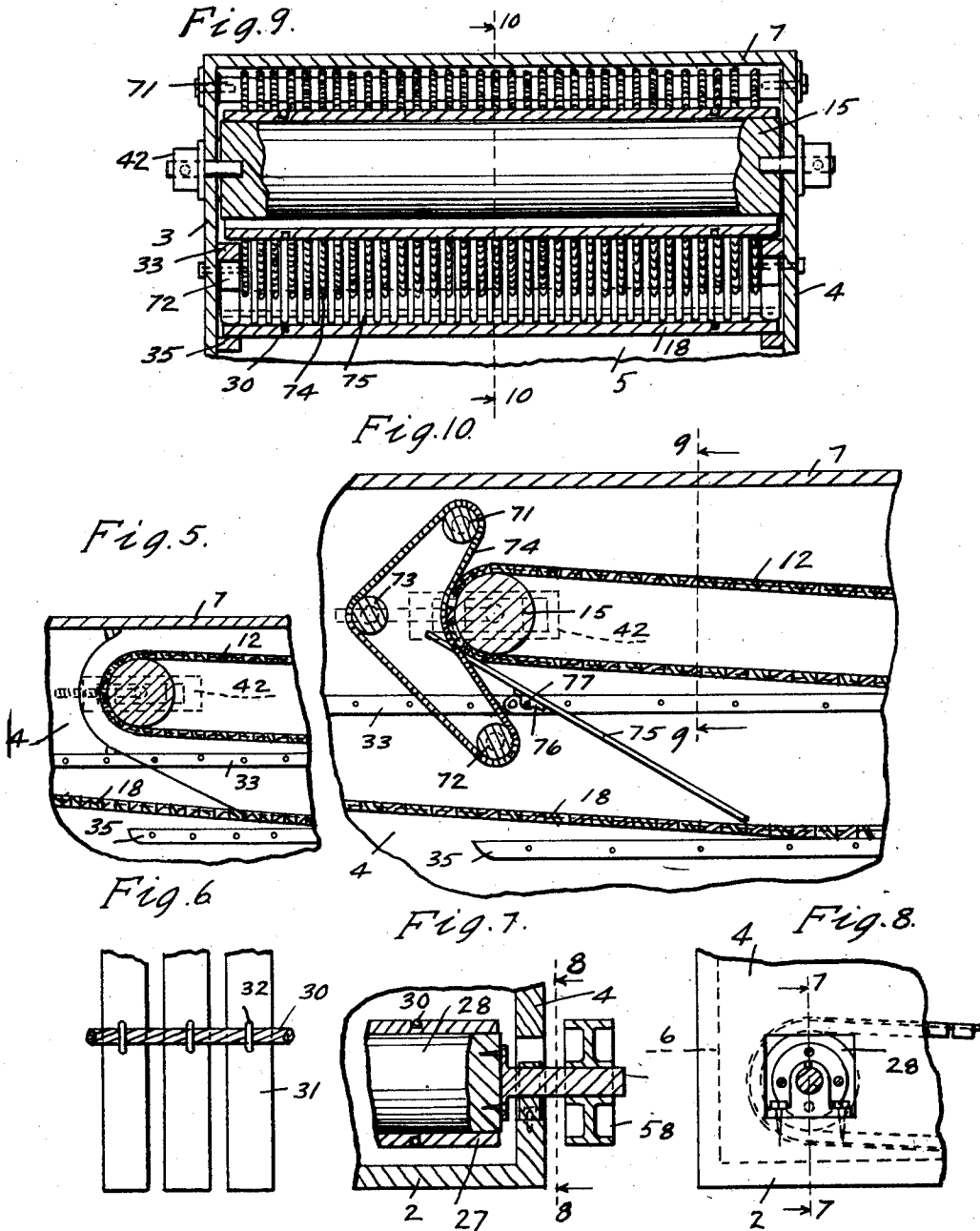
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2 SHEETS—SHEET 2.

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UNITED STATES PATENT OFFICE.

WILLIAM I. WINCHESTER, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO LAUGHLIN FRUIT REFINERS, INC., OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

FRUIT-PEEL DRIER.

1,345,301.

Specification of Letters Patent. Patented June 29, 1920.

Application filed April 21, 1919. Serial No. 291,733.

To all whom it may concern:

Be it known that I, WILLIAM ISAAC WINCHESTER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Fruit-Peel Driers, of which the following is a specification.

This invention relates to driers and consists in the novel features herein shown, described and claimed.

Primarily the object is to make a drier to take the lemon peels from the separator set up in a companion application, dry the peels, and deposit the peels in a bag for handling and shipping.

Obviously the drier may be used for other purposes than for lemon peels and it may be used separately from the separator.

Figure 1 is a top plan view of a drier embodying the principles of the invention, parts being broken away and shown in section.

Fig. 2 is a vertical longitudinal section on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary side elevation looking in the direction indicated by the arrow 3 in Fig. 1.

Fig. 4 is a vertical cross-sectional detail on the line 4—4 of Fig. 2.

Fig. 5 is a fragmentary vertical longitudinal sectional detail on the line 5—5 of Fig. 1.

Fig. 6 is a fragmentary detail plan of one of the foraminous belts.

Fig. 7 is a vertical cross-sectional detail on the lines 7—7 of Figs. 2 and 8.

Fig. 8 is a fragmentary longitudinal sectional detail on the lines 8—8 of Fig. 7.

Fig. 9 is a vertical cross-section on the line 9—9 of Fig. 10.

Fig. 10 is a view analogous to Fig. 5 and showing a modified construction and taken on the line 10—10 of Fig. 9.

The main frame of the drier consists of a plurality of posts 1 mounted vertically, a bottom 2 mounted horizontally upon the posts 1, side walls 3 and 4 extending upwardly from the bottom 2, end walls 5 and 6 connecting the ends of the side walls and extending upwardly from the bottom 2, and a top 7 mounted upon the end walls and side walls, thus forming a drying chamber 8.

A heater 9 is mounted in any suitable way to be heated from a steam coil, a gas burner,

or the like, and a blower 10 is mounted in position to blow fresh air through the heater 9 and the fresh warm air from the heater passes through a conduit 11 to the lower part of the chamber 8 and the hot air circulates through the chamber and through the foraminous belts and around the material to be dried and then passes out of the chamber through the opening 8'. A removable hood 8^a is mounted in position to cover the hopper and close the opening 8^b.

The foraminous belt 12 is mounted upon a roller 13, said roller 13 being mounted upon a bracket 14 extending forwardly from the upper part of the wall 6, and the belt passes into the chamber 8 in a substantially horizontal plane through an opening in the wall 6 to the roller 15 near the wall 5. A hopper 16 is mounted above the belt 12 near the roller 13 and a chute 17 discharges into the hopper 16. The chute 17 comes from the separator or other source of supply for feeding the drier. A second foraminous belt 18 is mounted upon rollers 19 and 20 within the chamber 8 below the belt 12, and a third foraminous belt 21 is mounted upon rollers 22 and 23, a fourth belt 24 is mounted upon rollers 25 and 26, and a fifth belt 27 is mounted upon rollers 28 and 29.

The foraminous belts 12, 18, 21, 24 and 27 are all substantially alike and consist of endless cables 30 covered by cross slats 31 and held in place by staples 32. The cross slats 31 are close enough together to make a practically continuous apron which will support the material to be dried. The cables 30 may be wire or cord rope and there may be any desired number of the cables in a belt.

Cleats 33 are secured to the inner faces of the walls 3 and 4 in position to support the ends of the slats on the upper side of the belt passing from the roller 13 to 15, and similar cleats 34 support the ends of the slats on the lower side of the belt passing from the roller 15 to the roller 13. In a like manner the cleats 35 and 36 support the belt 18, cleats 37 and 38 support the belt 21, cleats 39 and 40 support the belt 24, and a cleat 41 supports the upper side of the belt 27, the lower side of the belt being supported by the bottom 2. The cleats 33 to 41 are located relative to their respective belts so that the belts may sag slightly and so that the cleats

will only support the intermediate portions of the belts. In this manner the belts will gradually approach the cleats and avoid danger of striking the ends of the cleats.

5 The rollers 20 and 26 are mounted close to the inner face of the wall 5 while the rollers 15 and 23 are some distance from the inner face of the wall 5, so that the material falling from the belt 12 as it passes
10 downwardly around the roller 15 will fall upon the belt 18, and the material passing from the belt 21 as it passes downwardly around the roller 23 will fall upon the belt 24. In a like manner the rollers 22 and 28
15 are close to the inner face of the wall 6 and the rollers 19 and 25 are moved inwardly from the wall 6, so that the material falling from the belt 18 as it passes downwardly around the roller 19 will fall upon the belt
20 21 and the material passing from the belt 24 as it passes downwardly around the roller 25 will fall upon the belt 27. The rollers 15, 20, 23 and 26 are provided with belt tighteners 42. The belt tighteners 42 are made
25 by mounting the spindles of the rollers in bearings and mounting the bearings to be adjusted by set-screws. The roller 29 is also mounted in belt tightener bearings, and the roller 29 is mounted outside of the wall 5,
30 there being a hopper or spout 43 below the roller and a bag 44 below the spout to receive the dried material from the belt 27.

A sheet metal baffle plate 45 is mounted behind the roller 15 and forms an incline
35 against which the material is discharged from the belt 12 and led downwardly to the belt 18. One object of the baffle plate is to mix the material up and roll it over and over as it passes from the belt 12 to the belt
40 18. A similar baffle plate 46 is mounted in front of the roller 19 to conduct the material from the belt 18 downwardly and backwardly to the belt 21. In a like manner a baffle plate 47 conducts the material from
45 the belt 21 downwardly and forwardly to the belt 24, and the baffle plate 48 conducts the material from the belt 24 downwardly and backwardly to the belt 27.

A motor 49 is mounted upon the base 50,
50 a worm 51 is fixed upon the motor shaft 52, a large worm gear 53 is mounted to mesh with the worm 51, a belt pulley 54 is fixed upon the shaft 55 upon which the worm gear 53 is fixed, and a large belt pulley 56
55 is fixed upon the spindle of the roller 28 and connected to the pulley 54 by a belt 57 so as to drive the roller 28 at a comparatively low rate of speed from the motor 49. The belt pulley 58 is fixed upon the opposite end
60 of the spindle of the roller 28 from the pulley 53, a belt pulley 59 is fixed upon the spindle of the roller 19, and a crossed belt 60 connects the pulleys 58 and 59. The crossed belt 61 connects a pulley 62 upon
65 the spindle of the roller 19 to a pulley 63

upon the spindle of the roller 13. A belt 65 connects a pulley 66 upon the spindle of the roller 19 to a pulley 67 upon the spindle of the roller 25. A belt 68 connects a pulley 69 upon the spindle of the roller 28 with the pulley 70 upon the spindle of the roller 22. The speed of transmission is uniform throughout the chamber 8. The belts 60 and 61 are crossed so as to drive the rollers 13, 22 and 28 in one direction with the upper
75 sides of the conveyer belts 12, 21 and 27 moving backwardly, that is to the left in Fig. 2, to drive the rollers 19 and 25 in the opposite direction so that the upper parts of the belts 18 and 24 travel forwardly, that
80 is to the right in Fig. 2, so as to make a zig-zag passage for the material coming to the belt 12 through the hopper 16 and leaving the belt 27 through the hopper 43. The speed of transmission from the roller 28 is
85 comparatively slow and practically equal so that the belts will travel at a uniform rate of speed and slow enough to dry the material while it is passing through the chamber 8.

In the modification shown in Figs. 9 and 10 a roller 71 is mounted above the roller 15, a second roller 72 is mounted below the roller 15, and a third roller 73 is mounted
90 directly behind the roller 15. A plurality of coil spring belts 74 run around the rollers 71, 72 and 73, said belts being driven by contact with the belt 12. A plurality of guide fingers 75 are mounted with their upper
95 ends in contact with the belt 12, there being one finger between each pair of belts 74, and the fingers 75 extend on an incline forwardly and downwardly to the belt 18. Ears 76 are secured to the fingers 75 and a
100 rod 77 is inserted through the ears 76 and supported in the walls 3 and 4. The belts 74 and fingers 75 serve to mix up and turn over the material coming from the belt 12 and passing to the belt 18.

If desired, the parts 71-77 may be
110 mounted in connection with each of the rollers 15, 19, 23 and 25.

Thus has been produced a drier which will take material, such as moist lemon peels or the like, in a continuous stream, dry the
115 material, and discharge the dried material into a sack or other receptacle for transportation.

Various changes may be made without departing from the spirit of the invention as
120 claimed.

I claim:

1. In a fruit peel drier, a drying chamber, a front roller and a rear roller mounted horizontally and transversely of the chamber, a foraminous belt mounted upon the
125 rollers, its upper side adapted to run toward the rear roller, a second front roller mounted below the rear roller and a second rear roller mounted below the first front roller, 130

a second foraminous belt mounted upon the second pair of rollers with its upper side moving opposite to the upper side of the first belt, a plurality of yielding belts 5 mounted upon rollers to engage the first foraminous belt as it passes around the first rear roller, a second set of yielding belts engaging the second foraminous belt as it passes around the second rear roller, and 10 fingers extending between the yielding belts and leading downwardly and forwardly.

2. In a fruit peel drier, a drying chamber, rollers mounted in pairs horizontally transversely of the chamber, foraminous belts 15 mounted upon the rollers, each alternate belt adapted to run in an opposite direction, said belts comprising endless rope members bound by transverse slats, secondary yielding belts mounted to operate against the tail 20 end, and rollers carrying the main belts

whereby material carried upon the main belts may be guided from any one belt to the belt next below.

3. In a fruit peel drier, a drying chamber, rollers mounted in pairs horizontally trans- 25 versely of the chamber, foraminous belts mounted upon the rollers, each alternate belt adapted to run in an opposite direction, said belts comprising endless rope members bound by transverse slats, secondary yield- 30 ing belts mounted to operate against the tail end rollers carrying the main belts whereby material carried upon the main belts may be guided from one belt to the belt next below, means for heating and ventilating 35 the drying chamber, and means for feeding material upon the belts.

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

W. I. WINCHESTER.