A. R. THOMPSON.

PROCESS OF MAKING IMPALING ROLLS FOR RAISIN SEEDERS.

APPLICATION FILED FEB. 21, 1910.

1,038,682.

Patented Sept. 17, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

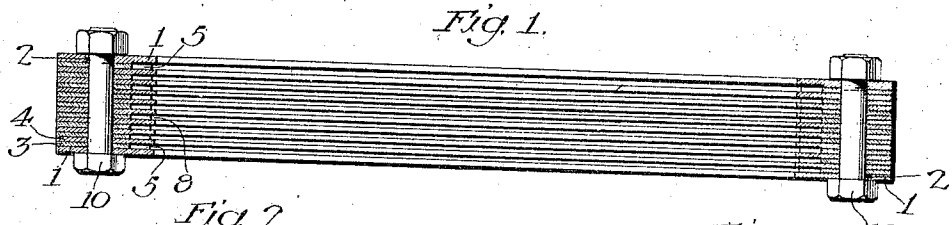


Fig. 2.

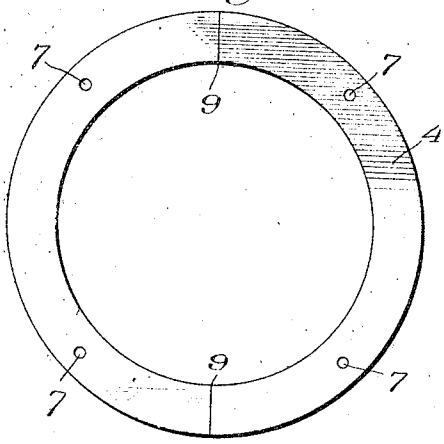


Fig. 3.

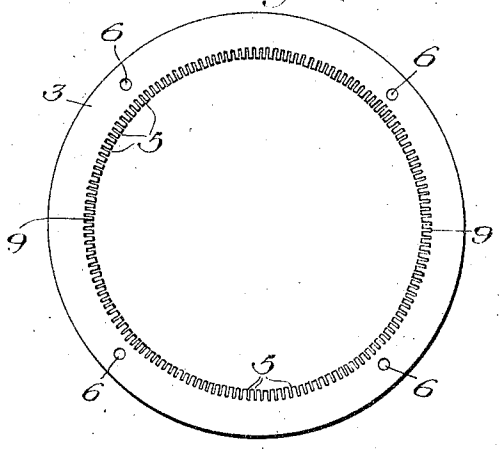
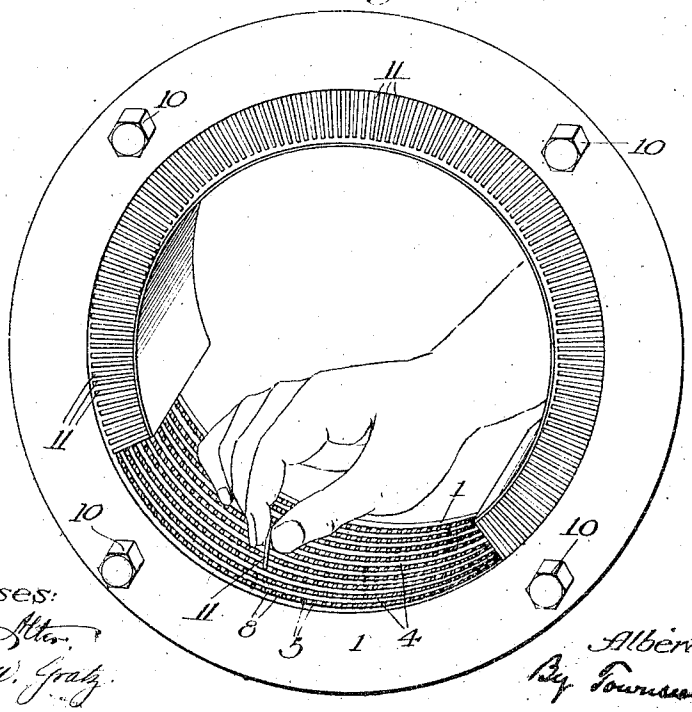


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

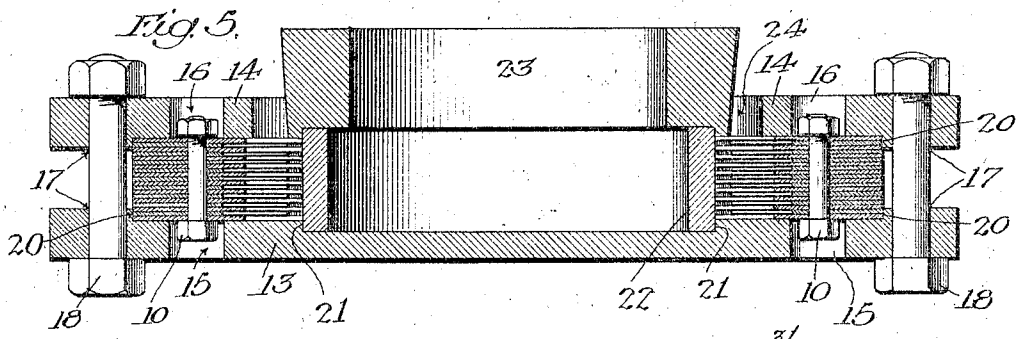


Fig. 6.

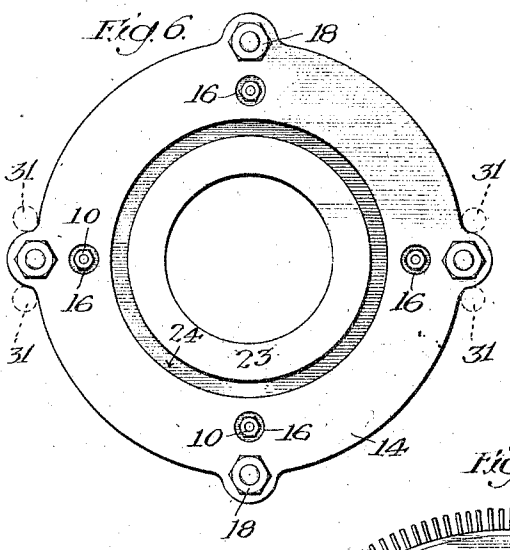


Fig. 7.

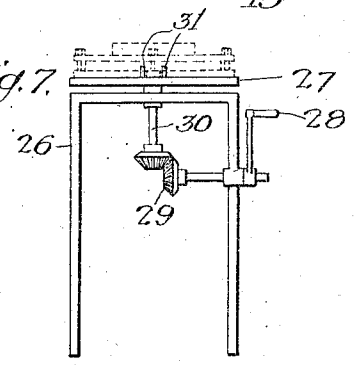


Fig. 9.

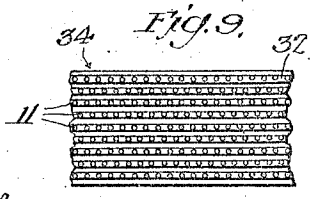


Fig. 8.

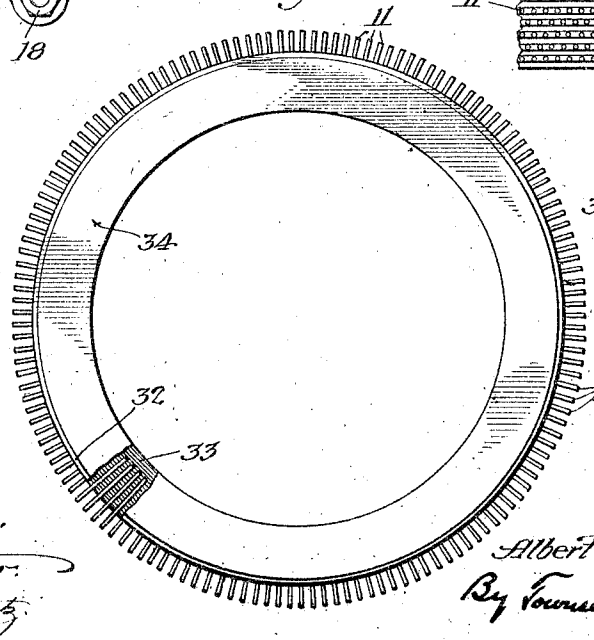
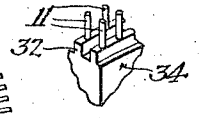


Fig. 10.



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UNITED STATES PATENT OFFICE.

ALBERT RILEY THOMPSON, OF SAN JOSE, CALIFORNIA, ASSIGNOR TO ANDERSON-BARNGROVER MANUFACTURING COMPANY, OF SAN JOSE, CALIFORNIA, A CORPORATION OF CALIFORNIA.

PROCESS OF MAKING IMPALING-ROLLS FOR RAISIN-SEEDERS.

1,038,682. Specification of Letters Patent. Patented Sept. 17, 1912.

Application filed February 21, 1910. Serial No. 545,221.

To all whom it may concern:

Be it known that I, ALBERT R. THOMPSON, a citizen of the United States, residing at San Jose, in the county of Santa Clara and State of California, have invented a new and useful Process of Making Impaling-Rolls for Raisin-Seeders, of which the following is a specification.

This invention relates to a method of constructing the impaling rolls for a raisin seeder, said rolls being formed with peripheral pins which serve as impaling means and which are arranged more or less closely throughout the periphery of the roll, and required to be spaced apart and held firmly in their proper positions during the operation of the roll.

The main object of the present invention is to provide means whereby an impaling roll may be constructed with peripheral pins thereon supported in rigid and firm position.

Another object of the invention is to insure that the outer ends of the pins will be equidistant from the axis of the roll.

Another object of the invention is to form the supporting roll with means for sustaining the inward pressure on the pins, incurred in the impaling operation.

A further object of the invention is to provide an impaling roll in which the peripheral face of the roll from which the pins extend presents a smooth continuous surface, without pits or roughness.

A further object of the invention is to provide for construction of the roll with peripheral guide flanges for the stripping means.

Another object of the invention is to provide for construction of the impaling roll with peripheral pins in staggered relation, so that the pins are disposed in equidistant arrangement in all directions.

Other objects of the invention will appear hereinafter.

The process consists essentially in providing a support in which the pins are detachably held in the position which they are to occupy on the roll, inclosing said support in a mold, pouring melted material into said mold, and subsequently removing the support leaving the pins embedded in the casting.

The process furtner consists in casting the roll body on to the pins, as stated, and subjecting the material while in the mold to a force or pressure tending to force it against the supporting member for the pins, whereby the material is caused to tightly fill the spaces between the pins, so as to avoid any looseness of the pins and to present a smooth peripheral face for the roll. This pressure is preferably produced by centrifugal action, the mold being subjected to whirling action during the casting operation to apply the centrifugal force on the melted material.

The pins are supported in the stated position by a supporting means which is built up of separable sections, the pins being inserted between such sections and being held thereby, and the parts being clamped together to form a rigid support which is inserted in the mold in the casting operation, and after the casting has been effected the separable parts are separated and removed from the pins leaving the pins and the cast material as an integral body constituting the impaling roll.

Referring to the drawings:—Figure 1 is a vertical section of the means for supporting the pins in the formation of the impaling roll. Fig. 2 is a side elevation of one of the split rings serving to support the pins. Fig. 3 is a side elevation of another of the split rings, provided with pin-receiving notches. Fig. 4 is a perspective view showing the manner of applying the pins to the supporting member. Fig. 5 is a vertical section of the supporting member and the containing mold in position for casting the roll. Fig. 6 is a plan thereof. Fig. 7 is a side elevation of the apparatus whereby centrifugal pressure is applied to the material during the casting operation. Fig. 8 is a side elevation of a finished roll, and Fig. 9 is a face view of a portion thereof, showing the arrangement of the pins. Fig. 10 is a perspective of a portion of the roll.

The supporting member for the pins comprises two outside washers or flat rings 1, formed with bolt holes 2, and a plurality of intermediate rings or washers intermediate between the washers 1. Said intermediate washers comprise milled washers 3 and blank or plain washers 4, the milled washers have radial slots, recesses, or notches 5 to receive the pins, all of the washers 1, 3 and

4 being of the same outer diameter, and the inner diameter of the washers 3 being the same as that of the washers 1, but the inner diameter of the washers 4 being somewhat smaller to form channels 8 between the washers 4, the slots 5 extending from the bottom of these grooves. The intermediate washers 3 and 4 are provided with bolt holes 6, 7 which are so disposed in successive washers that when the parts are assembled the slots or notches will be in staggered relation. Each of the intermediate rings 3 and 4 are split, as indicated at 9, so as to divide the washer into two sections to facilitate drawing from the cast-roll, as hereinafter set forth.

The above described parts are assembled as shown in Fig. 1, a washer 1 being placed at the bottom, a milled washer 3 being placed thereon, followed by a plain washer 4, then a milled washer, and so on, the milled and plain washers alternating and the pack of washers being capped by the top washer 1, the successive washers being placed so that their bolt holes 2, 6, 7, are in alinement and so that the slots or notches 5 are arranged in staggered relation and the transverse rows of notches extend obliquely across the inside face of the support. The parts are then held in this position by means of bolts 10, the spaces formed by slots 5 being of sufficient size to enable insertion of the impaling pins.

The impaling pins, indicated at 11, are inserted in the slots or notches 5 while the parts are assembled, as above described, as illustrated in Fig. 4, the parts being held by the bolts 10 in such relation as to enable insertion of the pins with some pressure and to retain the pins in position by frictional engagement therewith. On account of the staggered relation of the slots, as above described, the pins when so inserted in position will be presented in staggered relation from oblique rows across the face of the support, and each pin being substantially equidistant from the surrounding pins. The support with the pins is then placed in the mold, shown in Figs. 5 and 6. Said mold may comprise a lower plate 13, and an upper plate 14, said plates having recesses 15, 16 to receive the nut and head of the bolts 10 and having openings 17 to receive clamp bolts 18 for the mold. The members or plates 13 and 14 are provided with annular seats or rabbets 20 for engaging the outside plates 1 of the pin supporting member, and the lower member of the plate 13 is provided with a circular seat or recess 21 to receive a core or inner member 22 which fits within said seat and may extend into contact or proximity with the inner ends of the impaling pins 11. An upward extension 23 may be provided for this inner member 22, the top 14 having a central opening 24 somewhat larger that the extension 23, the space between the members 23 and 14 serving as an inlet or pouring space for the casting material.

The casting material or matrix for binding and holding the pins and for forming the body of the roll may consist of any suitable material, for example, any metal which is sufficiently fusible for the purpose. The supporting member with the pins having been inserted between the mold members 13 and 14 and clamped therein by the bolts 18, said metal, in melted condition, is poured into the space between the inner member 21, the bottom member 13, and the supporting member consisting of the washers 1, 3, 4, and said metal runs into and occupies the space between the pins 11. In order to insure that the metal finds its way to every part of this space and that there are no blow holes, or any loose joints, between the pins and metal, I provide for applying pressure to the metal while it is still in fluid condition, and for this purpose I prefer to use centrifugal force produced by subjecting the body of metal to a whirling action. An apparatus suitable for this purpose is shown in Fig. 7, wherein 26 designates a frame or support, 27 a rotary table mounted on the vertical bearing of the supporting member 26, operating means such as a handle 28, and connecting means or gearing 29 connecting said handle with the shaft 30 of the table 27 so as to impart to said table a rapid rotary movement. The mold 13, 14, etc., is placed on the rotary table 27 and is subjected by the described mechanism to rapid rotation, causing the pins 11 to be forced outwardly into contact with the bottom of slots 5, this rotation being continued while the metal is poured into the mold in a fused state, thereby causing the metal to press outwardly by centrifugal force so as to completely fill the interstices or spaces between the pins and the supporting parts, giving a solid, continuous casting without blow holes and insuring that the pins will be embedded tightly in the casting. The metal also runs into the channels 8 forming ribs in the casting. Table 27 has pins 31 to engage mold 13.

The bottom of slots 5 being equidistant from the inner face of the supporting member, the outer ends of the pins in the roll will be equidistant from the roll face and also equidistant from the roll axis.

It will be seen that in securing the pins in position within the mold, it is necessary only to handle the brass rings, thus making it much easier than if it were necessary to handle the mold itself in this operation, as the parts of the mold will generally be of cast-iron and comparatively heavy.

The roll having been cast onto the pins, as above described, and having been al-

lowed to cool, the supporting member or ring consisting of the built-up plates 3, 4, etc., is removed bodily from the mold or clamping form, the fastening bolts 18 removed from the supporting ring or member, and the first blank washer lifted off. Then the first slotted washer is lifted off the first row of pins. The second blank washer is interlocked between the first and second row of pins, and to withdraw the same it is necessary to draw each of the sections thereof radially outward to free it from the pins. The second slotted washer may then be lifted up into the space which was occupied by the second blank washer, and the two sections thereof may then be drawn radially outward in the same manner as with the withdrawal of the second blank washer. In this manner each of the intermediate washers may be withdrawn and the cast roll with the pins embedded therein may be lifted off the bottom blank washer.

The roll 34 formed as above described will have a plurality of peripheral ribs or ridges indicated at 32, formed by the metal filling the channels 8, aforesaid, the impaling pins 11 projecting from these ribs and said ribs serving as guides for the stripping means when the roll is in use.

The inner member 21 of the mold is of such diameter that it does not extend to the inner ends of the pins 11, so that when the metal is poured as described, it will extend under the inner ends of the pins, as shown at 33 in Fig. 10, forming a support against the inward pressure on the pins in the impaling operation.

What I claim is:—

1. The process of making an impaling roll which consists in supporting pins in a peripheral portion of an annular mold, rotating the mold to cause the pins to move outwardly, arresting such outward movement at definite distance from the center of the mold, pouring melted metal into the mold and rotating the mold while said metal is cooling, whereby the metal is forced between the pins and into contact with the peripheral portions of the mold.

2. The process of making an impaling roll, which consists in maintaining pins in a peripheral portion of a mold by centrifugal action, pouring melted material into the mold between said pins, and subjecting said melted material while in the mold to pressure by rotating the mold to produce centrifugal action on said material.

3. The process of making an impaling roll, which consists in normally supporting pins in a peripheral portion of a mold, rotating the mold to cause the pins to move outwardly, arresting such outward movement at definite distance from the peripheral portion of the mold, and casting material into the mold.

4. The process of making an impaling roll, which consists in normally supporting pins in a peripheral portion of a mold, rotating the mold to cause the pins to move outwardly, arresting such outward movement at definite distance from the peripheral portion of the mold, and casting material into the mold, said cast material extending under the inner ends of the pins.

In testimony whereof, I have hereunto set my hand at San Jose, California, this 14th day of February, 1910.

ALBERT RILEY THOMPSON.

In presence of—
F. E. WEAVER,
F. L. BURRELL.