March 17, 1953 H. J. MUMMA 2,631,535

FRUIT STAMPING ROTOR

Filed Jan. 15, 1948 2 SHEETS--SHEET 1

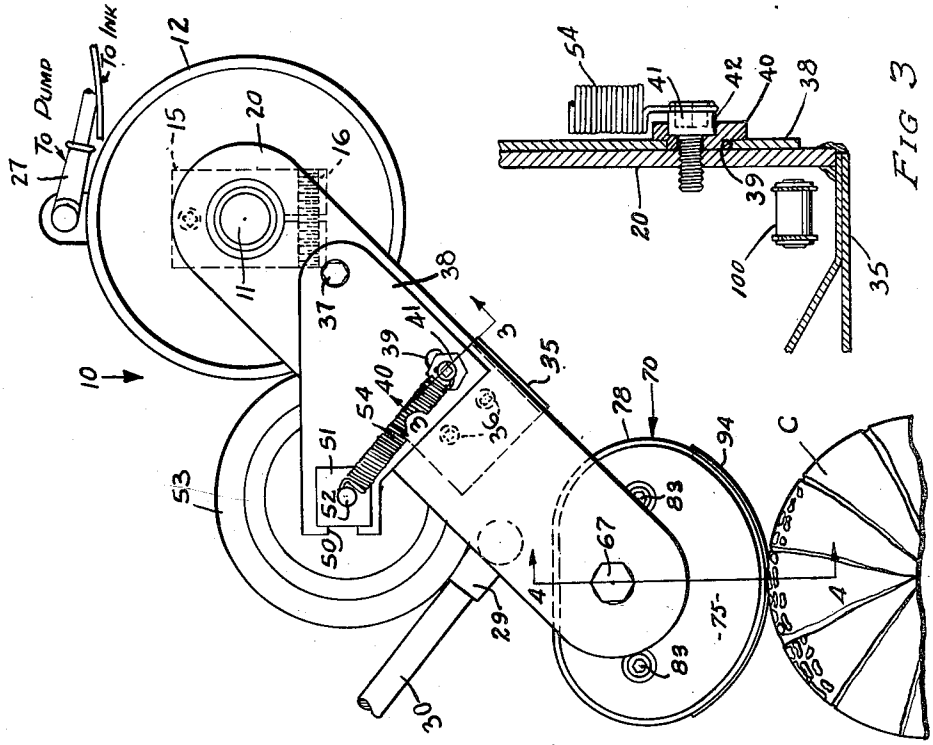


FIG 2

FIG 3

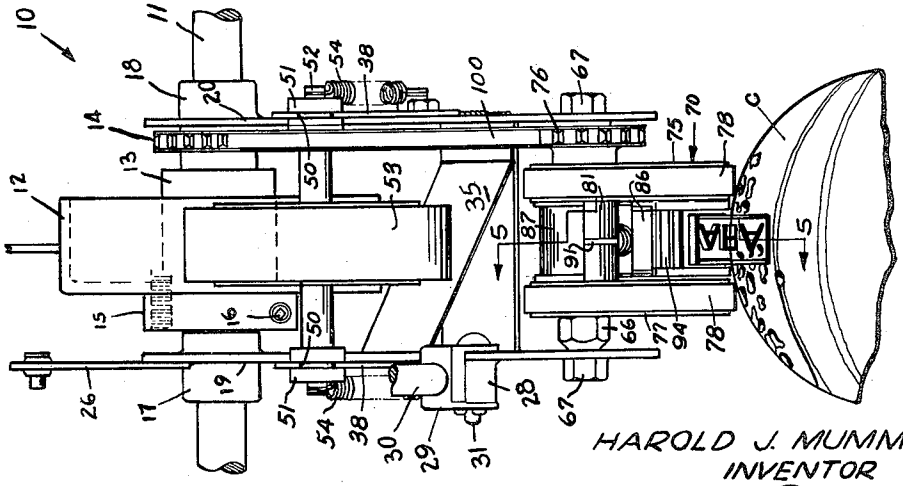


FIG. 1.

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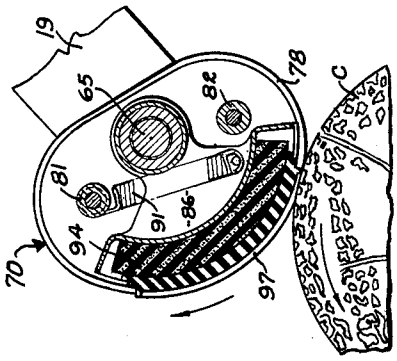


FIG. 9.

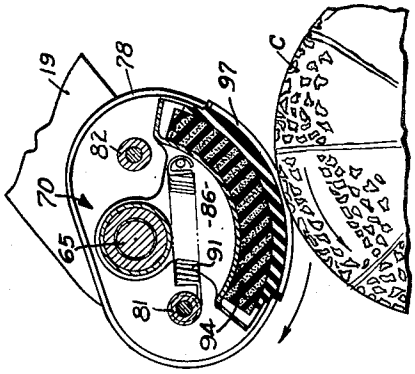


FIG. 8.

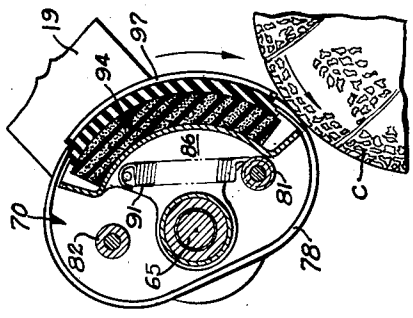


FIG. 7.

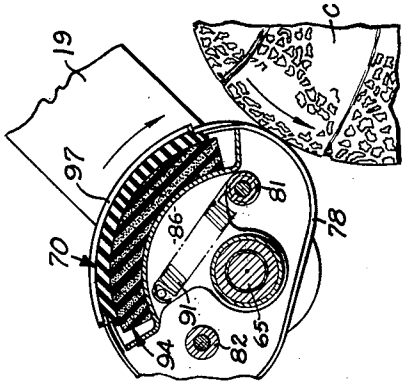


FIG. 6.

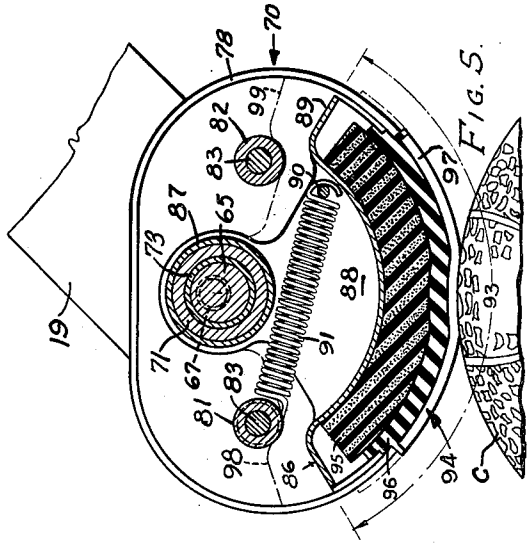


FIG. 5.

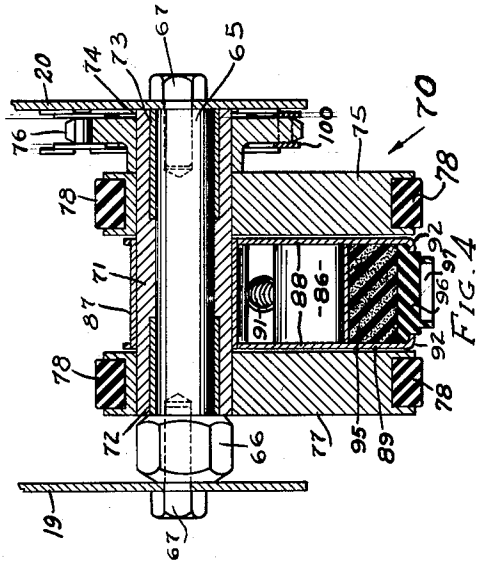


FIG. 4.

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2,631,535

UNITED STATES PATENT OFFICE

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FRUIT STAMPING ROTOR

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Application January 15, 1948, Serial No. 2,389

5 Claims. (Cl. 101—376)

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This invention relates to the printing art and is particularly useful in the art of stamping trade-marks or other indicia on rollable articles.

This invention is an improvement in a certain fruit marking machine disclosed in U. S. Letters Patent to E. A. Verrinder, No. 2,424,006, issued July 15, 1947. The improvement relates primarily to the printing rotor of the Verrinder machine and the mechanism for inking this and reference is had to said patent for details of the fruit marking machine itself.

The Verrinder machine employs an elliptical printing rotor relatively small in size and mounted on an axis which is eccentric with respect to the center of mass of the rotor but concentric with the printing face of the rotor, this face occupying the longest single arc comprised in the periphery of the rotor. The rubber printing stamp mounted within this arc on the Verrinder rotor rests on springs, permitting it to yield inwardly radially in response to contact with the fruit in order that the die faces of the stamp might enter inequalities of the fruit and make a good mark.

Due to irregularities in size and shape and surface characteristics of cantaloupes, a certain amount of slippage has been experienced between the printing rotor and the cantaloupe during the printing operation. Where this occurs, it smears the mark on the cantaloupe and causes the printing die to wear excessively.

It is an object of the invention to provide a fruit stamping rotor which will substantially prevent the smearing of marks and excessive wear of the printing die as a result of slippage between the rotor and the cantaloupes during the printing operation.

A further object of the invention is to provide a novel and simplified mechanism for inking an elliptical printing rotor of the Verrinder type.

The manner of accomplishing the foregoing objects as well as further objects and advantages will be made evident in the following description taken in connection with the accompanying drawings in which:

Fig. 1 is a front elevational view of a printing unit of a Verrinder type fruit marking machine with which a preferred embodiment of the present invention is incorporated.

Fig. 2 is a side elevational view of Fig. 1.

Fig. 3 is an enlarged detail sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is an enlarged cross sectional view taken on the line 4—4 of Fig. 2.

Fig. 5 is a cross sectional view, on the same scale as Fig. 4, and taken on the line 5—5 of Fig. 1.

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Fig. 6 is a fragmentary sectional operational view taken on the line 5—5 of Fig. 1 but with the printing rotor turned as when first contacting a cantaloupe being advanced on the conveyor of the machine towards the rotor.

Fig. 7 is a view similar to Fig. 6 illustrating the relation of the printing rotor to the cantaloupe after the rotor is turned approximately 50° from the position in which it is shown in Fig. 6.

Fig. 8 is a view similar to Fig. 7 showing the rotor turned approximately 70° beyond the position in which it is shown in Fig. 7.

Fig. 9 is a view similar to Fig. 8 and showing the rotor turned approximately 40° beyond the position in which it is shown in Fig. 8, Figs. 8 and 9 illustrating how the printing stamping is permitted in this invention to remain in true rolling contact with the cantaloupe being marked when there is a lag between the rates of rotation of the rotor and the stamp.

Referring specifically to the drawings, the printing unit 10 shown in Figs. 1 and 2, is mounted on a drive shaft 11 which corresponds to the drive shaft 110 in the Verrinder patent. Fixing the location, on shaft 11, of the unit 10, is a fountain roller 12 having a hub 13 which carries a sprocket 14 and is fixed to a clamp 15, the latter being tightened by a set screw 16 onto the shaft 11. Freely fitting over the shaft 11 against the clamp 15 and sprocket 14, are sleeves 17 and 18 to which are welded sheet metal arms 19 and 20.

Arms 19 and 20 comprise identical plates, the arm 19 having a pump actuating arm 26 welded to its upper end which connects through a link 27 with an ink pump (not shown). The arm 19 also has an eye 28 welded thereto to which a clevis 29 of a pressure rod 30 is pivotally connected by a pin 31.

The arm 20 has welded to the lower edge thereof a triangular cross brace 35 which extends across the space between the two arms so that the flat opposite end of this brace lies flush against the arm 19 and is secured thereto as by screws 36.

Pivotally attached by cap screws 37 to the arms 19 and 20 are triangular form roller supports 38, the latter having slots 39 into which hex-headed eccentrics 40 extend, these eccentrics being pivotally and eccentrically mounted on screws 41 which extend through eccentric holes 42 in eccentrics 40 and are screwed into suitable tapped holes provided in the arms 19 and 20. Thus, by loosening the screws 41 and rotating the hex-headed eccentrics 40, the roller supports 38 may be swung about their pivot screws 41 for purposes of adjustment, the screws

37 then being set by screwing these in tightly to fix the supports in their adjusted positions.

Supports 38 also have open slots 50 in which shaft blocks 51 are slidably disposed. Supported in the blocks 51 is a shaft 52 carrying a rubber tired ink form roller 53. Opposite ends of the shaft 52 extend outwardly beyond the blocks 51 and springs 54 are looped around these shaft ends and around the screws 41 to yieldably pull the shaft blocks 51 towards their inwardmost positions in the slots 50. This brings the rubber tired form roller 53 into contact with the periphery of the fountain roller 12.

Mounted between lower ends of the arms 19 and 20 is a shaft 65. This has a hex-shaped shoulder 66 at one end thereof and is secured to the arms 19 and 20 by cap screws 67 entering eccentric tapped holes in opposite ends of the shaft.

Freely rotatable on the shaft 65 is a printing rotor 70. The rotor 70 has a sleeve 71 which is freely rotatable on the shaft 65 and has bearing bushings 72 and 73.

One end of the sleeve 71 is knurled as at 74. Pressed onto the knurled end of this sleeve is an elliptical rotor tread plate 75. Also pressed on the extending knurled end of the sleeve 71 is a pinion sprocket 76, this plate and this sprocket then being soldered to the sleeve 71.

Another plate 77, identical with the plate 75, slips over the opposite end of the sleeve 71, these plates both being recessed about their respective peripheries to receive endless rubber tire treads 78. The plates 75 and 77 are held in the relation just described by spacers 81 and 82 and bolts 83 (Fig. 5) which extend through the plate 75 through the spacers 81 and 82 and are screwed into suitable tapped holes provided therefor in plate 77.

Before the plate 77 is thus assembled on the sleeve 71 in spaced relation with the plate 75 a stamp supporting rocker 86, fabricated from sheet metal and including a bearing sleeve 87, side walls 88, and an arcuate stamp receptacle 89, is inserted in the space which separates the plates 75 and 77, when these are assembled, with the sleeve 87 receiving and freely rotatable on the sleeve 71.

Extending between and with its opposite ends supported on the walls 88, is a pin 90 (Fig. 5). When the plate 77 has been assembled, as above noted, and fixed in rigid spaced relation with the plate 75 by the spacers 81 and 82, one end of a coiled spring 91 is hooked around the pin 90 and the other end is hooked around the spacer 81 in a suitable groove provided therefor.

The side walls 88 of the rocker 86 extend outwardly to form side walls for the receptacle 89, outer edges of these walls having inturned flanges 92 which lie at the same radius from the axis of the sleeve 71 as the peripheral portions of the plates 75 and 77 which are concentric with the sleeve 71, and which occupy zone 93 (Fig. 5).

The flanges 92 retain an arcuate stamp 94 in the receptacle 89, this stamp including a deep cushion 95 of sponge rubber to the outer surface of which is bonded a rubber type bearing strip 96 from which type faces 97 extend radially outwardly to a greater radius than that of the outer surfaces of the tires 78 in the concentric zone 93.

When the rotor 70 is thus assembled, the spring 91 normally holds the rocker 86 with one end thereof engaging the spacer 81 as indicated by broken line 98 (Fig. 5). The spring 91 is fairly light however, and the rocker 86 is free to be swung by the exertion of a slight pressure against this to its opposite position in which the rocker engages the spacer 82 as indicated by broken line 99 (Fig. 5).

Encircling the sprockets 14 and 76 is an endless rotor drive chain 100 which may be tightened by loosening the cap screws 67, rotating the shaft 65 by a wrench applied to the hex-shoulder 66 and then re-setting the screws 67.

The unit 10 is multiplied to provide one unit in the stamping machine for each of the files of fruit the machine is made to accommodate.

Rod 30 has an expansion spring (not shown) coiled thereabout just like the spring 220 coiled about the rod 216 in the Verrinder patent and this rod 30 is likewise suspended on the frame by a nut on its end so as to limit the downward swinging of unit 10 about the shaft 11 and to permit this to be swung upwardly from its lowermost position against the pressure of the spring coiled about the rod 30.

Operation

The invention, being particularly useful in marking cantaloupes, is shown as associated with a cantaloupe C in the various views in the drawings. This cantaloupe is of course delivered on the conveyor of the marking machine into contact with the rotor 70 in a certain timed relation with the rotation of the latter as effected through the chain 100 by the shaft 11.

Figs. 6, 7, 8 and 9 illustrate various stages of the operation of printing a mark on a cantaloupe. These cantaloupes vary in diameter but each cantaloupe initially contacts the rotor at a point on the periphery thereof outside of the concentric zone 93 as shown in Fig. 6. That is, the initial contact of the rotor with the cantaloupe is always on a non-concentric portion of the rotor's periphery.

While the present invention is not restricted in its broadest aspects to use on an elliptical rotor of the type employed on the Verrinder machine, it is especially useful in that type of rotor. This is because in this machine it is desirable to have the type faces extend outwardly a considerable distance beyond the rubber rotor treads 78 in order for these type faces to penetrate depressions in the face of the cantaloupe to make a good mark, and this results in a lag between the rates of rotation of the rotor and the type faces which tends to smear the mark and wear out the stamp.

The present invention permits a limited degree of relative rotation between the stamp and the rotor about the axis of the latter during a printing operation. It then returns the stamp to its initial normal relation with the rotor as soon as the printing operation is completed.

As may be seen by a comparison of Figs. 6, 7, 8 and 9, the rotary shifting of the stamp with reference to the rotor takes place progressively and because the spring 91 imposes only a very light resistance to this relative rotation, the latter takes place without causing any smearing of the mark by a wiping action of the stamp.

As the stamp 94 leaves contact with the cantaloupe C, following the stage in the stamping operation shown in Fig. 9, the spring 91 snaps the rocker 86 into its position 98 (Fig. 5) in which it is stopped by engagement with the spacer 81.

From the foregoing it is evident that the present invention permits the use of a stamp which extends radially beyond the rotor treads so that the stamp penetrates depressions in the cantaloupe being marked and yet because of the

rotational displacement which the stamp is permitted with reference to the rotor, smearing of the mark and rapid wearing of the stamp are eliminated.

The claims are:

1. A printing device comprising: a support for a tread; a tread provided on said support and adapted to have an article to be marked brought into rolling contact with said tread; a stamp mounted on said support with a stamping face thereof adjacent said tread so that said face is also brought into rolling contact with said article by bringing the latter into rolling contact with said tread; means on said support for shiftably relating said stamp to said tread whereby said stamp is free to shift progressively relative to said tread, during the progress of said mutual rolling contact, in a direction and along a path parallel with the direction in which said mutual rolling contact progresses; a stop on said support for limiting the aforesaid shifting movement of said stamp in a given direction; and a spring yieldably holding said stamp against said stop during the intervals between printing operations and for returning said stamp into contact with said stop at the conclusion of each printing operation.

2. In a printing rotor the combination of: an axial member; a pair of elliptical tread plates fixed on said member in spaced relation; yieldable treads provided on the perimeters of said tread plates, certain corresponding portions of said perimeters being concentric with said axial member; a stamp supporting rocker pivotally mounted on said axial member between said tread plates; a stamp supported on said rocker with said stamp disposed opposite said concentric portions of said treads and between said treads, the printing face of said stamp also being concentric with said axial member; a stop limiting the freedom of said rocker to rotate about said member; and a spring yieldably returning said rocker into contact with said stop following a printing operation.

3. A combination as in claim 2 in which said stamp has a deep resilient support therefor on said rocker, and in which said stamp extends radially a substantial distance beyond the adjacent peripheral surfaces of said treads.

4. A printing device comprising a shaft constituting an axle for a rotor mounted thereon, said rotor including a tread support having resilient

tread means thereon for yieldable rolling engagement with an article to be printed, said rotor further including a stamp support housed therein, said stamp support having a resilient stamping means thereon extending radially beyond the tread means of said rotor for coincident rolling engagement with said article, said stamp support being coaxially mounted on said shaft for relative rotation between said rotor and stamp support, and spring means connecting said rotor and stamp support for normally holding the latter against rotation on said shaft relative to said rotor in initial printing position, said spring means being yieldable during said coincident rolling engagement of said resilient rotor and resilient stamping means with said article to provide relative coaxial rotation between the resilient rotor and stamp support to prevent slippage of the stamping means on the article and consequent smearing of a stamp impression applied thereto, said spring means returning said stamp support to initial printing position after passage of the article from engagement therewith.

5. A combination as in claim 4 wherein said rotor is journaled on said shaft and said stamp support is journaled on said rotor for relative rotation about said shaft axis, and wherein the resilient article engaging rotor and stamping means are disposed concentric with said axis, and means for coincidentally rotating said rotor and stamp support in timed relation with presentation thereto of articles to be stamped, whereby said articles are placed in simultaneous rolling contact with said rotor and stamping means to apply a stamp impression to said article without relative slippage between said stamping means and the article.

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