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[45]	Patented:	Aug. 4, 1970	3,038,418	6/1962	Gugler	107/8(.6)

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[54]	CLOCKWISE-COUNTERCLOCKWISE PASTRY TWISTING DEVICE 6 Claims, Drawing Fig.	502,258	3/1939	Great Britain	107/8(.6)
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[50]	Field of Search	107/9, 9(.1), 9(.2), 9(.3), 9(.55), 8(.6), 7, 54, 54(.2), 54(.21), 54(.28), 254

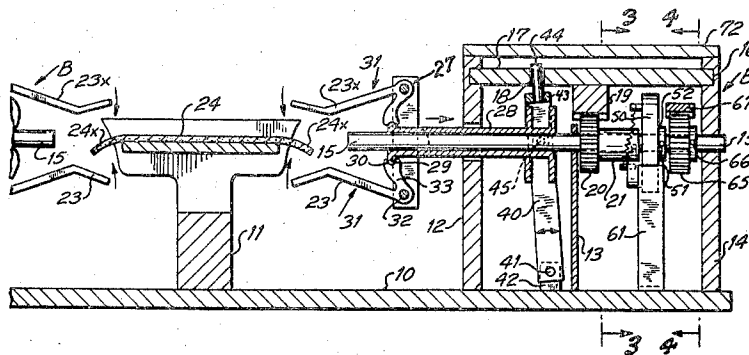
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ABSTRACT: A device comprising a pair of oppositely disposed rotatable elements disposed in spaced relationship, operating simultaneously upon a strip of seized pastry disposed there-between, one element being adapted to rotate clockwise while the other element rotates counterclockwise to thereby fully convolute said seized pastry.



U.S. PATENT 3,522,777
CLOCKWISE-COUNTERCLOCKWISE PASTRY
TWISTING DEVICE

This invention is illustrated by an embodiment thereof shown in the accompanying drawing in which

FIG. 1 is a plan view of the invention, broken away in part, and indicating the manner of seizing longitudinal pastry strip in an opposed manner, said strip being disposed between two twisting assemblies of substantially identical construction but disposed in mirror relationship to one another, one of said assemblies being shown in full whereas the other is shown in part.

FIG. 2 is a section view taken on line 2-2 of **FIG. 1** and showing the manner of seizing simultaneously a pastry strip at each of its two ends

FIG. 3 is a view taken on line 3-3 of **FIG. 2**

FIG. 4 is a view taken on line 4-4 of **FIG. 2** and

FIG. 5 is a perspective view of the product obtained by this invention.

Turning to the drawing, a base 10 is provided with an upright T-shaped support 11 disposed centrally between two twisting assemblies A and B. Each assembly is identical in construction so that only one need be described in detail. Each assembly is provided with three vertically disposed support plates 12, 13 and 14, secured fixedly to the base 10 in suitable space relationship. An axle 15 is disposed in each assembly, one being adapted for clockwise rotation whereas the other is adapted for counterclockwise rotation. The axle 15 traverses the respective plates 12, 13 and 14 through suitable apertures therein. The plates 12 and 14 are each provided with guideway channels 16 to slidably receive a slide plate 17 having a suitable cam slot 18 therein.

The slot 18 includes a curved finger actuating, pastry seizing portion 18X, communicating with a linear portion 18Y used to effect rotation of the seized pastry. A longitudinal rack 19 is suitably welded to the underside of slide plate 17 and engages a one-way slippage pinion 20 having a fixed collar 21 having an abutment pin 22 affixed thereto, said pinion and collar being suitably disposed on axle 15.

In order to push and pull the respective plates 17 of the assemblies A and B simultaneously, a handle 17X is secured to each of the respective plates 17 and a longitudinally disposed handle bar 17Y is located therebetween. In automated operation of this invention, electrical means are employed in lieu of the handle means.

An important feature of this invention is the provision of a pair of suitably levered fingers 23 and 23X to engage the unsupported portion 24X of the pastry strip 24.

To operate the opposing finger 23 and 23X simultaneously and thereafter rotate the pastry seized therebetween, a pair of vertically disposed plates 27, each extending above and below the axle are welded in diametrically opposed relationship to said axle. A slide sleeve 28, having opposed spaced-apart extension portions 28X disposed slidably between said plates 27, is mounted on the axle 15. Each extension portion 28X is provided with a suitably curved knob 29 to engage a co-acting receiving cavity 30 of a suitably angular lever arm 31, each lever arm 31 being pivoted to a pair of opposing plates 27. Each lever arm consists of a finger portion 23 integral with a stem portion 33 containing said cavity 30. A U-shaped rocker arm 40 is pivoted at the base of each of its two legs 40X by pins 41 to a respective spaced-apart stud 42 fixed in base 10. The rocker 40 is provided in its top horizontally disposed member 43 with a cam slot pin 44 of conventional manufacture. This rocker 40 is connected to sleeve 28 by use of conventional journal bearings 45 disposed suitably in the opposed leg portions of said arm 40. The bearings 45 engage a conventional groove located in the sleeve 28, to thereby facilitate linear movement of the sleeve 28 with the rocker movement of arm 40.

In operation, as the plate 17 with its cam slot is pushed inwardly, the cam pin firstly moves in the curved slot portion 18X causing the fingers to move toward one another due to the sliding movement of sleeve 28 away from the pastry sup-

port 11 on axle 15, thereby seizing the pastry portion 24X between the closed fingers.

To produce suitable rotation of axle 15 and the seized pastry the slippage pinion 20 through its abutment pin 22 engages the drive plate 50 which is fixed to the axle 15 by a set screw 51 located in the flange collar 52 integral with said plate 50.

As shown in **FIG. 3**, a spring loaded clutch pin 55 is hingedly secured to plate 50 by pivot pin 56. A coil spring 57 is fastened at one end to a pin 58 located in the drive plate 50 and at the other end to a pin 58X located in the clutch pin 55. Thus suitable inward movement of plate 17 and the rack 19 attached thereto causes the clutch pin 55 to timely engage the abutment pin 22, thereby causing the axle 15 and the seized pastry to rotate and produce a twist in the pastry.

The plate 50 is provided with a rim 59 and a notch 60 is suitably located therein. A leaf spring 61 is secured to the base 10 and continuously engages said rim 59. Thus the notch 60 permits only one-way rotation of the plate 50 and its affixed axle 15.

In order to always align fingers 23 and 23X of each assembly A and B into their vertically disposed spaced-apart relationship at the commencement of each twisting operation, an auxiliary flanged pinion 65 is secured fixedly to axle 15 by set screw 66. This pinion 65 and the axle 15 affixed thereto are actuated by a separate and suitably short ratchet 67 secured to the undersurface of plate 17.

Actuation of pinion 65 by rack 67 causes the axle 15 and plate 50 to rotate until notch 60 engages the leaf spring 61 (**FIG. 4**). In this position the opposing pastry seizing fingers of the respective assemblies A and B, while still grasping the pastry ends, are aligned in vertical relationship ready to be released from the twisted pastry when the cam pin in return movement traverses the cam slot portion 18X on the outward or pull stroke of the handle and the cam plate 17 attached thereto.

In lieu of a rack 67 and a co-acting pinion 65, a friction plate may be substituted to engage a co-acting friction rim on an annulus secured to axle 15.

The twisting clockwise and counterclockwise action of the device takes place only on the inward stroke of the handle toward the support 11 after the fingers have seized the respective pastry ends. There is no axle rotation on the outward or pull stroke of the handle and its attached cam plate 17. Axle rotation on the inward stroke is stopped by use of a suitably located arrest block 70 disposed on the handle before the cam pin engages end wall 69.

The actuation of the auxiliary rack 67 is done only at the beginning of the outward stroke to bring about the above stated vertical alignment of said fingers to permit their non-rotational opening at the termination of the outward stroke in slot portion 18X.

The end product is a fully twisted preferably coated piece of danish pastry 80 twisted from each end toward the center thereof and against itself.

The central support 11 may be modified to uphold a moving electrically actuated conveyor having spaced-apart pastry strips 24 thereon, in which event the assemblies A and B are operated in suitable electrically timed relationship to said conveyor.

I claim:

1. A device for fully twisting a strip of pastry held by each of its two ends comprising a first twisting means having a pair of levered pastry seizing fingers therein; a second substantially identical twisting means disposed in opposed mirror relationship to said first twisting means; a support for said strip of pastry disposed centrally between said first and said second twisting means and adapted to effectuate a firm seizing of the ends of said pastry strip by the fingers of the respective first and second twisting means; and actuating means cam operated for simultaneously actuating said first and second twisting means by initially causing said fingers to seize said pastry and thereafter twisting said pastry, one of said twisting means rotating its seized end clockwise while the other twisting means rotates its seized end counterclockwise.

2. The device of Claim 1 wherein each of said pastry twisting actuating means comprises an axle having a portion protruding toward said support for said pastry strip; a pair of parallel disposed diametrically opposed plates secured to said protruding portion of said axle, each plate extending above and below said axle; a pair of opposed levered pastry seizing fingers pivotally hinged to a said pair of plates respectively on each side of said axle; and sleeve means slidably disposed on said axle and extending between said plates for actuating said fingers.

3. The device of Claim 2 wherein said levered fingers are substantially V-shaped, each being pivotally secured to said opposing parallel plates at substantially the apex of the V-configuration, each of said fingers consisting of a pastry seizing finger portion and a stem portion adapted to engage said sleeve.

4. The device of Claim 3 wherein the stem portion is provided at its base with a suitable ball-knob receiving cavity and said sleeve extension portions disposed slidably between said plates are each provided ball-knobs disposed in ball joint relationship in said cavity of said stem whereby reciprocal sliding movement of said sleeve is translated into pastry seizing operation of said fingers.

5. The device of Claim 4 wherein said actuating means comprises rocker arm means engaging said slidable sleeve, said

rocker arm having a cam pin thereon; a cam plate reciprocally and slidably mounted in said actuating means, said plate having a suitably curved cam slot therein engaging said cam pin whereby movement of said cam pin in the curved portion of said cam slot causes said rocker arm engaging said sleeve to move said sleeve slidably on said axle to thereby operate said pastry seizing fingers.

6. The device of Claim 5 wherein said actuating means is provided with a slippage pinion disposed on said axle and is provided with an abutment pin thereon; a rack secured to the underside of said cam plate and engaging said slippage pinion; a substantially round plate fixed to said axle and having a suitable spring loaded clutch pin thereon adapted to engage said abutment pin, said plate having a critically disposed notch in the rim thereof; leaf spring means adapted to engage said notch to permit only one-way rotation of said axle; and alignment means disposed on said cam plate and said axle for aligning the lever fingers in vertical opposed relationship upon completion of the twisting operation on the inward stroke of said cam plate, said fingers being maintained in vertical non-rotating alignment on the outward stroke of said cam plate due to said slippage pinion, said fingers being opened to release the twisted pastry upon reverse travel of said cam pin in the curved portion of said cam slot.

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