June 28, 1966 L. O. SCHAFER 3,257,973

PASTRY MAKING DEVICE

Filed Nov. 13, 1963 2 Sheets-Sheet 1

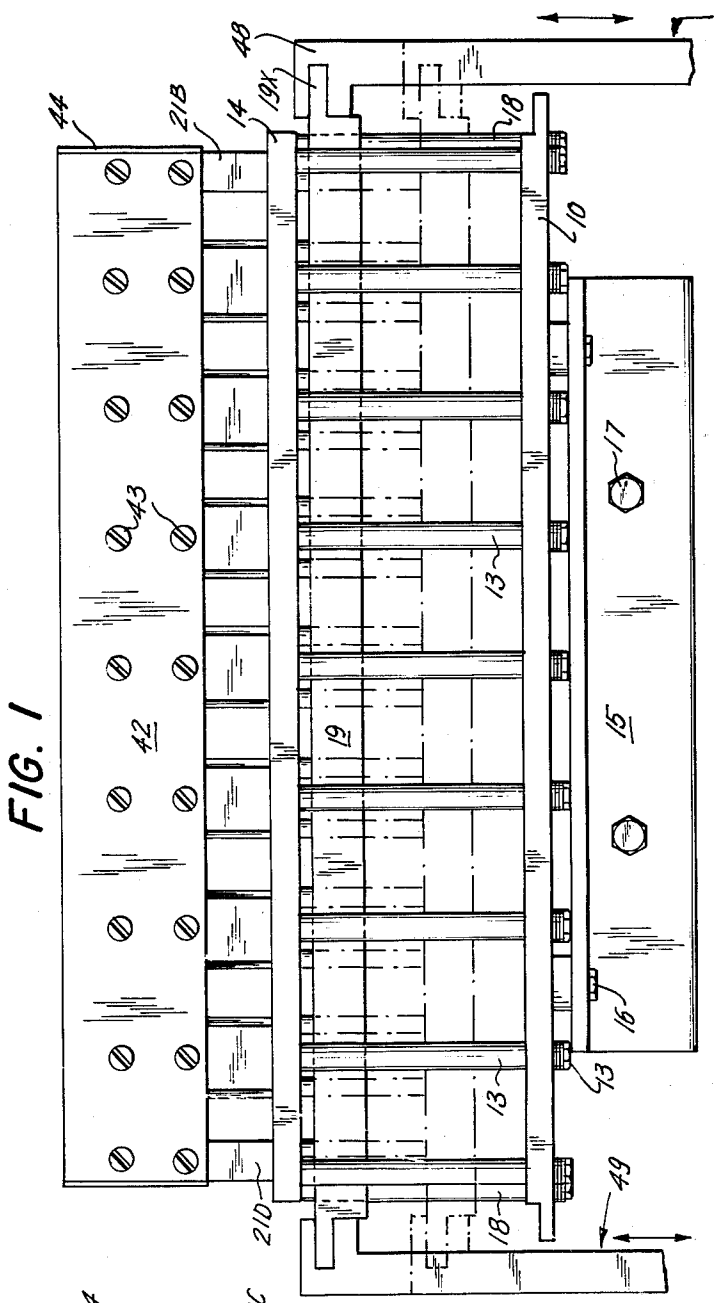


FIG. 1

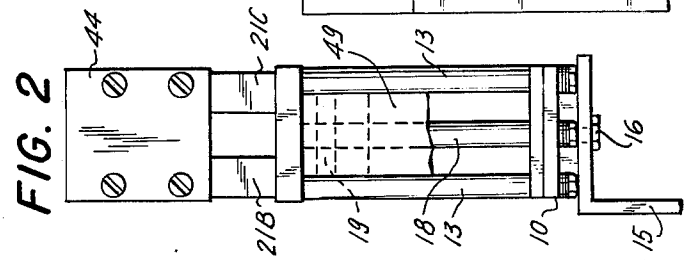


FIG. 2

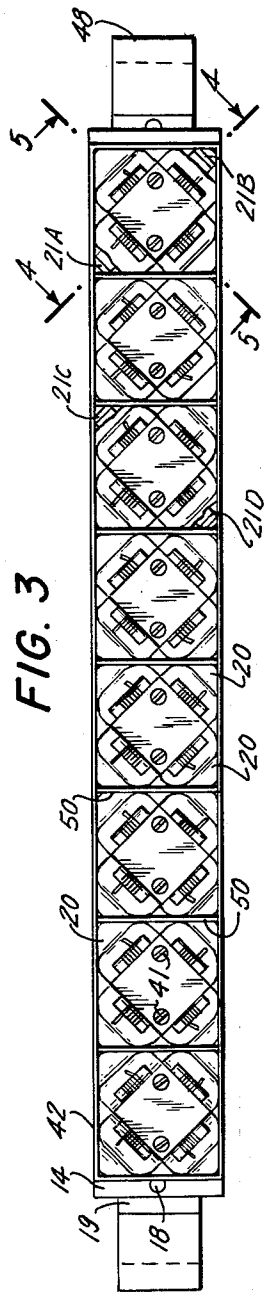


FIG. 3

June 28, 1966 L. O. SCHAFER 3,257,973

PASTRY MAKING DEVICE

Filed Nov. 13, 1963 2 Sheets-Sheet 2

FIG. 4

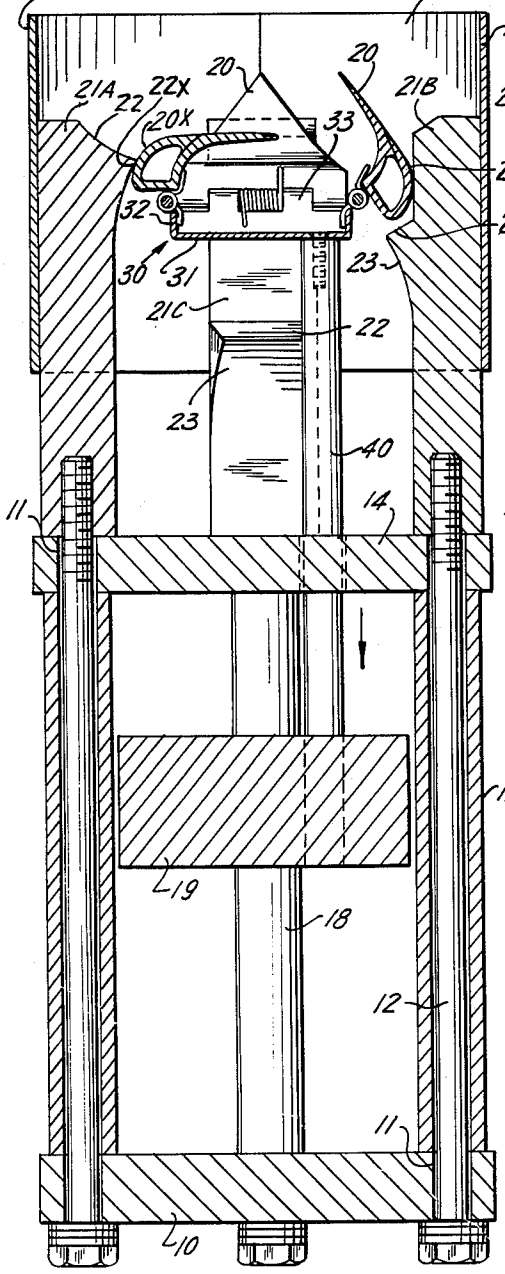
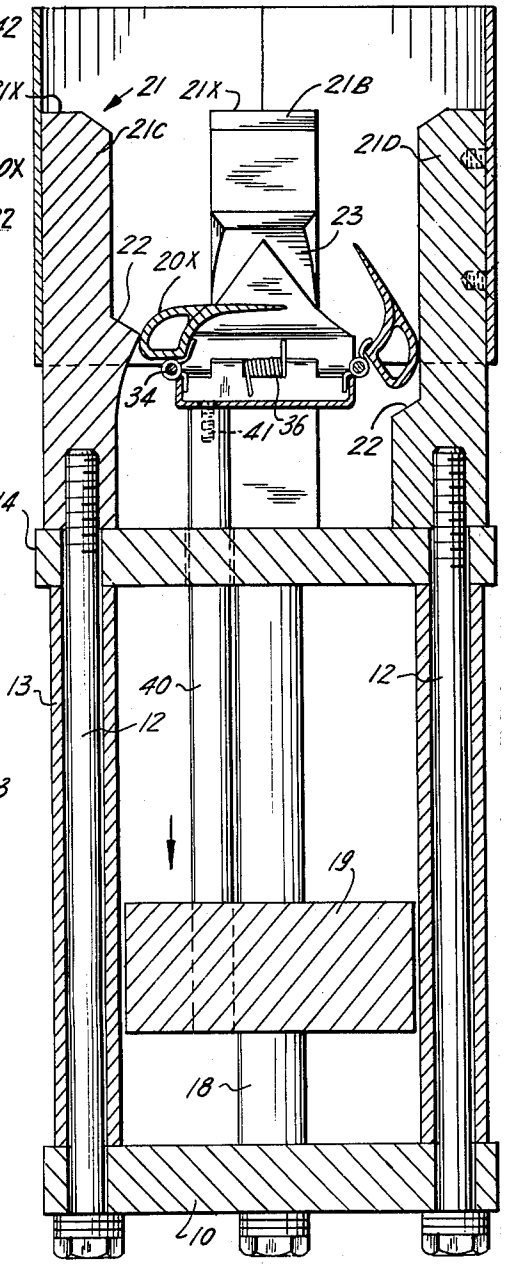


FIG. 5



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3,257,973

PASTRY MAKING DEVICE

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2 Claims. (Cl. 107—9)

This invention relates to a device for folding flat miniature pastry units such as is known as Danish pastry.

It is an object of this invention to provide a novel four fold mechanical device for consecutive folding of the four corners of rectangular squares of pastry dough.

It is a further object to provide a device wherein a group or bank of individual folding units are combined to form an overall unitary device.

These and other objects of this invention will become apparent upon reading the following descriptive disclosure of an illustrative embodiment of this invention shown in the accompanying drawings and in which:

FIG. 1 is a side elevation view of the combination device showing a bank of eight folding units,

FIG. 2 is an end view of the device,

FIG. 3 is a top plan view of the device showing all folding fingers of each unit in open position,

FIG. 4 is a section view taken on line 4—4 of FIG. 3, and

FIG. 5 is a section view taken on line 5—5 of FIG. 3.

According to this invention a rectangular base plate **10** is provided with a plurality of suitably spaced apertures **11** (FIG. 4) to receive a corresponding plurality of suitably long bolts **12** therein.

Separator collars **13** of suitable and equal length are disposed over each bolt **12** and a perforated rectangular top plate **14** is disposed upon the collars **13** and to receive bolts **12** in the top plate apertures (FIGS. 4 and 5).

This invention is operable where only one folding unit is provided. However, it is more economical to operate a combined device made up of several individual units.

In the illustration herein eight individual units are shown in linear arrangement but clearly the plurality of combined individual units may range from two to more than eight.

Where eight units are employed as in the illustrative embodiments herein, the top plate **14** and the bottom plate **10** are long rectangular plates having suitably spaced-apart apertures **11** along both their longitudinal edges. Thus bolts **12** and their collars **13** constitute a pair of parallel rows adjacent a respective longitudinal edge.

An angular support bracket **15** is secured to base plate **10** by a pair of bolts **16**, thereby permitting the device to be secured by bolts **17** to the side of a bench or suitable work table.

At each of the ends of the suitably spaced-apart top plate **14** and bottom plate **10** a guide bolt **18** may be disposed. This bolt **18** is intermediate the two parallel rows of bolts **12**. The guide bolts are each secured into a respective suitably threaded cavity in the top plate **14**.

A moveable longitudinal plate **19** of suitable width is disposed between the two spaced-apart rows of bolts **12** (FIGS. 2 and 5), said plate **19** being provided with suitable apertures suitably located adjacent its respective ends to receive guide posts **18**.

Thus the plate **19** is slideable up and down in a reciprocal manner on the guide posts **18** and between the pair of longitudinal rows of bolts **12** and their collars **13**.

As shown in FIGS. 3, 4 and 5 a plurality of individual folding units or cells are provided, each cell having four folding fingers **20** and a set of corresponding co-

acting cam pillars generally designated **21** to actuate said fingers in timed sequence.

A set of four cam pillars generally designated **21**, namely pillars **21A**, **21B**, **21C** and **21D** are used for each cell.

Each of the cam pillars **21A**, **21B** and **21C** is provided with an identical cam surface substantially in the form of a V-configuration having a depending slope **22** and an upright slope **23**.

The cam pillars **21** are disposed in the corners of each cell. The horizontal elevation of the cam of each of the four pillars in a cell is different and so predetermined as to effectuate a pre-selected sequence of operation. Each pillar **21** is provided with a flat top surface **21X** to permit all the pointed ends of the fingers to lie in a substantially flat plane in the normal position (FIG. 3).

The pastry folding unit itself comprises an integral sheet metal rectangular cup or container **30** having a bottom wall **31** and upright walls **32**. The tops of the upright walls are each provided with a pair of spaced-apart axle holding supports **33** and an axle **34** is disposed therein.

The folding fingers **20** are triangular, each having a pair of suitably spaced-apart rolled-over axle supports disposed on axle **34**. A coil spring **36** is disposed on each axle **34** having one of its ends bearing on an upright wall **32** and the other on a folding finger **20** so as to continuously urge said finger in outward open position (FIG. 3).

The bottom wall **31** of each cup **30** is provided with a pair of apertures and a pair of rods **40** each having a threaded cavity at its top is secured to the cup **30** by means of a suitable flat head screw **41**.

The bottom of each rod **40** is threaded and is disposed in a co-acting threaded aperture in the moveable plate **19** (FIGS. 4 and 5). Thus downward motion of plate **19** pulls the cup **30** downwardly, and upward motion pushes the cup upwardly.

Each of the pillars **21** is provided with a suitable threaded cavity in its bottom wall and a threaded bolt **12** is threaded into a respective cavity, thereby pulling the pillar **21** firmly to top plate **14**.

Preferably a top border plate **42** is secured to the pillars of each side as by screws **43**. Also end border plates **44** may be provided at each end and they also are secured to pillars **21** by means of suitable screws.

Turning now to FIG. 1, moveable plate **19** is provided at each end with tongue portions **19X** to engage the bifurcated ends **48** of a U-shaped yoke **49**. The yoke **49** is secured to an eccentric on a motor to obtain an up and down reciprocal motion.

As shown in FIG. 3, the folding units or cells are separated one from the other by spacer plates **50** which terminate at the top rim of the border plates **42**.

The fingers **20** are each provided with a smoothly curved quadrant cam surface **20X** adjacent its hinged edge by suitable bending of the center portion of the bottom of the sheet metal from which the fingers are made. The cam forming bent metal **20X** may be welded to the pointed portion to form an integral smooth juncture therewith.

As shown in FIGS. 4 and 5, the manner of the operational folding sequence is as follows. Fingers **20** are normally disposed in their respective corners of their cells (FIG. 3).

The pastry sheet is now placed on the top of the border plates **42** and **44** and the separator plates **50**. A heavy roller (not shown) is then rolled over the top of the pastry sheet forcing it to be cut into squares by the edges of the cell. The pastry then falls into cup **30** and a suitable amount of edible filling is added.

Now the pastry is ready to be folded so as to enclose the filling.

As the cups **30** are pulled down by plate **19** and rods **40** the apex **22X** of the cam surface **22** on pillar **21A** causes the finger cam surface **20X** sliding thereagainst to turn over about 90 degrees, turning over the pastry resting upon this finger onto the filling (FIG. 4).

Next, the finger **20** disposed against pillar **21B** and its lower cam surface **22** is actuated by cam surface **20X** thereof riding over the cam surfaces **22** and **23** of said pillar **21B**.

The movement over cam surface **22** causes the finger to fold over about 90 degrees whereas passage beyond cam surface **23** permits the finger to assume a vertical position sliding against the vertical wall of the pillar therebelow.

Thus each finger **20** is turned 90 degrees by a cam surface **22** and its apex **22X** and then is urged by the coil spring **36** back against the pillar after passage onto the lower cam surface **23**.

The operation of a third finger **20** on cam pillar **21C** (FIG. 5) is the same as described for pillars **21A** and **21B**, turning over a pastry corner in diagonal relationship to those already turned over by cam pillars **21A** and **21B**.

The cam surface **22** of pillar **21D**, being the lowermost and thus below the cam surface **22** of cam pillar **21C** need not be provided with a cam surface **23** inasmuch as the folding operation is complete upon actuation of a finger **20** by the cam surface **22** of cam pillar **21D**.

All the fingers **20** in all the units or cells operate simultaneously. Accordingly eight pastry pieces are obtained in corner folded position with their corner apices touching in a pyramidal manner enclosing the filling, upon the return of the moveable bar **19** into its topmost position (FIG. 3). In this FIG. 3 position the fingers **20** are turned over about 180 degrees as they are beyond the topmost edge **21X** of the pillars and the triangular point of each finger is disposed in a corner of the cell formed by the border plates.

This invention has been described by means of an embodiment but it is of a broader scope.

I claim:

1. A pastry folding machine for folding the four corners of a pastry sheet into a pyramidal configuration

comprising a rectangular container having upright sides each having a suitably rolled over edge; a unitary triangular folding finger for each container side, each finger having rolled over axle supports aligned with said rolled over edges; axles disposed through said rolled over edges of said upright sides and said supports of the finger for each of the four container sides; coil springs disposed on said axles, and biased against said upright container sides and said fingers for urging said fingers continuously away from the container; a rectangular frame disposed beneath said container in spaced relationship; a suitable upright cam pillar disposed in each corner of said frame, said container being vertically movable between said cam pillars, a plurality of said cam pillars having substantially V-shaped cams located to successively engage adjacent folding fingers during descent of said container and effect a predetermined folding sequence of corners of the pastry sheet supported on the container and another of said cam pillars having a surface engaging another folding finger subsequently for completing the folding of the pastry sheet and reciprocal rod means mounted in said frame and secured to said container to effect reciprocal motion of said container with its folding fingers between said cam pillars whereby sequential folding of corners of the pastry sheet is effected on downward movement of said reciprocal means.

2. The pastry folding machine of claim **1** wherein a plurality of folding machines are disposed in linear relationship, the reciprocal rod means thereof being secured to a common reciprocal plate, and means for reciprocating said plate whereby said plurality of folding machines are operated simultaneously.

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