Feb. 9, 1932.
STUFFED PASTRY MACHINE
Filed Feb. 19. 1927 2 Sheets-Sheet 1


Feb. 9, 1932.
A. E. H. BARILI

1,844,142
STUFFED PASTRY MACHINE
Filed Feb. 19: 1927
2 Sheets-Sheet 2

rig. 2.


Fig. 3.


# UNITED STATES PATENT OFFICE 

AEIHUR E. H. BARILE OF LOS AMCRIES, CAIIFORNIA<br>ENUTFMD PASMRTI REACEINT




#### Abstract

This invention has relation to a device for making stuffed pastry, such as ravioli, filled confectionery and other similar alimentary products. - The object of my impention is the provision of a better grade of article of the gind referted to, and also to produce such article at a lower cost 姁an has heretofore been found possible. To this ond my invention consists in the combinetions hereineiter filly explaned bud illugtrated in the eppended drewings of phit?

Fig. 1 is a side elevation, pertly in section, 0 , mechine embodying she invention, Tig. 2 and Fig. 3 show the finished article, in its preserred forms,


Fig. is a fragmentary plan-view of the more important elements or the invention,

Fig. 5 ilmstrafes turther portions of the 20 preceding higure,

Fig. 6 is a fragmentary view corresponding to parts of Hig. 1, but showing a modifed form of the invention.

The device I min shout to describe is de. signed to manufacture Ervioli but may, $2 s$ above stated, bo adapted to the praduction of other stufied ahimentary articlee. As ins dicated in Fig. 1 paste of the proper cont sistency is delivered to sets of rolfers $\mathrm{m}_{3} 6, \%$ and 8 from two batcies 1 and 2, whieh batches in the first instance have been deposited on stationary tables 3 and 4 by the machime operator. In passing through these rollers the paste is formed into sheets 9,10 , of the correct thickness. While only two sets of calibrating rollers are here shown, because two sets suffice in a narrow machine, I wish it understood that more sets of rollers will be required in wide machines capable of producing long rows of ravioli at one time, as is well known to those versed in the art. The two sheets of paste are fed to and over a pair of form and cutting rollers 11,12 , whereupon the finished pieces of ravioli drop into a can 18, which can in turn is placed on a suitable conveyor 19. When filled the can is carried away by said conveyor to the usual sauce filling and cooking device. But as such device is well known in the art and
forms no part of the present invention it is not herein shown.

Centrally located, above the rollers 11, 12, is a suitable hopper 20 , into which stuffing material 21 is deposited. This hopper may be cylindrical in shape, or it may be oblong in a wider machine. It has no bottom but is provided with curved edges $20^{\mathrm{a}}, 20^{\mathrm{b}}$, which edges are substantially concentric with the rollers 11, 12. The edges are set so close to the periphery of said rollers, that the sheets of paste almost scrape against the edges in passing. The paste sheets may properly be said to form the bottom of the hopper, and do form such bottom, ws will presently appear:

The construction of the rollers 11,12 is very important, because not only is each piece of ravioli formed between these rollers, but they are also separated and their edges pressed together in passing through the two rollers, as will now be explained. Ravioli is made in diferent shapes. I prefer to shape the pieces as indicated in Figs. 2 and 3 , in squares, because they may be made in such shape without waste of material. "Wach square is proviced with a stuffed center portion, and this center may be circular or square, as desired. I find the square mold most economical to manuibecture, and the machine herein illustrated is provided with such square molds.

Referring to Fig. 4 it is seen that the roller 11 is made tivith a series of rows of molds, $11^{a}$, 11b, there being in this case two molds in each row. The roller 12 is provided with periphcral, annular cutters, 13 and 14, and these cutters are shaped to slit the paste sheets lengthwise as they pass between the rollers. On the roller 11 is mounted transverse rows of cutters 15, 16. It is important to note that, when the machine is in operation, these axially disposed cutters pass between the peripheral cutters of the roller 12.

In operation the paste sheets and the form rollers travel at a slow, uniform, continuous speed. The cans on the conveyor, on the other hand, are given an intermittent movement. As the two sheets of paste pass under the edges $20^{\mathrm{a}}, 20^{\mathrm{b}}$ of the hopper the stuffing 21, which rests on the paste, is urged along with
the result that the paste sheet 9 is forced into the molds $11^{\mathrm{a}}, 11^{\mathrm{b}}$, and the space thereby created is filled with the same stuffing which depressed the paste. The two rollers 11, 12 are adjustably fixed so close together that the two sheets of paste are very firmly pressed together, and no more stuffing is able to crowd between the sheets than that which has lodged in the cavities of the molds. The stuffing is 10 a thick, plastic composition. It does not flow very readily. And as the sheets of paste touch the bottom edges of the hopper, there is no danger of any stuffing working its way between the paste and said edges.
For family use cans capable of holding twelve pieces of ravioli, and filled with sauce, are usually employed. The form rollers is shown provided with six rows of molds, there being two molds in each row. The ordinary
20 can of this capacity is large enough to receive the two pieces of ravioli of each row. As a consequence enough pieces are formed at each revolution of the rollers 11,12 to fill a can. The paste is difficult to handle and can only ${ }_{25}$ be successfully manipulated at very slow speed. The rollers 11,12 should not make more than five to ten revolutions per minute. As a consequence ample time is afforded the conveyor to move forward step by step as
Even after the pieces of ravioli have been completely formed and separated it is difficult to keep them from adhering to one of the rollers. A series of suitable scrapers, 60 , applied to the roller 11. In case the paste used shows a tendency to stick to the rollers it is well to modify the proportions of the cutters in such a manner, that the twelve pieces of ravioli for each can are not entirely sepamay be applied to the roller 12, and they may successfully dislodge and keep this roller free from adhering pieces or fragments, but on account of the molds $11^{\mathrm{a}}, 11^{\mathrm{b}}$ and the axial cutters 15,16 such scrapers cannot readily be rated, but remain tied together in a strip 17, two pieces wide and six long, by a very thin film of paste. The weight of the free portions of this strip will help to dislodge any unit of the strip showing a tendency to stick to the rollers. In order to attain this result the cutters 13 and 15 should project a trifle farther than the cutters 14 and 16. The difference is so slight that it cannot be brought out clearly in the drawings, but it is thought not difficult to understand by anyone versed in the art, that the cutters 13 will trim the edges of the strip and the cutter 15 will cut off the strip at each revolution of the rollers.

As the strip sinks into the can, and strikes bottom, the pieces will commence to fold into an accordion shape, see also the diagrammatic Fig. 6, particularly if guided between suitable gauges 22,23 . The subsequent cooking in the can and the later handling of the cans
suffice to separate the pieces that are not torn apart in falling into the cans.
Where the form rollers are twice the diameter there will be twelve rows of molds, and two diametrically opposed cutters 15 would be required, in order to deliver twelve pieces of ravioli in each can. My aim is to point out that, given a certain capacity of production per minute, and a certain width of machine, there is a fixed relation between cutters and molds, even as the timing of the movement of the conveyor has a fixed relation to the rotation of the form rollers.
A preferred construction of the roller 11 is indicated in Fig. 5. The roller is shown made in five sections, and the sections are shown separated on the roller shaft, for the sake of clearness. There are two outer sections 30,31 , which may be exactly alike but assembled in reverse relation. Inside of these are two intermediate sections 32,33 , which also may be identical in shape. In cthe center is a section 34, or two sections 30 , 31 may be assembled, the opposite way, and used as a center. The advantage of this construction is that, in making the roller, only simple turning and milling operations are employed, as against the expensive operation of sinking molds into the surface of a solid roller. Those versed in the art will readily appreciate, that the rollers 12 similarly may be made in four sections, of which the two end sections $12^{\mathrm{b}}$ and the two center sections $12^{\mathrm{a}}$ may be respectively alike.
The cutters $13,14,15,16$ are preferably made crimped, as indicated in the drawings, partly because the appearance of the finished article is thereby improved, and mainly for the reason that the serrated edges of the compressed pieces of paste become locked very tightly together, and will not come apart.
The device of my invention may be driven from any suitable source of power, not shown, and such power is applied to rotate a drive shaft 40 which, through suitable gearing, such as a chain 41 , is connected to rotate the roller 12 at the speed hereinbefore indicated. Rigidly combined with the latter is a gear wheel 42 , and this wheel drives an identical gear wheel 43, of the roller 11. From the roller 12 extend chains 44,39 to the rollers 5 and 8 , and the roller 11 is similarly operatively connected with the rollers 6 and 7. In this manner all the rollers are connected to be rotated continuously at the proper speed. Chain gearing is shown for the sake of clearness and simplicity, but in actual practice I prefer to employ worm and spur gearing.
For the purpose of imparting properly timed intermittent movement to the conveyor, an arm 45 may be fastened on the drive shaft 40. This arm is positioned to strike a pin 46 of a bell-crank 47, and the latter carries a spring-held pawl 48, which in turn engages
a ratchet wheel 49 , of the conveyor shaft 50. The bell-crank is, by a spring 51, normally held retracted against a suitable stop 52. As the arm 45 reaches the pin 46 , it com5 mences to swing the bell-crank and to turn the sprocket wheel, until a forward step of the conveyor has been effected, whereupon the arm passes the pin, and the spring 51 is free to return the bell-crank to its nor0 mal position. A mechanism as the one just described will advance the cans, as required, but I wish to state that, in practice, I employ much more elaborate devices in order to effect a smooth, positive movement to the 15 conveyor. But as the particular means employed does not form part of this invention, I have shown one which can be easily comprehended by the reader.
Means, such as a weight 60 , may be placed 20 in the hopper in order to apply pressure on the stuffing, sufficient to force the latter into the molds $11^{\text {a }}, 11^{\text {b }}$. More elaborate devices may be substituted but the simple weight 60 is, perhaps, the most convenient, on ac5 count of its very simplicity.

In place of recessing only one form roller the full depth of the stuffing it is, of course, possible to sink the molds one-half the distance into each roller, as indicated in Fig. 6, 0 where the rollers 70,71 are provided with shallow half-molds $70^{2}$ and $71^{18}$. The cutters 72,73 may remain exactly the same as the cutters 15 and 16. One objection to this construction is the additional expense of the 5 second set of molds, and little is gained, unless the appearance of the finished article is the main consideration.
I claim:

1. In a ravioli machine, a cutting roller 40 comprising, a plurality of cylindrical sections and circular knives of a larger diameter between said sections; in combination with a second roller comprising, a series of cylindrical sections having convex annular
45 beveled edges and a series of cylindrical discs fitting between said sections, the periphery of said discs having transverse grooves the edges of which are beveled to correspond with the annular convex bevels of the roller, and
50 axial cutters seated between said grooves and fitting between the circular knives of the first named roller.
2. In a ravioli machine, a pair of intergeared rollers, means for forming and feed55 ing sheets of flour paste to said rollers, an open bottom straight sided hopper above said rollers for the purpose of guiding stuffing to the paste sheets on said rollers, the bottom edge of said hopper being shaped to con-
60 form to the contour of the rollers, means on the rollers for cutting the stuffed paste sheets into squares, one or both of said rollers being provided with deep square molds into which the stuffed paste is free to enter, there being 05 between said molds and the said cutting
means broad peripheral margins between which the paste sheets become firmly pressed together and the stuffing expelled from these marginal portions.
3. In a ravioli machine, a pair of intergeared rollers provided with indented molds and having annular and axial cutters separating said molds, there remaining a substantial peripheral margin between the cutters and molds, means for feeding sheets of paste to said rollers, an open bottom hopper above the rollers for guiding stuffing to the paste sheets on the rollers, and a weight insertable in and loosely fitting said hopper for pressing the stuffing against the paste sheets.
4. In a ravioli machine, a pair of intergeared rollers, one roller having indented molds and provided with axial cutters between said molds, the other roller being made with annular peripheral cutters adapted to be positioned between the molds of the first named roller at the point of contact of the rollers, all the molds being spaced apart so as to provide a wide margin between the cutters and the molds, means for feeding sheets of flour paste to the rollers, and a detachable open bottom hopper for guiding stuffing to the paste sheets on the rollers.
5. In a ravioli machine, a pair of intergeared rollers provided with indented molds and having annular and axial cutters between said molds, there being a substantial peripheral margin between the cutters and molds, means for feeding sheets of paste to the rollers, an open bottom hopper with vertical 100 sides above said rollers for guiding stuffing to the paste sheets on the rollers, and means for adjusting said hopper vertically to accommodate paste sheets of various thicknesses.

In testimony whereof I have hereunto af-
ARTHUR E. H. BARILI.
$\square$

