Jan. 28, 1964 R. J. FAY 3,119,352

SANDWICHING MACHINE

Original Filed Dec. 15, 1958 2 Sheets-Sheet 1

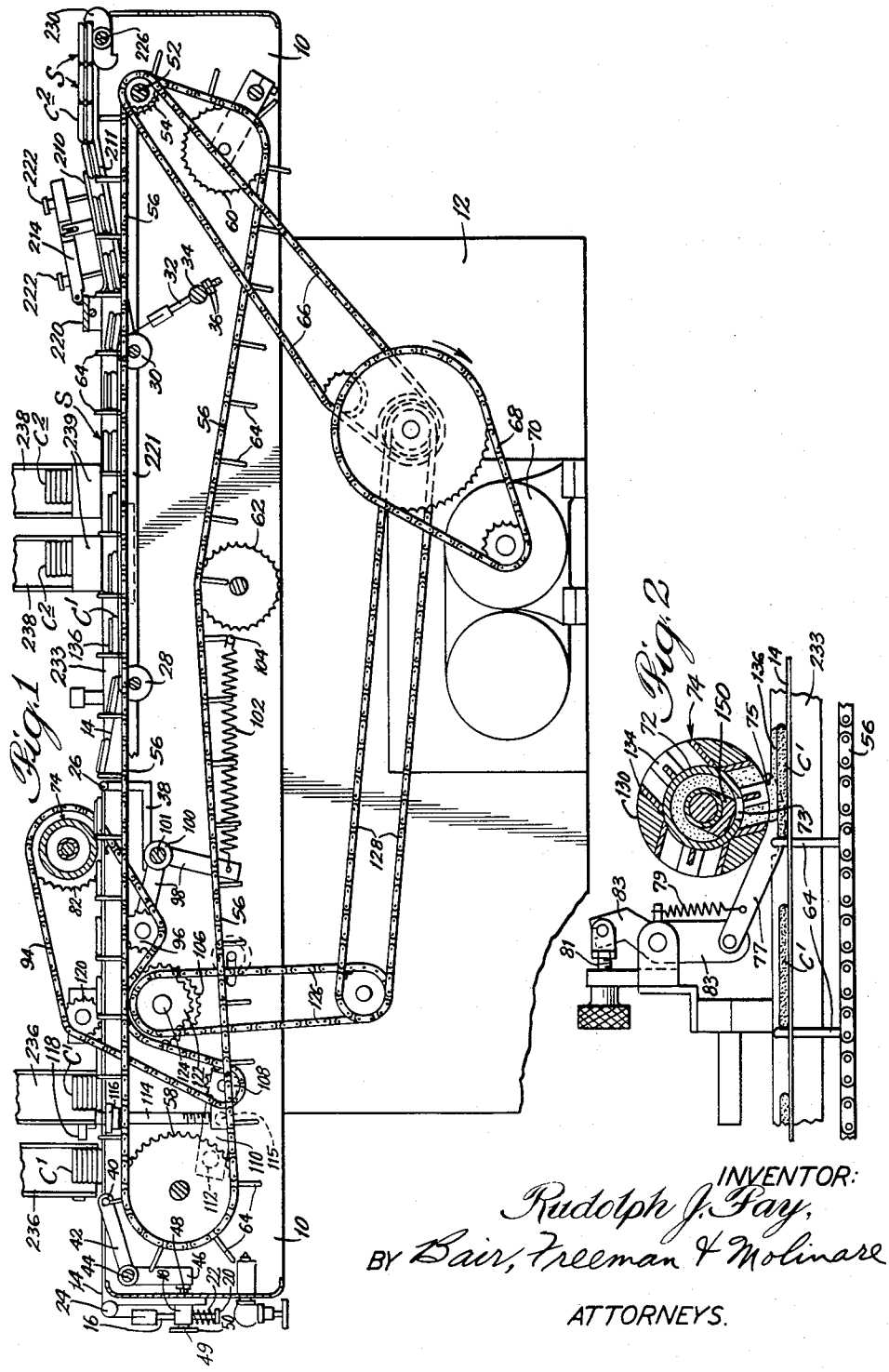

Fig. 1

Fig. 2

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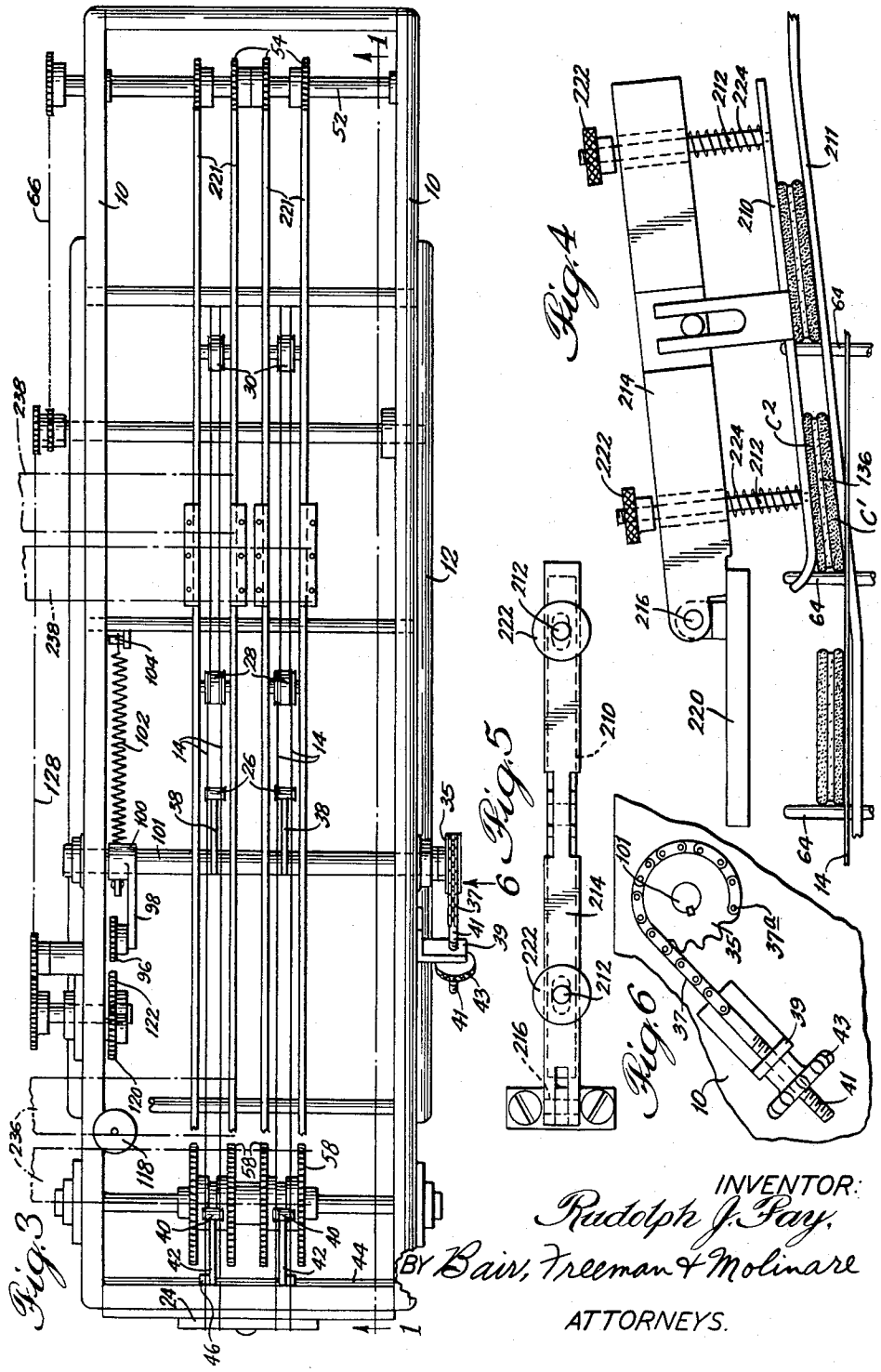

Fig. 3

Fig. 4

Fig. 5

Fig. 6

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3,119,352
SANDWICHING MACHINE

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Original application Dec. 15, 1958, Ser. No. 780,508, now Patent No. 2,993,453, dated July 25, 1961. Divided and this application May 29, 1961, Ser. No. 113,468
12 Claims. (Cl. 107—1)

This invention relates to a sandwiching machine of simple, durable and inexpensive construction for assembling those types of "sandwiches" which comprise two cookies with a filler of creme between them, the machine having a conveyor for feeding cookies to a creme depositor which deposits a layer of creme thereon whereupon another cookie is deposited on top of the layer of creme and the sandwiches thus assembled are delivered from the machine. The present application is a division of my copending application Serial No. 780,508, filed December 15, 1958, now Patent No. 2,993,453, issued July 25, 1961.

One object of the invention is to provide a sandwiching machine in which the cookies are supported by a taut wire arrangement, fingers of a conveyor chain slide the cookies along the wires, the tension of the wires being adjustable, and means being also provided for adjusting the height thereof to accommodate different thicknesses of cookies that are sandwiched in the machine.

Another object is to provide a depressor for the completed sandwiches which is readily movable to an elevated position for permitting the removal of any sandwiches which jam in the machine.

Still another object is to provide conveniently operable adjusting devices for the tension of the wires, and for the elevation of the wires at both ends thereof with respect to the frame of the machine and thereby with respect to cookie magazines and a creme depositor of the machine.

A further object is to provide the foregoing elements of such design that they permit the forming of sandwiches at a relatively high rate such as 600 to 1,000 per minute in a double-row machine without undue breakage of the sandwiches.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my sandwiching machine, whereby the objects above contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in detail on the accompanying drawings, wherein:

FIG. 1 is a vertical sectional view of my sandwiching machine and shows the driving mechanism for various parts of the machine;

FIG. 2 is an enlarged vertical sectional view of a portion of FIG. 1 taken through a depositor assembly and shows a cutoff wire coacting therewith;

FIG. 3 is a plan view mainly of the frame and cookie conveyor assembly of my machine to show the relation of parts and the relation of the taut wires thereto;

FIG. 4 is an enlarged side elevation showing a depressor;

FIG. 5 is a plan view of FIG. 4; and

FIG. 6 is an enlarged side elevation of a portion of FIG. 3 adjacent the indicating arrow 6.

On the accompanying drawings I have used the reference numeral 10 to indicate two spaced side frames of my machine and 12 a base for the side frames 10.

A pair of supporting wires 14 is provided for each row of sandwiches to be formed in the machine (two rows being shown) and the left-hand ends of the wires

are secured to a stem 16 slidable through a bracket 18 and having a head 20 thereon between which and the bracket a spring 22 is interposed. The wires extend upwardly from the stem 16 and bend over a rod 24 to extend toward the right, then lie in grooves of stub rods 40 and 26, then wrap one turn around grooved pulleys 28, then extend over grooved pulleys 30 and their right-hand ends are secured to threaded stems 32. The stems 32 are slidable through a cross rod 34, and lock nuts 36 are provided for adjusting the tension of the wires. The springs 22 maintain the tension substantially constant as variations in tension occur due to variations in cookie load in the magazines 236 and in pressure of the creme (because of variations in its viscosity) when deposited on the cookies.

The stub rods 26 are supported on arms 38 and the stub rods 40 are supported on arms 42. The arms 38 are welded to a rock shaft 101 on which is a sprocket 35 (see FIGS. 3 and 6). A chain 37 has one end secured at 37a to the sprocket 35, extends over the sprocket and has its other end secured to a pull screw 41 slidable through a bracket 39 mounted on one of the side frames 10. A hand wheel 43 is threaded on the pull screw 41 for elevating the stub rods 26 thereby adjusting the height of the supporting wires 14 at this point.

The arms 42 are pivoted on a cross rod 44 adjacent the left-hand end of the machine and a second arm 46 for each arm 42 constitutes therewith a bell crank. These bell cranks are connected together by a bar 48 against which a set screw 49 bears to adjust the bell cranks about the cross rod 44 as a pivot. A hand wheel 50 on the set screw 49 is provided for turning the set screw.

A conveyor drive shaft 52 is provided on which are conveyor drive sprockets 54, and conveyor chains 56 extend around these sprockets and also around sprockets 58 and idler sprockets 60 and 62, all as shown in FIG. 1. The conveyor chains 56 are provided with pin-like fingers 64 for propelling cookies and sandwiches along the taut supporting wires 44 as will hereinafter appear. Chain supporting rails 221 are provided for the chains 56, and side rails 233 for the cookies and sandwiches are provided throughout the length of the machine.

The conveyor drive shaft 52 is driven by a pair of drive chains 66 and 68 and suitable sprockets for reducing the speed in an obvious manner, the chain 68 being driven by an electric motor or the like 70 or other prime mover for actuating my sandwiching machine.

In FIG. 1 a depositor drum 74 is illustrated, and in FIG. 2 some of the details thereof are shown including lands 130 between which are stencils 134 surrounding a sleeve 72 into which creme is forced as fully disclosed in my parent application hereinbefore referred to. The depositor forms no part of my present invention, being fully disclosed and claimed in said parent application and the patent which issued therefrom. Accordingly only a few details thereof are shown in FIG. 2, the element 150 being a valve block for controlling the flow of creme. Also a cutoff wire 75 is shown supported by a pair of arms 77 and held against the periphery of the depositor drum 74 by a spring 79. The arms 77 are supported on arms 83 pivoted to a stationary bracket and provided with an adjusting screw 81 to determine the fore-and-aft position of the wire 75 relative to the stencils 134.

The depositor drum 74 is provided with a drive sprocket 82 (see FIG. 1). For driving this sprocket I provide a depositor drive chain 94 which passes under an idler sprocket 96 carried by a bell crank 98 having a hub 100 rotatable on the rock shaft 101. One end of a spring 102 is connected to the bell crank 98, and the other end thereof is anchored to a stationary stud 104 so as to tend

to move the idler sprocket 96 downwardly for keeping the chain 94 taut.

The chain 94 also passes around a drive sprocket 106, and around a pair of idler sprockets 108 and 120. The idler sprocket 108 is carried by an arm 110 pivoted at 112, and a differential adjusting screw 114 is threaded into a block which is pivoted at 115 to the arm. A bracket 116 is provided through which the differential adjusting screw 114 rotatably and non-slidably extends, and the upper end of the screw is provided with a hand wheel 118 for adjusting the same for a purpose which will hereinafter appear.

For driving the sprocket 106 from the motor 70 a sprocket 122 is mounted on a shaft 124 on which the sprocket 106 is mounted, and the sprocket 122 is driven by a pair of chains 126 and 128 in an obvious manner. Thus the depositor drum 74 is driven cyclically with respect to the conveyor chain 56.

Located adjacent the right-hand end of the machine as illustrated in FIG. 1 are hold-down bars 210. These are mounted on rods 212 that are slidable in brackets 214 pivoted at 216 to a stationary bracket 220 (see FIG. 4). The rods 212 are threaded for adjusting nuts 222, and springs 224 are interposed between the brackets 214 and the hold-down bars 210. Proceeding to the right-hand end of the machine in FIG. 1 a stacker shaft 226 is illustrated on which stacker cams 230 are mounted.

Base cookie magazines of trough-like character 236 are provided for delivering base cookies C^1 to the sandwiching machine at one point, and secondary or top cookie magazines 238 are provided for delivering top cookies C^2 to the base cookies after the creme has been deposited on the cookies C^1. The base cookies are removed one at a time from the magazine 236 by the conveyor fingers 64 while suitable escapement mechanism 239 may be provided for the magazines 238.

Practical Operation

When my machine is in operation the magazines 236 will deliver base cookies C^1 to the supporting wires 14, and the fingers 64 will propel the base cookies along the wires, first to the depositor 74 where the deposits 136 of creme are applied, then to the magazines 238 which deposit the top cookies C^2 on the base cookies and the creme 136 by operation of the escapement mechanism 139 whereupon the pins 64 slide the sandwiches S (assembly of cookies C^1 and C^2 and deposit of creme 136) along the wires 14 and along the inclined rails 211 under the depressor bars 210 until the sandwiches overlie the stacker cams 230.

The height of the wires 14 under the magazines 236 and the depositor drum 74 may be nicely adjusted by raising and lowering the stub rods 40 and 26 by manipulating the adjustment hand wheels 50 and 43 respectively, the tension on the wires being substantially constant during such height adjustment by reason of the springs 22. This tension however can be adjusted by manipulating the lock nuts 36 on the stems 32 if desired to compensate for stretch of the wires after extended use, and to compensate for expansion or contraction of the wires due to ambient temperature conditions.

The creme 136 fed to the sleeve 72 flows past the open valve blocks 150 and through the stencils 134 to be deposited on the base cookie C^1 as shown in FIG. 2. As the depositor drum rotates counterclockwise in FIG. 2 the cutoff wire 75 cuts off the creme for each stencil as it passes the wire thus leaving a clearly defined deposit of creme 136 on the base cookie C^1.

The base cookies and their deposits of creme are propelled by the fingers 64 along the wires 14 over the stub rods 26 and the pulleys 28 to the magazine 238 which deposit the topping cookies C^2 thereon. In the event the deposit of creme is not properly centered on the base cookie C^1 the differential adjusting wheel 118 can be manipulated while the machine is in operation for shifting the portion of the chain assembly 94 extending over the sprocket 82 to rotate it in either required direction with respect to the sprocket 106, tension being maintained by the spring 102, and thus the adjustment is accomplished by a very simple differential type of mechanism.

The fingers 64 then propel the completed sandwiches S along the wires 14 and then up the inclined rails 211 as they pass under the depressor bars 210 which are adjusted so as to provide slight spring pressure to compress the sandwiches S to uniform thickness (the softness of the creme 136 permitting same), and hold them in position on the rails 211 as they are propelled therealong by the fingers 64. In case of any malfunctioning the depressor brackets 214 for the bars 210 may be swung upwardly about their pivots 216 to permit the removal of broken sandwiches. Finally the fingers 64 propel the sandwiches into a position on top of the cams 230 and as the cams rotate clockwise they up end the sandwiches and push them face to face along a platform (not shown) from the machine as disclosed in my parent application.

Some changes may be made in the construction and arrangement of the parts of my sandwiching machine without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may reasonably be included within their scope.

I claim as my invention:

1. In a machine of the character disclosed, a frame, a magazine for cookies or the like, means for engaging the cookies and conveying them along said frame, a depositor for said cookies, taut wires for supporting said cookies while being so conveyed from said magazine and past said depositor, means for adjusting the tension and height of said wires relative to said magazine and said depositor, and rails for said cookies to slide along after they leave said wires, said rails being inclined relative to said taut wires to disengage said cookies from said wires, said means for engaging the cookies, conveying them along said rails also.

2. In a sandwiching machine of the character disclosed, a frame, a conveyor having elements extending therefrom for engaging cookies or the like and conveying them along said frame, taut wires for supporting said cookies while being so conveyed, means for adjusting the tension and height of said wires, rails for said cookies to slide along after they leave said wires, said rails being inclined relative to said taut wires to disengage said cookies therefrom, said conveying means engaging said cookies and conveying them along said rails also.

3. In a sandwiching machine, a frame, a conveyor chain, means projecting therefrom for engaging cookies or the like and conveying them along said frame, taut wires for supporting said cookies while being so conveyed, means adjacent each end of said wires for adjusting the height thereof, means for adjusting the tension of said wires, and springs connected with said wires to insure substantially uniform tension thereof.

4. In a sandwiching machine, a frame, means for conveying cookies or the like along said frame, taut wires for supporting said cookies while being so conveyed, pivoted levers having grooved stub rods for supporting said taut wires at spaced points, said pivoted levers being adjustable for raising and lowering said grooved stub rods thus adjusting the elevation of said wires, said wires declining from said second stud rod, a grooved pulley around which said wires wrap once and then extend at a lower elevation than the portions of said wires between said stub rods, spring means for maintaining the tension on said wires as they are adjusted by said pivoted arms, and threaded stems and lock nuts for changing the tension thereof.

5. In a sandwiching machine, a frame, means for conveying cookies or the like along said frame, taut wires

for supporting said cookies while being so conveyed, pivoted levers having grooved stub rods for supporting said taut wires at spaced points, said pivoted levers being adjustable for raising and lowering said grooved stub rods thus adjusting the elevation of said wires, spring means for maintaining the tension on said wires as they are adjusted by said pivoted arms, and threaded stems and lock nuts for changing the tension thereof.

6. In a sandwiching machine, a frame, means for conveying cookies or the like along said frame, taut wires for supporting said cookies while being so conveyed, pivoted levers having grooved stub rods for supporting said taut wires at spaced points, said pivoted levers being adjustable for raising and lowering said grooved stub rods thus adjusting the elevation of said wires, said wires declining from said second stub rod, a grooved pulley around which said wires wrap once and then extend at a lower elevation than the portions of said wires between said stub rods, and spring means for maintaining the tension on said wires.

7. In a sandwiching machine, a frame, means for conveying cookies or the like along said frame, taut wires for supporting said cookies while being so conveyed, and pivoted levers having grooved stub rods for supporting said taut wires at spaced points, said pivoted levers being adjustable for raising and lowering said grooved stub rods thus adjusting the elevation of said wires.

8. In a sandwiching machine, a frame, means for conveying cookies or the like along said frame, taut wires for supporting said cookies while being so conveyed, rails for said cookies to slide along after they leave said wires, said rails being inclined relative to the direction of travel of said conveying means to disengage said cookies from said conveying means, and pivoted levers having grooved stub rods for supporting said taut wires at spaced points, said pivoted levers being adjustable for raising and lowering said grooved stub rods thus adjusting the elevation of said wires.

9. In a sandwiching machine, a frame, means for conveying cookies or the like along said frame, taut wires for supporting said cookies while being so conveyed, rails for said cookies to slide along after they leave said wires, said rails being inclined relative to the direction of travel of said conveying means to disengage said cookies from said conveying means, and pivoted levers having grooved stub rods for supporting said taut wires at spaced points, said pivoted levers being adjustable for raising and lowering said grooved stub rods, thus adjusting the elevation of said wires, said wires declining from said second stub rod, and a grooved pulley around which said wires wrap once and then extend at a lower elevation than the portions of said wires between said stub rods.

10. In a sandwiching machine, a frame, means for conveying cookies or the like along said frame, taut wires for supporting said cookies while being so conveyed, said wires having one end anchored, pivoted levers for supporting said taut wires at spaced points, said pivoted levers being adjustable for increasing or decreasing the elevation of said wires, and a grooved pulley around which said wires wrap once and then extend to a second point of anchorage.

11. In a machine of the type disclosed, a frame, means for conveying cookies or the like along said frame, taut wires for supporting said cookies while being so conveyed, pivoted levers having grooved stub rods for supporting said taut wires at spaced points, said pivoted levers being adjustable for raising and lowering said grooved stub rods thus adjusting the elevation of said wires, said wires declining from the last stub rod, a grooved pulley around which said wires wrap and then extend to a point of anchorage, and spring means for maintaining the tension on said wires as they are adjusted by said pivoted arms.

12. A sandwiching machine, a frame, means for conveying cookies or the like along said frame, taut wires for supporting said cookies while being so conveyed, rails for sandwiches formed of said cookies to slide along after they leave said wires, said rails being inclined relative to the direction of travel of the cookies on said taut wires to disengage said sandwiches from said taut wires, a depressor for said sandwiches as they pass along said inclined rails, said depressor comprising hold-down bars spring-biased to engage the sandwiches, and means for supporting said hold-down bars, said last means being pivoted for swinging upwardly from a position over the sandwiches on said inclined rails to permit removal of broken sandwiches.

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