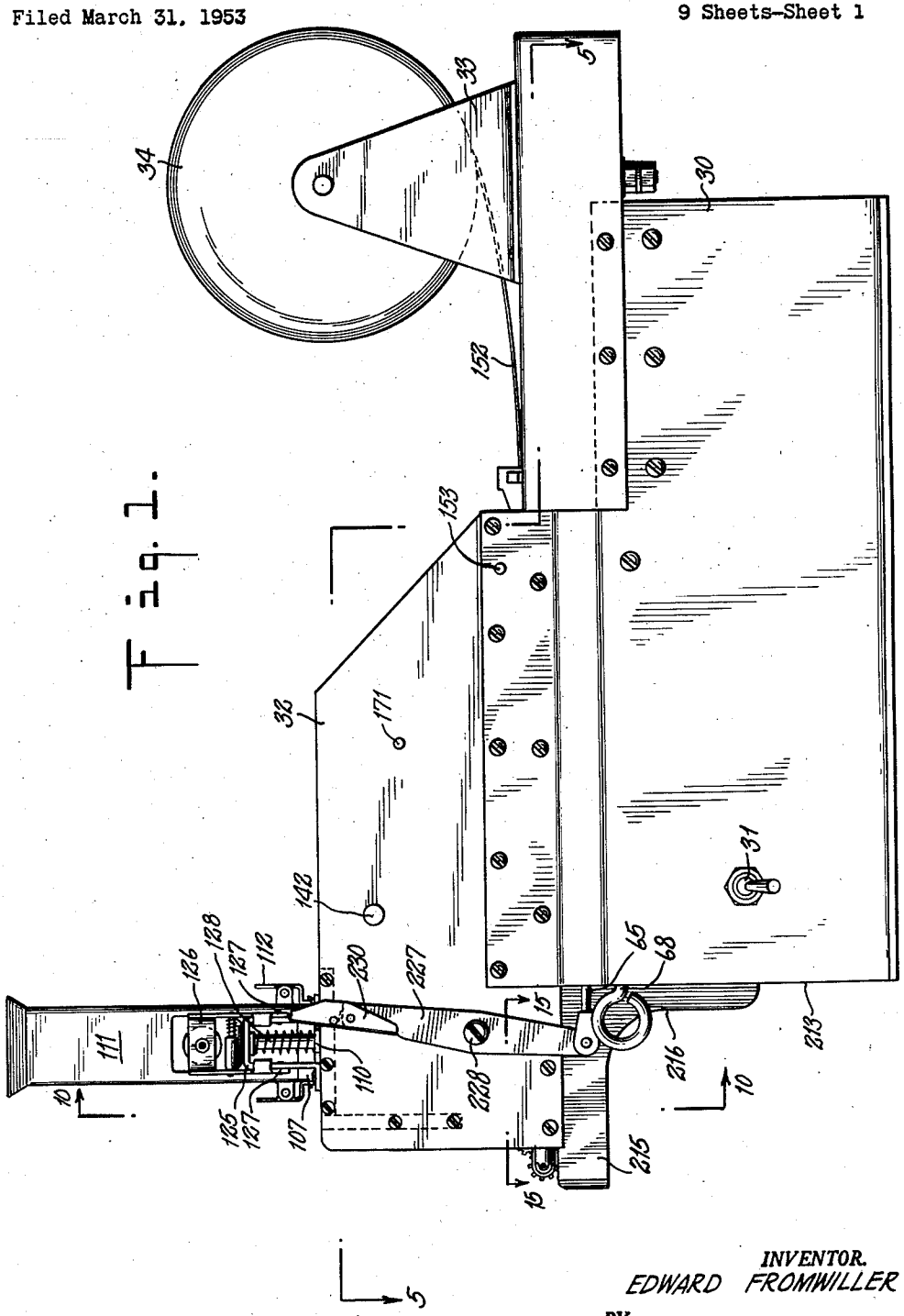
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AUTOMATIC BUTTER PAT DISPENSER

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Fig. 1.



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Fig. 2.

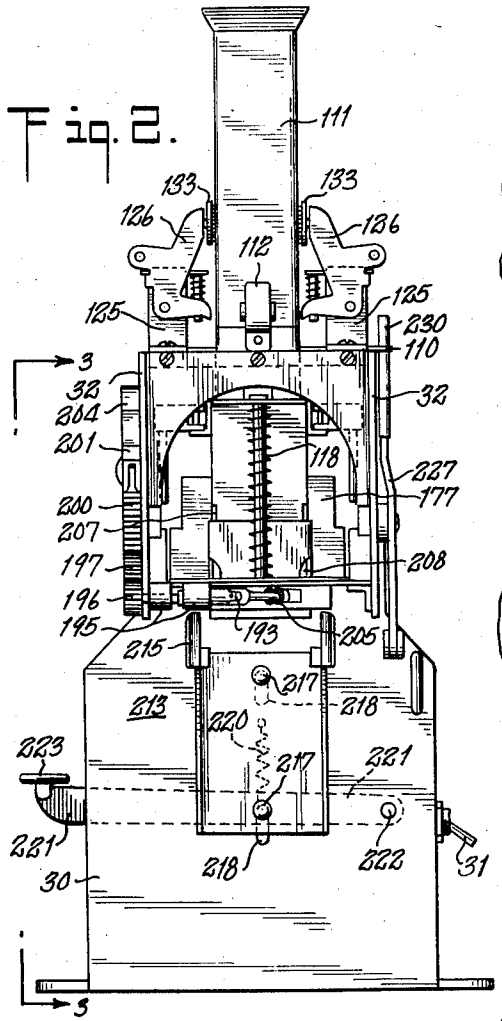


Fig. 3.

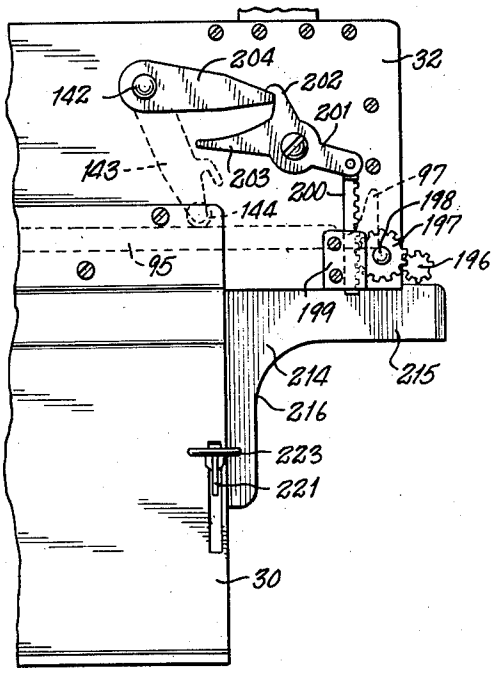
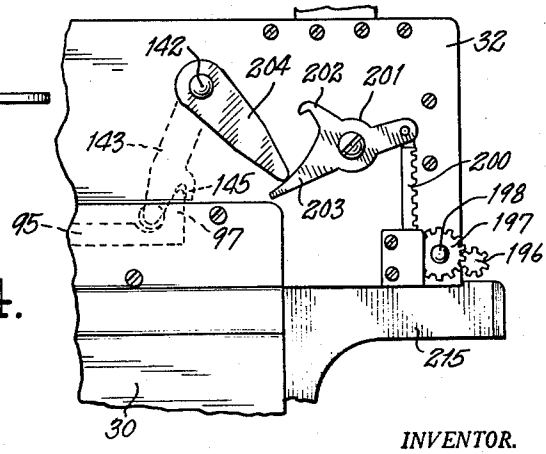


Fig. 4.



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Fig. 5.

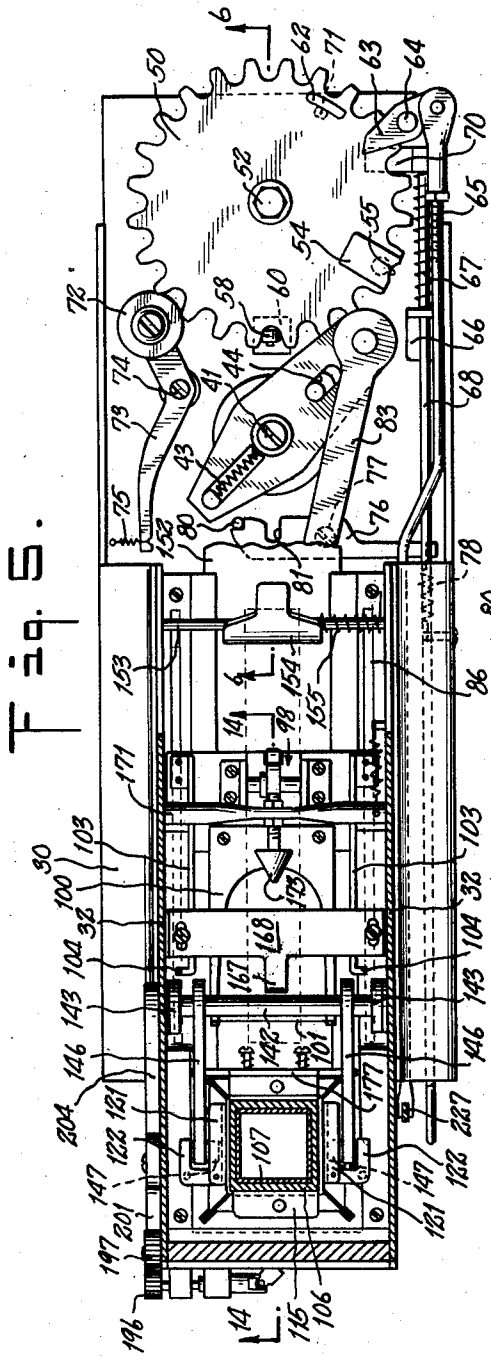
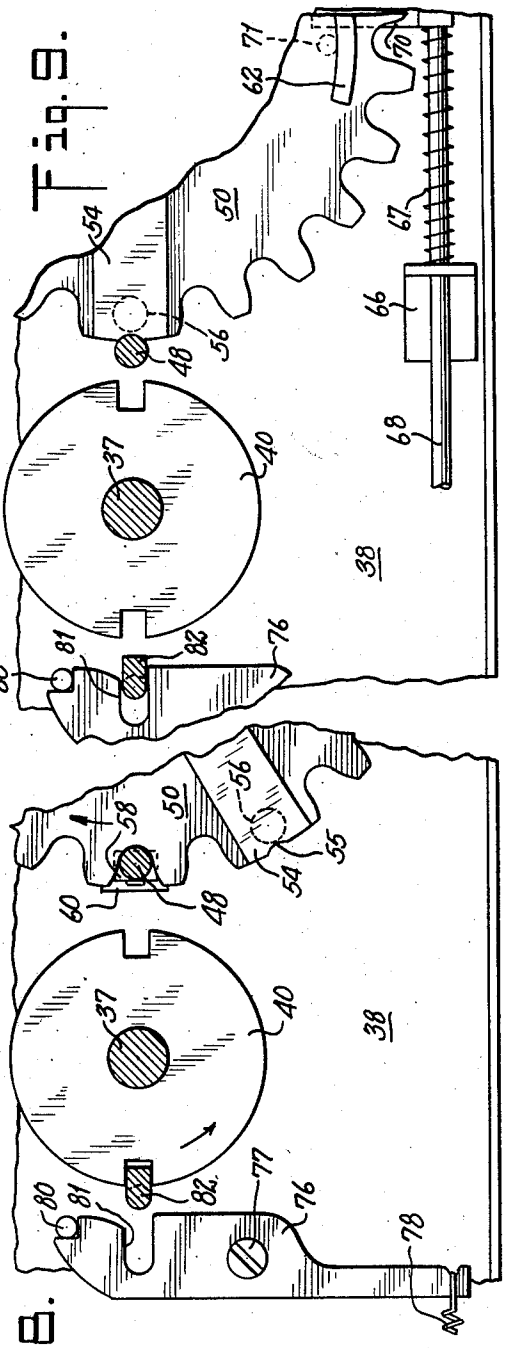


Fig. 8.



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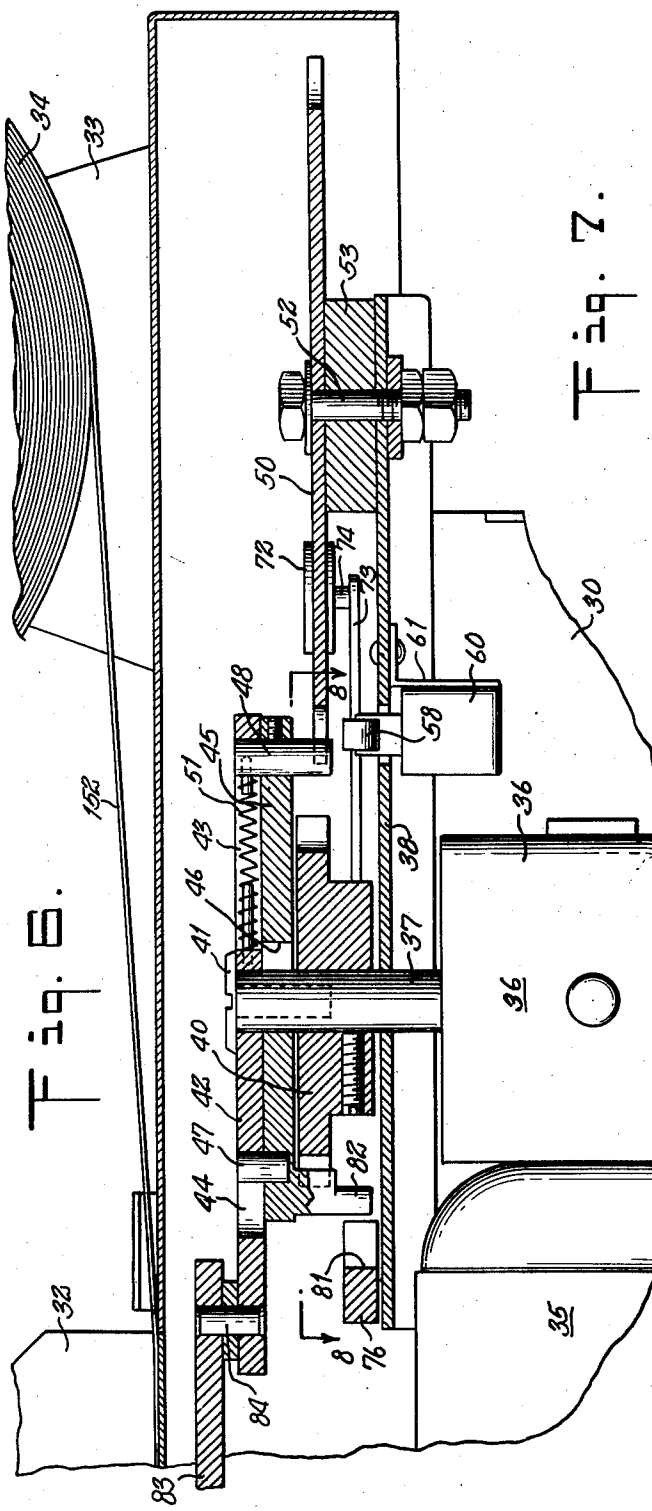


Fig. 6.

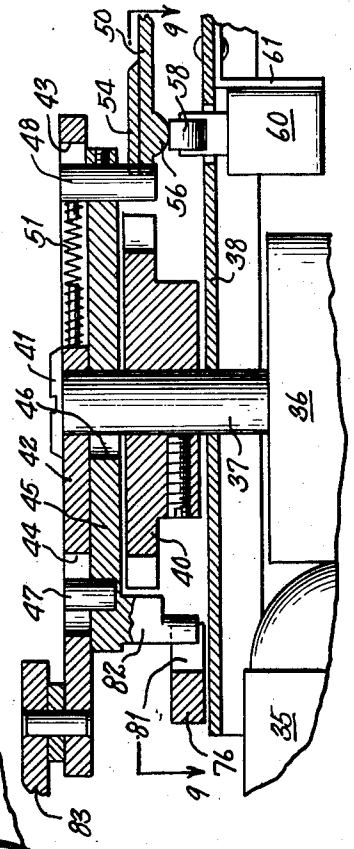


Fig. 7.

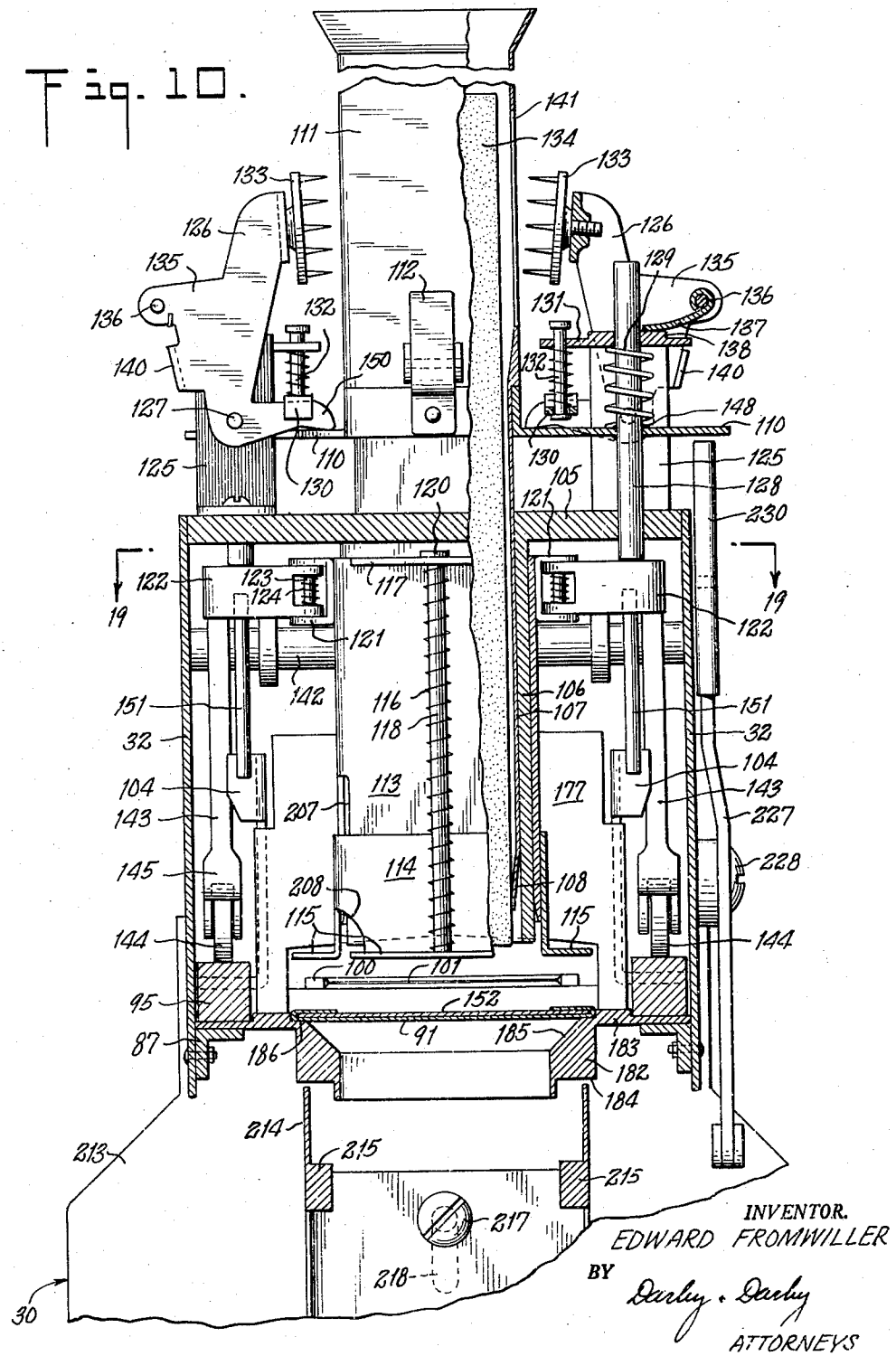
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Fig. 10.



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Fig. 11.

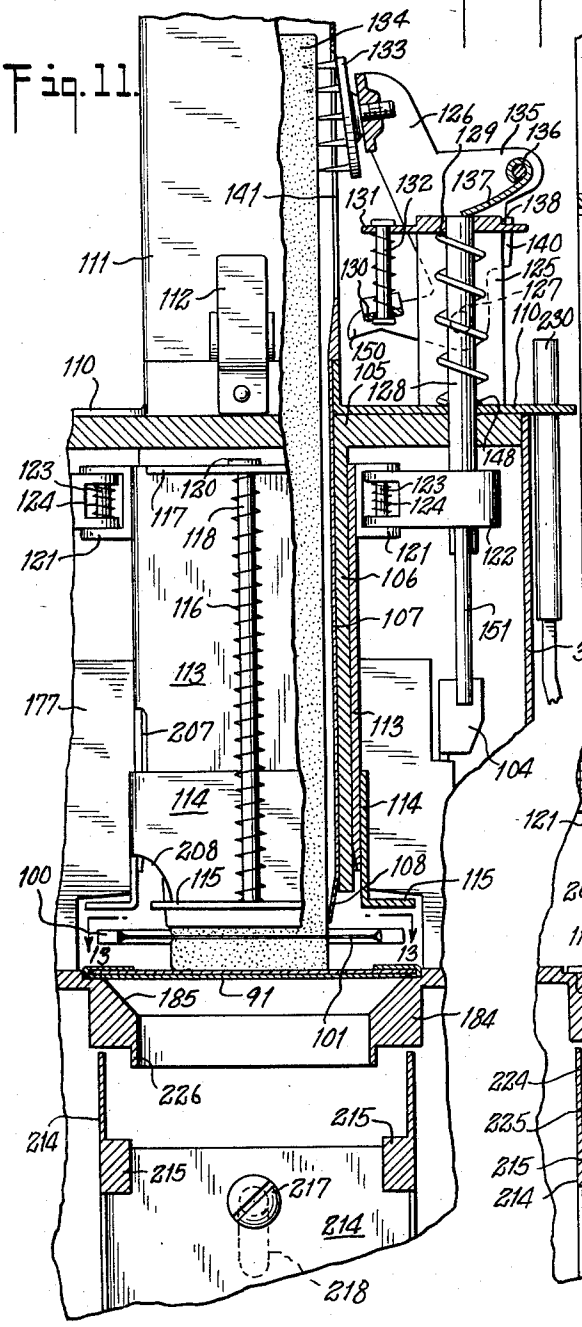


Fig. 13.

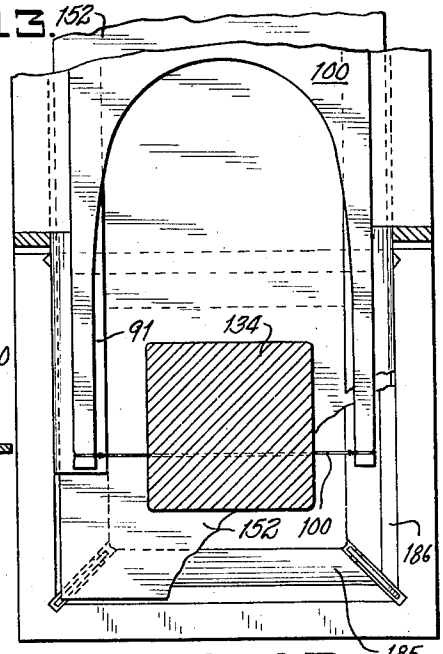
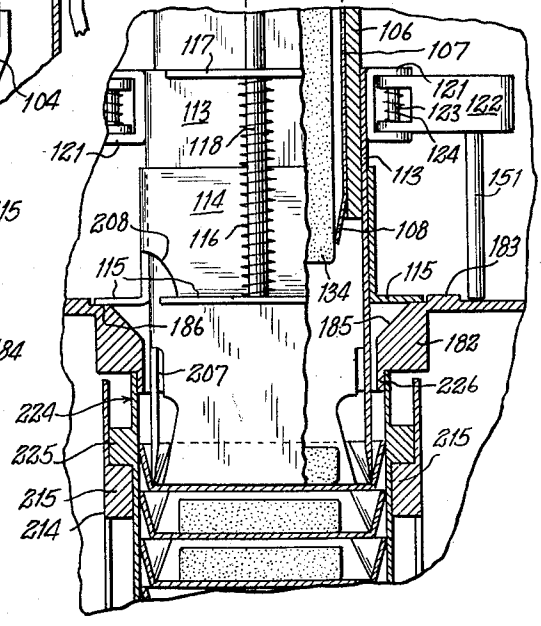


Fig. 12.



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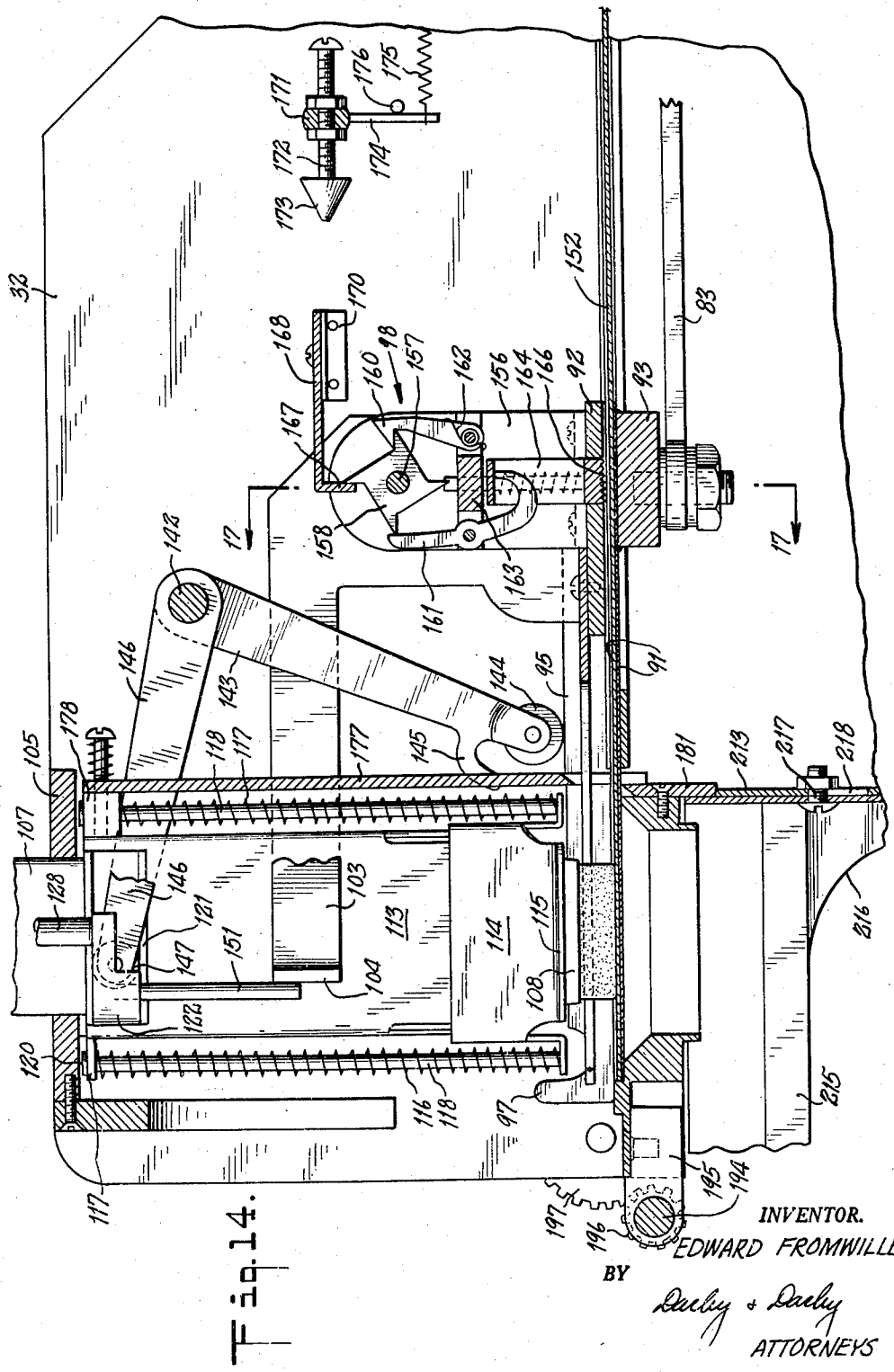


Fig. 14.

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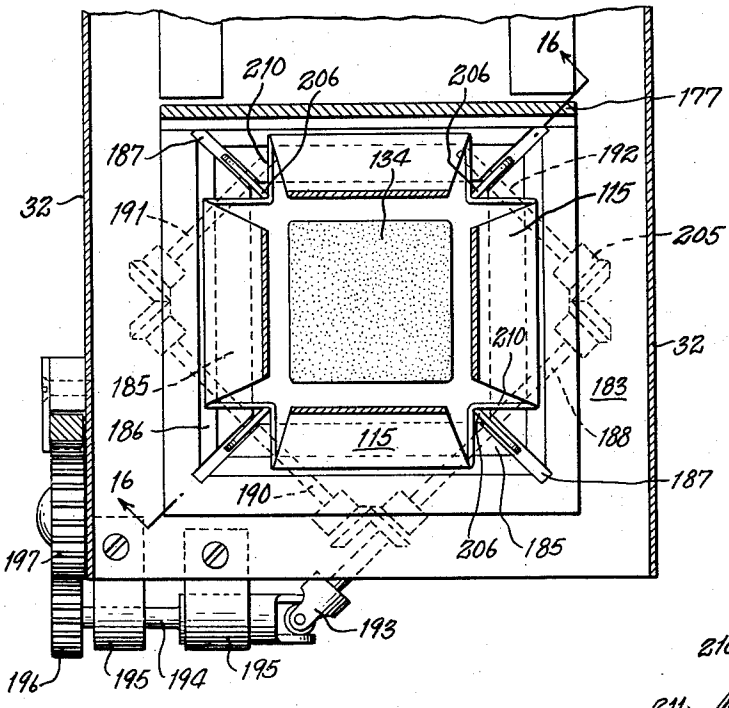


Fig. 15.

Fig. 18.

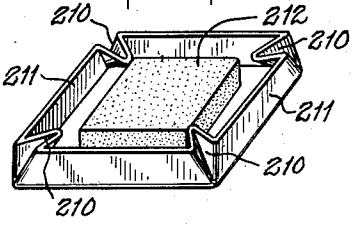
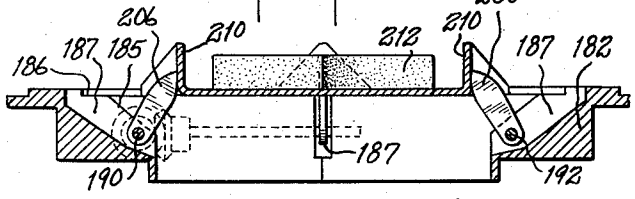


Fig. 16.



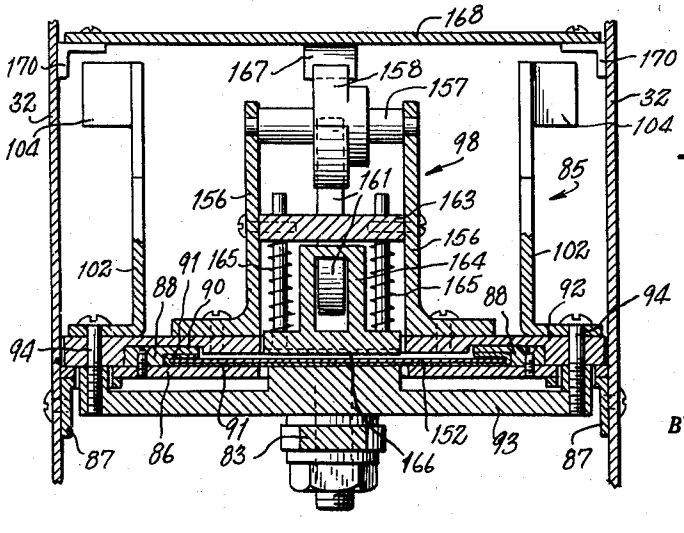


Fig. 17.

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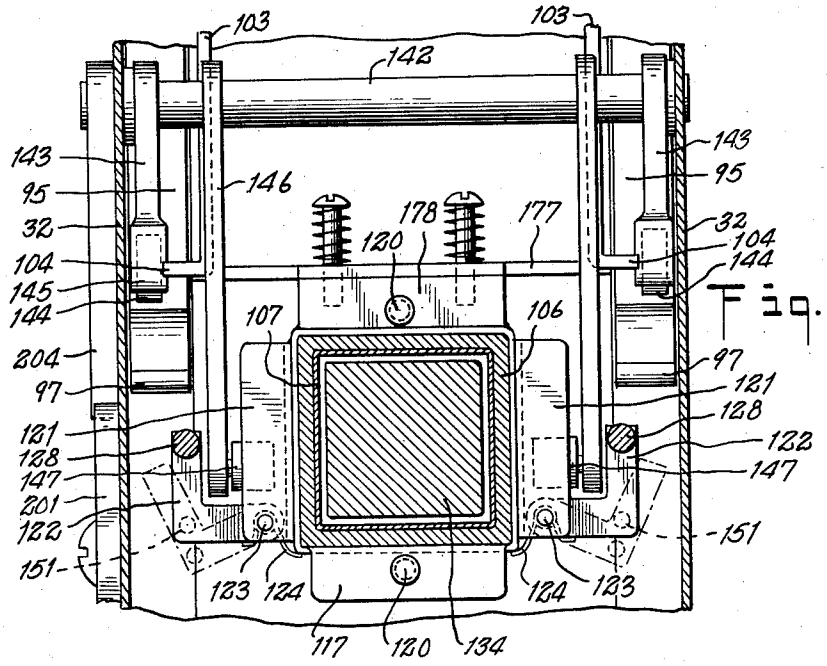


Fig. 19.

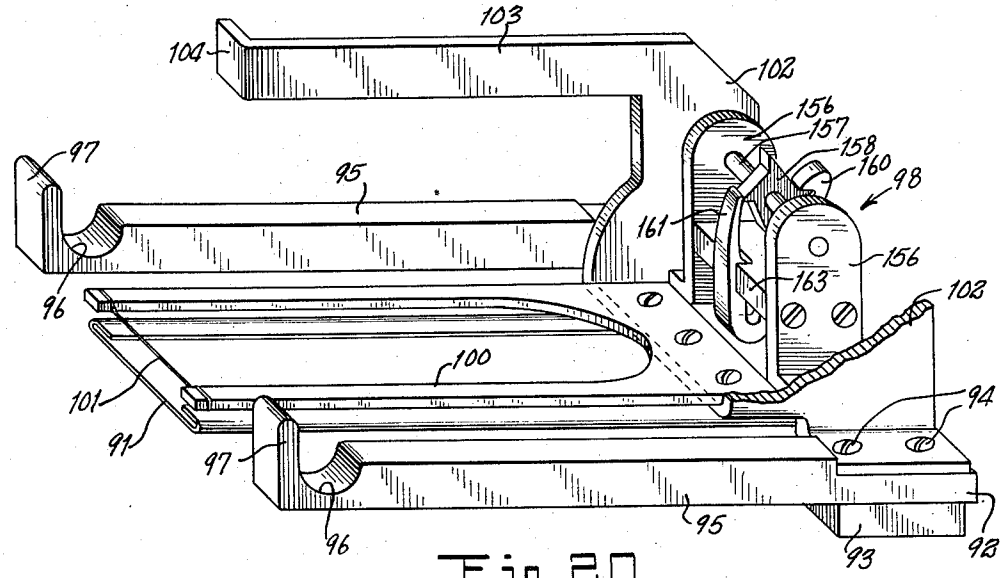


Fig. 20.

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United States Patent Office

2,851,836

Patented Sept. 16, 1958

2,851,836

AUTOMATIC BUTTER PAT DISPENSER

Edward Fromwiller, Richmond Hill, N. Y.

Application March 31, 1953, Serial No. 345,785

22 Claims. (Cl. 53—59)

The present invention relates to an automatic machine for dispensing cakes or blocks of material. The invention provides for automatically cutting and depositing blocks of material onto receptacles which are cut and formed of sheet material simultaneously with the cutting of the deposited material from a larger block thereof.

In the embodiment shown the invention is especially adapted to the cutting and dispensing of food products such as butter and cheese. However, it may be used with similar advantages in the processing and delivery of other materials such as building materials, chemicals, plastic masses, etc.

A particular feature of this invention lies in the construction whereby a predetermined number of cakes of material are deposited in a like number of receptacles, the receptacles being in turn placed in a package, the entire operation being automatic and the machine automatically stopping upon the completion of the predetermined number.

It is an object of the invention to provide a machine which automatically severs cakes of material from a larger cake and deposits the severed cakes upon trays formed of sheet material which trays are formed simultaneously with the severing of the deposited cakes.

It is another object of the invention to form the trays in such a manner that they have relatively rigid side wall portions thereby making it possible to assemble a number of trays in a stack without fear that the tray above will make contact with the material in the tray next beneath.

It is a further object of the invention to provide such a machine having a control mechanism which causes the machine to operate to produce a number of cakes of material and a corresponding number of trays on which the cakes are deposited and to then stop.

It is a still further object of the invention to provide a machine of the type mentioned wherein the trays with the material cakes thereon are sequentially stacked within a preformed tubular package as they are produced.

Other objects and features of the invention will be apparent when the following description is considered in connection with the annexed drawings, in which,

Figure 1 is a side elevation of an embodiment of my invention particularly adapted for cutting butter pats from a bar of butter, depositing the pats on individual trays and assembling the trays in stacked formation in a tubular package or container;

Figure 2 is a front elevation of the machine of Figure 1;

Figure 3 is a fragmentary enlarged side elevation of the machine of Figure 1 the view being taken as indicated by the line 3—3 of Figure 2;

Figure 4 is a view similar to Figure 3 but showing parts in an operated position;

Figure 5 is a horizontal cross-sectional view of the machine the view being taken on the plane of the line 5—5 of Figure 1;

Figure 6 is a fragmentary enlarged vertical cross-sectional view taken on the plane of the line 6—6 of Figure 5;

Figure 7 is a view similar to Figure 6 but with certain of the parts shown in different positions;

Figure 8 is a fragmentary horizontal cross-sectional view of the machine, the view being taken on the plane of the line 8—8 of Figure 6;

Figure 9 is a fragmentary horizontal cross-sectional view, the view being taken on the plane of the line 9—9 of Figure 7;

Figure 10 is an enlarged front elevational view, partly in section, the section being taken on the plane of the line 10—10 of Figure 1. In this view the chute through which a bar of butter travels is broken away to show the position of the butter bar;

Figure 11 is a view generally similar to Figure 10 but showing the parts in a different position and specifically in the position in which they occupy at the time when a pat of butter is sliced from the bar;

Figure 12 is a fragmentary view similar to Figure 11 but showing the position of the parts when the bar of butter is about to be moved downwardly to present a new portion thereof for the slicing operation;

Figure 13 is a fragmentary horizontal cross-section taken on the plane of the line 13—13 of Figure 11 showing particularly the position of the butter cutting knife and of an actuating carriage;

Figure 14 is a fragmentary vertical cross-sectional view taken on the line 14—14 of Figure 5 showing particularly the paper feeding mechanism and showing also some details of the mechanism for feeding the bar of butter;

Figure 15 is a fragmentary horizontal cross-sectional view taken on the plane of the line 15—15 of Figure 1 showing particularly the fingers for folding the corners of a paper blank upwardly to form a tray on which an individual butter slice or pat is deposited;

Figure 16 is a fragmentary cross-sectional view of the folding fingers, the view being taken on the plane of the line 16—16 of Figure 15;

Figure 17 is a vertical cross-sectional view of the paper feeding mechanism, the view being taken on the plane of the line 17—17 of Figure 14;

Figure 18 is a perspective view of a paper tray or dish as formed by the machine having a butter pat in position centrally thereon;

Figure 19 is a horizontal cross-sectional view taken on the plane of the line 19—19 of Figure 10 and showing particularly operating means for feeding the butter bar to position to have a section cut therefrom; and

Figure 20 is a perspective view of an actuating carriage which serves to actuate the butter bar feeding and paper feeding mechanisms as well as the paper cutting knife and the feeding of completed butter pats on individual dishes into a predetermined tubular container.

As has been indicated hereinabove the embodiment of the machine chosen for illustration is one for cutting individual pats of butter from the usual quarter pound bar, depositing those pats on individual paper sheets having upwardly folded side walls forming shallow dishes and thereafter stacking the dishes in a preformed tubular container.

The machine comprises a housing, a driving mechanism, a control mechanism including a counter, butter feeding mechanism, butter cutting mechanism, paper feeding mechanism, paper cutting mechanism, paper folding mechanism, and mechanism for inserting completed butter trays or dishes into a preformed package. In order to simplify the description the various mechanisms will be described separately under appropriate headings insofar as this is possible.

Housing

Referring now to the drawings and particularly to

Figures 1 and 2, the housing comprises a generally rectangular member 30 which is closed at its ends and which contains a driving motor, a manual switch 31 therefor, and an automatically operated switch together with suitable reduction gearing. This housing member is additionally provided with upwardly extending portions 32 on which certain of the operating mechanisms are mounted and between which others of the operating mechanisms are mounted for movement as will be later described. Additionally there is mounted on the housing member 30 at the rear thereof (the right hand as shown in Figure 1) a pair of brackets 33 on which a roll of paper 34 is in turn supported.

Driving and control mechanism

As has been indicated a motor and speed reduction gears together with an automatically operated switch are mounted within the housing 30. Referring now to Figure 6 the motor is indicated therein at 35 being directly connected to a speed reducer unit 36, the output shaft 37 of which extends upwardly through a plate 38.

Fixed to the shaft 37 above the plate 38 is a driving member 40, the member being circular and having a notch at each of two diametrically opposite points on its periphery. Rotatably mounted on the shaft 37 and held in position by means of a screw 41 threaded into a tapped hole in the shaft end is an arm 42. Arm 42 has a pair of slots 43 and 44 (see Figure 5) at diametrically opposite points thereof. Loosely mounted between the driving member 40 and the arm 42 is a slide 45 having an enlarged opening 46 through which the shaft 37 passes. The slide 45 has a pin 47 therein which extends upwardly into the slot 44 and also has a pin 48 therein which extends beyond the slide upwardly into the slot 43 and downwardly for cooperation with a control and detent wheel 50. A coiled spring 51 extends from the end of slot 43 adjacent the shaft 37 to the pin 48, the spring urging the slide into a normal position indicated in Figures 5 and 8.

The controlling detent 50 is mounted for rotation by means of a bolt 52 which extends through a block 53 and the plate 38. The controlling detent wheel 50 has gear teeth formed therein, the number of teeth being determined by the number of butter pats which are to be formed in a complete cycle of the machine from an intermittently fed bar. In the present instance, 24 individual trays and pats are formed in one complete cycle of the machine and therefore the detent wheel is provided with 24 teeth. Mounted on the detent wheel 50 adjacent its periphery is a small plate 54 having a very shallow notch 55 therein the plate being mounted so that the notch 55 is located centrally between two adjacent detent wheel teeth the normal tooth space being omitted at this point. On the underside of the detent wheel 50 is a boss 56 which cooperates with the actuating member 58 (see Figures 5 through 7) of a micro-switch 60 supported in any suitable manner as for example by means of the bracket 61 from the underside of the plate 38. Fixed to the upper surface of the detent wheel 50 adjacent the periphery thereof is a cam member 62 which lies in the path of and cooperates with a lever 63 pivotally mounted at 64 and having a link 65 pivoted to the opposite end thereof which link extends forwardly or to the left as seen in Figure 5 and serves to lock the mechanism in a particular position upon the completion of 24 butter pats. Slidably mounted in brackets 66 fixed to the upper side of the plate 38 and spring-pressed to a rearward position by means of the spring 67 is a rod 68 having a tooth 70 formed thereon, this tooth extending into the path of a lug 71 mounted on the lower side of the detent wheel 50.

Cooperating with the wheel 50 is a detent roller 72 which roller is rotatably mounted at one end of a lever 73 which lever is pivotally mounted at the point 74 to the plate 38, a spring 75 being connected between the

end of the lever opposite roller 72 and a fixed point, thus holding the roller 72 in contact with the detent wheel 50.

A locking lever 76 is pivotally mounted on the plate 33 at the point 77 and is held in the position shown in Figure 5 by means of a coil spring 78 stretched between the lever end and a fixed point on the machine housing. A pin 80 extending upwardly from the plate 38 cooperates with the opposite end of the lever to limit its movement in a clockwise direction. Locking lever 80 is provided with a notch 81 which, in a manner shortly to be described, cooperates with the pin 82 formed as an integral part of the slide 45. The driving mechanism thus far described operates in the following manner. As the shaft 37 rotates the pin 82 extends into one of the diametrically opposite notches in the driving member 40 and thus the arm 42 is caused to rotate through the medium of the slide 45. Such rotation continues until the small plate 54 (see Figure 5) occupies the position substantially in longitudinal alignment with the slide 45. At each rotation the pin 48 engages a tooth of the detent wheel 50 and advances that wheel in a clockwise direction through one tooth space. When the plate 54 reaches the position above-menioned the pin 48 encounters the shallow notch in plate 54 and as a result the slide 45 is moved longitudinally to the left as seen in Figures 5 through 9 thus disengaging the pin or lug 82 from the notch in drive member 40 and engaging the lower end thereof in the notch 81 in the locking lever 76. The arm 42 is thus locked in a position in which it extends substantially longitudinally of the machine and at the same time since the lug 82 moves out of its engaged position in the notch of member 40 the motor is free to rotate without effect on the remainder of the mechanism. However, at the same time the boss 56 makes contact with the micro-switch actuator 58 and opens the circuit to the drive motor. In order to again start the motor and cause the machine to go through a number of cycles as counted by the detent wheel 50, the rod 68 is pulled forwardly and the extension 70 of this rod being then behind a downwardly extending projection 71 on the underside of the detent wheel 50, moves that wheel forward through a tooth space releasing the micro-switch actuator 58 and closing the circuit to the motor. Also the pin 48 is then positioned opposite a tooth space in the detent wheel 50 and consequently the spring 51 moves the slide 45 to the right as seen in Figure 7 and, as soon as the shaft 37 has rotated sufficiently, the pin 82 enters into one of the notches in the periphery of the drive member 40.

A drive link 83 is pivotally mounted by means of a pin 84 on the end of the arm 42. This actuating link 83 is connected at its opposite end (see Figures 14 and 17) to an actuating carriage generally designated 85 in Figure 17. The carriage 85 is slidably mounted in slots in a supporting plate 86, the plate being in turn supported by means of the angle members 87 fixed to the upwardly extending side walls 32.

The carriage 85 comprises the upper longitudinally extending plate 92 and the lower longitudinally extending bar 93, the bar having upwardly extending flanges at the edges thereof and being fastened to the upper plate 92 by means of the screws 94.

As is clear from Figure 17, the lower surface of upper plate 92 is shaped to fit the upper surface of members 88 and is guided by these members 88 as well as by the side walls 32 for longitudinally reciprocating motion under drive of the link 83.

Referring now to Figure 20, there are formed integrally with the plate 92 two longitudinally extending bars 95 having depressions 96 and hooks 97 at their forward or left hand ends. Also mounted upon the transverse plate 93 is a paper feeding mechanism 98 and a bifurcated member 100 supporting a wire knife 101 which, as will appear, serves to cut pats of butter from a bar. Additionally there is mounted on the transversely extending

plate 92 for movement therewith a member 102 having arms 103 which extend upwardly and to the left terminating in the outwardly bent-over lugs 104. Also, a paper feeding and supporting plate 91 is fixed to the carriage 88 by suitably fastening it to an upwardly extending boss on bar 93. This plate has bent-over edges to properly position the paper. As has been above indicated, the entire carriage 85 reciprocates under drive of the motor.

Butter feeding mechanism

Extending between the side plates 32 adjacent the forward edges thereof is a frame member 105 (see Figures 10, 11, and 14), this frame member having a downwardly extending tube 106 formed integrally therewith, the tube 106 being rectangular in cross-section as is clearly shown in Figure 19. Slidably mounted within the tube 106 is a tube 107, the tube 107 having an inwardly bent lip portion 108 at the lower end thereof. Fixed to the tube 107 are the outwardly extending ears 110 which ears rest upon the plate 105 when tube 107 is in its lowest position as indicated in Figure 11. Mounted upon the upper end of the tube 107 is a tube extension 111 which is fixed to the tube 107 by means of the two clamping members 112, one placed at the front and one at the rear of the tube extension 111.

Slidably mounted on the exterior of tube 106 is another rectangular tubular member 113 and slidably mounted upon the member 113 at the lower end thereof is a rectangular sleeve-like member 114, this member 114 having flanges 115 bent off horizontally from the four sides. The tube 113 and sleeve 114 are normally held in the position shown in Figure 11, that is with the sleeve 114 in its lowest position relative to tube 113, by means of springs 116 extending between the front and rear flanges 115 of the sleeve 114 and ears 117 fixed to the front and rear of tube 113. The downward movement of sleeve 114 with respect to tube 113 is limited by the pins 118 which are fixed to respective flanges 115 at their lower ends and have heads 120 bearing against the upper surface of the ears 117 at their upper ends. It is to be noted that the springs 116 are placed over respective pins 118.

Mounted on the sides of the tube 113 at its upper end are a pair of channels 121. Pivotally mounted in the forward ends of the channels 121 are arms 122, these arms being mounted on pins 123 and being urged in a direction such that the outer ends of the arms 122 move rearwardly by means of small coil springs 124.

A U-shaped bracket 125 is mounted at each side of the frame member 105, these brackets extending upwardly and having the U-shaped butter holding members 126 pivotally mounted thereon at points 127. Rods 128 extend vertically being slidably mounted in bores in the plate or frame member 105 and aligned bores in the horizontally extending portions of brackets 125.

Extending between the two arms of the U-shaped butter holding members 126 are bars 130 and through these bars and extensions 131 of the horizontal portions of brackets 125 extend pins 132 having coil springs about them urging the butter holding members 126 to rotate about their pivots 127 in a direction to urge the spiked butter holding members 133 against a bar of butter indicated at 134. Extensions 135 are provided on the members 126 and a rod 136 extends from one arm of the U-shaped member 126 to the other. On the rod 136 there is mounted a leaf spring member 137 which cooperates with an edge 138 on the bracket 125 to provide means for holding the members 126 outwardly so that the spikes 133 may be held out of contact with the butter when desired. It is to be noted that a bar 140 extends across from the arms of member 126 and limits the inward motion thereof. It is also to be noted that the tube extension 111 has slots 141 in the sides thereof to permit the spiked butter holding members to enter the tube and perform their function of holding the butter bar 134 in a stationary position.

Extending between the extension side plates 32 is a shaft 142 (see Figures 5 and 14). Fixed to the shaft 142 are two downwardly extending arms 143, one of these arms being located at each side of the machine. The arms 143 are provided with rollers 144 at their lower ends, these rollers resting on the upper surface of the bars 95 of the actuating carriage 85. Arms 143 are also provided with hook members 145 which cooperate with the upwardly extending hook-like members 97 of the bars 95.

Also fixedly mounted on the shaft 142 are the forwardly extending arms 146 which arms are provided at their outer ends with rollers 147 the rollers extending outwardly and riding in the channels 121.

As the carriage 85 moves rearwardly and near the end of its rearward motion the hook-like portions of bars 95 engage rollers 144 causing rotation of shaft 142 in a counterclockwise direction as seen in Figure 14. As a result of this rotation rollers 147, riding in channels 121, cause tube 113 to be depressed. As the tube 113 is lowered the sleeve 114 moves downwardly with it until the flanges 115 thereof seat against the plate 86 and specifically against certain recessed portions thereof which will later be described. Following this, the tube 113 continues its downward movement, the springs 116 being then compressed. During this time the butter holding members or bell cranks 126 remain in the position shown in Figure 11.

As the carriage starts its forward movement the shaft 142 is caused to rotate in a clockwise direction and as a result thereof the tube 113 and sleeve 114 rise. Since the arms 122 are urged rearwardly they are positioned beneath the ends of rods 128 causing the rods to move upwardly as the sleeve 113 moves upwardly. The ears 110 of tube 107 are integrally connected as by welding to the rods 128 at the points 148 and consequently the tube 107 is elevated at this time. Since the butter bar 134 is held stationary by the spiked members 133 of the butter retaining bell cranks 126 the tube 107 moves upwardly with respect to the butter. This relative movement continues until the ears 110 strike the extensions 150 of the bell cranks 126. Following this the bell cranks release the butter and it moves upwardly together with the tube 107 for a slight distance.

As the carriage continues its forward motion the lugs 104 of the arms 103 strike pins 151 which depend from the outer ends of the arms 122. This causes the arms 122 to rotate forwardly against the tension of their respective springs 124 and this movement moves the arms 122 out of the path of rods 128. Consequently the rods 128, together with the tube 107, move downwardly under urge of the spring 129 and since, as explained, the butter retaining members 133 are out of contact with the butter the turned in lip 108 of the tube 107 causes the butter to move downwardly with the tube thus feeding a new portion of butter into position to be cut off. The paper 152 is at this time supported by guide and support 91.

Butter cutting mechanism

The butter cutting mechanism is extremely simple and comprises a wire knife 101 mounted at the open end of the bifurcated member 100. Since the member 100 is mounted on and moves with the actuating carriage 85 it will be obvious that when butter is fed to the lower level as has been described and to the position particularly indicated in Figure 11, the knife 101 will cut through the bar of butter 134 and will sever a butter pat from the bar.

Paper feeding mechanism

As has been indicated, a roll of paper 34 is mounted on a suitable shaft or rod extending between the brackets 33. A paper strip 152 is fed from the roll 34 into the

guideway formed by the upturned edges of the paper guide **91** (see Figure 17). As has been indicated the plate **86** is provided with three slots, one located at either side and one located centrally. These slots extend as indicated in dotted lines in Figure 5 and rearwardly of these slots a shaft **153** extends across the machine from one of the plates **32** to the other. Mounted on the shaft **153** is a pressure member **154** which puts a drag on the paper as it is fed to thereby keep it taut. Pressure is exerted on the member **154** by means of the spring **155** coiled about the shaft **153** and tending to rotate that shaft and the pressure member rigidly affixed thereto in a counterclockwise direction.

The paper feeding mechanism proper is generally designated **98** in Figures 14, 17 and 20. This mechanism comprises two brackets **156** which are fastened to the transversely extending plate **86** of the actuating carriage **85**. Mounted between the brackets **156** is a shaft **157** on which is rigidly fixed a ratchet wheel **158**. Cooperating with the ratchet wheel **158** are two pawls **160** and **161**. The pawl **160** is spring-pressed by means of the spring **162** and is pivoted on a bar **163** which extends between the brackets **156**. Pawl **161** is likewise pivoted on the bar **163**, this pawl however being actuated by the ratchet **158**. The lower upturned end of pawl **161** bears against the lower edge of a rectangular opening in a feed block **164** which feed block is slidably mounted for vertical reciprocation by means of pins fixed in the horizontally extending lower portion of the block and slidably mounted in bores in the bar **163**. Springs **165** surround each of the pins just-mentioned and urge the feed block **164** downwardly into contact with the paper strip **152**. It will be understood that the feed block operates through a slot in a plate **92** so that its lower serrated edge **166** can contact the paper and clamp it against support and guide **91** as mentioned.

The ratchet wheel **158** is operated upon by two separate means. One of these means comprises the lug **167** which extends downwardly from a bar **168** which bar is adjustably mounted on brackets **170** fixed to the side plates **32**. Thus as the carriage **85** moves forwardly carrying the pawl **158** therewith, a tooth thereof comes into contact with the lug **167** and causes a clockwise rotation of the wheel **158** into the position shown in Figure 14. This in turn produces a counterclockwise rotation of the pawl **161** lifting the feed block **164** against the tension of the springs **165**. Thus during return movement of the actuating carriage **85**, that is, movement to the right as seen in Figure 14, the paper strip **152** moves forwardly with respect to support **91**.

Pivotally mounted in the side plates **32** rearwardly of the bar **168** is a rod or shaft **171** which, near its center, has a threaded bore therethrough. Adjustably mounted in the bore for movement in a longitudinal direction is a screw **172** which screw terminates at its forward end in a conical member **173**.

Extending downwardly from the bar **171** and formed integrally therewith is an arm **174** which is spring-urged rearwardly, that is, to the right as seen in Figure 14 by means of a spring **175**, the movement of the arm **174** being limited by a pin **176** fixed in the side plate **32**.

As the carriage nears the rearward end of its reciprocatory stroke the ratchet wheel **158** strikes the surface of conical member **173**. Since the pawl is held against counterclockwise movement this results in a clockwise oscillation of the shaft **171** which, as soon as the ratchet wheel tooth has passed the conical member **173** returns under urge of the spring **175**, to the position shown in Figure 14.

As the carriage starts its next forward stroke the ratchet tooth strikes the flat rear edge of conical member **114** and is caused to rotate in a clockwise direction as the carriage **85** advances. This results in moving another tooth of the ratchet wheel **158** away from the tail of the pawl **161** whereupon the springs **165** cause the feed block **164** to move downwardly until the serrated surface **166** engages with the paper and as the carriage advances the paper is carried forward with the guide **91** until the actuating carriage again reaches the forward position illustrated in Figure 14.

Paper cutting mechanism

The paper cutting mechanism comprises a knife **177** mounted at the top of the rear surface of the tube **113** and extending downwardly. The knife **177** is spaced from the tube **113** by means of the spacer **178** and the knife is vertically in alignment with the forward edge of the plate **86** which terminates at this point. Suitably supported beneath the plate **86** and with its rear edge in alignment with the forward edge of the knife **177** is a second knife **181**, the two knives cooperating to sever paper as it emerges from the guide **91**.

Since, as has been described, the tube **113** is lowered due to action of the bell crank comprised of the arms **143** and **146** once during each cycle of the machine, it will be clear that the knife **177** descends during each cycle of the machine and severs from the paper strip that portion lying forwardly of the knife.

Paper folding mechanism

As has been indicated, squares of paper are folded so that they form paper dishes for the pats of butter. This folding operation is performed subsequently to the depositing of the butter pat on the paper square. The mechanism for performing this folding operation is best shown in Figures 2 through 4 and 11 through 16. Mounted on the forward ends of the supporting angles **87** is a member **182** comprising the mounting flanges **183** and the downwardly extending thick wall portions **184**, the portions **184** being formed as integral parts of member **182** and being arranged in a rectangular formation. The member **182** has downwardly and inwardly sloping wall portions **185** terminating at their upper edges in a horizontal depressed portion **186** on which the paper **152** rests.

As shown in Figures 15 and 16, the member **182** is provided with slots **187** extending outwardly from the inner walls at the corners. Mounted in bores in the wall portions **184** of the member **182** and extending across the corners of the structure are shafts **188**, **190**, **191** and **192**, these shafts being perpendicular to the walls of respective slots **187**. The shaft **188** extends forwardly and is connected by means of a universal joint **193** to a horizontal shaft **194** supported in brackets **195** extending forwardly and being fixed to the lower surface of the forward flange **183**. At its left end, as seen in Figure 15, shaft **193** has fixed thereto a gear **196** which gear meshes with a gear **197** rotatably mounted on a stud **198** fixed to the left hand one of the plates **32**. Slidably mounted in a guide **199** fixed to the plate **32** is a rack **200** which meshes with the gear **197**, being pivotally connected at its upper end to a bell crank **201**. The bell crank **201** is provided with the arms **202** and **203** between which the end of an arm **204**, mounted on the left hand end of shaft **142**, extends. Thus as the shaft **142** nears its extreme of oscillatory motion in a counter-clockwise direction as viewed in Figure 3, or in other words, as the actuating carriage **85** moves to its extreme rearward position, the rack **200** moves downwardly causing rotation of the gears **197** and **196** and producing clockwise rotation of the latter shaft. Since shafts **188**, **190**, **191** and **192** are coupled for conjoint rotation by means of the bevel gears **205** the clockwise rotation of gear **196** and of shaft **194** will, through the universal joint **193**, cause similar rotation of the four shafts **188**, **190**, **191** and **192**. This will result in the folding fingers **206** which are mounted one on each of the shafts **188**, **190**, **191**, **192** retracting into their respective slots **187**.

As the actuating carriage **85** nears its forward extremity of motion the shafts **188**, **190**, **191** and **192** will be

caused to rotate in the opposite direction, the folding fingers will emerge from their slots and arrive at the position shown in Figures 15 and 16, this action of course resulting from the arm **204** bearing against the end **203** of the bell crank lever **201**.

Referring now to Figure 10, it will be seen that the tube **113** is provided with a notch **207** at each corner and it will furthermore be observed that the sleeve member **114** is provided with a cutaway portion **208** at each corner, this last mentioned cutaway being better shown in Figure 2.

Since, as has been explained, the flanges **115** of the tubular sleeve **114** rest upon the upper surface of the rectangular member **182** and specifically upon the horizontal recessed edges **186** thereof when the actuating carriage is in its rearward position and in fact achieve this position somewhat before the carriage reaches its extreme rearward position, these flanges clamp the paper **152** or more accurately a square cut from that paper in a flat position, hold it there while the folding fingers **206** move out of their slots **187** and into contact with the underside of the paper square moving to an extent such that they form the corner creases shown particularly at **210** in Figure 18. As the fingers are performing the folding operation the tube **113** is descending and consequently the rim portion of the paper square is folded upwardly due to the slope of the wall portions **185** so that a paper butter dish having the upwardly extending side wall portions **211** together with the corner folds **210** previously mentioned, is formed. It should be observed that these folding operations are performed after a butter pat, as indicated at **212** in Figure 18, has been deposited on the paper square in the manner heretofore described.

Inserting mechanism

Mounted on the forward wall **213** of the lower housing **30** is a channel member **214** the member having horizontally extending bars **215** formed integrally therewith and the side walls of the member being curved as indicated at **216** in Figures 1 and 14 (see also Figure 10). The entire channel member is mounted on the wall **213** by means of screws **217** which extend through holes in the base of the channel **214** and slots **218** in the plate **213** (see Figure 2). A spring **220** is stretched between a fixed point on the plate **213** and the lower one of the two screws **217** serving to keep the channel **214** in its uppermost position.

A lever **221** mounted on the forward plate or wall **213** of the housing **30** by any suitable means such as the pivot screw **222** extends to the left and terminates outside the housing in a finger piece **223**. Thus by depressing the finger piece which is connected to the lower screw **217** the channel **214** may be lowered.

As is clearly shown in Figures 10 through 12 a tubular package **224** having an outwardly extending flange **225** adjacent its upper end is positioned beneath the opening in the member **182**, the flanges **225** of the package being supported on the bars **215** of the channel **214**. The package is placed in position while the lever **221** is held in its downward position and after the package has been thus positioned the lever is released carrying the package upwardly into the position shown in Figure 12 in which the wall portion of the package **224** above the flange **225** thereof surrounds a downwardly extending lip **226** formed on the member **182**.

As will be seen particularly in Figure 12, the tube **113** descends considerably below the level of the lower edge of the lip **226** and thus after the side **211** and corners **210** of the butter dish have been formed as indicated above, the completed butter dish with the pat of butter therein is forced into the package **224**.

Because of the shape and arrangement of the corner fold which forms corner brackets and thereby lends support to the butter dish it is possible to push the butter dishes downwardly in the package as they are deposited therein as just above-described and likewise because of this rigidity the bottoms of the butter dishes do not make contact with the butter in the dish next below. The mechanism is so arranged that one dish is formed onto which no butter has been deposited and this dish is inserted into the package and forms a cover for the package.

Operation

Although the operations of the various mechanisms have been described in detail hereinabove a general description of the operation of the machine follows.

A bar of butter is first placed in the tube **107**, the butter retaining members **126** being held in their outward position by means of the leaf springs **137**. When the butter has been inserted the members **126** are released and the spiked butter retaining members **133** project through the slots **141** in the tube **111** and retain the butter bar in its proper position. The motor switch **31** is next operated setting the motor and shaft **37** together with the driving member **40** in motion. Next the rod **68** is pulled forwardly thus operating the detent wheel **50** through one tooth space it being assumed as is necessarily the case that the detent wheel has stopped in a position in which the shallow notch in the plate **54** is in line with the pin **48** and in fact the pin **48** is in that shallow notch.

The movement of the detent wheel as just above described releases the slide **45** which then moves to the right, as seen in Figure 7, until the pin or lug **82** rests against the periphery of the driving member **40**. As soon as the driving member **40** reaches a position in which a peripheral notch is in line with a pin **82** it enters the notch and the arm **42** begins to rotate.

Rotation of the arm **42** causes reciprocation of the actuating carriage **85** which moves forwardly being driven by the actuating link **83**. As the carriage moves forwardly a tooth of pawl **158** strikes the cone **173** causing the paper feeding block **164** to be lowered into contact with the paper **152** and to feed the paper forward with the carriage in the succeeding movement thereof. Also as the carriage moves forwardly the bell crank comprising arms **143** and **146** is caused to rise thereby elevating the tube **113** and also through cooperation of the arms **122** and the rods **128** elevating the tube **107**. During the period of elevation of the tube **107** the butter retaining members **133** are in the position shown in Figure 11 and retain the butter in its position permitting the tube **113** to move with respect thereto. As the carriage reaches the extreme forward position the butter retaining members **126** are released in a manner already described and the outwardly extending ears **104** of the arms **103** push against pins **151** and release the tube **107** and its extension **111** which are then forced downwardly by means of the springs **129**. This places the lower edge of the bar of butter against the forward portion of the strip of paper which has been fed in the manner indicated.

Also at this time, that is, as the actuating carriage **85** reaches its extreme forward position the pawl **158** is caused to rotate slightly as it strikes the tooth **160** thus causing pawl **161** to elevate the paper feeding block **164** so that it will not grip the paper during the return movement of the actuating carriage.

The carriage **85** now starts its rearward movement and the knife **101** cuts a slice or pat of butter from the bottom of the bar. As the carriage **85** continues to move rearwardly the hook members **97** on the bars **95** move the bell cranks comprising pairs of arms **143** and **146** in a counterclockwise direction lowering the tubes **113** and **114**. As the tube **113** commences to descend the knife **177** cuts the forward portion of the paper strip from the remainder forming a square of paper which is immediately thereafter clamped against the recesses **186** in the member **182** by means of the flanges **115** of the tubular sleeve **114**. As the tube **113** continues to descend the folding fingers

206 also rotate in a counterclockwise direction as seen in Figure 16, the cooperation of the tube 113 with the inwardly and downwardly sloped walls 185 of the member 182 folding the side walls upwardly in the position shown at 211 of Figure 18 and concurrently forming the corner creases 210 by action of the folding fingers.

Continued descent of the tube 113 pushes the completed butter dish with a pat of butter thereon into a package 224 held on the bars 215 of the channel 214. This cycle of operations is repeated until the detent wheel again reaches a position in which the plate 54 lies with its center line along the longitudinal center line of the machine at which time the clutch formed by the slide 45 and the peripheral notches in the driving member 54 disengages. At the same time, the boss 56 on the detent wheel 50 engages the microswitch actuator 58 and breaks the circuit to the motor.

The cam member 62 on the detent wheel 50 strikes the lever 63 one cycle before the plate 54 comes into the longitudinally aligned position just described. As a result of this the rod 65 is moved rearwardly as seen in Figures 1 and 5. This results in a clockwise rotation of lever 227 about its pivot screw 228 which is fixed in the side plate 32. Pivotally mounted on the upper end of lever 227 is a lever 230 which is spring-pressed into the position shown so that it forms in effect an extension of the lever 227. Movement of the upper end of lever 227 to the left as seen in Figure 1 puts the upper end of the lever 230 into the path of the horizontally extending ear 110 of the tube 107 and thus prevents the feeding of butter during the formation of the last dish which, as has been mentioned above, serves as a cover for the package.

It will be understood that the tray forming mechanism for inserting the trays in a package may be utilized in connection with other butter slicing and paper feeding mechanisms. As an example this mechanism might be used with the butter slicing and feeding mechanisms disclosed in my prior patent application Serial No. 209,071, filed February 2, 1951, now Patent No. 2,718,701. Furthermore, the storage rack arrangement as disclosed in my aforesaid prior application might be utilized to feed successive bars of butter to the machine of the present invention or other forms of refrigeration and storing devices might be utilized with the present machine.

While I have described a preferred embodiment of my invention, it will be understood that I wish to be limited not by the foregoing description, but solely by the claims granted to me.

What is claimed is:

1. A device for delivering slices of material onto sheet material, forming said sheet material into trays and inserting the formed trays with slices of material thereon into a preformed package comprising, in combination, means to intermittently feed sheet material along a predetermined path, means to intermittently feed the material to be sliced along a predetermined path substantially perpendicular to said first-mentioned path, means to cut said sheet material, means to slice said other material, means to deposit said slice of material on said portion cut from said sheet material, means to fold inward the corners of the cut portion of said sheet material to form a rigid tray having its sides extending above said slice, and means to insert said trays with slices of material thereon sequentially into a package supported adjacent said folding means, portions of one tray supporting the subsequent tray out of contact with the slice of material on the said one tray.

2. A device for delivering slices of butter onto a sheet of paper, forming said paper into trays and inserting the formed trays with slices of butter thereon into a preformed package comprising, in combination, means for intermittently feeding a bar of butter along a predetermined path, means to intermittently feed a sheet of paper along a predetermined path substantially perpendicular to said first-mentioned path, means to cut said paper into rectangular portions, means to slice said butter, means to deposit each said slice of butter onto a rectangular paper portion, means to fold upward each of the four edges of said rectangular paper portions to form rigid trays having their sides extending above the butter slice thereon, and means to insert said trays with the butter slices thereon sequentially into a package supported adjacent said folding means, portions of one tray supporting the subsequent tray out of contact with the butter slice on said one tray.

3. A device for delivering slices of butter onto a sheet of paper, forming said paper into trays and inserting the formed trays with slices of butter thereon into a preformed package comprising, in combination, means for intermittently feeding a bar of butter along a predetermined path, means to intermittently feed a sheet of paper along a predetermined path substantially perpendicular to said first mentioned path, means to cut said paper into rectangular portions, means to slice said butter, means to deposit each said slice of butter onto a rectangular paper portion, means to fold each of the four edges of said rectangular paper portions upwardly to form rigid trays having their sides extending above the butter slice thereon, means to insert said trays with the butter slices thereon sequentially into a package supported adjacent said folding means, portions of one tray supporting the subsequent tray out of contact with the butter slice on said one tray, and common driving means for said butter feeding means, said paper feeding means, said butter cutting means, said paper cutting means and said folding means.

4. A device for delivering slices of butter onto a sheet of paper, forming said paper into trays and inserting the formed trays with slices of butter thereon into a preformed package comprising, in combination, means for intermittently feeding a bar of butter along a predetermined path, means to intermittently feed a sheet of paper along a predetermined path substantially perpendicular to said first-mentioned path, means to cut said paper into rectangular portions, means to slice said butter, means to deposit each said slice of butter onto a rectangular paper portion, means to fold the edges of said rectangular paper portions to form rigid trays having their sides extending above the butter slice thereon, means to insert said trays with the butter slices thereon sequentially into a package supported adjacent said folding means, portions of one tray supporting the subsequent tray out of contact with the butter slice on said one tray, common driving means for said butter feeding means, said paper feeding means, said butter cutting means, said paper cutting means and said folding means, and control means for said driving means, said control means comprising a counter and a clutch operated by said counter serving to disable said driving means after the cutting of a predetermined number of butter slices and the forming of a predetermined number of paper trays.

5. A device as claimed in claim 4 characterized in that said control means further includes means for preventing the slicing of butter during the last of the plurality of cycles of said machine under control of said control means whereby the last tray of a series has no butter slice deposited thereon and serves as a cover for the preceding butter slices inserted into said package.

6. A device as claimed in claim 5, characterized in that said control means further includes means for deenergizing said common driving means after completion of a predetermined number of slices of butter and a number of trays one greater than the number of butter slices, the total number of trays and butter slices being sufficient to fill the preformed package.

7. A butter feeding device for a machine of the class described, said feeding device comprising, in combination, a rectangular tube adapted to receive a bar of butter, said tube having inturned lower edges to hold said butter fixed in position with respect to said tube, a rec-

tangular sleeve surrounding the lower portion of said rectangular tube, means to reciprocate said sleeve and said tube, a pair of butter holding members pivotally mounted on fixed pivots adjacent the upper portion of said rectangular tube, and means driven by said rectangular sleeve for oscillating said butter holding members about their pivot points in synchronism with the motion of said tube, said tube being provided with slots adjacent said butter holding members through which said members may protrude and make contact with the butter whereby said members hold said butter fixed in position during movement of said tube in one direction and release said butter for movement with said tube during tube movement in the opposite direction.

8. A device as claimed in claim 7 characterized in that said butter holding members are spring-urged into butter holding position and further characterized in that means are provided for oscillating said butter holding members away from said butter near one extreme of the reciprocatory movement of said rectangular sleeve and said tube.

9. A device as claimed in claim 7, characterized in that said tube is resiliently urged to one of its extreme positions and further characterized in that said rectangular sleeve is coupled to said tube for moving it in the direction opposite to that in which it is urged by said spring.

10. A device as claimed in claim 9, characterized in that said rectangular sleeve has latches mounted thereon, said latches being spring-pressed to an outward position, said latches cooperating with pins fixed to said tube and further characterized in that an actuating carriage is provided, said carriage reciprocating in a plane at right angles to the plane of said tube and said sleeve, said carriage being connected to said sleeve through a bell crank and said carriage having projections thereon which cooperate with extensions on said latches whereby said carriage releases said pins from said latches and permits said tube to move to one of its extreme positions under urge of said spring, said carriage during movement in the opposite direction moving said sleeve and through said latches and said pin also moving said rectangular tube to the opposite position against the urge of said spring.

11. A device as claimed in claim 9, characterized in that detent means are provided for said butter holding members, said detent means serving to hold said members out of engagement with said butter, and further characterized in that said detents are manually releasable.

12. A device as claimed in claim 9, characterized in that a stop member is provided, said stop member cooperating with said rectangular tube, said stop member when operated preventing movement of the tube in butter feeding direction.

13. Paper feeding means for a machine of the class described, said feeding means comprising a reciprocable actuating carriage, a ratchet wheel rotatably mounted on said carriage, a plate movable with said carriage, a clamping member mounted on said carriage above said plate, said clamping member being spring-pressed downwardly to hold a sheet of paper against said plate for movement therewith, a pawl cooperating with said ratchet wheel and said clamping member to hold said clamping member out of contact with said paper, a lug fixed in position adjacent one extremity of the path of reciprocation of said carriage, said lug extending into the path of the teeth of said ratchet wheel to cause said clamping member to be elevated and a second lug oscillatable in a plane perpendicular to the path of movement of said carriage, said second lug being located adjacent the other extreme of reciprocatory movement of said actuating carriage and serving at the initiation of movement toward said one extremity to actuate said ratchet wheel to release said pawl and permit said clamping member to be urged into contact with paper on said plate.

14. A device as claimed in claim 13, characterized in that said second lug comprises a conical member, said conical member being mounted for oscillation on a shaft extending transversely of said paper sheet and transversely of the axis of the cone, said conical lug being spring-urged to position in which its axis is parallel to the plane of the paper, and further characterized in that a spring-urged detent is supported on said carriage and cooperates with said ratchet wheel to prevent rotation thereof in one direction whereby said ratchet wheel causes rotation of said conical lug about the transverse shaft during movement of the carriage in one direction and said conical lug causes rotation of said ratchet wheel during movement of said carriage in the opposite direction.

15. In a device of the class described, in combination, an actuating carriage, a paper feeding means supported on said actuating carriage, said means comprising a plate mounted on said carriage for reciprocation therewith, and a clamping member mounted on said carriage for reciprocation therewith, said clamping member being movable in a direction toward and away from said plate to thereby clamp a sheet of paper for movement in one direction and release said sheet of paper during movement of said actuating carriage in the opposite direction, a rectangular butter holding tube mounted adjacent the forward end of said plate when said carriage is in one extreme of its reciprocatory movement, a bell crank mounted on an axis extending transversely of the path of movement of said actuating carriage, a rectangular sleeve slidably mounted on said butter feeding tube, means on said actuating carriage for operating said bell crank, means on said rectangular sleeve for cooperating with said bell crank to thereby raise and lower said sleeve as said actuating carirage reciprocates, a stationary knife mounted beneath the path of movement of said carriage, and a second knife mounted on said rectangular sleeve for movement therewith, said knives cooperating to sever a portion from a paper sheet fed by said paper feeding mechanism as said carriage reciprocates.

16. A device as claimed in claim 15, characterized in that said actuating carriage has a bifurcated member mounted thereon for movement therewith, and further characterized in that said bifurcated member has a knife extending across between the lines thereof whereby movement of said carriage slices butter fed by said rectangular tube, said butter being deposited on the sheet of paper fed by said paper feeding mechanism, a portion of paper having a butter slice thereon being thereafter severed from the sheet by said cutting knives.

17. In a device of the class described, in combination, a butter feeding mechanism comprising a rectangular tube adapted to hold a bar of butter, means for reciprocating said rectangular tube, means for holding said butter in fixed position relative to said tube during movement of said tube in one direction, means for holding said butter in fixed position for movement relative to said tube during reciprocation of said tube in the opposite direction to thereby feed predetermined portions of butter beyond the end of said tube, an actuating carriage, means mounted on said actuating carriage for feeding a sheet of paper into position beneath said rectangular tube, means for severing a butter slice from the body of butter in said tube and depositing said slice upon said paper, a sleeve surrounding said tube, a second sleeve surrounding said first sleeve, said second sleeve having outwardly extending flanges thereon, a female die member mounted beneath said rectangular tube and said sleeves, said die member being rectangular in shape and having inwardly sloping interior walls, said second sleeve cooperating with portions of said die element to hold a cut off paper portion in position, said first sleeve serving as a male die member to force said cut off paper portion against said

first die member to cause the sides of said portion to be bent upwardly forming a tray, and means for reciprocating said first and second sleeves in timed relationship to perform said clamping and dieing actions.

18. A device as claimed in claim 17, characterized in that said first-mentioned rectangular sleeve and said second-mentioned rectangular sleeve are provided with cut-outs at the corners thereof and further characterized in that said female die member is slotted at the corners, said slots having folding fingers mounted therein, said folding fingers being supported on oscillating shafts, said shafts being oscillated in timed relationship with the movement of said first and second sleeves to form creases in the corners of said paper trays, said creases extending inwardly from the corners along diagonal lines, the creases being deper at the upper edge of the tray and diminishing to zero at the base, said creases thereby acting as strengtheners of the tray and serving as brackets to support a succeeding tray upon a preceding tray.

19. A device as claimed in claim 18, characterized in that said shafts are gear connected together and further characterized in that a rack is provided to drive said shafts, said rack being driven by said actuating carriage.

20. A driving means for a machine of the class described, comprising, a motor, a reduction gear, an actuating carriage, a rotatably mounted driving arm, a clutch coupling said driving arm to said reduction gear, said clutch comprising a disk having notches in the periphery thereof and a slide member mounted on said driving arm for reciprocal movement in a plane substantially perpendicular to the axis of rotation of said arm, said slide having a pin thereon to engage one of said notches, and a conecting rod extending from said driving arm to said actuating carriage to thereby reciprocate said actuating carriage through a complete cycle during each rotation of said driving arm.

21. A device as claimed in claim 20, characterized in that a detent wheel is mounted adjacent said driving arm, said detent wheel having a plurality of teeth thereon alternating with tooth spaces, one of said tooth spaces being shallow relative to the remainder, said slide on said drive arm being moved by said detent wheel when the shallow tooth space is presented to thereby disengage said pin from said disk and free said motor for rotation independently of said arm.

22. A device as claimed in claim 21, characterized in that an electrical switch is mounted adjacent said detent wheel and said detent wheel is provided with a cam portion, said cam portion actuating said switch to cause de-energization of said motor upon a complete rotation of said detent wheel whereby said driving mechanism is uncoupled from said actuating carriage and said driving motor is stopped after a predetermined number of cycles of operation of the machine have been performed.

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