March 7, 1944. C. T. WALTER 2,343,599

AUTOMATIC TAMALE FORMING AND WRAPPING MACHINE

Filed May 4, 1942 6 Sheets-Sheet 1

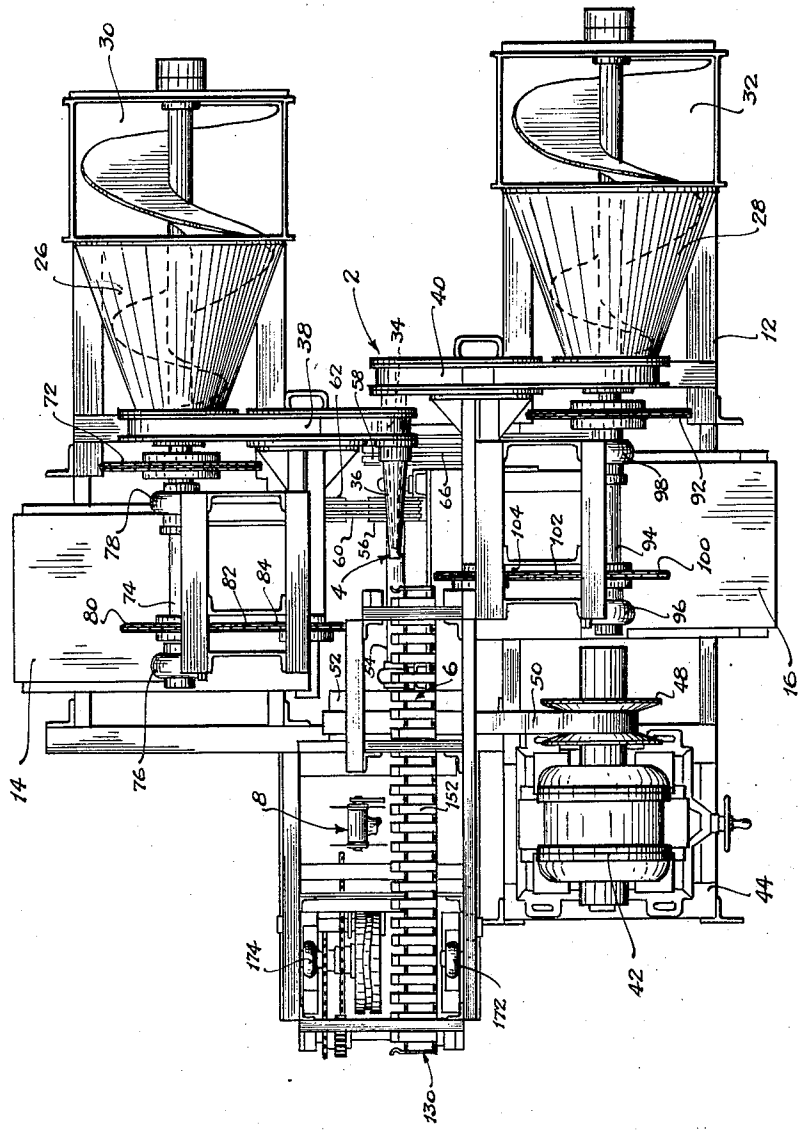


Fig. 1

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AUTOMATIC TAMALE FORMING AND WRAPPING MACHINE

Filed May 4, 1942 6 Sheets-Sheet 2

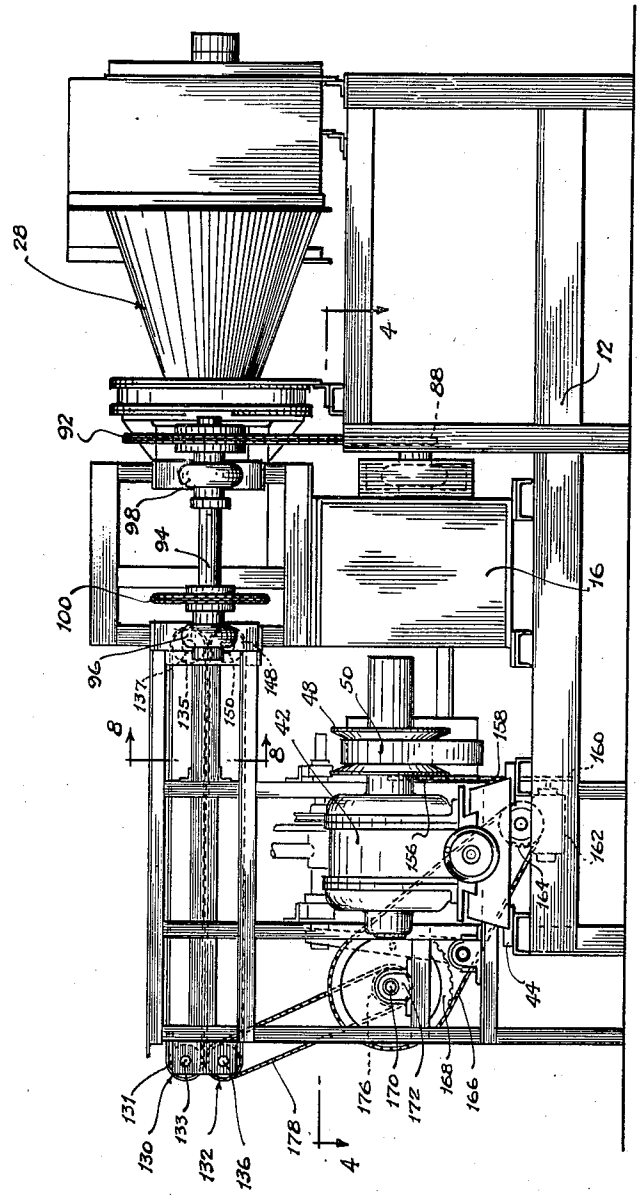


Fig. 2

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AUTOMATIC TAMALE FORMING AND WRAPPING MACHINE

Filed May 4, 1942 6 Sheets-Sheet 3

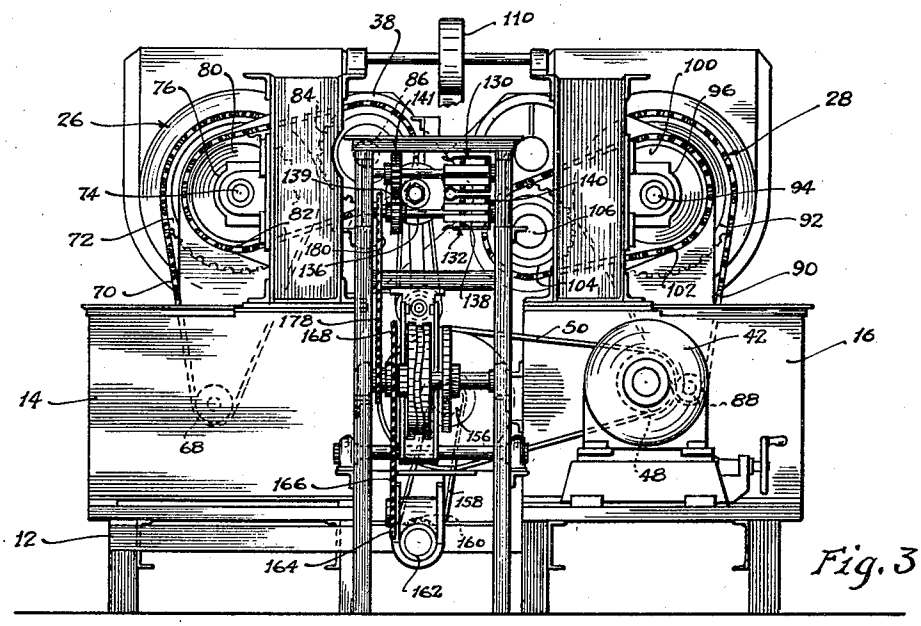


Fig. 3

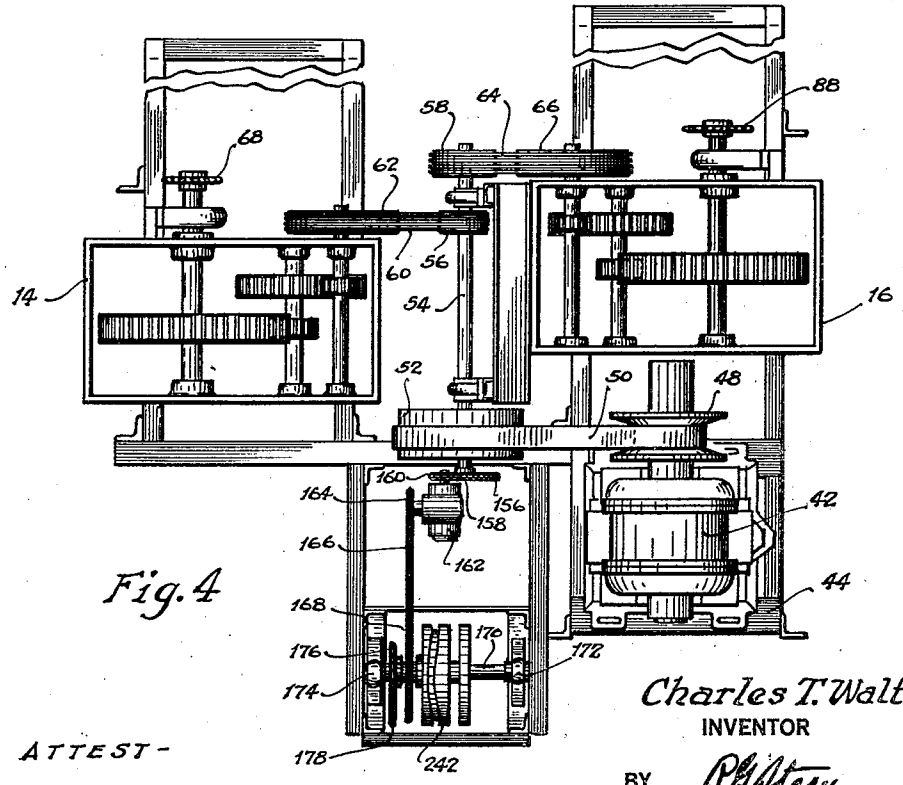


Fig. 4

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AUTOMATIC TAMALE FORMING AND WRAPPING MACHINE

Filed May 4, 1942 6 Sheets-Sheet 4

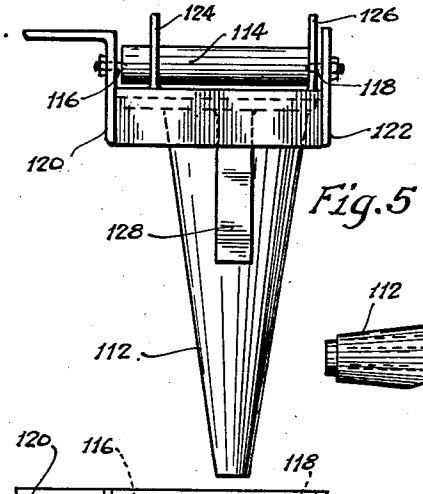


Fig.5

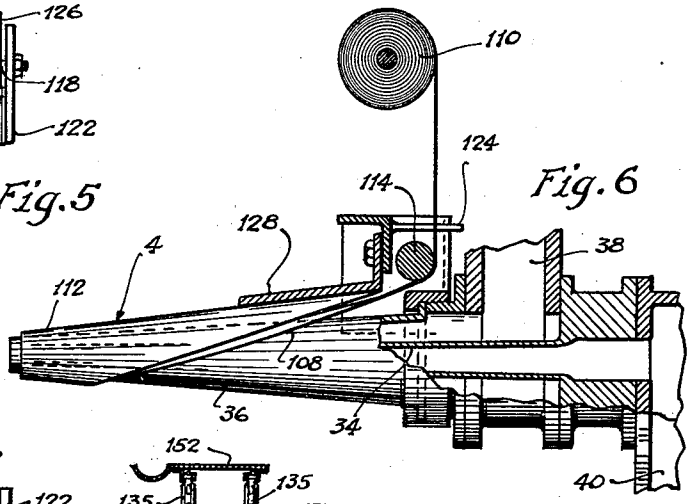


Fig.6

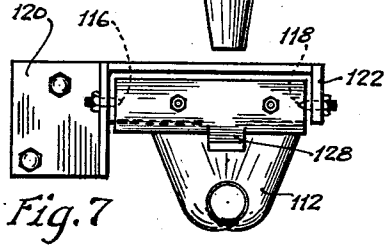


Fig.7

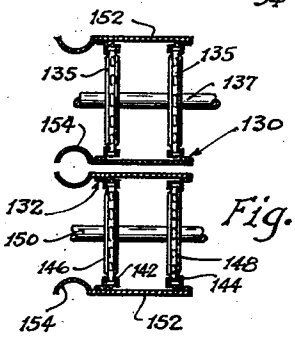


Fig.8

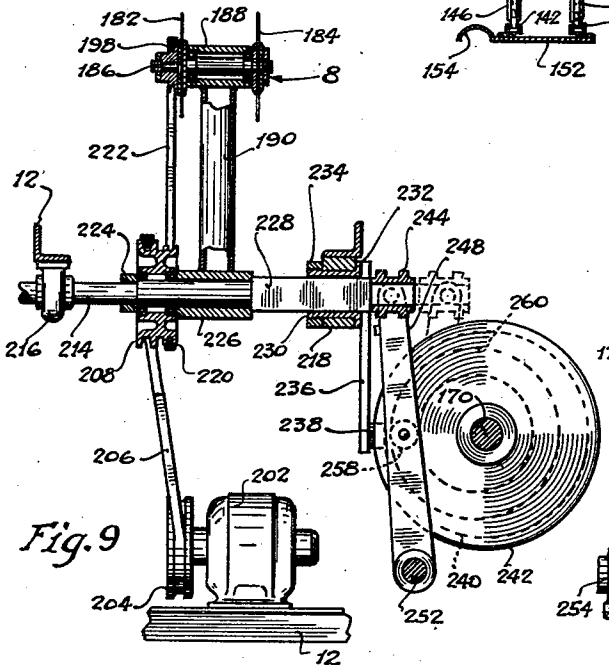


Fig.9

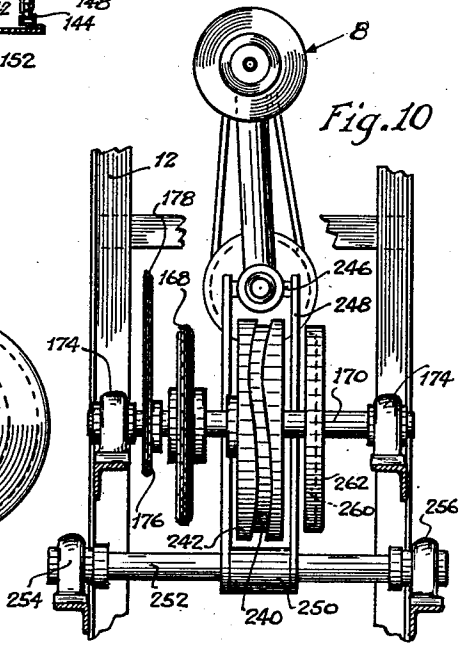


Fig.10

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AUTOMATIC TAMALE FORMING AND WRAPPING MACHINE

Filed May 4, 1942 6 Sheets-Sheet 5

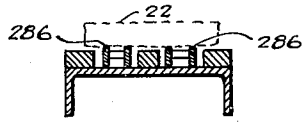


Fig. 14




Fig. 11

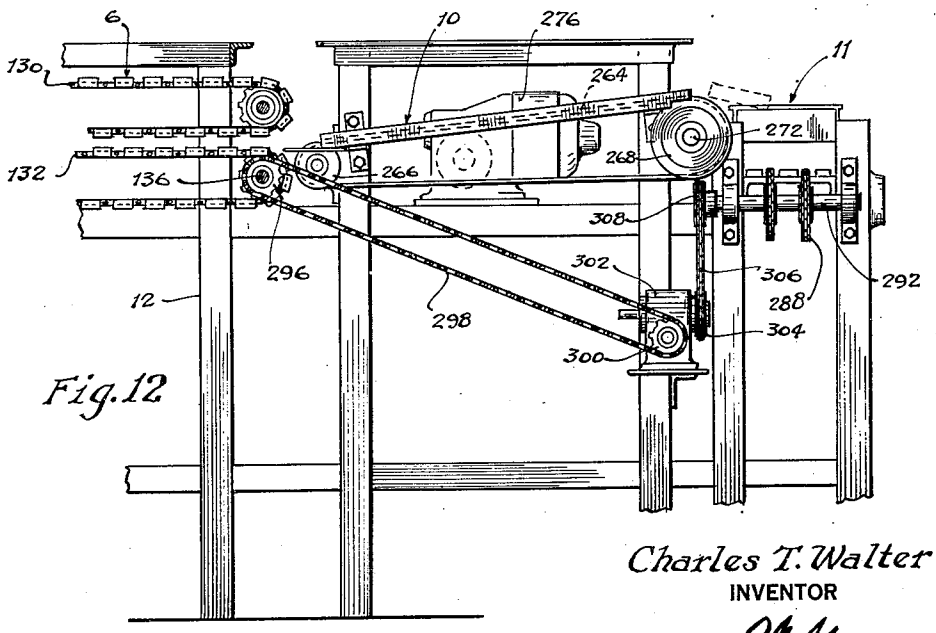


Fig. 12

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AUTOMATIC TAMALE FORMING AND WRAPPING MACHINE

Filed May 4, 1942 6 Sheets-Sheet 6

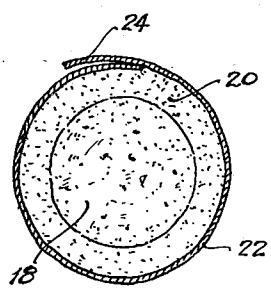


Fig. 15

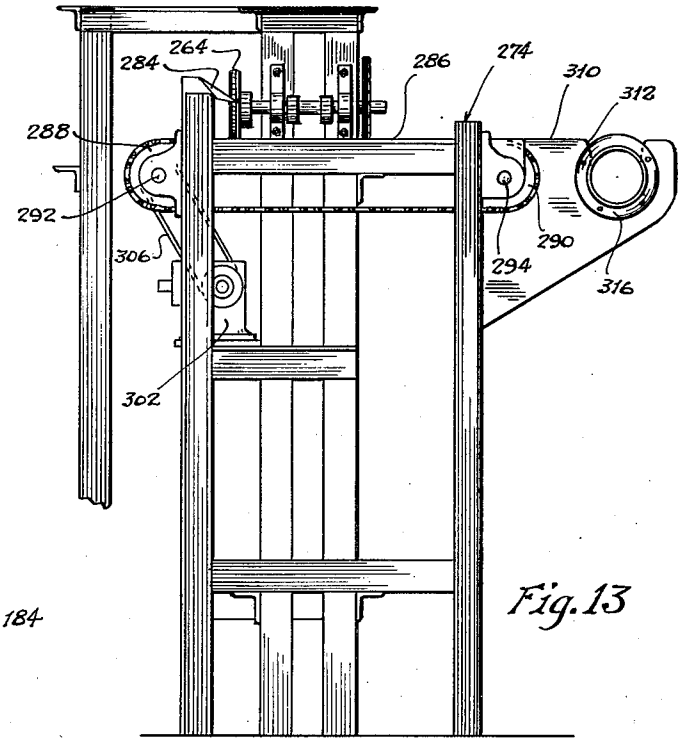


Fig. 13

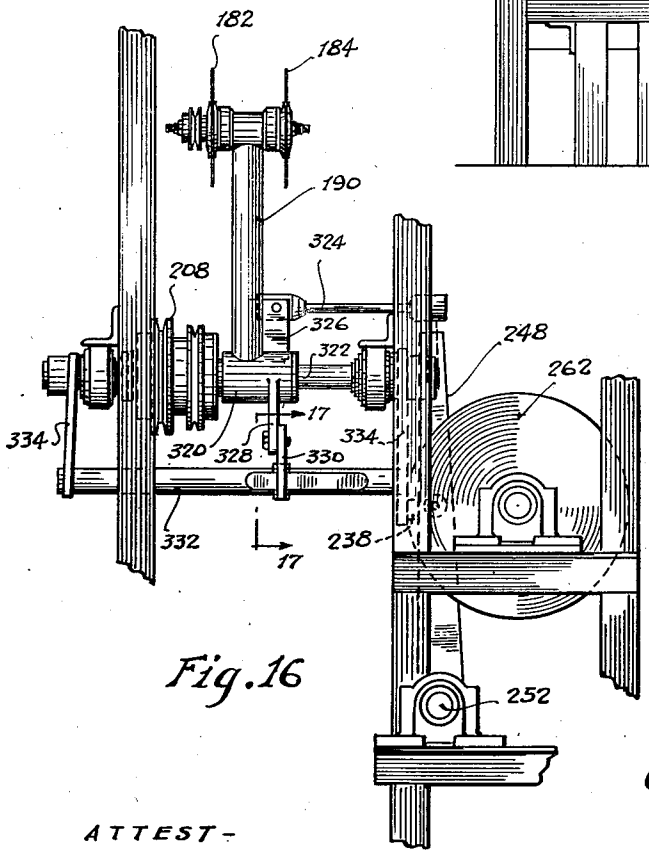


Fig. 16

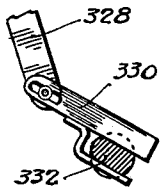


Fig. 17

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Patented Mar. 7, 1944

2,343,599

# UNITED STATES PATENT OFFICE

2,343,599

## AUTOMATIC TAMALE FORMING AND WRAPPING MACHINE

Charles T. Walter, Chicago, Ill., assignor to Industrial Patents Corporation, Chicago, Ill., a corporation of Delaware

Application May 4, 1942, Serial No. 441,722

12 Claims. (Cl. 107—1)

The present invention relates to improvements in automatic machines for converting foodstuffs in mass form into condition for packaging. More particularly, the present invention relates to a fully automatic machine for shaping, wrapping, cutting and delivering foodstuffs to provide a product such as tamales ready for packing and consumption.

Among the objects of the present invention is to provide a novel automatic machine for handling foodstuffs such as tamale material, and which shapes, wraps, cuts and discharges such material in such condition that the same may be readily packed in containers for further processing.

Another object of the present invention is to provide a novel automatic machine of the character above described which is of simplified construction, readily fabricated at relatively low cost, and which is adapted for production of the food articles comprehended at a greatly increased rate of speed as compared to prior practices in the art.

The present invention has been founded upon a desire to automatically produce a finished article of food, such as a tamale, of uniform diameter throughout, with a proper amount of the individual ingredients or food mass from which the same is formed, and all of which are of predetermined uniform length so that the resulting product is consistently uniform from one batch to the other.

One of the objects of the present invention is to provide an automatic machine for preparing foodstuffs of the character identified, the same including novel means for feeding a uniform and constant amount of material of proper and uniform size to the machine and into the environment of wrapping mechanism which encloses and protects the said discharged material.

More particularly, the present invention comprehends a novel feeding mechanism which feeds material at a uniform rate of flow to the machine and which is independent of the amount of material in the material hopper. In accordance with the present invention, means for producing this novel result may include a positive meter type feeding mechanism which assures delivery of material at a uniform rate of flow and of the proper size and shape, independently of the amount of material in the hopper for the machine. As an illustration of a positive meter type feeding mechanism, a gear pump may be used in conjunction with the material source which is operated at a predetermined speed for delivering predetermined uniform amounts to the machine.

Another object within the purview of the present invention is to provide novel mechanism characterized as a positive meter type feeding mechanism for delivering food materials of varying characteristics such as would be provided in the manufacture of tamales, and which materials are delivered to the machine in concentric relation to one another in constant and uniform predetermined amounts to assure uniformity in the resulting product.

A further object of the present invention is to provide novel conveyor mechanism adapted to receive wrapped material for delivering it to a point where the same is automatically severed at predetermined intervals to provide wrapped food material of predetermined lengths. More particularly, the novel feature embodied in such conveyor mechanism takes the form of conveyor elements which grip the material for movement thereof into cutting relation with the cutting mechanism, and which conveyor construction facilitates the rapid cutting of the wrapped material into proper lengths at greatly increased speeds as compared to prior developments in the art.

As a still further object, the present invention contemplates a novel cutting mechanism for severing the wrapped food material into desired lengths, and which cutting mechanism is characterized as involving one or more cutting elements adapted to sever the wrapped food material during its continuous movement on the conveyor, thus greatly increasing the output of the machine.

In one embodiment selected to illustrate the invention, the said cutting means may take the form of one or more rotatable cutting elements or knives mounted for reciprocal movement in respect to the continuously conveyed wrapped food material and which, during its cutting operation with respect to said food material, travels linearly at substantially the speed of travel of said food material. Compound reciprocal and lineal movement of the cutting element or elements is effected by novel mechanisms including cam controlled supporting means for said element or elements which is of relatively simple construction, yet positive in its action to assure continued operation of the machine under all conditions, thus making certain of reduction in operating costs which might otherwise be experienced by breakdown of the machine.

As a further object of the present invention,

novel discharge means is contemplated comprising an arrangement of movable mechanism for discharging the cut lengths of wrapped food material into a position to facilitate introduction of the same into a container such as a can or the like. More particularly, such novel discharge conveyor mechanism embodies a recess or receptacle adapted to receive a given number of cut lengths of drapped food material, which may then be readily introduced into the container. As another feature of the invention, such novel construction may include means disposed adjacent the recess for supporting the receptacle and for guiding the predetermined number of lengths of wrapped food material into the container.

Other objects, features, capabilities and advantages are comprehended by the invention, as will later appear and as are inherently possessed thereby.

Referring to the drawings:

Figure 1 is a top plan of a machine embodying the novel features of the present invention;

Figure 2 is a side elevation of the machine of Figure 1 of the drawings;

Figure 3 is an end elevation of the machine shown in Figure 1 of the drawings;

Figure 4 is a plan view of main driving mechanism taken on line 4—4 of Figure 2.

Figure 5 is a detail top plan of the wrapping mechanism for the machine shown in Figure 1 of the drawings;

Figure 6 is a detail side elevation partly in section of the wrapping mechanism shown in Figure 5 of the drawings;

Figure 7 is a detail end view of the wrapping mechanism of Figures 5 and 6;

Figure 8 is a transverse section of the conveyor mechanism taken on lines 8—8 of Figure 2 of the drawings;

Figure 9 is an elarged fragmentary detail side elevation partly in section of the cutting mechanism;

Figure 10 is an end elevation of the cutting mechanism shown in Figure 9 of the drawings;

Figure 11 is a detail plan view of the discharge conveyor mechanism;

Figure 12 is a side elevation of the discharge conveyor mechanism shown in Figure 11 of the drawings;

Figure 13 is an end view of the discharge conveyor mechanism shown in Figures 11 and 12 of the drawings;

Figure 14 is a view in section of the discharge assembling conveyor taken on line 14—14 of Figure 11.

Figure 15 is a cross section of the food product automatically formed and delivered ready for packaging by a machine made in accordance with the present invention;

Figure 16 is a detail side elevation of a modified cutter mechanism with the supporting frame partly broken away; and

Figure 17 is a view taken on line 17—17 of Figure 16.

Referring now more in detail to the drawings, an embodiment selected to illustrate the invention has a material feeding mechanism 2 and a product wrapping mechanism 4 associated therewith adapted to continuously form and deliver a wrapped food material to a conveyor 6. The conveyor has a continuous movement to carry the wrapped food material to a position where the same is cut into predetermined lengths by a cutting mechanism 8, then the cut lengths of wrapped food material are moved onto a discharge conveyor 10 from which the same is delivered to a collecting conveyor and table 11 from where it is removed and placed in containers, such as tin cans, for further processing. The mechanisms hereinabove noted generally are supported upon suitable framework, generally referred to as 12, the details of which will not be described except where necessary to clearly disclose associated mechanism, but which framework includes reduction gear housings 14 and 16 (to be described in detail hereinafter) about which the machine has been built and which provides a rigid and firm unit.

The machine herein described incorporates structure making it particularly suitable for making tamales, but it is to be clearly understood that the invention is not limited to the making of such food articles, but comprehends structure adapted to make other food products of similar nature. A cross section of a tamale as made in this machine is shown in Figure 15 of the drawings, and it has a core 18 of ground meat surrounded by a shell of meal 20 and both of which are enclosed by a paper wrapper or the like 22. The wrapper has its marginal edges in overlapping relation as at 24 to hold the center masses together and to facilitate handling, packing and preparation of the same for consumption.

Since the article involves the concentric arrangement of food materials of varying characteristics, the present machine incorporates in its structure the horizontally disposed hoppers 26 and 28 each of which is of a somewhat conventional form. The hoppers 26 and 28 have openings 30 and 32 respectively for receiving the food material being introduced into the same and each hopper is provided with a screw conveyor adapted to convey material toward the exit point, all as is well known in the art. The ground meat forming the core 18 of the tamale is supplied from the hopper 28 from which the meat feeds through a discharge tube 34. Meal for forming shell 20 is introduced into the hopper 26 and is discharged through a discharge tube 36 formed around or embracing the tube 34 to be concentric in respect thereto so that both meat and meal may be extruded from the discharge means in concentric relation to produce the article disclosed in Figure 15 of the drawings.

The present machine embodies a novel means for delivering fixed amounts of both meat and meal from the hoppers 26 and 28, respectively, and at a uniform and constant speed, such means including gear pumps generally referred to as 38 and 40 for the meal and meat supply, respectively. These gear pumps constitute a positive meter type feeding mechanism located between the outlet from the hoppers 26 and 28 and the discharge tubes 36 and 34.

The gear pumps may be driven from any suitable power source and as here shown a motor 42 adjustably mounted upon the base 44 drives a variable speed pulley 48. This variable speed pulley, through the medium of a belt 50, drives another pulley 52 mounted on a shaft 54 which is suitably mounted in bearings on the frame structure 12 which shaft is disposed substantially centrally and longitudinally of the machine. Shaft 54 also has mounted thereon, the spaced pulleys 56 and 58, the former, driving pulley 62 through the belts 60, and the latter, driving pulley 66 through the medium of the belts 64. Pulleys 62 and 66 are each mounted to drive reduction gears enclosed in housings 14 and 16 respectively.

Output from the reduction gears enclosed within housing 14 is through sprocket wheel 68 (Figure 3) which, through the medium of sprocket chain 70, drives the sprocket wheel 72 mounted upon shaft 74 journaled as at 76 and 78. The shaft 74 drives the screw conveyor disposed within the hopper 26. Keyed to the shaft 74 and in spaced relation to the sprocket wheel 72 is the sprocket wheel 80 which, through the chain 82, drives sprocket wheel 84 mounted upon shaft 86 supported in suitable bearings not shown. Shaft 86 drives the gear pump 38 for positively delivering predetermined quantities of the meal mixture to the tubular discharge 36 for the hopper 26.

The output for the reduction gears enclosed within the housing 16 is through the sprocket wheel 88 best shown in Figure 3 which drives the chain 90 that in turn drives the sprocket wheel 92 mounted upon the shaft 94 journaled in the frame bearings 96 and 98. Shaft 94 provides a direct drive for the screw conveyor disposed within the hopper 28 and fixed upon the shaft 94, in spaced relation to the sprocket wheel 92 is another sprocket wheel 100 having chain 102 cooperating therewith to drive the sprocket 104 mounted upon the shaft 106 journaled in suitable bearings supported by the main frame structure. Shaft 106 drives the gear pump 40 which is designed to positively deliver meat from hopper 28 at the proper rate through the discharge tube 34.

From the description given so far, it is apparent that the machine is operative to cause the center core of meat to be extruded simultaneously with the shell of meal. The pumps 38 and 40 measure the quantities as they are extruded and a finished product is continuously delivered from feeding means 2.

As the tubular food product is discharged from the feeding means, a wrapping 22 of paper or the like is placed around the completed product. This wrapping 22 is delivered in the form of a web 108, Figure 6, fed from a roll 110 suitably mounted upon the frame structure and which feeds the web over roll 114 into the environment of the wrapping and folding horn 112. Roll 114 is mounted upon the adjustable pivots 116 and 118 supported in the frame members 120 and 122, respectively and guide elements 124 and 126 are provided for guiding the web 108 into association with the wrapping and folding horn 112. The wrapping and folding horn 112 is mounted in superimposed relation in respect to the outer discharge tube 36 through the medium of the bracket 128 and which wrapping is provided with a suitable compound curved surface which gradually folds the web 108 as the same leaves the guide roll 114 to completely envelop the discharge tube 36 and subsequently the food product being extruded through the tubes 34 and 36.

The wrapped food product upon leaving the discharge tube 36, is received between the upper and lower conveyor means 130 and 132, Figures 2, 3 and 8. The lower conveyor unit 132 is power-driven, as will be later more fully described, and the upper conveyor unit 130 may be driven from the lower conveyor unit 132. Each of these conveyor units is of similar construction and a detailed description of the lower conveyor unit is deemed sufficient to clearly disclose the nature thereof.

The lower conveyor unit 132 comprises a shaft 136 suitably journaled in the frame structure upon which are mounted the spaced driving sprockets 138 and 140 which drive the two flexible chains 142 and 144, respectively. These chains 142 and 144 extend longitudinally of the machine and pass over the idler pulleys 146 and 148, respectively, mounted upon the shaft 150 suitably journaled in the frame structure. Connected to the said flexible chain elements 142 and 144 are a plurality of flights or conveyor elements 152 disposed transversely of the flexible elements 142 and 144 and in spaced relation to one another. Each of the conveyor elements 152 laterally overhangs the flexible conveyor element 142 at one side and has its cantilevered end formed with a depression or recess 154 so shaped that when it is disposed in substantially longitudinal alignment with the discharge tube 36 it will receive the tubular wrapped food product being extruded from the discharge elements 34 and 36.

As is best shown in Figure 8 of the drawings, the upper conveyor unit 130 is of similar construction, having its flights or conveyor elements 150 formed with recesses or depressions 154 which are complementary to the recesses or depressions 154 of the flight element 152 of the lower unit 132, the opposed elements 150 and 152 substantially embracing the wrapped food material between their curved ends 154 to move the same longitudinally of the machine toward the cutter mechanism 8.

The lower conveyor unit 132 is driven from the central shaft 54 through a driving connection comprising a pulley 156 which, through the belt 158, drives the pulley 160 of a worm speed reducer 162, the output from the speed reducer 162 being by way of pulley 164 which drives a chain 166 passing around and driving sprocket 168 mounted upon a shaft 170 suitably journaled in the frame structure as at 172 and 174. This shaft has fixed thereto a sprocket wheel 176 which, through the medium of a sprocket chain 178, drives a sprocket 180, the said sprocket wheel 180 being mounted upon the shaft 136. As above stated, the sprockets 138 fixed to shaft 136 drive the chains forming conveyor unit 132.

The upper conveyor unit is supported on sprockets 131 fixed to shaft 133 at one end and is supported at its opposite end on idler sprockets 135 rotatable on shaft 137. Shaft 133 is driven from gear 139 keyed to shaft 136 by the intermeshing gear 141 keyed to shaft 133.

As the wrapped food material is conveyed longitudinally of the machine toward the discharge end of the conveyor 6, the same in severed by the cutting mechanism 8 which is mounted for reciprocation longitudinally with the conveyor as well as being operative to move into and out of cutting relation with the wrapped food material. The movement of the cutting mechanism is synchronized with the continuous movement of the conveyor so that the said cutting mechanism travels linearly with the conveyor and reciprocates into the food product to cut it into predetermined lengths.

For convenience in operation and construction, the cutting mechanism 8, see Figure 9, is formed with two cutting blades 182 and 184 of similar construction, mounted in spaced relation and fixedly secured upon shaft 186 rotatably supported in the tubular head 188 of an arm or bracket 190. A driving pulley 198 is fixedly mounted on the shaft 186 to rotate the cutting means and the cutting elements 182 and 184 are driven from a motor 202 suitably positioned on the frame 12, the motor driving through the pulley 204, belt 206, which in turn drives a pulley 208 rotatably mounted upon a shaft 214 suitably journaled for

longitudinal sliding and rotative movement in bearings such as 216 and 218 provided on the frame 12. The pulley 208 has another pulley 220 formed integral therewith which drives belt 222 running over the pulley 198 for rotating the knife or cutting elements 182 and 184. The motor 202 is of relatively high speed and operates the knives or cutting elements 182 and 184 at a relatively high rate of speed to assure proper cutting of the wrapped food material.

The integrally formed pulleys 208 and 220 are disposed between the locking collar 224 and the hub 226 to which the arm 190 is secured, the said collar 224 and hub 226 being pinned to the shaft 214. Shaft 214 is provided with a non-circular end 228 slidably fitting within a bearing 230 mounted in the bearing 218. Slide bearing 230 is fixed in relation to the bearing 218 by means of a radial flange 232 at one end and a lock nut or block 234 adjacent its other end.

It will therefore be apparent from the above description that the shaft 214 is journaled for oscillating movement as well as sliding movement in the direction of the axis of said shaft whereby the arm 190 is carried longitudinally along beside the machine and is oscillated toward and away from the machine. The cutting elements 182 and 184 carried at the end of arm 190 are oscillated thus angularly in planes normal to the longitudinal axis of the shaft 214 and because of the sliding movement of said shaft the said cutting elements may have lineal movement longitudinally of the axis of said shaft.

The invention comprehends novel mechanism for moving the shaft longitudinally of its axis in journal bearings 216 and 218, while oscillating said shaft angularly in planes normal to said axis. One such mechanism is shown in Figure 9 and a modification of this structure is shown in Figure 16.

In the mechanism shown in Figure 9 the oscillatory movement of the shaft 214 is accomplished through the medium of a lever arm 236 secured to the radial flange 232 of sleeve bearing 230, the arm being provided adjacent its lower end with a cam roller 238 operating within a peripheral cam groove 240 of a cam 242 fixed upon the shaft 170. Sliding movement is imparted to the shaft 214 through a collar 244 mounted at the end of the shaft and having operative engagement with the inwardly projecting lugs 246, Figure 10, of a yoke 248. This yoke has its hub 250 mounted upon the shaft 252 that is rotatably carried in bearings 254 and 256 mounted upon the frame. Intermediate shaft 252 and lugs 246, the yoke has a cam follower 258 engaging in a cam groove 260 formed in the side face of the cam 262.

Power to accomplish the above described operation of the cutting mechanism to produce the oscillatory and lineal movement through the cam mechanism is derived from shaft 170 which receives its power from the worm speed reducer 162, pulley 164, belt 166 and pulley 168. The cam mechanism is so constructed that during operation of the machine, the cutting elements 182 and 184 are moved into cutting relation to the wrapped food material while the product continuously moves forward, and during the cutting operation the cutting elements are moved forwardly with the product at the speed of the material being conveyed in order to assure a straight cut through the wrapped food material. After the cutting operation has been completed, the movement of the cutting elements out of the cut wrapped food material is effected while continuing the forward lineal movement of the cutter head at the same rate of speed as the the material moving over the conveyors. After the cutter is removed from the product it is quickly moved back into its initial position for repetition of this cutting cycle performed upon the wrapped food material at predetermined intervals to secure any selected length for the finished product. The provision for the two spaced cutting elements is to make for efficiency in operation so that the cutter head moves the cutting elements into cutting relation to the wrapped food material only half as often as would otherwise be required if only one cutting element were provided, thus wear and tear on the machine is decreased, and accordingly the life of the machine is prolonged and fewer repairs and replacement of parts are required.

In the modified cutter mechanism shown in Figure 16, the cutter wheels 182 and 184 are mounted at the upper end of the arm 190 for movement into the product just as they do in the cutter device shown in Figure 9. The arm 190 in the modified structure is carried upon a hub 320 slidably mounted on shaft 322. The shaft 322 is fixedly supported in suitable bearings carried by the frame and the hub 320 is reciprocated lengthwise along shaft 322 by the cam actuated arm 248 which cooperates with the cam 262 in the manner described in connection with the cutter mechanism of Figure 9. The arm 248 is connected to hub 320 by link 324 having a ball and socket connection with a lug 326 integral with the hub. Thus as arm 248 is oscillated about the axis of shaft 252, the cutters mounted on arm 190 fixed to hub 320 are reciprocated longitudinally lengthwise beside the conveyor 6.

To effect the inward and outward movement of the cutters, the hub 320 is provided with a downwardly extending arm 328 integrally secured thereto. The arm 328 is adjustably connected to a drag link 330 as shown in Figure 17 and the drag link is operatively connected with the bar 332 fixedly supported in the yoke 334. The yoke arms 334 are rotatably mounted at one end about the axis of shaft 322 upon which the hub 320 is rotatably mounted. One side of the yoke 334 is provided with an extension to cooperate with cam follower 238 which is engaged in the groove 240 cut in the cam 242 described above in connection with Figure 9. The bar 332 is provided with a squared surface (Figure 17) and the drag link 330 is connected to the bar 332 so that it may slide longitudinally along the bar 332 as the hub 320 is driven lengthwise of the machine but yet the link is adapted to receive motion from the bar to rock the hub 320 about shaft 322.

The driving pulley 208 is integral with the hub 320 and may be driven from the motor 202 as shown in Figure 9. In this modified structure, it will be apparent that the shaft about which the hub 320 rotates remains stationary and a minimum number of parts are reciprocated. This lightening of the structure minimizes wear on the bearings and the further modification to provide the yoke 334 and drag link 330 for driving the cutter into the food product gives a more rigid and serviceable structure.

The exact control of the knife mechanism is quite important in order that the knives may be driven into the food product and just through it to completely sever the individual lengths

without hitting any of the conveyor structure. A uniform cycle of movement must be maintained to produce an attractive product and the present structure accomplishes the desired results in the most expeditious manner.

As the cut lengths of wrapped food material are discharged from the outlet end of the conveyor formed of units 130 and 132, the same are received by the discharge mechanism generally designated 10, see Figure 12. This discharge mechanism includes an upwardly inclined conveyor 264 passing about the pulleys 266 and 268 mounted upon shafts 270 and 272, respectively, which are suitably mounted in the frame extension 274. The discharge conveyor derives its power from the motor 276 that drives pulley 278 and belt 280, the belt driving the pulley 282 mounted upon shaft 272. The cut lengths of wrapped food material have their axes disposed substantially longitudinal of the direction of movement of the conveyor 264 at the time of discharge onto the same.

Conveyor 6 is operated to move at a speed exactly the same as the linear speed of the extruded product flowing from the feeding means to support the product while it is cut into separate lengths. Conveyor 10 has a faster linear speed than conveyor 6 to space the separated lengths delivered from conveyor 6 so that they will fall onto collecting means 11 in closely spaced relation.

Upon leaving the discharge conveyor the cut product is discharged onto the guide 284 which delivers it onto a conveyor 286. This conveyor is disposed at substantially right angles with respect to the discharge conveyor 264 and passes around the sprockets 288 and 290 suitably mounted upon shafts 292 and 294, respectively, the shafts being journaled in the frame extension 274. Conveyor 286 is driven from a sprocket wheel 296 mounted upon shaft 136 of the conveyor 6, the wheel driving the chain 298 that in turn drives sprocket wheel 300 of a reduction gear unit 302. The output from the gear train in box 302 drives a pulley 304 and chain 306 which drives pulley 308 mounted on one end of the shaft 292.

The cut lengths of wrapped food material are directed onto the conveyor 286 by guide 284 whereby the lengths of wrapped food products are positioned with their axes disposed transversely of the direction of movement of the conveyor 286. As above stated, conveyor 264 is upwardly inclined and moves the lengths of the product at a speed to project them outwardly onto the conveyor 286. Due to the upward inclination, the product will fall onto conveyor 286 which is disposed somewhat below the end of conveyor 264, in a relatively flat position so that all parts tend to land at about the same time. As the product is falling vertically, it contacts guide 284 disposed at about a 45° angle and the vertical falling motion is converted into a horizontal direction.

Also, the guide 284 is disposed in a manner to lay the individual lengths of the product on the conveyor 286 at approximately right angles to its direction of movement. Although the machine has been designed to lay the product on conveyor 286 with all parts landing at the same time, it has been found that the forward ends of the pieces projected outwardly by conveyor 264 tend to meet the conveyor 286 first and are thus pulled forward before the rear ends hit. The guide 284, however, catches the rear ends as they drop and boost them along to compensate for this forward movement of the front ends. This boosting action is accomplished by placing guide 284 over conveyor 286 at an angle, with the end which contacts the rear ends of the length of the product moved forwardly an appropriate distance to cause the rear ends to catch up with the forward ends of the severed lengths of the product.

The products flow from conveyor 286 onto a collecting platform 310 which is provided with a recess or depression 312 into which a given number of the severed lengths may be swept. The depression is formed with an open end 314 and has a funnel like guide means 316 attached thereto which projects outwardly as an annular laterally disposed flange over which a can or other receptacle 318 may be fitted. Such structure facilitates the movement of the cut lengths of wrapped material into the can or other receptacle 318, and the wrapped food material may be quickly and easily placed within such containers by an operator stationed at the platform 310. The operator may insert a suitably shaped paddle into the depression 312 through the opening 314 to move the cut lengths of wrapped food material transversely of platform 310 and into a container 318 mounted upon the guide flange 316.

The structure described above operates to continuously form a tamale product by extruding a core of meat and a shell of meal therearound from the feeding means 4. The product is continuously wrapped immediately after it is extruded with the paper web 22 having the overlapped ends as shown in Figure 15.

As the continuous stick of wrapped product flows from the feeding means it is engaged by the flights 150 and 152 of the conveyor 6 and the conveyor moves forwardly at a speed equal to the linear speed of the product issuing from the feeding means. Thus the continuous stick of the tamale product is supported in its forward movement by the conveyor 6. It is during this forward movement on conveyor 6 that the cutting means 8 carries the knives 182 and 184 into the product to sever it into predetermined lengths ready for packing into a suitable container.

The movement of the cutting blades 182 and 184 inwardly into cutting relation with the product, is synchronized with the conveyor movement to position the knives between the individual conveyor flights 150 and 152 whereby the knives may be passed completely therethrough. The knives are mounted to move continuously longitudinally along with the conveyor as they perform their cutting action so that the product is severed while it moves continuously toward the discharge end of the machine. After cutting the extruded and wrapped stick, the knives are withdrawn from the product and the cutting mechanism is reciprocated rearwardly to be in a position to begin another cutting cycle.

The severed product is delivered from the end of conveyor 6 onto the conveyor 10 having the belt 264. As above stated, this conveyor means is driven at a higher linear speed than the speed of conveyor 6 to effect a spacing of the separated lengths an appreciable distance apart whereby they may be dropped onto the conveyor 286 in proper relation. The conveyor 286 delivers the cut lengths of the product onto a collecting table 310 from where they may be pushed by the operator into a suitable container 318 positioned over the funnel shaped guide 316.

While I have herein described and upon the drawings shown illustrative embodiments of the invention, it is to be understood that the inven-

tion is not limited thereto but may comprehend other constructions, arrangements of parts, details and features without departing from the spirit of the invention.

I claim:

1. In a machine for making tamales and the like, means for continuously forming the food material into a rod, conveying means to receive the continuously formed rod, severing means cooperating with said conveyor to cut the rod into products of predetermined lengths, said conveyor operating at a lineal speed equal to the lineal speed of the formation of the rod, a second conveyor to receive said cut products with the longitudinal axis of the product disposed parallel to the direction of movement of the conveyor, said second conveyor being driven more rapidly than said first conveyor to effect a spacing of the cut products, a third conveyor disposed in angular relation with respect to said second conveyor to carry the cut products to a collecting table.

2. In a machine for making tamales and the like, the combination of a conveyor adapted to receive lengths of wrapped food material having their longitudinal axes disposed generally in the direction of movement of said conveyor, a second conveyor disposed angularly with respect to said first-named conveyor for receiving said wrapped food material with their longitudinal axes disposed transversely of said second conveyor, and a receiving platform at the end of said second conveyor, said platform having a depression of predetermined size for receiving a predetermined number of said lengths of wrapped food material, said depression having a laterally disposed opening to facilitate manual removal of said lengths of wrapped food material and delivery to a container.

3. In a machine for making tamales and the like, the combination of a conveyor adapted to receive lengths of wrapped food material having their longitudinal axes disposed generally in the direction of movement of said conveyor, a second conveyor disposed angularly with respect to said first-named conveyor for receiving said wrapped food material with their longitudinal axes disposed transversely of said second conveyor, a receiving platform at the end of said second conveyor, said platform having a depression of predetermined size for receiving a predetermined number of said lengths of wrapped food material, said depression having a laterally disposed opening to facilitate manual removal of said lengths of wrapped food material and delivery to a container, and laterally disposed guide means at said opening adapted to support said container during a filling operation.

4. In a machine for making tamales and the like, the combination of a conveyor adapted to receive lengths of wrapped food material having their longitudinal axes disposed generally in the direction of movement of said conveyor, a second conveyor disposed angularly with respect to said first-named conveyor for receiving said wrapped food material with their longitudinal axes dispused transversely of said second conveyor, means at the junction of said conveyors for guiding said lengths of wrapped food material from said first-named conveyor to said second-named conveyor, and a receiving platform at the end of said second conveyor, said platform having a depression of predetermined size for receiving a predetermined number of said lengths of wrapped food material, said depression having a laterally disposed opening to facilitate manual removal of said lengths of wrapped food material and delivery to a container.

5. A machine for producing and conditioning for packaging a tamale product and the like comprising means for continuously extruding and wrapping the product into a rod-like form, means to continuously receive and convey said rod-like form longitudinally forward, means to sever the rod-like form into pieces of selected length, spacing means to separate the severed lengths, and receiving means to group selected numbers of said lengths for packaging.

6. A machine for producing and conditioning for packaging a tamale product and the like comprising means for continuously extruding and wrapping the product into rod-like form, means to continuously receive and convey said rod-like form longitudinally forward, means to sever the rod-like form while supported on said receiving means, said rod-like form being severed into pieces of selected length, a second means to receive said severed pieces to continue to convey said pieces longitudinally forward and to space them one from another, and receiving means to group selected numbers of said lengths for packaging.

7. A machine for producing and conditioning for packaging a tamale product and the like comprising means for continuously extruding and wrapping the product into rod-like form, driven means to continuously receive and convey said rod-like form longitudinally forward, said driven means moving forwardly with the same velocity as the product is extruded, means to sever the rod-like form into pieces of selected length, driven spacing means to separate the severed lengths one from another, said spacing means being positioned to convey the severed pieces longitudinally away from said first named driven means more rapidly than said material is extruded, and receiving means to group selected numbers of the length for packaging.

8. A machine for producing and conditioning for packaging a tamale product and the like comprising means for continuously extruding and wrapping the product into rod-like form, said extruding means including a gear pump to positively extrude a measured quantity of the product, means to continuously receive and convey said rod-like form longitudinally forward, driven means to sever the rod-like form into pieces of selected length, the driving means for said severing means and said gear pump being positively intergeared whereby the extruded rod-like form is cut into predetermined lengths of measured quantity, spacing means to separate the severed lengths, and receiving means to group selected numbers of the lengths for packaging.

9. A machine for producing and conditioning for packaging a tamale product and the like comprising means for continuously extruding and wrapping the product into rod-like form, means to continuously receive and convey said rod-like form longitudinally forward, means to sever the rod-like form into pieces of selected length, driven spacing means to receive the severed pieces to convey them forwardly in a direction parallel to their longitudinal axis and from which the pieces are projected longitudinally into space, a conveyor means disposed at right angles with respect to said driven spacing means to receive the spaced pieces being delivered from said spacing means as they fall through space after leaving the end of said spacing means, an angularly disposed plate positioned between said spacing means and

said conveying means to catch the projected pieces to guide them onto said conveying means, and a receiving table cooperating with said conveying means, said receiving table having means associated therewith whereby selected numbers of the lengths of said pieces may be grouped for packaging.

10. In a machine for making tamales and the like, the combination of a conveyor adapted to receive lengths of wrapped food material having their longitudinal axes disposed generally in the direction of movement of said conveyor, a second conveyor disposed angularly with respect to said first named conveyor for receiving said wrapped food material with the longitudinal axes of the lengths being disposed generally transversely of the second conveyor, said lengths being transferred from said first conveyor to said second conveyor by being projected into space to fall upon said second conveyor, guiding means disposed at the junction of said conveyors for guiding said lengths of wrapped food material onto said second conveyor, said guiding means taking the form of a substantially flat plate having its face disposed in a plane angularly related to the second conveyor such that the rearmost end of the falling piece is engaged by said face to be urged forwardly as it falls onto the second conveyor so that the piece will be disposed on said second conveyor at substantially right angles thereto, and a receiving platform at the end of the second conveyor, said platform having a depression of predetermined size for receiving a predetermined number of said lengths of wrapped food material, said depression having a laterally disposed opening to facilitate manual removal of said lengths of food material and delivery to a container.

11. In a machine for making tamales and the like, means for continuously forming the food material into a rod, conveying means to receive the continuously formed rod, severing means cooperating with said conveyor to cut the rod into products of predetermined lengths, said conveyor operating at a lineal speed equal to the lineal speed of the formation of the rod, a second conveyor to receive said cut products with the longitudinal axis of the product disposed parallel to the direction of movement of the conveyor, said second conveyor being driven more rapidly than said first conveyor to effect a spacing of the cut products, a third conveyor disposed in angular relation with respect to said second conveyor to carry the cut products to a collecting table, said machine including means for driving said third conveyor at a speed sufficiently great to move the cut pieces carried thereon away from the point of transfer of the cut pieces from the second conveyor to the third conveyor before the following cut pieces are delivered over to the third conveyor.

12. In a machine for making tamales and the like, the combination of a conveyor adapted to receive lengths of wrapped food material having their longitudinal axes disposed generally in the direction of movement of said conveyor, a second conveyor disposed angularly with respect to said first named conveyor for receiving said wrapped food material with the longitudinal axes of the lengths being disposed generally transversely of the second conveyor, said lengths being transferred from said first conveyor to said second conveyor by being projected into space to fall upon said second conveyor, guiding means disposed at the junction of said conveyors for guiding said lengths of wrapped food material onto said second conveyor, said guiding means taking the form of a substantially flat plate having its face disposed in a plane angularly related to the second conveyor such that the rearmost end of the falling piece is engaged by said face to be urged forwardly as it falls onto the second conveyor so that the piece will be disposed on said second conveyor at substantially right angles thereto, and a receiving and collecting means disposed at the end of said second conveyor to receive and collect a predetermined number of the lengths of said wrapped food material for presentation to a container.

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