July 11, 1961 M. POLLMANN 2,991,605

APPARATUS FOR PACKING CIGARETTES AND OTHER ROD-LIKE ARTICLES

Filed Dec. 23, 1958 5 Sheets-Sheet 1

Fig.1

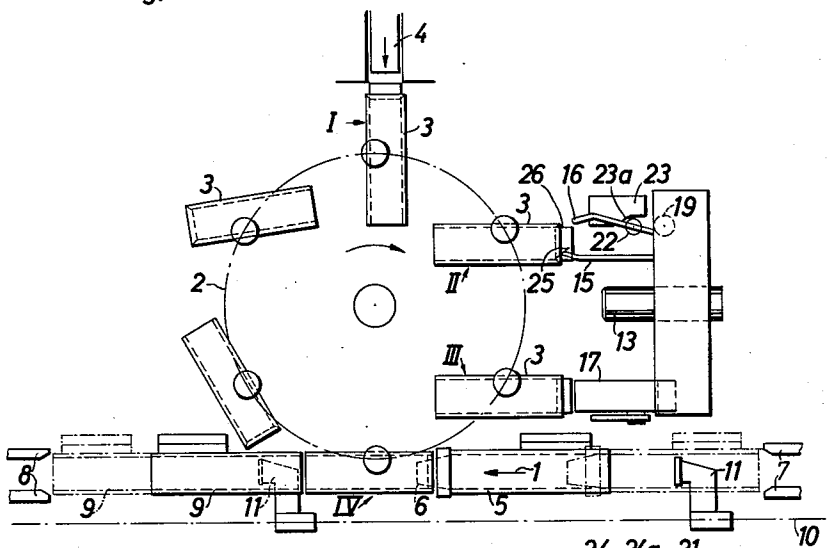


Fig.3

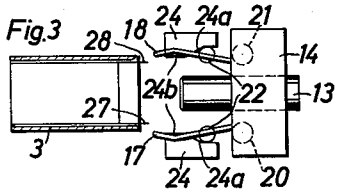


Fig.2

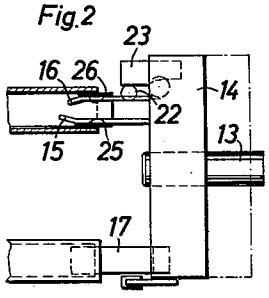
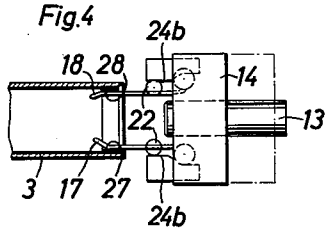


Fig.4



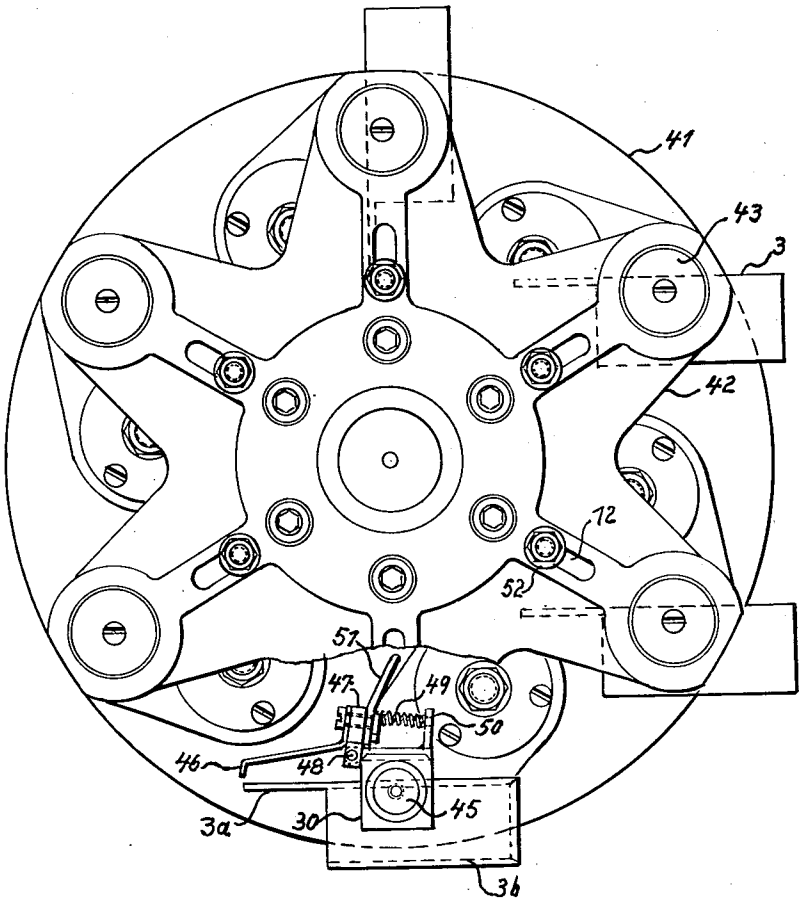
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APPARATUS FOR PACKING CIGARETTES AND OTHER ROD-LIKE ARTICLES

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Fig. 5



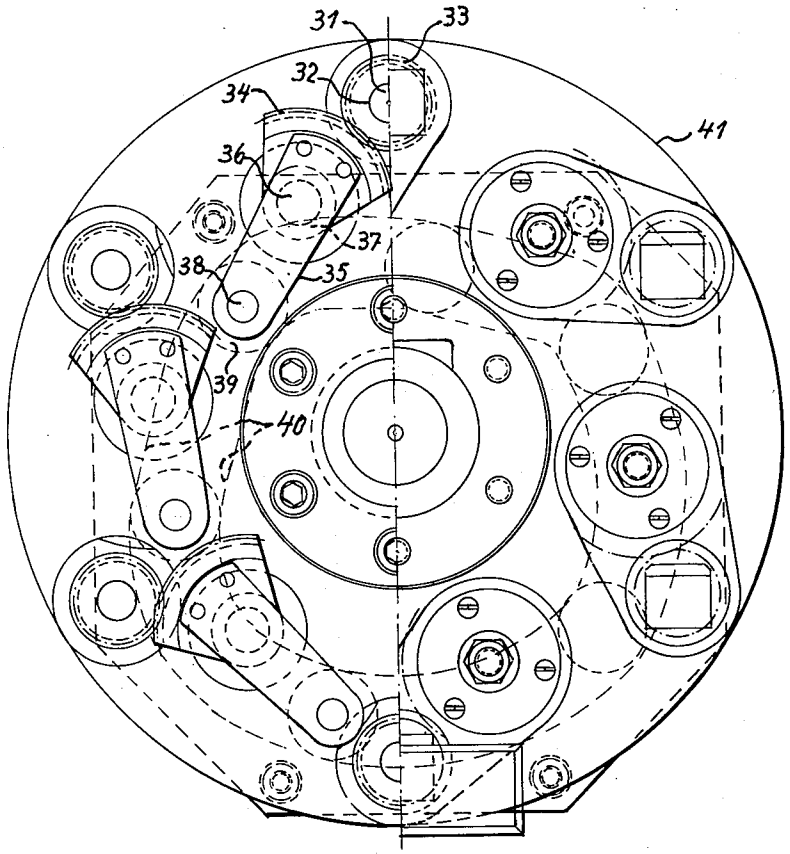
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APPARATUS FOR PACKING CIGARETTES AND OTHER ROD-LIKE ARTICLES

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Fig. 6



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APPARATUS FOR PACKING CIGARETTES AND OTHER ROD-LIKE ARTICLES

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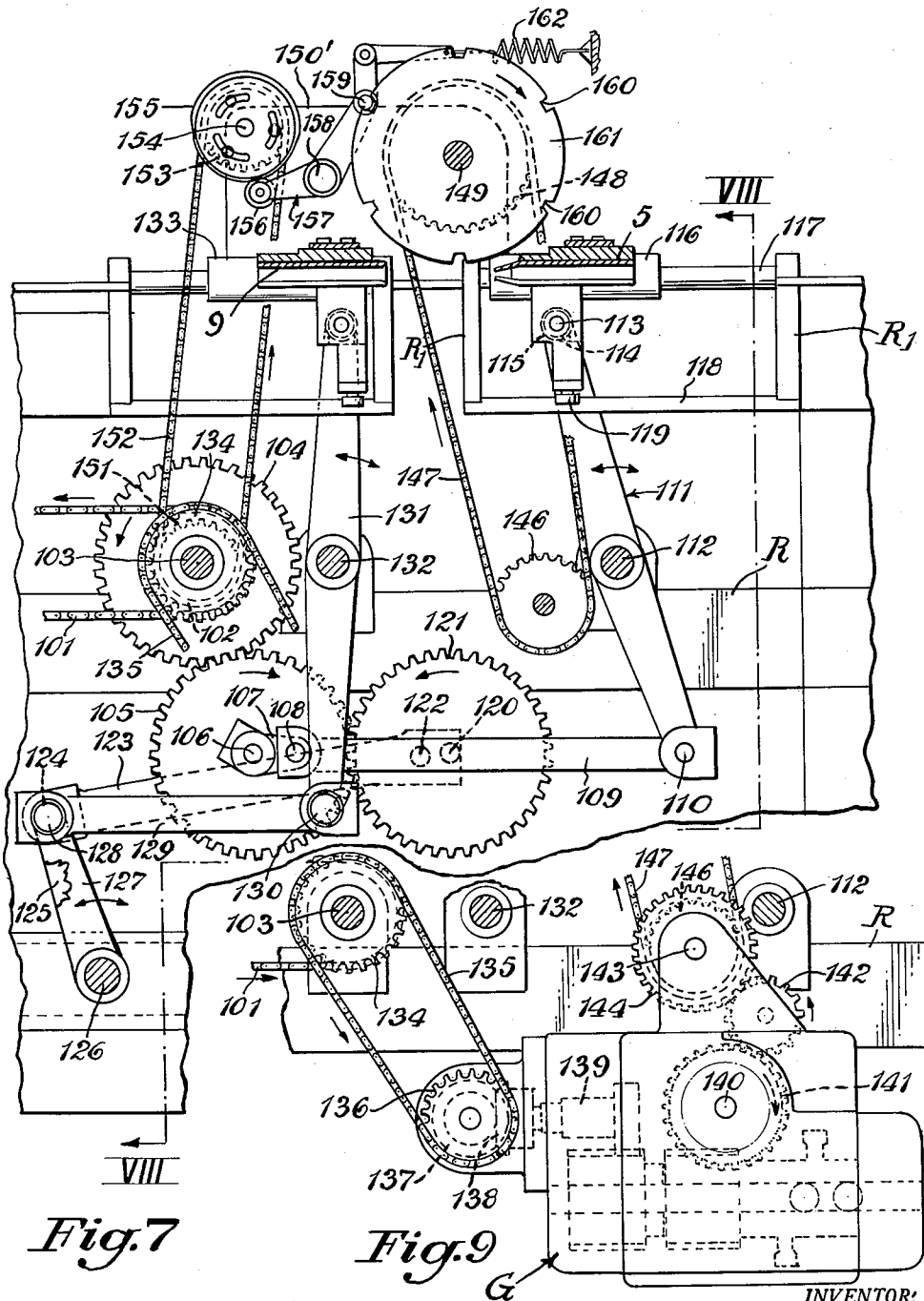


Fig. 7

Fig. 9

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APPARATUS FOR PACKING CIGARETTES AND OTHER ROD-LIKE ARTICLES

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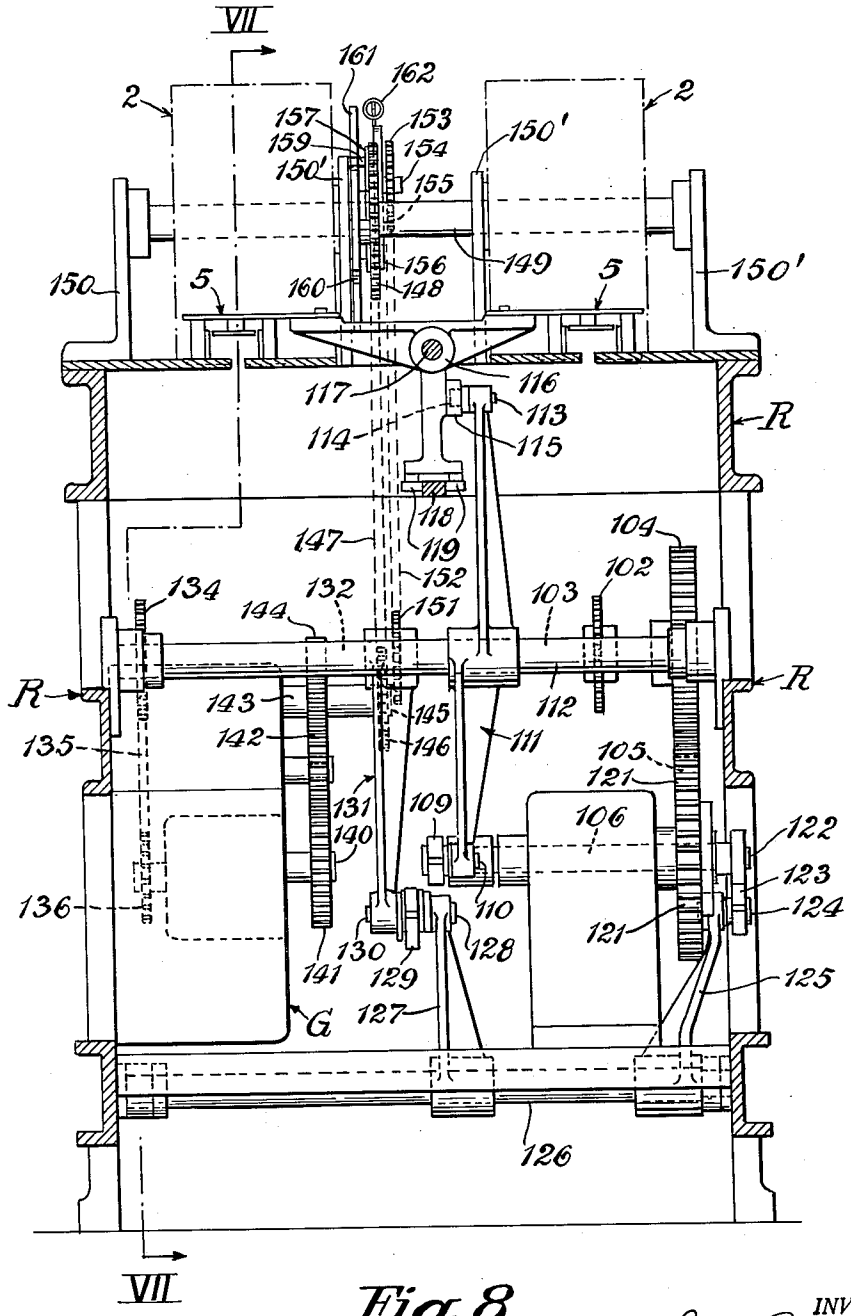


Fig. 8

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United States Patent Office 2,991,605 Patented July 11, 1961

2,991,605

APPARATUS FOR PACKING CIGARETTES AND OTHER ROD-LIKE ARTICLES

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Filed Dec. 23, 1958, Ser. No. 782,425
Claims priority, application Germany Dec. 28, 1957
20 Claims. (Cl. 53—252)

The present invention relates to apparatus for packing cigarettes and other rod-like articles in which packaging containers are fed by means of a turret or the like into a linear feeder track conveying the articles during packing, for example, cigarettes, with or without a foil or like wrapper. In particular the invention relates to that type of machine in which the containers are fed to the packing track in the form of open-ended containers or beaker-like packages which are withdrawn from a stack.

In the known packing machines of this kind the containers are delivered to guide surfaces on which they are stacked one over the other and are then caused to tilt through 90° into the plane of the packing track. This movement of the containers is, however, not positively controlled and has proved for a long time to be the critical point of such machines.

Moreover, the delivery of the material to be packed from the delivery guide means to the receiving guides or holders of the linear packing track leads to difficulties since the inclusion of the turret requires the provision of gaps in the linear packing track both on the receiving side and on the delivery side, and accordingly one object of the invention is to bridge these gaps by the provision of a pocket or cell for each gap which moves or can be moved backwards and forwards into the gaps of the packing track on both sides of the pockets or cells of the turret travelling into the packing track and which coincides with the pockets or cells and with the travelling track.

By the presence both of a receiving pocket and of a withdrawal pocket it becomes possible to perform the insertion of the articles from the delivery section into the turret and from the latter into the outgoing pocket in a reliable manner. In this case it has proved advisable to ensure that the mouthpiece of the receiving pocket or cell has already commenced to enter into the pocket or cell of the turret before the latter has stopped in its position coincident with the packing track. The invention therefore provides that the pockets or cells on the turret shall be rotatable and thereby permits the turrett to be used simultaneously for shaping the containers in their movement towards the linear packing track.

For example, open-ended hard containers for cigarettes have been suggested in which extension members of the wide and narrow sides, of the container are folded through 180° so as to lie in closely adjacent planes and so that the extension flaps are brought to lie internally against the associated wide or narrow sides of the container and thus stiffen the edge parts thereof in a desirable manner.

According to the invention further the rotatable pockets or cells of the turret are controlled by cams during the step-wise rotation of the rotary member in such manner that they come into coincidence with folder devices for folding in the edge flaps of the containers.

A device of this character and in accordance with the present invention is shown on the accompanying drawing as applied to apparatus for packing cigarettes in edge-stiffened open topped containers and wherein:

FIG. 1 shows part of a cigarette packing machine with the packing track, the turret, and the folder device for laying down the edges of the container.

FIG. 2 shows the folding devices for laying down the edges of the container after the folding-in operation and approximately in the forward position.

FIG. 3 shows the folding device for the narrower sides before engaging therewith.

FIG. 4 shows the folding device according to FIG. 3 approximately in the foremost position.

FIG. 5 shows a view of the rotary member on a larger scale than FIG. 1 and includes certain constructional features.

FIG. 6 is a view of the rotary member according to FIG. 5 in which the two halves are shown in different plane.

FIG. 7 shows the operating elements for the reciprocating movement of the delivery pocket and the receiving pocket and also shows the upper drive portion for the turret which is timed with the pockets and the arresting device for the turret, substantially in a sectional view taken along the line VII—VII of FIG. 8. For the sake of clearness the parts in front of the arresting disc and also the arresting mechanism have been omitted.

FIG. 8 shows the operating elements in a sectional view substantially along the line VIII—VIII of FIG. 7; and

FIG. 9 shows the lower drive portion of the turret with the arresting gearing similar to the sectional view VII—VII in FIG. 8.

It will be understood that the features shown and described herein are intended to form part of a cigarette handling or packing machine, and since the construction of such machines is well known in the art it has not been deemed necessary to show other machine details. It will suffice to say that a block consisting of a number of cigarettes to be packed in each container, is caused to travel in a packing track, the feed direction of which is indicated by the arrow **1**, and which is interrupted to allow for the turret **2**. The latter comprises pockets or cells **3**, which in turn co-operate with a folding plunger **4** inserting the part-formed containers into the pockets **3**. A supply pocket or cell **5** with mouthpiece **6** reciprocates backwards and forwards in the gap between guides **7** of the packing track and that pocket or cell **3** which is in line with the packing track, this being the pocket or cell in position IV thereof. There is provided a take-off pocket or cell **9** which is adapted to reciprocate between the pocket or cell **3** in position IV and guides **8** of the packing track. Displacement of the cigarettes is performed by a feed chain **10** which moves in a path which traverses the breaks in the packing track and driver elements **11** on the chain slide of the cigarette block, which may be wrapped in tinfoil, out of the guides **7** into the pocket **5**, through the pocket **5** into the pocket **3** in the position IV, through the pocket **3** to pick up the container therein, and into the pocket **9** and from the pocket **9** to a point between the guides **8**, after which the packed container is fed in known manner to a following working station.

As will be seen in the position I the pockets **3** are radially positioned and aligned with the plunger **4**. In the positions II and III the pockets **3** are arranged parallel one to the other and to the packing track and in these two positions the two pockets **3** co-operate with the two folder devices which are fastened to a slide member **14** reciprocating on a guide **13**. One folding device has a pair of folder blades **15** and **16** for laying down the wider edges of the part-formed container in the pocket **3** in the position II, and the other folder device includes two folder blades **17** and **18** (see also FIGS. 3 and 4) for laying down the two narrower sides, which is effected in the position III of the pocket **3**. The folding blade **15** is rigidly connected with the slider **14** while the folder blades **16, 17** and **18** are rotatable in bearings **19, 20, 21** arranged in the slider **14** and execute a controlled move-

ment during the reciprocation of the slider **14**. The control of this movement is effected by a rotatably mounted roller **22** on each of the folders **16**, **17** and **18** and which co-operate respectively with cam tracks **23** or **24**.

The plunger **4**, the rotary member **2** and the folder devices co-operate as follows:

The blank, in the present case intended for a stiff open-top package, is folded by the plunger **4** to provide an open, part-formed package by means not shown but well known in the art, and this is inserted into the pocket **3** in the position I. Then the turret **2** moves one step forward. As will be seen from the various positions of the pockets 3 the movement of them is so controlled that they adopt in each case the desired relative position to the turret **2** or to the parts with which they are to co-operate. This control will be explained below.

In the movement from position I to position II the pocket 3 is moved in such manner that it moves from its radial position to a position parallel to the packing track and to the reciprocatory movement of the slider **14**. It is thus moved through an angle of 90° relatively to the pocket 3 in the I position. Shortly before the end of this feed step the bottom wide flap **25** (see also FIG. 2) is brought into engagement with the folder blade **15** and during the further movement of the pocket **3** is folded inwardly. After the stoppage of the turret **2** the slider **14** moves towards the turret, and the folder **16**, controlled by the roller **22** and the cam track **23**, engages the top wider flap **26** and folds this inwardly during the travel of the roller **22** over the arcuate part **23***a* of the cam element **23**. The folder **15** has simultaneously folded in the inwardly part-folded flap **25** further. This successive folding is necessary in order that the flaps **25** and **26** shall not meet one another in the course of folding. Upon the further movement of the slide member **14** the blades **25** and **26** are pressed against the inner walls of the associated sides of the container. Then the slider member with the folder means again move out of the pocket **3** and the latter moves from its position II to the position III but so that their parallel positions to the conveyor track are retained.

In the position III the narrower flaps **27** and **28** are folded in by the folder blades **17** and **18** as shown in FIG. 3 and in the same way as already described during the movement of the slider member **14**. This folding in can in this case be effected simultaneously since the narrower side flaps **27** and **28** do not conflict in their movement. As already described for the folder blades **16**, the folder blades **17** and **18** operate during the forward movement of the slider **14** while traversing the arcuate parts **24***a* of the cam element **24** and thus fold the flaps **27** and **28** inwardly during the further movement of the rollers **22** against the straight part **24***b* of the cam track **24** to press them against the inner walls of the narrower side of the container as is shown in FIG. 4.

The pocket **3** is then brought into the position IV after the outward movement of the slider **14**, in which the container located in it is coincident with the means **7** and **8** guiding the cigarette block, and with the inner walls of the supply pocket **5** as well as the take-off pocket **9**. During the movement of the pocket **3** into the position IV the supply pocket **5**, into which the tinfoil covered block has been inserted preliminarily by the chain hooks **11**, travels from the position indicated in chain dot lines together with the chain hook **11** towards the pocket **3** moving into the position IV.

Since very little time is available the moving of the pocket from position III to position IV is so controlled that its front bottom edge has already moved into the lower plane of the packing track **1** before stoppage in the position IV so that the mouthpiece **6** can be inserted into the pocket already during the movement of the pocket **3** to its position IV. After stoppage of the pocket **3** in the position IV the supply pocket **5** with the mouthpiece **6** is located in the position shown in full lines in engagement with the pocket **3** arranged now in the travelling track. Since the chain **10** is continuously moving the cigarette block has already been fed through the pocket **5** with a reduction in the speed of movement of the supply pocket **5** and thereafter is slid into the container in the pocket **3**. On the further movement of the chain hook **11** this slides the hard container into the withdrawal pocket **9** located on the other side of the pocket **3** (position shown in full lines on the drawings). As soon as the hard container has been moved sufficiently far forward by the chain hooks (in general not completely) the withdrawal pocket **9**, the hard container and the chain hook **11** (shown in the dotted position) move in the direction towards the guides **8** and, correspondingly to the speed difference between the pockets **9** and the chain hooks **11**, a relative movement is effected between them and thus a displacement of the hard container within the pocket. The movement of the pocket **9** ends in the position shown in chain dot lines. The chain hooks **11** feed the filled pocket between the guides **8** and deliver them to the following treatment station. Any appropriate means may be provided for moving the pockets **5** and **9**; they may be positively driven or they may be freely mounted and subjected to the action of springs tending to return them to the starting positions after they have been moved to the delivery position (for each of them) by engagement with the cigarette block within them.

FIGS. 5 and 6 show an embodiment of the control of the pockets **3** during the rotation of the turret **2**. Each pocket **3** is secured to a holder **30**. At both ends of the holder **30** are provided stub shafts **31** (see FIG. 6 top) and **45** (see FIG. 5 bottom), which are rotatable in bearings **32** and **43**. A gear wheel **33** is fastened to the free end of the stub shaft **31** nearest the machine frame, which engages a toothed segment **34** fastened to a lever **35** rotatably by a support shaft **36** in a bearing **37**. A bearing pin **35** is secured to the free end of the lever **35** and a guide roller **39** is rotatably mounted thereon, which moves between the two cam surfaces of an internal cam track **40** which is so designed that it moves the pockets **3** in the manner already described through the control means referred to. The bearing **32** in which the stub shaft **31** is guided is arranged in a disc **41** and the pockets **3** are arranged between this disc and a star-shaped support member **42**. The latter serves as a bearing plate for the bearings **43** in which the other stub shafts **45** of the holders **30** are mounted.

When folding in the flaps **25**, **26**, **27**, **28** according to FIGS. 2 and 3, it is necessary to support the bottom of the packet. This is effected by means of projections **46** (see FIG. 5) which are secured to adjustable levers **47** which in turn are pivotal on bearing pins **48**. A compression spring **49** engages the other side of the lever **47** approximately in the direction of the projection **46** and which is supported at its other end against a projection **50** fastened to the holder **30**.

Furthermore, a control arm **51** is secured to the lever **47** which is arranged approximately radially and co-operates with a stop pin **52** mounted in a slot **12** of the star-shaped member **42** so that each pin **52** can be adjustably fastened therein for setting up purposes. By the varying relative positions between the pockets **3** or the control lever **51** and the star-shaped support member **42** or the stop pins **52**, the projection **46**, which in the positions I, II and III engages over the rear upper end **3***a* of the pocket **3**, serves in the position IV to tip it upwardly by the engagement of the control lever **51** with the respective stop pin **52** so that the packet can be slid out of the pocket **3**.

As already stated the time available for the various necessary steps of movement in the region of the packing track is comparatively short. For these reasons and as already explained, provision is made that the mouthpiece **6** has already entered the pocket **3** towards the end of the movement thereof. As shown, particularly in

FIG. 5, the rear end of the pocket **3** is cut away except for the top guide **3***a*. By this construction of the pocket it is possible to move the turret further as soon as the package has left the pocket bottom **3***b*, and the chain hook **11** permits this to be done.

If the plunger **4** becomes jammed in the pocket **3** the plunger **4** is no longer actuated by its drive as is known and it is, therefore, necessary immediately to stop the drive of the turret. This is conveniently effected by means of a controlled clutch which is interposed between the driving and driven sections of the drive system for the turret. In order to minimize the liability to jamming occuring a control device is conveniently included in the sheet feed means for the wrapper material which stops the machine if two wrappers simultaneously are inserted into the folder box.

In the following will be described the parts of a drive mechanism which relates to a double track embodiment of the packing machine which is diagrammatically illustrated in the FIGS. 1–6 and in which with reference to the description of the operation in connection with FIGS. 1–6 a similar operation takes place on two parallel arranged packing tracks.

The FIGS. 7, 8 and 9 show the parts of the drive mechanism for the reciprocating movement of the delivery pocket **5** and the receiving pocket **9**, the drive for the turret **2** and its arresting device. A motor not illustrated, drives by means of a reduction gearing a chain **101** and the latter drives a sprocket wheel **102** which rotates the main shaft **103** mounted in the machine frame R.

Drive of the pocket 5

A gear **104** secured to the main shaft **103** drives a gear **105** secured to a shaft **106**. At the other end of the shaft **106** is secured a crank arm **107** which carries a crank pin **108** and the latter by means of a rod **109** is connected with a pivot pin **110** on a double armed lever **111**, which lever is secured on a shaft **112** rotatably supported in the machine frame R. The lever **111** therefore is caused to oscillate back and forth about the axis of the shaft **112**. The free end of the lever **111** carries on a pin **113** a slidable element, for instance a needle bearing **114** which is moveable in a guide **115** of a carriage **116** and transfers the oscillating movement of the lever **111** to the carriage **116** moveable in a straight line in the direction of the packing track. The delivery pocket **5** is attached to the carriage **116** and, of course, the size of the delivery pocket **5** is selected to corresponded to the desired size of the package. The guidance of the carriage **116** takes place by means of a rod **117** slidable supported in the upper portion of the carriage **116** and by means of a rail **118** which is engaged by rollers **119** mounted on the lower portion of the carriage **116**. The rod **117** and the rail **118** are attached to the machine frame R_1.

Drive of the pocket 9

The gear **105** drives in addition to the crank arm **107** a gear **121** which is rotatably mounted on a pin **120**. The gear **121** by means of a crank pin **122** attached hereto and a rod **123**, a pivot pin **124** and a lever arm **125** rotate a shaft **126** back and forth. The shaft **126** is supported in the machine frame R and has secured thereto another lever **127** which by means of a pivot pin **128** and a rod **129** and a pivot pin **130** oscillates a double armed lever **131**. The lever **131** is secured on a shaft **132** supported in the machine frame R. The lever **131** is oscillating about the axis of the shaft **132** and in doing so, operates a carriage **133** in a straight horizontal line. The carriage **133** has attached hereto the receiving pocket **9**, the size of which is selected in accordance with the size of the packing. The pocket **9** therefore is moved in a straight line in the packing track. The connection of the lever **131** with the carriage **133** and the guidance of the carriage **133** are constructed in the same manner as the ones described for the carriage **116**.

Drive of the turret 2

The already mentioned driven main shaft **103** has also secured thereto a sprocket wheel **134** in addition to the mentioned gear **104**. The sprocket wheel **134** drives uniformely by means of a chain **135** a sprocket wheel **136**, bevel gears **137**, **138**, and the shaft **139** an arresting gearing G of known construction. The arresting gearing G co-operates with two worm gears which are in continuous engagement with each other and of which the drive gear by means of a cam is axially displaced, in order to transmit on one hand a rotative movement to the other worm gear or on the other hand brings said other gear to a stop. The driven shaft **140** and the gear **141** perform at each time a single rotative movement about an angle of 160°, followed by a stoppage. The gear **141** drives by means of an intermediate gear **142** a gear **144** secured to the shaft **143** and, therefore, the gear **144** is intermittently driven. On the outer end **145** of the shaft **143** is secured a sprocket wheel **146** which by means of a chain **147** and a sprocket wheel **148** rotates a shaft **149** which has the turret **2** fixedly secured thereto so that during each operating phase the turret **2** performs a rotation of 60°. The shaft **149** is rotatably mounted in bearing blocks **150** and **150'** which are secured to the machine frame R.

Arresting device for the turret 2

For a correct arresting of the turret **2** after each rotative movement through an angle of 60° there is secured to the main shaft **103** a sprocket wheel **151** which by means of a chain **152**, a sprocket wheel **153** and a shaft **154** mounted in the bearing block **150'** drives an adjustable cam disc **155**. The cam disc **155** is engaged by a roller **156** on the two armed lever **157** and therefor the latter is oscillated in step with the machine about a bearing pin **158** attached to the bearing block **150'**. On the free end of the lever **157** is attached a locking pawl **159** and on an extension of this free arm of the lever **157** is attached one end of the tension spring **162**, the other end of which is attached to the machine frame. This pawl **159** is controlled by the cam disc **155** and engages, when the turret **2** has stopped, a recess **160** in a disc **161** which is secured on the turret shaft **149**.

What I claim is:

1. Apparatus including a linear feed track having a gap and a turret adjacent said gap for inserting groups of rod-like articles into open-ended containers carried by said turret in which the articles are fed to said linear feed track and the containers are presented into said track by a step by step movement of said turret, comprising movable cell-like members adapted to reciprocate in the gap on each said of the turret in a direction coincident with the linear track so as to receive articles from said track, to feed them into the container carried by said turret, to receive containers and articles leaving said turret and to feed them for continuing movement in said linear track.

2. Apparatus for inserting groups of rod-like articles into open-ended containers, comprising a linear feed track having a gap, a turret adjacent said gap on which the containers are fed to said linear feed track and the containers are presented into said track by means of said turret for receiving said articles, first and second reciprocable cell-like members adapted to reciprocate in the gap on the two sides of the turret in a direction coincident with the linear track, the first cell-like member receiving articles from said track and feeding them into the container carried by said turret, and the second cell-like member receiving articles leaving said turret in containers and feeding them for continuing movement in said linear track.

3. Apparatus for packing rod-like articles in open-ended containers comprising a linear feed track for such

articles with a discontinuity, a rotary turret positioned tangentially to said track adjacent the discontinuity, cell elements on said turret housing open-ended containers and presenting them in alignment with the linear track of said articles, a reciprocable cell movable between one end of the linear track at said discontinuity and the cell of the turret coinciding with the linear track, and a further reciprocable cell positioned oppositely to the first named reciprocable cell and receiving an assembly of articles delivered from said turret cell together with a container surrounding them and moving up to the other end of the discontinuity in the linear track to deliver the articles and the container enclosing them into said track for further handling.

4. Apparatus according to claim 3 wherein the rotary turret comprises cell elements movable in a rotary path and means to move said elements from a first radial position for receiving part-formed containers, towards a second, tangential position, where said elements are coincident with the line of the linear track, whereby assemblies of articles can be fed into a container held in said element in said second position and the articles together with the container can then be delivered into the second reciprocable cell for delivery into the linear track.

5. Apparatus according to claim 4 comprising cam-operated means for effecting rotation of the cell elements sequentially from the first position to the second position and means for completing folding operations upon the part-formed container in transit from the first position to the second position.

6. Apparatus according to claim 5 wherein said cam-operated means move the cell element with the part-formed container therein from the first position to intermediate positions parallel to the linear track and in the further movement of said turret said cell elements rotate relatively to the turret so as to remain parallel to the linear track up to the second position where the cell element comes into line with the linear track.

7. Apparatus according to claim 6 comprising folder blades and means for actuating them towards and away from the cell elements to effect inward folding of top flap portions of the container to form a stiffened top edge portion thereof, said blades being operative over successive intermediate positions while the cell elements are positioned parallel to the linear track.

8. Apparatus for packing rod-like articles comprising a linear feed track for the articles including a discontinuity therein, spaced end plates forming a rotary turret positioned tangential to said linear track at said discontinuity, first and second reciprocable cells moving in the line of said linear track on each side of the position occupied by the rotary turret, means to effect intermittent stepwise rotation of the turret, a plurality of displaceable cell elements mounted between said end plates, means to insert part-formed containers into said cell elements in a first position diametrically opposite the linear feed track, means to rotate the cell elements successively in the stepwise rotation of the turret from the first radial position to two successive intermediate positions, both parallel to the linear track, and to a position still parallel to the linear track but coincident therewith, means operative in said two intermediate positions to effect successive folding of projecting flap elements successively on the wider sides and on the narrower sides of the mouth edge of the container held in the cell element, means operative in said linear track to feed articles along said track, then into the first reciprocable cell and thence into that cell element of the rotary turret which coincides with the feedtrack, thence in continuing movement of said feeder means into the second reciprocable cell and then, with the reciprocation thereof, into the continuing part of the linear track.

9. Apparatus for packing rod-like articles comprising a linear feed track for the articles having mutually spaced aligned sections, a rotary turret positioned tangential to said linear track between said sections, reciprocable cell elements moving in the line of said linear track on each side of the position occupied by the rotary turret, means to effect intermediate stepwise rotation of the rotary turret, a plurality of displaceable cell elements mounted on said turret, cam followers to effect rotation of said cell elements in co-relation with the rotation of the turret, a fixed cam engaged by said followers, means to insert part-formed containers into said cell elements in a first position diametrically opposite the linear feed track, said cam being designed to rotate the cell elements successively in the stepwise rotation of the turret from the first radial position to successive intermediate positions parallel to the linear track and to a position still parallel to the linear track but coincident therewith, means operative in said two intermediate positions to effect successive folding of opposed projecting flap elements successively on the wider sides and then on the narrower sides of the edge of the container held in the cell element, linearly moving feeder means operative in said linear track to feed articles along said track, then into a first reciprocable cell, thence into that cell element of the rotary turret which coincides with the feed track, thence in continuing movement of said feeder means into the second reciprocable cell and thence, with the reciprocation thereof, into the continuing part of the linear track.

10. Apparatus for packing rod-like articles in open-ended containers comprising a linear feed track for such articles with a discontinuity, a rotary turret positioned tangentially to said track adjacent the discontinuity, cell elements on said turret housing open-ended containers and presenting them in alignment with the linear track of said articles, a reciprocable cell movable between one end of the linear track at said discontinuity and the cell of the turret coinciding with the linear track, a further reciprocable cell and receiving an assembly of articles delivered from said turret cell together with a container surrounding them and moving up to the other end of the discontinuity in the linear track to deliver the articles and the container enclosing them into said track for further handling, and means for rotating said turret step by step and locking it in position after each rotative step, said means including a circular disc provided with recesses at its circumference and fixedly connected to said turret in coaxially relation, a locking pawl adapted to engage said recesses, a pivotally mounted lever having said locking pawl attached theerto, and rotatable cam means in operative engagement with said pivotally mounted lever and adapted to operate the same so as to disengage said locking pawl from said recesses in said circular disc.

11. Apparatus for packing rod-like articles in open-ended containers comprising a linear feed track for such articles with a discontinuity, a rotary turret positioned tangentially to said track adjacent the discontinuity, cell elements on said turret housing open-ended containers and presenting them in alignment with the linear track of said articles, a reciprocable cell movable between one end of the linear track at said discontinuity and the cell of the turret coinciding with the linear track, a further reciprocable cell and receiving an assembly of articles delivered from said turret cell together with a container surrounding them and moving up to the other end of the discontinuity in the linear track to deliver the articles and the container enclosing them into said track for further handling, and means for rotating said turret step by step and locking it in position after each rotative step, said means including a circular disc provided with recesses at its circumference and fixedly connected to said turret in coaxially relation, a locking pawl adapted to engage said recesses, a pivotally mounted lever having said locking pawl attached thereto, and rotatable cam means in operative engagement with said pivotally

mounted lever and adapted to operate the same so as to disengage said locking pawl from said recesses in said circular disc, said cam means being provided with an adjustable cam for varying its action upon said pivotally mounted lever, and means for urging said lever and the locking pawl thereon toward its operative engagement with said circular disc.

12. In an apparatus for packing cigarettes in containers, comprising a rotary member, cell elements mounted on said rotary member for movement from a radial position to a tangential position with respect to said rotary member, a linear packing track having gaps, said packing track being arranged for conveying the articles to be packed and to receive containers from the cells of said rotary member, and reciprocating cell elements in the gaps in the packing track on both sides of the cell elements in the rotary member movable in the same direction with the packing track, the reciprocating cell elements on each side of the cell elements carried by the rotary member being arranged to coincide with the cell elements carried by said rotary member when said cell elements are in their tangential position and aligned with the packing track.

13. An apparatus according to claim 12 in which the reciprocating cell elements at each end of the rotary cell element are positioned in line with the packing track and arranged to move in opposite directions toward and away from the cell member carried by the rotary member.

14. An apparatus according to claim 12 in which the cell elements of the rotary member are rotatably mounted on the rotary member and controlled in the course of their movement on entering the packing track such that a mouthpiece of the cell on the entry side of the packing track will enter the cell of the rotary member before the latter has stopped in a position coincident with the packing track.

15. An apparatus according to claim 14 in which rotation of the cell elements of the rotary member are controlled so that they assume working position which are initially radial and thereafter in positions tangential to the rotary member and parallel to the packing track.

16. An apparatus according to claim 15 in which a feeder device is arranged adjacent the rotary element for inserting partly formed container blanks into the cell elements of the rotary member, and a plunger movable in

said feeder device for feeding said container blanks into the cell elements of said rotary member.

17. An apparatus according to claim 15 in which folder means are arranged adjacent to the rotary member to operate in parallel relation to one another and to the packing track.

18. An apparatus according to claim 17 characterized in that the folder means includes folding elements for folding in and letting down the wide and narrow edges of the containers, and means for reciprocating said folder elements.

19. An apparatus according to claim 12 characterized in that the cell elements carried by the rotary member are provided with shortened side walls and include a projecting portion on the cover side, abutments engageable with the bottom of the containers carried by the cell elements of the rotary member, stop and lever means on said rotary member for moving said abutments out of engagement with the containers, and means for controlling said stop and lever means.

20. In an apparatus for packaging articles in containers, a packing track having a gap, an article feeder on said track, a receiver on said track in spaced relation from said feeder, a rotary member adjacent said packing track, a series of circumferentially spaced cell members on said rotary member, means for moving said rotary member into said gap from a position in which the cell member extends radially to a position in which the cell member is substantially tangential to said rotary member and extends in alignment with said packing track between said feeder and receiver, and a pusher movable in a direction longitudinally of said track for discharging articles from said feeder into a container carried by one of said cell members when the same is positioned in said gap and to displace the container and articles from said cell member into said receiver.

References Cited in the file of this patent

UNITED STATES PATENTS

665,241	Ludington	Jan. 1, 1901
1,125,331	Jagemnerg	Jan. 19, 1915
1,525,169	DeLeers	Feb. 3, 1925
1,932,052	Stocks	Oct. 24, 1933
2,512,922	Dearsley	June 27, 1950
2,870,584	Sherrill	Jan. 27, 1959