Oct. 4, 1955 B. A. WITTKUHNS ET AL 2,719,467

WINDING MECHANISM FOR PAPER CONTAINER MAKING MACHINES

Original Filed April 26, 1951 5 Sheets-Sheet 1

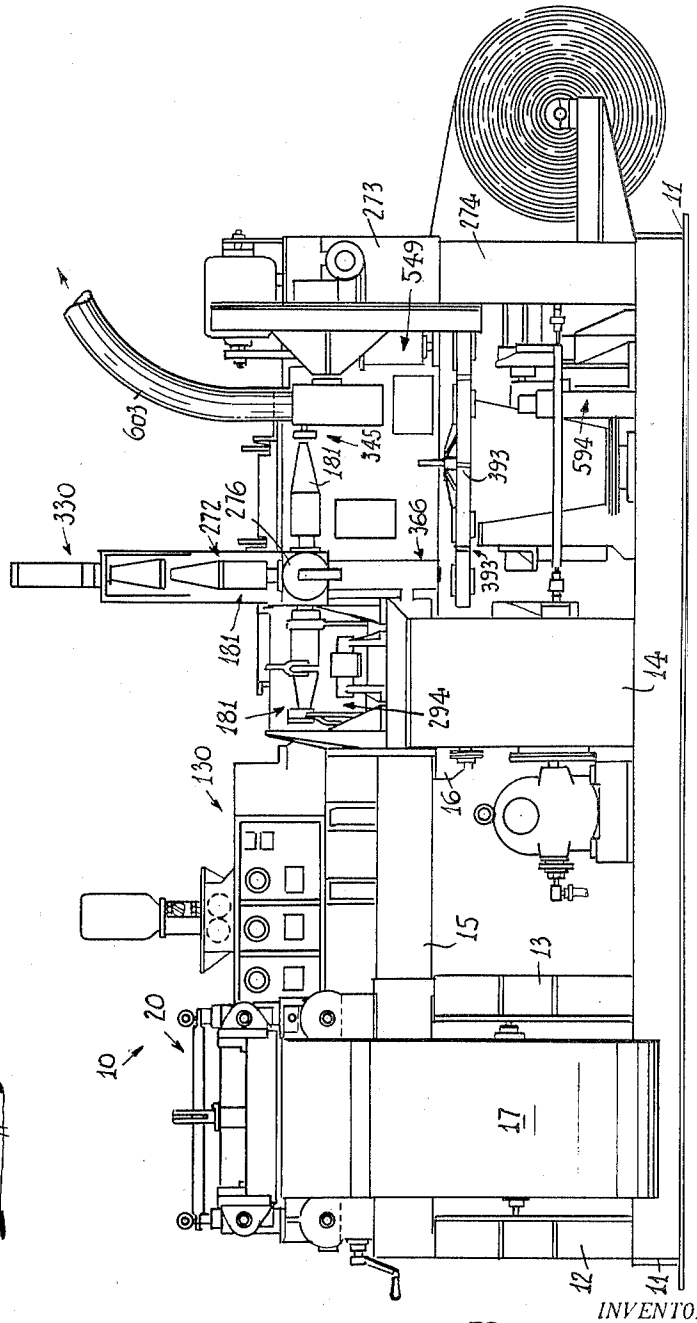


Fig. 1.

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Original Filed April 26, 1951 5 Sheets-Sheet 2

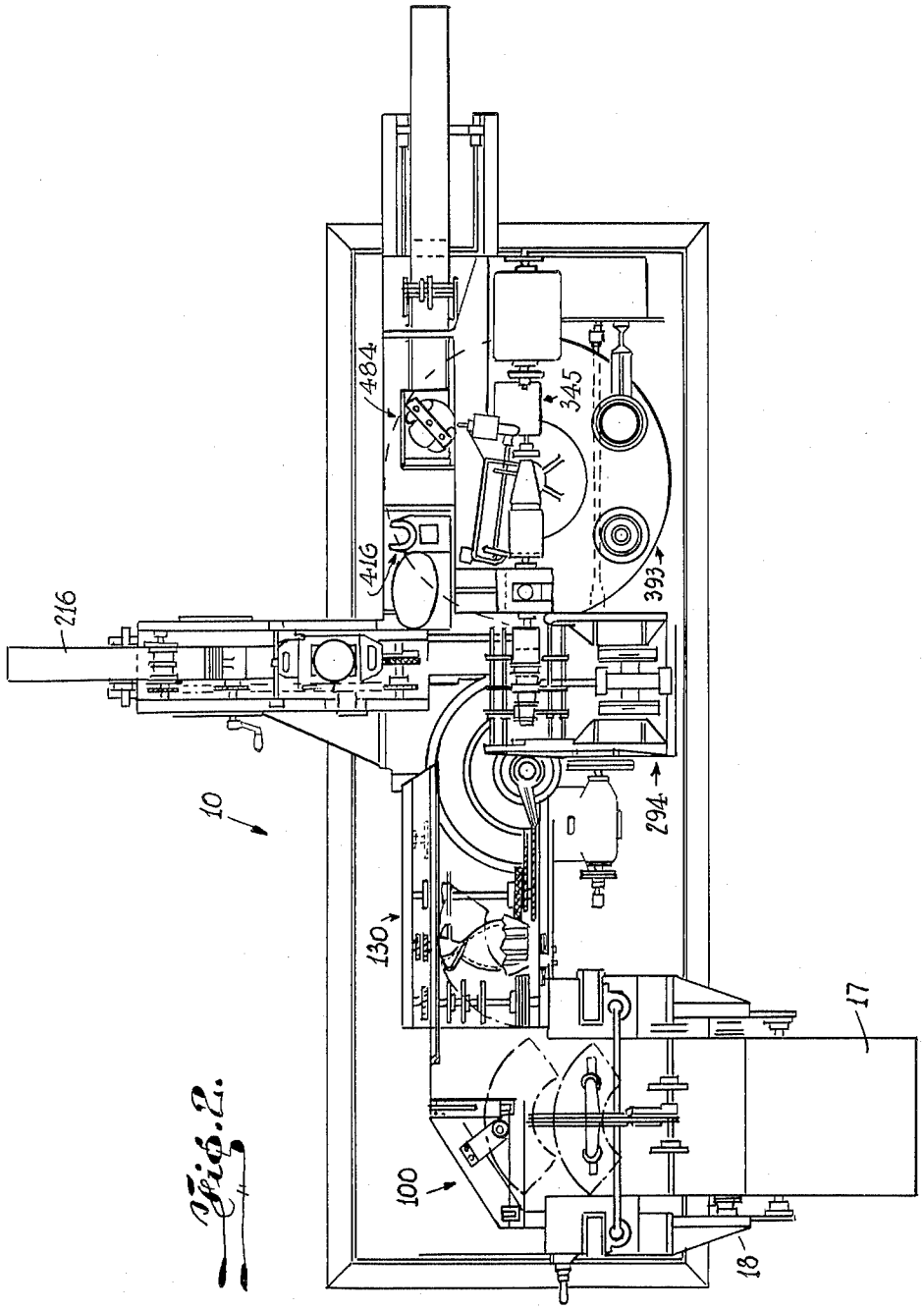


Fig. 2.

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Original Filed April 26, 1951 5 Sheets-Sheet 3

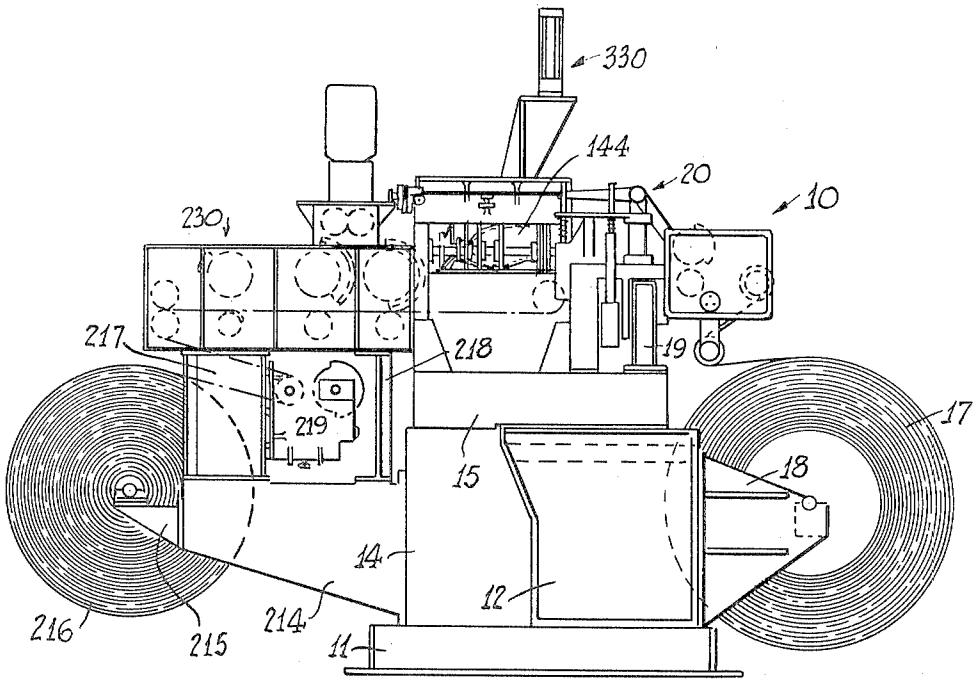


Fig. 3.

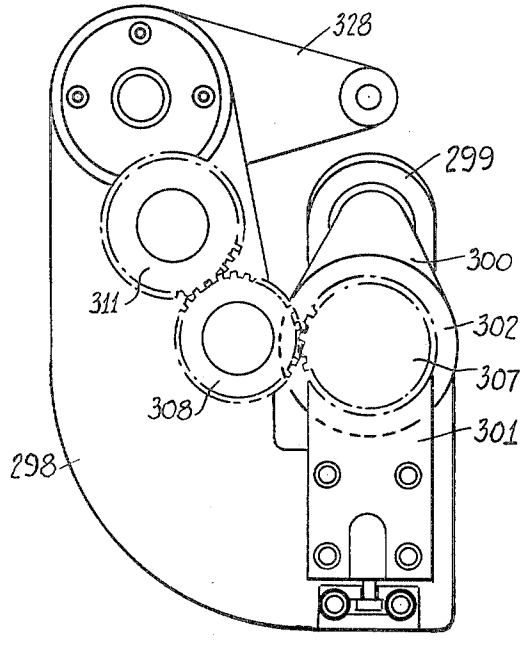


Fig. 9.

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WINDING MECHANISM FOR PAPER CONTAINER MAKING MACHINES

Original Filed April 26, 1951 5 Sheets-Sheet 4

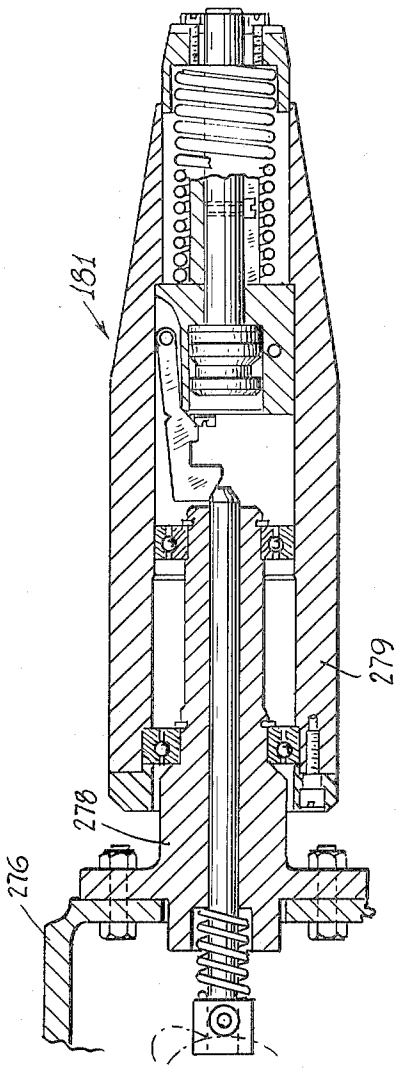


Fig. 4.

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WINDING MECHANISM FOR PAPER CONTAINER MAKING MACHINES

Original Filed April 26, 1951 5 Sheets-Sheet 5

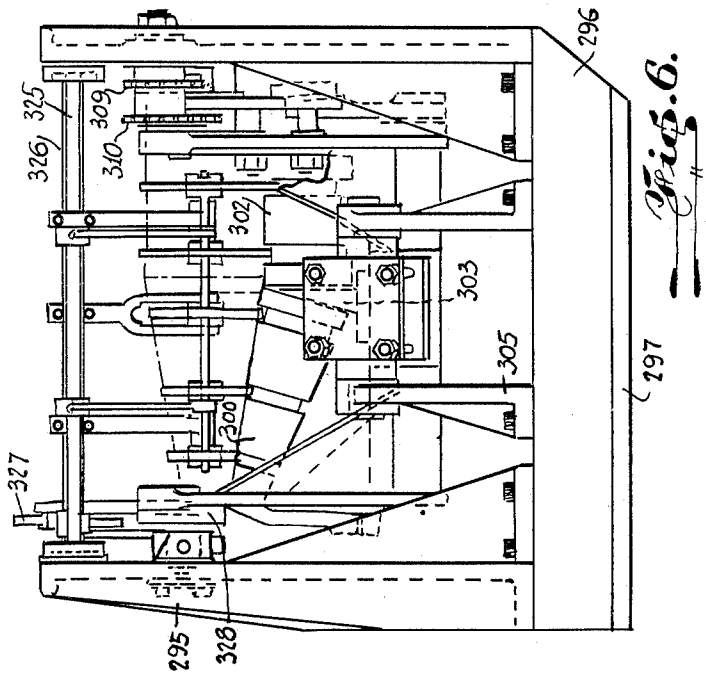


Fig. 6.

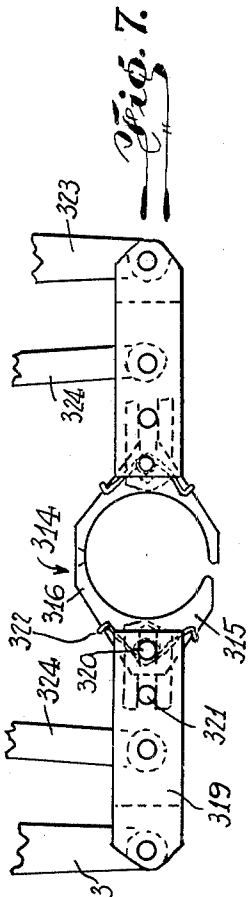


Fig. 7.

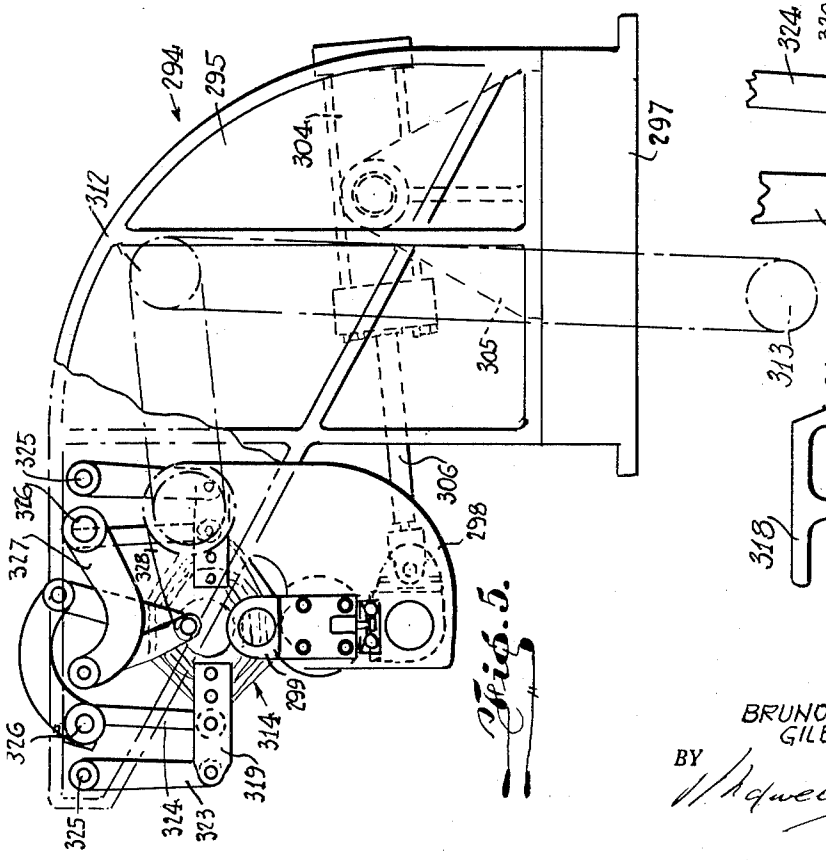


Fig. 5.

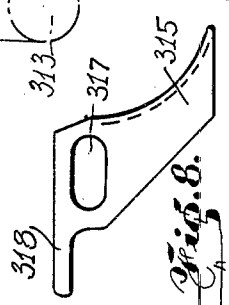


Fig. 8.

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United States Patent Office

2,719,467

Patented Oct. 4, 1955

2,719,467

WINDING MECHANISM FOR PAPER CONTAINER MAKING MACHINES

Bruno A. Wittkuhns, Summit, and Gilbert F. Hill, Madison, N. J., assignors to National Paper Bottle Co., Inc., New York, N. Y., a corporation of New York

Original application April 26, 1951, Serial No. 223,011. Divided and this application June 19, 1953, Serial No. 370,772

6 Claims. (Cl. 93—81)

The present invention relates generally to machines for making paper containers, and more particularly is directed to improved mechanism for effecting the winding of paper blanks upon a mandrel to form a container body in machines of the described character, and is a division of our copending and prior filed application, Serial No. 223,011, filed April 26, 1951, for Machine for Making Paper Containers.

Paper containers have, prior to this invention, been made in various shapes and forms for holding milk, fruit juices and other liquid or free flowing materials. Certain of these previous paper containers have been formed to the general shape of glass bottles, that is, a shape or form including a cylindrical lower portion and a truncated conical, contiguous neck portion. Paper containers having the described shape are particularly desirable and convenient for the packaging and transportation or delivery of milk and other liquid products since such containers are suited for filling on existing standard glass bottle filling equipment and may be conveniently grasped and carried at the truncated neck portion thereof.

As shown in the co-pending applications of Bruno A. Wittkuhns, H. George D. Nutting and Gilbert F. Hill, Serial No. 85,781, filed April 6, 1949, now Patent No. 2,642,785; Serial No. 85,782, filed April 6, 1949, now Patent No. 2,642,784; and Serial No. 85,783, filed April 6, 1949, now Patent No. 2,674,929, paper containers simulating the shape of glass bottles may each be formed from a rectangular blank and a curved blank, cut from respective continuous webs or strips of paper, and paired for winding together into a container body of double-ply construction, with the curved blank providing the truncated conical neck portion of the body and being interleavened during the winding operation with the rectangular blank which forms the cylindrical portion in a manner to form a mid-sectional joint. The paper plies forming the container body are bonded together by an adhesive layer sandwiched therebetween, and the contracted end of the neck portion is spun over and shaped to form a reinforced mouth at that end of the container body for supporting and retaining a removable closure, while the large or bottom end of the container body is closed by a bottom disc having a depending marginal skirt which is spun inwardly together with the adjacent end portion of the container body to form a rolled bead sealing the bottom of the container body and providing a reinforced supporting base. In order to stiffen or strengthen the neck portion and to shape it for closely simulating the corresponding part of a glass bottle, the neck portion is formed with a plurality of longitudinal flutes extending from above the midsectional seam to the reinforced mouth.

A machine of the kind to which the present invention relates may comprise a first blank preparing assembly for successively cutting curved or arcuate blanks from a continuous web or strip of paper, for separating the cut arcuate blanks from the remainder or waste of the paper web or strip, and for applying adhesive to suitable areas

of each arcuate blank and crimping the trailing end portion of the blank as the latter is fed or transported to a winding station; and a second blank preparing assembly, operating in synchronism with the first blank preparing assembly, for applying printed matter to a continuous web or strip of paper at suitably spaced locations along the length thereof, for successively cutting the printed web or strip along spaced transverse lines to provide rectangular blanks and simultaneously crimping the trailing end portion of each rectangular blank, and for applying adhesive to a suitable area of each rectangular blank while feeding or transporting such blank to the winding station in paired relation to a corresponding arcuate blank. Such a machine further includes a first mandrel supporting conveyor, preferably in the form of a turret, which is indexed periodically and in synchronism with the first and second blank preparing assemblies to carry the plurality of mandrels successively to and from dwelling position at a plurality of operating stations disposed at spaced apart locations along the path of travel of the mandrels, as defined by the movement of the turret. These operating stations in the order in which they are arranged include the winding station at which devices embodying the present invention are located for winding each pair of arcuate and rectangular blanks fed thereto onto the mandrel then in dwelling position at the winding station to form a wound container body on the mandrel; a pressing station having a device located thereat for pressing the wound container body on the mandrel in dwelling position at the pressing station to compress the midsectional seam and the longitudinal seam of the truncated conical portion of the container body and thus provide a secure bond; a mouth spinning station at which devices are located for spinning engagement with the contracted end of the container body on the mandrel in dwelling position at the spinning station to form a reinforcing rolled bead at the mouth of the container body; and a stripping station at which devices are located for removing the container body axially from the mandrel in dwelling position at the stripping station. In order to facilitate the spinning operations which form the reinforcing beads at the mouth end and base end of the container body and to prevent burning of the latter during such operations, a paraffin applying unit is arranged adjacent the path of travel of the mandrels, between the pressing and mouth spinning stations, for depositing small quantities of paraffin onto each container body, adjacent the opposite ends thereof, as the supporting mandrel is being indexed to the mouth spinning station. Each machine of the described character still further includes a second conveyor, preferably in the form of a turntable, which carries a series of container body receiving cells successively to and from dwelling position at a plurality of operating stations arranged at spaced apart locations along the path of travel of the cells, as defined by the movement of the turntable. The operating stations associated with the cell carrying turntable, in the order in which they are arranged, include a loading station aligned with the stripping station associated with the turret so that a cell dwelling at the loading station is in position to receive a container body as the latter is removed from its supporting mandrel; a fluting, mouth shaping and glue applying station at which devices are located for simultaneously forming longitudinal flutes in the neck portion of the container body in the cell dwelling at the related station, initially shaping the bead at the mouth of that container body so that a removable closure will be retained therein, and applying glue to the inner surface of that container body adjacent the base end thereof; a bottom punching and inserting station at which devices are located for punching circular blanks from a continuous web or strip of paper, forming each circular blank into

a bottom member of cup-like configuration and inserting the formed blank into the bottom end of the container body in the cell dwelling at the bottom punching and inserting station so that the skirt or marginal wall portion of the bottom member engages against the band of adhesive applied to the container body at the preceding station, and for completing the shaping of the bead at the mouth of the container body in the cell dwelling at the bottom punching and inserting station; a bottom spinning station at which devices are located for spinning engagement with the bottom end of the container body to roll the bottom end portion together with the skirt of the bottom member inwardly thus sealing the bottom of the container body and forming a reinforcing and supporting base for the container body, and for supporting the bottom member in position within the container body carried by the cell dwelling at the bottom spinning station during the performance of the bottom spinning operation; and an ejecting station at which devices are located for pneumatically removing the container body from the cell dwelling at the ejecting station.

A general object of the present invention is to provide a machine of the described character capable of producing paper containers automatically, economically and without imperfections at high production speeds.

A specific object of the present invention is to provide improved devices at the winding station of a machine of the described character for effecting rotation of the mandrel during residence of the latter at the winding station and for guiding the paired arcuate and rectangular blanks fed to said station around the rotated mandrel to form a wound container body on the latter.

Another specific object of the present invention is to provide a machine of the described character having improved devices located at the winding station to move out of the path of travel of the mandrels during indexing of the latter to and from the winding station and to move into engagement with a pair of arcuate and rectangular blanks during winding of the latter onto a mandrel dwelling at the winding station for guiding and pressing the blanks onto the mandrel so that the blanks are wound uniformly.

Another specific object resides in the provision of devices located at the winding station for engagement with the arcuate and rectangular blanks during winding of the blanks onto a mandrel to guide the blanks on the latter and including relatively rigid fingers mounted for floating contact with the blanks being wound and spring urged against the blanks in a manner to provide uniform contact pressure at all points of contact.

In accordance with the present invention, the foregoing objects are achieved by providing a paper container making machine which comprises a rotatable turret having a series of body supporting mandrels extending radially therefrom in angularly spaced relationship, a winding station disposed adjacent the orbital path of travel of the mandrels as defined by rotation of the turret, and devices at the winding station operative to rotate a mandrel residing at the winding station and to guide container body forming blanks in winding relationship around the rotated mandrel to form a wound container body, and wherein the winding devices include a frame, a rocker arm pivoted on the frame for swinging about an axis parallel to the axis of the mandrel at the winding station, a pressure roller rotatable on the rocker arm for swinging with the latter from an inoperative position at one side of the path of travel of the mandrels to an operative position in facial contact with the mandrel residing at the winding station, means for swinging the rocker arm between its inoperative and operative positions, means continuously rotating the pressure roller so that the latter rotates the mandrel at the winding station when in its operative position, a plurality of pairs of guiding finger assemblies at opposite sides of the orbital path of travel of the mandrels, means supporting the pairs of guiding finger assemblies for lateral movement between inoperative positions, remote from that path of travel, and operative positions substantially embracing the mandrel at the winding station, and means for moving the pairs of guiding finger assemblies between their operative and inoperative positions in synchronism with the swinging movements of the rocker arm supporting the pressure roller.

The above and other objects, features and advantages of the present invention will be apparent in the following detailed description of a specific embodiment, while the invention consists of the novel combinations, arrangements of parts and details of construction set forth in the description and shown in the drawings and then more particularly defined in the appended claims.

In the drawings:

Fig. 1 is a front elevational view of a machine for making paper containers and having winding mechanism embodying the present invention;

Fig. 2 is a top plan view of the machine shown in Fig. 1;

Fig. 3 is a side elevational view of the machine shown in Fig. 1;

Fig. 4 is an axial sectional view of a mandrel forming a part of the upper turret in an embodiment of the present invention;

Fig. 5 is a side elevational view of a winding device embodying the invention, partly broken away for the purpose of clarity;

Fig. 6 is a front elevational view of the winding device of Fig. 5;

Fig. 7 is a fragmentary side elevational view, on an enlarged scale, of a pressure finger assembly included in the winding device of Figs. 5 and 6; and

Fig. 8 is a detail view of one of the finger elements included in the finger assembly of Fig. 7;

Fig. 9 is a side elevational view, on an enlarged scale, of a rocker arm assembly included in the winding device of Fig. 5 when viewed in the direction opposite to that of the latter.

Referring to the drawings, and initially to Figs. 1, 2, 3 thereof, a machine **10** of the described character in which the container bodies are formed is there seen to include a substantially rectangular base **11** having two upstanding support members **12** and **13** adjacent one end and a pedestal or support **14** substantially at the center of the front portion of the base. An L-shaped frame member **15** has one leg extending forwardly, or toward the viewer in Fig. 1, and mounted on the support members **12** and **13**, and its other leg extending longitudinally of the base **11** to rest upon a lug **16** extending from pedestal **14**. The continuous paper strip or web from which the arcuate blanks are formed is stored in the form of a roll **17** which is rotatably mounted between brackets **18** extending forwardly from the support members **12** and **13**. The paper strip is drawn off the top of roll **17** toward the rear and is fed to a curved blank cutting assembly which is mounted above the forwardly extending leg of frame **15** by an auxiliary frame part **19** and is generally indicated by the reference numeral **20**.

Positioned after the curved blank cutting assembly **20**, described above, is a separator assembly **100** constructed to perform a dual function. The separator assembly **100** first serves to dispose of the paper scrap so that it will not interfere with the further advancing of the curved blanks, and also serves to advance and swing or turn the blanks to the required position for further movement along a conveyor to the winding station. It is necessary to swing or turn the curved blanks after they have been cut in order to satisfy the dual requirements of economy in the use of paper, that is, cutting the blanks from the paper strip so that a minimum of paper is wasted, and of efficiency in holding the overall dimensions of the machine to a minimum for easy installation and servicing.

A conveyor assembly **130** is mounted on the longitudinally extending leg of the frame **15** (Fig. 1) to receive the curved blank after the latter has been turned

on the separator assembly **100** described above and then advance the curved blank to the winding station while glue is applied to selected areas of the blank and the trailing end portion is crimped.

Since the curved blank is destined to form the frusto-conical neck part of the container and must be wound on the suitably tapered frusto-conical portion of the mandrel **181** at the winding station, a problem is presented in feeding the curved blank to the tapering surface of the mandrel without twisting or warping the blank. This is accomplished by a turntable assembly which feeds the curved blank along a circular path in a plane inclined relative to the horizontal so that the leading end of the blank tangentially approaches the mandrel at the bottom of the latter.

The operations of the cutting assembly, separator assembly, conveyor assembly and turntable assembly are all integrated and synchronized to successively cut curved blanks and advance the same to the take-up or winding station in position for winding on the frusto-conical portion of the mandrel **181** then residing at the winding station. While these assemblies are successively performing the respective functions, other mechanisms are simultaneously operating during each cycle to provide a suitably formed rectangular blank positioned at the winding station in proper relation to the curved blank for winding with the latter onto the mandrel to form the container body.

The mechanism for preparing the rectangular blanks for winding draws a continuous strip or web of paper from a roll, applies printed matter to the strip at suitably spaced locations, and then, during movement along a rectangular blank feeder or conveyor assembly **230** (Fig. 3), cuts the strip into rectangular sections or blanks while simultaneously crimping the trailing end portion of each blank, applies glue to the trailing half of the upper surface of each blank and forwards the glued blanks to the winding station while registering each blank longitudinally and laterally relative to the corresponding one of the curved or arcuate blanks and relative to the mandrel at the winding station.

The mechanism for preparing the rectangular blanks is carried by a cantilever support **214** extending rearwardly from the central support pedestal **14** (Fig. 3) and having brackets **215** at its rear end between which a roll of paper **216** is rotatably mounted. Upstanding frame members **217** and **218** are mounted on the cantilever support **214**, adjacent the rear and forward ends, respectively, of the latter, and a printing unit **219** is positioned between those frame members.

As seen in Figs. 1 and 2 of the drawing, an upper turret assembly **272** is rotatably mounted on a turret supporting frame **273** which extends longitudinally of the base **11** and is supported at one end on the central pedestal **14** and at the other end on a frame member **274** extending upwardly from the base at the end of the latter remote from the cutting assembly **20**. For the present it is sufficient to state that the turret is driven to provide for the rotation of the hub **276** through an angle of 90° for each cycle of the machine, with the hub being maintained for a predetermined interval at an indexed position during each cycle.

A radially extending mandrel assembly **181** is mounted on each of the flat side faces of the hub **276** for swinging movement with the latter along an orbital path which lies in a vertical plane in front of the frame **273**. The axis of rotation of the hub is disposed so that, when each mandrel assembly **181** reaches the horizontal position extending toward the conveyor assembly **130**, that mandrel assembly is then at the winding station to have a rectangular blank paired with a curved blank wound thereon.

Each mandrel assembly **181** (Fig. 4) includes a hollow shaft or trunnion **278** secured to the hub **276** with its longitudinal bore registering with the radial bore **277** of the hub opening at the related flat side face. A hollow mandrel shell **279** is supported rotatably at one end on the trunnion by suitable anti-friction bearings, and is formed with an outer surface having a cylindrical portion, extending to the supported end thereof, and a frusto-conical portion, extending to the free end thereof, to receive the rectangular and curved blanks, respectively.

A winder assembly **294** (Figs. 5 and 6) is located at the winding station and includes a frame mounted atop the front portion of the pedestal support and formed by an outer support **295** disposed outside of the path of travel of the free ends of the mandrels and extending from in front of the plane of movement of those mandrels to a point in back of that plane and an inner support **296** disposed in front of the plane of movement of the mandrels so as not to interfere with the indexing of the latter, with a base **297** joining the inner and outer supports and secured to the central pedestal support. A rocker arm assembly includes a cast rocker arm **298** having substantially L-shaped sides pivoted on the adjacent inner and outer supports for swinging about an axis in front of the plane of movement of the mandrels and connected together by a cross-portion at their free ends. A bracket **299** extends from the outer L-shaped side to provide a bearing for the outer end of a frusto-conical section **300** of a pressure roller, while a bracket **301** extends from the inner L-shaped side to rotatably support the inner end of the cylindrical section **302** of the pressure roll. A bearing bracket **303** extends from the center of the cross-portion of rocker arm **298** to support the adjacent ends of the conical and cylindrical sections of the pressure roller. Miter gears (not shown) are carried by the adjacent ends of the roller sections **300** and **302** and mesh so that both sections rotate together. An air cylinder **304** is rockably mounted between supporting brackets **305** on the frame base **297**, and the piston rod or plunger **306** of the air cylinder is pivotally connected to the rocker arm assembly **298** to swing the latter between an operative position, shown in Fig. 5, in which the pressure roller effects linear contact with the bottom of a mandrel at the winding station, and an inoperative position, in which the pressure roller is swung to the rear of the plane of movement of the mandrels so as not to interfere with indexing of the latter to and from the winding station.

With a mandrel in residence at the winding station and the rocker arm assembly in operative position to contact the pressure roller with the mandrel surface, the paired curved and rectangular blanks are fed between the contacting surfaces of the mandrel and roller by the respective feeding mechanisms. The pressure roller is then rotated to frictionally effect rotation of the mandrel dwelling at the winding station while the blanks are guided around the mandrel to encase the latter in a container body of double layers of paper with an interlocked seam between the conical and cylindrical portions thereof. In order to rotate the pressure roller and, by frictional contact, the mandrel at the winding station, a gear **307** (Fig. 9) is fixed to the shaft extending from the inner end of the cylindrical section **302** thereof and meshes with a gear **308** rotatably mounted on the adjacent side of the rocker arm **298**. A sprocket **309** and a spur gear **310** (Fig. 6) are rotatable together on the inner pivot of the rocker arm assembly, and an idler gear **311** (Fig. 9) is rotatable on the rocker arm in continuous meshing engagement with the gear **310** as well as the gear **308**. A double sprocket **312** (Fig. 5) is rotatably mounted on the support **296** and a chain runs over one course of the double sprocket **312** and around the sprocket **309** to drive the latter. A driving chain runs over the other course of the double sprocket **312** and around a sprocket **313** on an idler shaft which is in turn driven, through a sprocket and chain connection from a suitable drive source, for example, the main feeder drive shaft assembly (not shown) of the machine.

In order to guide the blanks around the mandrel during the winding operation, a plurality of pairs of front and rear

sets of finger assemblies **314** (Fig. 7) are mounted to substantially embrace the circumference of the mandrel from opposite sides during winding and to be withdrawn out of the path of the mandrels during indexing of the latter. Each of the front and rear sets of finger assemblies includes two separate fingers **315** and **316** having inner surfaces shaped to conform to the circumference of the mandrel at their location. Each finger is formed with an elongated slot **317** and an offset lug **318** at the base end thereof and the bases of the fingers **315** and **316** of each set are received within a clevis bar **319** which has two pivot pins **320** and **321**, one extending through both slots **317** and the other located between the lugs **318**. A spring member **322** engages both of the fingers at about the midpoints thereof to urge the fingers together while the lugs **318** engaging the related pin **321** limit the spring urged movement. Each clevis bar **319** is pivotally supported at spaced points on its length by arms **323** and **324** depending respectively from parallel rockable shafts **325** and **326**. This support for the clevis bars constitutes a parallel motion so that when the shafts **325** and **326** are rocked, the clevis bars **319** are moved substantially linearly toward and away from the path of movement of the mandrels. In embracing the mandrel, the fingers **315** and **316** are spread apart from their spring urged positions, while the floating nature of the fingers attachment to the supporting clevis bar permits orientation of the fingers for even contact with the mandrel along the entire surface of contact. A control lever **327** is fixed to each shaft **326**, and a crank arm **328** is fixed to the rocker arm assembly **298** for pivoting movement with the latter, with the free end of the crank arm **328** connected to the levers **327** by links **329** so that the control shafts **326** are rocked to move the fingers away from the path of travel of the mandrels, when the rocker arm assembly is swung to inoperative position, and conversely to move the fingers to mandrel embracing position when the rocker arm is rocked to operative position.

In order to synchronize the actuation of the pressure roller and finger supports with the indexing of the upper turret, the flow of compressed air to the actuating air cylinder is controlled to retain the rocker arm in inoperative position, during indexing of the turret and to move the rocker arm to operative position during the interval of dwell of the mandrel at the winding station.

After the paired rectangular and curved blanks have been wound upon the mandrel to form a container body encasing a mandrel shell, the turret is rotated 90° in a clockwise direction as viewed from the front to position the following mandrel at the winding station and to move the mandrel having a container body wound thereon away from the winding station and to residence at a succeeding station at which a suitable container forming operation is performed on the wound container body. Thus, as the turret is rotated in a stage-by-stage manner to successively position the mandrels at the winding station, the mandrels having wound container bodies thereon are progressively advanced to and from residence at operating stations arranged at spaced locations adjacent the orbital path of travel of the mandrels. For example, such operating stations may include a pressing station **330** at which the wound container body is compressed to ensure a firm bond at the seams joining the blanks of which it is formed, a mouth spinning station **345** at which the small diameter end of the container body is spun to provide a rim or bead defining the mouth of the container, and a stripping station **366** (Fig. 1) at which the container bodies are stripped from the mandrels to condition the latter for having container bodies wound thereon upon their return to the winding station. Further, in a paper container making machine having winding mechanism embodying the present invention, the container bodies stripped from the mandrels at the stripping station **366** are preferably there projected into container body receiving cells carried by a horizontal turntable **393** so that the latter can in turn carry the container bodies past additional stations, such as, for example, a mouth shaping, fluting and glue applying station **416** (Fig. 2) at which the bead at the mouth end of the container body is roughly shaped, flutes are formed in the neck portion of the container body, and a band of glue is applied to the interior surface of the container body adjacent its base end; a bottom cutting and inserting station **484** at which a bottom forming, cup-shaped member is cut, formed and inserted into the base end of the container body, and the mouth end is given its final shape; a bottom spinning station **549** (Fig. 1) at which the base end of the container body and the bottom forming member are rolled together to seal the bottom of the container and provide a rigid base; and an ejecting station **594** (Fig. 1) at which the container is pneumatically removed from its supporting cell and projected into a discharge conduit **603**, thereby preparing the cell for receiving another container when it again arrives at the stripping station **366**.

While the winding mechanism embodying the present invention has been described and illustrated in connection with a particular paper container making machine, it is apparent that the winding mechanism is not limited to employment in that machine alone, and that such winding mechanism may be advantageously used for a similar purpose in other paper container making machines and the like.

While a preferred embodiment of the present invention has been described and shown in detail, by way of illustration, it is to be understood that the invention is not limited to that precise embodiment, and that changes and modifications, obvious to one skilled in the art, may be made therein without departing from the scope and spirit of the invention.

What is claimed is:

1. In a bottle shaped container forming machine; the combination of a rotatable turret having a series of body supporting mandrels extending radially therefrom in angularly spaced relationship, and a winding station disposed adjacent the orbital path of travel of said mandrels as defined by the rotation of said turret and devices at said winding station operative to rotate the mandrel residing at said winding station and to guide container forming blanks in winding relationship on the rotated mandrel for forming a wound container body on the latter, said devices comprising a frame, a rocker arm pivoted on said frame for swinging about an axis parallel to the axis of said mandrel at the winding station, a pressure roller rotatable on said rocker arm for swinging with the latter from an inoperative position at one side of said orbital path of travel of the mandrels to an operative position in facial contact with the mandrel at the winding station, means for swinging said rocker arm to move said pressure roller between said operative and inoperative positions of the latter, means continuously rotating said pressure roller so that the latter, when in its operative position, rotates the mandrel at said winding station, a plurality of pairs of guiding finger assemblies at opposite sides of said orbital path of travel each of said finger assemblies including two finger members arranged end to end and having arcuate guiding surfaces shaped to conform to the circumferential configuration of the mandrel at the axial location on the latter at which the finger assembly embraces the mandrel when in its operative position, means supporting said pairs of guiding finger assemblies for lateral movement between inoperative positions remote from said path of travel and operative positions substantially embracing the mandrel at said winding station, said means supporting said pairs of guiding finger assemblies including a lateral support bar for each finger assembly, means supporting the adjacent ends of said two finger members of each finger assembly on the related lateral support bar in a manner to permit pivoting of said finger members toward each other and bodily movement of said finger members relative to the support bar in a

lateral direction, and spring means acting on the central portions of said two finger members to continuously urge the latter to pivot towards each other and to move laterally relative to said support bar in the direction toward said path of travel of the mandrels so that said finger assemblies, when in their operative positions, are resiliently pressed against the surface of the mandrel at said winding station, and means for moving said pairs of guiding finger assemblies between said operative and inoperative positions thereof in synchronism with the swinging movements of said rocker arm.

2. A bottle-shaped container forming machine as set forth in claim 1; wherein said means supporting said pairs of guiding finger assemblies further includes a rock shaft rockably supported at each side of said orbital path of travel of the mandrels and extending parallel to the axis of a mandrel at the winding station, radial arms fixed to each of said rock shafts and pivotally connected to said lateral support bars carrying the finger assemblies, a rockable stabilizing shaft extending parallel to each rock shaft and having stabilizing arms extending radially therefrom and pivotally connected to said lateral support bars at points on the latter spaced from the pivotal connections with said radial arms on the related rock shaft, and wherein said means for moving the pairs of guiding finger assemblies includes an actuating arm extending radially from the end portion of each of said rock shafts disposed outside of the orbital path of travel of said mandrels, a crank arm fixed on said rocker arm for swinging with the latter, and link means connecting said crank arm to said actuating arm on each of said rock shafts.

3. In a paper container making machine of the described character; the combination of a rotatable turret having a series of body supporting mandrels extending radially therefrom in angularly spaced relationship for successive advance to and from a winding station disposed adjacent the orbital path of travel of said mandrels as defined by rotation of said turret, means at said station for effecting rotation of the mandrel residing at said winding station, and means at said station for guiding container forming blanks in winding relationship on the mandrel at said station, said guiding means including a plurality of pairs of guiding finger assemblies at opposite sides of said orbital path of travel, each of said finger assemblies including two rigid finger members arranged end to end and having arcuate guiding surfaces shaped to conform to the circumferential configuration of the mandrel at the axial location on the latter at which the related finger assembly embraces the mandrel when in its operative position, means supporting said pairs of guiding finger assemblies for substantially rectilinear movement between inoperative positions remote from said path of travel and operative positions substantially embracing the mandrel at said station, said means supporting said pairs of guiding finger assemblies including a lateral support bar for each finger assembly, means supporting the adjacent ends of said two finger members on the related support bar in a manner to permit pivoting of said finger members toward each other and bodily movement of said finger members relative to said support bar in the lateral direction, and spring means acting on the central portions of said two finger members to continuously urge the latter to pivot towards each other and to move laterally relative to said support bar in the direction toward said path of travel of the mandrels so that said finger assemblies, when in their operative positions, are resiliently pressed against the surface of the mandrel at said winding station, and means for moving said pairs of guiding finger assemblies between said operative and inoperative positions thereof.

4. In a paper container making machine of the described character; the combination according to claim 3, wherein said means supporting the adjacent ends of the two finger members on said support bar includes two pins extending transversely from said support bar at longitudinally spaced locations, each of said two finger members having a longitudinal slot therein receiving the one of said pins closest to said path of travel, and an extension on each of said finger members offset relative to said slot and engageable with the other of said pins to limit the spring urged pivoted movement of said two finger members toward each other.

5. In a paper container making machine of the described character; the combination according to claim 3, wherein said means supporting said pairs of guiding finger assemblies further includes a rock shaft rockably supported at each side of said orbital path of travel of the mandrels and extending parallel to the axis of a mandrel at the winding station, radial arms fixed to each rock shaft and pivotally connected to said lateral support bars carrying the finger assemblies at the related side of said path of travel, and a rockable stabilizing shaft extending parallel to each rock shaft and having stabilizing arms extending radially therefrom and pivotally connected to said lateral support bars at points on the latter spaced from the pivotal connections of said lateral support bars with said radial arms on the related rock shaft.

6. In a paper container making machine of the described character; the combination according to claim 5, wherein said means for moving said pairs of guiding finger assemblies includes an actuating arm extending radially from the end portion of each of said rock shafts disposed outside of the orbital path of travel of said mandrels, a common crank arm mounted for swinging movement about a fixed axis, link means connecting said common crank arm to said actuating arm on each of said rock shafts, and means for swinging said crank arm.

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