Nov. 1, 1966 K. GROTH ETAL 3,282,202

ROTARY PRINTING APPARATUS

Filed June 9, 1965 3 Sheets-Sheet 1

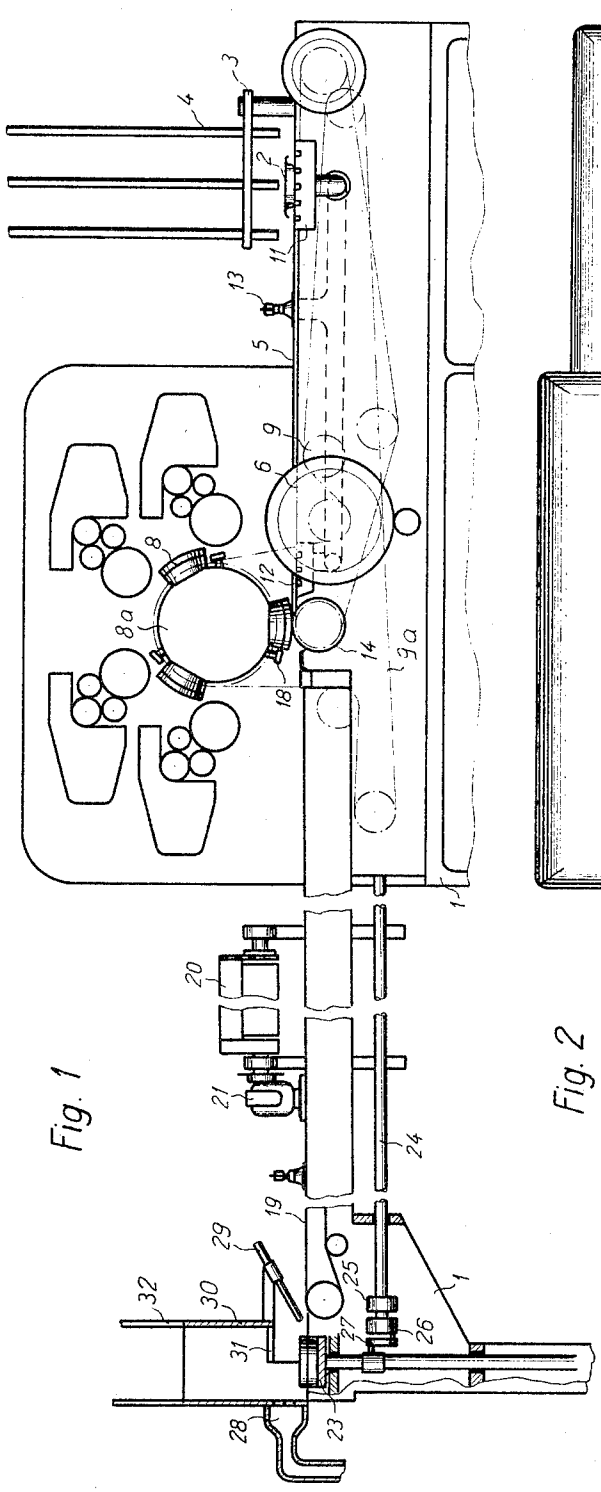

Fig. 1

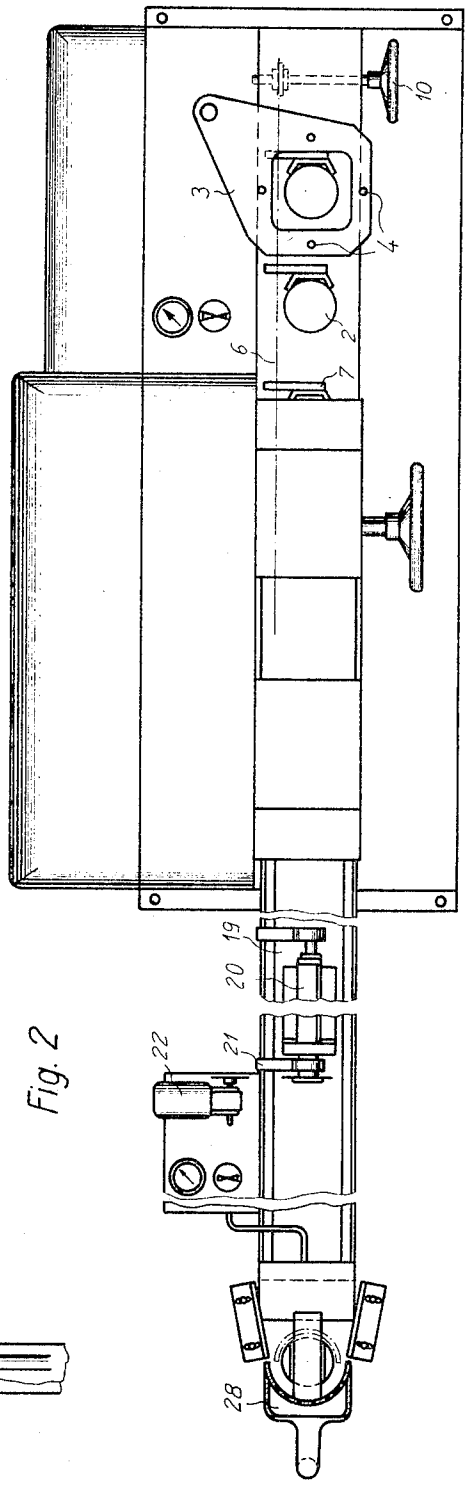

Fig. 2

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ROTARY PRINTING APPARATUS

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Fig. 3

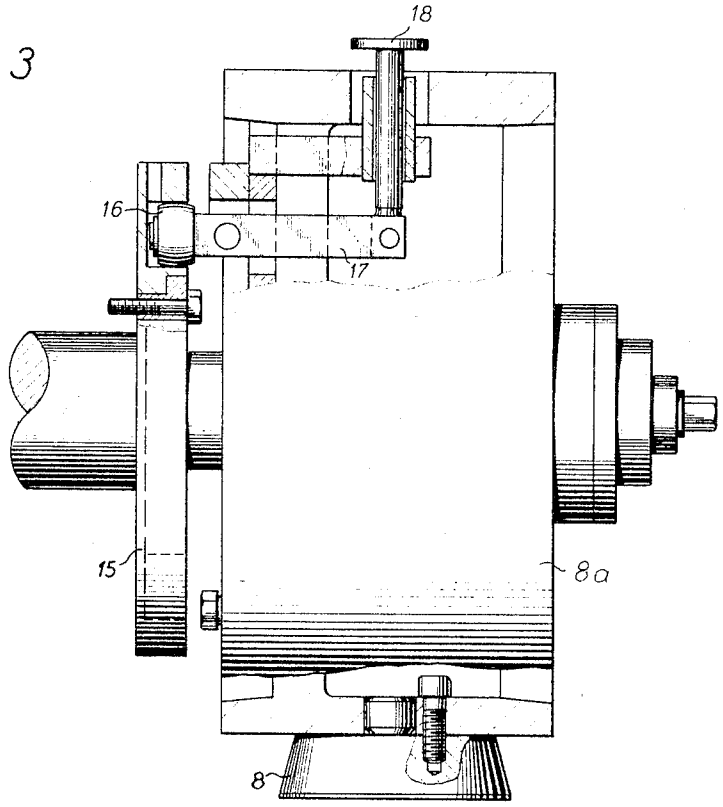


Fig. 4

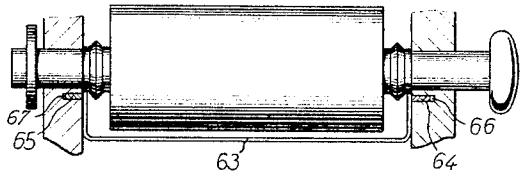
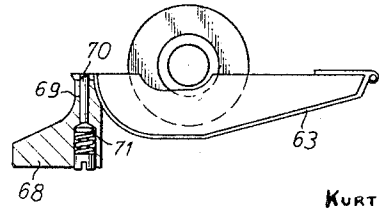


Fig. 5



INVENTORS
KURT GROTH
WERNER LEHMANN
By McGlew and Toren
ATTORNEYS

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ROTARY PRINTING APPARATUS

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Fig. 6

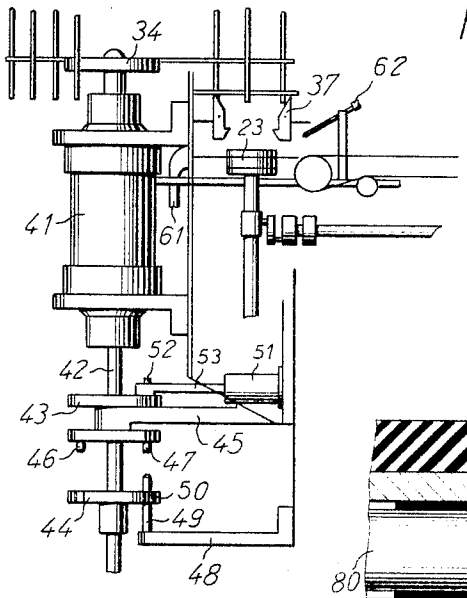
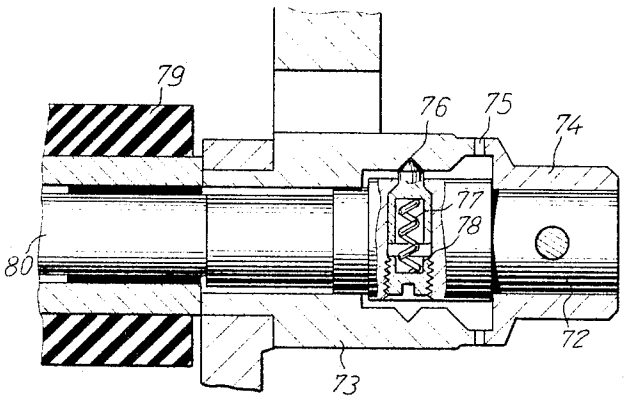


Fig. 9



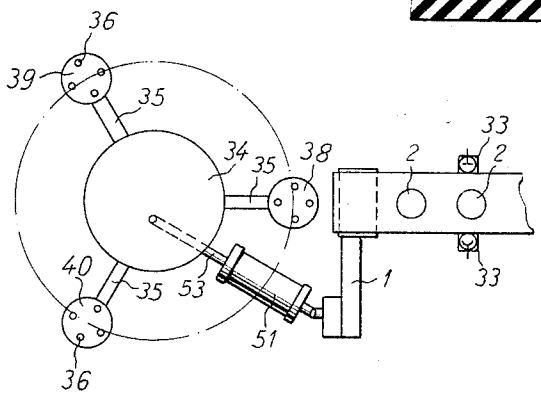
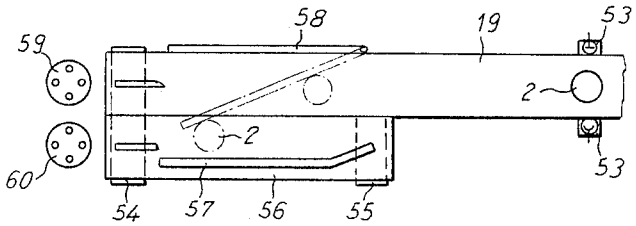


Fig. 7

Fig. 8



United States Patent Office

3,282,202

Patented Nov. 1, 1966

3,282,202

ROTARY PRINTING APPARATUS

Kurt Groth and Werner Lehmann, both of Fribourg, Switzerland, assignors to Polytype AG, Freiburg, Switzerland

Filed June 9, 1965, Ser. No. 462,549
Claims priority, application Switzerland, June 15, 1964, 7,740/64
14 Claims. (Cl. 101—37)

This invention relates to the printing of lids or covers and, more particularly, to a novel and very substantially improved apparatus for printing, counting and stacking lids or covers.

In the printing of lids or covers for containers and the like, the lids are removed from a storage or supply stack or device and transported to a printing station where they are brought into contact with a rotary printing means generally having segments of resilient material thereon carrying the printing plates. Usually the lids or covers then are transported through suitable means for drying the printing thereon, counting the lids or covers, and stacking or packaging the lids or covers.

It is known, in arrangements of this type, to provide storage or stacking devices comprising composite worms having different pitches. An endless conveyor removes the lids to be printed from the stacking device and carries the lids to the printing mechanism. Known arrangements of this type have the disadvantage that the feeding of the lids or covers from the stack thereof to the conveyor, and then through the printing mechanism, it is not precise or exact. Consequently, waste results from the printing of the lid or cover being displaced or offset or due to the rim of the lid or cover being damaged.

Another disadvantage of known arrangements of this type is that the printed lids frequently stick to the cushion printing segments and do not drop off onto the conveyor belt. This also results in considerable trouble as well as waste. In addition, the worms provided at the stacking devices are not adapted to all forms of lids.

An object of the present invention is to provide a fully automatic apparatus for the printing of lids or covers for containers of the like.

Another object of the invention is to provide a fully automatic apparatus for the printing of lids or covers, and which avoids the disadvantages of prior art apparatus for the printing of lids or covers.

A further object of the invention is to provide a fully automatic apparatus for the printing of lids or covers, and including a novel stacking device for storing or stacking the lids or covers, and from which the lids or covers are extracted for transport to a printing station.

Yet another object of the invention is to provide an automatic apparatus for the printing of lids or covers in which the lids or covers to be printed, which are arranged in a stack or supply device, are transported from the stack or supply device to the printing mechanism by a chain conveyor provided with prismatic abutments for engaging and transporting the respective lids or covers along a feed table.

A further object of the invention is to provide an automatic apparatus for the printing of lids or covers, of the type just mentioned, and in which the chain, together with the prismatic abutments, moves over the upper surface of a feed table which is adjustable in height.

Another object of the invention is to provide automatic apparatus for printing lids or covers, of the type just described, in which the feed table is provided with two

suction devices, one adjacent the supply stack and the other adjacent the printing mechanism to assure positive positioning of the lids or covers to be withdrawn from the supply stack and to be printed.

A further object of the invention is to provide a fully automatic apparatus for printing covers or lids, of the type mentioned, and in which a rotatable carrier supporting the printing segments is provided with cam controlled ejecting fingers arranged to positively displace the printed lids or covers from the printing segments onto a conveyor belt for transport to a drying arrangement.

Yet another object of the invention is to provide a fully automatic apparatus for printing lids or covers including novel stacking means receiving the printed lids or covers and controlled by a counter to distribute the lids or covers between several stacks.

Still a further object of the invention is to provide a fully automatic apparatus for printing lids or covers including inking rollers and the like in the printing mechanism, and means whereby the rollers may be readily and easily dismounted for inspection maintenance and/or repair.

For an understanding of the principles of the invention, reference is made to the following description of typical embodiments thereof as illustrated in the accompanying drawings.

In the Drawings:

FIG. 1 is a somewhat schematic side elevation view, partly in section, illustrating automatic apparatus embodying the invention;

FIG. 2 is a plan view corresponding to FIG. 1;

FIG. 3 is a side elevation view, partly in axial section and to an enlarged scale, of the carrier for the printing segments, and illustrating the cam controlled ejecting fingers;

FIG. 4 is a transverse sectional view through an ink well support arrangement;

FIG. 5 is a longitudinal sectional view through the ink well support arrangement;

FIG. 6 is a somewhat schematic elevation view of one form of lid counting and stacking arrangement embodying the invention;

FIG. 7 is a somewhat schematic plan view corresponding to FIG. 6.

FIG. 8 is a plan view of another form of lid counting and stacking mechanism embodying the invention; and

FIG. 9 is a partial axial sectional view illustrating the disengageable locking means for an inking roller.

Referring to FIGS. 1 and 2 of the drawings, the apparatus of the invention includes a support frame 1 on which there is mounted a stacking or supply device for containing a supply of lids or covers 2 which are to be printed. This stacking device comprises a holder 3 on which is supported a plurality of upwardly extending guide rods 4. Extending beneath the stacking device there is a feed table 5 which is adjustable in height. Feed table 5 serves as a flat and elongated support for the upper run of an endless conveyor chain 6 to which are secured abutments or engaging members 7 arranged to engage lids 2 and transport them along feed table 5. The abutments 7, insofar as their lid or cover engaging portion is concerned, are generally prismatic in plan, having the shape of a trapezoid with an open larger base. By virtue of this shape, the abutments 7 are able to guide lids or covers 2 from the stacking or supply device in exactly aligned relation to the printing station.

At the printing station, there is a drum or cylinder member 8*a* serving as a carrier for the printing segments 8

carrying the printing plates. As in the standard case, these printing segments **8** are made of a resilient material such as rubber, and are mounted at uniformly spaced positions around the circumference of carrier *8a*. The drive of conveyor chain **6** is synchronized with the rotation of carrier *8a*, supporting the printing segments **8**, by means of a chain drive *9a* trained over sprockets **9**, there being a common drive means for the chain drive *9a* and the chain conveyor **6**. A hand wheel **10** is provided for conjoint adjustment of conveyor chain **6** and chain drive *9a*.

Two suction devices **11** and **12**, are provided in spaced relation on feed table **5** and are commonly connected to a connection **13** arranged for connection to a source of vacuum. Suction device **11** quickly clamps the falling lids or covers to hold the same for engagement by an abutment **7**. Suction device **12** retains the lids or covers in correct position for engagement by a printing segment **8** carrying the inked printing plate. The drawing of the lids or covers is effected by the combined action of the printing segments **8** and a counter printing cylinder **14**, and as the lids or covers are drawn between these two elements, the desired printing is effected on the lid or cover.

As best seen in FIG. 3, ejecting fingers or plungers **18** are mounted for radial displacement in carrier *8a* to prevent sticking of the lids or covers to the printing segments **8**. These fingers are cyclically operated by means of a face cam **15** having a track in which there is engaged, for each finger, a roller **16** connected to the associated finger **18** by the linkage indicated at **17**. Fingers **18** are operated in such a manner as to push the printed lids or covers radially away from the printing segments, so that the printed lids or covers will fall onto an endless conveyor belt **19**, shown in FIGS. 1 and 2.

A drying arrangement **20** is positioned above the upper run of conveyor belt **19** and arranged to dry the printed lids or covers. Suitable mechanism, illustrated at **21**, is driven by gearing **22** and is effective, when conveyor belt **19** is at a standstill, to deflect drying arrangement **20** in such a manner that the heat rays are directed away from lids or covers **2** lying on conveyor belt **19** and away from the conveyor belt. For example, the drying device may be deflected in such a manner that its heat rays are directed upwardly. However, as soon as conveyor **19** resumes its motion, the gearing **22** moves the drying system back into its operative position. The arrangement including the elements **21** and **22** prevents burning of the stationary lids or covers or of the stationary conveyor belt **19**.

Conveyor belt **19** transports the printed and dried lids or covers **2** to a stacking device comprising a vertically movable ram **23**. Ram **23** is driven in synchronism with carrier *8a* through a shaft **24**, a slidable member **25** and an eccentric **26**. A connecting rod **27** connects eccentric **26** to a suitable collar on the shaft or piston rod of ram **23**. The stacking device includes a suction means **28**, a blowing or positive pressure means **29**, an upright cylindrical receiver **30**, with which there is associated a holding ring **31**, and stack guide rods **32** extending upwardly from the upper end of receiver **30**.

In FIGS. 1 and 2, conveyor **19** is illustrated as delivering the printed and dried lids or covers to a relatively simple stacking device. However, within the scope of the invention the conveyor **19**, or its equivalent, may deliver the printed and dried lids and covers to a counting and packaging device. Such an arrangement is shown in FIGS. 6 and 7.

As illustrated in FIGS. 6 and 7, a counter **33** is arranged adjacent conveyor **19**. Counter **33** may be a mechanical counter, an electro-mechanical counter, or a photocell-type of counter. The counter counts the lids or covers **2** transported by the conveyor belt **19**. After the counter **33** counts a preselected number of lids or covers **2**, which number is adjustable, it delivers a pulse to a packaging device.

This packaging device comprises a vertically and angularly displaceable turntable or plate **34**. By means of supports **35** positioned at equi-angular spacings around turntable **34**, three stacking devices **38**, **39** and **40**, for example, are supported on turntable **34**. Each stacking device includes stack guide rods **36** and pivoted detents **37**. Plate or turntable **34** is vertically displaced by means of a cylinder **41** having a piston rod **42** operatively associated with a clutch device comprising members **43** and **44**. Member **43** is free to rotate relative to rod **42**, and is rotatably mounted on a support or bracket **45**. Member **44** is fixedly connected to rotate with shaft or piston rod **42**.

The lower part of upper clutch member **43** is provided with a pair of diametrically opposite downwardly projecting pin **46**. Lower clutch member **44** is provided with several pairs of diametrically opposite bores or apertures **50** therethrough, there being three pairs of bores **50** in the example selected for illustration, each pair corresponding angularly to a respective stacking device **38**, **39** or **40**. An upright pin **49** is supported on a bracket **50** and, in the lower position of turntable **34**, pin **49** extends through a bore **50** in member **44**.

Angular displacement of turntable **34** is effected by means of a cylinder **51** having a piston rod **53** connected to an eccentric pin **52** on upper clutch member **43**. Cylinder **51** is swingably secured to bracket **45** or to another fixed portion of support frame **1**.

When a predetermined number of covers or lids **2** have been counted by counter **33**, the latter delivers an output pulse which effects operation of cylinder **41** to lift its piston rod **42**. This upward movement of piston rod **42** lifts turntable **34** supporting the stacking devices, and also lifts lower clutch member **44**, disengaging clutch member **44** from pin **49** and engaging pins **46** and **47** in a pair of diametrically opposite bores **50** in member **44**. Member **44**, and thus piston rod **42**, are thereby connected to rotate with the clutch member **43**. At this time, cylinder **51** is activated to displace its piston rod **53** and rotate clutch member **43** through an angular displacement equal to the angular displacement of the stacking devices **38**, **39** and **40** from each other. This, in turn, effects rotation of lower clutch member **44** and the connected rod **42**. Cylinder **51** remains under pressure, with its piston rod **53** extended, while pressure is released from cylinder **41**. Thus, piston rod **42** moves downwardly and, as lower clutch member **44** disengages pins **46** and **47**, an aperture **50** therein receives pin **49**, thus locking member **44** and piston rod **42**, as well as table **34**, against angular displacement. Piston **51** is now energized to retract its piston rod **53**, ending the cycle. The greater the number of stacking devices **38**, **39** and **40**, the greater is the amount of time available for attending to the stacked lids and covers, for example, by removing completed stacks and packing the same.

Another embodiment of a lid or cover counting and packaging device is illustrated in FIG. 8. In this embodiment, a counter **53**, which may be identical with the counter **33**, is arranged adjacent conveyor belt **19**. A short conveyor belt **56**, trained over rollers **54** and **55**, is arranged in juxtaposition to the end portion of conveyor **19**, and a fixed guide rail **57** is positioned over the upper surface of conveyor **56**. A pivoted switch **58** is associated with conveyor **19**, and normally occupies the position shown in dotted lines in FIG. 8. A stacking device **59** is arranged in alignment with conveyor **19**, and a second stacking device **60** is arranged in alignment with conveyor **56**. After a preselected and adjustable number of lids or covers **2** have been counted by counter **53**, a control pulse is delivered to a suitable gearing, which has not been illustrated, which is arranged to pivot the switch **58**. Responsive to this pulse, the switch **58** is pivoted to the broken line position of FIG. 8 so that the lids or covers **2** are deflected from conveyor **19** onto conveyor **56** for delivery to the stacking device **60**. Upon

the next pulse received from counter 53, the switch 58 is swung back to the solid line position so that the lids or covers 2 are now delivered to the stacking device 59. In the arrangement shown in FIG. 8, as well as in the arrangement shown in FIG. 6, a suction device 61 and a blowing device 62 are associated with the stacking devices.

FIGS. 4 and 5 illustrate a simple and convenient inking arrangement. Each ink well 63 is formed with sliding rails or flanges 64 and 65 which engage slidably in grooves 66 and 67 of a support frame. The position of each ink well 63 in the support frame is releasably secured by means of a detent pin 70, biased by a spring 78, inserted in a bore 69 in the frame 68. In place of the detent pin illustrated, a spring pressed ball-type of detent arrangement may be used.

In accordance with a further feature of the invention, the down times of the apparatus, such as caused by the necessity for ink changes and adjustment, are limited to a minimum by means providing for ready interchangeability and rapid adjusting of the several rollers. As illustrated in FIG. 9, this means comprises a novel roller lock.

This roller lock comprises an eccentric axle member 72 and an eccentric fine adjustment bushing 73. A grip member 74 is secured to the outer end of axle member 72, and interengageable ratchet teeth 75 are provided on the facing end surfaces of bushing 73 and grip member 74. A radially displaceable detent pin 76 is slidable in a diametric bore in axle member 72, and is biased radially outwardly by a spring 77 to engage in suitable detent recesses in the inner surface of bushing 73. The force of spring 77 may be adjusted by a regulating screw 78. A stub axle 80 extends eccentrically from the inner end of member 72 and is engaged in the cylindrical roller 79. By angularly adjusting member 72, a fine adjustment of the position of roller 79 is effected.

In order to exchange a roller 79, the operator merely takes hold of grip member 74 and pulls the same outwardly. Ratchet pin 76 has a bevelled end so that it is forced radially inwardly to release shaft 72 from bushing 73 allowing the axle 72 to be withdrawn from roller 79.

While the described counting and packaging systems, such as shown in FIGS. 6, 7 and 8, have been illustrated as used with the conveyor printing and conveying mechanism shown in FIGS. 1 and 2, it would be understood that these particular lid or cover counting and packaging devices may be used with known lid and cover printing arrangements, such as those having worm type stacking means for the covers or lids.

While specific embodiments of the invention have been shown and described in detail to illustrate the application of the principles of the invention, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

1. Automatic apparatus for printing lids or covers comprising, in combination, a relatively elongated feed table; a cover supply device above said table for delivering covers to said table; a conveyor element extending along said table and having spaced abutments extending laterally of the later to move covers along said table to a printing station spaced from said supply device, a rotatable carrier at said printing station; plural printing segments on said carrier at uniformly spaced locations thereabout; means driving said conveyor element and rotating said carrier in synchronism with each other; means cooperable with said carrier to receive covers from said conveyor element and press each cover against a segment to print the covers; drying means receiving the printed covers; and stacking means receiving the dried covers; said holder for swinging over said feed table and away tending upwardly from said holder and means mounting said holder for swinging over said feed table and away from the latter about a vertical axis.

2. Automatic apparatus for printing lids or covers comprising, in combination, a relatively elongated feed table; a cover supply device above said table for delivering covers to said table; a conveyor element extending along said table and having spaced abutments extending laterally of the latter to move covers along said table to a printing station spaced from said supply device; a rotatable carrier at said printing station; plural printing segments on said carrier at uniformly spaced locations thereabout; means driving said conveyor element and rotating said carrier in synchronism with each other; means cooperable with said carrier to receive covers from said conveyor element and press each cover against a segment to print the covers; drying means receiving the printed covers; and stacking means receiving the dried covers; said abutments being secured to said conveyor element at spaced intervals therealong corresponding to the peripheral spacing of said printing segments, and extending rigidly laterally from said conveyor element; each abutment having the shape of a trapezoid with its larger base open.

3. Automatic apparatus for printing lids or covers comprising, in combination, a relatively elongated feed table; a cover supply device above said table for delivering covers to said table; a conveyor element extending along said table and having spaced abutments extending laterally of the latter to move covers along said table to a printing station spaced from said supply device; a rotatable carrier at said printing station; plural printing segments on said carrier at uniformly spaced locations thereabout; means driving said conveyor element and rotating said carrier in synchronism with each other; means cooperable with said carrier to receive covers from said conveyor element and press each cover against a segment to print the covers; drying means receiving the printed covers; stacking means receiving the dried covers; and ejection fingers mounted in said carrier for radial displacement, each adjacent a respective segment, and each operable, as a cover has been printed by the respective printing segment, to engage the cover to push it away from the respective printing segment.

4. Automatic apparatus for printing lids or covers comprising in combination, a relatively elongated feed table; a cover supply device above said table for delivering covers to said table; a conveyor element extending along said table and having spaced abutments extending laterally of the latter to move covers along said table to a printing station spaced from said supply device; a rotatable carrier at said printing station; plural printing segments on said carrier at uniformly spaced locations thereabout; means driving said conveyor element and rotating said carrier in synchronism with each other; means cooperable with said carrier to receive covers from said conveyor element and press each cover against a segment to print the covers; drying means receiving the printed covers; stacking means receiving the dried covers; ejection fingers mounted on said carrier for radial displacement, each adjacent a respective segment, and each operable, as a cover has been printed by the respective printing segment, to engage the cover to push it away from the respective printing segment; and cam means operatively associated with said carrier and engaged with said ejection fingers to radially displace the same in a predetermined cycle.

5. Automatic apparatus for printing lids or covers comprising, in combination, a relatively elongated feed table; a cover supply device about said table for delivering covers to said table; a conveyor element extending along said table and having spaced abutments extending laterally of the latter to move covers along said table to a printing station spaced from said supply device; a rotatable carrier at said printing station; plural printing segments on said carrier at uniformly spaced locations thereabout; means driving said conveyor element and rotating said carrier in synchronism with each other; means

cooperable with said carrier to receive covers from said conveyor element and press each cover against a segment to print the covers; drying means receiving the printed covers; stacking means receiving the dried covers; means ejecting printed covers from said carrier; a conveyor belt receiving the covers ejected from said carrier; said drying means being positioned over the upper surface of said conveyor belt; and means operable, responsive to halting of said conveyor belt, to deflect said drying means away from said conveyor belt and, responsive to re-starting of said conveyor belt, to return said drying means to operative relation with said conveyor belt.

6. Automatic apparatus for printing lids or covers comprising, in combination, a relatively elongated feed table; a cover supply device above said table for delivering covers to said table; a conveyor element extending along said table and having spaced abutments extending laterally of the latter to move covers along said table to a printing station spaced from said supply device; a rotatable carrier at said printing station; plural printing segments on said carrier at uniformly spaced locations therearound; means driving said conveyor element and rotating said carrier in synchronism with each other; means cooperable with said carrier to receive covers from said conveyor element and press each cover against a segment to print the covers; drying means receiving the printed covers; stacking means receiving the dried covers; means ejecting printed covers from said carrier; and a conveyor belt receiving the covers ejected from said carrier; said drying means being positioned over the upper surface of said conveyor belt; said stacking means including a vertically displaceable ram, driving means vertically displacing said ram in synchronism with rotation of said carrier, a suction device and a fluid pressure device conjointly operable to displace covers from said conveyor belt onto said ram, a support ring arranged to receive covers from said ram, and guide rods extending upwardly from said support ring to support a stack of printed and dried covers.

7. Automatic apparatus for printing lids or covers comprising, in combination, a relatively elongated feed table; a cover supply device above said table for delivering covers to said table; a conveyor element extending along said table and having spaced abutments extending laterally of the latter to move covers along said table to a printing station spaced from said supply device; a rotatable carrier at said printing station; plural printing segments on said carrier at uniformly spaced locations therearound; means driving said conveyor element and rotating said carrier in synchronism with each other; means cooperable with said carrier to receive covers from said conveyor element and press each cover against a segment to print the covers; drying means receiving the printed covers; stacking means receiving the dried covers; means ejecting printed covers from said carrier; a conveyor belt receiving the covers ejected from said carrier; said drying means being positioned over the upper surface of said conveyor belt; and counting means operatively associated with said conveyor belt to count covers transported thereby, said counting means controlling operation of said stacking means.

8. Automatic apparatus for printing lids or covers comprising, in combination, a relatively elongated feed table; a cover supply device above said table for delivering covers to said table; a conveyor element extending along said table and having spaced abutments extending laterally of the latter to move covers along said table to a printing station spaced from said supply device; a rotatable carrier at said printing station; plural printing segments on said carrier at uniformly spaced locations therearound; means driving said conveyor element and rotating said carrier in synchronism with each other; means cooperable with said carrier to receive covers from said conveyor element and press each cover against a segment to print the covers; drying means receiving the printed covers; means ejecting printed covers from said carrier; a conveyor belt receiving the covers ejected from said carrier; said drying means being positioned over the upper surface of said conveyor belt; a counter operatively associated with said conveyor belt to count covers transported thereby from said drying means; a turntable device; a plurality of stack support devices positioned uniformly around said turntable device; said turntable device being angularly displaceable to align respective support devices in succession with the end of said conveyor belt to receive printed and dried covers from the latter; and operating means effective to angularly displace said turntable device; said counter, responsive to passage of a preselected number of covers along said conveyor belt, triggering said operating means to angularly displace said turntable device to position a succeeding stacking device in operative relation with the end of said conveyor belt.

9. Automatic apparatus for printing lids or covers comprising, in combination, a relatively elongated feed table; a cover supply device above said table for delivering covers to said table; a conveyor element extending along said table and having spaced abutments extending laterally of the latter to move covers along said table to a printing station spaced from said supply device; a rotatable carrier at said printing station; plural printing segments on said carrier at uniformly spaced locations therearound; means driving said conveyor element and rotating said carrier in synchronism with each other; means cooperable with said carrier to receive covers from said conveyor element and press each cover against a segment to print the covers; drying means receiving the printed covers; means ejecting printed covers from said carrier; a conveyor belt receiving the covers ejected from said carrier; said drying means being positioned over the upper surface of said conveyor belt; a counter operatively associated with said conveyor belt to count covers transported thereby from said drying means; a turntable device; a plurality of stack support devices positioned uniformly around said turntable device; said turntable device being angularly displaceable to align respective support devices in succession with the end of said conveyor belt to receive printed and dried covers from the latter; operating means effective to angularly displace said turntable device; said counter, responsive to passage of a preselected number of covers along said conveyor belt, triggering said operating means to angularly displace said turntable device to position a succeeding stacking device in operative relation with the end of said conveyor belt; a vertically displaceable ram positioned adjacent the end of said conveyor belt and aligned with each stacking device as the latter is moved into operative relation with said conveyor belt; and means for vertically reciprocating said ram in synchronism with rotation of said carrier; each stacking device including detent means arranged to receive and retain a cover lifted by said ram, and stack support rods extending upwardly from said detent devices.

10. Automatic apparatus for printing lids or covers comprising, in combination, a relatively elongated feed table; a cover supply device above said table for delivering covers to said table; a conveyor element extending along said table and having spaced abutments extending laterally of the latter to move covers along said table to a printing station spaced from said supply device; a rotatable carrier at said printing station; plural printing segments on said carrier at uniformly spaced locations therearound; means driving said conveyor element and rotating said carrier in synchronism with each other; means cooperable with said carrier to receive covers from said conveyor element and press each cover against a segment to print the covers; drying means receiving the printed covers; means ejecting printed covers from said carrier; a conveyor belt receiving the covers ejected from said carrier; said drying means being positioned over the upper surface of said conveyor belt; a counter operatively associated with said conveyor belt to count covers transported thereby from said drying means; a turntable device; a plurality of stack support devices positioned uniformly around said turntable device; said turntable device

being angularly displaceable to align respective support devices in succession with the end of said conveyor belt to receive printed and dried covers from the latter; operating means effective to angularly displace said turntable device; said counter, responsive to passage of a preselected number of covers along said conveyor belt, triggering said operating means to angularly displace said turntable device to position a succeeding stacking device in operative relation with the end of said conveyor belt; said operating means for said turntable device comprising a vertically oriented fluid pressure actuator connected to said turntable device, and having a piston rod extending downwardly therefrom; a first clutch element rotatable on said piston rod; a bracket rotatably supporting said first clutch element; a second clutch element fixed to said piston rod and normally disengaged from said first clutch element; means operable, in a disengaged position of said second clutch element, to restrain the same and said piston rod against rotation; said fluid pressure actuator being operable, responsive to a signal from said counter, to lift said piston rod to disengage said second clutch element from its retaining means and to engage said first and second clutch elements; and a second fluid pressure actuator connected to said first clutch element and operable, during engagement of said first and second clutch elements to angularly displace said first clutch element to correspondingly displace said turntable device; said first fluid pressure actuator thereupon lowering said piston rod and said turntable to disengage said clutch elements and to re-engage said second clutch element with its retaining means.

11. Automatic apparatus for printing lids or covers comprising, in combination, a relatively elongated feed table; a cover supply device above said table for delivering covers to said table; a conveyor element extending along said table and having spaced abutments extending laterally of the latter to move covers along said table to a printing station spaced from said supply device; a rotatable carrier at said printing station; plural printing segments on said carrier at uniformly spaced locations therearound; means driving said conveyor element and rotating said carrier in synchronism with each other; means cooperable with said carrier to receive covers from said conveyor element and press each cover against a segment to print the covers; drying means receiving the printed covers; means ejecting printed covers from said carrier; a first conveyor belt receiving the covers ejected from said carrier; said drying means being positioned over the upper surface of said first conveyor belt; a second relatively short conveyor belt adjacent the terminal portion of said first conveyor belt; a first stacking means adjacent the discharge end of said first conveyor belt; a second stacking means adjacent the discharge end of said second conveyor belt; a switch pivotally mounted adjacent an edge of said first conveyor belt and having a retracted position extending parallel to one side of said first conveyor belt and an operative position in which it extends across said first conveyor belt to deflect covers therefrom to said second conveyor belt; and a counter operatively associated with said first conveyor belt and operable to count covers transported thereby; said counter, responsive to counting a preselected number of covers on said first conveyor belt, triggering said switch for movement from one position to the other position and vice versa.

12. Automatic apparatus for printing lids or covers comprising, in combination, a relatively elongated feed table; a cover supply device above said table for delivering covers to said table; a conveyor element extending along said table and having spaced abutments extending laterally of the latter to move covers along said table to a printing station spaced from said supply device; a rotatable carrier at said printing station; plural printing segments on said carrier at uniformly spaced locations therearound; means driving said conveyor element and rotating said carrier in synchronism with each other; means cooperable with said carrier to receive covers from said conveyor element and press each cover against a segment to print the covers; drying means receiving the printed covers; stacking means receiving the dried covers; means ejecting printed covers from said carrier; a first conveyor belt receiving the covers ejected from said carrier; said drying means being positioned over the upper surface of said first conveyor belt; a second relatively short conveyor belt adjacent the terminal portion of said first conveyor belt; a first stacking means adjacent the discharge end of said first conveyor belt; a second stacking means adjacent the discharge end of said second conveyor belt; a switch pivotally mounted adjacent an edge of said first conveyor belt and having a retracted position extending parallel to one side of said first conveyor belt and and operative position in which it extends across said first conveyor belt to deflect covers therefrom to said second conveyor belt; a counter operatively associated with said first conveyor belt and operable to count covers transported thereby; said counter, responsive to counting a preselected number of covers on said first conveyor belt, triggering said switch for movement from one position to the other position and vice versa; and a guide extending along said second conveyor belt adjacent the edge thereof further from said first conveyor belt and effective to guide covers, deflected from said first conveyor belt to said second conveyor belt, longitudinally of said second conveyor belt.

13. Automatic apparatus for printing lids or covers comprising, in combination, a printing station; a rotatable carrier at said printing station; plural printing segments on said carrier at uniformly spaced locations therearound; means for delivering covers from a supply thereof to said printing station; means cooperable with said carrier to press each cover against a respective segment to print the covers; inking rollers operatively associated with said segments; each inking roller being tubular in form to provide an axial passage therethrough; a support for each inking roller including a cylindrical sleeve and an axle member having a bearing portion engaged concentrically from said bearing portion and a stub axle portion extending from said bearing portion and having bearing engagement in the associated printing roller, said stub axle portion being eccentric with respect to said bearing portion; a grip secured to said support axle member to angularly adjust the same in said cylindrical sleeve to adjust the position of the associated inking roller; and interengageable releasable detent means on said grip member and on said sleeve effective to retain the adjusted position of said support axle member.

14. Automatic apparatus for printing lids or covers comprising, in combination, a printing station; a rotatable carrier at said printing station; plural printing segments on said carrier at uniformly spaced locations therearound; means for delivering covers from a supply thereof to said printing station; means cooperable with said carrier to press each cover against a respective segment to print the covers; inking rollers operatively associated with said segments; each inking roller being tubular in form to provide an axial passage therethrough; a support for each inking roller including a cylindrical sleeve and an axle member having a bearing portion engaged concentrically in said sleeve and a stub axle portion extending from said bearing portion and having bearing engagement in the associated printing roller, said stub axle portion being eccentric with respect to said bearing portion; a grip secured to said support axle member to angularly adjust the same in said cylindrical sleeve to adjust the position of the associated inking roller; interengageable releasable detent means on said grip member and on said sleeve effective to retain the adjusted position of said support axle member; said bearing portion having a bore extending diametrically thereof; and a spring biased detent mounted in said bore and projecting out-

wardly of said bearing portion; the interior surface of said sleeve being formed with a plurality of recesses engageable by said detent.

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ROBERT E. PULFREY, *Primary Examiner.*

DAVID KLEIN, *Examiner.*

W. F. McCARTHY, *Assistant Examiner.*