July 9, 1963 T. L. COOK 3,096,575

METHOD FOR ORIENTING CYLINDRICAL OBJECTS AND SECURING THE SAME TOGETHER

Filed May 25, 1959 5 Sheets-Sheet 1

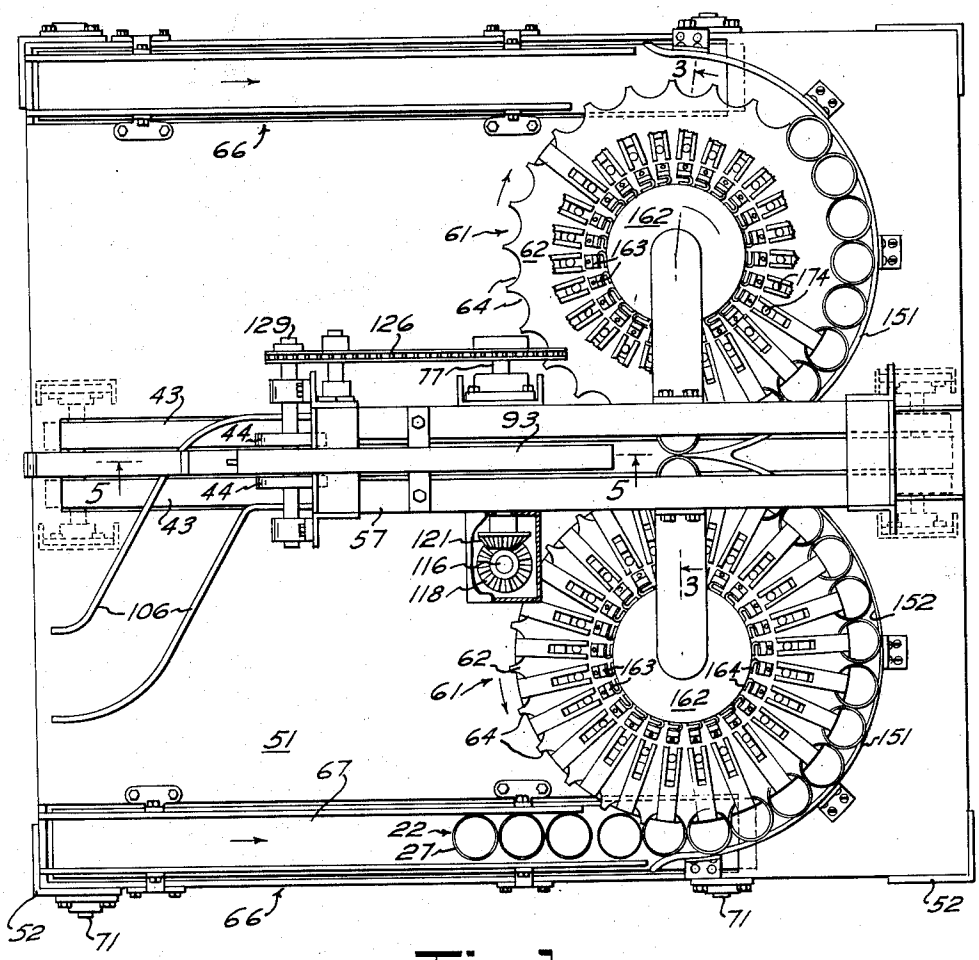

Fig. 1.

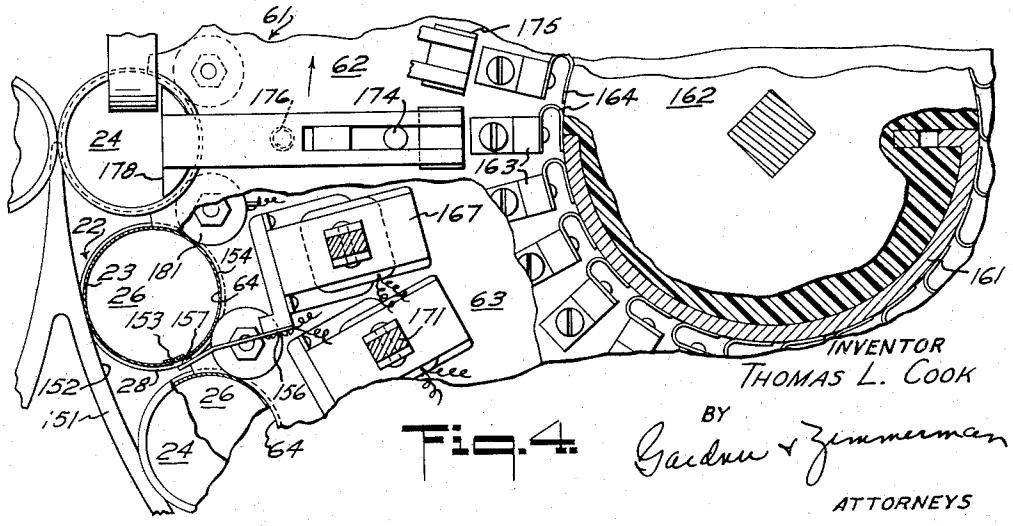

Fig. 4

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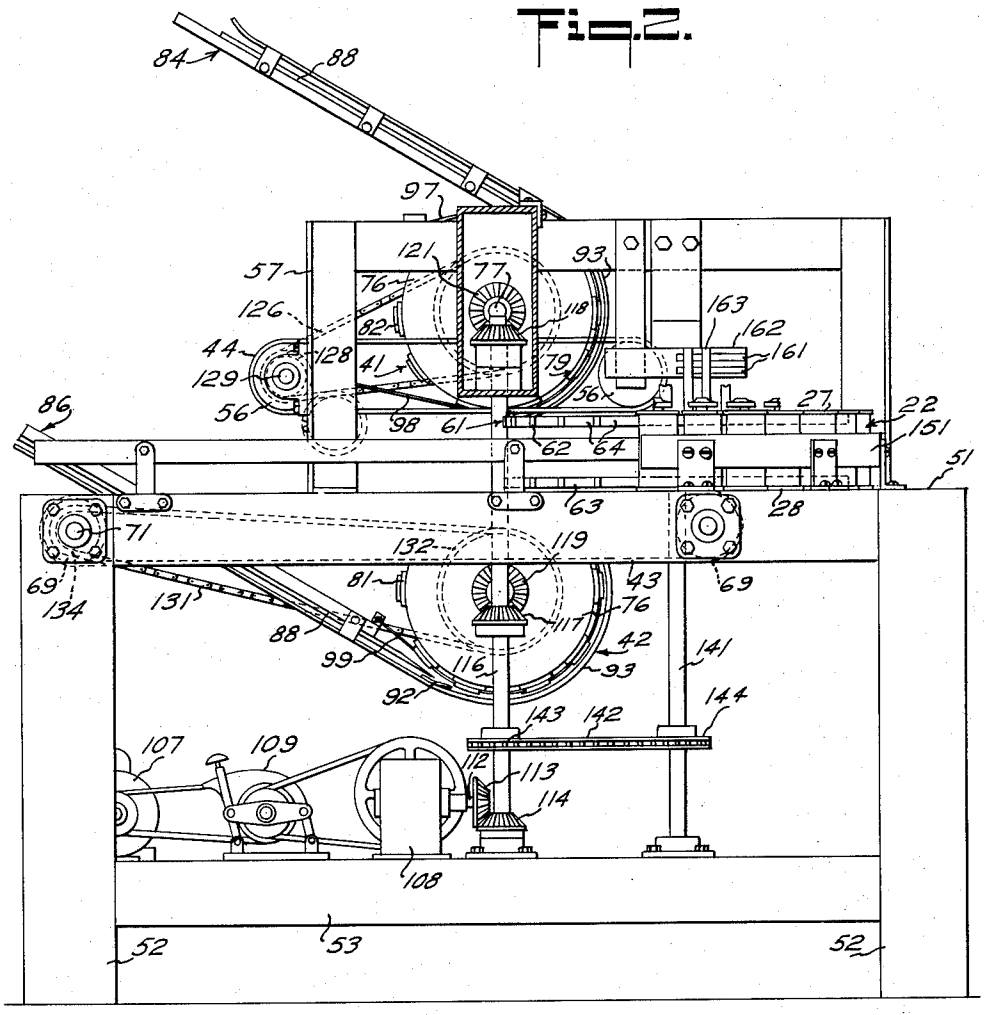
Fig. 2.



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METHOD FOR ORIENTING CYLINDRICAL OBJECTS AND SECURING THE SAME TOGETHER

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Fig. 3.

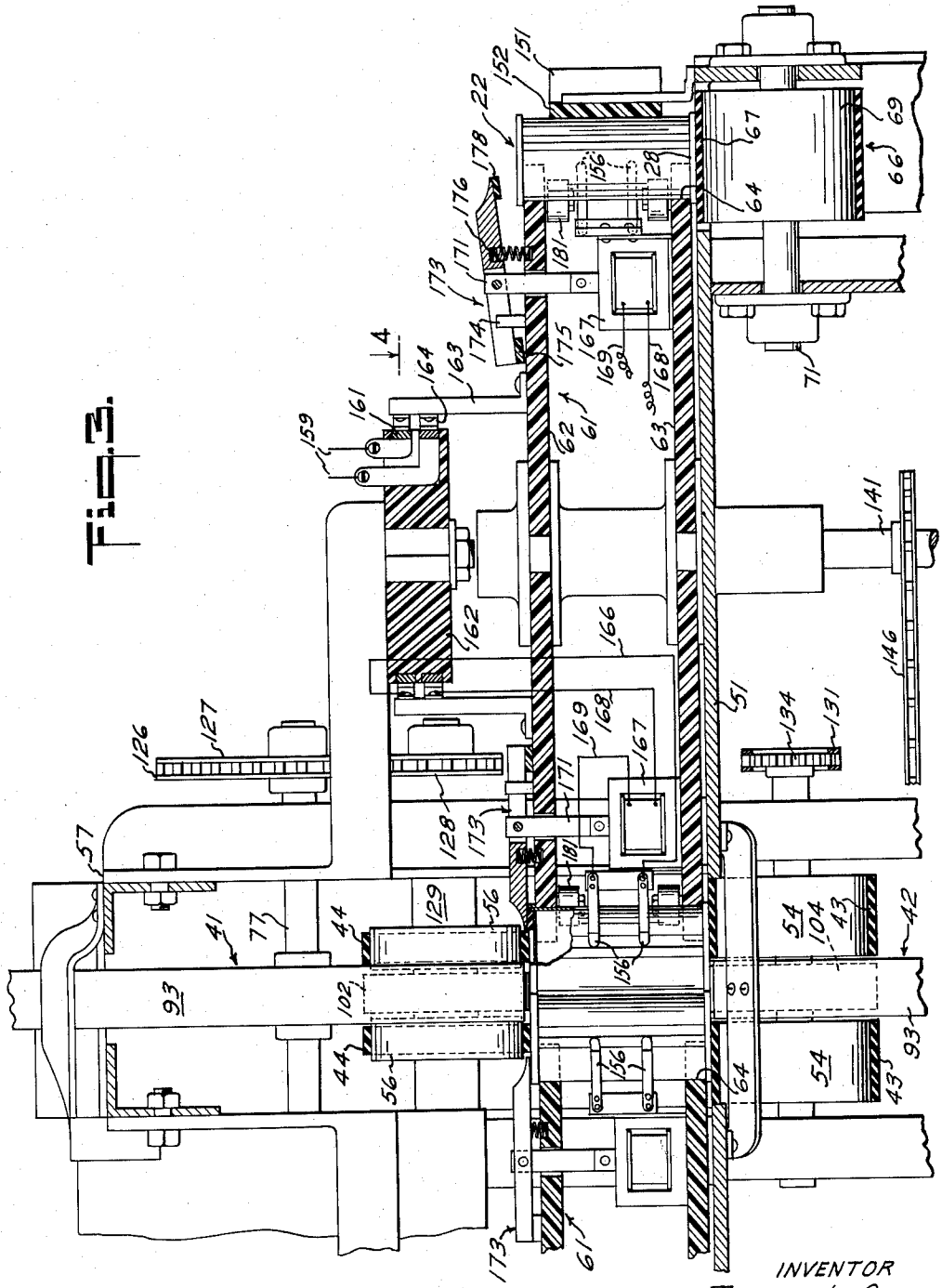

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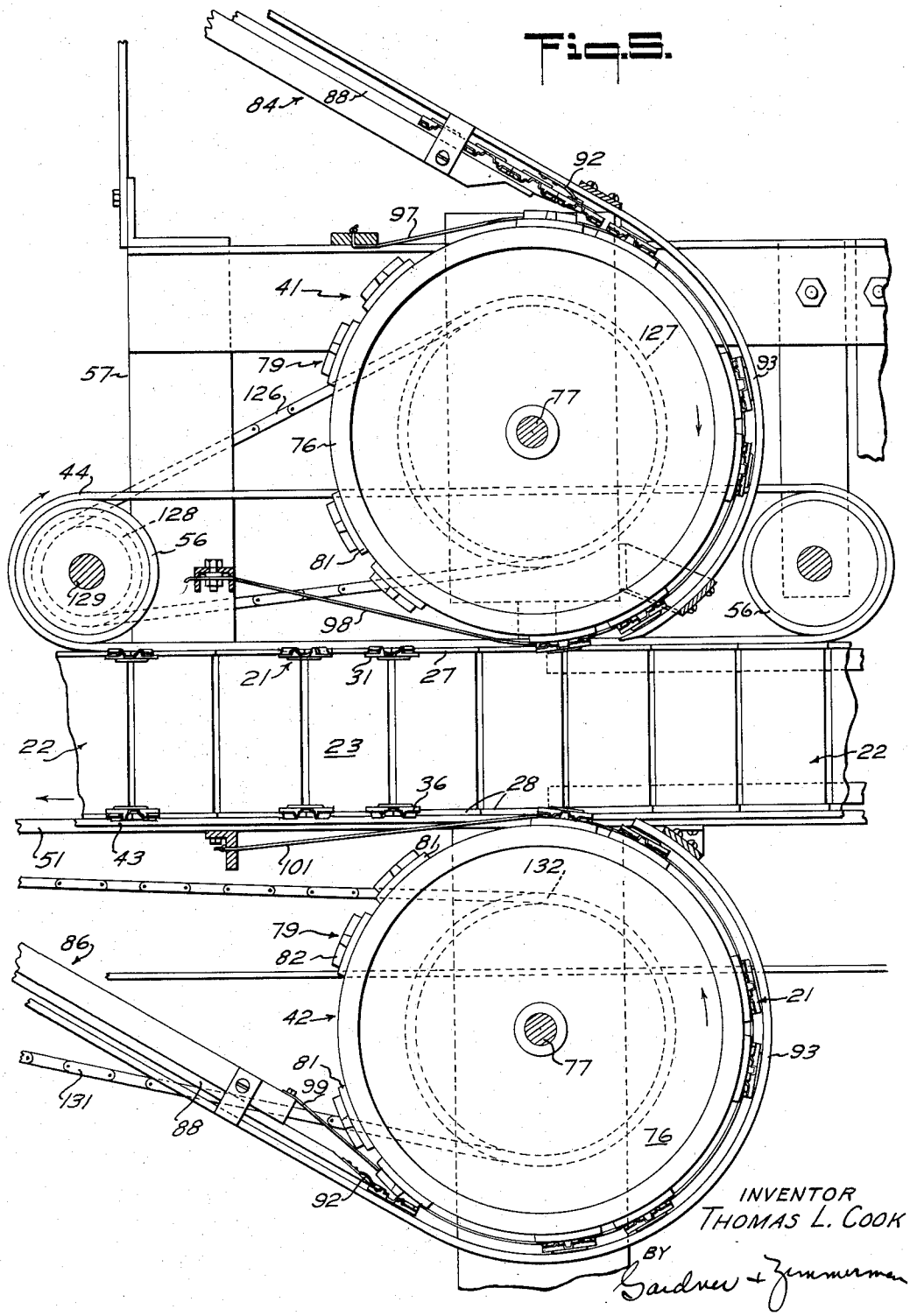
Fig. 5.



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METHOD FOR ORIENTING CYLINDRICAL OBJECTS AND SECURING THE SAME TOGETHER

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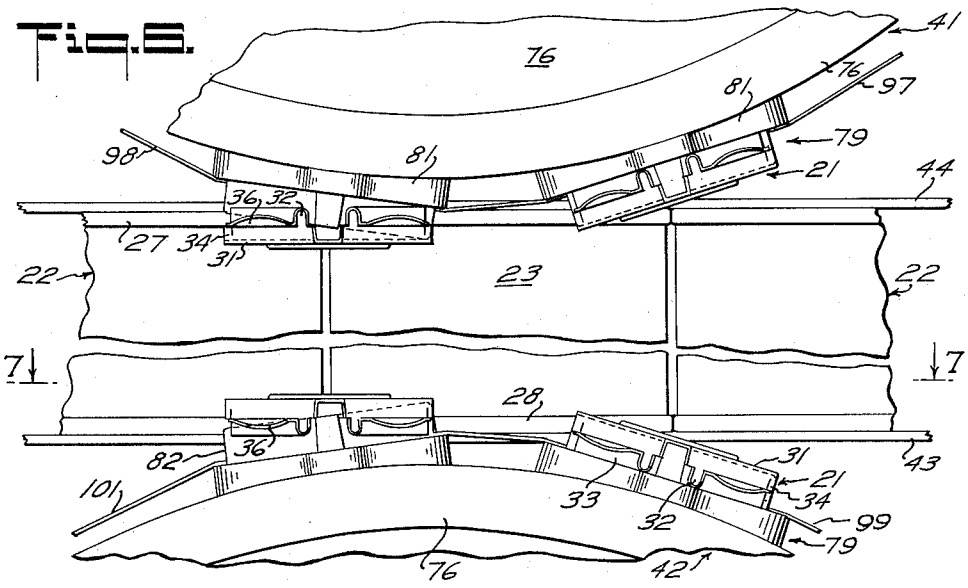
Fig. 6.



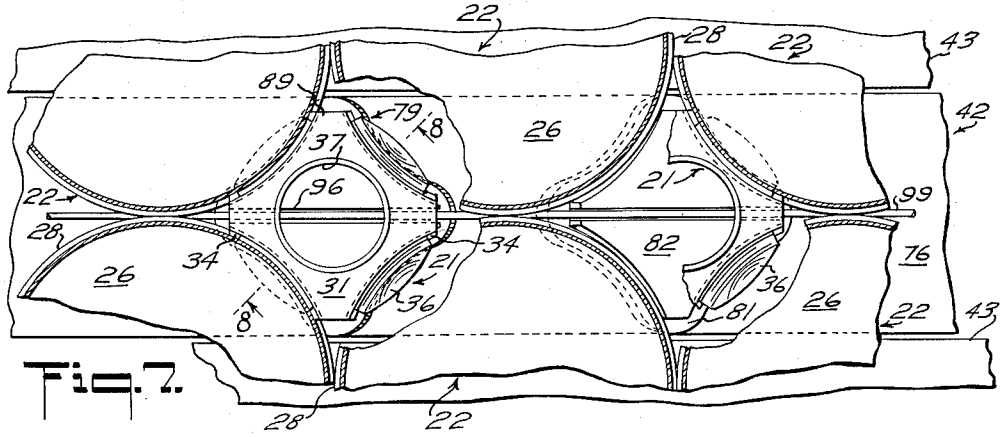
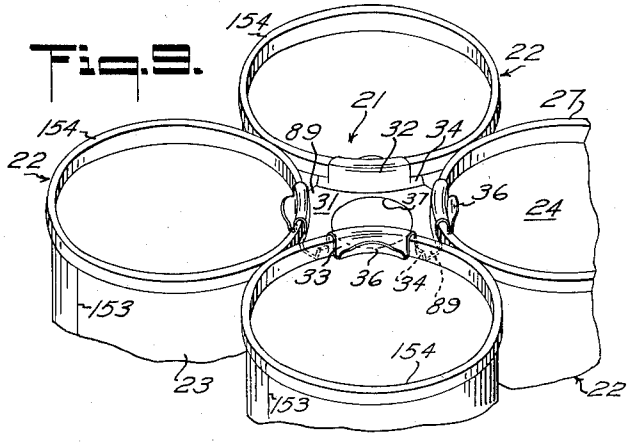


Fig. 7.

Fig. 9.



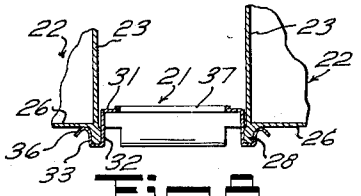


Fig. 8.

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METHOD FOR ORIENTING CYLINDRICAL OBJECTS AND SECURING THE SAME TOGETHER

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Filed May 25, 1959, Ser. No. 815,570
8 Claims. (Cl. 29—407)

This invention generally relates to the art of packaging cylindrical members, such as containers used for foods, beverages and the like, and is more particularly directed towards a method for securing a plurality of containers together by means of metal clips engageable with the beads on the respective containers.

Containers of the type above mentioned are conventionally formed of tin plate and referred to as tin cans, and such cans include a cylindrical side wall and endwalk with an enlarged bead or flange at the juncture of the walls. For a number of years, it has been the practice of merchandising experts to attempt to sell larger quantities of their particular canned product by adopting a multi-can packaging program for the sale of their goods. In this connection, the beer industry has effectively demonstrated the advantages of a multi-can package by selling in excess of ninety percent of its canned beer in the so-called six pack container. In other words, it has been found that the consumer, if presented with the choice of purchasing two or three individual cans or a package of six cans, will take the latter, thereby materially increasing the sale of the product.

In accordance with conventional multi-can packaging, the individual cans are inserted into a carton, and portions of the carton, usually formed of cardboard or like material, are folded around the cans and suitably secured in position. While this arrangement possesses the desirable attributes of multi-can packaging, it likewise has practical and economical disadvantages and shortcomings. By way of example, cartons are bulky to store, even in their collapsed condition, and are relatively expensive. Furthermore, the machinery required to form the cartons around the cans is extremely complicated, expensive, and subject to repeated break downs and other maintenance difficulties.

To avoid the shortcomings above mentioned, it has been more recently suggested to dispense with the costly cartons and hold the cans together by means of relatively simple metal clips releasably engageable with the can beads. By way of example, reference is made to U.S. Letters Patent No. 2,810,171, which discloses a can clip or holder for securing a plurality of cans together to provide a multi-can package. Obviously, if such clips are to be used on a commercial basis, it is necessary that a system be developed to rapidly apply the clips to the cans in an automatic manner and without damage to the cans. Also, as will be understood from reviewing the previously cited patent, a clip of this nature only engages the can beads at their adjacent portions, leaving the peripheral surface of the can side wall unobstructed. Since in most instances the side wall is covered with identifying or advertising indicia, either by printing or lithographing directly on the can, or by applying a label thereto, it is desirable that when the cans are secured together, the indicia bearing covering of each can be oriented in such manner as to be readily visible to the propective purchaser.

It is therefore an object of the present invention to provide a method for applying clips to a continuous flowing line of cans whereby a predetermined number of such cans will be properly secured together to form a multi-can package.

Another object of this invention is to provide a method of orienting cylindrical members so that a predetermined common peripheral portion of each member is facing in a common preselected direction.

A further object of the invention is to provide an automatic system for applying clips to beaded cans in such manner that the indicia bearing covering of each can will be directed in a preselected desired direction whereby the dominant portion of the covering, e.g. the portion bearing the name of the product may be directed outwardly and thereby easily observed by a purchaser.

A still further object of the invention is to provide a method of the character described in which the clips are simultaneously applied to the upper and lower beads of the cans so that a complete can package may be readily formed in a single operation.

Yet another object of the invention is to provide a system of the type above described in which a predetermined number of cans may be secured together from a continuously moving line or lines of such cans in an extremely rapid manner whereby large quantities of cans can be handled in a given period of time.

The invention possesses other objects and fetaures of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawings accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawings and description may be adopted within the scope of the invention as set forth in the claims.

Referring to said drawings:

FIGURE 1 is a top plan view of the apparatus of the present invention.

FIGURE 2 is a side elevational view of the apparatus.

FIGURE 3 is a transverse cross sectional view taken substantially in the plane indicated by the line 3—3 of FIGURE 1, and on an enlarged scale.

FIGURE 4 is a plan cross sectional view taken substantially in the plane indicated by the line 4—4 of FIGURE 3.

FIGURE 5 is a longitudinal cross sectional view taken substantially in the plane indicated by the line 5—5 of FIGURE 1.

FIGURE 6 is a fragmentary view on an enlarged scale of a portion of the structure shown in FIGURE 5.

FIGURE 7 is a plan cross sectional view taken on the line 7—7 of FIGURE 6.

FIGURE 8 is a cross sectional view taken at the line 8—8 of FIGURE 7, the mechanism being removed in order to better illustrate the cans and applied clip.

FIGURE 9 is a perspective view of four cans with an upper clip applied thereto.

In broad terms, the method of this invention includes the delivery of filled cans to a can orienting mechanism, and when the cans are properly oriented and while the cans are moving along a defined path, simultaneously applying can-holding clips to upper and lower beads of a predetermined number of cans to provide a multi-can package. For purpose of illustration and explanation, the disclosed apparatus is designed to provide a package of six cans, consisting of two parallel adjacent rows of three cans each, such a package being generally referred to as a six pack. The can clips disclosed herein are adapted for engagement with the beads of four adjacent cans. Consequently, for a six pack, a total of four clips are used, two on the upper beads and two on the lower beads. For a four or lesser pack, obviously only a single clip is required on the top and on the bottom bead portions.

With the foregoing in mind, it will be understood that

in creating a six pack, the properly oriented cans must be fed to the clip applicator means in two adjacent rows, the first two cans in both rows clipped together, and the second and third cans of both rows likewise secured to provide a unit of six cans. Then, notwithstanding the fact that the fourth can immediately follows the third can, no clip is applied therebetween, but new clips are then applied to the fourth and fifth cans and the fifth and sixth cans, etc.

Before going into further detail on the present apparatus, reference is first made to FIGURES 8 and 9 of the drawings where there is shown a can clip **21** applied to a plurality of cans **22**. Each can is of conventional construction and includes a cylindrical side wall **23**, a top end wall **24**, a bottom wall **26**, and upper and lower beads **27** and **28** respectively at the juncture of the side and end walls. The clip **21** is adapted to be applied to four immediately adjacent cans, each of the cans having its head portions in engagement with like portions of two adjacent cans, with the clip primarily disposed within the interstice defined by the cans.

Clip **21** includes a central planar portion **31** whose side edges extend upwardly to form legs **32**, the latter being arcuate in shape along the length thereof. The central portion of each leg has its upper end portion bent downwardly with a leg **33**, generally parallel to and spaced outwardly from leg **32**. The end portions of leg **32** are foreshortened to define tabs **34** directed towards leg **33**. As will be seen in the drawings, when the clip is applied to the cans, the central portion **31** will be disposed inwardly of the end of the can, the leg **32** positioned against the outer periphery of head **27** or **28**, the leg **33** positioned against the inner periphery of such head, and the tabs **34** at each end of the leg **32** underlying the shoulder formed at the juncture of the head and can side wall. In addition, leg **33** at its distal end is provided with an upward deformation **36** to facilitate removal of the clip from the cans, while portion **31** includes a central aperture **37** which serves as a convenient finger grip for handling the can package.

As previously explained, the clips **21**, in their present environment are adapted to be applied to the upper and lower heads of two side by side rows of continuously moving cans by means of vertically aligned upper and lower clip applicator dies, generally designated at **41** and **42**, and which will be hereinafter more fully described. The cans **22** are fed, in vertical position, and in two adjacent rows between the dies, by a plurality of endless conveyor belts. As here shown, the latter includes a pair of horizontally extending parallel lower belts **43** positioned on each side of the dies, and having their upper reaches substantially at the upper periphery of die **42**; and a similar pair of upper belts **44**, each overlying a subjacent belt **43**, and with their lower reaches substantially at the periphery of upper die **41**. The spaced reaches of the respective belts are such as to firmly engage the cans therebetween and move them forwardly from right to left, past the dies, as viewed in FIGURES 1 and 2 of the drawings.

The belts, dies and other moving portions of the mechanism are preferably mounted on a platform which includes a horizontal table **51** supported on legs **52** and suitable bracing **53**. The lower belts adjacent the ends of the platform engage drive rollers **54**, suitably journalled thereon, while the upper belts **44** are in engagement with drive rollers **56** carried on vertical extensions **57** of the table, and as will be hereinafter more fully explained, such rollers are driven in synchronism by a suitable power source. It will be noted that the upper belts extend longitudinally of the platform for only a portion of the length of the lower belts, having one end portion disposed immediately rearwardly of the dies and their other end portions positioned forwardly of the dies.

Any suitable means may be utilized for initially placing the cans in vertical position on the lower belts **43** whereby they may be conveyed forwardly along the platform, thence firmly clamped between the upper and lower belts and acted upon by the dies. It will be noted that the upper reaches of the lower belts **43** are substantially coplanar with the surface of the platform table **51**, so that the cans may be conveniently moved across such surface and deposited on the belts, the platform having a cut out portion for receiving the belts. As here shown a pair of transversely spaced rotary can feed members **61** are utilized for this purpose, one of such members being disposed on each side of one of the belts. Each of the members **61** is substantially the same and includes a pair of vertically spaced horizontally disposed plates **62** and **63** having uniformly spaced can-receiving arcuate pockets **64** disposed along the circumference thereof. These pockets extend for slightly less than 180° of arc, and the spacing between the plates is such that the pockets will engage the side wall of a can adjacent the upper and lower beads thereof when the can is seated on the table **51**. In order to supply cans to the members **61**, can delivery conveyors **66** are provided adjacent the opposite edges of the table, here shown in the form of endless belts **67** adapted to continuously receive a supply of cans and deliver them in a rearward direction towards and into the pockets of members **61** at a tangential position diametrically opposed to the belts **43** and **44**. Conveyors **66** are each carried on suitable drive rollers **69** carried on shafts **71** and suitably power driven.

From the foregoing, it will be understood that the cans, upon delivery to the conveyors **67**, are fed into the pockets **64** of the members **61**, and upon rotation of the latter in the direction of the arrows shown in FIGURE 1, the cans will be moved across the table **51** onto the upper reaches of belts **43**, leaving the pockets. Forward movement of belts **43** result in the cans then coming into engagement with the lower reaches of belts **44**, thereby being clamped against displacement when moving past the die members. It will be noted that the belts **43** and the belts **44** do not engage the entire bead area of the cans, but only the outer bead portions thereof, thus leaving the adjacent opposed bead portions of the two rows of cans unobstructed so that the clip **21** may be applied thereto. In this connection, it should be noted that suitable can guides may be provided to insure proper positioning of the cans between the belts **43** and **44**.

Referring now to the clip applicator dies, the same are disposed in vertically aligned relation, and each comprises a disc **76** mounted for rotation about horizontally disposed drive shafts **77**. The disc of the upper die **41** is positioned above the table **51** a distance generally equivalent to the height of a can, while the disc of the lower die is disposed subjacent the table surface. At preselected portions along the periphery of each disc are positioned clip supporting and applying dies **79**, preferably made of a hardened material and extending radially outwardly of the disc periphery. In the arrangement shown for the production of six packs, it will be seen that the dies **79** are positioned in pairs, with the circumferential spacing between the centers of the dies in each pair corresponding to the diameter of a can and the circumferential spacing between the centers of one die of one pair and a die of an adjacent pair being twice the diameter of a can. In this manner, with the rotation of the discs synchronized with the travel of belts **43** and **44**, sets of six adjacent cans will be clipped together in the manner previously described. If a four pack was desired, the centers of each die would be spaced at twice the can diameter, while an eight pack would require three dies spaced at a can diameter, and then a space of twice the can diameter, etc.

In more detail, each of the dies **79** includes a base **81** having a plan contour of generally the same shape, but larger than the plan contour of a clip **21**. Extending radially outwardly of the base is a male boss or projection **82** of a size and configuration to fit within the cavity defined by the central portion **31** and legs **32** of the clip

and hold the same against relative displacement on the boss except for movement in a direction radially outwardly of the disc.

The clips **21** are fed to the bosses **82** on the discs by means of an inclined upper chute **84** extending tangentially of the upper disc slightly forwardly (relative to its rotational sense) of the upper portion thereof, and a similarly inclined lower chute **86** which extends through the table **51** to tangentially intersect the lower disc slightly rearwardly of its lower portion. Any suitable shaker mechanism (not shown) may be utilized to feed the clips in single file into the chutes wherein they will gravitally slide towards the die members **41** and **42**. With respect to the upper chute, the clips must be disposed with the central planar portion **31** uppermost so that the bosses may receive the clip cavity. However, as to the lower chute, the clips must be inverted, i.e., with the portion **31** lowermost for insertion on the bosses. The clips must also be oriented as to position in the chutes since the bosses are oriented so that a diagonal line drawn between the juncture of opposed adjacent edges of the dies, and the clips carried thereby extends centrally along the circumference of the discs and along the longitudinal axes of the table between the can conveyor belts for each line of cans. The clip orientation in the chutes is maintained by providing, in combination with the sides, top and bottom walls of the chute, a central rod or wire **88** which extends diagonally between the opposed openings **89** formed at the junctures of the side walls of the clip.

With the chutes filled with clips, properly oriented, the lowermost clip is held in position to be intercepted by a boss **82** by a weak leaf spring **92**, with one corner of the clip sufficiently advanced so that the next boss on the disk must engage the clip, forcing it away from the spring. Full seating of the clip on the boss is insured by providing an arcuate guide plate **93** for each disk, spaced sufficiently from the periphery of the latter to retain the clips against gravitational displacement, and seat the juncture of legs **32** and **33** against the base **81** of each boss.

From the foregoing, it is believed clear that with the clips applied to the bosses, as the latter approaches the moving rows of cans, the clips will be placed on the cans with a generally rolling action in the direction of can travel, as best illustrated in FIGURE 6 of the drawing, the clips being effectively snapped into engagement with the can beads. In this connection, a safety feature is provided to avoid jamming of the mechanism if due to spacing between cans in a row, the absence of cans, faulty synchronism between can feed and rotation of the dies, or for other reasons, a clip remains on its boss after passing its normal release position. As here shown, each boss is provided with a slot **96** extending circumferentially of the disc in which is disposed a fixed rod. Rod **97** for the upper disc enters the slots at about the top of the disc, prior to clip introduction thereto, and follows the contour of the latter to a position beyond the lower or clip applying portion of the disc, whereupon it extends away from the disc for a short distance as shown at **98**. In this manner, the rod in no way interferes with the application of the clips to the bosses, but if a clip should remain on its boss past the lower portion of the disc, the rod portion **98** will strip the clip from the boss. In the same manner, a rod **99** is provided for the lower disc and includes a clip-stripping portion **101** extending from the upper portion of the disc to remove any clips carried beyond the top portion of the disc whereat the clip is intended to be applied to the cans.

As the clipped cans pass the clip applying dies **41** and **42**, they continue to move forwardly between the belts **43** and **44**. Adjacent the forward ends of the latter are disposed pressure rollers **102** and **104** which lie between each set of belts and are adapted to bear against the clips and insure proper seating of the clips on the can beads. Continued forward movement of the cans causes the latter to engage guide plates **106** which remove the packaged cans from the belts for delivery to a take-away conveyor or other desired operations.

Means are provided for driving the previously described moving portions of the apparatus in timed relation, particularly with respect to the can feed members **61**, conveyor belts **43** and **44**, and dies **41** and **42**. As here shown, a motor **107** is mounted adjacent the lower portion of the platform and is operatively connected to a speed reduction unit **108** through a speed changing mechanism **109**. Unit **108** is provided with a drive shaft **112** in which a bevel gear **113** is mounted. Gear **113** is in engagement with a similar gear **114** carried adjacent the lower end of a vertical shaft **116** mounted for rotation in suitable support bearings and in alignment with the axes of discs **41** and **42**. Shaft **116** is provided with vertically spaced bevel gears **117** and **118** which engage like gears **119** and **121** carried by the die shafts **77**, thus effecting synchronized rotation of the upper and lower dies **41** and **42**.

Belts **44** and their drive rollers **56** are driven in timed relation to the dies such as through a chain **126** engaging a sprocket **127** carried by the upper die shaft **77** and a sprocket **128** carried by a shaft **129** on which the rollers **56** are mounted.

The lower belts **43** are similarly driven by the lower die through a chain **131** engaging a drive sprocket **132** carried on the lower die shaft **77** and a sprocket **134** on the shaft of the forward lower drive rollers **54**.

The can delivery conveyors **66** need not be synchronized so long as they bring a continuous line of cans to each of the rotary star wheel members **61** to fill each pocket thereof. Members **61** are rotated in timed relation to the remaining portions of the mechanism by providing each member **61** with a vertical shaft **141**, one of which is preferably driven by a chain **142** engaging sprockets **143** and **144** carried on shafts **116** and **141** respectively, and the two shafts being connected for contra rotation in any suitable manner including a chain **146**.

The apparatus and method hereinabove described will produce clipped multi-can packages of any desired number of cans in a rapid and efficient manner. However, as previously stated, most cans are suitably labeled or lithographed, and to produce an eye appealing six pack, for example, the brand name in each row should be directed outwardly in order to be clearly visible to the prospective purchaser. Accordingly, as an important feature of this invention, there is provided a means and method for so orienting the cans prior to the application of the clips or other securing means thereto.

As here illustrated, such means are incorporated on the star wheels **61**, and in broad terms is arranged to effect rotation of the cans until a predetermined peripheral portion of the can is oriented relative to its pocket **64**, halting further rotation, and then delivering the oriented cans to the belt **43** with the desired portion of the label facing outwardly, i.e., towards its adjacent longitudinal edge of table **51**.

To effect the foregoing rotation of the cans, each star wheel **61** is provided with a fixed arcuate guide plate **151** extending from the can feed conveyors **66** to the belts **43**. These plates are provided with a can engaging portion **152** made of rubber or other material having a high coefficient of friction and spaced from the periphery of member **61** so that a can moved by the latter is forced against the portion **152** and caused to rotate in its pocket **64**. Obviously, if the cans were extremely heavy, it might be necessary to provide plate **151** in the form of a moving belt to insure can rotation, but for most installations, the high friction stationary plate is adequate. Thus, during the arcuate path of movement of the cans, they will be rotated about their axes, and such rotation is utilized to provide for proper can orientation.

In the present embodiment it will be seen that the cans are properly oriented relative to the pockets **64** by providing a sensing arrangement which is operative to halt

the can rotation when a predetermined peripheral portion of the can is engaged by such element. The sensing arrangement is electrically actuated by means of the element contacting a bare metal portion of the sidewall of the can to effect closure of an electrical circuit which in turn effects a clamping of the can in the pocket.

In this respect it will be appreciated that it is a common practice in the industry to cover the sidewalls of can with lithographic labeling which is electrically non-conductive. Such lithographing usually covers the entire sidewall except for a strip adjacent the longitudinal side seam in which the bare metal is left exposed. In the arrangement disclosed, the can side seam **153** is positioned ninety degrees from a portion **154** of the lithography which is desired to be viewed when the cans are clipped together. In the event the cans are provided with paper labels rather than the lithographic coating, the paper usually extends completely around the can sidewall, and therefore in order to provide a bare metal portion for establishment of an electric circuit, it is only necessary to provide an aperture or apertures through the label so that the sensing element can engage the bare metal.

As best seen in FIGURES 1, 3 and 4 of the drawings, the sensing arrangement includes a pair of vertically spaced contact bars **156** positioned intermediate the star wheel plates **62** and **63**, with a pair being provided for each of the pockets **64**. The ends of the bars are provided with contacts **157** which are normally disposed slightly within the lateral confines of the pockets so as to engage a can positioned therein.

Electrical energy is supplied through power leads **159** leading to a pair of vertically spaced arcuate conductor rings **161** which extends approximately one-half the periphery of a commutator member **162** fixedly positioned in axially aligned relation overlying the star wheel. Mounted on the upper surface of plate **62** are a plurality of brackets **163** with the number of such brackets corresponding to the number of pockets **64** in the star wheel. Each of the brackets is provided with a pair of spring contacts **164** in engagement with the periphery of the commutator, and likewise engageable with the conductor rings **161**. One of the contacts **164** is connected to one of the can contact bars **156** by a lead **166**, and the other contact **164** is connected to a solenoid **167** by a lead **168** which in turn is connected by a lead **169** to the other can contact bar. The solenoid is provided with a normally extended plunger **171** which is retractable upon creation of a circuit through the solenoid. Pivotally connected to the end of plunger **171** is a medial portion of a can clamping arm **173**. One end of the arm is bifurcated with a pin **174** extending from plate **62** positioned between the bifurcations for guiding the arm during pivotal movement thereof, such end being also provided with a resilient rocker portion **175** engageable with the plate **62**. The other end of the arm overlies its adjacent pocket and is normally maintained in the elevated position seen in the right hand side of FIGURE 3 by a spring **176** extending between plate **62** and the lower surface of the arm. This latter end of arm **173** is provided with a can clamping pad **178** which, when the arm is rocked downwardly, as shown in the left hand side of FIGURE 3, will engage the top end wall of the can and effectively prevent further rotation thereof.

From the foregoing description, it will be understood that as the cans are rotated in their respective pockets in the manner previously described, the contact bars **156** will engage the bare metal portion of the can side wall after the can has rotated no more than one revolution. In the case of the lithographed cans, such engagement will be made when the bare can portions adjacent the side seam **153** reaches the bars, whereas in the case of labeled cans, when the apertures in the label reach the bars. The bar contacts **157** are disposed at the trailing edge of each pocket, and when such contacts engage the bare metal of the can, a circuit will be closed through the rings **161**, contacts **164** and the solenoid, causing a retraction of the plunger and a downward movement of the arm **173** to firmly clamp the can against further rotation. It will be noted that the rings **161** extend substantially from the position wherein the star wheel receives cans from the feed lines **66** to the position wherein such cans are delivered by the wheel to the conveyor **43**.

As a result of the foregoing, the can sidewall portion **154** which will be oriented outwardly in the finished can package will be disposed at the innermost seat portion of its pocket after the arm has been actuated.

While as above mentioned, a can, upon entry into its pocket, will be required to rotate only one revolution or less, and normally the engagement of the can with the member **152** will fulfill this rotational requirement. However, to assist the rotation of the cans, freely journalled roller **181** may be provided between the plates **62** and **63**, each of such rollers being adapted to engage the side walls of a pair of cans in adjacent pockets.

What is claimed is:

1. A method of orienting and securing cylindrical metal containers having a generally non-conductive covering over a major extent of its periphery with bare metal at another portion of its periphery, which consists of moving said containers along a defined path and discharging the same in end up relation at the end of said path, effecting a rotation of said containers about their axis during said movement, applying a sensing element to the periphery of each container during rotation thereof to sense the appearance of said bare metal, and utilizing the sensing of said bare metal to halt further container rotation whereby all containers will be discharged with the bare metal portion in the same relative position, and then substantially simultaneously securing upper and lower end portions of at least two adjacent containers together.

2. The method of orienting a plurality of cylindrical metal containers each having a label covering at least a portion of the side wall periphery with bare metal at another portion of its periphery, which consists of placing said containers in generally vertical position, moving said containers along a defined generally horizontal path, rotating said containers about their respective axes during such movement, applying a sensing element to the periphery of each container during rotation thereof to sense the appearance of said bare metal, utilizing said sensing of bare metal to halt said rotation when a predetermined peripheral container portion is oriented in a preselected direction, and then moving said containers along a substantially linear horizonal path with each container having the same peripheral portion similarly orieinted.

3. The method of orienting and securing a plurality of cylindrical members together which comprises moving said members along a defined path, rotating said members about their axes during such movement, halting said rotation and preventing further rotation when a predetermined peripheral member portion is oriented in a preselected direction, and then moving said members in side by side parallel relation with each member having a common peripheral portion similarly oriented, and then securing a preselected number of said members together adjacent the ends thereof.

4. The method of securing a plurality of beaded cans together with clips engageable with the beads of adjacent cans which consists of moving two continuous rows of cans along a defined path in substantially immediate side by side relation, supporting said cans during such movement while leaving confronting portions of the beads of adjacent cans in the two rows unobstructed, feeding clips towards said rows of cans, and applying said clips to said confronting bead portions while said cans are moving along said path.

5. The method of producing a multi-can package by affixing clips to the upper and lower bead portions of

a plurality of cans which comprises moving a first row of cans along a defined path, moving a second row of cans along a parallel path with the cans in each row being disposed parallel to and substantially immediately adjacent the cans of the other row defining an interstice between each set of four cans, feeding a line of clips towards the ends of said cans at said interstices, and urging individual clips into engagement with the bead portions of each set of cans at each end of the cans, all while said rows are moving along said path.

6. The method as claimed in claim 5 in which a preselected peripheral portion of the cans in each row is facing away from an adjacent can in the other row.

7. The method of securing four beaded cans together with a bead engaging clip positioned in the interstice between the cans at both ends thereof, which comprises placing said cans in an upright position, moving two immediately adjacent rows of cans along a defined horizontal path with the cans in each row aligned with the cans in the other row, feeding a line of clips downwardly towards the upper ends of said cans another line of clips upwardly towards the lower ends of the cans, and substantially simultaneously forcing a pair of said clips into engagement with the upper and lower bead portions of two cans in one row with two cans in the other row.

8. The method as set forth in claim 7 in which said clips are fed towards said moving cans along an arcuate path tangentially related to the path of movement of the upper and lower ends of the cans.

References Cited in the file of this patent

UNITED STATES PATENTS

929,798	Spain	Aug. 3, 1909
1,105,590	Abbott	July 28, 1914
1,830,021	Forney	Nov. 3, 1931
1,985,863	Kronquest	Dec. 25, 1934
2,172,402	Nordquist	Sept. 12, 1939
2,225,549	Card	Dec. 17, 1940
2,315,526	Jordan	Apr. 6, 1943
2,623,274	Henchert	Dec. 30, 1952
2,646,911	Holmberg	July 28, 1953
2,716,804	Johnson	Sept. 6, 1955
2,835,963	Drennan	May 27, 1958