

Feb. 5, 1952

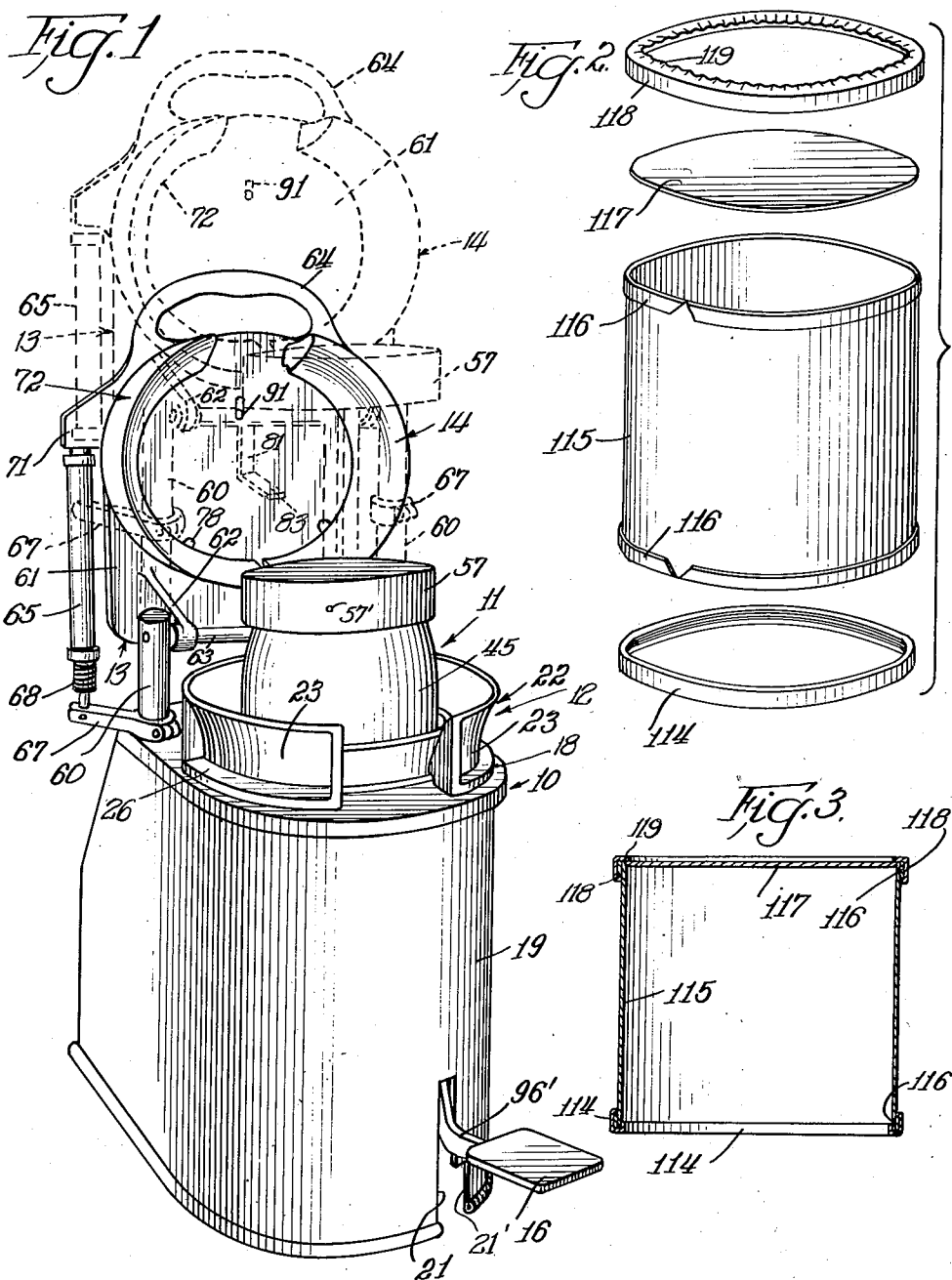
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2,584,718

CONTAINER ASSEMBLING APPARATUS

Filed Oct. 1, 1949

5 Sheets-Sheet 1



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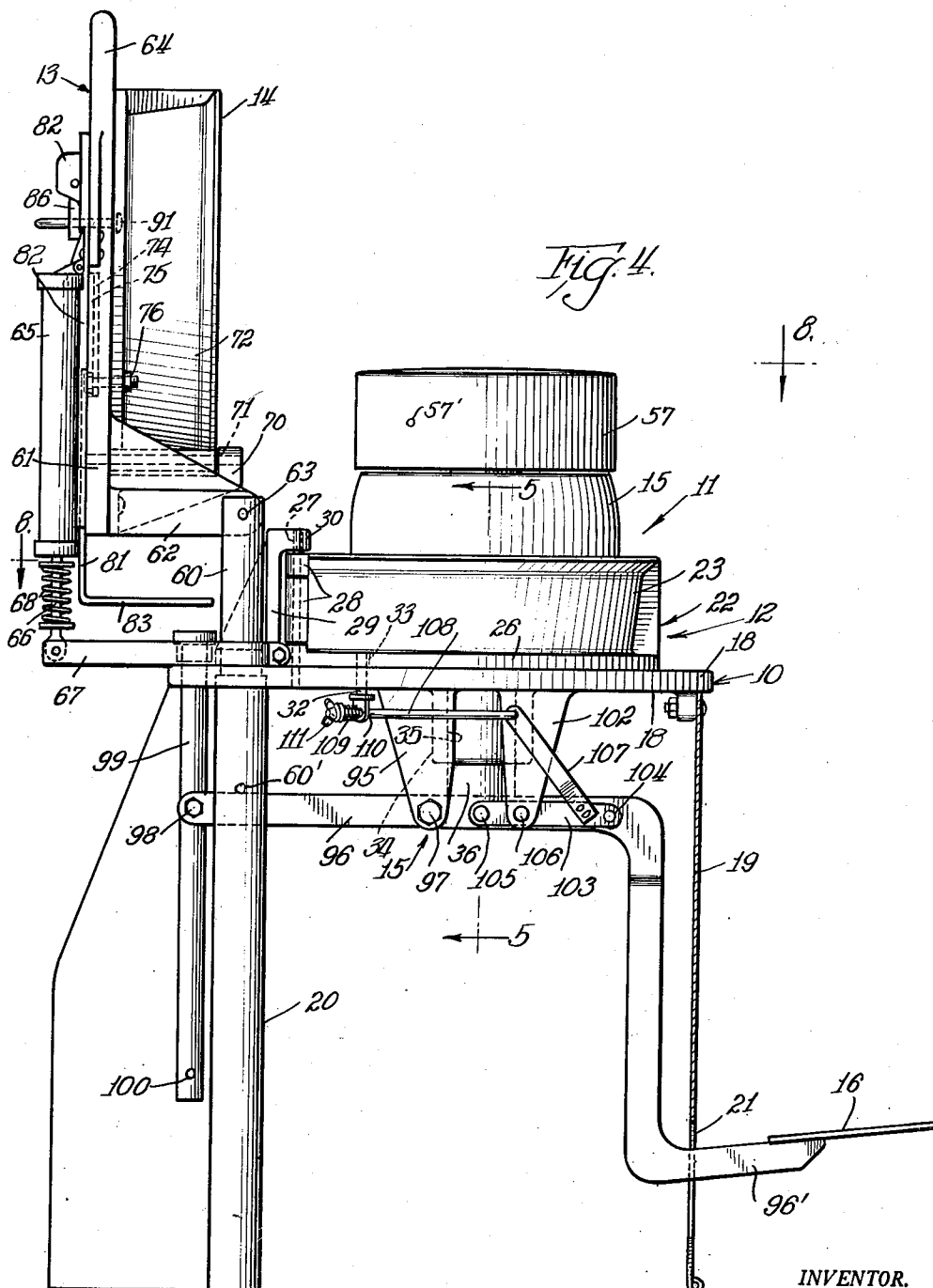
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5 Sheets-Sheet 2



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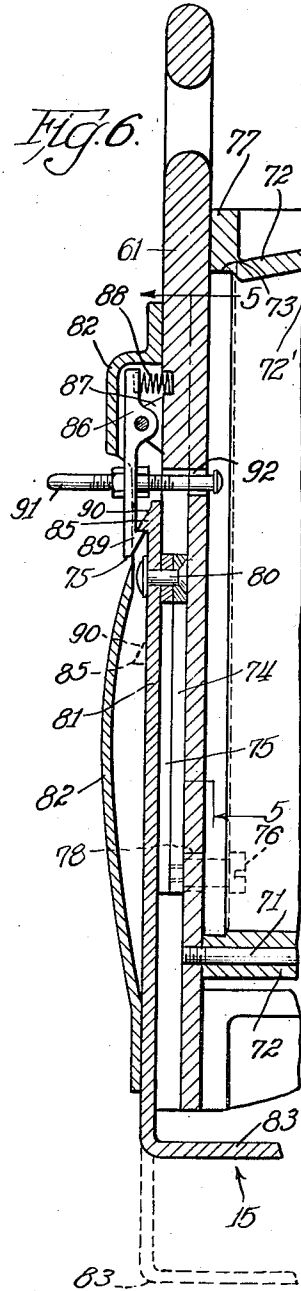
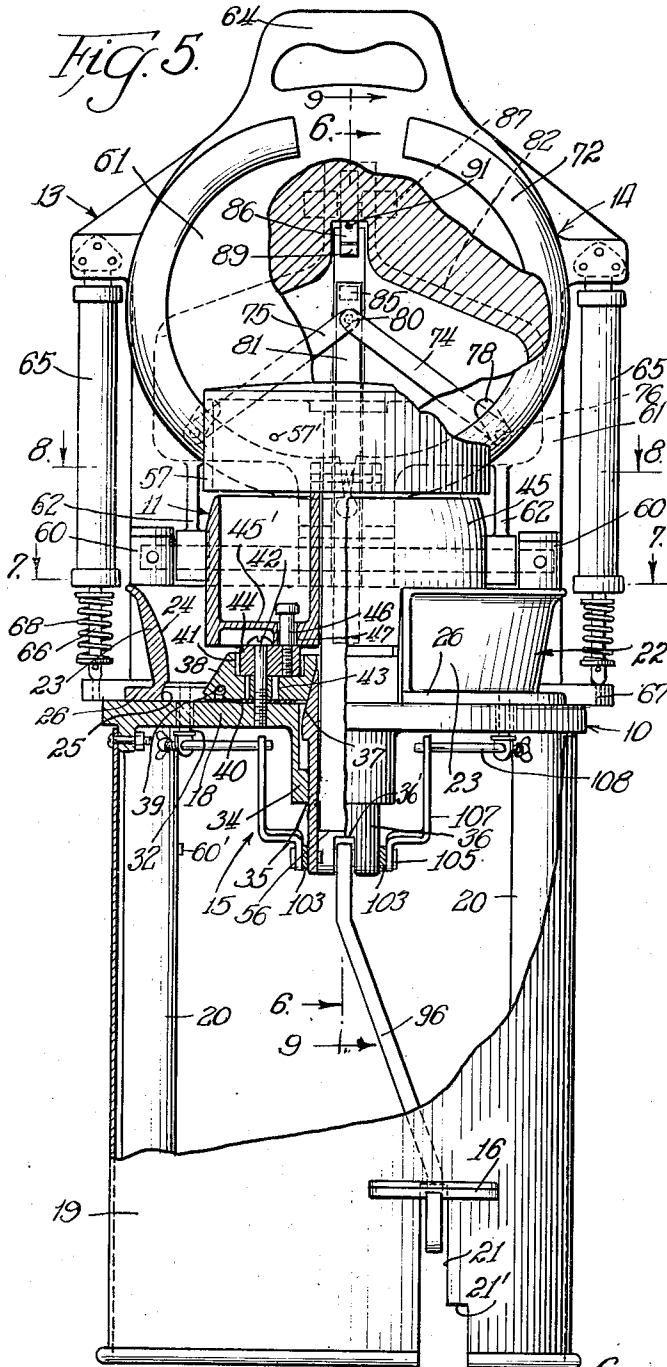
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5 Sheets-Sheet 3



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5 Sheets-Sheet 4

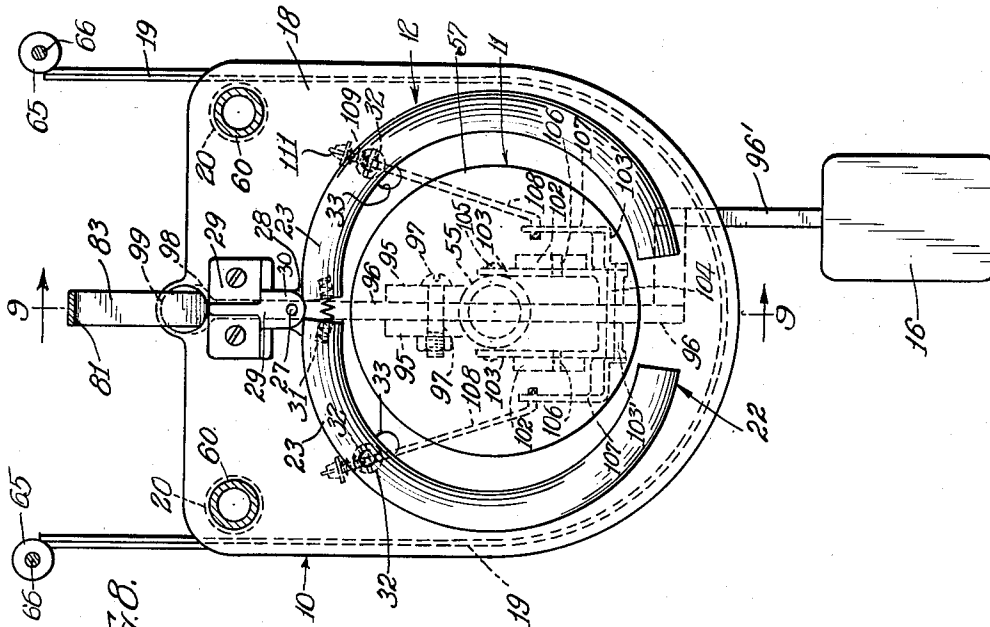


Fig. 8.

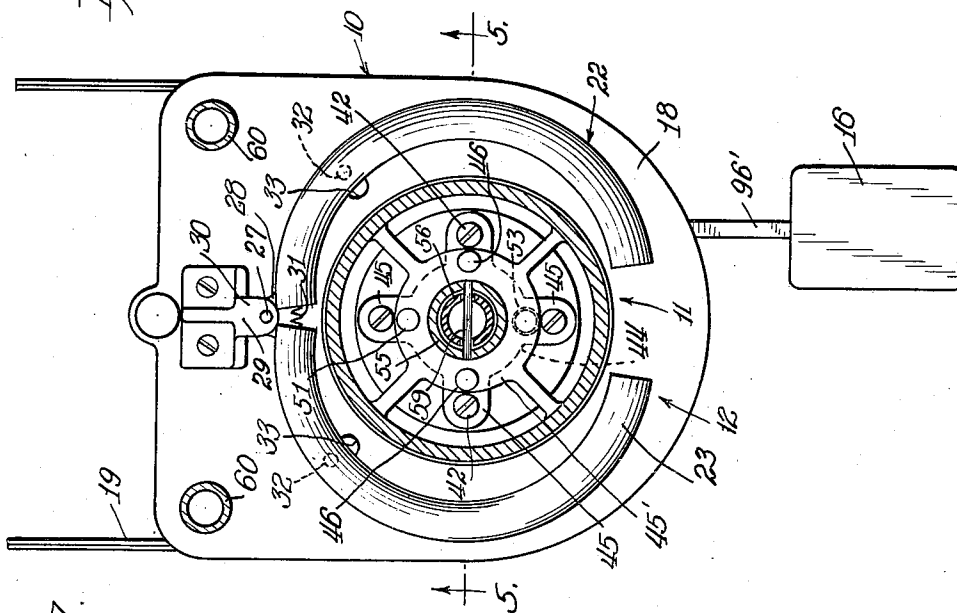


Fig. 7.

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5 Sheets-Sheet 5

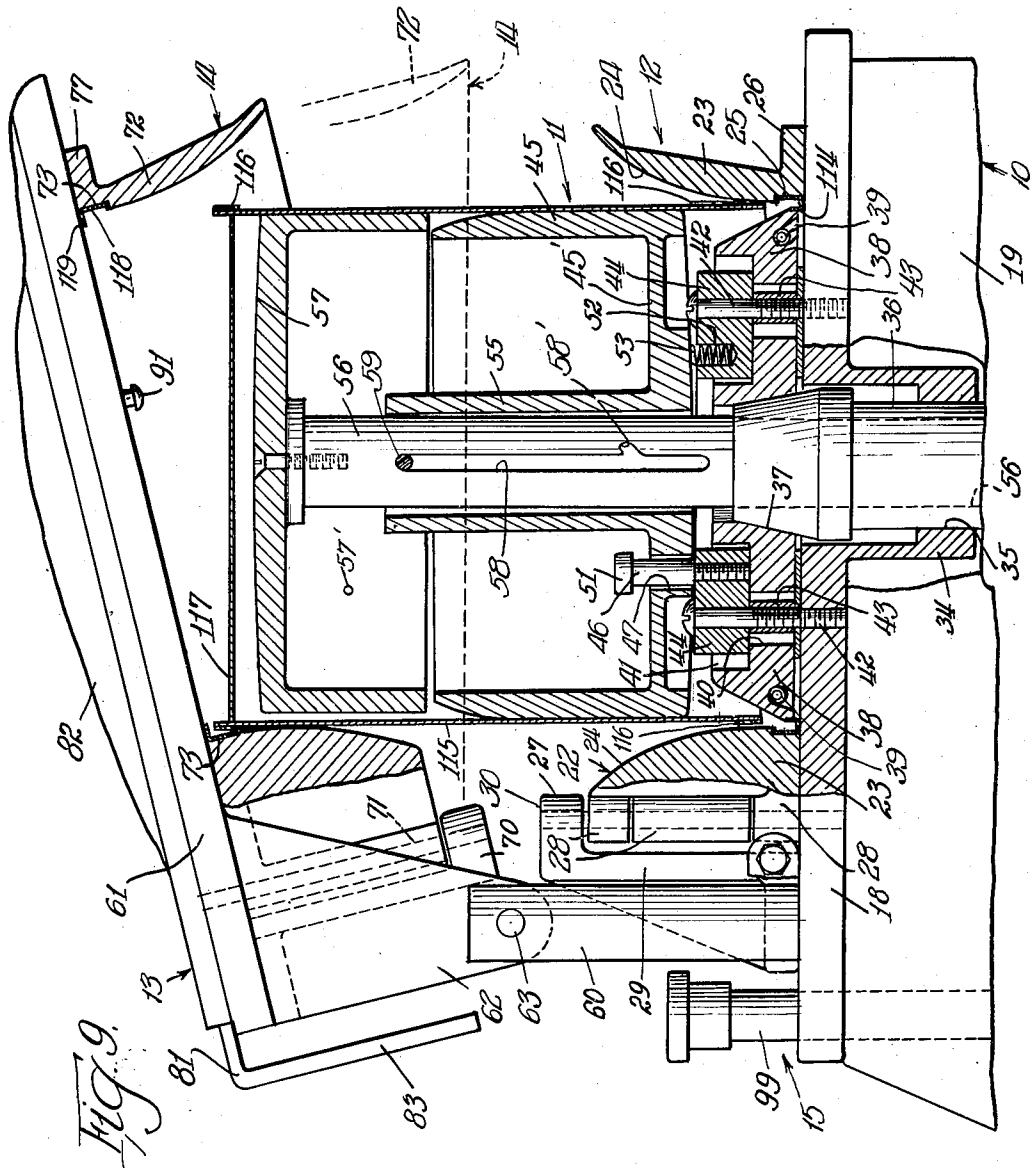


Fig. 9.

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UNITED STATES PATENT OFFICE

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CONTAINER ASSEMBLING APPARATUS

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Application October 1, 1949, Serial No. 119,161

13 Claims. (Cl. 93—55.1)

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The present invention pertains to an improved, manually operated apparatus for assembling end reinforcing rings to the bodies of cylindrical paperboard containers such as are commonly employed in the shipment of bulk ice cream. The operations performed by the present apparatus include the application of one end of the container wall, previously expanded to cylindrical shape from its original flat, knocked-down condition, of a relatively rigid, pre-shaped metal reinforcing ring or bead, and the assembly to the opposite end of the container of a flat bottom disk closing that end, together with a coacting ring, generally similar to the first mentioned ring, which reinforces the container and holds the end closure disk against outward displacement.

It is an object of the present invention to provide a relatively simple, inexpensive and readily operated apparatus which is particularly well adapted to perform the foregoing operations, and thus make it possible to assemble two reinforcing rings and a bottom closure disk to the cylindrical body of the container as a rapid, single procedure performed by a single operator.

Another more specific object of the present invention is to provide a device or apparatus of the foregoing character, including a pair of contractile members adapted respectively to engage and hold the top and bottom reinforcing rings which are to be applied to the container, which members are mounted on pivotally connected supports movable relative to one another to enable shifting of the members to and from operating position, and mechanism operatively connecting these members in a fashion to apply the reinforcing rings to the cylindrical container body as a single, manually controlled operation.

A still further object of the invention is to provide an apparatus capable of being rapidly and easily operated by a single workman and performing automatically all of the manipulations necessary to set up a cylindrical, reinforced container body, including the simultaneous engagement of a pair of relatively rigid reinforcing rings which are to be applied to the top and bottom of the cylindrical container body by contractile assembling members, the application of said rings to the body, together, if desired, with an end closure disk which is held in fixed relation to the body by one of said rings, by relative movement of the assembling members into operating position with respect to the container body ends, and the release of one of the contractile members to permit relative retraction of the as-

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sembling members from said position, which apparatus performs the necessary operations at both ends of the container body without damage to the container parts and with uniformly successful results.

More specifically it is an object of the invention to provide a container assembling apparatus characterized by a pair of contractile split assembling bells, each including a pair of pivotally connected sections of semicircular shape, said respective bells being movable relative to one another, and each being contractible to engage the relatively rigid reinforcing rings which are intended to be assembled to opposite ends of the container body; by individual actuating devices or mechanisms to contract said respective bells in proper relation to the rings for the assembly; by manually operable means operatively connected to said bell actuating devices or mechanisms for simultaneous or coordinated, automatic operation; and by means to automatically release at least one of the bells from contracted, ring engaging position practically instantaneously following the assembling operation, thereby permitting reverse movement from assembling position.

A still further object is to provide such an apparatus which has adjustable provisions enabling a given apparatus to be employed in assembling cylindrical containers of different axial lengths.

The foregoing statements are indicative in a general way of the nature of the invention, but other and more specific objects will be apparent to those skilled in the art upon a full understanding of the construction and operation of the device.

A single embodiment of the invention is presented herein for purpose of illustration, but it will be appreciated that the invention is susceptible of incorporation in other modified forms coming equally within the scope of the appended claims.

In the drawings:

Fig. 1 is a perspective view illustrating the improved assembly apparatus in the normal, inoperative position thereof prior to the positioning thereon of the parts of the container to be assembled, this view indicating in dotted and solid line the respective relative positions of certain components thereof for operation on containers of different size;

Fig. 2 is an exploded view in perspective illustrating the various parts of the cylindrical paperboard container which are assembled by the present apparatus;

Fig. 3 is a view in transverse vertical section through the container in its finally assembled condition;

Fig. 4 is a view in side elevation illustrating the apparatus in its position corresponding to Fig. 1, being in vertical section through a portion of the skirt of the base of the apparatus to more clearly illustrate certain parts of the operating mechanism;

Fig. 5 is a front elevational view partially broken away and in transverse vertical cross section along a line generally corresponding to line 5—5 of Fig. 6 to show more clearly certain details for the contracting means for the split assembling bell on the movable head of the apparatus, the bell being shown in inoperative open position; the view being further broken away and sectioned vertically along a line corresponding to line 5—5 of Figs. 4 and 7 to show the arrangement and relationship of certain mandrel expanding and bell contracting parts associated with the base of the apparatus;

Fig. 6 is an enlarged fragmentary view in vertical cross section along a line corresponding to line 6—6 of Fig. 5, but illustrating the parts of the head bell contracting means in the operative position thereof in which the split halves of the ring clamping bell are shown in their closed and latched position;

Figs. 7 and 8 are respectively views in horizontal section approximately along lines corresponding to lines 7—7 and 8—8 of Fig. 5, further illustrating details of the mandrel structure and provisions for actuating the mandrel and ring engaging bell which are carried on the base of the apparatus; and

Fig. 9 is a somewhat enlarged, fragmentary view, partially broken away and in vertical section along a line generally corresponding to line 9—9 of Figs. 5 and 8, but showing the ring engaging bells contracted and the assembling head and base of the apparatus in their approached relative position, immediately prior to manipulation of the head to final position, indicated in dotted line.

Referring particularly to Figs. 1, 4 and 5 of the drawings, the apparatus disclosed therein is composed of the following main components: A suitable rigid supporting base 10 on which is mounted a mandrel assembly 11, a ring clamping assembly 12, a supporting head 13 pivotally mounted on base 10, a ring clamping assembly 14 on the head and a linkage generally designated 15, which is actuated by a foot pedal 16 and has the function of automatically and conjointly actuating the mandrel and clamp ring assembly 11, 12 on base 10 and the head clamping assembly 13.

The base 10 comprises a horizontal plate-like supporting table 18 which is sustained by any suitable provision, illustrated in the present apparatus as a depending, rigid, shaped sheet metal skirt 19 which functions further as a shield and closure for certain operating parts of the apparatus. A pair of tubular posts 20 fitted into vertical apertures adjacent the rear of the table 18 supplement the supporting action of the skirt 19. The front, rounded surface of the skirt-like table 19 is provided with a vertically elongated, laterally stepped aperture 21 through which the pedal 16 projects.

Reference should be made to Figs. 4, 5, 7, 8 and 9 in connection with the mandrel assembly 11 on table 18. It comprises a split, expansible and contractible bell or ring 22 made up of a pair

of relatively deep, semicircular externally ribbed cast sections 23 of like shape which are pivoted to one another. Each of the castings 23 is of gradual, inwardly and downwardly curved contour on its inner surface 24, said surface terminating at its lower extremity in a shaped annular undercut recess 25 which is adapted to receive one of the metal reinforcing rings to be applied to the container, as hereinafter described.

Bell sections 23 are provided with a radially outwardly extending, continuous flange 26 which slides on the table 18 in the inward contractile and outward expansive pivoting movement of sections 23 in the operation of the ring clamping bell 22.

The bell sections 23 are pivoted to one another by means of a vertically extending pin 27 on the table 18 extending through pivot ears or bosses 28 located at the rear of the sections. A vertically extending pivot bracket 29 is secured to the table and is provided with a forwardly extending boss 30 which receives the upper extremity of the pivot pin 27. A coil compression spring 31 disposed in outwardly bored recesses in the bell sections 23 adjacent the pivot pin 27 (see Figs. 7 and 8) serves to urge said sections away from one another to the open position illustrated in Figs. 7 and 8.

Each of said sections 23 carries a rigid post 32 located somewhat forwardly and outwardly of the rear pivoted end thereof, which posts 32 extend downwardly through inclined slots 33 in the table 18. These posts 32 are adapted to connect the bell sections 23 with the automatic actuating provisions of the apparatus, hereinafter described in detail.

Referring to Figs. 5 and 9, the table 18 is provided with a central, downwardly extending boss 34 which is bored at 35 to slidably receive the tubular, vertically reciprocable, actuating plunger 36. The latter is shaped at its upper extremity to provide a conical cam 37 slidably engageable with a plurality of radially shiftable mandrel cone segments 38, each provided with small, undercut ring receiving recess on the lower edge of its outer arcuate periphery. The segments 38 are provided with grooves opening to the bottom surface thereof in which the annular segment-contracting garter spring 39 is disposed. They also are provided with radially disposed slots 40 which open at their upper end to the circumferentially extending grooves 41 of substantial size in the upper surface of the segments. Four equi-spaced pins 42 are threadably secured to the table 18 to extend upwardly through slots 40 and groove 41, being surrounded by the small guide sleeve 43 in the slot. These pins guide the segments 38 in their radial outward sliding movement under the influence of the cam 37. A mandrel rocker supporting ring 44 disposed in groove 41 atop the segments 38 is held in non-rotative relation to the table 18 by means of the pins 42, which extend through radial ears 45 on the supporting ring 44. Said ring serves as a rocking support for the drum-like mandrel 45 which, as illustrated in Fig. 9 has a base spider 45' provided with a slightly rounded arcuate rocker surface resting on ring 44. Thus limited front to rear rocking of the mandrel is permitted when the assembling head 14 is thrust downwardly to telescoping relation thereto. Three upstanding pins 46 secured to the ring 44 at the sides and rear thereof project through holes 47 in the base spider 45' of the mandrel, with relatively generous clearance between said recesses

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47 and the pins 46. The purpose of pins 46 is to guide the mandrel 45 in its forward to rear rocking movement while permitting some slight amount of lateral shifting on ring 44, as well as to hold the mandrel from upward separation from the base 10. The mandrel is normally urged in the rearward direction by a coil spring 53 disposed in an upwardly opening recess 52 at the forward side of the supporting ring 44 (see Fig. 9).

It is evident that when the plunger 36 is elevated, the conical cam surface 37 thereof acts on the various mandrel sections 38 to urge the same uniformly outwardly in the radial direction to predetermined, expanded position. In this position the respective outer arcuate surfaces of the sections are disposed concentrically of the axis of the cam and also concentric with the split bell 22 in the closed position of the latter. They grip the inner periphery of the reinforcing ring.

The spider 45' of mandrel 45 is provided with an integral, upwardly extending, tubular extension 55 in which is received a supporting post 56 for the auxiliary mandrel member 57, to which said post is fixedly secured. The bore in the spider extension 55 is of sufficient diameter to freely receive the post, so as to enable the rocking movement of the mandrel referred to above. Post 56 extends downwardly through the bore of the tubular mandrel expanding plunger 36, as illustrated in Figs. 5, 7 and 9, and is adapted to be lifted upwardly to elevate the auxiliary mandrel member 57 when it is desired to assemble containers of larger size and axial dimension. To this end, the post 56 is axially slotted at 58 to receive and be sustained by the transverse supporting pin 59 which extends across the bore of tubular spider extension 55. Slot 58 has a lateral offset 58' which is engaged with pin 59 in an elevated position of auxiliary mandrel member 57, upon slight rotation of the latter. This affords simple means for selectively supporting the auxiliary mandrel member at different vertical positions relative to the main expansible mandrel sections 38. Two different vertical positions of the auxiliary mandrel member 57 are indicated in solid and dotted lines, respectively, in Fig. 1.

The movable assembling head 13 is also supported on the base 10 of the apparatus for vertical adjustment in accordance with the vertical positioning of the auxiliary mandrel member 57. To this end, each of the tubular supporting posts 20 of base 10 slidably receives a telescoped, vertically adjustable head supporting rod 60. Suitable simple provisions, for example, a removable pin 60' extending through post 20 to fit in vertically spaced holes in the rod 60, may be employed to enable the head 13 to be supported at different elevations corresponding to the elevation of the mandrel member 57.

One or more holes 57' are drilled through the skirt of auxiliary mandrel member 57 for the purpose of eliminating vacuum holding effect when the container is removed from the mandrel.

The head 13 includes a rigid backing plate 61 of substantial thickness provided with a pair of integral, laterally spaced and forwardly extending pivoting ears 62. These ears are pivoted to the upper end of the respective supporting rods 60 by means of the pin 63. The backing plate 61 is also provided with a gripping portion 64 adapted to be manually grasped by an operator in manipulating the head from the in-

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operative position illustrated in Figs. 1, 4, 5 and 6 downwardly and forwardly toward the position shown in dotted line in Fig. 9, and vice versa.

Dash pot cylinders 65 which are pivotally connected at one end thereof to the rear surface of the backing plate 61 are provided to cushion the return movement of the assembling head 13. The plungers 66 of these respective dash pot cylinders are each pivoted to a rearwardly extending arm 67 which is clamped on the adjacent adjustable head supporting rod 60. Coil springs 68 encircle said plungers and act to urge the same forwardly in the respective cylinders 65.

Head backing plate 61 carries an integral bell-hinging bracket 70 which projects forwardly therefrom, in the position of the head illustrated in Fig. 4. A pivot pin 71 extending from plate 61 to a boss on said bracket plate, as illustrated in Figs. 4, 6 and 9 of the drawings, serves to hinge the respective semi-circular sections 72 of the split ring engaging bell 14 on head 13 to one another and to the backing plate. Sections 72 are similar to the base-carried bell sections 23 and, like the latter, each has an undercut ring receiving groove, designated 73. Sections 72 are urged to spread relation by suitable simple provisions corresponding to the coil spring 31. They are adapted to be actuated to operative, closed relation to one another, so as to be circular and concentric with the axis of mandrel 11 in the final operating relationship of the various elements, which actuation takes place coincidentally with the expansion of the mandrel and contraction of bell 22, by the provisions illustrated particularly in Figs. 4 and 6.

These provisions include a pair of elongated links 74, 75, each of which is pivoted to one of the clamping sections 72, externally of the inner, shaped or inclined surface 73 of the latter, by means of a hinge screw 76 extending through the external flange 77 of said bell engaging section. Angularly disposed slots 78 in the head backing plate 61 receive said head pivoting screws 76 and permit inwardly convergent movement thereof as the links 74, 75 shift upwardly in a central vertical plane extending through the axis of the mandrel 11 and ring engaging bells 14 and 22. These links are articulated to one another by a pivot pin 80 which also pivots the links to a vertically slidable, elongated actuating member 81 of rigid, strap-like character. Member 81 is slidably received in a suitable internal way in a cast external shield 82 secured to the rear surface of the head backing plate 61. Said actuating member extends downwardly past the lower extremity of the backing plate (see Figs. 4, 6 and 9) and is turned forwardly at a right angle to provide a tappet element 83.

Immediately above the bell pivot pin 80 the member 81 is shaped to provide a rearwardly extending latching nose 85, as illustrated in Fig. 6, through which said member is adapted to be restrained in its upwardly thrust position, shown in solid line in Fig. 6, thereby maintaining the links 74, 75 in elevated position. The ring clamping bell sections 72 which are actuated by said links are also held in closed, operative condition to clamp therebetween one of the rigid reinforcing rings which is to be applied to the container being operated on. A keeper dog 86 is medially pivoted between a pair of ears 87 located on the rear surface of the head backing plate 61 and beneath a raised portion 82' of the shield 82, this dog being urged

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in counterclockwise direction by small coil spring 88 acting on the tail thereof. The dog carries a latching nose 89 adapted to engage beneath the nose 85 of the slidable actuating member 81, as illustrated in Fig. 6. The latching noses each have an inclined surface 90 adjoining the latching surface thereof whereby the member 81, in sliding upwardly along the rear surface of the backing plate, is adapted to cam the dog 87 outwardly against the force of spring 88, thereafter being engaged and latched by said dog.

In order to release dog 86 and enable actuating member 81 to return downwardly to the inoperative position thereof illustrated in dotted lines in Fig. 6, thereby enabling bell sections 72 to return to the spread condition of Fig. 5, the dog has adjustably fixed thereon a forwardly extending release pin 91 which projects through an aperture 92 in the backing plate 61. This pin 91 is so positioned that it engages the mandrel member 57 at the time that the head is fully swung forwardly and downwardly to its final assembling position, thereby shifting the pin 91 upwardly to disengage the latch noses 85, 89, whereupon the ring clamping bell sections 72 return outwardly to their inoperative, spread condition.

The mandrel assembly 11 including the radially expansible mandrel segments 38, the table-mounted bell assembly 22 including the contractible sections 23 and the swingable head-mounted bell assembly 14 including the contractible bell sections 72 are automatically actuated simultaneously by the following instrumentalities.

Referring particularly to Figs. 4, 5 and 8, the table 18 is provided with a pair of depending brackets 95 of substantial mass and size which provide a fulcrum for the L-shaped, main operating lever 96 on which the treadle or foot pedal 16 is rigidly secured externally of the skirt 19. The opposite arm of said operating lever extends rearwardly from the bracket and is pivotally connected by a pin 98 to a vertically acting, elongated actuating rod 99. This rod is provided with a plurality of longitudinally spaced holes 100 to enable the lever 96 to be selectively pivoted thereon, thereby adapting the head bell actuating linkage to a condition in which the head 13 and auxiliary mandrel member 57 are in different vertically adjusted positions to operate on containers of different sizes.

The above described connection causes elevation of the actuating rod 99, when the treadle 16 is depressed, the rod engaging the offset tappet element 83 of the vertically slidable bell actuating member 81, which in turn actuates the ring sections 72 to operative, closed condition through links 74, 75. At the completion of this operation the member 81 engages the latching dog 86 to hold said sections in closed condition.

A further pair of laterally spaced depending brackets 102 on the table 18 serve as an auxiliary fulcrum for certain of the means which actuate the mandrel 11 and ring clamping bell 22 conjointly with actuation of bell 14. A straight link 103 is medially pivoted at 106 to each of the brackets 102. The forward end of the respective links 103 is pivoted at 104, through a thickened spacer boss 103', to the lever 96; and the opposite, rear end of each of the respective links is pivoted at 105 to the lower end of the cam sleeve 36. The latter is slotted at 36' to accommodate lever 96. Accordingly, clockwise movement of the main lever 96 about its fulcrum 97, as viewed in Fig. 4 produces downward movement of the pivot point

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104, which in turn causes the links 103 to move clockwise about their fulcrum at 106. This in turn causes upward movement of the tubular cam sleeve 36, although in a degree much less than the degree of movement of the main lever 96.

Coincident with the foregoing operation, sections 23 are urged toward one another through the agency of a pair of bracket extensions 107, each rigidly welded to one of the links 103. Said bracket extensions are pivotally connected at their upper extremities to pull rods 108, which extend rearwardly and are coupled to the vertically depending pins 32 on the respective ring clamping bell sections 23. Thus the latter are moved toward operative, contracted, ring clamping relation. This movement is cushioned by a coil spring 109 surrounding rod 108, which spring is interposed between the abutment 110 on the pin 32 and an adjustable wing nut 111 threaded onto the free end of the pull rod 108.

In operation, a supply of the preformed container bodies, designated 115 in Fig. 2 of the drawings, the preformed lower and upper, metal reinforcing rings 118, 114 respectively, and the bottom closure disks 117 are provided. The rings 118 have a radially extending flange or shoulder 119. At the commencement of the assembling cycle a reinforcing ring 114 is dropped about mandrel 11 and a ring 118 is deposited in the groove 73 of the open head bell section 72. A container body 115 is then preliminarily shaped by manually expanding the same towards its ultimate cylindrical outline. These bodies are fabricated in a flat, knocked-down condition and can be expanded by simply applying compressive force to the opposite side margins of the collapsed article. They are characterized by an integral, outwardly and downwardly ironed flange or bead 116 at either end thereof. The partially expanded container body 115 is slipped over the cylindrical mandrel member 57 and pushed down by hand, approximately to the position illustrated in Fig. 9, adjacent the reinforcing ring 114 previously deposited about the expansible mandrel section 38 and within the spread ring clamping bell sections 23. A container closure disk 117 is next placed over the top of the auxiliary mandrel member 57, within the walls of the body 115, whereupon the apparatus is ready to be operated.

The operator depresses the treadle 16 fully, whereupon the actuating plunger rod 99 is thrust upwardly into engagement with the tappet element 83 on the actuating member 81 for split head bell sections 72. This shifts the member upwardly and draws the sections to circular clamping position with their undercut groove 73 in external engagement with the reinforcing ring 118 previously deposited therein. Simultaneously with this action, the table bell sections 23 are similarly contracted to operative, closed condition to one another, through the agency of the brackets 107 secured to links 103 and the pull rods 108 operatively connected to the ring sections 23. The mandrel expanding cam sleeve 36 is also thrust upwardly by reason of the clockwise pivoting of links 103 about their fulcrum 106, thereby camming the mandrel segments 38 outward to engage the inner surface of ring 114.

The mandrel 11 and clamping bell 22 may be retained in the respective operative conditions thereof by engaging the forward pedal extension of 96' of lever 96 beneath the laterally stepped offset 21' of the treadle accommodating opening 21. This enables the operator to release his foot pressure on the treadle 16. The head bell 14 is

held closed by the latch dog 86, as described above.

Next the operator grasps the grip 64 of the assembling head 13 and swings the latter forwardly and downwardly through the solid line position illustrated in Fig. 9 to the position illustrated in dotted line in that figure. This causes the container body 115 to be forced downwardly into operative, concentrically engaged relation of its flange 116 in the reinforcing ring 114, with said flange firmly nested within said ring. The other ring 118 carried by bell 14 is at the same time forced downwardly into corresponding telescoped relation to the other flange 116 of said container body 115, with the radial shoulder 119 of ring 118 in restraining end engagement with the end closure disk 117.

During the final downward thrust of the head 13, the latch release pin 91 engages the mandrel member 57, through the interposed disk 117, thereby releasing the latch dog 86 and allowing the head ring clamping sections 72 to expand outwardly to their normal, spread condition. The table ring clamping sections 23 are similarly released, and the mandrel segments 38 caused to return inward to inoperative position, by disengaging the lever extension 96' from the holding offset 21'. The assembled container is then lifted manually from the mandrel 11 of the apparatus.

The above described apparatus is relatively simple and economical in its parts, and is capable of being operated rapidly and efficiently by a single workman adequately supplied with a supply of preformed container parts. The reinforcing rings 114, 118 are unfaillingly assembled in firm, displacement resisting relation to the container body 115, without damage to the latter, and the time previously required for the assembly of comparable container structures by separate assembly operations performed at opposite ends of the container, is materially lessened by the present improvements.

I am aware that various modifications of the above structure are possible all falling within the principle of the invention. This concerns generally the combination of a pair of pivoted or relatively movable, split, contractible clamping bells or rings, one of which is associated with an expansible mandrel, preferably of an axially adjustable type, together with means for simultaneously contracting said rings and expanding said mandrel as a single, manually automatic operation, thereby placing the rings and mandrel in condition for a final manual operation to complete the intended container assembly.

I claim:

1. An assembling device of the type described, comprising a support, a contractible clamping ring mounted on said support, means to contract said clamping ring, a clamping and assembling head, a contractible clamping ring on said head, means connecting said head to said support for relative movement of said last named ring to and from generally concentric, assembling relation to said first named ring, means to contract said head clamping ring and means operatively connected to said last named ring contracting means and to said first named ring contracting means for automatic conjoint operation of said rings, said automatic operating means including means to operate said last named ring contracting means simultaneously with operation of said first named ring contracting means.

2. An assembling device of the type described, comprising a support, an expansible mandrel and a concentric, contractible clamping ring mounted

on said support, means to expand said mandrel, means to contract said clamping ring, a clamping and assembling head, a contractible clamping ring on said head, means connecting said head to said support for relative movement of said last named ring to and from generally concentric, assembling relation to said mandrel and first named ring, means to contract said head clamping ring and means operatively connected to said last named means and to said first named mandrel expanding and ring contracting means for automatic, conjoint operation of said rings and mandrel, said automatic operating means including means to operate said last named ring contracting means simultaneously with operation of said first named ring contracting means.

3. An assembling device of the type described, comprising a support, a contractible clamping ring mounted on said support, means to contract said clamping ring, a clamping and assembling head, a contractible clamping ring on said head, means connecting said head to said support for relative movement of said last named ring to and from generally concentric, assembling relation to said first named ring, means to contract said head clamping ring including an actuating member mounted for movement relative to said head and operatively connected to the head clamping ring, said member being movable with said head in the movements of the latter relative to said support, and means operatively connected to said last named means and to said first named ring contracting means for automatic, conjoint operation of said rings, including a member operatively engaging said ring actuating member when the latter is out of assembling relation to said first named ring.

4. An assembling device of the type described, comprising a support, an expansible mandrel and a concentric, contractible clamping ring mounted on said support, means to expand said mandrel and contract said clamping ring, a clamping and assembling head, a contractible clamping ring on said head, means connecting said head to said support for relative movement of said last named ring to and from generally concentric, assembling relation to said mandrel and first named ring, means to contract said head clamping ring including an actuating member mounted for movement relative to said head and operatively connected to the head clamping ring, said member being movable with said head in the movements of the latter relative to said support, and means operatively connected to said last named means and to said first named mandrel expanding and ring contracting means for automatic, conjoint operation of said rings and mandrel, including a member operatively engaging said ring actuating member when the latter is out of assembling relation to said mandrel and first named ring.

5. An assembling device of the type described, comprising a support, a contractible split clamping ring disposed on said support, means to contract said clamping ring, a clamping and assembling head, a contractible clamping ring movably mounted on said head, means pivoting said head on said support for movement of said last named clamping ring to and from generally concentric, assembling relation to said first named clamping ring, means to contract said head clamping ring comprising an actuating member slidably mounted on said head and operatively connected to said head clamping ring and means operatively connected to said first

named ring contracting means and to said member to actuate the latter conjointly with operation of said first named contracting means.

6. An assembling device of the type described, comprising a support, an expansible mandrel mounted on said support to project from a surface thereof, a contractible split clamping ring disposed on said support in encircling relation to said mandrel adjacent said surface, means to expand said mandrel, means to contract said clamping ring to concentric relation to said mandrel, a clamping and assembling head, a contractible clamping ring movably mounted on said head, means pivoting said head on said support for movement of said last named clamping ring to and from generally concentric, assembling relation to said mandrel and first named clamping ring, means to contract said head clamping ring comprising an actuating member slidably mounted on said head and operatively connected to said head clamping ring and means operatively connected to said first named ring contracting and mandrel expanding means and to said member to actuate the latter conjointly with operation of said expanding and contracting means.

7. An assembling device of the type described, comprising a support, an expansible mandrel mounted on said support to project from a surface thereof, a contractible split clamping ring disposed on said support in encircling relation to said mandrel adjacent said surface, means to expand said mandrel, means to contract said clamping ring to concentric relation to said mandrel, a clamping and assembling head, a contractible clamping ring movably mounted on said head, means pivoting said head on said support for movement of said last named clamping ring to and from generally concentric, assembling relation to said mandrel and first named clamping ring, means to contract said head clamping ring, comprising an actuating member slidably mounted on said head and operatively connected to said head clamping ring, means operatively connected to said first named ring contracting and mandrel expanding means and to said member to actuate the latter conjointly with operation of said expanding and contracting means, and means on said head to lock said clamping ring in contracted condition.

8. An assembling device of the type described, comprising a support, an expansible mandrel mounted on said support to project from a surface thereof, a contractible split clamping ring disposed on said support in encircling relation to said mandrel adjacent said surface, means to expand said mandrel, means to contract said clamping ring to concentric relation to said mandrel, a clamping and assembling head, a contractible clamping ring movably mounted on said head, means pivoting said head on said support for movement of said last named clamping ring to and from generally concentric, assembling relation to said mandrel and first named clamping ring, means to contract said head clamping ring comprising an actuating member slidably mounted on said head and operatively connected to said head clamping ring, means operatively connected to said first named ring contracting and mandrel expanding means and to said member to actuate the latter conjointly with operation of said expanding and contracting means, means on said head to lock said head clamping ring in contracted condition, and means engageable with said mandrel in the as-

sembling position of the head clamping ring to release the latter from locked condition.

9. An apparatus for assembling annular end reinforcing parts to the ends of a cylindrical container body, comprising a base, a fixed mandrel projecting from said base and adapted to be enveloped by said container, an expansible mandrel concentrically disposed at the end of said fixed mandrel adjacent said base and adapted for radial outward expansion relative to the latter, a contractible clamping ring movably mounted on said base and adapted to be contracted to concentric relation to said mandrels to engage a container reinforcing part, means to simultaneously expand said last named mandrel and contract said clamping ring, a clamping and assembling head pivoted on said base for movement to and from concentric assembling relation to said mandrels, a contractible clamping ring movably mounted on said head, and adapted to be contracted to operative position in concentric engagement with another container reinforcing part, means to actuate said last named clamping ring to said operative position, means to lock the same in that position, means operatively connecting said actuating means to said mandrel expanding and ring contracting means for conjoint operation therewith when said head is out of assembling position; and means on said clamping and assembling head engageable with said fixed mandrel in the assembling relation of the head and mandrels to disengage said locking means and release said last named clamping ring.

10. An apparatus for assembling annular end reinforcing parts to the ends of a cylindrical container body, comprising a base, a fixed mandrel projecting from said base and adapted to be enveloped by said container, an expansible mandrel concentrically disposed at the end of said fixed mandrel adjacent said base and adapted for radial outward expansion relative to the latter, a contractible clamping ring movably mounted on said base comprising a plurality of arcuate clamping sections hinged to one another and to said base outwardly of said expansible mandrel and adapted to be contracted to concentric relation to said mandrels to engage a container reinforcing part, means to simultaneously expand said last named mandrel and contract said clamping ring sections, a clamping and assembling head pivoted on said base for movement to and from concentric assembling relation to said mandrels, a contractible clamping ring movably mounted on said head, comprising a plurality of arcuate clamping sections pivoted on said head and adapted to be contracted to operative position in concentric engagement with another container reinforcing part, means to actuate said last named clamping ring sections to said operative position, means to lock the same in that position, means operatively connecting said actuating means to said mandrel expanding and ring contracting means for conjoint operation therewith when said head is out of assembling position, and means on said clamping and assembling head engageable with said fixed mandrel in the assembling relation of the head and mandrels to disengage said locking means and release said last named clamping ring sections.

11. An apparatus for assembling annular end reinforcing parts to the ends of a cylindrical container body, comprising a base, a fixed mandrel projecting from said base and adapted to be enveloped by said container, an expansible mandrel concentrically disposed at the end of said fixed

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mandrel adjacent said base and adapted for radial outward expansion relative to the latter, a contractible clamping ring movably mounted on said base comprising a plurality of arcuate clamping sections hinged to one another and to said base outwardly of said expansible mandrel and adapted to be contracted to concentric relation to said mandrels to engage a container reinforcing part, means to simultaneously expand said last named mandrel and contract said clamping ring sections, a clamping and assembling head pivoted on said base for movement to and from concentric assembling relation to said mandrels, a contractible clamping ring movably mounted on said head, comprising a plurality of arcuate clamping sections pivoted on said head and adapted to be contracted to operative position in concentric engagement with another container reinforcing part, means to actuate said last named clamping ring sections to said operative position including an actuating member slidably carried by said head and operatively connected to said head clamping ring to contract the same, means to lock said actuating member in ring contracting position, means operatively connecting said actuating means to said mandrel expanding and ring contracting means for conjoint operation therewith when said head is out of assembling position, and means on said clamping and assembling head engageable with said fixed mandrel in the assembling relation of the head and mandrels to disengage said locking means and release said actuating member and last named clamping ring sections.

12. An apparatus for assembling annular end reinforcing parts to the ends of a cylindrical container body, comprising a base, a mandrel projecting from said base and adapted to be enveloped by said container, a contractible clamping ring movably mounted on said base and adapted to be contracted to concentric relation to the mandrel to engage a container reinforcing part, means to contract said clamping ring, a clamping and assembling head pivoted on said base for movement to and from assembling relation to said mandrel, a contractible clamping ring comprising a plurality of arcuate clamping sections pivoted on said head and adapted to be contracted to operative concentric engagement with another container reinforcing part, means to actuate said last named sections to said operative position comprising a linkage connected to the respective clamping sections and an actuating member slidably mounted on said head and connected to said linkage, a latch carried by said head and engageable with said member to lock the same in section contracting position, means operatively connecting said actuating member to said first named ring contracting

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means for conjoint operation therewith, including a member movable on said base and engageable with said actuating member when said head is out of assembling position, and means on said head engageable with said fixed mandrel in the assembling relation of the head and mandrel and acting on said latch to release said last named clamping sections from contracted position.

13. An apparatus for assembling annular end reinforcing parts to the ends of a cylindrical container body, comprising a base, a fixed mandrel projecting from said base and adapted to be enveloped by said container, an expansible mandrel concentrically disposed at the end of said fixed mandrel adjacent said base and adapted for radial outward expansion relative to the latter, a contractible clamping ring movably mounted on said base and adapted to be contracted to concentric relation to the mandrels to engage a container reinforcing part, means to simultaneously expand said mandrel and contract said clamping ring, a clamping and assembling head pivoted on said base for movement to and from assembling relation to said mandrel, a contractible clamping ring comprising a plurality of arcuate clamping sections pivoted on said head and adapted to be contracted to operative concentric engagement with another container reinforcing part, means to actuate said last named sections to said operative position comprising a linkage connected to the respective clamping sections and an actuating member slidably mounted on said head and connected to said linkage, a latch carried by said head and engageable with said member to lock the same in section contracting position, means operatively connecting said actuating member to said mandrel expanding and first named ring contracting means for conjoint operation therewith, including a member movable on said base and engageable with said actuating member when said head is out of assembling position and means on said head engageable with said fixed mandrel in the assembling relation of the head and mandrel and acting on said latch to release said last named clamping sections from contracted position.

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