March 9, 1954 G. D. JANSEN 2,671,490

MECHANISM FOR CRIMPING RETAINING RINGS ON CONTAINERS

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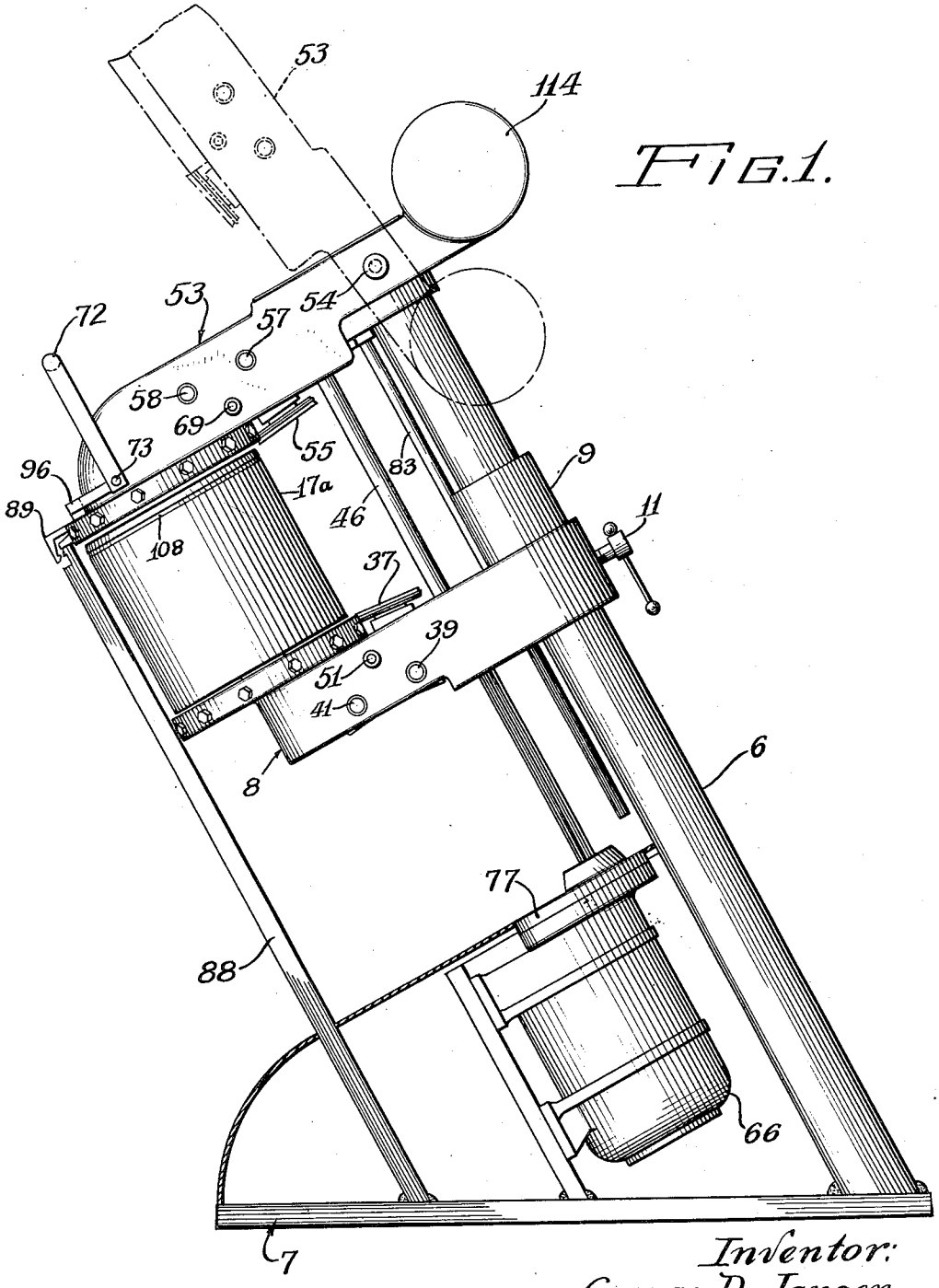


FIG. 1.

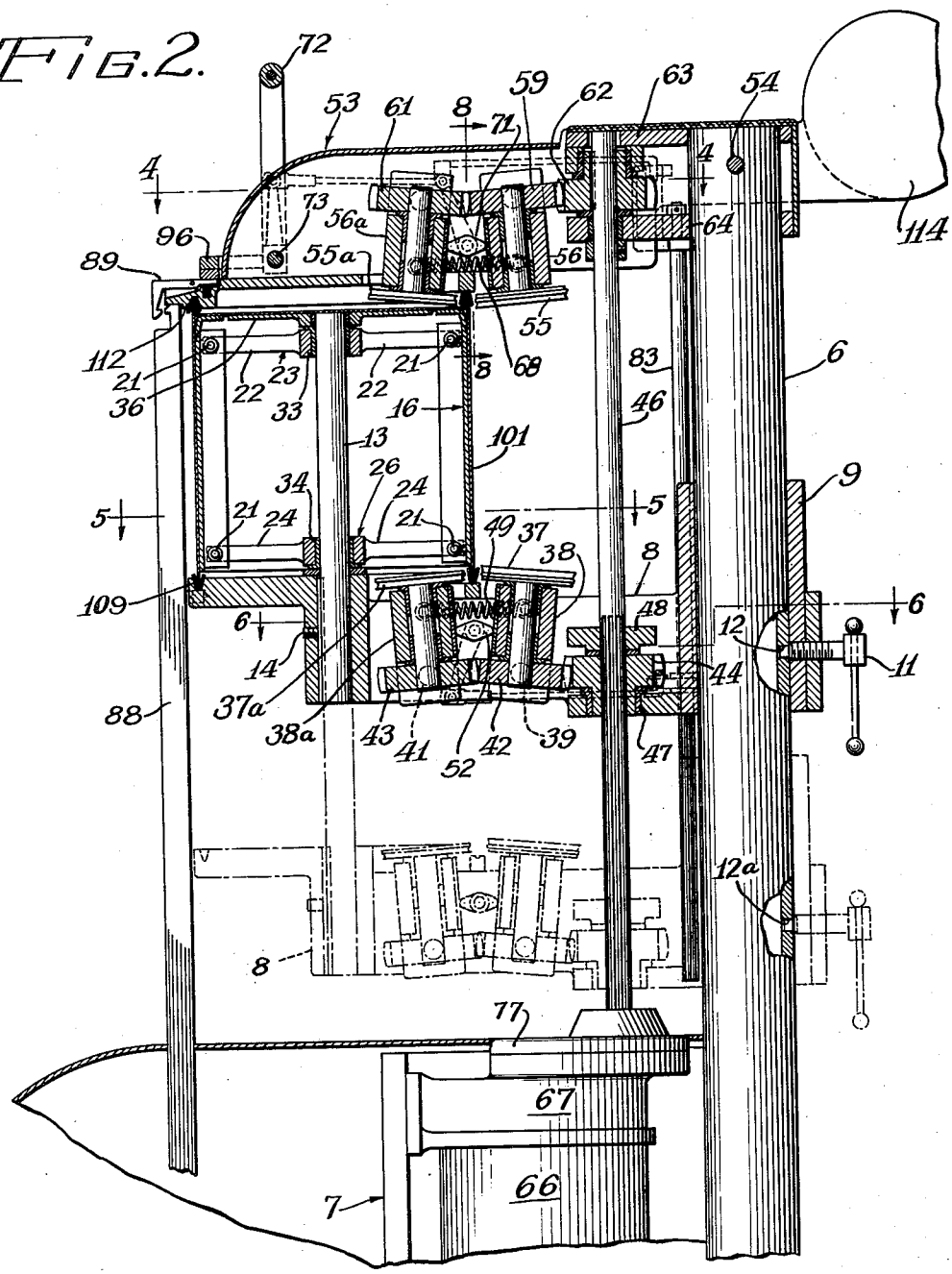
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MECHANISM FOR CRIMPING RETAINING RINGS ON CONTAINERS

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Fig. 2.



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FIG. 3.

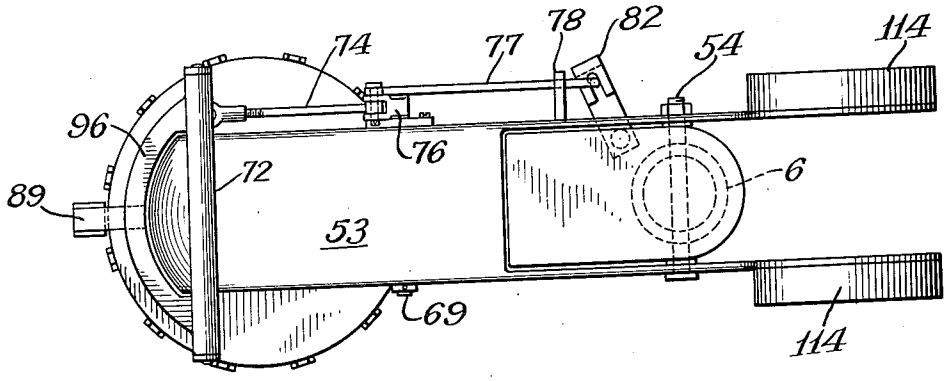
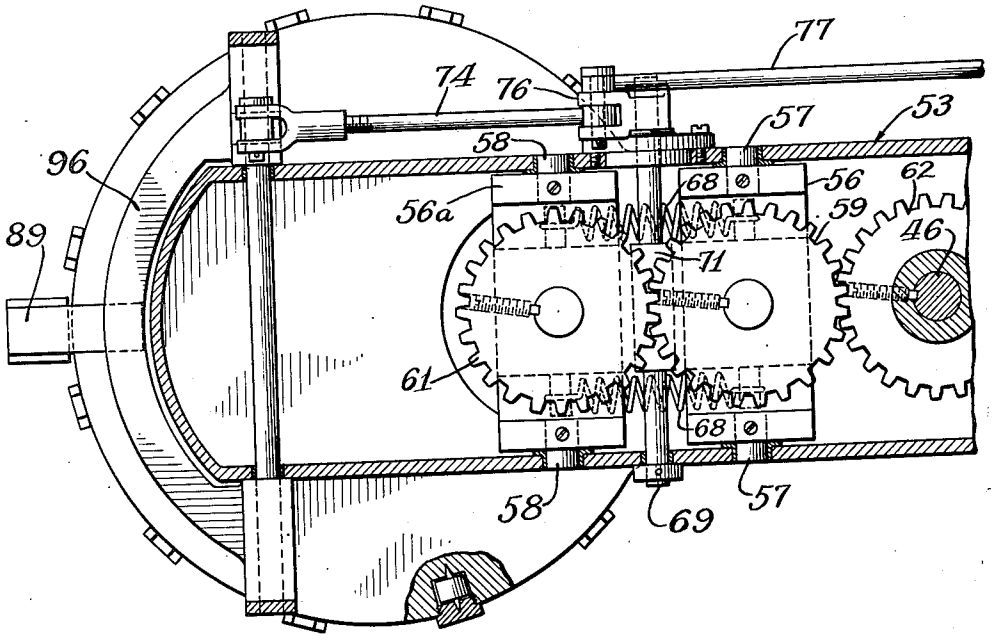


FIG. 4.



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MECHANISM FOR CRIMPING RETAINING RINGS ON CONTAINERS

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Fig. 5.

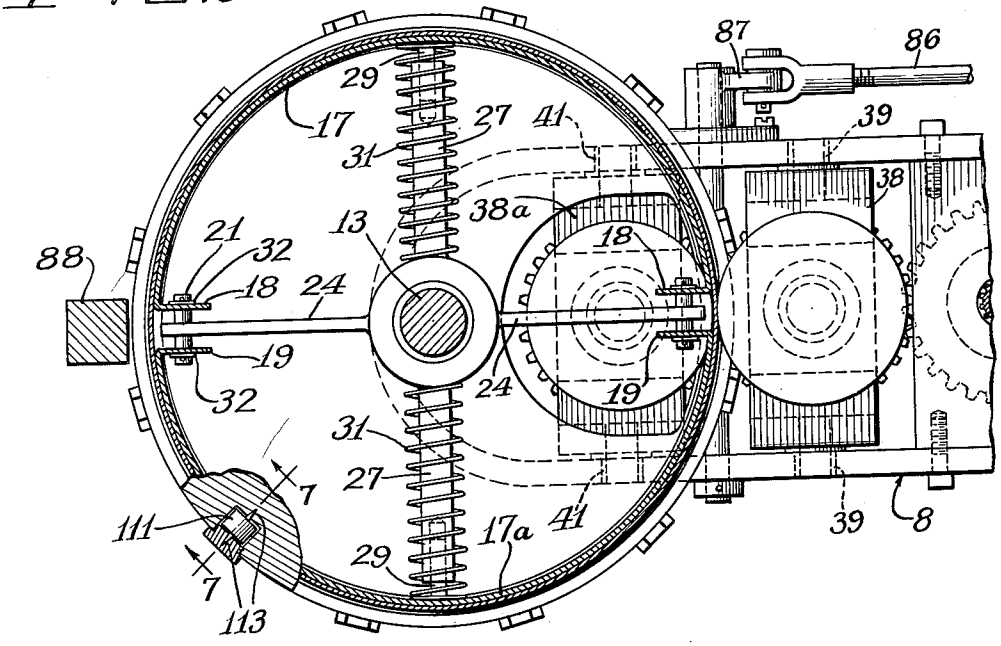


Fig. 6.

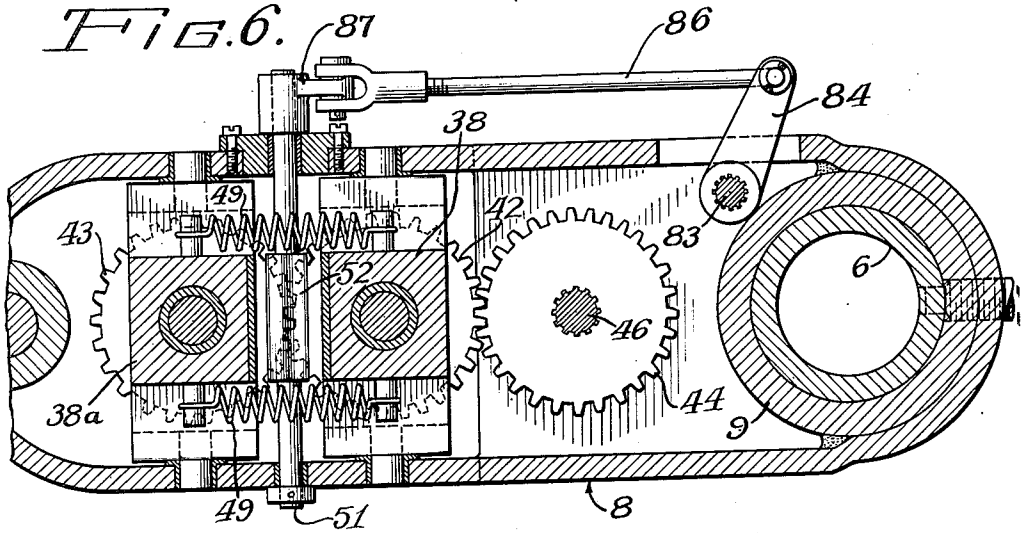
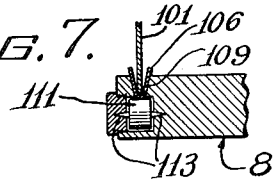


Fig. 7.



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FIG. 8.

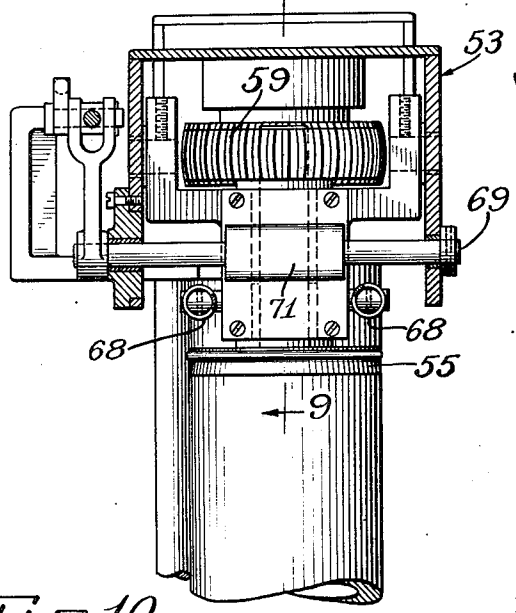


FIG. 10.

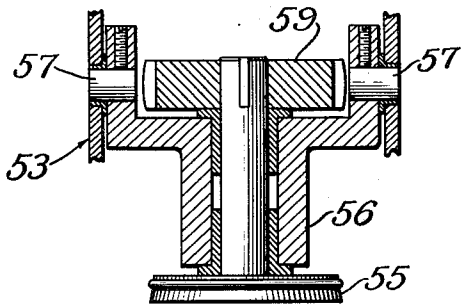


FIG. 9.

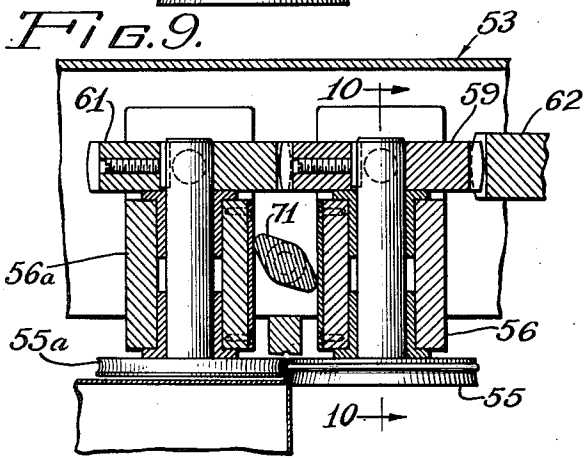
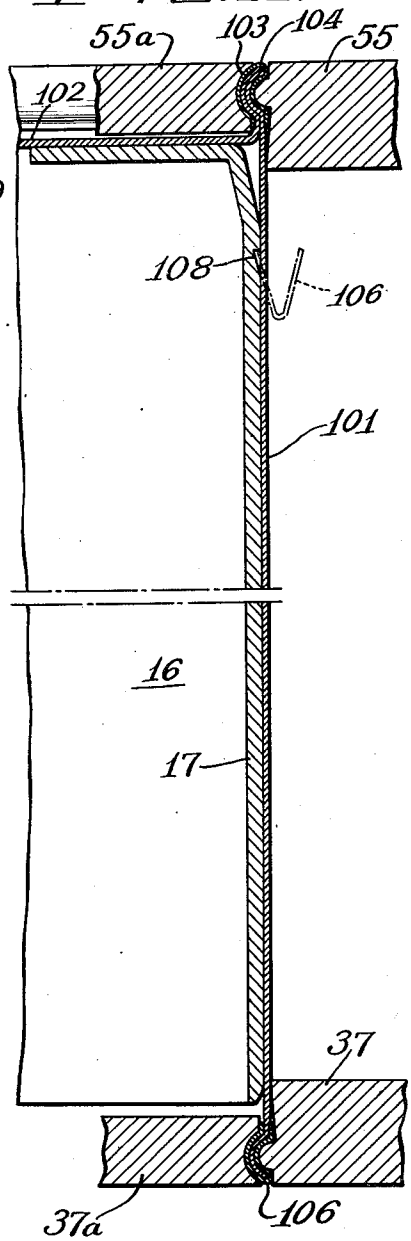


FIG. 11.



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FIG. 12.

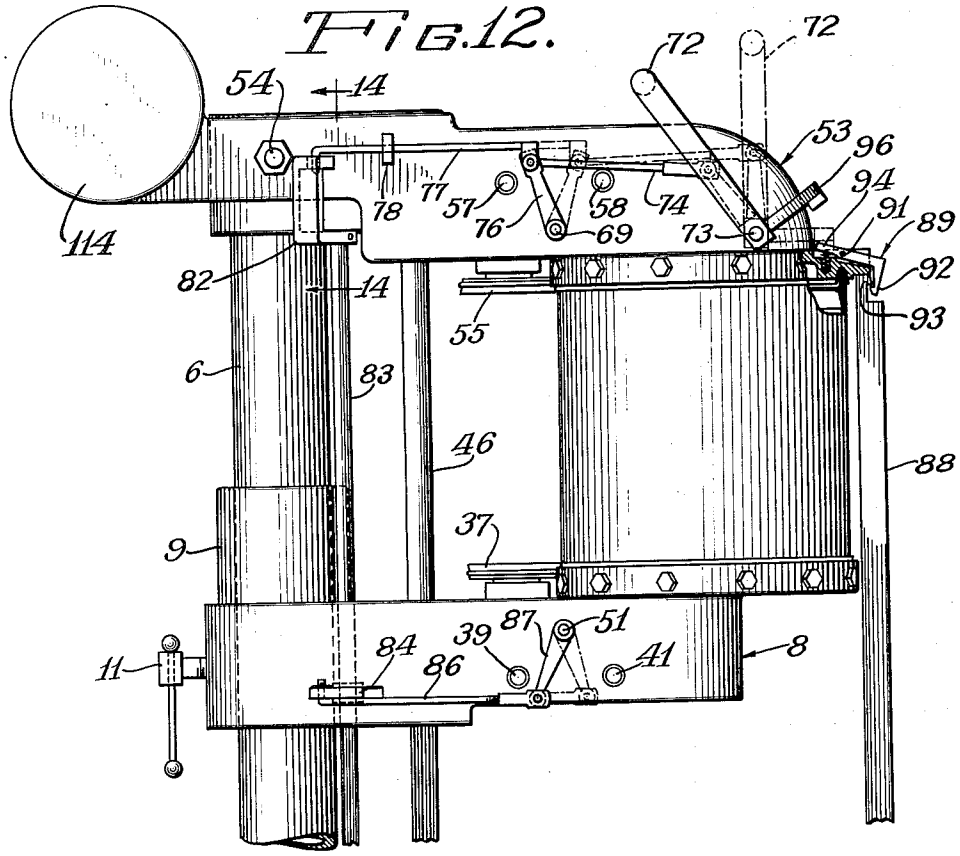


FIG. 13.

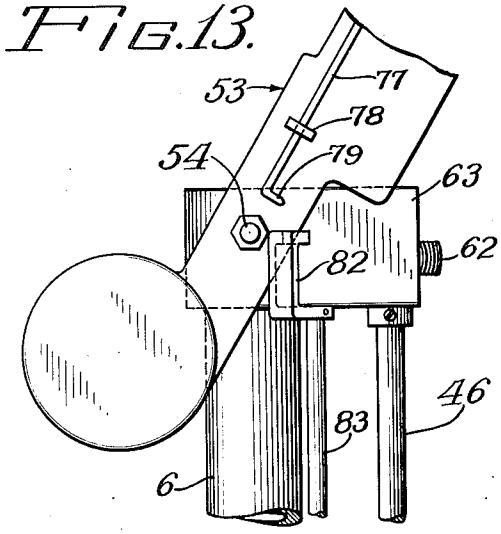
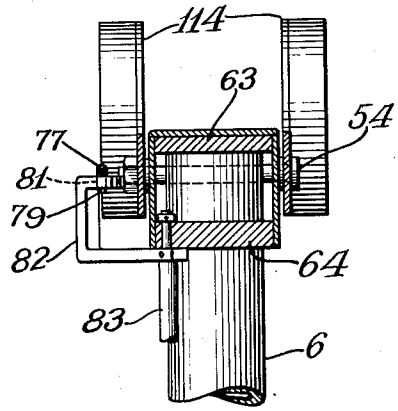


FIG. 14.



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UNITED STATES PATENT OFFICE

2,671,490

MECHANISM FOR CRIMPING RETAINING RINGS ON CONTAINERS

George D. Jansen, Chicago, Ill., assignor to Summit Container Company, a corporation of Illinois

Application March 22, 1949, Serial No. 82,745

13 Claims. (Cl. 153—1)

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This invention relates to machines for assembling containers, and is more particularly concerned with the provision of a machine adapted for use in the assembly of fiberboard containers of the type disclosed in my copending patent application, Serial No. 68,609 filed December 31, 1948, now Pat. No. 2,547,395, granted April 3, 1951, in which the container is shown and described as comprising a flanged fiberboard bottom secured in one end of a tubular fiberboard side wall by means of a metallic retaining ring, the other end of the side wall being reinforced by a metallic reinforcing ring.

Fiberboard containers of various types and sizes are now being used extensively by manufacturers of ice cream and other food products, in place of metal containers which required storage space and washing equipment during their use. Fiberboard containers are adapted for a single use in storing or shipping ice cream or other food products, and are usually sold to the ice cream manufacturers in knock-down collapsed condition in order to conserve space during storage or shipment. It is thus necessary for the ice cream manufacturer to employ the use of a machine for assembly of the containers and it is the usual practice to assemble the containers as same are required for use. As manufacturers of ice cream and other food products usually employ the services of girls in the assembly of knock-down fiberboard containers, it is an object of the present invention to provide a machine which is simple in operation and requires minimum effort and time on the part of the operator in the assembly of the containers.

This invention further contemplates the provision of a machine provided with two sets of crimping rolls adapted to act simultaneously in crimping the retaining and reinforcing rings upon opposite ends of the side wall of a container, the crimping rolls being mounted for simultaneous movement into and out of engagement with their respective rings responsive to operation of a single control lever.

This invention further contemplates the provision of a machine in which the two sets of crimping rolls are adapted to be moved toward or away from each other to accommodate containers of various sizes, one set of rolls being mounted for vertical reciprocable movement along a column, while the other set of rolls is mounted within a head pivotally mounted upon the upper end of the column.

This invention further contemplates the provision of a container assembly machine in which

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the crimping rolls act to provide a line contact engagement between the retaining and reinforcing rings and the fiberboard employed to form the side wall and bottom of the container. In other types of knock-down containers, it has been the practice to crimp one edge of the retaining or reinforcing ring into engagement with the fiberboard, which construction causes the sharp edge of the ring to cut into the fiberboard and thus produce a weakened section. By providing a line contact engagement between the metal rings and the fiberboard, the fiberboard is not weakened and the rings serve to grip the fiberboard more tightly than other types of rings heretofore employed in assembling containers.

This invention further contemplates the provision of a container assembly machine provided with two sets of crimping rolls which are urged into crimping engagement under a predetermined load and without depending upon the skill of the operator. This is accomplished by providing a pivotal mounting for each crimping roll whereby the rolls in each set may be moved toward or away from each other, with each set of rolls normally urged into crimping engagement by means of a plurality of tension springs responsive to the control of a cam member.

This invention further contemplates the provision of a container assembly machine in which each crimping roll is positively driven by means of gears leading to a common drive shaft. It has been learned that such a drive for the several crimping rolls results in less scuffing and marring of the finished surface of the metallic rings.

This invention further contemplates the provision of a container assembly machine embodying a variable diameter mandrel journaled for rotational movement in an inclined plane and serving to guide and hold the several parts of the container against accidental displacement during the ring crimping operation. During the assembly of containers, it is contemplated that each size container shall have a mandrel corresponding to the size of the container. In other words, a longer mandrel is employed on a 5 gallon container than on a 2½ gallon container.

This invention embodies other novel features, details of construction and arrangement of parts which are hereinafter set forth in the specification and claims and illustrated in the accompanying drawings, wherein:

Fig. 1 is a side elevational view illustrating a

container assembly machine embodying features of the present invention.

Fig. 2 is an enlarged vertical sectional view illustrating the arrangement of parts of the container and the machine immediately prior to the ring crimping operation.

Fig. 3 is a top plan view showing the machine.

Fig. 4 is an enlarged fragmentary sectional view taken along the line 4—4 of Fig. 2.

Fig. 5 is an enlarged fragmentary sectional view taken along the line 5—5 of Fig. 2.

Fig. 6 is an enlarged sectional view taken along the line 6—6 of Fig. 2.

Fig. 7 is a detail sectional view taken along the line 7—7 of Fig. 5.

Fig. 8 is an enlarged sectional view taken along the line 8—8 of Fig. 2.

Fig. 9 is a sectional view taken along the line 9—9 of Fig. 8.

Fig. 10 is a detail sectional view taken along the line 10—10 of Fig. 9.

Fig. 11 is an enlarged fragmentary sectional view illustrating the manner in which the rolls crimp the metallic retaining and reinforcing rings in forming the container.

Fig. 12 is a fragmentary side elevational view illustrating the mechanism employed for simultaneously opening and closing the crimping rolls.

Fig. 13 is a fragmentary side elevational view corresponding to Fig. 12, showing the head of the machine pivoted to its open position.

Fig. 14 is a detail sectional view taken along the line 14—14 of Fig. 12.

Referring now to the drawings for a better understanding of this invention, the container assembly machine is shown as comprising a tubular column 6 which is preferably supported in an inclined plane upon a base 7. A roll supporting carriage 8 is provided with a sleeve bearing 9 to receive the column 6, and a set screw 11 is threaded through the sleeve bearing 9 for engagement in an aperture 12 formed in the column to secure the roll carriage 8 in fixed position. Other apertures 12*a*, etc. must be provided in the column 6 to adjust the carriage 8 along the column 6 when the machine is employed for assembling containers of different lengths.

The outer end of the carriage 8 is provided with an aperture to receive a mandrel shaft 13 disposed in a plane parallel with the column 6, the shaft 13 being secured in fixed position by means of a set screw 14. A mandrel 16 is journaled for rotational movement upon the shaft 13. The mandrel 16 is preferably constructed to permit a limited amount of expansion and contraction for the reasons hereinafter set forth. The mandrel is shown as comprising a pair of semicircular plates 17 and 17*a* formed with inturned flanges 18—18 and 19—19, respectively, each of said flanges being formed with a pair of apertures to receive alignment studs 21. The alignment studs 21 are secured intermediate their ends within apertures extending transversely through the ends of arms 22—22 of a spider 23 and arms 24—24 of a spider 26. The spiders 23 and 26 are also provided with a pair of radially disposed arms 27—27 and 28—28, respectively, the ends of the arms 27—27 and 28—28 being bored to receive studs 29 secured to the mandrel plates 17 and 17*a*. A compression spring 31 is mounted upon each of the arms 27—27 and 28—28 to yieldably resist inward movement of the mandrel plates 17 and 17*a*, the outward movement of the plates 17 and 17*a* being determined by stop washers 32 provided on the ends of each alignment

stud 21. The spiders 23 and 26 are provided with bearings 33 and 34 to receive the shaft 13. An abutment plate 36 is journaled on the upper end of the shaft 13 for surface alignment with the upper end of the plates 17 and 17*a* of the mandrel.

A pair of lower crimping rolls 37 and 37*a* are formed with shaft portions journaled for rotational movement in bearings 38 and 38*a*, respectively. The lower ends of the bearings 38 and 38*a* are each provided with a pair of pivot pins 39—39 and 41—41, respectively, for engagement in bearing apertures formed in the carriage 8. Gears 42 and 43 are keyed to the shaft portions of the rolls 37 and 37*a*, respectively, for meshing engagement to drive the rolls 37 and 37*a* in opposite directions.

A driving gear 44 is keyed to a drive shaft 46 for meshing engagement with the gear 42, the gear 44 having a hub portion journaled in a bearing 47 provided on the carriage 8. The gear 44 is held against upward displacement by means of a thrust plate 48 provided on the carriage 8. A pair of tension springs 49—49 are connected at their ends to pivot bearings 38 and 38*a* to normally urge the rolls 37 and 37*a* toward each other. A cam shaft 51 is journaled at its ends in suitable bearings provided in the carriage 8 and is formed or provided with a cam 52 which acts to control the pivotal movement of the bearings 38 and 38*a*.

A head 53 is mounted for pivotal movement about the axis of a pivot pin 54 extending through the upper end of the column 6. A pair of upper crimping rolls 55 and 55*a* are formed with shaft portions journaled for rotational movement in bearings 56 and 56*a*, respectively. The bearings 56 and 56*a* are provided with pivot pins 57 and 58, respectively, for rotational movement in suitable bearings provided in the head 53. Gears 59 and 61 are keyed to the shaft portions of the rolls 55 and 55*a*, respectively, for intermeshing engagement to drive the rolls in opposite directions. A driving gear 62 is keyed to the drive shaft 46 and is provided with a hub portion journaled in a suitable bearing formed in a bearing bracket 63 welded to the column 6. The gear 62 is held against downward displacement from its bearing by means of a thrust bearing plate 64 welded to the column 6. An electric motor 66 is secured to the base 7 and is provided with a reduction gear unit 67 to transmit power to the drive shaft 46.

A pair of tension springs 68—68 are secured at their ends to the bearings 56 and 56*a* to normally urge the rolls 55 and 55*a* toward each other. A cam shaft 69 is journaled at its ends in suitable bearings provided in the head 53 and is formed or provided with a cam 71 interposed between the bearings 56 and 56*a* to control the spacing between the bearings.

The crimping roll control mechanism is shown as comprising a hand-operated control lever 72 mounted for pivotal movement at 73 on the head 53. A connecting link 74 is pivotally connected at its one end to the control lever 72 and at its other end to the free end of a lever 76 keyed to the cam shaft 69. An arm 77 is pivotally connected at its one end to the free end of the lever 76 and is supported at its other end within an aperture provided in a bearing bracket 78, the free end of the arm 77 being bent downwardly at 79 for operative engagement within a slot 81 provided in a U-shaped lever 82. The lever 82 is keyed to a shaft 83 journaled at its upper end in the thrust bearing plate 64 and at its lower end in a suitable bearing provided in the carriage 8.

The lower end of the shaft 83 is splined to receive and engage a lever 84 having its free end pivotally connected to one end of a link 86 which is connected at its other end to a lever 87 keyed to the cam shaft 51. When the head 53 is disposed in its operating position as illustrated in Figs. 1, 2 and 12 in the drawings, the forward end of the head is adapted to rest upon the upper end of an abutment bar secured to the base 7. A latch 89 is mounted for pivotal movement on a pivot pin 91 provided on the forward end of the head 53, the free end of the latch being provided with a hook portion 92 for engagement under a shoulder 93 formed on the abutment bar 88. As illustrated in Fig. 12, a compression spring 94 is provided on the head 53 to normally urge the latch 89 into engagement with the abutment shoulder 93 formed on the abutment bar 88. An arm 96 is secured to the operating handle 72 to engage and release the latch 89 when the control arm 72 is moved to its forward position, as illustrated in doted outline in Fig. 12.

As heretofore pointed out, the machine shown and described is adapted for use in assembling contaniers of the type disclosed in my copending application, Serial No. 68,609, the container comprising a tubular fiberboard side wall 101, a fiberboard bottom 102 formed with an annular flange 103, a metallic retaining ring 104, and a metallic reinforcing ring 106. In assembling the container, the head 53 is disposed in its upper position, as illustrated in dotted outline in Fig. 1. A V-shaped reinforcing ring 106 is first moved downwardly over the upper end of the mandrel to its position illustrated in dotted outline in Fig. 11, one leg of the ring being engaged in an annular recess 108 formed in the semi-circular plates 17 and 17a. The fiberboard side wall is then directed over the mandrel 16 to engage the reinforcing ring 106 and to move the latter downwardly over the mandrel until the ring is disposed in an annular groove 109 formed in the carriage 8. When the reinforcing ring 106 is located in the groove 109, the compression springs 31 act to spread the plates 17 and 17a of the mandrel until they are in snug engagement against the inner surface of the side wall 101. The fiberboard bottom 102 is then pressed into the side wall 101 until it seats against the abutment plate 36 of the mandrel 16. The retaining ring 104 is then mounted over the flange portion 103 of the fiberboard bottom 102 and over the adjacent portion of the side wall 101.

After the several parts of the container have been positioned upon the mandrel 16 in the manner thus described, the operator then moves the head 53 downwardly into engagement with the abutment bar 88, the handle 72 being disposed in the position illustrated in Fig. 2. During downward movement of the head, the teeth on the gear 59 are moved into meshing engagement with the teeth on the gear 62. To perform the crimping operation, the operator then pushes the handle 72 rearwardly from its position illustrated in dotted outline in Fig. 12 of the drawings to its position illustrated in full outline. Rearward pivotal movement of the control lever 72 causes the connecting link 74 to act through the lever 76 to rotate the cam shaft 69 and cam 71. Rearward movement of the control lever 72 also causes rearward movement of the arm 77, pivotal movement of the lever 82 and shaft 83 which act through the lever 84, connecting link 86, lever 87 and cam shaft 51 to rotate the cam 52.

During rotational movement of the cams 52 and 71 due to rearward movement of the control lever 72, the tension springs 49—49 and 68—68 act to pivot their respective bearings 38 and 38a and 56 and 56a toward each other to bring the rolls 37 and 37a into crimping engagement against opposite sides of the reinforcing ring 106, and the rolls 55 and 55a into crimping engagement against opposite sides of the retaining ring 104. During movement of the crimping rolls into engagement with their respective metallic rings, the rolls are rotated by means of the electric motor 66 acting through reduction gear unit 67, drive shaft 46, driving gears 44 and 62 which, in turn, impart rotational movement to the gears 42 and 43 and gears 59 and 61, respectively. During the crimping operation, the crimping rolls cause the container parts and mandrel 16 to rotate about the shaft 13 until the legs of the metallic rings 104 and 106 are moved together into tight engagement with the fiberboard to complete the assembly of the container, as illustrated in Fig. 11.

To prevent scraping or scuffing of the metallic rings 104 and 106 during the crimping operation, it has been found desirable to provide a plurality of small roller bearings 111 within the carriage 8 and the head 53 to engage the metallic rings during the crimping operation, the roller bearings 111 being arranged within the slot 109 of the carriage 8 and within the slot 112 of the head 53. During rotational movement of the metallic rings 104 and 106, it will be noted that these rings bear against the roller bearings 111 which then rotate about their bearing points 113. During the ring rolling operation, the head 53 is secured in its downward position against the abutment bar 88 by means of the latch 89.

In removing the finished container from the machine, the control handle 72 is moved from its rearward position to its forward position, as illustrated in Fig. 12. The forward movement of the control lever 72 first causes the cams 52 and 71 to pivot their respective bearings 38—38a and 56—56a away from each other to move the rolls 37—37a and 55—55a out of contact with the metallic rings 106 and 104, respectively. As the crimping rolls are moved out of crimping engagement, the arm 96 acts to release the latch 89 from its engagement with the abutment bar 88 to permit the head 53 to be pivoted upwardly about its pivot bearing 54. To facilitate pivotal movements of the head 53, counterweights 114—114 are provided to extend rearwardly from the pivot 54 of the head. After the head 53 is moved to its raised position, the operator engages and draws the finished container from the mandrel 16.

It will be noted that the machine thus shown and described is adapted for use in the assembly of containers of different lengths. As illustrated in Fig. 2, the carriage 8 may be raised or lowered to accommodate containers of various sizes. In the assembly of containers of the type shown and described, it will be noted that the several parts of the container are maintained in assembled relation during the ring rolling operation by means of the mandrel and the oppositely facing grooves formed in the head 53 and carriage 8.

While this invention has been shown in but one form, it is obvious to those skilled in the art that it is not so limited but is susceptible of various changes in modifications without departing from the spirit and scope of the claimed invention.

I claim as my invention:

1. In a machine for assembling containers, a frame, a head pivotally mounted on said frame, a carriage adjustably mounted on said frame for movement relative to said head, a mandrel shaft provided on said carriage, a cylindrical mandrel journaled on said shaft, a pair of crimping rolls provided adjacent each other on said head, a pair of crimping rolls provided adjacent each other on said carriage, common means to simultaneously move said pairs of crimping rolls into and out of crimping engagement adjacent the peripheral margins at opposite ends of the mandrel, common means to rotate said pairs of crimping rolls, an abutment bar provided on said frame for engagement with said head when the latter is disposed in its operative position, and latch means provided on said head for engagement with said abutment bar when said pairs of crimping rolls are disposed in crimping engagement.

2. In a machine for assembling containers, a base, a column extending upwardly from said base, a head pivotally mounted on the upper end of said column, a carriage adjustably mounted on said column for movement relative to said head, a mandrel shaft provided on said carriage and projecting toward said head, a mandrel journaled on said shaft, a pair of retaining ring crimping rolls adjacent each other provided on said head adjacent the peripheral margin at one end of the mandrel, a pair of reinforcing ring crimping rolls adjacent each other provided on said carriage adjacent the peripheral margin at the other end of the mandrel, cam means to move said pairs of crimping rolls out of crimping engagement, resilient means to normally urge said pairs of crimping rolls into crimping engagement, common means to simultaneously actuate said cams, common means to rotate said pairs of crimping rolls, said mandrel comprising a pair of semi-cylindrical members mounted for movement toward or away from each other, and resilient means to normally urge said plates away from each other.

3. In a machine for embracing a marginal edge portion of a tubular side wall between connected flanges of a ring-shape member of generally V-section, a frame, a rotatable mandrel journaled on said frame, a head supported for pivotal movement on said frame about an axis normal to a line parallel to the rotational axis of the mandrel, a pair of roll brackets mounted for pivotal movement on said head on parallel axes normal to lines parallel to said mandrel axis and at one side of the latter, means to pivot said brackets toward and away from each other, rolls journaled in said brackets operative to roll connected ring flanges toward each other to embrace the marginal edge portion of a side wall responsive to pivotal movement of said brackets, and common means to drive said rolls.

4. In a machine for embracing a marginal edge portion of a tubular side wall between connected flanges of a ring-shape member of generally V-section, a frame, a rotatable mandrel journaled on said frame, a head supported for pivotal movement on said frame about an axis normal to a line parallel to the rotational axis of the mandrel, a pair of roll brackets mounted for pivotal movement on said head on parallel axes normal to lines parallel to said mandrel axis and at one side of the latter, means to pivot said brackets toward and away from each other, rolls journaled in said brackets operative to roll connected ring flanges toward each other to embrace the marginal edge portions of a side wall responsive to pivotal movement of said brackets, and common means to drive said rolls including meshing gears secured to said rolls.

5. In a machine for embracing a marginal edge portion of a tubular side wall between connected flanges of a ring-shape member of generally V-section, a frame, a rotatable mandrel journaled on said frame, a head supported for pivotal movement on said frame about an axis normal to a line parallel to the rotational axis of the mandrel, a pair of roll brackets mounted for pivotal movement on said head on parallel axes normal to lines parallel to said mandrel axis and at one side of the latter, means to pivot said brackets toward and away from each other, rolls journaled in said brackets operative to roll connected ring flanges toward each other to embrace the marginal edge portion of a side wall responsive to pivotal movement of said brackets, said means to pivot the roll brackets being disposed between the plane of the pivotal axes of the brackets and said rolls.

6. In a machine for embracing a marginal edge portion of a tubular side wall between connected flanges of a ring-shape member of generally V-section, a frame, a rotatable mandrel journaled on said frame, a head supported for pivotal movement on said frame about an axis normal to a line parallel to the rotational axis of the mandrel, a pair of roll brackets mounted for pivotal movement on said head on parallel axes normal to lines parallel to said mandrel axis and at one side of the latter, means to pivot said brackets toward and away from each other, rolls journaled in said brackets operative to roll connected ring flanges toward each other to embrace the marginal edge portion of a side wall responsive to pivotal movement of said brackets, said means to pivot the roll brackets being disposed between the plane of the pivotal axes of the brackets and said rolls and including a cam journaled for rotation on said head between said brackets to pivot the latter away from each other.

7. In a machine for embracing a marginal edge portion of a tubular side wall between connected flanges of a ring-shape member of generally V-section, a frame, a rotatable mandrel journaled on said frame, a head supported for pivotal movement on said frame about an axis normal to a line parallel to the rotational axis of the mandrel, two pairs of roll brackets mounted for pivotal movement, one pair of said roll brackets being mounted on said head, each pair of brackets having parallel pivotal axes normal to lines parallel to said mandrel axis and at one side of the latter, means to pivot said brackets toward and away from each other, rolls journaled in said brackets, each pair of rolls being operative to roll connected ring flanges toward each other to embrace the marginal edge portion of a side wall responsive to pivotal movement of said brackets.

8. In a machine for embracing a marginal edge portion of a tubular side wall between connected flanges of a ring-shape member of generally V-section, a frame, a rotatable mandrel journaled on said frame, a head supported for pivotal movement on said frame about an axis normal to a line parallel to the rotational axis of the mandrel, two pairs of roll brackets mounted for pivotal movement, one pair of said roll brackets being mounted on said head, each pair of brackets having parallel pivotal axes normal to lines parallel to said mandrel axis and at one

side of the latter, means to pivot said brackets toward and away from each other, rolls journaled in said brackets, each pair of rolls being operative to roll connected ring flanges toward each other to embrace the marginal edge portion of a side wall responsive to pivotal movement of said brackets, one roll of each pair being disposed between the axis of rotation and the projected periphery of the mandrel, and the other roll being outside the projected periphery of the mandrel.

9. In a machine for embracing a marginal edge portion of a tubular side wall between connected flanges of a ring-shape member of generally V-section, a frame, a rotatable mandrel journaled on said frame, a head supported for pivotal movement on said frame about an axis normal to a line parallel to the rotational axis of the mandrel, two pairs of roll brackets mounted for pivotal movement, one pair of said roll brackets being mounted on said head, each pair of brackets having parallel pivotal axes normal to lines parallel to said mandrel axis and at one side of the latter, means to pivot said brackets toward and away from each other, rolls journaled in said brackets, each pair of rolls being operative to roll connected ring flanges toward each other to embrace the marginal edge portion of a side wall responsive to pivotal movement of said brackets, one roll of each pair being disposed between the axis of rotation and the projected periphery of the mandrel, and the other roll being outside the projected periphery of the mandrel, and common means to drive said rolls.

10. In a machine for embracing a marginal edge portion of a tubular side wall between connected flanges of a ring-shape member of generally V-section, a frame, a rotatable mandrel journaled on said frame, a head supported for pivotal movement on said frame about an axis normal to a line parallel to the rotational axis of the mandrel, two pairs of roll brackets mounted for pivotal movement, one pair of roll brackets mounted for pivotal movement, one pair of said roll brackets being mounted on said head, each pair having parallel pivotal axes normal to lines parallel to said mandrel axis and at one side of the latter, means to pivot each pair of said brackets toward and away from each other, rolls journaled in said brackets, each pair of rolls being operative to roll connected ring flanges toward each other to embrace the marginal edge portion of a side wall responsive to pivotal movement of said brackets, said means to pivot each pair of said roll brackets being disposed between the plane of the pivotal axes of the pair of brackets and their respective rolls.

11. In a machine for embracing a marginal edge portion of a tubular side wall between connected flanges of a ring-shape member of generally V-section, a frame, a rotatable mandrel journaled on said frame, a head supported for pivotal movement on said frame about an axis normal to a line parallel to the rotational axis of the mandrel, two pairs of roll brackets mounted for pivotal movement, one pair of roll brackets being mounted on said head, each pair having parallel pivotal axes normal to lines parallel to said mandrel axis and at one side of the latter, means to pivot said brackets toward and away from each other, rolls journaled in said brackets, each pair of rolls being operative to roll connected ring flanges toward each other to embrace the marginal edge portion of a side wall responsive to pivotal movement of said brackets, said means to pivot each pair of said roll brackets being disposed between the plane of the pivotal axes of the pair of brackets and their respective rolls and including cams journaled for rotation between related pairs of brackets to pivot the latter away from each other.

12. In a machine for embracing a marginal edge portion of a tubular side wall between connected flanges of a ring-shape member of generally V-section, a frame, a rotatable mandrel journaled on said frame, a head supported for pivotal movement on said frame about an axis normal to a line parallel to the rotational axis of the mandrel, two pairs of roll brackets mounted for pivotal movement, one pair of roll brackets being mounted on said head, each pair having parallel pivotal axes normal to lines parallel to said mandrel axis and at one side of the latter, means to pivot said brackets toward and away from each other, rolls journaled in said brackets, each pair of rolls being operative to roll connected ring flanges toward each other to embrace the marginal edge portion of a side wall responsive to pivotal movement of said brackets, said means to pivot each pair of said roll brackets being disposed between the plane of the pivotal axes of the pair of brackets and their respective rolls and including cams journaled for rotation between related pairs of brackets to pivot the latter away from each other, each cam having diametrically opposed cam surfaces to engage related brackets, and a tension spring associated with each pair of brackets to urge the brackets toward each other.

13. In a machine for embracing a marginal edge portion of a tubular side wall between connected flanges of a ring-shape member of generally V-section, a frame, a rotatable mandrel journaled on said frame, a head supported for pivotal movement on said frame about an axis normal to a line parallel to the rotational axis of the mandrel, a pair of roll brackets mounted for pivotal movement on said head on parallel axes normal to a line parallel to said mandrel axis and at one side of the latter, means to move said brackets relative to each other, rolls journaled in said brackets operative to roll connected ring flanges toward each other to embrace the marginal edge portion of a side wall responsive to relative movement of said brackets, one roll being disposed between the axis of rotation and the projected periphery of the mandrel and the other roll being outside the projected periphery of the mandrel.

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