

Oct. 6, 1936.

J. M. HOTHERSALL

2,056,192

ART OF MAKING CONTAINER BODIES

Filed June 20, 1933

4 Sheets-Sheet 1

Fig. 1

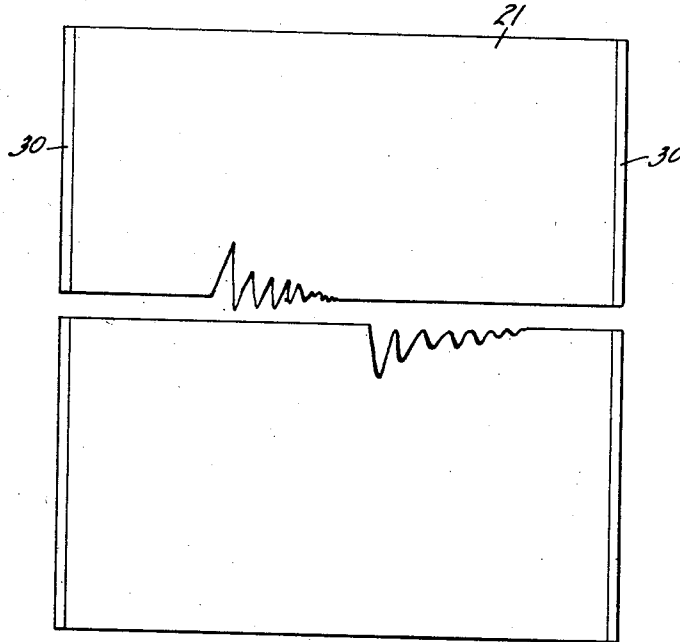


Fig. 2

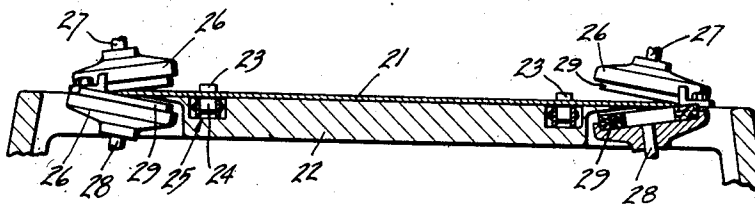
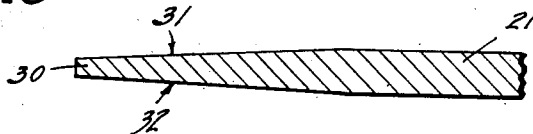


Fig. 3



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4 Sheets-Sheet 2

Fig. 4

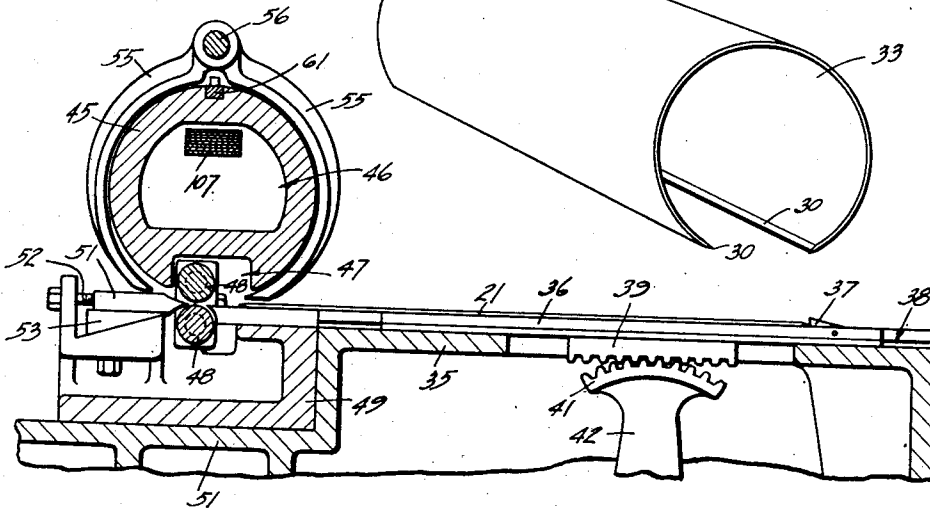


Fig. 5

Fig. 7

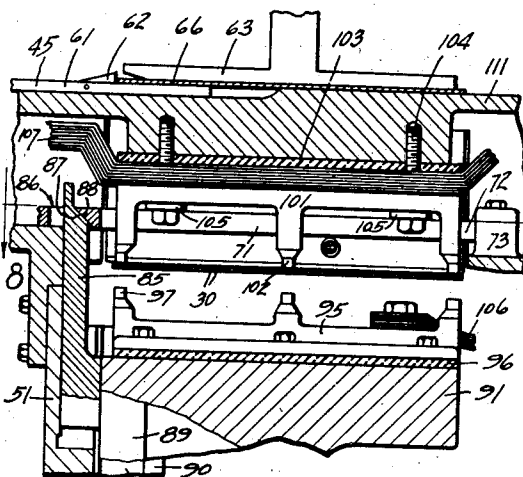


Fig. 6

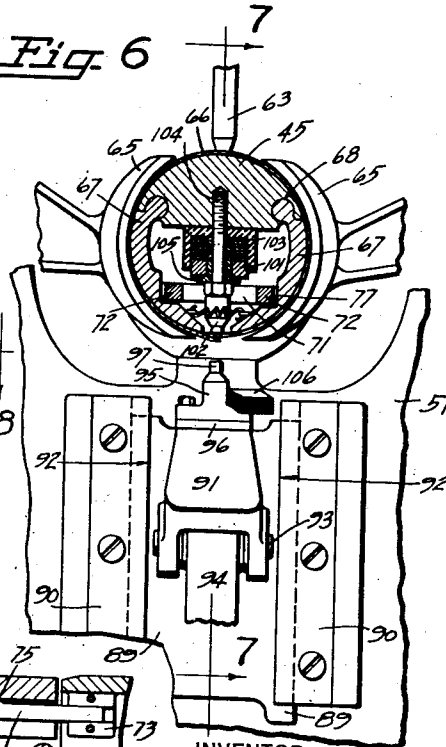
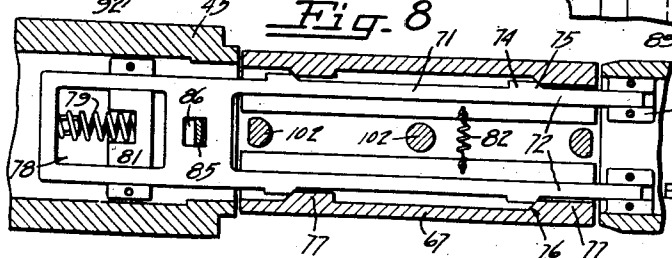


Fig. 8



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2,056,192

ART OF MAKING CONTAINER BODIES

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4 Sheets-Sheet 3

Fig. 9

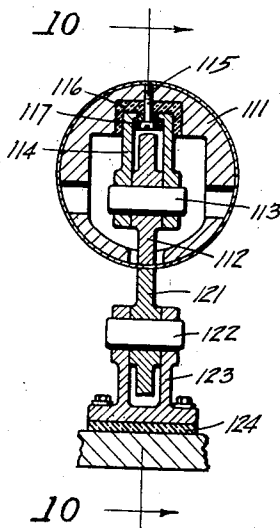


Fig. 10

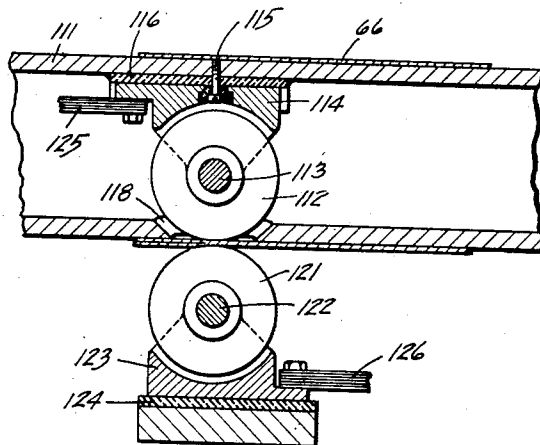


Fig. 11

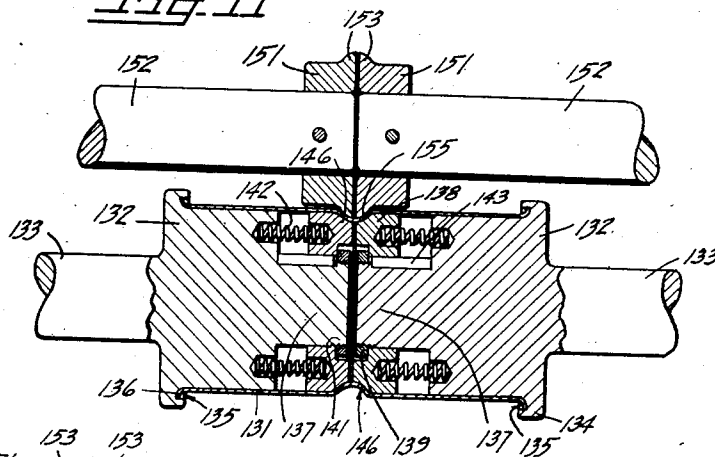
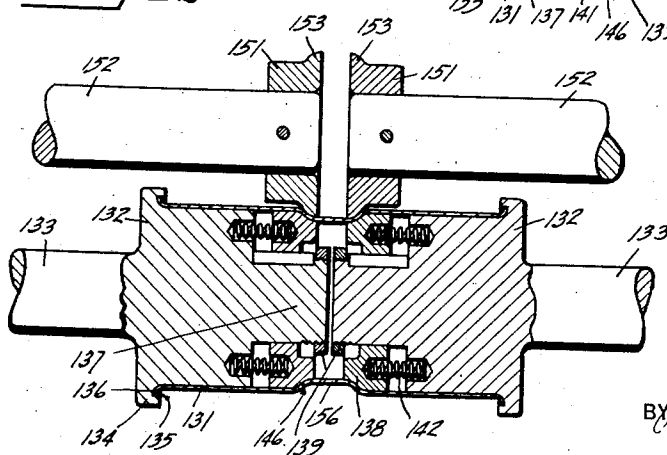


Fig. 12



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2,056,192

ART OF MAKING CONTAINER BODIES

Filed June 20, 1933

4 Sheets-Sheet 4

Fig. 13

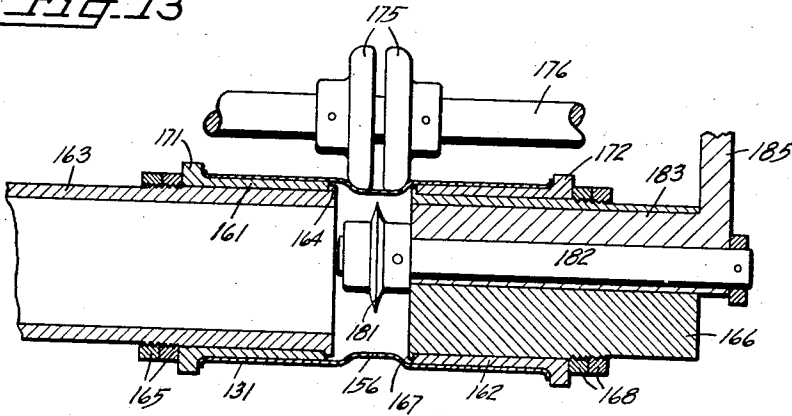


Fig. 14

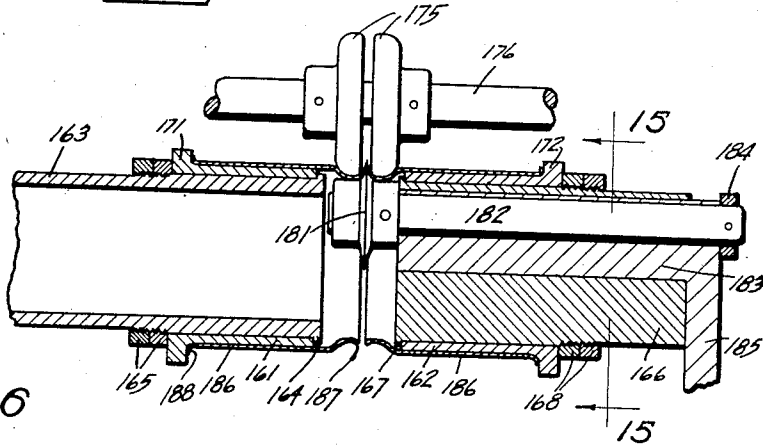


Fig. 16

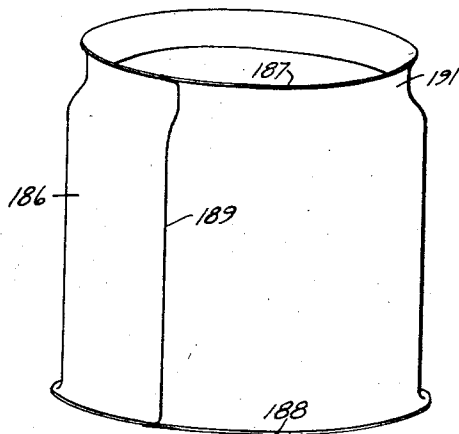
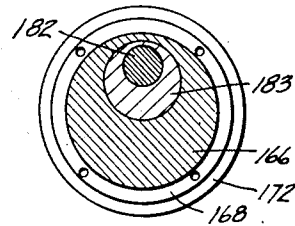


Fig. 15



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UNITED STATES PATENT OFFICE

2,056,192

ART OF MAKING CONTAINER BODIES

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Application June 20, 1933, Serial No. 676,749

9 Claims. (Cl. 113—120)

The present invention relates to a method of making container bodies such as are used for holding paint, white lead and other heavy products and to apparatus for the same. It is highly desirable in such containers that the body walls be reduced in diameter at their top ends to provide necked-in containers which can be easily stacked one on top of another, the smaller diameter top of one fitting into the bottom of another. It is to the manufacture of these necked-in containers and to the simplification of manufacturing steps as well as to the production of an improved product that this invention is particularly directed.

An important object of the present invention is a method of producing this necked-in feature in a simple and effective manner as by a combination beading, rolling and spinning action performed centrally of a double length body section, such action insuring against distortion or uncontrolled bending of the metal stock. This control during bending or beading is particularly important in the manufacture of larger sizes of containers which are necessarily of relatively heavy gage metal but the present invention is also of benefit in the manufacture of containers of other sizes and of metal of other gages.

The invention also contemplates the initial production of a strong uniformly sized tubular body part having a substantial, tight side seam preferably welded which has a uniform thickness at the side seam and throughout the rest of the body part so that in bending the stock to produce the necked-in sections there are no uneven stresses set up against the bending action and a more uniform necked-in section results.

An important object of the invention is the provision of a method of progressively rolling and beading the wall to produce the necked-in section by which only a small area of the metal at a given time is undergoing a change in shape.

The invention also provides for flanging both ends of the double tubular body in the same mechanism that produces the beading and necking-in operations, thus simplifying this part of the process.

A further step in the method contemplated is the splitting or final cutting and separating of the two fully necked-in bodies and this cutting action at the same time turns back and partially curls the edges of the container bodies so that after severance there is produced two bodies which are flanged, necked-in and edge curled in part and these bodies are then ready for the attachment of bottoms to fit them for filling.

The apparatus herein disclosed as a form found preferable up to the present time is believed to be novel in utilizing a new kind of beading operation on the body walls of the tubular bodies by progressively and laterally engaging the wall sec-

tions and moving outwardly from a central position, thus introducing a spinning action in addition to the regulation beading action.

The mechanical features associated with the cutting or splitting action are also important in producing an improved container body and embody a simplification of movements as well as working parts.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is a plan view partially broken away of a double blank showing opposite edges thinned by grinding;

Fig. 2 is a plan sectional view through parts of the grinding apparatus and illustrating the relative position of the blank being ground;

Fig. 3 is an enlarged fragmentary sectional view of one edge of such a blank after thinning;

Fig. 4 is a schematic sectional view showing a mandrel in cross section with forming rollers and feeding devices for the blank;

Fig. 5 is a perspective view of the tubular shaped blank after it has passed through the forming rollers;

Fig. 6 is a schematic view showing another section of the same or a different mandrel and showing a tubular body on the mandrel with its edges overlapped and also showing spot welding devices for tacking the edges of the body together to hold it to a predetermined size;

Fig. 7 is a transverse fragmentary view of the same features taken substantially along the line 7—7 in Fig. 6;

Fig. 8 is a plan sectional detail taken substantially along the line 8—8 in Fig. 7;

Fig. 9 is a schematic view illustrating the same or a different mandrel in cross section and showing welding rollers for forming a continuous side seam in the body while on the mandrel;

Fig. 10 is a transverse sectional view taken substantially along the line 10—10 in Fig. 9;

Figs. 11 and 12 are schematic, longitudinal, sectional views taken through flanging and beading heads and respectively illustrating a tubular body in two beading stages;

Figs. 13 and 14 are schematic, longitudinal, sectional views taken through cutting heads and respectively illustrating two cutting stages in the splitting of a tubular body into two container bodies;

Fig. 15 is a cross-sectional detail taken substantially along the line 15—15 in Fig. 14; and

Fig. 16 is a perspective view of one of the flanged, necked-in container bodies as produced by the various steps of operation.

A double length body sheet or blank 21 (Figs. 1 and 2) having a potential area for two container bodies is the raw material for the necked-in container bodies to be made. This blank is preferably thinned at the edges which are to enter into the side seam, so that the latter may be smoothly formed as described, and for such purpose are passed through a grinding apparatus, fragmentarily and schematically illustrated in Fig. 2. The blank 21 is conveyed over a table 22 by feed fingers 23 carried on two conveyor chains 24 which are moved in any suitable manner within grooves 25 formed in the top of the table 22.

Each opposed side edge of the blank 21 passes between grinding rollers 26, an upper and a lower roller being mounted on each side and inclined at an angle to the faces of the sheet. Each upper roller is carried on a rotating shaft 27 extending outwardly and at a slight angle to the vertical. Each lower roller is similarly carried on a shaft 28 tilted at a similar angle but in an opposite direction to its associated shaft 27.

Each grinding roller carries a ring 29 of abrasive material and a small section of these rings engages the edges of the blank 21 as it passes between them, each edge during movement between an upper and a lower roller being ground away in a taper 30, illustrated in Fig. 3, an inclined upper wall 31 and an inclined lower wall 32 resulting. This tapering of the edges of the blank thins it preparatory to producing a lapped side seam of diminished thickness.

This taper edged blank 21 is then rolled into open tubular form as illustrated in Fig. 5 and designated by the numeral 33. This rolling is done by suitable apparatus, the principal parts being indicated in Fig. 4. Blank 21 is moved over the surface of a table 35 by a reciprocating feed bar 36 having feed fingers 37 and operating in grooves 38 cut in the upper surface of the table 35. The feed bar 36 may be reciprocated in any suitable manner as by a rack section 39 secured to the feed bar 36 meshing with a gear segment head 41 formed on an oscillating arm 42.

A forming mandrel 45 is located just above the table 35 and at one side and is cut away at its center to provide a chamber 46 and along its bottom to provide a slot 47. Forming rollers 48 extend partially within the slot 47 and are carried in a frame 49 which is inserted in a front section 51 of the table.

These rollers are continually rotated and are positioned one above the other. The near edge of the blank 21 upon being moved toward the mandrel 45 by the feed bar 36 engages in the bite of the rollers 48 and is carried through the rollers and up and over the forming mandrel 45.

A deflector plate 51 adjustably held by a bolt 52 is also mounted in the frame 49 and is supported on a wedge block 53. This deflector plate effects the proper bending of the stock. Guide wings 55 mounted on a rod 56 partially enclose the sides and top of the mandrel 45 and are held away from its surface to provide a pass or guideway for the blank 21 as it is shaped into the tubular form best shown at 33 (Fig. 5).

This tubular form or shape is then moved along the mandrel 45 in any suitable manner as by a feed bar 61 having spring fingers 62. It is brought to rest at a body sizing station, still being supported upon the mandrel.

Figs. 6 and 7 show the principal operating parts at this station. The tubular member 33 is now first clamped to the mandrel along its top by a holding head 63 which may be of the usual form

used in body makers. Side wings 65 are then moved inwardly against the sides of the tubular member and the latter is wrapped close around the mandrel and its thinned edges 30 are brought together, converting the tubular form into a double tubular body 66. The mandrel 45 is provided with side wings or sizing walls 67 formed with rounded heads which are hinged at their upper ends in sockets or pockets 68 formed in the mandrel.

Before the side wings 65 have completed the wrapping of the body around the mandrel just described, the walls 67 are moved outwardly to properly shape the mandrel to its desired cross section, this action sizing the body 66 and bringing it into a predetermined diameter.

Movement of the side wings may be effected in any suitable manner as by a sliding plate 71 (Figs. 6, 7 and 8) which moves inside of and longitudinally of the mandrel 45. The plate is forked at its forward end into two arms 72 which are slidably supported in blocks 73 carried in the mandrel. Each arm 72 is provided with outer extensions 74 having tapered faces 75 at their forward edges. These faces are adapted to ride against tapered faces 76 formed in projections 77 extending inwardly from the walls 67.

The rear end of the slide 71 is cut away at 78 and a spring 79 is located within the opening being interposed between the end of the slide and a stationary block 81 carried in the mandrel 45. This spring when not compressed holds the slide in retracted position with the mandrel walls 67 collapsed. When the mandrel walls 67 are sized as just referred to the slide 71 is in forward position and the projections 74 are against the projections 77 of the walls 67. The mandrel walls 67 may be yieldingly tied together near their bottom free edges by a spring 82 which insures collapse of the mandrel walls when the plate 71 is slid back to disengage its projections 74 and the wall projections 77.

Movement of the slide 71 to effect this sizing action is made by a vertically movable plate 85 which extends upwardly through an opening 86 formed in the slide 71. Plate 85 is formed with an inclined wall 87 which engages with a similar wall 88 at one end of the opening 86. Upward movement of the plate 85 is transmitted through the inclined surfaces 87 and 88 and moves the slide forward and then locks the slide and the mandrel walls 67 in sizing position.

Provision is made for tacking together and in separated spots, the overlapped edges 30 of the body 66 so that its sized diameter will be maintained when the body is moved from the sizing station. For this purpose there is disclosed in the drawings (Figs. 6 and 7) a welding head 91 which is formed on one end with a foot 89 which has sliding engagement at 92 in the frame of the machine, being held in sliding position by slide gibs 90 in the usual manner. The welding head 91 may be pivotally connected at 93 to any suitable actuating link 94 by means of which it is raised and lowered. The welding head may carry and thus actuate the plate 85 which is directly secured as shown to one side of the head.

An electrode body 95 is carried by the welding head 91 and is insulated therefrom in any suitable manner as by an interposed insulating plate 96 and this body is provided with upstanding projections 97 which constitute lower electrodes of the tacking apparatus. The upper electrode unit is located inside of the mandrel 45 and is inside

of the body 66 clamped on the mandrel at the sizing station.

This mandrel unit comprises an electrode body 101 having projecting electrodes 102 which are in vertical alignment with the lower electrodes 97. The electrode body 101 may be insulated from the mandrel 45 by any suitable means as by an insulating block 103 interposed between body and mandrel. Bolts 104 threadedly engaging in the mandrel and passing through insulated sleeves 105 in the body provide suitable connection.

Electrical welding energy is conveyed through the two electrode bodies 95, 101 during the tacking or tack welding operation in any suitable manner, connections with the electrode bodies being indicated in Fig. 7. For this purpose laminated copper strips 106 are bolted directly to the lower body 95 and similar strips 107 may be held in electrical contact with the upper electrode body 101 by the clamping bolts 104. Strips 107 extend through the hollow part of the mandrel 45 as indicated in Fig. 7.

The tubular body 66 when sized and clamped on the mandrel rests with the inside lap of its overlapped edges 30 against the electrodes 102. When the welding head 91 and electrode body 95 are raised the electrodes 97 are brought against the outer lap of the tubular body wall and complete a welding circuit for an electrical current which thereupon passes through the lower and upper electrodes 97, 102 and through the interposed body wall at its overlapped edges 30 and this effects a spot welding or tacking of the engaged laps at the points of contact.

Following this spot welding action the walls 67 of the mandrel 45 are released from their expanded position by sliding of the plate 71 under the action of its spring 79 as the actuating plate 95 backs off with the lowering of the welding head 91. This collapse of the mandrel walls frees the body 66 from the mandrel sides and the head 63 is also moved away from clamping position. The tubular bodies 66 are then preferably moved along a tubular extension 111 (Figs. 7, 9 and 10) of the mandrel 45 or they may be taken off of mandrel 45 and placed over another mandrel the spot welds maintaining the sized diameter of the bodies. The overlapped parts are then preferably moved through roller electrodes and a continuous welded seam formed in each of the tubular bodies.

These roller electrodes may be located in and adjacent to the mandrel section 111 which is smaller in diameter than the diameter of the body 66 to permit easy sliding movement of the body therealong. This is preferably a continuous movement and may be effected in any suitable manner.

The roller electrodes, as shown in Figs. 9 and 10, comprise an upper roller 112 mounted on a short shaft 113 which is held in a cage 114, all of these parts being inside the hollow mandrel 111. Cage 114 is secured to the mandrel by a bolt 115, an insulating strip 116 between mandrel and cage and an insulating washer 117 around the bolt insulating the cage and its electrode roller from the mandrel.

Mandrel 111 along its lower side is cut away at 118 and the roller 112 projects into this opening and its outer periphery at the bottom of the mandrel is in horizontal alignment with the lower exterior surface of the mandrel. The tubular body 66 in moving along the mandrel at this position engages the roller 112, the inner lap of

the overlapped edges 30 being in electrical contact with the roller at such time.

The roller electrodes being described also include a lower roller 121 which is located outside of and beneath the mandrel 111. This roller is mounted on a shaft 122 which is parallel to and in vertical alignment with the shaft 113 of the roller 112. The shaft 122 is carried in a cage 123 which is bolted or otherwise suitably secured to the frame of the machine. An insulating plate 124 interposed between the cage 123 and the frame electrically insulates the roller 121 from the frame.

Electrical energy passes through the electrodes 112, 121 during the time that a tubular body 66 is moving along the mandrel, the interposed lapped edges 30 completing the path for the welding current. This path to the cage 114 may include laminated strips 125 passing inside of the hollow mandrel and similar strips 126 may be used for connection with the cage 123.

While the metal of the body 66 in the welding zone is in a molten condition pressure of the roller electrodes 112, 121 squeeze down and compress the interposed body wall in a side seam that is substantially the same thickness as the rest of the body wall. There is, however, very little compression to be done at such a time since the lapped tapered edges 30 collectively form a thickness barely more than the thickness desired.

The fully welded body with its continuous side seam, now designated by the numeral 131 (Figs. 11 and 12) is removed from the mandrel 111 and is then placed on a pair of flanging and beading heads 132. These heads are of identical construction and are inserted into the open ends of the body. Each head 132 is carried upon or may be a part of a horizontal shaft 133 which is suitably mounted for rotation on its own axis and also for longitudinal movement. It is the longitudinal movement of the heads that effect their insertion into the ends of the body.

Each head 132 is formed with a flanging ridge 134 in which an annular groove 135 is disposed. The heads 132 in coming into the body 131 move into the position illustrated in Figs. 11 and 12 and in reaching this position the two outer edges of the body are caused to pass into the flanging grooves 135 and are deflected outwardly as they follow the walls of the grooves. Flanges 136 are thus formed at each end of the tubular body. The flanges are uniform throughout their extent since the welded side seam is of the same thickness as the rest of the body wall.

Each head 132 is reduced in diameter at its inner end and is formed with a stem 137. A backing-up ring 138 is slidably mounted upon each stem 137 and is held on the stem by a clamping nut 139 threadedly engaging the threaded end 141 of the stem. Springs 142 are interposed between each head 132 and its backing-up ring 138 and normally holds the latter against its nut 139. Each ring 138 is prevented from rotating on its stem 137 by a feather 143 which, however, allows for longitudinal sliding movement.

The inner corner of each backing-up ring 138 is cut away and is formed with a concave annular grooved surface 146. The two concave surfaces 146 of the adjacent rings, when the heads 132 are inserted, together provide a semi-circular groove which is used in the next or beading operation now to be described.

Two beading rollers 151 are pinned to the inner ends of axially aligned shafts 152, these shafts

being parallel to the shafts 133 of the flanging heads and suitably mounted so that they may be simultaneously moved inwardly toward the flanging head shafts while still maintaining parallelism. For the first step in the beading operation the ends of the two shafts 152 are disposed in close proximity, their rollers 151 then being close together but not touching, as shown in Fig. 11.

Each roller 151 is formed with a rounded ridge or projection 153 and these cooperate, when the rollers are in the position illustrated in Fig. 11, to present a semi-circular peripheral ridge corresponding in contour to the semi-circular groove of two cooperating rings 138.

To effect the beading operation the shafts 152 are moved inwardly as a unit toward the shafts 133 and the rounded projections 153 of the beading rollers press against and reshape the tubular body 131 along its median region. It will be understood that the can body is rapidly turning with the rotating flanging heads 132 and the rollers 151 are correspondingly rotated. The metal of the body which is engaged by the rollers is thus gradually and progressively forced inwardly until ironed down against the concave walls 146 of the backing-up rings 138. An annular bead 155 results, Fig. 11 illustrating the completion of this part of the beading operation.

The bead 155 is used as an intermediate shape in forming the necked-in portion of the container body being manufactured. As a further step this bead is then widened by a continuation of the rolling action plus a separation of the beading rollers 151 as their shafts 152 are drawn apart along their aligned axes. The rotating shafts 152 at such time are still maintained in parallelism with and at the same distance from the rotating beading head shafts 133.

During this separation of the shafts and the beading rollers the projecting ridges 153 of the rollers pressing through the confined wall of the tubular body 131 force apart the backing up rings 138 moving them outwardly on their stems 137 against the action of the springs 142. These movements widen the narrow bead 155 into an elongated bead 156 (as shown in Fig. 12).

The body 131 during this beading action is confined between the flanging projections 134 of the flanging heads 132 and the metal of the wall is gradually pressed inwardly in a combined beading and spinning action which is much easier on the metal stock in the body avoiding any sudden or intense strains which would necessarily be present in straight die action. It is this beaded section 156 which provides the necked-in parts of the container bodies being made. The body 131 in its present state is now a double body which requires only splitting along its center to produce the two desired container bodies.

The beading roller shafts 152 are then moved back and away from the double body on the flanging heads 132 and the latter are then withdrawn from the body. In this withdrawing action the springs 142 pressing their associated backing up rings 138 against the walls of the bead 156 assist in knocking off or disengaging the beaded body 131 from the beading heads. The double body 131 is thereupon positioned upon cutting heads 161, 162 (Figs. 13 and 14).

The head 161 is mounted upon the end of a tubular member 163 which is formed with an outwardly projecting flange 164 against which one end of the head 161 abuts. Locknuts 165 are threadedly engaged upon the tubular member 163

and hold the head 161 tight against the projection 164.

The head 162 is mounted in a similar manner upon a member 166, the inner end of the head resting against a projecting flange 167. Locknuts 168 threadedly engaging the member 166 hold the head 162 in position against its flange projection 167.

The members 163, 166 are suitably mounted for rotation on a common axis and are movable longitudinally of that axis. The members are separated one from another a distance sufficient to allow positioning of the beaded tubular body 131 between their adjacent ends and the members are thereupon moved inwardly toward each other and their ends are inserted into the open ends of the body and into the position illustrated in Figs. 13 and 14. In this position the projections 171, 172 of the respective cutting heads 161, 162 are against the flanged ends of the tubular body clamping the body in position for cutting. It will be understood that the body 131, the heads 161, 162 and the members 163, 166 are all rotated in unison on a central longitudinal axis.

Two backing-up rollers 175 are mounted upon and pinned to a shaft 176 which is parallel to the axis of the members 163, 166. The shaft 176 is suitably mounted for rotation on its own axis and also for parallel movement toward the cutting heads and the members 163, 166.

With the tubular body 131 clamped between the cutting heads 161, 162 and rotating therewith, the shaft 176 is moved inwardly and the rollers 175 are brought into engagement with the tubular body. These rollers 175 are formed with rounded corners as illustrated, the outer roller surface fitting in the curved side walls of the bead 156. Rollers 175 and shaft 176 rotate in unison with the cutting heads. While in this engaged rotating position the tubular body 131 is slit centrally of its beaded section 156 separating it into two parts.

The actual cutting or splitting is effected by a cutting disc 181 pinned on a shaft 182 which is eccentrically mounted in a bushing 183, the latter being eccentrically mounted within the member 166 (see also Fig. 15). The shaft 182 extends beyond the ends of the bushing 183 and is held against longitudinal movement in the bushing by the disc 181 on one end and by a collar 184 pinned on the other end.

The cutting disc 181 when the cutting heads 161, 162 are in body clamping position is disposed within the space between the ends of the members 163, 166 and a sharp peripheral cutting surface of the disc aligns with the space between the backing-up rollers 175, this position being in the middle of the tubular body 131 as it rests on the cutting heads.

The bushing 183 is extended laterally, beyond one end of the member 166, into an operating arm 185 and this may be moved in any suitable manner to rotate the bushing 183 within its bearing in the member 166. The resulting eccentric movement shifts the cutting disc 181 outwardly from the position illustrated in Fig. 13 against and through the wall of the body 131 into the position illustrated in Fig. 14.

Rotation of the parts in addition to this shifting movement of the cutting disc splits the tubular double body into two identical container bodies 186 (Fig. 16). The backing-up rollers 175 and the shaft 176 are thereupon moved away and the container bodies are taken off of the cut-

ting heads 161, 162 which are separated for this purpose.

The cutting disc 181 in moving outwardly through the body wall slightly turns back the edge produced in cutting and forms a partial curl 187. Referring to Fig. 16 it will be observed that the welded tubular container body produced in the steps just described has the top edge curled at 187 and the bottom flanged at 188. It also has a welded side seam 189 and a necked-in top 191.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction, and arrangement of parts of the apparatus mentioned herein and in the steps and their order of accomplishment of the process described herein, without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the apparatus and process hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. The method of making necked-in container bodies which comprises, providing a blank having the potential area of two container bodies, thinning the edges of the blank which are to become adjacent, bending said blank into tubular form, connecting the adjacent edges in a side seam to provide a tubular double body, pressing an annular bead around said body, and splitting said body centrally of said bead to provide two necked-in container bodies.

2. The method of making cylindrical necked-in container bodies which comprises, providing a blank having the potential area of two container bodies, thinning the edges of the blank which are to become adjacent, bending said blank into cylindrical form, connecting the adjacent edges in a side seam to provide a cylindrical double body, pressing an annular bead around said body midway between its ends, widening said bead by progressively spreading its side walls, and splitting said body centrally of said widened bead to provide two duplicate necked-in container bodies.

3. The method of making necked-in container bodies which comprises, providing a blank having the potential area of two container bodies, grinding an end edge of the blank to reduce its thickness, bending said blank into tubular form with opposed edges overlapped and including said thinned edge, connecting the overlapped edges in a side seam to provide a tubular body, pressing an annular bead around said body, and splitting said body centrally of said bead to provide two duplicate necked-in container bodies.

4. The method of making necked-in container bodies which comprises, providing a blank having the potential area of two container bodies, grinding two opposed end edges of the blank to reduce their thickness, bending said blank into tubular form with its thinned edges overlapped, connecting the overlapped edges in a side seam of substantially the same thickness as the thickness of the blank to provide a tubular body, pressing an annular bead around said body midway between its ends, and splitting said body centrally of said bead to provide two necked-in container bodies.

5. The method of making necked-in container bodies which comprises, providing a blank having the potential area of two container bodies, thinning the edges of the blank which are to become adjacent, bending said blank into tubular form,

connecting the adjacent edges in a welded side seam to provide a double length tubular body, flanging both ends of said double body, pressing an annular bead around said body midway between its flanged ends, and splitting said body centrally of said bead to provide two necked-in container bodies.

6. The method of making necked-in container bodies which comprises, providing a blank having the potential area of two container bodies, grinding two opposed end edges of the blank to reduce their thickness, bending said blank into tubular form, connecting the thinned edges in a welded side seam of substantially the same thickness as that of the rest of the blank to provide a double length tubular body, flanging both ends of said double body, pressing an annular bead around said body midway between its flanged ends, and splitting said body centrally of said bead to provide two necked-in container bodies.

7. The method of making cylindrical necked-in container bodies, which comprises, providing a double body blank, thinning the edges of the blank which are to become adjacent, rolling said blank into cylindrical form over a mandrel, sizing the rolled blank to exact diameter by expanding a part of said mandrel, uniting the edges of said blank at intervals to hold it in sized condition to provide a double body, welding the said body in a side seam along its held edges, pressing an annular bead centrally of and into the exterior wall of said double body, and dividing said double body into two necked-in container bodies by cutting through its wall in the middle of said bead to split it into two parts.

8. The method of making cylindrical necked-in container bodies, which comprises, providing a double body blank, thinning opposed edges of said blank, rolling said blank into cylindrical form, bringing the thinned edges of said blank into overlapped position, sizing the rolled blank to exact diameter, uniting the overlapped edges of said blank to hold it to its exact diameter, welding the held edges of said blank in a side seam having substantially the same thickness as the rest of the blank wall to provide a double cylindrical body, pressing an annular bead centrally of and into the exterior wall of said cylindrical body, widening said bead by progressively spreading its side walls, and dividing said double body into two duplicate necked-in container bodies by splitting it while cutting outwardly through its wall in the middle of said bead and at the same time turning back and curling the edges of the divided container bodies.

9. The method of making cylindrical necked-in container bodies, which comprises, providing a double body blank, thinning the edges of the blank which are to become adjacent, rolling said blank into cylindrical form over a mandrel to provide a body, sizing the rolled body to exact diameter by expanding a part of said mandrel, uniting engaged edges of said body to hold it to its sized diameter, welding the held edges of said blank in a side seam to provide a double-cylindrical body, flanging both ends of said body, pressing an annular bead centrally of and into the exterior wall of said body to provide a necked-in section, widening said bead by progressively spreading its side walls and forming a larger necked-in section, and dividing said body into two necked-in container bodies by cutting outwardly through its wall in the middle of said bead.

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