CLASS 413, SHEET METAL CONTAINER MAKING

SECTION I - CLASS DEFINITION

This Class contains:

(1) Both apparatus and the process for affixing a sheet metal closure to a receptacle.

(2) Machines and processes for shaping a metal lid and for performing the attendant operations for preparing such lid for final assembly to a receptacle.

(3) The process and apparatus for forming or partial forming sheet metal into tubular stock to be used in container making.

(4) Container subcombination making, per se, such as pull tab (pull ring) making, tear tab making plus assembly via fastener (rivet) to one another.

SECTION II - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 700+ for the generic subclasses of assembly and/or metal shaping using plural diverse apparatus; and subclasses 700+ for means to assembly or disassemble.

53, Package Making, appropriate subclasses for the filling and closing of a receptacle. Class 53 accepts the filling and closing of a receptacle in a pressure modifying atmosphere, in subclasses 79+, 266.1+, 403+, 420+, 432+, and 485+.

72, Metal Deforming, subclasses 362+ for the body forming processes. See also subclasses 199+ for roller tool.

100, Presses, subclasses 54+ for receptacle closing that involves a compression of the receptacle or contents.

118, Coating Apparatus, appropriate subclass for means used to coat any part of the container.

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclass 203, 218, and 465 to form a tube by edge joining one piece blanks.

215, Bottles and Jars, especially subclasses 200+ for closures for bottles or jars.

220, Receptacles, appropriate subclasses such as 200+ for closures, per se.

228, Metal Fusion Bonding, subclasses 101+ for the welding of a tube along its side seam.

229, Envelopes, Wrappers, and Paperboard Boxes, subclasses 5.5+ for container end structure, per se.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, for method of bonding plastic containers.

427, Coating Processes, appropriate subclasses used in the coating of a container.

493, Manufacturing Container or Tube From Paper; or Other Manufacturing From a Sheet or Web, appropriate subclass if the can body is nonmetallic.

SECTION III - GLOSSARY

CLOSURE

A lid, bottle cap, the top of a can.

CONTAINER

For purposes of this class is a closed can (e.g., soft drink, beer), full or empty.

PULL TAB

A member operated by the users fingers and used to open the container.

RECEPTACLE

A tube closed at one end (e.g., drinking cup).

TEAR TAB

The metal torn when the pull tab is activated.

SUBCLASSES

1 METHOD:

This subclass is indented under the class definition. Process for forming a complete sheet metal container or part of one, a complete sheet metal closure or part of one.

SEE OR SEARCH CLASS:

72, Metal Deforming, subclasses 374+ for open topped receptacle making which are intended to be closed or capped subsequently.

2 Assembling receptacle with closure:
This subclass is indented under subclass 1. Process for attaching or uniting an end closure to an open topped container.

SEE OR SEARCH THIS CLASS, SUBCLASS:
26+, for the apparatus for applying the closure to the receptacle.

SEE OR SEARCH CLASS:
53, Package Making, subclasses 285+ for closing a package.

3 Including work feeding:
This subclass is indented under subclass 2. Process wherein either the end closure or the open topped container is transported or conveyed to an assembly station.

SEE OR SEARCH THIS CLASS, SUBCLASS:
45+, for the apparatus to feed closure or receptacle.

4 End joint forming:
This subclass is indented under subclass 2. Process specific to the connection between the open topped container and the end closure.

5 Metal to nonmetal:
This subclass is indented under subclass 4. Process wherein either the end closure or the open topped container is made of a nonmetallic material and the other element is metallic.

6 Rolling:
This subclass is indented under subclass 4. Process including curling overlapping portions of the end closure and the open ended container into a toroidal bead that lies adjacent the upstanding wall portion of the said container to thereby form a fluid tight joint.

SEE OR SEARCH THIS CLASS, SUBCLASS:
31+, for apparatus using a roller die to apply the closure to a receptacle.

7 Applying sealant:
This subclass is indented under subclass 4. Process including the step of applying a sealing material, liquid or preform, between the end closure and the open topped container to form a tight joint therebetween.

SEE OR SEARCH THIS CLASS, SUBCLASS:
19+, for method of applying a liquid coating material to a closure.
34+, for the apparatus for applying the closure to the receptacle with means to apply a gasket or sealant.
58+, for the apparatus to apply a sealing means to the closure.

SEE OR SEARCH CLASS:
277, Seal for a Joint or Juncture, for a generic sealing means or process, subclass 316 for a process of static sealing where the seal is formed in place (i.e., in situ).

8 Forming or treating metallic closure preform:
This subclass is indented under subclass 1. Process wherein a previously shaped metallic component of an end closure is adhered to or assembled with another element, or is coated, impregnated or molded upon; or is otherwise conditioned to make it more usable as an end closure.

SEE OR SEARCH THIS CLASS, SUBCLASS:
56, for apparatus for forming or treating closures.

SEE OR SEARCH CLASS:
29, Metal Working, subclasses 700+ for the method of manufacture.
264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 239+ for shaping a plastic member.
427, Coating Processes, subclasses 299+ for coating a container closure with pretreatment.

9 By joining with preformed gasket or liner:
This subclass is indented under subclass 8. Process wherein a previously shaped seal or covering material is assembled with the metallic component.

SEE OR SEARCH THIS CLASS, SUBCLASS:

7, for the method of assembling the closure to the receptacle by end joint forming using a sealant.

34, for the apparatus for applying the closure to the receptacle with means to apply a gasket or sealant.

58+, for the apparatus to apply a sealing means to the closure.

SEE OR SEARCH CLASS:

277, Seal for a Joint or Juncture, for a generic sealing means or process, subclass 316 for a process of static sealing where the seal is formed in place (i.e., in situ).

10 Forming means to deter or detect tampering (e.g., child proof cap):
This subclass is indented under subclass 8. Process for fabricating on or attaching to the end closure either means preventing easy disengagement of the closure from the receptacle or means signalling such disengagement has occurred or has been attempted.

11 Reshaping previously used crown cap:
This subclass is indented under subclass 8. Process wherein previously used end closure having a fluted and flared skirt is recycled by deforming it into its original shape thus enabling reuse.

12 Fabricating or assembling member having frangible portion (e.g., tear tab forming):
This subclass is indented under subclass 8. Process for making a member having a weakened breakable portion thereabout in the end closure, or for attaching a member containing such a weakened portion to the end closure to thereby allow access to the containers when the weakened portion is broken.

SEE OR SEARCH THIS CLASS, SUBCLASS:

55, for apparatus used in forming score lines about a cylindrical can body.

67+, for apparatus used in forming frangible zones in container lids.

SEE OR SEARCH CLASS:

277, Seal for a Joint or Juncture, for a generic sealing means or process, cross-reference art collection 917 for a seal including a frangible feature.

13 Forming user lip guard:
This subclass is indented under subclass 12. Processes including providing a edge or portion to protect the user's mouth against injury from any rough edge produced when the weakened portion is broken.

14 Assembling pull tab (e.g., ring) to tear tab:
This subclass is indented under subclass 12. Process wherein an actuator is secured to the member, by a element that is extending through an aperture in either the actuator or the member.

SEE OR SEARCH THIS CLASS, SUBCLASS:

66, for apparatus for uniting pull tab to closure.

15 Forming discontinuous frangible fracture line (e.g., push-in type with hinged tear tab):
This subclass is indented under subclass 12. Process for fabricating a member having a weakened peripheral portion which extends about only a portion of the member and wherein the container is opened by pushing the member downwardly.

16 Having pull tab and hinged tear tab:
This subclass is indented under subclass 15. Process wherein the member is joined to the closure through a nonfranging section about which the member swings and wherein a manually actuated element is provided for effecting the franging and pivoting of the member.

17 Scoring to form fracture line:
This subclass is indented under subclass 15. Process including forming a line of fracture by a scoring step which thins or partially cuts through the metal closure.

18 Coating:
This subclass is indented under subclass 8. Process including the step of coating all or part of a closure, before or after forming, with a metal or nonmetal coating to aid in the assem-

bly of the closure to the receptacle or to inhance its sealing capacity.

19 Applying liquid to form gasket or liner:
This subclass is indented under subclass 18. Process wherein the metallic component is contacted with a liquid which adheres to the component and forms a seal or covering layer thereon.

SEE OR SEARCH THIS CLASS, SUBCLASS:
60+, for apparatus that contacts the closure with a liquid seal.

SEE OR SEARCH CLASS:
277, Seal for a Joint or Juncture, for a generic sealing means or process, subclass 316 for a process of static sealing where the seal is formed in place (i.e., in situ).

20 By spraying:
This subclass is indented under subclass 19. Process wherein a stream of the liquid is projected against the metallic component.

SEE OR SEARCH THIS CLASS, SUBCLASS:
61, for apparatus to spray a liquid seal onto a closure.

21 Solder applying:
This subclass is indented under subclass 8. Process wherein a fusable metal is applied to the metallic component.

SEE OR SEARCH THIS CLASS, SUBCLASS:
57, for apparatus to apply solder to the closure.

22 Making or applying pouring spout or conical neck:
This subclass is indented under subclass 8. Process wherein the closure is formed with a converging neck or integral pouring spout.

SEE OR SEARCH THIS CLASS, SUBCLASS:
53, for apparatus to assemble spout with container.

23 Forming thread:
This subclass is indented under subclass 8. Process wherein a helical screw is formed on a skirt portion of a metallic end closure.

24 Forming lug (e.g., twist-off cap):
This subclass is indented under subclass 8. Process wherein a inwardly directed projection is formed on a skirt portion of a metallic end closure.

(1) Note. This subclass contains the “twist-off cap” type closure wherein the lug engages a thread or other lug formed on the contiguous receptacle.

25 Making pull tab gripping means (ring end):
This subclass is indented under subclass 1. Process for forming the ring means used to pull a tear tab off a can top to open the can.

(1) Note. The rivet that fixes the ring means to the tear tab may be found here.

SEE OR SEARCH THIS CLASS, SUBCLASS:
66, for apparatus that unites a pull tab to closure.

26 APPARATUS APPLYING CLOSURE TO RECEPTACLE:
This subclass is indented under the class definition. Apparatus for placing either the top or bottom or both on the rectilinear can body in a manner that creates an air tight seal within the container.

SEE OR SEARCH THIS CLASS, SUBCLASS:
2, for method of assembling receptacle with closure.

27 Seamer:
This subclass is indented under subclass 26. Apparatus wherein the end closure receptacle are united by means which folds an overlapping portion of the periphery of the end closure an edge of the receptacle body upon each other, to thereby form an air tight seal between the closure and the receptacle.

28 **No workpiece no seam type:**
This subclass is indented under subclass 27. Apparatus wherein means are provided to stop the seaming operation if either the lid or receptacle does not arrive at the seaming station in time to be united with the other.

29 **With lubricating means:**
This subclass is indented under subclass 27. Apparatus wherein a means is provided to ease the friction between the moving parts of the seaming apparatus or the parts being seamed.

SEE OR SEARCH CLASS:
184, Lubrication, subclasses 14+ for lubricators.

30 **Progressive seaming stations:**
This subclass is indented under subclass 27. Apparatus wherein the seaming is accomplished in successive operations in at least two separate, spaced locations.

31 **Roller die:**
This subclass is indented under subclass 17. Apparatus wherein the seaming is done by a cylindrical means that rolls about the can lip periphery during the seaming operation.

32 **Irregular can:**
This subclass is indented under subclass 31. Apparatus wherein the can is not round in cross section.

33 **Pattern cam:**
This subclass is indented under subclass 32. Apparatus wherein the cylindrical means is constrained to follow a noncircular path approximating the shape of the finished can by a contoured cam.

34 **Gasket or seal applying means:**
This subclass is indented under subclass 31. Apparatus wherein a means is provided for applying a sealing means between the can body and lid so that the lid and body are seamed together in an air tight.

SEE OR SEARCH THIS CLASS, SUBCLASS:
7, for method of applying sealant.
58+, for apparatus that applies seal to closure.

SEE OR SEARCH CLASS:
277, Seal for a Joint or Juncture, for a generic sealing means or process, subclass 630 for a static contact seal for other than an internal combustion engine, or a pipe, conduit, or cable having an installation, removal, assembly, disassembly, or repair feature.

35 **Lid feeding means:**
This subclass is indented under subclass 31. Apparatus wherein said seamer and roller die means are provided for delivering can ends to the joining means separately from the receptacle.

SEE OR SEARCH THIS CLASS, SUBCLASS:
45+, for closure or receptacle feed.

36 **Rectilinear movement of seam head:**
This subclass is indented under subclass 31. Apparatus wherein the cylinder means moves in a straight line joining the end closure to the receptacle during the seaming operation.

37 **Can holder or lock:**
This subclass is indented under subclass 31. Apparatus wherein means are provided to clamp the receptacle in a fixed position during the seaming operation.

38 **Portably mounted or attached seamer:**
This subclass is indented under subclass 31. Apparatus wherein said seamer can be easily moved from one point of use to another. (This is not a hand held tool but a movable one.)

39 **Hand actuated:**
This subclass is indented under subclass 31. Apparatus wherein manually operated means is used to move the cylindrical means to perform the seaming operation.

40 **Roller spreader:**
This subclass is indented under subclass 31. Apparatus wherein plural cylinder means are provided and additional means are provided for moving the cylindrical means towards and away from each other so that the work to be seamed can be inserted or withdrawn from the apparatus.

41 Cam actuated:
This subclass is indented under subclass 40. Apparatus wherein said cylinder means are moved radially outwardly by the action of a cam.

42 Fluted chuck:
This subclass is indented under subclass 27. Apparatus wherein said seamer is a cylindrical member having longitudinal slits there in to facilitate its placement over the means to be seamed thus enabling the said means to be rotated and effect the seaming operation.

43 Reciprocating die:
This subclass is indented under subclass 27. Apparatus wherein the seaming tool has at least one die that moves linearly in and out of engagement with the can body and can end to help forge a seam between the body and end.

44 Geneva drive mechanism:
This subclass is indented under subclass 27. Apparatus wherein said seamer is actuated by a geneva gear.

45 Closure or receptacle feed:
This subclass is indented under subclass 26. Apparatus wherein the closure or receptacle is fed to the station where the two are united to transport either an end closure or a receptacle to a station where the two are united.

SEE OR SEARCH THIS CLASS, SUBCLASS:
3, for the method of feeding.

46 Magnetic feed:
This subclass is indented under subclass 45. Apparatus wherein the feed is done by a magnet that drives or secures one or more components and carries it to the joining station.

47 Storage means (e.g., magazine):
This subclass is indented under subclass 45. Apparatus wherein the closures or can bodies are retained in a storage means which supplies the transport means.

48 Dropper type:
This subclass is indented under subclass 47. Apparatus wherein said storage means comprise mechanism that causes the closure or can body to free fall either directly into the uniting station or onto transport means which moves it into the uniting station.

49 And pusher:
This subclass is indented under subclass 48. Apparatus wherein actuation is initiated by a force causing the lid or body to leave the magazine and free fall or slide a short distance to the joining area.

(1) Note. Reciprocating means is provided for engaging the lower most end closure or receptacle in the storage means to remove the same from said storage means.

50 And turret:
This subclass is indented under subclass 48. Apparatus wherein said dropper type storage means is constructed in a circular feeder fashion to release the lids or bodies after a turning indexing step to deliver the components to the joining station.

51 Including pusher:
This subclass is indented under subclass 47. Apparatus wherein said storage magazine supply means has a forcing means therein to move a component from the magazine to the joining station.

52 Closure and receptacle feed:
This subclass is indented under subclass 45. Apparatus wherein both the receptacle and the closure are transported to a point where both are joined together.

53 APPARATUS FORMING POURING SPOUT OR ASSEMBLING SPOUT WITH CONTAINER:
This subclass is indented under the class definition. Apparatus for shaping or otherwise fabricating a material flow guide normally used in pouring content material from a container or for uniting such a material flow guide with a container.

54 APPARATUS UNITING KEY TO CONTAINER OR CLOSURE:
This subclass is indented under the class definition. Apparatus having means for assembling a separable tear strip operator with either the container or the end closure for the container,

said operator having a slot formed therein into which a portion of the tear strip is inserted.

(1) Note. This type of tear strip operator usually operates by rolling the tear strip up into a wound mass as the operator is rolled around the periphery of the can.

55 APPARATUS SCORING CONTAINER BODY:

This subclass is indented under the class definition. Apparatus wherein means are provided for forming a pair of axially spaced, parallel cuts on the tubular portion of the can body which cuts substantially circumscribe the can body and define a tear strip therebetween.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12+, for the method of tear tab forming.

67+, for apparatus to form a frangible zone on the closure.

56 APPARATUS TO FORM CONTAINER CLOSURE (LID):

This subclass is indented under the class definition. Apparatus for fabricating or partially fabricating a metallic end closure to be used with a receptacle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

8+, for method to form or treat metallic closures.

57 Having means to apply solid solder:

This subclass is indented under subclass 56. Apparatus wherein means are provided for assembling an easily fusible metal, e.g., solder, with the end closure while said fusible metal is in the solid state.

SEE OR SEARCH THIS CLASS, SUBCLASS:

21, for method of solder applying.

58 Having means to apply seal or liner:

This subclass is indented under subclass 56. Apparatus including means to assemble a gasket or similar sealing or lining member with an end closure or for applying a fluent sealing or lining medium to said end closure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

9, and 19+, for method of forming with or applying gasket or liner.

SEE OR SEARCH CLASS:

53, Package Making, subclass 129.1 for sealing gasket.

277, Seal for a Joint or Juncture, for a generic sealing means or process, subclass 630 for a static contact seal for other than an internal combustion engine, or a pipe, conduit, or cable having an installation, removal, assembly, disassembly, or repair feature.

59 Having heating means:

This subclass is indented under subclass 58. Apparatus having means to elevate the temperature of the end closure assembly or of some component thereof.

60 By means contacting closure with liquid:

This subclass is indented under subclass 58. Apparatus wherein said member brings the lid into contact with a liquid coating means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

19+, for method of applying liquid to form a gasket or liner

SEE OR SEARCH CLASS:

118, Coating Apparatus, subclasses 200+ for applying a liquid to a workpiece.

61 By spraying:

This subclass is indented under subclass 60. Apparatus having means to project a stream of liquid against the end closure.

62 And metal deforming means:

This subclass is indented under subclass 58. Apparatus wherein additional means are provided to bend or otherwise distort a metallic component of the end closure, or some component thereof.

63 With seal cutting means:
This subclass is indented under subclass 58. Apparatus including means to sever one portion of a sealing or lining medium from a source of stock material.

64 And means to feed a web of material:
This subclass is indented under subclass 63. Apparatus wherein the stock material is supplied to the severing means in the form of a striplike continuum.

65 Means ejecting seal or closure:
This subclass is indented under subclass 58. Apparatus having means for removing either the finished cap or a misaligned seal from the assembly apparatus after the completion of the assembly operation.

66 Having means uniting pull tab on closure:
This subclass is indented under subclass 56. Apparatus including a means to join an actuating member to an end closure, which end closure has a frangible zone, such that the member is positioned to effect franging of said zone when desired.

SEE OR SEARCH THIS CLASS, SUBCLASS:
14, for method of assembling the pull tab to tear tab.

67 Having means forming frangible zone on closure:
This subclass is indented under subclass 56. Apparatus including means that weakens a linear portion of the lid so that this line will subsequently fail under pressure and an area within the weakened line can be bent or removed placing a hole in said lid.

SEE OR SEARCH THIS CLASS, SUBCLASS:
12, for method of fabricating or assembling a member having a frangible portion.

SEE OR SEARCH CLASS:
277, Seal for a Joint or Juncture, for a generic sealing means or process, subclass 630 for a static contact seal for other than an internal combustion engine, or a pipe, conduit or cable having an installation, removal, assembly, disassembly, or repair feature.

68 By means inserting ripper means into closure:
This subclass is indented under subclass 67. Apparatus wherein a cord or wire is inserted into the can top so that it can subsequently be pulled, ripping a line in the closed can top, thus opening the container.

69 APPARATUS FOR CAN BODY MAKING:
This subclass is indented under the class definition. Apparatus for forming a can body, per se.

(1) Note. The hollow cylinder has no end closures attached.

70 Blank feed:
This subclass is indented under subclass 69. Apparatus wherein means are provided to deliver preforms used to make can bodies to a can forming station.

71 With bending:
This subclass is indented under subclass 70. Apparatus wherein means are provided to force a preform into a cylindrical shape.

72 With seaming:
This subclass is indented under subclass 71. Apparatus wherein means are provided to longitudinally seam the bent preform.

73 With body deforming (bending, flanging):
This subclass is indented under subclass 72. Apparatus wherein said seaming is done to the two longitudinal edges after they are bent in an overlapping manner to hold them together with seamer making the joint air tight as a condition subsequent.

74 With seaming:
This subclass is indented under subclass 70. Apparatus wherein means are provided for seaming the bent preform along its longitudinal edges.

75 With body deforming:
This subclass is indented under subclass 74. Apparatus wherein said seaming is done to the two longitudinal edges after they are bent in an overlapping manner to hold them together with

seamer making the joint air tight as a condition subsequent.

76 Body deforming:
This subclass is indented under subclass 70. Apparatus wherein said blank is bent at the two longitudinal edges in an overlapping manner to hold them together.

77 With side seaming:
This subclass is indented under subclass 69. Apparatus wherein said cylindrical can body is longitudinally closed to form an air tight joint.

78 MISCELLANEOUS:
This subclass is indented under the class definition. Apparatus not provided for elsewhere in the class.

END