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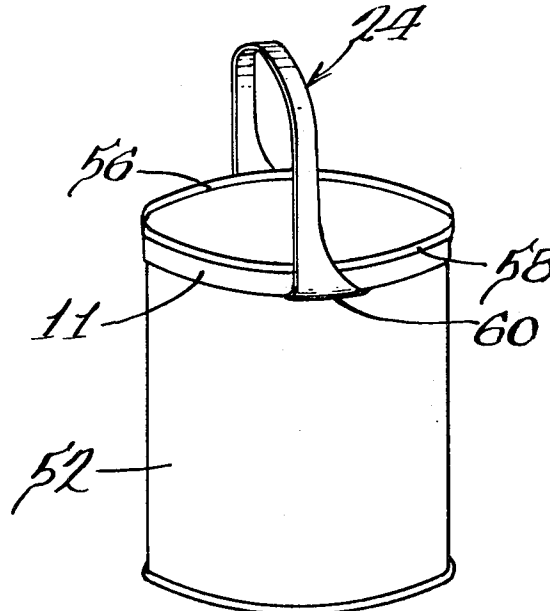
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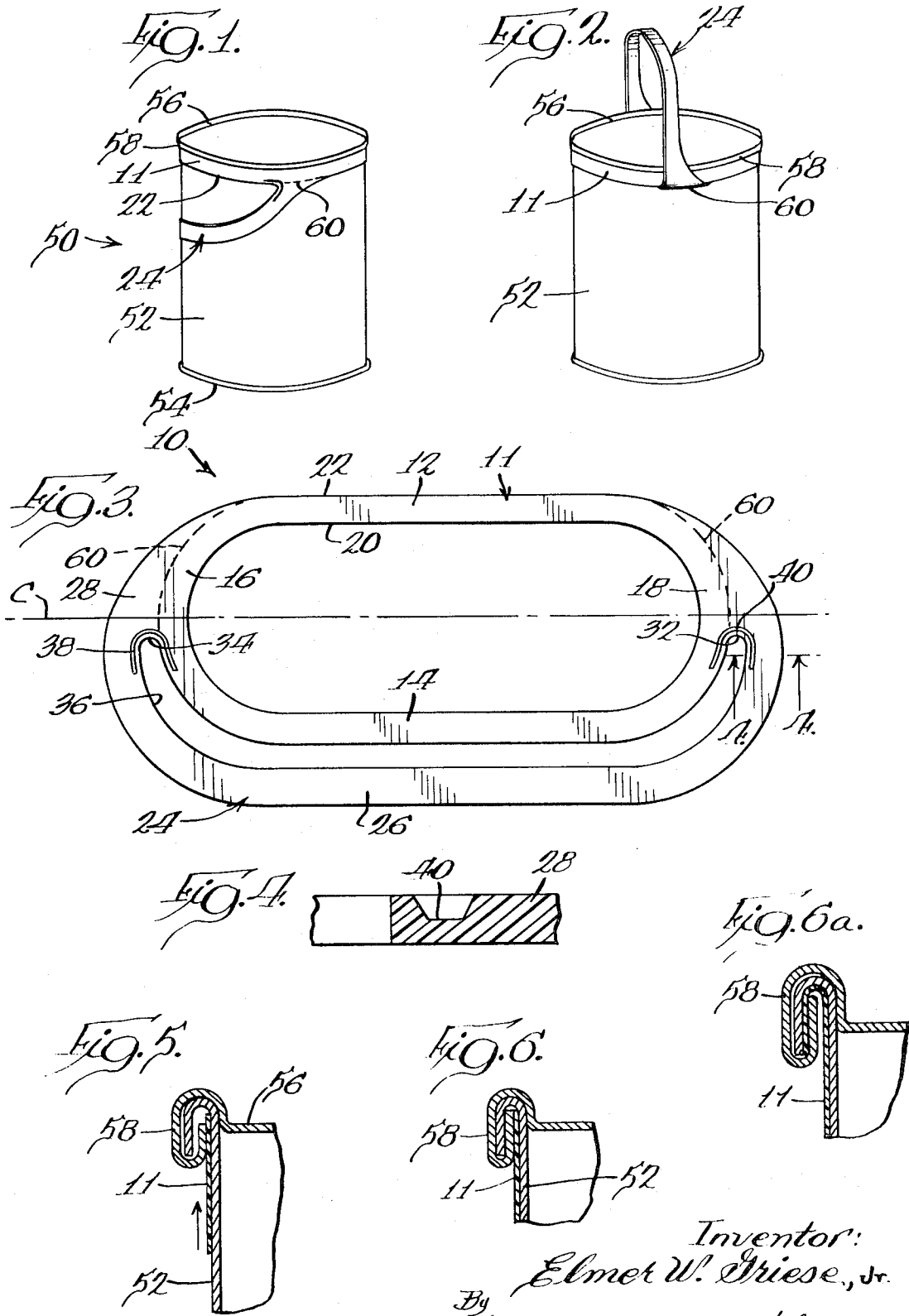
[54] **PLASTIC BAIL FOR CONTAINER AND METHOD OF ATTACHING BAIL**  
 13 Claims, 7 Drawing Figs.

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 94 R; 215/100 A; 229/52 R, 52 A, 52 B, 52 AL;  
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**ABSTRACT:** A container handle made from a single flat sheet of resilient material and having an annular member including rectilinear side portions and arcuate end portions with a bail extending from the outer edge of the annular member and having a central rectilinear section spaced from one of the side portions and integrally joined with each of the end portions. The container handle is attached to a container body by encircling the body with the annular member adjacent one end and seaming an end to the body in a manner to crimp at least a portion of the annular member between the body and the seam.





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## PLASTIC BAIL FOR CONTAINER AND METHOD OF ATTACHING BAIL

### BACKGROUND OF THE INVENTION

The present invention relates generally to containers and more particularly to an improved handle for containers and a method for attaching the handle to the containers.

The use of metal containers for packaging various products for shipment has been a common practice for many years. In packaging merchandise, such as paint, one well-known size of container is a 1-gallon can having a handle or bail pivotally supported by ears located at diametrically opposed points on the container body.

The use of a metal handle or bail has several disadvantages and the various steps necessary for attaching the handle to the container substantially increases the cost of the container. In conventional metal handles or bails, it is necessary to separately form the ears and locate the ears on the container. Subsequently the bail is either manually or machine-connected in an additional operation by inserting the ends of the bail into openings formed in the ears. Since the bails are normally formed from a continuous supply of wire, the ends of the bails are cut and bent. As a result the ends are uncoated and are subjected to rusting during storage. Also, when packaging several cans with the metal bails, it is necessary to orient the containers relative to the dividers normally forming part of a larger container package.

Another problem encountered in containers having the metal bail or handle, is that the label is normally applied to the container surface after the ears have been secured thereto. Thus, it becomes necessary to accurately orient the label relative to the ears to ensure that openings in the label are concentric with the centers of the respective ears.

While many alternate handle constructions have been proposed, to date none of these have been commercially acceptable for the conventional paint cans and the like and there still remains an urgent need for a simple and inexpensive replacement for the conventional metal bail.

### SUMMARY OF THE INVENTION

The present invention relates generally to a plastic bail or handle which can readily be formed from an inexpensive flat sheet of plastic material and which may be attached to a container simultaneously to the attachment of the container end to the container body.

More specifically, the present invention contemplates a container handle made flat in one piece and lying in a single plane with the handle or bail including an annular member having rectilinear side portions and arcuate end portions and defining inner and outer edges. The inner edge defines a substantially rectangular opening. Bail means are formed integral with the annular member or support and include a central rectilinear section spaced from and substantially coextensive with the length of one of the side portions and integrally joined to the outer edge along the arcuate end portions. The integral connections defines hinges between the bail and the annular member or band.

The container handle is attached to the container by encompassing the body with the annular member and locating the inner edge of the annular member adjacent one end of the body. Subsequently, a container end is attached to the container body by the usual seaming process in a manner that at least a portion of the annular member is secured or crimped between the body and the seam.

According to a further aspect of the present invention, the substantially rectangular opening in the annular member is made smaller than the peripheral dimension of the body so that the annular member must be stretched or tensioned when the member is placed on the body. By having the opening smaller than the size of the container body, the annular member will be deformed from the single plane to produce a substantially circular band and the opening becomes enlarged to substantially the peripheral dimension of the body.

## BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF DRAWINGS

FIG. 1 shows a container having the handle or bail of the present invention secured thereto and located in the stored position;

FIG. 2 is a view similar to FIG. 1 showing the handle in its carrying position;

FIG. 3 is a plan view of the container handle and connecting member in its originally formed condition;

FIG. 4 is an enlarged vertical sectional view taken along line 4-4 of FIG. 3;

FIG. 5 is an enlarged sectional view of the seam connecting the container end to the container body and shown in its intermediate stage prior to being crimped to the final position shown in FIG. 6; and

FIG. 6a shows a slightly modified attaching method for the container handle to the container.

### DETAILED DESCRIPTION

While this invention is susceptible of embodiment in many different forms, there is shown in the drawings and will herein be described in detail one specific embodiment, with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiment illustrated.

FIG. 3 of the drawing discloses a plan view of a device or container handle and support, generally designated by the reference numeral 10. The support 11 includes an annular member having rectilinear side portions 12 and 14 and arcuate end portions 16 and 18. The side portions 12 and 14 and the end portions 16 and 18 cooperate to define inner and outer edges 20 and 22 respectively. A handle or bail means 24 is formed integral with the arcuate end portions 16 and 18. The handle or bail may be divided into a central rectilinear section 26 which is spaced from and substantially coextensive with the rectilinear side portion 14 with means 26 and 28 located at opposite ends of the central rectilinear section 26 and integral with portions of the respective arcuate end portions 16 and 18.

An inspection of FIG. 3 shows that the integral connection between the ends of the portions 28 and 30 and the arcuate end portions 16 and 18 extends substantially one-half of the arcuate length of the end portions 16 and 18 and the integral connection is located adjacent the rectilinear portion 12. Stated another way, the substantial portion of the integral connection between the handle 24 and the support or annular member is located on one side of the longitudinal center axis C of the annular member or band while the handle or bail is located on the opposite side of the center axis C.

According to one aspect of the present invention, the device 10 is formed from a flat one-piece sheet located in a single plane and consisting of a resilient thermoplastic material, such as polyethylene. It should be noted that the final configuration of the device 10 is substantially rectangular and flat in its originally formed condition shown in FIG. 3. The configuration of the flat undeformed device 10 substantially reduces the amount of sheet material required for forming the handle and support.

During the formation process, it is preferable that the areas 32 and 34 located between the outer edge 22 of the connecting member 16 and the adjacent edge 36 of the handle 24 is coined at 38 and 40 to change the elastic memory of the intermediate area. This change in elastic memory of the areas 32 and 34 increases the resistance to tearing of the material so as to increase the tear strength of the material in this area, which, as will hereafter be explained, define and contribute to the hinge connection along the dotted line portions of FIG. 3.

The handle device 10 is designed to be attached to a conventional container 50, such as a 1-gallon paint can. The container 50 includes a circular body portion 52 having one closed end 54 and a rim or end 56 secured to the opposite end of the container body by a conventional double seam 58. The end is designed to receive a cover (not shown).

The method of attaching the handle to the container 50 contemplates encompassing the body portion 52 with the annular member or band 11, prior to attachment of the container end or rim 56 to the upper end of the container body 52. One edge or edge 20 of the band 11 is located adjacent the upper end of the body 52 while the opposite edge 22 is spaced from the associated end. Thereafter, the end 56 is placed in juxtaposed relation to the upper end of the container body 52 and is seamed to the container body by the double seam 58 in a manner to crimp or secure at least a portion of the band, defined by the annular member 11, between the adjacent surface of the body 52 and the seam 58.

The finished article or container 50 with the handle 24 secured thereto is shown in its normal condition in which the handle or bail 24 is located below the rim 56 and in juxtaposed relation to the container body 52. The handle 24 is adapted to be moved to a carrying position shown in FIG. 2 wherein the handle extends above the rim 56, as a conventional handle normally is positioned for carrying. During such movement from the position shown in FIG. 1 to the position shown in FIG. 2, the integral connections between the respective end portions 28 and 30 and the end portions 16 and 18 will act as a hinge along the dotted lines, generally designated by the reference numeral 60.

Furthermore, in its fully assembled condition shown in FIGS. 1, 2 and 6, a portion of the band, defined by the annular member 11, is located between the upper end of the body 52 and the double seam 58. This will prevent the band from expanding sufficiently to slip over the double seam 58 when the weight of the container is being supported by the handle 24.

Also, as shown in FIG. 6a, a larger portion of the band 11 than that shown in FIG. 6a may be encompassed within the double seam 58 thus providing, in addition to anchoring the band to the body 52, an additive sealing effects within the double seam itself. Alternatively, the entire band may be located within the double seam so that only the handle 24 will be exposed below the seam 58.

According to a further aspect of the present invention, the opening defined by the inner edge 20 is smaller than the peripheral dimension of the body 52 and is substantially rectangular in its undeformed condition shown in FIG. 3. During the deforming of the annular or connecting member 11 from the planer position shown in FIG. 3 to the final configuration shown in FIG. 1, the opening defined by the inner edge 22 is enlarged to substantially the peripheral dimension of the body 52 and will transform the annular member to a band encircling the body and in contacting relation with the surface of the body.

While various types of plastic material may be utilized for forming the handle device 10, one such material is a medium density, flexible polyethylene.

The particular handle of the present invention is very inexpensive to manufacture because it can be formed from an inexpensive plastic material or thin sheet, which is commercially available. Forming the handle in the manner described above and interposing the connection or support portion of the handle between the container body and the seam, will still insure that the handle will not be deformed sufficiently to slip over the rim 58.

What is claimed is:

1. In combination with a container having a body and an end secured to said body by a double seam, a handle compris-

ing an endless band encircling said body adjacent said end and having a portion thereof located between said body and said double seam; and a bail integral with said band, said bail normally being located in juxtaposed relation to said body below said end and adapted to be moved to a carrying position extending beyond said body and said end.

2. A container handle made flat in one piece and lying in a single plane, said handle being formed of a resilient thermoplastic material and comprising: an annular member having rectilinear side portions and arcuate end portions, said annular member having inner and outer edges; and bail means extending from said outer edge, said bail means having a central rectilinear section spaced from and substantially coextensive with one of said side portions; and means integrally joining said central section with said end portions.

3. A container handle as defined in claim 2, in which the inner edge portions of said end portions are substantially circular.

4. A container handle as defined in claim 3, in which the inner edge portions of said end portions have a radius which is one-half the distance between the rectilinear side portions.

5. A container handle as defined in claim 2, in which said last means connect said central rectilinear section to said end portions adjacent the other of said rectilinear portions.

6. A method of attaching a handle to a container having a body and an end comprising the steps of encompassing said body with a band of material having a handle portion integral with one edge; locating an opposite edge of said band adjacent one end of said body; and seaming said end to said body in a manner to secure at least a portion of said band between the body and the seam.

7. A method as defined in claim 6, in which said material is a resilient, flexible plastic material and in which said band is tensioned to encompass said body.

8. A method as defined in claim 7, in which said band has an opening which is substantially smaller than the peripheral dimension of said body in its undeformed condition.

9. A method as defined in claim 8, in which said opening is substantially rectangular.

10. A method as defined in claim 6, in which said band and handle portion are produced from a flat one-piece sheet.

11. A method of producing and attaching a handle to a container having a circular body and an end which comprises the steps of producing an integral handle and connecting member from a flat sheet having a single plane with the connecting member having an inner edge defining an opening smaller than the peripheral dimension of said body and the handle being connected at opposite ends to an outer edge of said connecting member; deforming said connecting member from said plane to enlarge said opening to substantially the peripheral dimension of said body; locating said inner edge adjacent one end of said body and said outer edge spaced from said one end; and seaming said end to said one end of said body to crimp said inner edge between the seam and the body.

12. A method as defined in claim 11, in which said opening is substantially rectangular when the connecting member is in its undeformed condition.

13. A method as defined in claim 11, in which said sheet is a resilient flexible plastic material including the further step of changing the elastic memory of the connecting area of said sheet between the outer edge of said connecting member and the adjacent edge of said handle.

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UNITED STATES PATENT OFFICE

**Certificate**

Patent No. 3,620,410

Patented November 16, 1971

Elmer W. Griese, Jr.

Application having been made by Elmer W. Griese, Jr., the inventor named in the patent above identified, and National Can Corporation, Chicago, Ill., a corporation of Delaware, the assignee, for the issuance of a certificate under the provisions of Title 35, Section 256, of the United States Code, adding the name of Ronald C. Owen as a joint inventor, and a showing and proof of facts satisfying the requirements of the said section having been submitted, it is this 1st day of May 1973, certified that the name of the said Ronald C. Owen is hereby added to the said patent as a joint inventor with the said Elmer W. Griese, Jr.

FRED W. SHERLING  
*Associate Solicitor.*