May 28, 1968 J. E. HUNKINS 3,385,499

REINFORCING BAND FOR CONTAINERS

Filed Jan. 3, 1967

FIG. 1

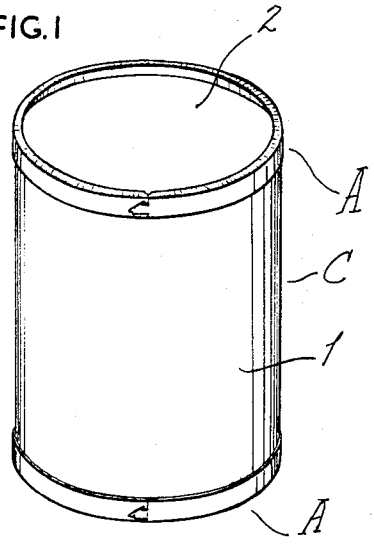
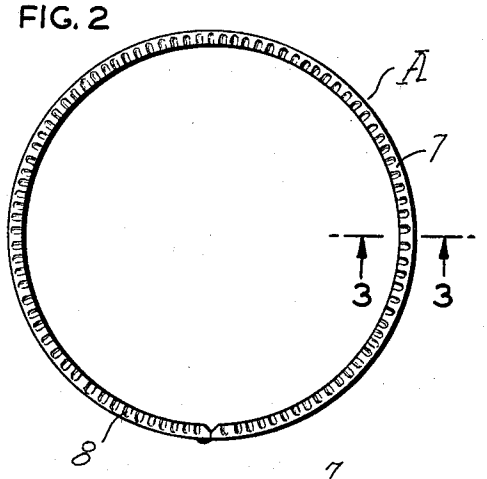


FIG. 2



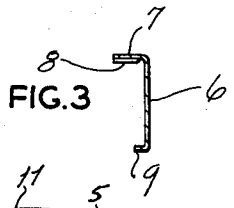


FIG. 3

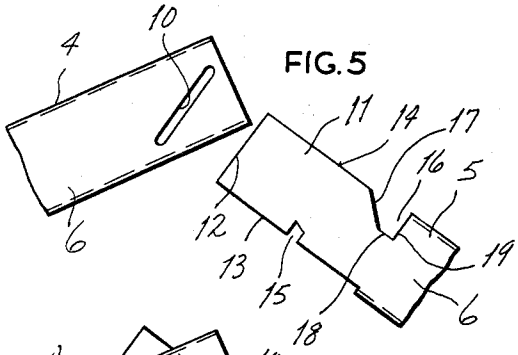


FIG. 5

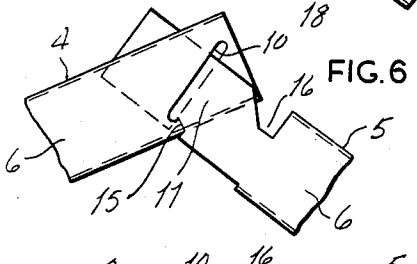


FIG. 6

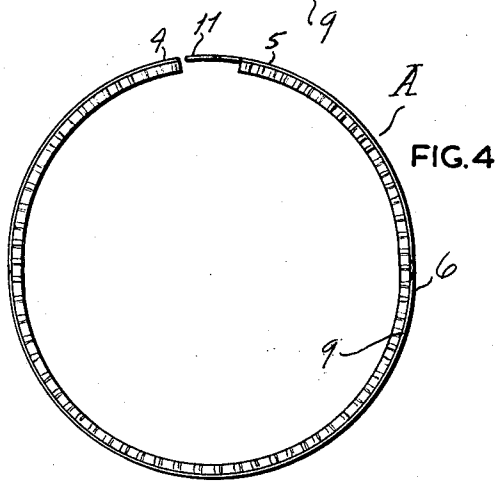


FIG. 4

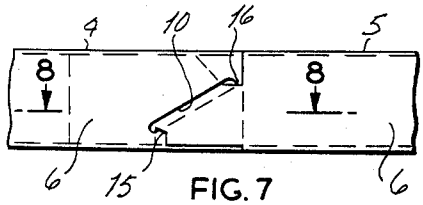


FIG. 7

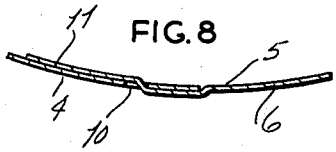


FIG. 8

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REINFORCING BAND FOR CONTAINERS

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ABSTRACT OF THE DISCLOSURE

A reinforcing band of split character having a wall portion for disposition against the wall of a container and an end flange for disposition against the adjacent end surface of the container, with the ends of said band being of cooperating male and female character; the said ends being so designed as to cause the male member to be swung through an arc of approximately 45° for effecting snug interlock, with detent means preventing disengagement through circumferentially applied forces.

Background of the invention

Heretofore numerous expedients have been developed in an effort to effect a positive and reliable interlock between the ends of reinforcing bands as used on containers fabricated of paper, cardboard, fiberboard, and the like. Such expedients have not proved reliable in usage as the same tend to cause a parting or opening action upon the imposition of accidental forces. Other efforts involve mounting extrinsic elements on such bands for locking purposes. Prior art structures which demonstrate the foregoing are disclosed in Patent Nos. 2,304,539; 2,086,041; 2,158,165 and 2,053,688.

Summary of the invention

It is an object of the present invention to provide a reinforcing band for use with containers made from non-metallic material and being adapted to strengthen the ends thereof against accidental rupture or other damage during usage.

It is another object of the present invention to provide a reinforcing band incorporating novel means for interengaging the ends thereof so as to cause said band to be maintained in fully operative condition, resistant against premature or inadvertent opening.

It is an additional object of the present invention to provide a reinforcing band of the character stated having its opposing ends designed for facile interlocking so that the same may be readily accomplished by unskilled personnel.

It is a further object of the present invention to provide a reinforcing band of the character stated which may be economically produced and which is highly durable and reliable in usage.

Brief description of the drawings

FIGURE 1 is a perspective view of a container having mounted thereon reinforcing bands constructed in accordance with and embodying the present invention.

FIGURE 2 is a top plan view of the band.

FIGURE 3 is a vertical transverse section taken on the line 3—3 of FIGURE 2.

FIGURE 4 is a bottom plan view.

FIGURE 5 is a fragmentary side elevational view of the ends of said band in disengaged condition, preparatory to interengagement.

FIGURE 6 is a fragmentary side elevational view of the ends of said band in partially engaged condition.

FIGURE 7 is a fragmentary elevational view of said band showing the ends thereof in fully engaged condition.

FIGURE 8 is a horizontal transverse sectional view taken on the line 8—8 of FIGURE 7.

Description of the preferred embodiment

Referring now by reference characters to the drawing which illustrates the preferred embodiment of the present invention, A generally designates a reinforcing band for use upon containers, as of the conventional carton type, being made customarily from paper, fiberboard, or other similar non-metallic material. In the drawing, an exemplary container is indicated at C and comprises a cylindrical side wall **1** and having upper and lower end walls **2**.

Reinforcing band A is formed preferably from flat steel and being of such gage as to allow requisite flexibility; said band A being formed into an annular body being split so as to provide end portions **4**, **5**. Band A comprises a main or side portion **6** which, in usage, will engage on its normally inner face the end adjacent portion of side wall **1** of container C. Integral with main portion **6** at one edge thereof is a perpendicularly presented flange **7** for overlying relationship with respect to the adjacent end surface **2** of container C; said flange being provided throughout its extent with radially extending corrugations **8** for rigidifying purposes. At its opposite edge, main portion **6** is provided with an inturned, circumferentially extending lip **9** in substantially planar parallel relationship to flange **7** but being of relatively reduced radial extent for providing an edge for biting, as it were, into the side wall **1** of container C to conduce to the snugness of the mounting of band A thereon.

End portion **4** of band A is provided with an elongated aperture **10** formed in the main portion thereof and in immediate proximity to the end margin of said end portion **4**. Aperture **10** is presented so that the axis of its longest dimension is at an angle of substantially 45° and being disposed so that the same inclines upwardly toward the end margin of end portion **4**.

End portion **5** comprises a tab or male member **11** which is continuous with main portion **6** and with its height being slightly reduced with respect to main portion **6**. Said tab **11** at its free end is provided with an end margin **12** perpendicular to the upper and lower edges **13**, **14**, respectively, of said tab. In its lower margin **13** proximate main portion **6**, said tab is provided with an upwardly opening notch-like recess **15**. In its upper margin **14** between main portion **6** and notch **15**, said tab **11** is cut-away, as at **16**, to provide a recess having an outer inclined edge **17** and a lower horizontal edge **18** with the inner edge, as at **19**, being defined by main portion **6**. As thus shown, end portion **4** is of generally female characteristic while end portion **5** is of cooperating male design.

In order to effect interlocking engagement between end portions **4**, **5** of band A so as to render same into fully ring-forming condition for operative purposes, end portions **4**, **5** must be turned at substantially an angle of 45° to the horizontal so as to present tab **11** for extension through aperture **10**, as may best be seen in FIGURE 5. However, it must be appreciated that FIGURES 5, 6, and 7 demonstrate the relationship of the end **4**, **5** of band A as used upon the upper end of container C. It will, of course, be recognized that in actually applying band A, container C will be turned so that the end thereof to receive band A will be presented upwardly. With the end portions so presented, and with end portion **4** being preferably slightly turned so as to allow tab **11** to move therethrough without contacting flange **7**, the user will then proceed to cause tab **11** to project through aperture **10** until recess **15** is aligned with the proximate edge of aperture **10**. The user will then cause the lower end edge

of aperture **10** to be brought into abutting contact with the base of recess **15** so as to form therebetween a pivot so that the user may then swing both ends reversely through substantially a 45° angle causing tab **11** to be received between flange **7** and lip **9** of end portion **4** which latter serve as detents so that any swinging action about the axis of tab **11** will be restrained. By reason of the specific spatial relationship between recess **15** and cut-away portion of recess **16**, the latter will receive the upper end of aperture **10**. With the end portions **4**, **5** so interengaged, as may best be seen in FIGURES 7 and 8, any circumferentially applied pulling force upon said end portions **4**, **5** will not effect disengagement since the inclined edge **17** extends toward flange **7** beyond the upper end of aperture **10**. Also, any such pulling force will tend to bring the lower edge portion of aperture **10** into abutment against the outer edge of recess **15** of tab **11** so that a detention is provided at both ends of aperture **10**. The vertical height of the projecting portion of tab **11** is greater than the distance between the upper end of aperture **10** and the proximate portion of lip **9** so that said tab **11** may not become disengaged by a mere pulling force. The only manner in which band A may be brought into open or disengaged position is by following a procedure reverse to that of the locking procedure and thus require requisite twisting and turning of the end portions **4**, **5** which could not be easily accomplished when band A is fully engaged upon container C.

Accordingly, in view of the foregoing, it is apparent that band A is provided with uniquely contrived cooperative locking members which serve to reliably retain band A in ring-forming condition, being resistant to any circumferential forces as well as any radial forces.

Furthermore, as shown in FIGURES 7 and 8, the received portion of tab **11** will be located between main portion **6** of end portion **4** and side wall **1** of container C and thereby be protected against any undesired damage as would occur with exposed tabs.

Although herein the joining means of the present invention have been shown and described in connection with a single band-forming length, it is to be understood that the same may be used with equal facility for engaging band units of less than full length so as to interconnect a plurality of such units into a comprehensive component of predetermined length.

It should be understood that changes and modifications in the formation, construction, arrangement, and combination of the several parts of the Reinforcing Band for Containers may be made and substituted for these herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to obtain by Letters Patent is—

1. For use with a container having a cylindrical side wall and end walls for strengthening the joints therebetween, a reinforcing band fabricated of metal and having a main portion for disposition against the side wall of the container, a flange projecting from one lateral edge of said main portion for abutment on its inner surface against the adjacent end face of the container, a lip projecting from the opposed lateral edge of said main portion, said lip being of less radial extent than said flange, said band being split to define first and second ends, said first end having an opening provided in said band main portion and being of slit-like character, the axis of the longest dimension of said opening being at an angle of less than 90 degrees to the vertical with its upper end being proximate said flange and the end margin of said first end and its other end being spacedly remote from said margin of said first end and proximate said lip, said second end having an extension for projection through the opening of said first end, said extension having first and second lateral edges, said first lateral edge having a notch-like recess for receiving a portion of the edge of said opening when said extension is in received condition, said second lateral edge having a recess being off-set with respect to said notch-like recess in its first edge and being presented for receiving marginal portions of the upper end of said opening.

2. For use with a container having a cylindrical side wall and end walls for strengthening the joints therebetween, a reinforcing band as defined in claim **1** and further characterized by said flange being provided with radially extending corrugations for rigidifying same.

3. For use with a container having a cylindrical side wall and end walls for strengthening the joints therebetween, a reinforcing band as defined in claim **1** and further characterized wherein said extension projects through said opening from the outer face thereof toward the inner face so that said extension is received in abutting relationship to the inner face of said main portion between proximate portions of said flange and lip which latter present detent surfaces for abutting the second and first lateral edges, respectively, of said extension to prevent undesired axial swinging thereof when said band is in operative position.

4. For use with a container having a cylindrical side wall and end walls for strengthening the joints therebetween, a reinforcing band fabricated of metal and having a main portion for disposition against the side wall of the container, a flange projecting from one lateral edge of said main portion for abutment on its inner surface against the adjacent end face of the container, a lip projecting from the opposed lateral edge of said main portion, said lip being of less radial extent than said flange, said band being split to define first and second ends, said first end having an opening, said second end having a tab for projection through the opening of said first end, said tab being of slightly less width than the distance between said lip and said flange for reception in abutting relationship to the inner face of said main portion between proximate portions of said flange and lip which serve to inhibit displacement of said tab when in engaged relationship, and cooperating detent means for preventing disengagement of said tab from said opening through circumferentially applied forces.

5. For use with a container having a cylindrical side wall and end walls for strengthening the joints therebetween, a reinforcing band as defined in claim **4** and further characterized by said lip having an edge for biting into the side wall of said container to enhance the stabilization of the band in mounted position.

6. For use with a container having a cylindrical side wall and end walls for strengthening the joints therebetween, a reinforcing band as defined in claim **4** and further characterized by the axis of the longest dimension of said opening being at an angle of less than 90 degrees to the vertical.

7. For use with a container having a cylindrical side wall and end walls for strengthening the joints therebetween, a reinforcing band as defined in claim **6** and further characterized by said dentent means comprising first and second recesses extending inwardly from the opposite edges of said tab and being mutually offset longitudinally of said tab.

References Cited

UNITED STATES PATENTS

81,018	8/1868	Shone	24—20
174,730	3/1876	Herron et al.	24—20

FOREIGN PATENTS

548,836	11/1922	France.

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