

PATENT SPECIFICATION

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(54) CONTAINER CARRIERS

(71) We, ILLINOIS TOOL WORKS INC., a corporation organised and existing under the laws of the State of Delaware, United States of America, of 8501 West Higgins Road, Chicago, Illinois 60631, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to carriers as described in British Patent No. 914 202. Such carriers may be manufactured as strips of interconnected carriers, for application by machines to cans or other containers as described, for example, in British Patents Nos. 974 619 and 998 736.

The carriers essentially consist of container-encircling bands, the continuous inner peripheral extent of which is smaller than the circumferential dimension of the containers. When a carrier is applied to a plurality of containers, the material of the bands adjacent to the inner periphery of the bands is disposed in contact with a zone of the circumferential surface of the containers and firmly grips the containers. The configuration of the bands about the containers at the areas where the bands are interconnected may be described as somewhat frusto-conical.

The primary object of the present invention is to provide a strip stock of container carriers which will allow for severance at any longitudinal position between transverse pairs of container apertures or bands, with a minimum of excess material at the severed ends, and with convenient means on any group of one or more transverse pairs of container-encircling bands for comfortably carrying the resulting unitary package of containers and carrier.

According to this invention a length of strip stock, of a resiliently deformable

plastics material of substantially uniform thickness, comprises a plurality of container-encircling bands arranged in a longitudinal series of transverse pairs, first webs interconnecting adjacent bands longitudinally of the strip to provide substantially uniform longitudinal spacing of the pairs of bands, and second webs interconnecting the bands of each transverse pair, there being a longitudinally-extending tab at each end of each second web.

The accompanying drawings show an example of strip stock embodying the invention, and of carriers made from it. In these drawings:—

Figure 1 is a plan view of a portion of one length of strip stock;

Figure 2 is a top plan view of eight containers in a carrier cut from the strip stock shown in Figure 1; and

Figure 3 is a perspective view of four containers in a carrier cut from the strip stock.

It is contemplated that the strip stock be formed of a considerable length, for example, a thousand or more pairs of bands, and usually mounted on a reel. Only one small portion of such a strip stock is shown in Figure 1, but it should be understood that many more bands would be integrally formed on the ends of the portion shown.

The portion of strip stock shown in Figure 1 comprises three pairs of integrally formed bands 10. The material of the strip stock is intended to be a resiliently deformable, plastics material of substantially uniform thickness. Contemplated plastics materials are polymers, such as polyethylene.

The inner periphery 11 of each band 10 is continuous and uninterrupted and defines a container-receiving aperture. The defined aperture is substantially elliptical in shape, and the inner peripheral extent of each aperture is less than the circumferential dimension

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sion of the containers with which the carrier is intended to cooperate. In the machine application of such carriers to a plurality of containers, the substantially continuous strip stock is brought into association with a plurality of containers, such as cans, and the bands 10 are stretched to enable the bands to slip over the tops of and about the circumferential surfaces of the containers. The strip stock is then released and, due to the resilience of the plastics material, the bands 10 will assume a more or less cylindrical condition and firmly grip a zone of each container. The shape which the container-encircling bands 10 obtain after application to the containers is substantially shown in Figure 3 wherein the bands 10 are disposed about a plurality of cans 12. The next step in the process is generally a severing operation to produce groups of unitary packages of a carrier and a plurality of containers. This severing operation may occur between any two transverse pairs of bands 10 to form packages of any selected number of pairs of containers. In Figure 2, the severing has occurred to produce a unitary package of a carrier and eight containers 13. In Figure 3, the severing has occurred to produce a unitary package of a carrier and four containers 12.

Each band 10 and the next longitudinally positioned band 10 is interconnected by an integral first web 15. The severing operation to produce the unitary packages is performed along transverse lines as indicated in Figure 1 at 14. The lines 14 pass through the centres of these first webs 15. The severing operation leaves one half of a first web attached to a band 10, as shown at 15a in Figure 1. The distances between centres of apertures along the strip stock are uniform and are such that imaginary continuations of the elliptical external outlines of the respective bands 10 are tangent to one another at the centre of each web 15, or are nearly tangent. Thus, after severing, the radial width of the band at the place of severing is not substantially less than elsewhere. On the other hand, the amount of additional material incorporated in the webs 15 is small. The extent of the webs in a transverse direction is no more than required to give the strength needed to resist undesired breaking of a carrier.

The bands 10 of each pair are interconnected by an integral longitudinally extending second web 16. At each end of each second web 16 there is a longitudinally extending tab 17. The tabs 17 terminate short of the lines 14. Thus between each second web 16 and the next along the strip stock there is a hole 18. Those of the tabs 17 that are at either end of a carrier, when it is severed from the strip stock, form

convenient legend areas and may be used to indicate the price of the unitary package of a carrier and a plurality of containers. Those of the tabs 17 that are within a group of two transverse pairs of containers in the carrier form, with the respective hole 18, a convenient finger hole and tabs arrangement for carrying the unitary package. The finger hole and tabs arrangements between the various pairs of bands may also be used for receiving and interlocking with other handle means (not shown). In the unitary package of a carrier and a group of containers as shown in Figures 2 and 3, the tabs 17 extend substantially in a plane perpendicular to the axes of the containers, and the integral portions of the bands 10 and webs 15 and 16 assume a somewhat frusto-conical shape.

WHAT I CLAIM IS:—

1. A length of strip stock for forming a plurality of container carriers for different numbers of pairs of containers, this strip stock being of a resiliently deformable plastics material of substantially uniform thickness, and comprising a plurality of container-encircling bands arranged in a longitudinal series of transverse pairs, first webs interconnecting adjacent bands longitudinally of the strip to provide substantially uniform longitudinal spacing of the pairs of bands, and second webs interconnecting the bands of each transverse pair, there being a longitudinally extending tab at each end of each second web.

2. A length of strip stock as defined in claim 1, wherein each longitudinally-extending tab terminates short of a transverse line through the centres of adjacent first webs.

3. A length of strip stock as defined in claim 2, and a plurality of identical containers, wherein the inner peripheral measurement of each of the container-encircling bands is less than the circumferential measurement of the containers, so that the material of each band adjacent to the inner periphery of the band will be stretched and deformed to resiliently grip the respective container in contact with a zone of the circumferential surface of the container when the bands encircle the containers, and the second webs are formed so that the tabs then extend in a plane substantially perpendicular to the axes of the containers.

4. A container carrier for a plurality of pairs of containers comprising, a plurality of pairs of container-encircling bands arranged so that each band of each pair of bands is disposed adjacent to one band of at least one other pair of bands, first webs interconnecting the adjacent bands of different pairs, and second webs inter-

sion of the containers with which the carrier is intended to cooperate. In the machine application of such carriers to a plurality of containers, the substantially continuous strip stock is brought into association with a plurality of containers, such as cans, and the bands 10 are stretched to enable the bands to slip over the tops of and about the circumferential surfaces of the containers. The strip stock is then released and, due to the resilience of the plastics material, the bands 10 will assume a more or less cylindrical condition and firmly grip a zone of each container. The shape which the container-encircling bands 10 obtain after application to the containers is substantially shown in Figure 3 wherein the bands 10 are disposed about a plurality of cans 12. The next step in the process is generally a severing operation to produce groups of unitary packages of a carrier and a plurality of containers. This severing operation may occur between any two transverse pairs of bands 10 to form packages of any selected number of pairs of containers. In Figure 2, the severing has occurred to produce a unitary package of a carrier and eight containers 13. In Figure 3, the severing has occurred to produce a unitary package of a carrier and four containers 12.

Each band 10 and the next longitudinally positioned band 10 is interconnected by an integral first web 15. The severing operation to produce the unitary packages is performed along transverse lines as indicated in Figure 1 at 14. The lines 14 pass through the centres of these first webs 15. The severing operation leaves one half of a first web attached to a band 10, as shown at 15a in Figure 1. The distances between centres of apertures along the strip stock are uniform and are such that imaginary continuations of the elliptical external outlines of the respective bands 10 are tangent to one another at the centre of each web 15, or are nearly tangent. Thus, after severing, the radial width of the band at the place of severing is not substantially less than elsewhere. On the other hand, the amount of additional material incorporated in the webs 15 is small. The extent of the webs in a transverse direction is no more than required to give the strength needed to resist undesired breaking of a carrier.

The bands 10 of each pair are interconnected by an integral longitudinally extending second web 16. At each end of each second web 16 there is a longitudinally extending tab 17. The tabs 17 terminate short of the lines 14. Thus between each second web 16 and the next along the strip stock there is a hole 18. Those of the tabs 17 that are at either end of a carrier, when it is severed from the strip stock, form

convenient legend areas and may be used to indicate the price of the unitary package of a carrier and a plurality of containers. Those of the tabs 17 that are within a group of two transverse pairs of containers in the carrier form, with the respective hole 18, a convenient finger hole and tabs arrangement for carrying the unitary package. The finger hole and tabs arrangements between the various pairs of bands may also be used for receiving and interlocking with other handle means (not shown). In the unitary package of a carrier and a group of containers as shown in Figures 2 and 3, the tabs 17 extend substantially in a plane perpendicular to the axes of the containers, and the integral portions of the bands 10 and webs 15 and 16 assume a somewhat frusto-conical shape.

WHAT I CLAIM IS:—

1. A length of strip stock for forming a plurality of container carriers for different numbers of pairs of containers, this strip stock being of a resiliently deformable plastics material of substantially uniform thickness, and comprising a plurality of container-encircling bands arranged in a longitudinal series of transverse pairs, first webs interconnecting adjacent bands longitudinally of the strip to provide substantially uniform longitudinal spacing of the pairs of bands, and second webs interconnecting the bands of each transverse pair, there being a longitudinally extending tab at each end of each second web.

2. A length of strip stock as defined in claim 1, wherein each longitudinally-extending tab terminates short of a transverse line through the centres of adjacent first webs.

3. A length of strip stock as defined in claim 2, and a plurality of identical containers, wherein the inner peripheral measurement of each of the container-encircling bands is less than the circumferential measurement of the containers, so that the material of each band adjacent to the inner periphery of the band will be stretched and deformed to resiliently grip the respective container in contact with a zone of the circumferential surface of the container when the bands encircle the containers, and the second webs are formed so that the tabs then extend in a plane substantially perpendicular to the axes of the containers.

4. A container carrier for a plurality of pairs of containers comprising, a plurality of pairs of container-encircling bands arranged so that each band of each pair of bands is disposed adjacent to one band of at least one other pair of bands, first webs interconnecting the adjacent bands of different pairs, and second webs inter-



connecting the bands of each transverse pair, there being a longitudinally extending tab at each end of each second web, the bands and the first and second webs being integrally formed from a sheet of resiliently deformable plastics material of substantially uniform thickness.

5 A container carrier as defined in claim 4, wherein each longitudinally-extending tab terminates short of a transverse line through the centres of adjacent first webs.

6 A package comprising a container carrier as defined in claim 5 and a corresponding number of identical containers, 15 wherein the inner peripheral measurement of each of the container-encircling bands is less than the circumferential measure-

ment of the container, so that the material of each band adjacent to the inner periphery of the band is stretched and deformed to resiliently grip the respective container in contact with a zone of the circumferential surface of the container, and the second webs are formed so that the tabs extend in a plane substantially perpendicular to the axes of the containers.

7 A length of strip stock as defined in claim 1, substantially as described with reference to Figure 1 of the accompanying drawings.

For the applicant:—

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