

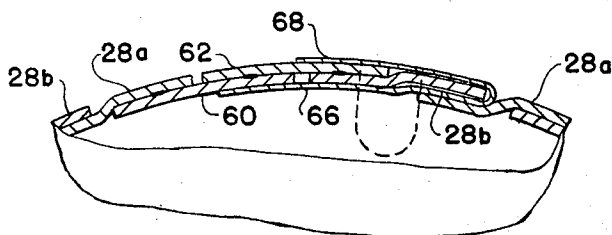
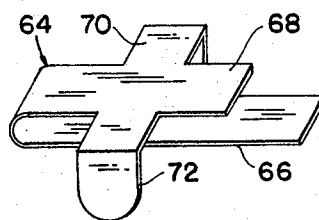
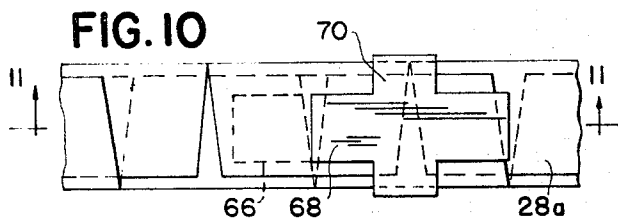
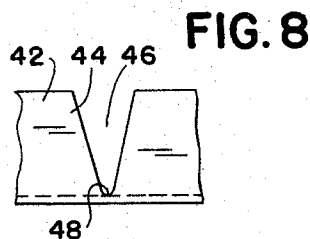
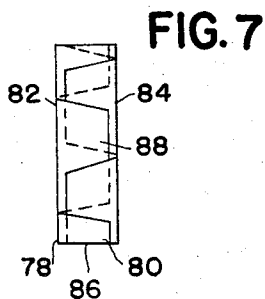
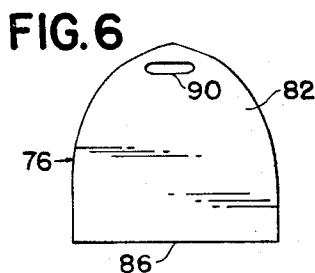
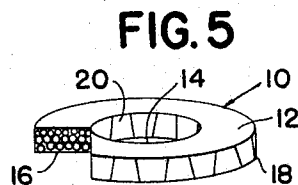
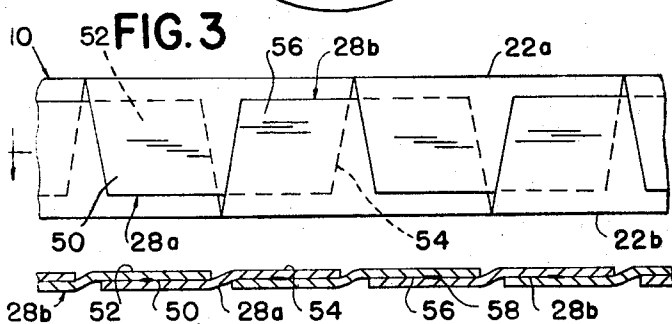
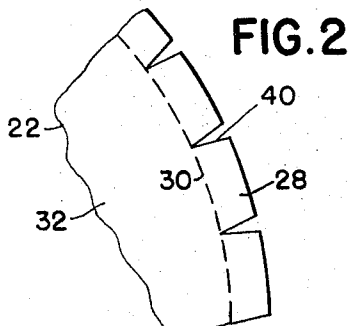
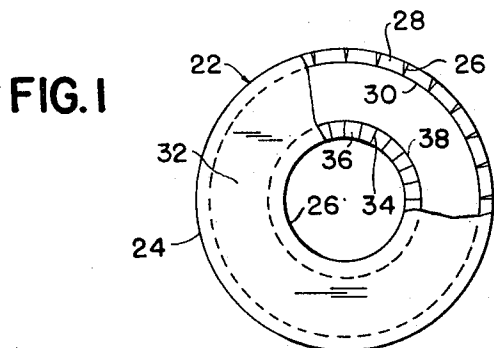
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3,332,601

CARTON

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3,332,601
CARTON

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The present invention relates to a carton and more particularly, to a carton characterized by the use of two similar flat areas of sheet material disposed in parallelism and constituting two opposite sides of the carton, said areas having marginal portions slotted to form tongues foldable into positions substantially perpendicular to the planes of the areas, the tongues folded from one of said areas being interleaved with the tongues folded from the other of said areas.

It is an object of the present invention to provide a carton formed from sheet material such for example as cardboard, the carton comprising opposed flat areas of sheet material each provided with marginal tongues folded to extend substantially perpendicularly from the plane of the areas to which the tongues are attached, the tongues being interleaved so that each tongue overlies and underlies adjacent portions of a pair of adjacent tongues on the opposite area of the sheet material.

It is a further object of the present invention to provide a carton of the character described formed from a single piece of sheet material folded to provide two flat parallel areas constituting two sides of the carton interconnected by a solid or uninterrupted intermediate portion of the sheet material constituting a portion of the edge of the carton.

It is a further object of the present invention to provide a carton as described in the foregoing in which each tongue is adhesively secured to the portion of the tongue from the opposite area of sheet material which it overlies.

It is a further object of the present invention to provide a carton as described in the preceding paragraph in which the adhesive is a hot melt adhesive applied to the inner surface of each tongue immediately prior to folding the tongue into assembled position.

It is a further object of the present invention to provide a carton as described in the foregoing in which the last tongue to be folded into position has no portion underlying another tongue, and means separate from said tongues for retaining said last tongue in folded position.

It is a further object of the present invention to provide a carton as described in the preceding paragraph in which the means for retaining the last tongue to be folded in assembled position comprises a clip having one portion overlying said last tongue and another portion underlying another tongue adjacent to said last tongue.

It is a further object of the present invention to provide a carton as described in the foregoing in which each of the areas of sheet material is of annular configuration and in which interleaving tongues are provided at both the outer and inner edges thereof to provide a carton having opposed flat annular sides, an opening centrally therethrough and overlapped tongues connecting both the inner and outer edges thereof.

It is a further object of the present invention to provide a method of assembling a carton from sheet material having areas provided with tongues at the edge portions thereof which comprises folding the tongues from opposite areas alternately and from the same area serially into mutually overlapping relation.

It is a feature of the present invention to provide a blank for assembling cartons of the type described in the foregoing, the blank having peripheral inwardly tapered notches at the edge thereof forming outwardly

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narrowing tongues, the edges of said notches at the bottoms thereof being spaced apart to accommodate tip portions of tongues from a cooperating area of sheet material.

Other objects and features of the invention will become apparent as the description proceeds, especially when taken in conjunction with the accompanying drawings, illustrating preferred embodiments of the invention, wherein:

FIGURE 1 is a plan view of a blank of sheet material cut and scored for folding.

FIGURE 2 is an enlarged fragmentary edge portion of the blank shown in FIGURE 1.

FIGURE 3 is an edge view of a carton assembled from a pair of the blanks shown in FIGURE 1.

FIGURE 4 is a sectional view on the line 4—4, FIGURE 3.

FIGURE 5 is a perspective view of the assembled carton, partly broken away.

FIGURE 6 is an elevational view of a somewhat different form of carton.

FIGURE 7 is a side view of the carton shown in FIGURE 6.

FIGURE 8 is an enlarged detailed view illustrating a preferred form of foldable tongue.

FIGURE 9 is a perspective view of a retainer clip.

FIGURE 10 is a fragmentary view of a carton having one flange retained in position by the clip shown in FIGURE 9.

FIGURE 11 is a fragmentary section on the line 11—11, FIGURE 10.

Referring now to the figures, in FIGURE 1 there is illustrated a blank of sheet material cut and scored for use in assembling with a similar blank to produce the carton best illustrated at 10 in FIGURE 5. The carton 10 has two opposed flat sides 12 which as illustrated are of annular shape, and includes a central opening 14 extending therethrough. A carton of this configuration is useful in packaging coils of flexible tubing such for example as relatively thin walled, small diameter copper tubing indicated at 16 in the figure. As will subsequently be described in detail, the carton 10 is completed by an outer circular side wall 18 formed of interleaved or interlocked tongues bent alternately from the upper and lower sheet members as seen in the figure. In addition, the carton 10 includes an inner circular side wall 20 similarly formed of interleaved or interlocked tongues as will subsequently be described in detail.

Referring now to FIGURE 1 the blank indicated generally at 22 has an outer circular edge 24 and an inner circular edge 26 leaving a central opening therethrough. The outer edge portion of the blank is cut substantially radially as indicated at 26 to form a series of bendable tongues 28 and the inner edges of adjacent radial cuts 26 are joined by score lines 30 to facilitate folding of the tongues into substantially perpendicular relation to the flat area 32 of the sheet material. Similarly, the inner edge portion of the blank 22 is radially cut as indicated at 34 to form bendable tongues 36 and the inner ends of the cuts 34 are interconnected by scores 38 to facilitate bending of the tongues 36 into perpendicular relation to the flat area 32 of the blank.

Referring now to FIGURE 2, which is an enlarged fragmentary view of a portion of the blank 22, it will be observed that the cuts 26 separating the tongues 28 from each other are disposed to form V-shaped notches 40 so that the side edges of the tongues 28 converge outwardly from the bottoms of the notches 40.

Referring now to FIGURE 8, there is shown a variation in the notches. In this figure the tongues are indicated at 42 and the edges 44 thereof are inclined to form generally V-shaped notches 46. The edge walls 44 of the notches are

separated at the bottoms of the notches as indicated at 48 to accommodate the tip of a tongue on an associated part.

Referring now to FIGURES 3 and 4, the manner in which the tongues 28 are interleaved or interlocked is best illustrated. In FIGURE 3 the blanks from which the carton 10 is formed are separately designated 22a and 22b, the blank 22a being the upper blank and its flat area 32 constituting the upper side of the carton. The upper blank 22a is provided with tongues 28a and the lower blank 22b is provided with the folded tongues 28b. It will be observed that each tongue 28a includes an edge portion 50 which overlies an edge portion 52 of a tongue 28b. Also, each tongue 28a includes the opposite end portion 54 which underlies the end portion of 56 of a tongue 28b.

In order to assemble the carton the two blanks are placed on opposite sides of the material to be included, as for example, a roll of tubing 16. Thereafter, starting with any selected tongue, the tongues are folded into the interleaving and interlocking relationship illustrated in FIGURES 3 and 4. It will be appreciated that the sequence of folding the tongues is to alternate the folding of a tongue from one blank with the folding of a tongue from the other blank, the tongues on the same blanks being of course, folded sequentially. With this operation, all of the tongues with the exception of the last tongue to be folded on each of the two blanks is interlocked by having portions interleaved between portions of two adjacent tongues on the other blank.

Preferably, means are provided to insure against separation of the two carton halves after the tongues have been folded into the relationship shown. Conveniently, this may be accomplished by providing a dot of adhesive on a portion of each tongue so that it is adhered to the underlying portion of a tongue from the opposite blank in assembly. These dots or adhered areas are indicated at 58 in FIG. 4.

Excellent results have been obtained when the dots of adhesive 58 are applied in the form of hot melt adhesive just prior to folding of each individual tongue. It is found that if the temperature of the hot melt adhesive is maintained at the correct value, the cooling of the hot melt adhesive effected substantially instantaneously upon contact with the adjacent tongue will cause the adhesive to set sufficiently so that the assembly operation may be carried on rapidly without the necessity of maintaining pressure on the folded tongues.

Alternatively, a suitable pressure sensitive adhesive may be employed so that the adhesion is completed by the simple act of folding each tongue into position and applying pressure thereto.

While the areas adhered by the dots of adhesive 58 are relatively small, in the aggregate they provide considerable strength opposing separation of the two blanks. On the other hand, it is not difficult to pry up the adhered portion of one of the tongues. This permits a very useful feature of the carton when associated with a coil of flexible material such as tubing. If care is taken to insure that the location of the outer end of the coil of tubing is known, the tongue adjacent this outer end may be lifted and perhaps a few additional tongues may be lifted to permit the end of the coil of tubing to be moved outside the carton. Thereafter, leaving the inner edge wall 20 of the carton undisturbed, the carton may be opened and the tubing extracted by fixing the end of the tubing and rolling the carton in the proper direction to cause the tubing to unroll. As the tubing unrolls it forces the tongues sequentially into open position, this being readily feasible because of the small area of the tongues which are adhered together. The inner wall 20 acts as a hub or axle and the annular side walls 12 of the carton act as flanges on which the carton rolls as the tubing is withdrawn and straightened by the simple act of rolling the carton along the floor.

While the small dots of adhesive are adequate to retain the carton assembled as above described, it will be understood that the last two tongues which are folded into

place are not interleaved with a portion thereof overlying an adjacent tongue. This relationship is best illustrated in FIGURES 10 and 11 where it will be noted that a particular one of the tongues 28b, here especially designated 60, has all portions thereof underlying portions of tongues 28a. It will also be observed that a particular one of the tongues 28a, here especially designated 62, has all portions thereof overlying portions of tongues 28b including a portion of the tongue especially designated 60. Of course, the tongue 60, which is located at the interior of the carton is held against inward displacement by the contents of the carton. However, the tongue 62, which is at the exterior of the carton, may require special means to retain it in the assembled position shown in FIGURE 11.

In FIGURE 9 there is shown a clip 64 which may conveniently be formed of metal, and which is adapted to be inserted as illustrated in FIGURE 11 so as to retain the tongue 62 assembled. The clip 64 includes a long strip portion 66 which may be inserted into the interleaved tongues 28a and 28b as seen in FIGURE 11, to retain the clip in assembled position. The strip 66 has a reversely bent portion 68 adapted to overlie the outer tongue especially designated at 62. Preferably, the strip portion 68 includes transverse arms 70 terminating in bent end portions 72 engageable with the opposite flat sides of the carton, and which thus further insure against separation between the carton halves.

Alternatively of course, the last tongue to be bent or folded into position at the outside of the carton, can be mechanically held in position by tape applied over the edge of the carton or it may be held in position by a band of tape or other material extending around the periphery of the carton. Finally, the last tongue to be folded at the outside of the carton, as well as additional tongues if desired for strength, may be stapled to one or both of the underlying tongue portions by staples applied from the exterior.

It will be observed in FIGURE 3 that the top edges of the tongues 28a and 28b do not extend fully to the bottom of the notches formed between adjacent edges of the tongues. If the notches are formed as illustrated in FIGURE 8, it will be readily apparent that the top edges of each tongue can extend fully to the bottom of the notches and may in fact have a portion engaged against the inner side of the flat area 32 of the associated blank.

While the carton illustrated in FIGURES 1 and 5 is annular in configuration, it will of course be apparent that the inner opening may be omitted and further, that the outer edge of the carton need not be of circular configuration. However, it is essential for the correction interleaving of the tongues that the edge portion of the carton formed by such interleaved tongues be continuous and right angled corners should be avoided since these result in tongues which are not retained in position by the interleaving action characteristic of the present carton.

Reference is now made to FIGURES 6 and 7 where there is illustrated a modified form of carton, here designated 76. This carton is formed from a single piece of sheet material folded as indicated at 78 and 80 so that the two side walls 82 and 84 are interconnected by a solid or continuous and uninterrupted bottom wall 86. The edge portion of the carton extending from one end of the bottom wall 86 to the other is formed by folded and interleaved tongues indicated generally at 88, which may be in all respects similar to the tongues 28 or 28a and 28b previously described. Since the two opposite sides of this carton are interconnected by the integral bottom wall 86, there is little tendency for the carton to open. Depending on the size and the use to which the carton is put, there may be provided a carrying opening 90 extending through both of the flat side areas 82 and 84.

The carton illustrated in FIGURE 5 is formed from the blanks illustrated in FIGURE 1 and offers substantial advantages, particularly in that it may be formed from identical blanks, thus resulting in substantial savings.

The drawings and the foregoing specification constitute a description of the improved carton in such full, clear, concise and exact terms as to enable any person skilled in the art to practice the invention, the scope of which is indicated by the appended claims.

What I claim as my invention is:

1. A carton comprising two substantially identical flat areas of sheet material having edge portions provided with a plurality of substantially continuous independent tongues bent to extend substantially perpendicularly to the planes of said areas, said tongues being interleaved throughout substantially the entire edge portion of the carton to provide a continuous edge wall interconnecting the flat areas of said sheet material, a tongue projecting from the edge of either of said areas overlying a portion of a first tongue projecting from the opposite area and underlying a portion of a second tongue projecting from said other area and next adjacent to said tongue.

2. A carton formed of two similar flat areas of sheet material disposed in parallelism and constituting two opposite sides of the carton and having marginal portions slotted to form tongues foldable into positions substantially perpendicular to the planes of the areas, the flat areas of sheet material constituting two opposite sides of the carton, and the tongues on the edge of each of said areas being folded alternately with the tongues of the other area so that each tongue overlies a portion of a first tongue on the other area and underlies a portion of a second tongue on the other area adjacent to said first tongue, said tongues constituting an edge wall of the assembled carton.

3. A carton as defined in claim 2 comprising staple means effective to secure at least the last tongue to be folded into assembled position to underlying tongue portions.

4. A carton as defined in claim 2 comprising tape extending across one or more of said tongues effective to oppose separation between the carton portions.

5. A carton as defined in claim 2 in which the edge portion of said carton formed by said tongues is a continuous surface.

6. A carton as defined in claim 2 in which the edge portion of said carton formed by said tongues is a curved continuous surface.

7. A carton as defined in claim 2 in which the edge portion of said carton formed by said tongues extends completely around said carton.

8. A carton as defined in claim 2 in which one tongue on one of said areas overlies portions of two adjacent tongues on the other area.

9. A carton as defined in claim 8 comprising separate locking means to retain said one tongue in folded position.

10. A carton as defined in claim 8 comprising a clip

having a portion underlying at least an additional tongue adjacent said one tongue and a portion overlying said one tongue.

11. A carton as defined in claim 10, said clip having flange portions bent at right angles to said first mentioned portion and engaging opposite sides of said carton.

12. A carton as defined in claim 2, comprising adhesive means on the inner surface of each tongue on either piece of sheet material adhering such tongue to the underlying portion of a tongue on the opposite piece of sheet material.

13. A carton as defined in claim 2 in which the areas of sheet material are of annular shape provided with interlocked tongues at both the outer and inner edges thereof to form an annular carton having inner and outer edge surfaces formed by said interlocked tongues.

14. A carton as defined in claim 2 in which the areas of sheet material are formed from a single piece of sheet material folded to provide the two similar areas interconnected at one edge thereof by a solid edge wall integral therewith, said tongues being interlocked as aforesaid to form a continuous edge wall extending around the carton from one end of said solid edge wall to the other.

15. The method of assembling a carton comprising two similar flat areas of sheet material disposed in parallelism and constituting two opposite sides of the carton and having marginal portions slotted to form tongues foldable into positions substantially perpendicular to the planes of the areas, which comprises folding the tongues alternately from said two areas and sequentially from each of said areas; applying a hot melt adhesive sequentially to said tongues just prior to folding the tongues into assembled relation, the application of adhesive being to the inner surface of each tongue in position to adhere it to the outer surface of an underlying tongue portion.

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