Nov. 18, 1969 E. J. GRASER 3,478,951

AUTOMATICALLY SELECTIVE LOCK DEVICE

Filed May 14, 1968 2 Sheets-Sheet 1

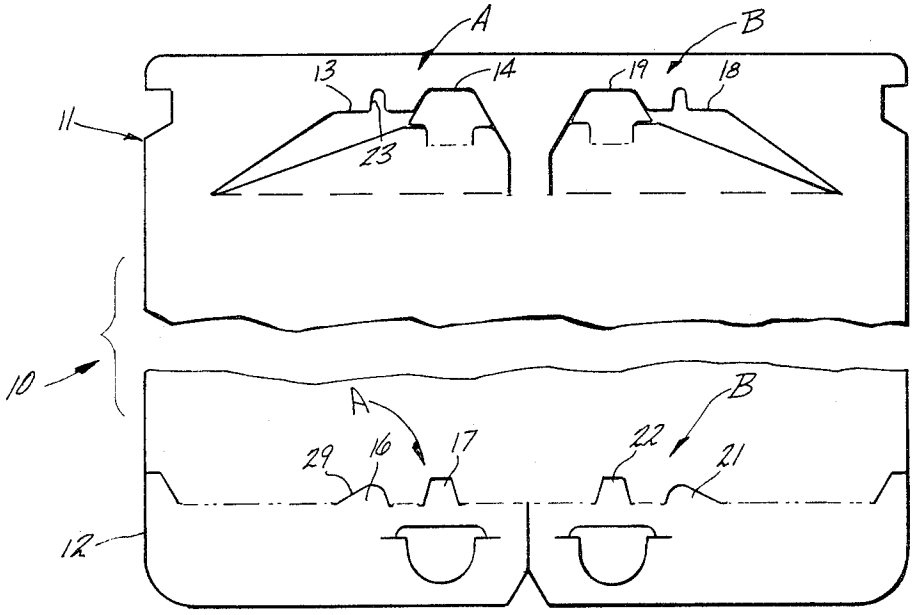


FIG - 1

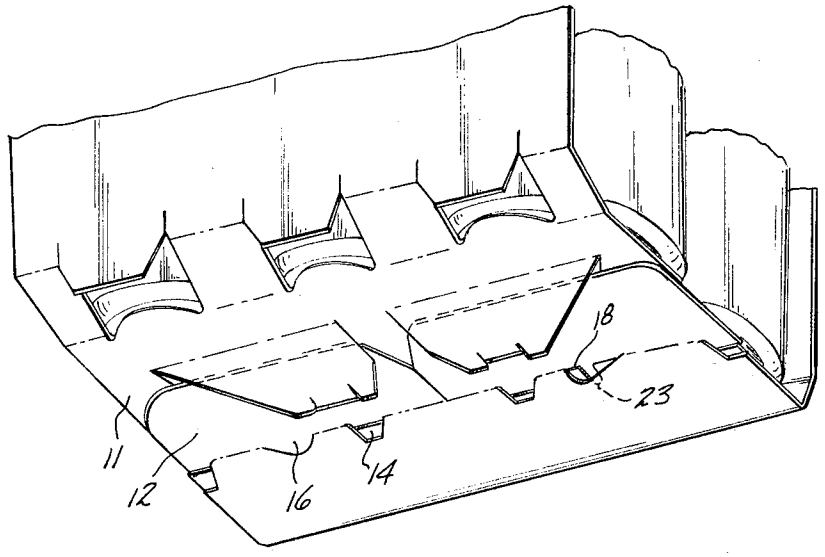


FIG - 2

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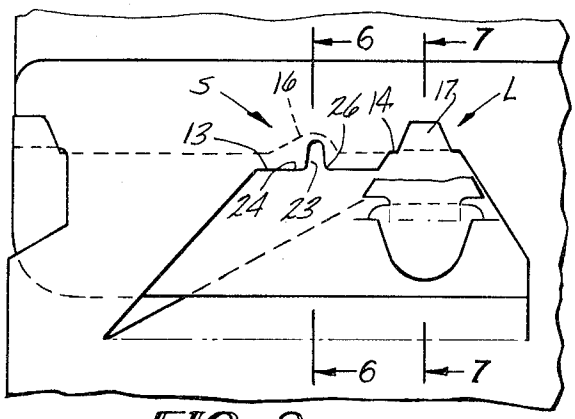


FIG-3

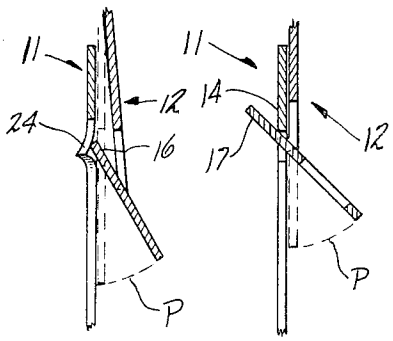


FIG-6 FIG-7

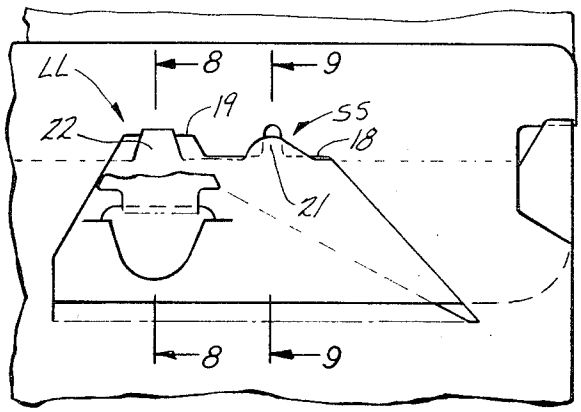


FIG-4

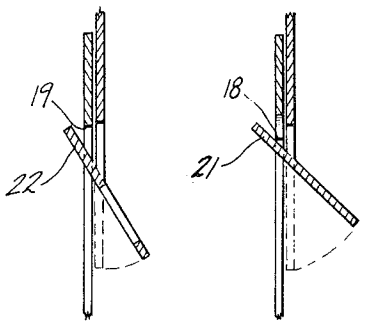


FIG-8 FIG-9

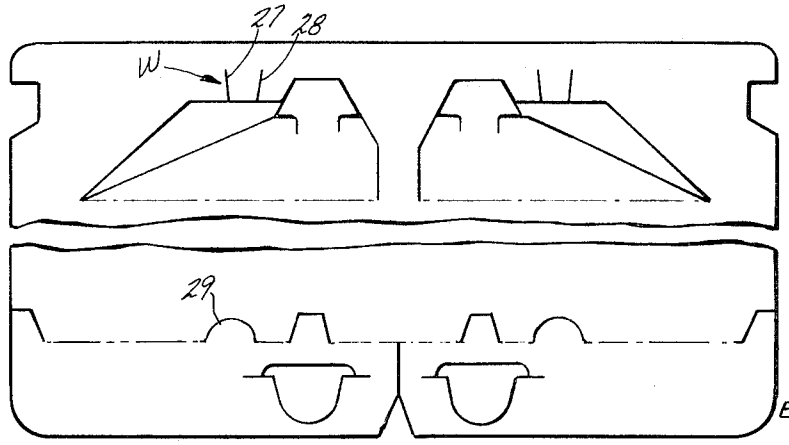


FIG-5

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AUTOMATICALLY SELECTIVE LOCK DEVICE

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Filed May 14, 1968, Ser. No. 729,062
The portion of the term of the patent subsequent to Aug. 6, 1985, has been disclaimed
Int. Cl. B65d 5/12, 5/26
U.S. Cl. 229—40 4 Claims

ABSTRACT OF THE DISCLOSURE

Improved lock means for fastening overlapping margins of a blank utilized to generate a wrap-around article carrier or package where the lock means of the blank includes at least two selectively operable locks accommodating at least two different package perimeter dimensions; one lock corresponding to a "long" perimeter dimension in the finished package and the other lock corresponding to a "short" perimeter dimension in the finished package.

More particularly, the invention is addressed to the structure and operation of the lock means accommodating the short perimeter dimension to facilitate smooth operation of the overall device when the short perimeter lock is idle or non-selected.

For convenience in subsequently claiming the invention, the language "short lock means," "short perimeter lock" or "short lock" is intended to denote a selectively operable lock which accommodates a short perimeter dimension in the package.

Correspondingly, the language "long lock means," "long perimeter lock" or "long lock" is intended to denote a selectively operable lock which accommodates a long perimeter dimension in the finished package.

A blank fabricated of packaging material embracing certain principles of the present invention may comprise a generally elongated sheet of packaging material terminating in opposed ends defining margins where the margins are operable to overlap one another and the main body of the blank encircles a plurality of generally similar articles, said margins being cut and scored to define selectively operable lock means where the lock means includes at least one long lock and one short lock, each long and short lock including a lock member and a cooperating lock element, the lock member of the short lock being formed with a region of weakness to permit said lock member to distort or bulge in response to cam action generated by its mating lock element when said short lock is idle or non-selected.

Stated otherwise, the spirit and scope of the invention resides in the structuring of the short lock so that it will generate minimum friction and minimum distortion during the course of locking the carrier when the short lock is idle, dormant or non-selected.

Other features and advantages of the present invention will become apparent from an examination of the succeeding specification when read in conjunction with the appended drawings, in which:

FIG. 1 is a plan view of a wrap-around blank embracing one embodiment of the invention;

FIG. 2 is a perspective view of a portion of a package or article carrier showing the blank of FIG. 1 and its lock means in the operated condition encircling a plurality of articles. Note that at the right side of FIG. 2 it is apparent that the short lock is operative and its adjacent long lock is idle, while at the left side of the package of FIG. 2 it is apparent that the short lock is idle and the companion long lock is operative.

FIG. 3 is a plan view of the left side of the lock of FIG. 2 as viewed from the interior of the package;

FIG. 4 is a view similar to the illustration of FIG. 3 as viewed from the interior right;

FIG. 5 is a representation of a modified blank embodiment;

FIG. 6 is a sectional view of FIG. 3 taken along the line 6—6;

FIG. 7 is a similar section as viewed along the line 7—7.

With respect to FIGS. 6 and 7, it is to be recalled that the short lock of FIG. 6 is non-selected and the long lock of FIG. 7 has been selected for operation.

FIGS. 8 and 9 are sectional views taken along the respective lines 8—8 and 9—9 showing idle long lock in FIG. 8 and operated selected short lock in FIG. 9.

Referring now in detail to the drawings, the reference numeral **10** indicates generally an elongated wrap-around blank fabricated of suitable packaging material having opposed end margins comprising inner margin **11** and outer margin **12**, i.e. margin **11** overlaps on the inside of the final package while margin **12** overlaps on the exterior.

The blank **10** is formed with a plurality of cuts and scores to define a plurality of selectively operable lock means indicated generally by the letters A and B.

Each lock means A (or B) includes at least one long lock and one short lock and each lock (long or short) includes a lock member **13–14** and a cooperating lock element **16–17**.

For example, lock member **13** cooperates with lock element **16** to define a short lock, while lock member **14** cooperates with lock element **17** to define a long lock. Together the long and short locks define lock means A and the long and short locks of lock means A are selectively operable depending upon the perimeter diameter of the carrier encountered at the time the lock is automatically operated in the course of carrier fabrication.

Lock means B is of the same general structure configuration but of opposite hand and includes lock members **18** and **19** and cooperating lock elements **21** and **22**.

The present invention is directed to the structure and operation of the short lock and arises by virtue of the fact that the locking member **13** and cooperating lock element **16** are so constructed and arranged that a minimum of friction and a minimum of permanent distortion occurs during the course of locking the carrier when the short lock is idle, dormant or non-selected.

Referring now in particular to FIGS. 3, 6 and 7, it is apparent that short lock S is idle or non-selected and and lock L is operative.

Short lock S is idle because lock member **13** and lock element **16** are free of locking engagement, i.e., they are merely overlapping one another.

In contrast, long lock L is operated because locking element **17** is in locking engagement with its mating lock member **14**.

FIGS. 6 and 7 show the overlapping margins **11** and **12** during the course of the locking operation and in final position; short lock S is non-selected and long lock L is selected. For example, it is apparent in FIGS. 6 and 7 that when lock element **17** is moving into locking position relative to its companion lock member **14**, there is rotational motion of margin **12** through an arc represented by the letter P. Necessarily, non-selected short lock S is subject to the same rotary motion as margin **12** moves into position.

To avoid undue interference and permanent distortion when short lock S is non-selected, the structure of lock member **13** is formed with a region of weakness developed by a line of weakness or by a through-cut indicated in FIG. 3 by the reference numeral **23**, permitting wing portions **24** and **26** of the region of weakness to bulge or spread in response to the cam action generated by lock element **16** as it wipes past margin **11** from the

solid line position shown in FIG. 6 to the final or dotted line position thereof. In effect, the region of weakness bulges and then returns to its normal flat or planar position in spring-like fashion.

Obviously, the area or region of weakness generated by the slot **23** and wing portions **24** and **26** of FIG. 3 may be developed in a number of different ways. For example, in FIG. 5 it is apparent that a region of weakness W is generated by forming a plurality of throughcuts **27** and **28**.

Correspondingly, the nose **29** (see FIGS. 1 and 5) of the lock element **16** is suitably contoured consistent with the structure of the region of weakness to further minimize friction and to further minimize permanent distortion.

FIGS. 4, 8 and 9 show the state of affairs when long lock LL is idle or non-selected and short lock SS is operated. In FIG. 4 it is apparent that lock element **22** is free of locking engagement with lock member **19**, while lock element **21** is in locking engagement with lock member **18**.

It is anticipated that numerous embodiments of the present invention may be devised without departing from the spirit and scope of the present invention.

In the subsequent claims, the language "region of weakness" is used to denote that portion of the lock member in which a short lock is structured to bulge or distort in response to the cam action of the contoured cooperating lock element when the short lock is idle, dormant or non-selected.

What is claimed is:

1. In a blank for a wrap-around article carrier of the type having end margins operable to overlap in a predetermined sequence and having a plurality of selectively operable lock means where each lock means includes a lock member and a cooperating lock element, the improvement comprising: forming one lock member of one lock means with a region of weakness to permit said lock member to distort or bulge without permanent distortion in response to cam action of its mating lock element when said lock means is idle or non-selected.

2. In a wrap-around article carrier of the type having selectively operable lock means defining at least one long lock and one short lock where the long and short locks each include a lock member and a cooperating lock element, the improvement comprising: forming the lock member of the short lock with a region of weakness operative to permit said lock member to bulge or distort when said short lock is non-selected or idle.

3. The invention of claim **2** wherein the cooperating lock element of said short lock is curvilinearly contoured to minimize friction during the course of its cam action with its mating lock member when said short lock is idle or non-selected.

4. A blank fabricated of packaging material defining a generally elongated sheet terminating in opposed ends defining margins, said margins being operable to overlap one another while the main body of the blank encircles a plurality of generally similar articles, said margins being cut and scored to define selectively operable lock means including a short lock means and a long lock means, said short lock means being formed with a region of weakness to permit said short lock means to distort or bulge without permanent distortion when said short lock means is idle or non-selected.

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DAVID M. BOCKENEK, Primary Examiner

U.S. Cl. X.R.

206—65; 229—39