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(71) Applicant (for all designated States except US): **INTERNATIONAL CONSOLIDATED BUSINESS PTY LTD** [AU/AU]; Level 1/3 Wellington Street, Windsor, VIC 3181 (AU).

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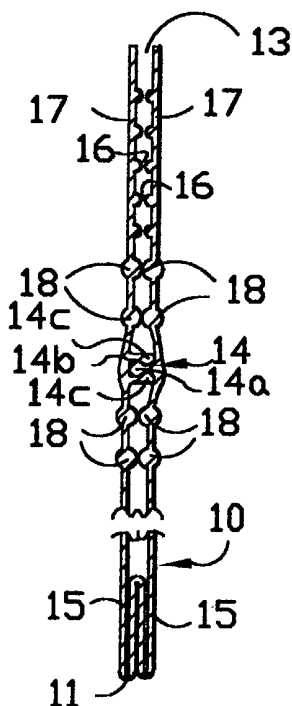
(72) Inventor; and

(75) Inventor/Applicant (for US only): **WITHERS, Philip, Craig** [AU/AU]; 93/28 SouthGate Avenue, SouthBank, VIC 3006 (AU).

(74) Agent: **GRIFFITH HACK**; Level 3/509 St. Kilda Road, Melbourne, VIC 3004 (AU).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: RECLOSABLE PLASTIC BAGS



(57) Abstract: A reclosable plastic bag (10) having two panels (15) of plastics sheet or film joined to each other along their opposite side edges (12) to define a bag with an opening (13). An extruded closure/sealing means (14) of one or more inter-engagable elongate rib/groove configurations (14a, 14b) closes the opening, and a plurality of elongate strengthening ribs (18) are also extruded adjacent, and parallel, to the closure/sealing means (14) on each of the panels of the bag and also inwardly and outwardly of the closure means. A plurality of shallow ribs (17) are also provided on the insides of the panels and extending parallel to said closure means and outwardly thereof to assist in gripping said panels when opening the bag, and the rib/groove configurations (14a, 14b) of the closure means (14) have a plurality of projections (19) thereon spaced apart along their length whereby during progressive engagement of the rib within its associated groove a series of audible and/or tactile signals will be provided signifying progressive closure of the closure means.

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RECLOSABLE PLASTIC BAGS

Technical Field

This invention relates to reclosable plastic bags, that is, plastic bags which can be repeatedly opened and closed to receive or retrieve contents, and sometimes known as "zipper" bags.

Background Art

Such bags conventionally are of rectangular configuration formed from an elongate plastic sheet or film folded upon itself to form two panels and sealed together along their opposite side edges with an opening defined by the free edges of the panels. The opening is adapted to be repeatedly opened and closed by closure/sealing means formed from a rib extending across one of the panels below the opening of the bag and inter-engaging in a groove formed between, and therefore defined by, two ribs extending across the other panel and also below the opening of the bag. Two parallel extending ribs on either sides of the rib which engages within the groove serve to capture the ribs within the defined groove.

The ribs and grooves are shaped and dimensioned so that the rib fits tightly within its associated groove and the ribs defining the associated groove deform to allow the rib to enter and to be captured within its associated groove. The bag is opened by gripping the free edges of the panel at the opening of the bag and pulling the panels apart with the rib disengaging from its associated groove thereby allowing access to the interior of the bag to receive or retrieve contents. To close or reseal the opening to the bag one end of the rib is pressed by thumb and finger pressure into the adjacent end of the associated groove with the thumb or finger under pressure being subsequently drawn along the length of the rib and groove arrangement to progressively introduce the rib into its associated groove to be tightly received therein and

whereby to seal the opening of the bag.

The opening of the bag can be repeatedly opened and closed as required, with the closure process being analogous to that accomplished by a zipper and thus the term "zipper" is sometimes used to describe such reclosable bags.

With known reclosable or "zipper" bags, the portions of the two panels adjacent their free edges, and above the rib/groove closure means, have a plurality of parallel shallow ribs formed across the opening, usually on the inside of the panels, to allow secure finger gripping when those portions of the panels are gripped to pull the panels apart and disengage the closure means when opening the bag.

Reclosable bags, which are extruded through a die head have an area of weakness below the closure, that is, the bags are flimsy due to the thickness of the plastic sheet or film used to form the bag, and the plastic panels split or break below and/or above the closure if it is too tight and/or the user applies and/or maintains undue force when opening the bag, that is, the user is aggressive. But on the other hand for security, water tightness, and air tightness, a tight closure is required. In addition, the flimsy nature of the extruded closures makes them harder to engage and seal when closing. The flimsy nature of the material also makes it harder to control closure quality during production.

One solution to this problem has been to form the panels adjacent to closure from a plastic laminate with a profiled closure which provides added strength to resist splitting or breaking of the panels in the area of the closure, whilst the additional rigidity provided by the laminate makes it easier to engage the closure and seal the

opening of the bag.

However, with reclosable bags having laminated plastic for the panels adjacent to closure means, the manufacturing costs are higher than for extruded closure bags because of the more sophisticated manufacturing equipment required, as well as the additional material costs, all adding to the cost of the bag to the consumer as compared with a bag having a simple extruded closure. There are also a limited number of suppliers of profiles to be used with a laminated construction, due to the very expensive set up costs for the production of profiles which are essential for a laminated construction.

It is therefore an object of one preferred embodiment of the present invention to provide a reclosable plastic bag having a closure formed by the simpler extrusion process and therefore without the additional cost factors associated with the laminated plastic alternative, but which also minimises, or eliminates, the problems with bags with conventional extruded closures.

Disclosure of the Invention

The present invention therefore envisages a reclosable plastic bag having at least two panels of plastics sheet or film joined to, or integral with, each other, or a combination of both, to define a bag with an opening, a closure/sealing means of one or more inter-engagable elongate rib/groove configurations to close said opening, wherein at least one elongate strengthening rib is provided adjacent, and parallel, to said closure means and on one or each of the panels of the bag and also inwardly and/or outwardly of said closure means.

The closure means, the strengthening ribs, and any grip enhancing ribs, can also be formed by the simpler extrusion manufacturing process, whilst the strengthening

ribs minimise, or eliminate, the problems with conventional extruded closures. In particular, the strengthening ribs bears some of the forces applied to the closure means and thus minimise the possibility of splitting or breaking of the bag material inwardly and/or outwardly of the closure means, whilst the strengthening ribs also stiffen the panels of the bag adjacent the closure means to provide additional rigidity to assist in aligning the inter-engaging rib/groove configurations when closing the bag. In addition it also enables the closure to be tighter for leak proofing, security, liquid and air tightness.

1, 2, 3, or even more, strengthening ribs may be provided both inwardly and outwardly of the closure means. Alternatively the ribs may consist of one wide rib. The ribs may be provided on the inside or outside of the bag and on one or both panels.

Preferably a plurality of shallow ribs are also provided on said panels extending parallel to said closure means and outwardly thereof to assist in gripping said panels when opening said bag.

The shallow ribs may be provided on the insides and/or outside one or both panels.

Preferably the rib/groove configurations of the closure means have a plurality of projections thereon spaced apart along their length whereby during progressive engagement of the rib within its associated groove a series of audible and/or tactile signals will be provided signifying progressive closure of the closure means.

Brief Description of the Drawings

One preferred embodiment of the invention will now be described with reference to the accompanying drawings, in which;

Figure 1 is a side view of the reclosable plastic bag in accordance with this preferred embodiment of the invention, and

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Figure 2 is a broken enlarged cross-sectional view of the embodiment of Figure 1.

Best Mode for Carrying Out the Invention

10 In this preferred embodiment, the invention consists of a reclosable plastic bag, generally indicated as 10. The plastic bag is formed from an extruded tube of plastic sheet or film which when flattened produces a fold line 11 which will define the bottom of the bag, and which
15 therefore produces a pair of panels 15 which are thereafter sealed along their opposite side edges 12 to provide a plastic bag having an opening 13 at the top of the bag when the other side of the tube is slit. The opening 13 is adapted to be repeatedly opened and closed by a
20 conventional extruded closure/sealing means 14 of the type described above, and consisting of a rib 14a extending across the width of one panel at the opening of the bag and below the opening of the bag, and also engaging and captured within a groove 14b defined by a pair of ribs 14c
25 extending across the width of the other panel of the bag at its opening. A pair of ribs on either side of the rib 14a, which engages within the groove 14b, serves to also capture the ribs 14c which define the grooves. Portions 16 at the top of the panels 15, and adjacent the free ends of the
30 panels of the bag above the closure/sealing means 14 have parallel extending shallow ribs 17, also formed by extrusion, on their insides to allow secure gripping of the panels when those portions of the panels are gripped to pull the panels apart and to disengage the rib/groove
35 closure means 14 when opening the bag.

In accordance with the present invention, a plurality, in this preferred embodiment two, parallel strengthening ribs 18 are also extruded along both sides of the closure/sealing means 14, to in effect bear some of the forces applied to the closure means 14 and thus minimise the possibility of splitting or breaking of the bag inwardly and/or outwardly of the closure means, whilst at the same time strengthening the panels of the bag adjacent the closure means to provide additional rigidity to assist in aligning the intergaging rib/groove closure configuration when closing the bag.

In this preferred embodiment of the invention, the ribs 14a of the closure means 14 have a plurality of projections 19 provided and spaced apart along its length whereby, when progressively engaging the rib with its associated groove a series of audible and/or tactile signals will be produced signifying progressive closure of the closure means.

The closure/sealing means 14, the shallow ribs 17, and the strengthening ribs 18, are all extruded when the tube from which the bag will be formed is extruded and before the tube is slit.

The strengthening ribs 18 may be formed by altering the profile of the extrusion die, or by injecting plastics material directly onto the surface of the tube as it is being extruded, or by a forming process through a grooved die head also when the tube for the bag is being extruded. The more manufacturing and material costly laminating process could also be used if necessary.

Claims:

1. A reclosable plastic bag having at least two panels of plastics sheet or film joined to, or integral with, each other, or a combination of both, to define a bag with an opening, a closure/sealing means of one or more inter-engagable elongate rib/groove configurations to close said opening, wherein at least one elongate strengthening rib is adjacent, and parallel, to said closure means and on one or each of the panels of the bag and also inwardly and/or outwardly of said closure means.
2. A reclosable plastic bag as claimed in Claim 1, wherein said strengthening rib or ribs may be provided both inwardly and outwardly of the closure means.
3. A reclosable plastic bag as claimed in Claim 1, wherein the rib or ribs may consist of one wide rib.
4. A reclosable plastic bag as claimed in any one of Claims 1 to 3, wherein the rib or ribs may be provided on the inside or outside of the bag and on one or both panels.
5. A reclosable plastic bag as claimed in any one of the preceding claims, wherein a plurality of shallow ribs are also provided on said panels extending parallel to said closure means and outwardly thereof to assist in gripping said panels when opening said bag.
6. A reclosable plastic bag as claimed in Claim 5, wherein the shallow ribs are provided on the insides and/or outside one or both panels.
7. A reclosable plastic bag as claimed in any one of the preceding claims, wherein the rib/groove configurations of the closure means have a plurality of projections thereon spaced apart along their length whereby during progressive engagement of the rib within its associated

groove a series of audible and/or tactile signals will be provided signifying progressive closure of the closure means.

- 5 8. A reclosable plastic bag, substantially as hereinbefore described with reference to the accompanying drawings.

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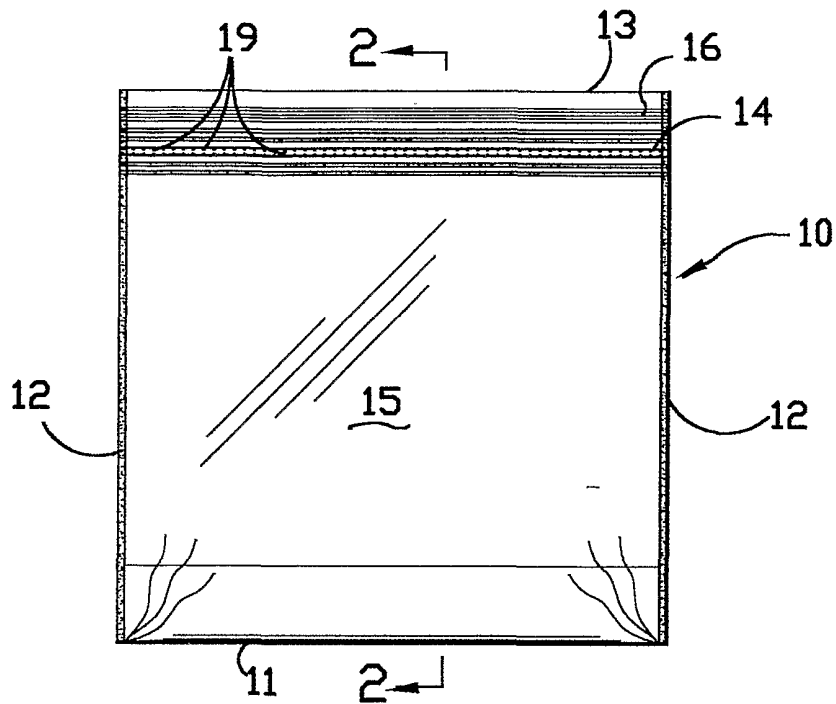


FIG. 1.

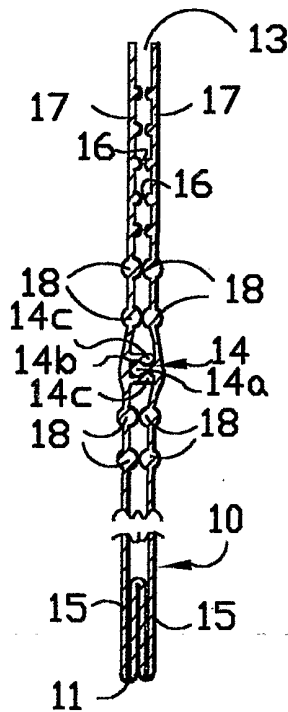


FIG. 2.

INTERNATIONAL SEARCH REPORT

International application No.

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A. CLASSIFICATION OF SUBJECT MATTER				
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According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED				
Minimum documentation searched (classification system followed by classification symbols)				
IPC: B65D 30/-, 33/-, 27/20				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)				
DWPI & keywords: rib, close, bag, audible, panel, plastic and similar terms				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
Y	US 3974958 A (RUDA) 17 August 1976 Abstract and figures 1&2	1-8		
Y	US 5138750 A (GUNDLACH ET AL) 18 August 1992 Figure 2	1-8		
P,X	Derwent Abstract Accession No. 2001-046445/06, Class Q32, JP 2000309352 A (SEISAN NIPPONSHA KK) 7 November 2000 Abstract	1-8		
<input type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex				
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"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family			
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6 July 2001		16 July 2001		
Name and mailing address of the ISA/AU		Authorized officer		
AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929		JAGDISH WABLE Telephone No : (02) 6283 2638		

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/AU01/00670

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member
US	3974958	NONE
US	5138750	NONE
JP	2000309352	NONE

END OF ANNEX