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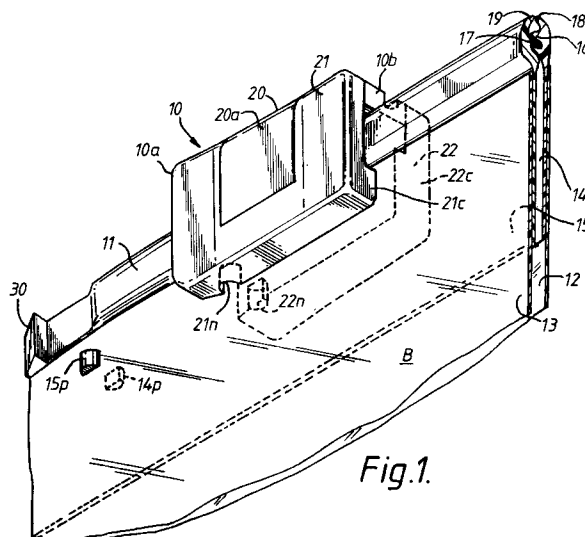
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**London WC2A 2EB(GB)**(54) **Plastic reclosable fastener with structure for retaining slider in closed position.**

(57) A fastener structure (11) for a thermoplastic bag (B), comprising a pair of flexible plastic strips (14,15) having a separable fastener extending along the length thereof comprising reclosable interlocking male and female profile elements (16,17) on the respective strips. The male and female elements (16,17) having complimentary cross sectional shapes such that they are closed by pressing the elements together. The structure (11) also includes a straddling slider (10) on the strips for closing the re-

closable male and female elements; and a latch for retaining the slider in closed position when the slider reaches the closed end of its travel along the plastic strips. The latching means comprises a cooperative detent structure on the slider and at least one of the plastic strips. The detent structure is spaced from the male (14p,15p) and female (21n,22n) interlocking elements and is engageable when the slider is at the closed end of its travel on the plastic strips.

*Fig.1.***EP 0 505 069 A1**

The present invention relates to a fastener structure for a thermoplastic bag. The invention particularly relates to fastener structure of the type known as zippers.

A conventional metal zipper has a tab on its slider. Folding down the tab locks the zipper so it will not unzip. Such a feature has not hitherto been provided on a plastic zipper, even though plastic zippers with sliders are well known in the art.

Plastic zippers have profiles and include a pair of male and female fastener elements in the form of reclosable interlocking rib and groove elements with a slider for opening and closing the rib and groove elements. In the manufacture of a thermoplastic film bag, a pair of these male and female fastener elements extend along the mouth of the bag, the male and female elements being adapted to be secured in any suitable manner to the flexible walls of the thermoplastic film bag. The elements may be integral marginal portions of such walls or they may be extruded separately and thereafter attached to the walls along the mouth of the bag. A method of continuously providing such a fastener on the thermoplastic film is disclosed in US-A-3462332. In US-A-3259951 there is disclosed an example of a thermoplastic bag where the fastener elements are extruded separately and thereafter attached to the walls along the mouth of the bag. This patent also discloses a slider and flexible closure strips adapted to be joined by such slider to form an airtight closure.

The sliders for opening or closing the reclosable fasteners are adapted to be assembled with the zipper by an endwise assembly or by a relative transverse manoeuvre. An example of a fastener with an endwise assembly of the slider is disclosed in US-A-3259951. In some instances the sliders are formed of multiple parts and assembled on the zipper. The assembly may be simplified if the slider is formed of one part and the sides are foldable into position when assembled on the zipper.

It is an object of the present invention to provide a fastener structure for a thermoplastic bag, in which the fastener can be opened and closed by a slider and wherein cooperating latching structure is provided to provide the feel of a secure closure when the slider has reached the closed position on the zipper.

According to one aspect of the invention there is provided a fastener structure for a thermoplastic bag, comprising a pair of flexible plastic strips having separable fastener means extending along the length thereof comprising reclosable interlocking male and female profile elements on the respective strips, said male and female elements having complimentary cross sectional shapes such that they are closed by pressing the elements

together, a straddling slider on said strips for closing the reclosable male and female elements, and latching means for retaining said slider in closed position when said slider reaches the closed end of its travel along said plastic strips, said latching means comprising a cooperating detent structure on said slider and at least one of said plastic strips, said detent structure being spaced from said male and female interlocking elements and being engageable when said slider is at the closed end of its travel on said plastic strips.

Preferably said cooperating detent structure comprises notched structure on said slider and cooperating protrusion structure on said at least one plastic strip.

Desirably a pair of said notched structures are provided on said slider for cooperating with protrusion structures on both of said plastic strips.

It is preferred that the slider is made of plastic.

According to another aspect of the invention there is provided a thermoplastic bag comprising a pair of facing sidewalls defining an open mouth at one end of the bag, and a fastener structure as described above disposed along the mouth for opening and closing said mouth.

Reference is now made to the accompanying drawings, in which:

Fig. 1 is a fractional perspective view of a plastic bag with a fastener structure according to the present invention;

Fig. 2 is an elevational view of the fastener structure shown in Fig. 1; and

Fig. 3 is a sectional view taken along the lines 3-3 in Fig. 2.

Referring to Fig. 1, there is illustrated fastener structure comprising a plastic slider 10 and a profiled plastic reclosable fastener 11. The slider 10 and fastener 11 are particularly suited for thermoplastic bags and the like and the slider 10 has been illustrated in Figs. 1 and 2 assembled on the fastener 11 at the top edge or mouth of a thermoplastic bag B. The bag B may be made from any suitable thermoplastic film such for example as polyethylene or polypropylene or equivalent material.

The bag B is formed by a pair of flexible plastic sheets 12 and 13 joined at the bottom and having a top edge, with a pair of flexible plastic strips 14 and 15 having separable plastic means extending along the length thereof comprising reclosable interlocking male and female profile elements in the form of rib and groove elements 16 and 17 on the respective strips to form the fastener 11. The strips 14 and 15 may be extruded separately and attached to the respective sides of the bag mouth or the strips 14 and 15 may be extruded integral with the sides of the bag mouth. The strips 14 and 15 include profiled tracks 18 and

19 extending along the length thereof parallel to the rib and groove elements 16 and 17 and the rib and groove elements, 16, 17 have complementary cross-sectional shapes such that they are closed by pressing the elements together with the slider 10.

The cross-sectional shapes of the interlocking male and female elements having the rib and groove profiles 16 and 17 may be of any type but preferably are of the type disclosed in WO-91/13564.

As may be seen in Fig. 1 the slider 10 straddles the fastener 11 at the top of the bag B and is adapted for opening or closing the reclosable fastener element 16 or 17 of the fastener 11. The slider 10 is formed from a single piece of moulded plastic comprising a separator finger 9, Fig. 2, and interlocking complementary structure moving along the fastener 11. The slider 10 may be moulded from any suitable plastic such for example as nylon, polypropylene, polystyrene, Delrin or ABS.

In the preferred embodiment the complementary structure comprises an inverted U-shaped member including a transverse supported member or body 20 from which the separator finger 9 depends. The body 20 is itself U-shaped and includes two integral spaced depending legs 20a and 20b (not shown). The finger 9 is positioned between the legs 20a, 20b. The body 20 is adapted to move along the top edges of the tracks 18 and 19 with the legs 20a, 20b straddling these elements and the finger 9 positioned between the tracks 18 and 19. The body 20 also includes a pair of hinged "wings" or side walls 21 or 22 that can be folded down into their final position.

The wings 21 and 22 are hinged to the main slider body 20 by means of hinge structure located at the opposite ends of the legs 20a and 20b. The wings 21 and 22 have central openings into which the legs 20a, 20b extend and the wings 21 and 22 are folded down into their final position as shown in Fig. 1. When the sidewalls 21 and 22 are in the folded position as shown in Fig. 1 a compression-type latching mechanism (not shown) locks the sidewalls 21 and 22 in folded position with the depending legs 20a and 20b. In this assembled position, the shoulders 21c and 22c on the sidewalls 21 and 22 are positioned beneath the bottom of the fastener elements 16 and 17 to prevent the slider 10 from being lifted off the fastener 11. The foldable depending sidewalls 21 and 22 extend from an opening end 10a of the slider 10 to a closing end 10b.

The sidewalls 21 and 22 and the depending legs 20a and 20b are spaced wider apart at the opening end 10a of the slider 10 to permit the separation of the rib and groove elements 16 and 17 by the finger 9 engaging the tracks 18 and 19

and are spaced sufficiently close together at the closing end 10b of the slider to press the rib and groove elements 16 and 17 into interlocking relationship as the slider 10 is moved in a fastener closing direction from the position in Fig. 1 to the closed position in Fig. 2.

As may be seen in Figs. 1-3 the extruded strips 14 and 15 have been provided with protrusions 14p and 15p which extend outwardly from the surface of the strips 14 and 15. The protrusions 14p and 15p are shaped to be received within the corresponding notches or indentations 21n and 22n formed in the lower portions of the sidewalls 21 and 22 of the slider 10. As may be seen in Figs. 1 and 3 the notches 21n and 22n are formed in the opposed vertical surfaces of the shoulders 21c and 22c.

The ends of the notches 21n and 22n are flared at the opening end 10a of the slider 10, Fig. 3, to provide a funnel shaped opening to permit the protrusions 14p and 15p to enter the notches 21n and 22n as the slider 10 moves to the closed end of the fastener 11, Figs. 2 and 3. The protrusions 14p and 15p are spaced with respect to the closed end of the fastener 11 so that when the slider 10 reaches the end of its travel on the fastener 11 in the closing direction, the protrusions 14p and 15p will be received in the notches or indentations 21n and 22n. This gives the user of the bag assurance that the bag is closed with certainty. If the fastener 11 is not provided with end stops the cooperating protrusions and notches will serve to keep the slider from going past the closed end of the fastener and coming off of the bag.

The opposite ends of the fastener 11 may be provided with end stops 30 formed from the material at the opposite ends of the fastener 11 and protrude from the fastener a distance adequate to engage the slider 10 to prevent the slider from going past the respective ends of the fastener and coming off of the bag. When the fastener 11 is provided with end stops 30 the protrusions 14p and 15p are spaced with respect to the closed end stop 30 of the fastener 11 so that when the slider 10 reaches the end of its travel on the fastener 11 in the closing direction, the protrusions 14p and 15p will be received in the notches or indentations 21n or 22n.

While one type of cooperating detent structure has been described and illustrated in respect to the slider and the plastic strips, it is to be understood that other cooperating detent structure may be utilised for performing the same function, namely providing the user of the bag with the feel of a secure closure. The protrusions and indentations disclosed herein for providing the cooperating detent structure may be positioned at other locations than those shown.

## Claims

1. A fastener structure for a thermoplastic bag, comprising a pair of flexible plastic strips having separable fastener means extending along the length thereof comprising reclosable interlocking male and female profile elements on the respective strips, said male and female elements having complimentary cross sectional shapes such that they are closed by pressing the elements together, a straddling slider on said strips for closing the reclosable male and female elements, and latching means for retaining said slider in closed position when said slider reaches the closed end of its travel along said plastic strips, said latching means comprising a cooperating detent structure on said slider and at least one of said plastic strips, said detent structure being spaced from said male and female interlocking elements and being engageable when said slider is at the closed end of its travel on said plastic strips.
 

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2. A fastener structure according to claim 1, wherein said cooperating detent structure comprises notched structure on said slider and cooperating protrusion structure on said at least one plastic strip.
 

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3. A fastener structure according to claim 2, wherein a pair of said notched structures are provided on said slider for cooperating with protrusion structures on both of said plastic strips.
 

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4. A fastener structure according to claim 1, 2 or 3, wherein said slider is made of plastic.
5. A thermoplastic bag comprising a pair of facing sidewalls defining an open mouth at one end of the bag, and a fastener structure as defined in any preceding claim disposed along the mouth for opening and closing said mouth.
 

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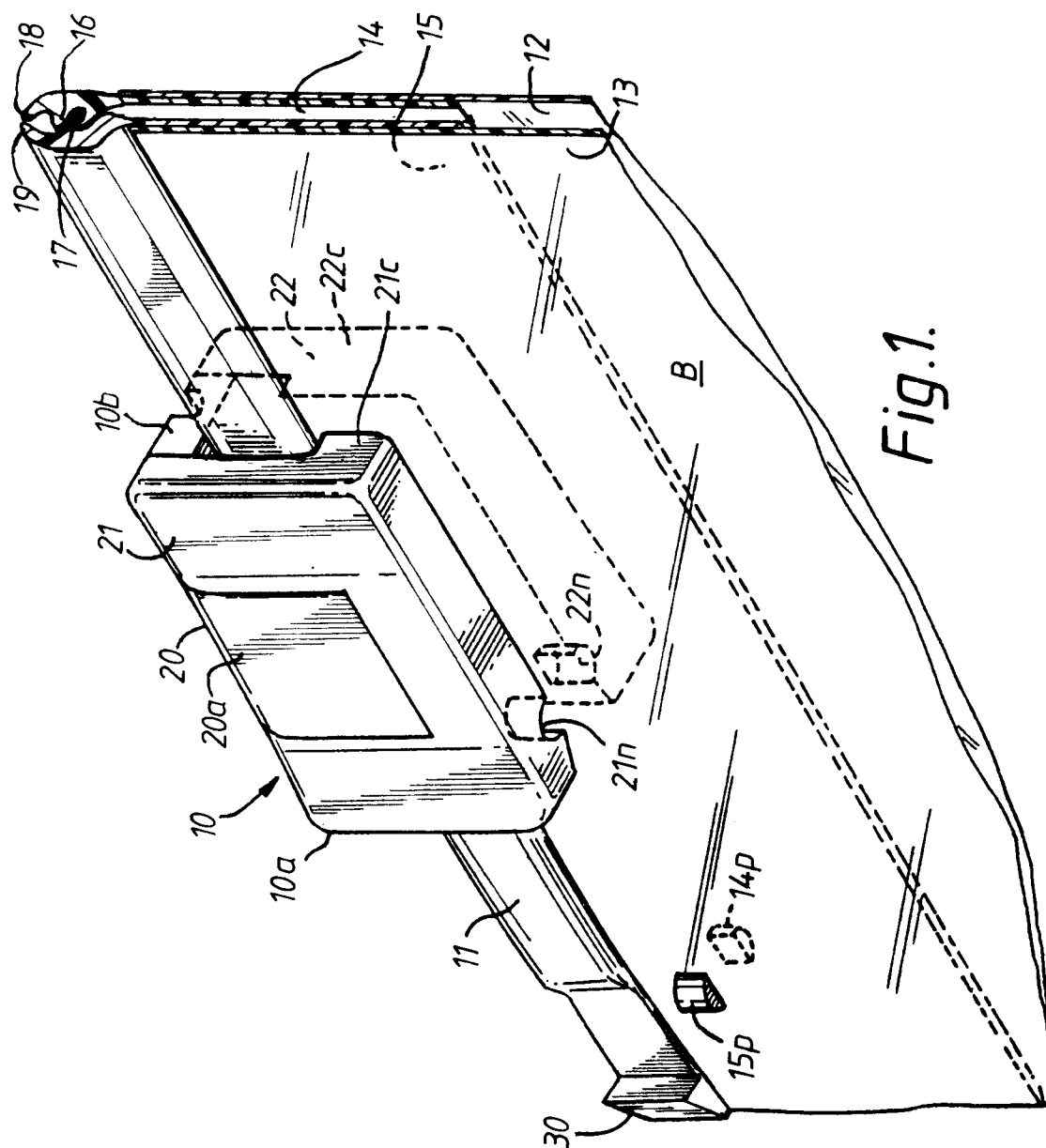
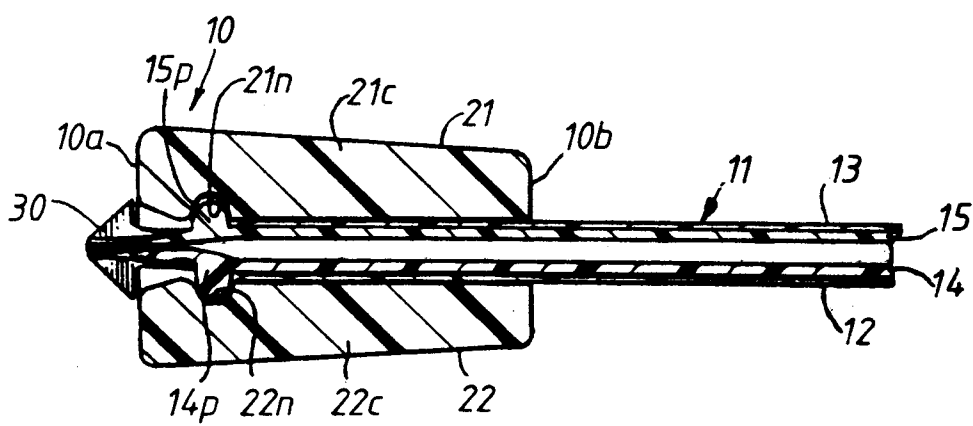
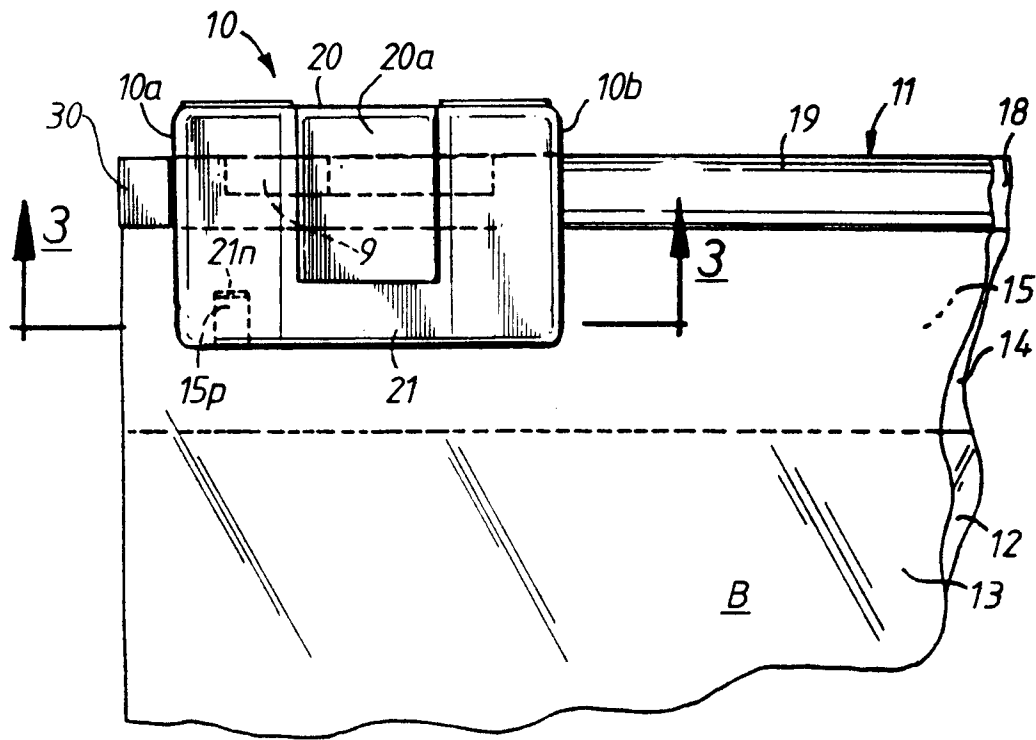


Fig. 1.





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## EUROPEAN SEARCH REPORT

Application Number

EP 92 30 1998

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	US-A-2 701 903 (H.L. WILLIAMS) * column 1, line 67 - column 3, last paragraph; figures * ---	1-5	A44B19/26 A44B19/30
D,P, Y	WO-A-9 113 565 (MOBIL OIL CO)  * the whole document * ---	1-5	
D,A	US-A-3 259 951 (M.A. ZIMMERMAN) * the whole document *  -----	1, 4, 5	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A44B B650
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 26 JUNE 1992	Examiner M. VANMOL
<b>CATEGORY OF CITED DOCUMENTS</b>  X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document  T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document			