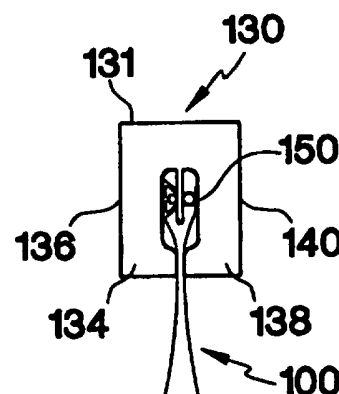




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/US97/02306 (22) International Filing Date: 20 February 1997 (20.02.97) (30) Priority Data: 60/011,860 20 February 1996 (20.02.96) US (71) Applicant (for all designated States except US): HOPPMANN CORPORATION [US/US]; 14560 Lee Road, P.O. Box 601, Chantilly, VA 22021-0601 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): SCHOBER, Horst, A. [US/US]; 8610 Antioch Circle, Vienna, VA 22180 (US). SCHMITT, Werner, H. [US/US]; 6385 Lake View Drive, Falls Church, VA 22041 (US). (74) Agents: SLATTERY, James, M. et al.; Birch, Stewart, Kolasch & Birch, L.L.P., P.O. Box 747, Falls Church, VA 22040-0747 (US).		(81) Designated States: JP, US, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i>
(54) Title: SLIDER FOR A PLASTIC RECLOSABLE FASTENER (57) Abstract A slider (130) for providing a positive closure and seal for a container includes a container (100) having flexible side walls and an opening positioned along one side. A closure is provided that is selectively openable and closable to permit entry into the container through the opening and closure of the container, respectively. A slider includes a housing for mounting on the sealable member for opening and closing the container, the housing having a top wall (131), side walls (136, 140), and a slot wherein the closure is disposed within the slot. An elongated member (150) extends substantially vertically for a predetermined distance within the slot of the housing for opening the sealable member when the slider is moved from an original position in a first direction. Cam members are provided within the housing for closing the sealable member when the slider is returned to the original position.		



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SLIDER FOR A PLASTIC RECLOSABLE FASTENER

BACKGROUND OF THE INVENTION

Field of the Invention

A slider is disclosed which includes a vertical
5 projection for selectively opening a flexible bag and a
cam member for selectively closing a flexible bag.

Description of Background Art

For a number of years plastic storage bags have been
on the market with a male and female closure member
10 disposed along one side. One brand of such plastic
storage bags is sold under the trademark "ZIPLOC." These
plastic storage bags consist of plastic pouches folded
and/or sealed on three sides. The top of the pouch is not
sealed and is equipped with a plastic zipper which
15 includes a male member and a female member. The plastic
bag does not use a slider. The bag must be manually
opened and closed by the user. Opening occurs by pulling
apart the two top sides of the storage bag. Closing
occurs by depressing the "ZIPLOC" zipper on one extreme
20 end of the bag and moving the closed fingers to the
alternate side of the bag. Mobil Oil Corporation has

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introduced the "HEFTY-ONE ZIP" storage bags into the marketplace. These bags are similar in construction to the "ZIPLOC" bags, but also include a plastic slider. The latter facilitates opening and closing of the plastic zipper by moving the slider to one or the other side of the plastic bag. Accordingly, the "HEFTY-ONE ZIP" zipper is operated in a manner similar to that of a conventional zipper.

Further scope of applicability of the present invention will become apparent from the detailed description given hereinafter. However, it should be understood that the detailed description and specific examples, while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art from this detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will become more fully understood from the detailed description given hereinbelow and the accompanying drawings which are given by way of illustration only, and thus are not limitative of the present invention, and wherein:

Figure 1 is a perspective view illustrating a flexible bag with a slider mounted on one end thereof;

Figure 2 is an end view of the slider according to the present invention;

Figure 3 is an opposite end view of the slider;

Figure 4 is a bottom view of a first embodiment of the slider;

Figure 5 is a cross-sectional view of the slider taken along line V-V of Figure 6;

Figure 6 is a side elevational view of the slider illustrated in Figure 5;

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Figure 7 is a bottom view of a second embodiment of the slider;

Figure 8 is a cross-sectional view taken along line VIII-VIII of Figure 7;

5 Figure 9 is a cross-sectional view taken along line IX-IX of Figure 7;

Figure 10 is a cross-sectional view of a third embodiment of the slider;

10 Figure 11 is a perspective cross-sectional view of the second embodiment of the slider;

Figure 12 is a cross-sectional view of a male portion of the sealable member of the flexible container;

Figure 13 is a cross-sectional view of a female portion of the sealable member of the flexible container;

15 Figure 14 is a vertical cross-sectional view of a fourth embodiment of the slider;

Figure 15 is an end view of the embodiment illustrated in Figure 14;

20 Figure 16 is a horizontal cross-sectional view of embodiment illustrated in Figure 14;

Figure 17 is a partial horizontal cross-sectional view of embodiment illustrated in Figure 14 wherein an opening/closing pin is positioned in a home position; and

25 Figure 18 is a partial horizontal cross-sectional view of embodiment illustrated in Figure 14 wherein an opening/closing pin is displaced from the home position for opening the flexible container.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

30 As illustrated in Figure 1, a flexible container 100 is provided with a sidewall 114 which is sealed along three sides thereof to form a closed container with an open top 115. A rib and groove or male closure member 117 and female closure member 119 are provided for selectively being engaged with each other for closing said flexible

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container 100.

As illustrated in Figures 1-6, a slider 130 is provided to engage an outer surface of the male closure member 117 and the female closure member 119 for forcing
5 said male closure member 117 into engagement with said female closure member 119 when said slider 130 is manually moved from an original position in a first direction and for separating said male closure member 117 from said female closure member 119 when said slider 130 is manually
10 returned to said original position. The slider 130 includes a top surface 130 with downwardly projecting sidewalls 136, 140.

Figure 2 is an end view of the slider. As illustrated in Figure 2, a lower portion of the sidewalls
15 136, 140 of the slider 130 include inwardly projecting members 134, 138 for mounting the slider 130 relative to the opening 115 of the flexible container 100.

Figure 3 is an end view of the slider 130. As illustrated in Figure 3, a lower portion of the sidewalls
20 136, 140 are straight within a central portion of the slider 130 as they extend downwardly from the top wall 131 of the slider 130. This end of the slider 130 permits the sealable member to remain opened after the slider 130 is moved from the original position in a first direction.

Figure 4 is bottom view of the slider 130 with an elongated pin member 150 extending along the length thereof. The sidewalls 136, 140 are spaced a predetermined distance for permitting the top of the flexible container 100 to be disposed therebetween.
25 Inwardly projecting cam members 134a, 138a are disposed adjacent to one end of the slider 130 for selectively closing the flexible container 100. As the slider 130 is returned to the original position, the inwardly projecting cam members 134, 138 press the outer side walls of the
30 male closure member 117 and the female closure member 119
35

-5-

for sealing the flexible container 100.

Figure 5 is cross-sectional view taken along line V-V of Figure 6. The elongated pin member 150 of the slider 130 projects downwardly for separating the male closure member 117 from the female closure member 119 for selectively opening the flexible container 100. As the slider 130 is moved from the original position in a first direction, the elongated pin member 150 expands the space between the male closure member 117 and the female closure member 119 for opening the flexible container 100.

Figure 6 is a side elevational view of the slider 130 illustrating the top wall 131 and a downwardly projecting wall 136. The elongated pin member 150 extends along the length of the slider 130.

A second embodiment of the present invention is illustrated in Figures 7-9. A slider 330 is provided to engage an outer surface of the male closure member and the female closure member of a flexible container for forcing said male closure member into engagement with said female closure member when said slider 330 is manually moved from an original position in a first direction and for separating the male closure member from the female closure member when said slider is manually returned to said original position. The slider 330 includes a top surface 331 with downwardly projecting sidewalls 336, 340.

Figure 7 is a bottom view illustrating the slider 330 which includes side walls 336, 340. An elongated pin member 350 of the slider 330 projects downwardly from a top wall of the slider 330 for separating the male closure member of a flexible container from the female closure member for selectively opening the flexible container. As the slider 330 is moved from the original position in a first direction, the elongated pin member 370 expands the space between the male closure member and the female closure member for opening the flexible container. This

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embodiment of the present invention includes two pairs of inwardly projecting cam members 334, 338 and 351, 352 for engaging an outer surface of the male closure member and the female closure member for selectively engaging the male closure member with the female closure member when the slider 330 is manually moved to be returned to an original position.

Figure 8 is a cross-sectional view taken along line VIII-VIII of Figure 7. As illustrated in Figure 8, the slider 330 includes a top wall 331 with the inwardly projecting cam members 334, 352 extending from the sidewall 336. The elongated pin member 370 includes a projection 371 for mating with a vertical groove in the closure member of the flexible container.

Figure 9 is an end view of the slider 330. The lower portion of the sidewalls 336, 340 include the inwardly projecting cam surfaces 334, 338. The elongated pin member 370 includes the projection 371. A pin 382 may be heated to tightly fit within the plastic slider 330 for ensuring the accurate positioning of the elongated pin 370.

Figure 10 is a cross-sectional view of another embodiment of the present invention. A slider 230 includes a top wall 201 with a fin 200 projecting downwardly from the top wall 201. An inwardly projecting cam surface 238 is provided for selectively closing the flexible container. As the slider 230 is returned to the original position, the inwardly projecting cam member 238 working together with a corresponding inwardly projecting cam member presses the outer side walls of the male closure member and the female closure member for sealing the flexible container.

Figure 11 is a perspective cross-sectional view illustrating a slider 430 including an upper wall 431 and a downwardly projecting sidewall 436. An elongated pin

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member 450 projects downwardly from the upper wall 431 of the slider 430. The inwardly projecting cam surface 438 is designed to contact an outer surface of the male closure member for engaging the male closure member against the female closure member for sealing the flexible container.

Figures 12 and 13 illustrate cross-sectional views of the sealing member 300 for the flexible container. A male closure member 304 is provided with a projection 302 and retaining members 301, 303. The male closure member 304 is designed to be secured within the female closure member 308 which includes a retaining groove 306. In operation, the male closure member 304 is selectively engaged within the interior of the female closure member 308 with the retaining members 301, 303 being disposed on an outer surface of the female closure member 308.

Figures 14-16 illustrate another embodiment of the present invention wherein the slider 530 is provided with an upper wall member 531 with sidewalls 536, 540 projecting downwardly therefrom. An elongated pin 550 extending downwardly from the upper wall member 531. Inwardly projecting cam surface 534, 538 are provided for engaging outer surfaces of a male closure member and a female closure member. As the slider 530 is manually moved from the original position in a first direction, the elongated pin member 550 expands the space between the male closure member and the female closure member for opening the flexible container. As the slider 530 is manually returned to the original position, the inwardly projecting cam surfaces 534, 538 engage the outer surfaces of the male closure member and the female closure member for selectively closing the flexible container.

Figure 17 illustrates the positioning of the elongated pin 370 within a groove 110 in the flexible container 100. In the original position, the elongated

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pin 370 within a groove 110 in the flexible container 100. In the original position, the elongated pin 370 is disposed within the groove 110 and the flexible container is sealed. As illustrated in Figure 18, as the elongated
5 pin 370 is manually moved in a first direction, the elongated pin 370 separates the male closure member from the female closure member for opening the flexible container.

The present invention may be utilized to facilitate
10 the opening and closing of a flexible container sold by Dow Brands under the trademark "ZIPLOC" bags. The slider of the present invention will permit opening and closing of the "ZIPLOC" bags in a conventional zipper mode or an automatic mode. The top of the "ZIPLOC" bags would be
15 modified to no longer require the collar/flange disposed above the "ZIPLOC" zipper. Instead, the "ZIPLOC" zipper will be disposed to be flush with the pouch. At one extreme end of the zipper, a vertical groove is molded or heatformed into the single zipper profile of the zipper.
20 In one embodiment, the vertical groove is positioned on only one side of dual piece zipper. However, this construction may be modified and the vertical groove may be disposed to be symmetric relative to the male closure member and the female closure member of the zipper. On
25 the opposite side from the groove or the other end of the zipper and pouch, an endstop is molded, heatformed or attached to the bag. The bag/zipper is then facilitated with a zipper slider according to the present invention. The latter facilitates opening and closing of the zipper,
30 and therefore, the bag. The slider may be a plastic molded component.

The slider according to the present invention facilitates a zipper closing of the flexible container when the slider is moved toward the vertical groove in the
35 zipper. A vertical pin or fin in the form of a knife

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blade is located at one end of the slider and is centered relative to the slider for facilitating the opening of the zipper when the slider is moved away from the zipper groove. In the closed position, the pin or fin is in a rest position in the zipper groove or indentation.

The invention being thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the following claims.

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WHAT IS CLAIMED IS:

1. A slider for ensuring a positive closure for a seal for a container comprising:

a container having side walls and an opening positioned along one side;

5 a sealable member having a rib and groove profile and being selectively manually opened and closed to permit entry into said container through said opening and closure of said container, respectively;

10 a slider including a housing for mounting on said sealable member for separating said rib and groove profile for opening and closing said container, said housing having a height and a width and downwardly projecting sidewalls forming a slot defined between said downwardly projecting sidewalls wherein said sealable
15 member is disposed within said slot, an elongated member extending vertically within said slot of said housing for extending between the rib and groove profile of said sealable member for opening said sealable member when said slider is manually moved from an original position in a
20 first direction, and a cam member disposed within said slot for closing said sealable member when said slider is returned to the original position.

2. The slider for ensuring a positive closure for a seal for a container according to claim 1, wherein said elongated member is a pin extending vertically a predetermined distance to project between the rib and
5 groove profile of said sealable member.

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3. The slider for ensuring a positive closure for a seal for a container according to claim 1, wherein said elongated member is a fin extending vertically a predetermined distance to project between the rib and groove profile of said sealable member.

4. The slider for ensuring a positive closure for a seal for a container according to claim 1, wherein said rib and groove profile includes a male closure member and a female closure member that are selectively held together to close the container and are manually separated by said slider to open the container.

5. The slider for ensuring a positive closure for a seal for a container according to claim 1, and further including a vertical groove disposed in said rib profile for positioning said elongated projection in a home position when said slider is returned to the original position for closing said container.

6. The slider for ensuring a positive closure for a seal for a container according to claim 5, and further including a vertical groove disposed in said groove profile for positioning said elongated projection in a home position when said slider is returned to the original position for closing said container.

7. The slider for ensuring a positive closure for a seal for a container according to claim 1, wherein said cam member includes a inwardly projecting cam surface disposed on an inner surface of each of said downwardly projecting sidewalls for engaging an outer surface of said rib and groove profile for selectively sealing said rib and groove profile when said slider is returned to the

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original position.

8. The slider for ensuring a positive closure for a seal for a container according to claim 7, wherein said cam member includes at least two pairs of inwardly projecting cam surfaces disposed on the inner surface of each of said downwardly projecting sidewalls for engaging an outer surface of the rib and groove profile for selectively sealing said rib and groove profile when said slider is returned to the original position.

9. The slider for ensuring a positive closure for a seal for a container according to claim 1, wherein said elongated member is a separate member relative to said cam member.

10. The slider for ensuring a positive closure for a seal for a container according to claim 1, wherein said housing includes a first end and a second end, said elongated member being positioned in said first end of said housing and said cam member being positioned within said second end of said housing.

11. A slider for providing a positive closure and seal for a flexible container comprising:

a sealed container having flexible side walls and an opening positioned along one side;

a sealable member having a rib and groove profile and being selectively opened and closed to permit entry into said container through said opening and closure of said container, respectively;

a slider includes a housing having a top wall and downwardly projecting sidewalls, said slider being mounted on said sealable member for opening and closing said container, said housing having a height and

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a width and a slot defined between said sidewalls wherein said sealable member is disposed within said slot, an
15 elongated member extending vertically to project a predetermined distance through said rib and groove profile from within said slot of said housing for opening said sealable member when said slider is moved in a first direction, and a cam member projecting inwardly from at
20 least one of said side walls of said housing for closing said sealable member when said slider is moved in a second direction.

12. The slider for ensuring a positive closure for a seal for a container according to claim 11, wherein said elongated member is a pin extending vertically a predetermined distance to project between the rib and
5 groove profile of said sealable member.

13. The slider for ensuring a positive closure for a seal for a container according to claim 11, wherein said elongated member is a fin extending vertically a predetermined distance to project between the rib and
5 groove profile of said sealable member.

14. The slider for ensuring a positive closure for a seal for a container according to claim 11, wherein said rib and groove profile includes a male closure member and a female closure member that are selectively held
5 together to close the container and are manually separated by said slider to open the container.

15. The slider for ensuring a positive closure for a seal for a container according to claim 11, and further including a vertical groove disposed in said rib profile for positioning said elongated projection in a
5 home position when said slider is returned to the original

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position for closing said container.

16. The slider for ensuring a positive closure for a seal for a container according to claim 15, and further including a vertical groove disposed in said groove profile for positioning said elongated projection
5 in a home position when said slider is returned to the original position for closing said container.

17. The slider for ensuring a positive closure for a seal for a container according to claim 11, wherein said cam member includes a inwardly projecting cam surface disposed on an inner surface of each of said downwardly
5 projecting sidewalls for engaging an outer surface of said rib and groove profile for selectively sealing said rib and groove profile when said slider is returned to the original position.

18. The slider for ensuring a positive closure for a seal for a container according to claim 17, wherein said cam member includes at least two pairs of inwardly projecting cam surfaces disposed on the inner surface of
5 each of said downwardly projecting sidewalls for engaging an outer surface of the rib and groove profile for selectively sealing said rib and groove profile when said slider is returned to the original position.

19. The slider for ensuring a positive closure for a seal for a container according to claim 11, wherein said elongated member is a separate member relative to said cam member.

20. The slider for ensuring a positive closure for a seal for a container according to claim 11, wherein said housing includes a first end and a second end, said

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elongated member being positioned in said first end of said housing and said cam member being positioned within said second end of said housing.

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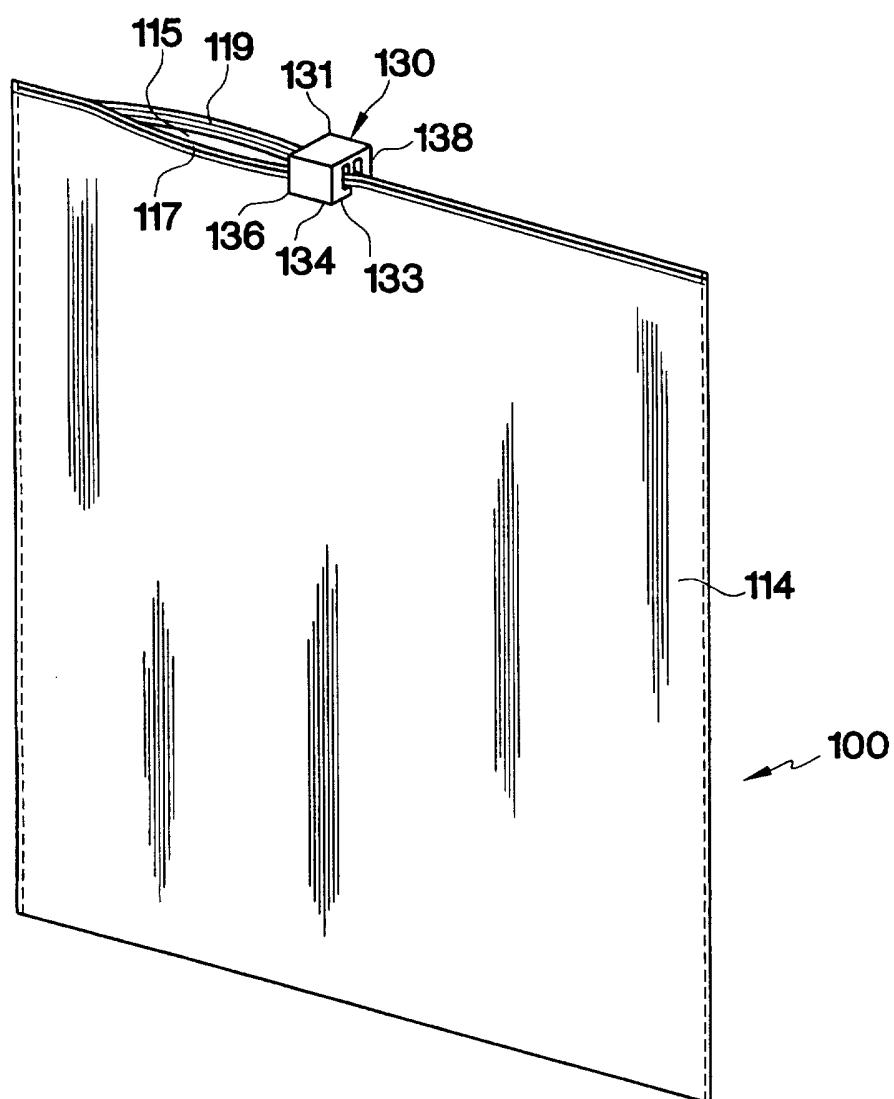


Fig. 1

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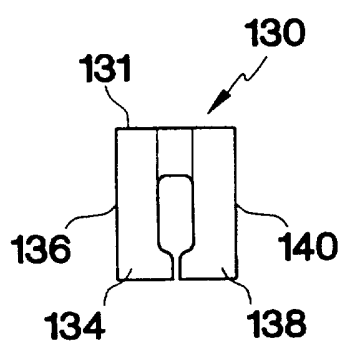


Fig. 2

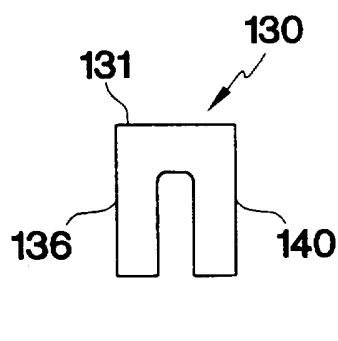


Fig. 3

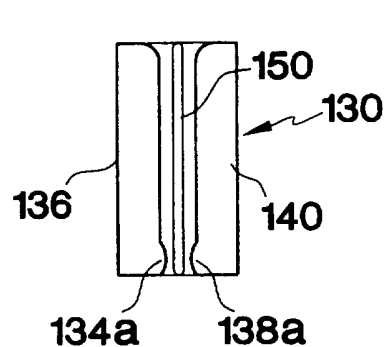


Fig. 4

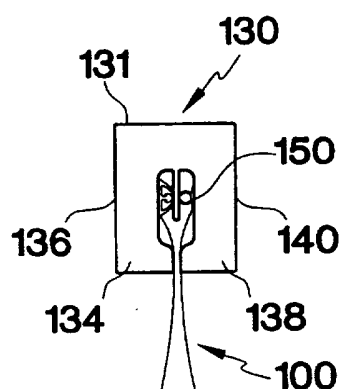


Fig. 5

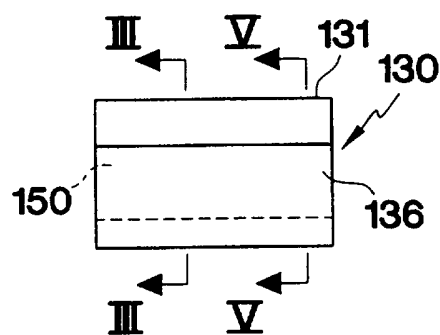


Fig. 6

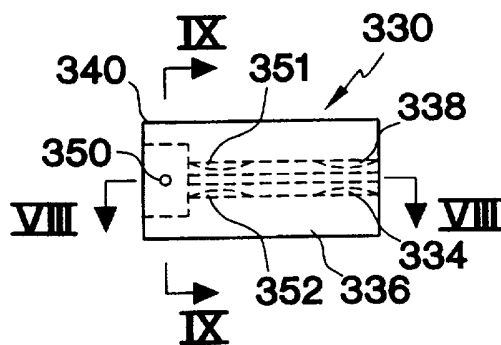


Fig. 7

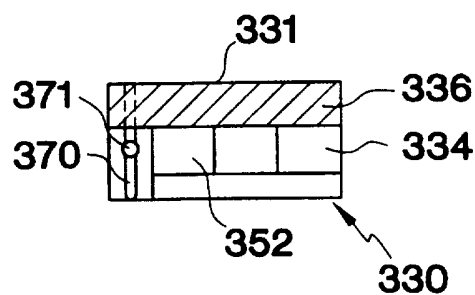


Fig. 8

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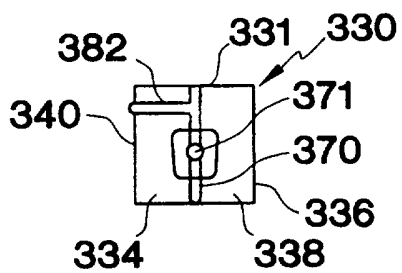


Fig. 9

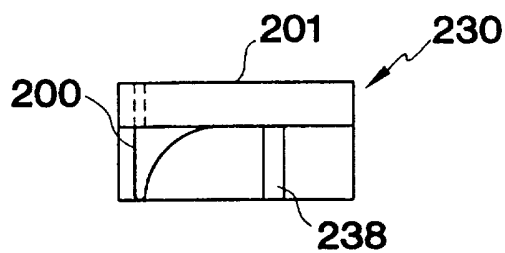


Fig. 10

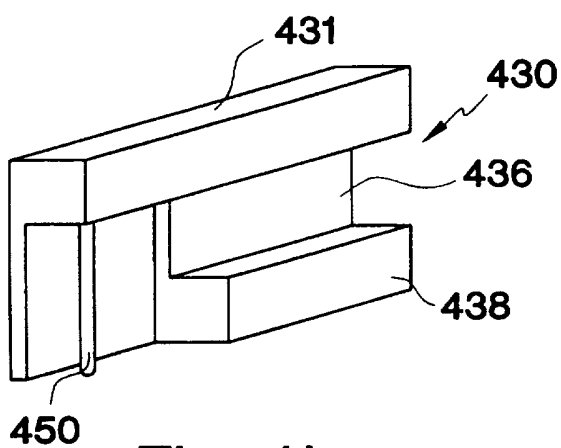


Fig. 11

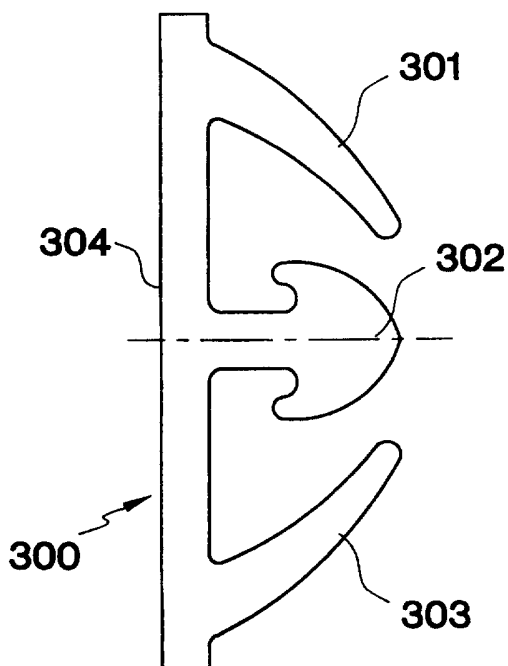


Fig. 12

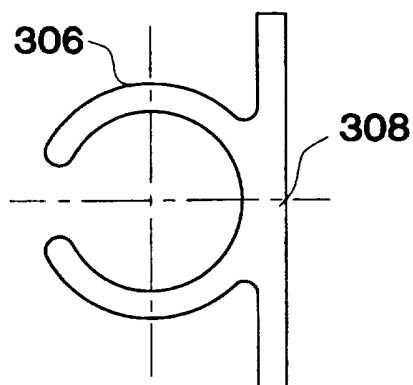


Fig. 13

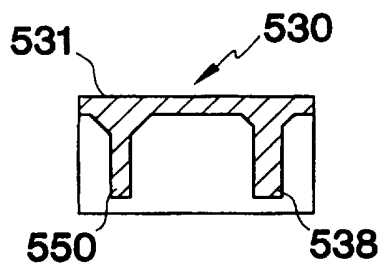


Fig. 14

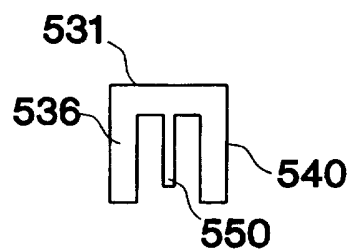


Fig. 15

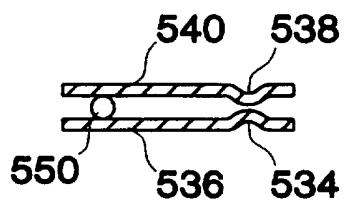


Fig. 16



Fig. 17

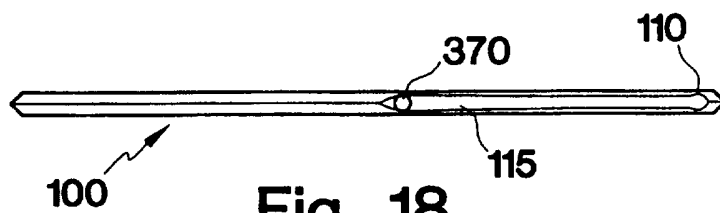


Fig. 18

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/02306**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(6) :A44B 19/16, 19/26

US CL :24/387, 400; 383/64

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)

U.S. : 24/387, 399, 400; 383/64

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3,426,396 A (LAGUERRE) 11 February 1969, see col. 2, lines 24-42.	1, 3, 4, 7, 9, 11, 13, 14, 17, and 19
X	US 4,262,395 A (KOSKY) 21 April 1981, see col. 3, lines 15-45	1, 3, 4, 7-9, 11, 13, 14, and 17-19
A	US 3,790,992 A (HERZ) 12 February 1974	
A	US 5,007,142 A (HERRINGTON) 16 April 1991	
A	US 5,010,627 A (HERRINGTON) 30 April 1991	
A	US 5,067,208 A (HERRINGTON, JR. ET AL.) 26 November 1991	



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	*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
A document defining the general state of the art which is not considered to be of particular relevance	*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
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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	

Date of the actual completion of the international search

01 APRIL 1997

Date of mailing of the international search report

16 APR 1997

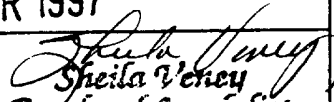
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International application No.

PCT/US97/02306

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,131,121 A (HERRINGTON, JR. ET AL.) 21 July 1992	
A	US 5,189,764 A (HERRINGTON ET AL.) 02 March 1993	
A	US 5,283,932 A (RICHARDSON ET AL.) 08 February 1994	
A	US 5,301,395 A (RICHARDSON ET AL.) 12 April 1994	