AUSTRALIA

Patents Act 1990

626345

REQUEST FOR A STANDARD PATENT

AND NOTICE OF ENTITLEMENT

The Applicant identified below requests the grant of a patent to the nominated person(s) identified below for an invention described in the standard complete patent specification accompanying patent application 35748/89.

[70,71] Applicant and Nominated Person:

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[54] Invention Title:

"WRAP-AROUND CARTON LOCKING MEANS"

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Basic Convention Application Details:

[31] Application Number	[33] Country	Country Code	[32] Date of Application
187,810	USA	US	29 April, 1988

Applicant states the following:

The nominated person(s) has entitlement from the actual inventor by assignment.

The nominated person has entitlement from the applicant of the basic application by assignment.

The nominated person is entitled to rely on the application listed in the Declaration under Article 8 of the PCT.

The basic Convention application was the first made in a Convention country in respect of the invention the subject of the application.

DATED: 14 July, 1992

PHILLIPS ORMONDE & FITZPATRICK
Attorneys for:
MANVILLE CORPORATION

David B Fitzpatrick

By:

Our Ref: IRN 157755
6335t

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WRAP-AROUND CARTON LOCKING MEANS

International Patent Classification(s)
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(56) Prior Art Documents
US 4611754
US 4597523
US 4437606

(57) Claim

1. A carton for holding one or more articles, comprising:

two side panels connected to top and bottom panels;

the bottom panel comprising an inner flap connected to one of the side panels along a fold line and an outer flap connected to the other side panel along a fold line, the outer flap overlapping the inner flap;

the outer flap containing a centrally located secondary female locking opening and a primary male locking member located between the secondary female locking opening and the fold line connecting the outer flap to said other side panel;

the inner flap having a centrally located secondary male locking member engaging the secondary female locking opening and a primary female locking edge located between the secondary male locking member and the edge of the inner flap opposite the fold line connecting the inner flap to said one side panel, the primary male locking member of the outer flap engaging the primary female locking edge of the inner flap;

the secondary male locking member being connected to

.../2

the carton along a fold line coinciding with th fold line connecting the inner flap to said one side panel;

the secondary male locking member overlying the outer flap between the fold line connecting the secondary male locking member to the carton and the secondary female locking opening; and

the overlapped portion of the inner and outer flaps extending substantially the entire width of the bottom panel of the carton.

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 4 : B65D 5/04

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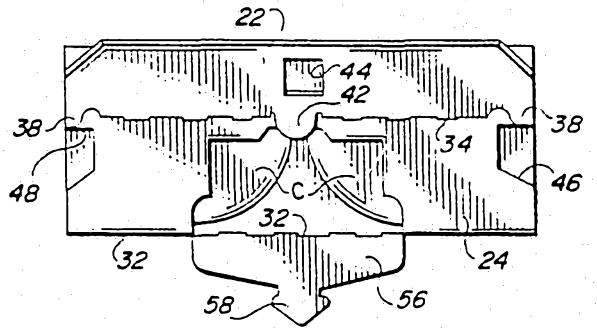
(54) Title: WRAP-AROUND CARTON LOCKING MEANS



(57) Abstract

A carton (10) having a bottom panel (16) comprised of two overlapping flaps (22, 24). The outer flap (22) has a primary male tab (42) engaging a primary female locking edge (52) in the inner flap (24), while the inner flap has a secondary male locking tab (56) engaging a secondary female locking opening (44) in the outer flap. The secondary locking tab is connected to the carton along a fold line (32) coinciding with the fold line connecting the inner flap to the adjacent side panel, allowing a large secondary locking tab to be used even though the bottom panel is narrow. The outer and inner flaps are able to overlap across substantially the full width of the flaps to form a bottom panel of double thickness.

elements can be properly located and sufficiently spaced apart to allow the flaps and the locking elements carried thereby to be manipulated by the packaging machine into locking engagement. When forming a more narrow carton, however, the same situation does not obtain. In smaller cartons such as those used to package plastic food tubs, the panels are smaller and do not provide as much area in which to locate similar locking elements. Furthermore, due to the tapered shape of many food tubs, the bottom panel of these smaller cartons is often narrower than the top panel, making it even more difficult to provide suitable locking means.

An apparent solution to the problem would appear to merely require reducing the size of the locking elements in order to be able to locate them on the available surface area of the panel flaps. This would not be satisfactory, however, because it would weaken the panel comprised of the connected flaps. All other things being equal, smaller locking elements are not able to resist the amount of stress that larger elements can resist. On the other hand, since the basic type of locking arrangement disclosed in the Graser patent has been found to perform well, it would be desirable to be able to use related locking elements in smaller cartons to avoid the need to develop entirely new designs.

Summary of the Invention

The present invention provides a carton for holding one or more articles, comprising:

two side panels connected to top and bottom panels;

the bottom panel comprising an inner flap connected to one of the side panels along a fold line and an outer flap connected to the other side panel along a fold line, the outer flap overlapping the inner flap;

the outer flap containing a centrally located secondary female locking opening and a primary male locking member located between the secondary female

locking opening and the fold line connecting the outer flap to said other side panel;

the inner flap having a centrally located secondary male locking member engaging the secondary female locking opening and a primary female locking edge located between the secondary male locking member and the edge of the inner flap opposite the fold line connecting the inner flap to said one side panel, the primary male locking member of the outer flap engaging the primary female locking edge of the inner flap;

the secondary male locking member being connected to the carton along a fold line coinciding with the fold line connecting the inner flap to said one side panel;

the secondary male locking member overlying the outer flap between the fold line connecting the secondary male locking member to the carton and the secondary female locking opening; and

the overlapped portion of the inner and outer flaps extending substantially the entire width of the bottom panel of the carton.

With this arrangement the secondary male locking member, which may comprise a punch-style arrow-shaped tab, can be quite large compared to the combined width of the overlapped flaps, thus providing more holding power than would ordinarily be possible in a small panel comprised of overlapped flaps. The overlapped portions of the inner and outer flaps may comprise a major portion of the width of the panel formed by the flaps, resulting in a panel of double thickness throughout most of its width.

Brief Description of the Drawings

The following description refers in more detail to the various features of the carton of the present invention. To facilitate an understanding of the invention, reference is made in the description to the accompanying drawings where the carton is illustrated in a preferred embodiment. It is to be understood that the

carton of the present invention is not limited to the preferred embodiment as illustrated in the drawings.

FIG. 1 is a pictorial view of a carton which incorporates the locking arrangement of the present invention;

FIG. 2 is an end view of the carton of FIG. 1;

FIG. 3 is a plan view of a production blank used to form a carton incorporating the locking features of the present invention;

FIG. 4 is a bottom view of a partially formed carton prior to engagement of the bottom panel flaps;

FIG. 5 is a view similar to that of FIG. 4, but showing the flaps in their initial stage of assembly;

FIG. 5A is a transverse sectional view of the carton and containers showing the flaps at a stage of assembly intermediate the stages of FIGS. 5 and 6;

FIG. 6 is a view similar to that of FIG. 5, but showing the flaps in a later stage of assembly; and

FIG. 7 is a bottom view of the assembled and locked bottom panel.

DESCRIPTION OF THE INVENTION

Referring to FIGS. 1 and 2, a carton 10, comprised of a top panel 12, side panels 14 and bottom panel 16, contains two food containers C, illustrated as plastic tubs of the type used to package butter, pudding and other soft foods. The edges 18 of the lids of the containers project through cutouts 20 in the upper

portion of the side panels 14 to assist in holding the containers in place. The containers C are relatively narrow overall, and in addition have slightly tapered side walls which cause their bottoms to be narrower than their tops. In order for the containers to be tightly held within the carton the bottom panel 16 of the carton is therefore narrower than the top panel. While carton dimensions naturally vary according to the dimensions of the containers, a bottom wall width of less than two inches is not uncommon.

The bottom panel 16 is comprised of two overlapping flaps 22 and 24. Flap 22 is the outer or overlying flap, and flap 24 is the inner or underlying flap. As illustrated, the flaps 22 and 24 overlap each other over a major portion of their width.

Referring to FIG. 3, a blank for forming the carton 10 is indicated at 26 and is comprised of a top panel section 12, side panel sections 14 and bottom panel flaps 22 and 24. The side panel sections 14 are connected to the top panel section 12 along fold lines 28, the outer flap 22 is connected to its adjacent side panel section 14 along fold line 30, and the inner flap 24 is connected to its adjacent side panel section 14 along fold line 32.

The outer bottom panel flap 22 has a score line 34 parallel to and spaced from the fold line 30. The ends of the score line terminate short of the ends of the flap 22 and are connected to the ends of the flap by cuts or slits 36, which form tertiary male locking tabs 38. The central portion of the score line 34 is interrupted by a slit 40 which forms primary locking tab 42. Located between the primary locking tab 42 and the free edge of the flap 22 is a secondary locking opening 44.

Still referring to FIG. 3, the inner flap 24 contains a cutout 46 on each end edge to provide tertiary female locking edges 48 adapted to be engaged by the tertiary locking tabs 38. A centrally located cutout 50 forms primary female locking edge 52 adapted to be engaged by primary locking tab 42. In addition, slits 54 extending from the fold line 32 form the base side edges of secondary male locking tab 56. The tab 56 includes an arrow-shaped punch-style head 58 adapted to engage with the secondary locking opening 44 in the flap 22 and is connected to the carton blank along fold line 32.

Referring now to FIG. 4, the bottom of the carton is shown as it would appear after the side panel sections 14 of the blank have been folded up about containers C and the bottom flaps 22 and 24 have been folded toward each other along their fold lines 30 and 32. As illustrated, the flaps have not yet been connected together but the secondary locking tab 56 has been folded back along the fold line 32 to expose the primary female locking edge 52 in preparation for the locking operation.

As shown in FIG. 5, the next step in the locking process is to fold the flap 22 back along its score line 34 to position the primary locking tab 42 over the primary female locking edge 52 and to position the tertiary locking tabs 38 over the tertiary female locking edges 48. To engage the primary and tertiary tabs with their locking edges the outer flap 22 is folded back down about its score line 34, causing the tabs to slide beneath their associated locking edges, as shown in FIG. 5A. The result of this operation is illustrated in FIG. 6, which shows portions of the inner flap 24 exposed in the areas formerly occupied by the locking tabs 38 and 42, now hidden beneath the female locking edges 48 and 52 of inner flap 24. A very small area of the containers C can still be seen where they have not been covered by the flap 22.

As shown in FIG. 7, the secondary locking tab 56 has been folded back down about the fold line 32 and the arrow- shaped head 58 of the tab has been inserted into the secondary female locking opening 44 of the flap 22. The shoulders 59 on the arrow-shaped head 58 engage the edges of the opening 44 to prevent the tab from being pulled out. Thus the secondary tab prevents the disengagement of the primary locking tab, and the tertiary locking tabs provide further protection against the disengagement of both the primary and secondary locking tabs. As illustrated, the free edge of the outer flap 22 extends substantially all the way to the fold line 32 connecting the flap 24 to its adjacent side panel. A slight distance remains between the free edge of the flap 22 and the fold line 32 to allow for the tab 56 to have room to be maneuvered into locking engagement with the locking opening 44. The free edge of the inner flap 24, although not shown, can extend entirely across the width of the bottom panel so as to terminate substantially at

the opposite side panel of the carton. Thus the bottom panel is comprised of a double thickness throughout the major portion of its width due to the substantially full overlap of the flaps 22 and 24.

Because the locking tab member 56 is connected to the carton at the fold line between the inner flap 24 and its adjacent side panel, it need not be made shorter or smaller in order to function properly, as would have to be done if it were connected to the inner flap at a point intermediate the width of the flap in the manner of the prior art arrangements. Although it is preferred than the fold line connecting the tab member 56 to the carton coincide with the fold line connecting the inner flap and its adjacent side panel, it is possible to locate it slightly out of alignment in either direction and still obtain the benefits of the invention. Such a location would still, however, be considered to be substantially coinciding with the fold line connecting the inner flap and its adjacent side panel.

Although the invention has been described in connection with plastic food containers, obviously it could be beneficially used in cartons designed to carry other types of articles. Regardless of the type of article in the carton, the number of articles in the carton, or the specific dimensions of the carton and articles, the invention would be of particular merit whenever it is desired to employ a relatively large locking tab to connect overlapping flaps which form a relatively narrow panel.

It should be understood that the invention need not be confined to use in a carton incorporating primary, secondary and tertiary locking assemblies. Although such an arrangement is preferred from the standpoint of securely holding the overlapping flaps of a carton together, the principles of the invention may apply in carton locking arrangements which do not employ all such assemblies.

It should also be understood that the invention is not necessarily limited to the specific types of locking details described in connection with the preferred embodiment. It should further be understood that changes to certain specific features of the preferred embodiment may be made in the practice of the invention without affecting the overall performance and concept of

the inventive locking arrangement and without departing from the spirit and scope of the invention, as defined in the appended claims.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A carton for holding one or more articles, comprising:

two side panels connected to top and bottom panels;

the bottom panel comprising an inner flap connected to one of the side panels along a fold line and an outer flap connected to the other side panel along a fold line, the outer flap overlapping the inner flap;

the outer flap containing a centrally located secondary female locking opening and a primary male locking member located between the secondary female locking opening and the fold line connecting the outer flap to said other side panel;

the inner flap having a centrally located secondary male locking member engaging the secondary female locking opening and a primary female locking edge located between the secondary male locking member and the edge of the inner flap opposite the fold line connecting the inner flap to said one side panel, the primary male locking member of the outer flap engaging the primary female locking edge of the inner flap;

the secondary male locking member being connected to the carton along a fold line coinciding with the fold line connecting the inner flap to said one side panel;

the secondary male locking member overlying the outer flap between the fold line connecting the secondary male locking member to the carton and the secondary female locking opening; and

the overlapped portion of the inner and outer flaps extending substantially the entire width of the bottom panel of the carton.

2. A carton according to claim 1, wherein the outer flap includes a fold line substantially parallel to and spaced from the fold line connecting the outer flap to said other side panel, and wherein the primary male locking member comprises at least one tab connected to the outer flap at points substantially coinciding with said

spaced fold line.

3. A carton according to claim 1, wherein the secondary male locking member is a punch-style arrow-shaped tab.

4. A carton according to claim 1 substantially as hereinbefore described with reference to the accompanying drawings.

DATED: 20 March, 1992.

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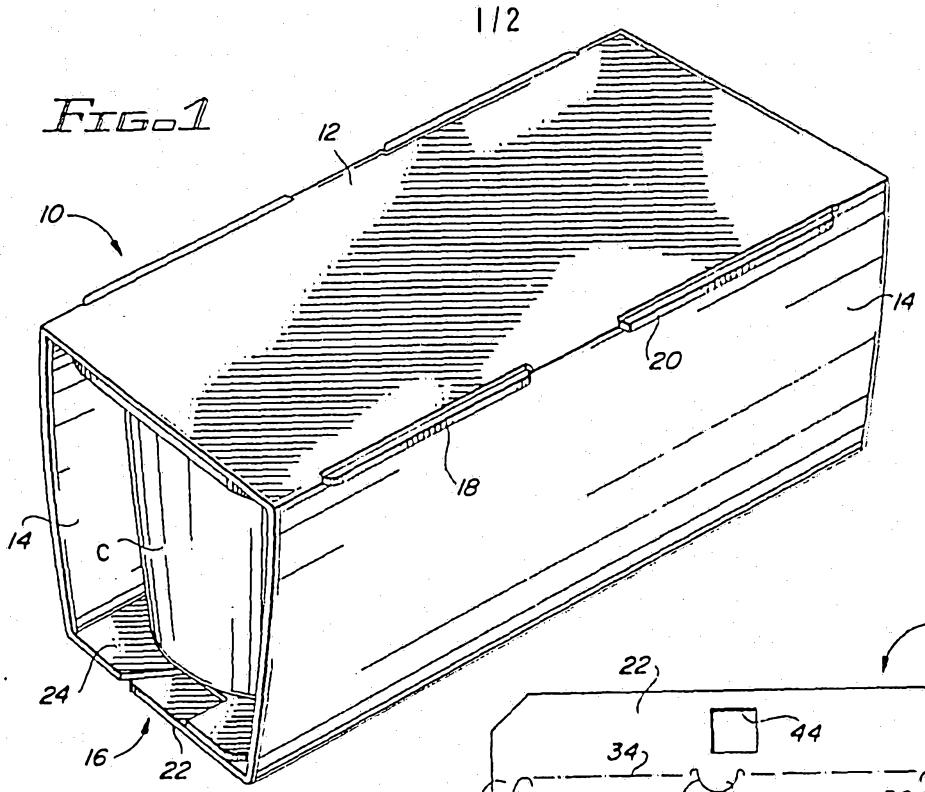
35748/89

FIG-1



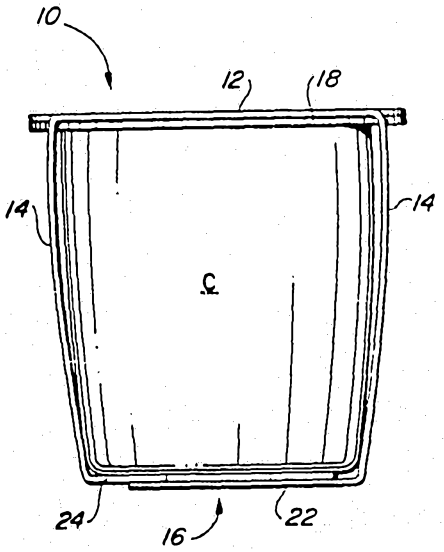


FIG-2

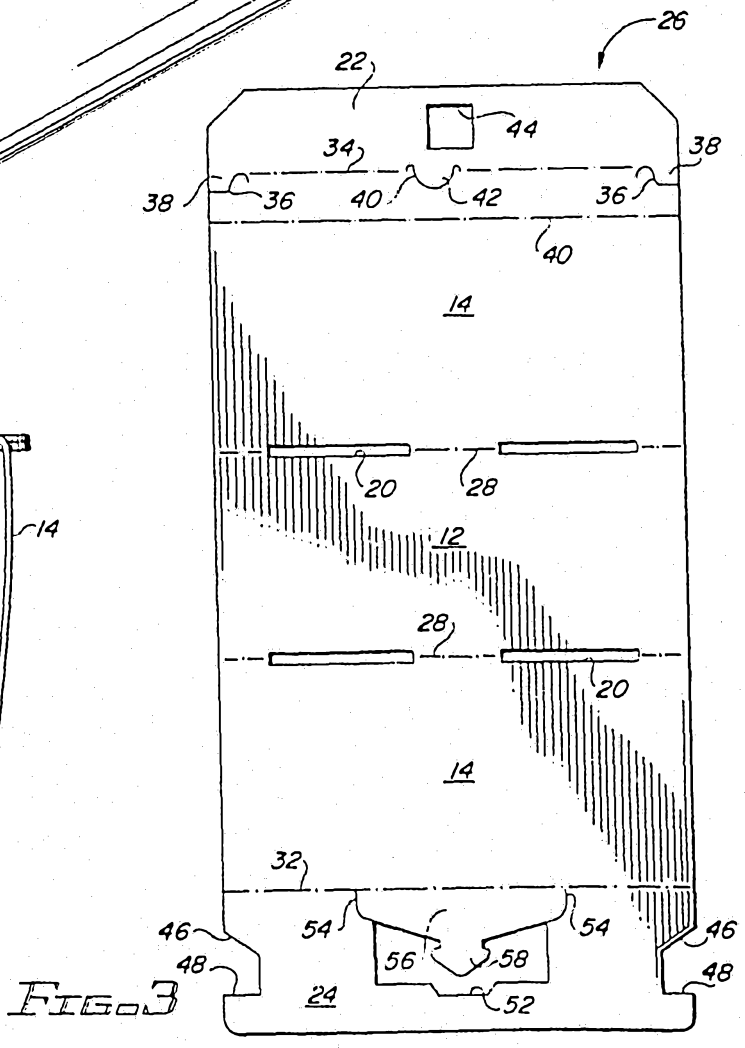


FIG-3

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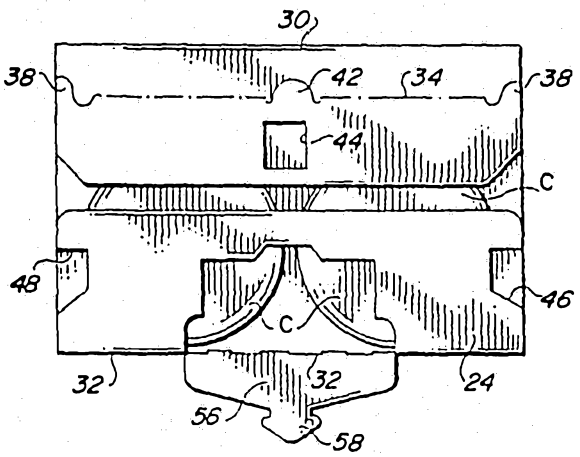
FIG-4



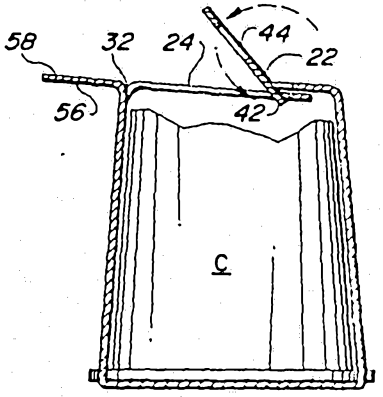
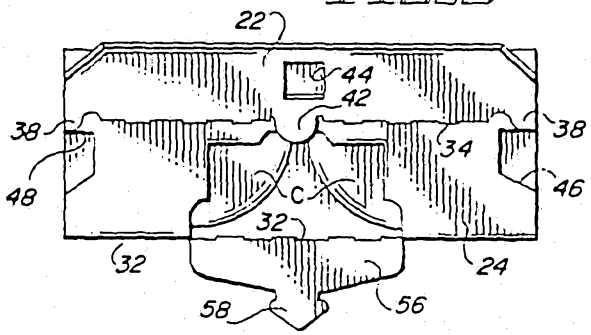


FIG-5A

FIG-5



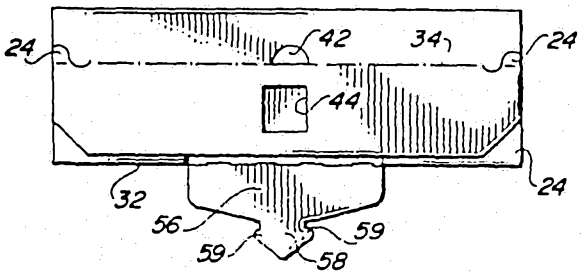


FIG-6

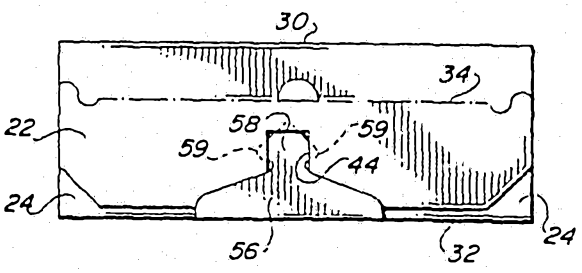


FIG-7

INTERNATIONAL SEARCH REPORT

International Application No. PCT/US89/01396

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [6]

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC(4): B65D 5/04
U.S. Cl: 229/40; 206/434

II. FIELDS SEARCHED

Minimum Documentation Searched [7]

Classification System	Classification Symbols
U.S.	229/40; 206/140, 427, 434

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched [8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT [9]

Category *	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No. [13]
X Y	US,A, 4,597,523 SCHUSTER 01 July 1986 Note col. 4, lines 11-33 and Fig. 6.	1-6, 11, 16 9, 10, 12, 13 15
Y	US,A, 3,398,856 GRASER 27 August 1968 Note Figure 6.	10
Y	US,A, 2,827,165 GENTRY 18 March 1958 Note col. 2, lines 55-71.	1-16
Y	US,A, 4,611,754 SUTHERLAND 16 September 1986 Note Figs. 3 and 4.	8, 14
A	US,A, 2,798,603 GRINSPOON 09 July 1957	
A	US,A, 4,437,606 GRASER 20 March 1984	

* Special categories of cited documents: [10]

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document 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

"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

IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
05 June 1989	17 JUL 1989
International Searching Authority	**Signature of Authorized Officer**
ISA/US	Stephen Garbe

Form PCT/ISA/210 (second sheet) (Rev.11-87)