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- (54) Title
IMPROVEMENTS TO COIN CONTROL SYSTEMS FOR AUTOMATIC MACHINES
- International Patent Classification(s)
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- (43) Publication Date : **04.02.92**
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- (56) Prior Art Documents
US 4883158
US 4763769
US 4347924

(57) Claim

1. A coin control system for an automatic dispensing machine, the system comprising a vertically elongated generally rectangular frame box, a coin selector located and mounted at an upper section of the frame box, the frame box having an upper surface provided with a slot for the introduction of coins which pass to the coin selector, the upper surface of the frame box also having a selectively operable button for return of rejected coins, the frame box having a middle section located directly below the coin selector and in which there is located a classifier for classifying and deviating coins passing through the coin selector, said classifier opening into a lower duct which is operative to channel coins selectively into a collecting container or into any one of a series of upright tubes located in a lower section of the frame box, the upright tubes having associated therewith respective coin return

(11) AU-B-80504/91

-2-

(10) 653162

mechanisms for returning coins from the tubes, a module for temporary storage of coins which is located and mounted in the lower section of the frame box and operative to temporarily store coins introduced by the user when the associated automatic machine is unable to dispense the desired product or service prior to subsequent return of such coins, the frame box having a side wall provided with coupling means for enabling mounting of an external return mechanism, an aperture provided in the side wall of said frame box and located so that an external return mechanism mounted by the coupling means to the side wall of the frame box can discharge coins through the aperture into said frame box, said frame box providing a guiding ramp along which coins passing through the aperture travel towards a coin return duct for returning coins to the user, the system further including a cover for said frame box, the cover providing openings for visual observation of an alphanumeric display mounted by the frame box and operable to show messages to the user, the cover further providing openings for enabling user access to operating buttons for operating the system, the cover further providing vertical slots for visual observation of the contents of the upright tubes.



(51) Clasificación Internacional de Patentes⁵ : G07F 5/24	A1	(11) Número de publicación internacional: WO 92/01271 (43) Fecha de publicación internacional: 23 de enero de 1992 (23.01.92)
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<p>(21) Solicitud internacional: PCT/ES91/00042</p> <p>(22) Fecha de presentación internacional: 10 de julio de 1991 (10.07.91)</p> <p>(30) Datos relativos a la prioridad: P 9001908 12 de julio de 1990 ES (12.07.90)</p> <p>(71) Solicitante (para todos los Estados designados salvo US): AZKOYEN INDUSTRIAL, S.A. [ES/ES]; Avenida San Silvestre, E-31350 Peralta (ES).</p> <p>(72) Inventor; e</p> <p>(75) Inventor/solicitante (sólo US) : ECHAPARE IBARROLA, Jesus [ES/ES]; Pedro I, 23 - 6, E-Pamplona (ES).</p> <p>(74) Mandatario: HERRENO ANTOLIN, Julio; Herrero & Asociados, S.L., Alcalá, 21, E-28014 Madrid (ES).</p>	<p>(81) Estados designados: AT (Patente europea), AU, BE (Patente europea), CH (Patente europea), DE, DE (Patente europea), DK (Patente europea), ES (Patente europea), FR (Patente europea), GB, GB (Patente europea), GR (Patente europea), IT (Patente europea), LU (Patente europea), NL (Patente europea), SE (Patente europea), US.</p> <p>Publicada <i>Con informe de búsqueda internacional. Antes de la expiración del plazo previsto para la modificación de las reivindicaciones, será publicada nuevamente si se reciben tales modificaciones.</i></p> <p style="font-size: 2em; text-align: center;">653162</p>
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(54) Title: IMPROVEMENTS TO COIN CONTROL SYSTEMS FOR AUTOMATIC MACHINES

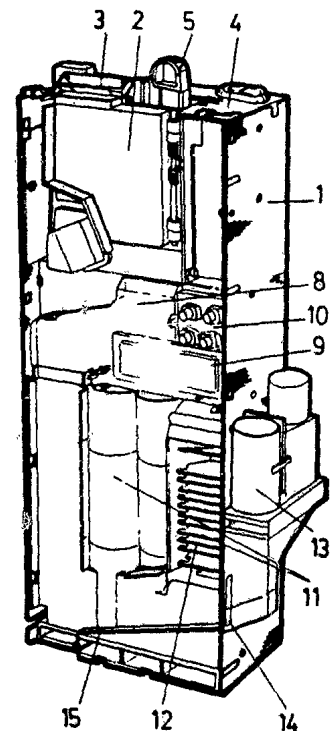
(54) Título: MEJORAS INTRODUCIDAS EN SISTEMAS DE CONTROL DE MONEDAS PARA MAQUINAS AUTOMATICAS

(57) Abstract

The improvements comprise the integration of the whole control system within a prismatic-rectangular vertically elongate casing (1), wherein the electronic coin selector (2) is provided in the top part, and immediately under said selector a sorter (8) whose channels are controlled by electromagnets, said sorting device being assisted by a display (9) and a group of push-buttons (10) and in the bottom part of the casing, under the sorting device (8), there is provided a series of storage tubes (11) corresponding to respective return mechanisms, a unit (12) for the temporary storage of coins, as well as at least one groove (14) in one of the side walls of the case (1), which groove allows to provide for the optional coupling of an external return device (13) and which, through a guide (15), supplies the coins to the return passage.

(57) Resumen

Consiste en establecer todo el sistema de control en el seno de una carcasa (1), prismático-rectangular, alargada verticalmente, de manera que en la misma se establece superiormente el selector electrónico de monedas (2), inmediatamente por debajo de él un clasificador (8) cuyas canalizaciones están controladas por electroimanes, clasificador asistido por un display (9) y un grupo de pulsadores (10), mientras que en la zona inferior de la carcasa, por debajo del clasificador (8), se establecen una serie de tubos de almacenaje (11) correspondientes a respectivos mecanismos devolvedores, un módulo (12) de almacenaje temporal de monedas, así como al menos una ranura (14) en una de las paredes laterales de la carcasa, que permite el acoplamiento opcional de un devolvedor exterior (13) y que, a través de una guía (15) suministra las monedas al conducto de devolución.



IMPROVEMENTS TO COIN CONTROL SYSTEMS
FOR AUTOMATIC MACHINES

FIELD OF THE INVENTION

The present invention relates to coin control systems for
5 automatic machines, that is, machines capable of supplying a
product or service after the introduction therein of a coin or
collection of coins, and particularly relates to improvements
affecting both the coin validation systems and the systems for
storing the coins and paying out prizes or returns.

10 BACKGROUND OF THE INVENTION

In automatic machines of the type mentioned hereinbefore,
such as for example games machines, tobacco or drinks dispensing
machines, etc., a series of mechanisms are desirable such as a
selector for detecting the passage of each coin, verifying the
15 validity or invalidity thereof, and, as the case may be,
valuating same, a classifier to separate coins of different
values, channelling same towards different receptacles, several
storage boxes for coins of different values, designed to supply
the said coins again towards the outside, generally for returns
20 or "change", and means for returning to the user the coins
introduced when the machine is unable to supply the desired
product, etc.

At present, all of such elements constitute a separate
arrangement wherein the said elements, though functionally
25 interrelated, are totally independent from a physical point of
view, each being located in the most appropriate area of the
machine and being suitably mounted therein, this implying an
extremely complex assembly, which furthermore varies from one



type of machine to another, thereby complicating matters even further.

DESCRIPTION OF THE INVENTION

The object of the invention is to alleviate these
5 problems, in such a way that the coin control system constitutes a compact device wherein the different elements comprising same can be assembled separately before final assembly of the whole system in any machine, the said elements adopting a rational distribution in order to achieve a compact volume, easy to
10 install within any machine, and with optimum characteristics from a functional point of view.

According to the invention, there is provided a coin control system for an automatic dispensing machine, the system comprising a vertically elongated generally rectangular frame
15 box, a coin selector located and mounted at an upper section of the frame box, the frame box having an upper surface provided with a slot for the introduction of coins which pass to the coin selector, the upper surface of the frame box also having a selectively operable button for return of rejected coins, the
20 frame box having a middle section located directly below the coin selector and in which there is located a classifier for classifying and deviating coins passing through the coin selector, said classifier opening into a lower duct which is operative to channel coins selectively into a collecting
25 container or into any one of a series of upright tubes located in a lower section of the frame box, the upright tubes having associated therewith respective coin return mechanisms for returning coins from the tubes, a module for temporary storage

of coins which is located and mounted in the lower section of the frame box and operative to temporarily store coins introduced by the user when the associated automatic machine is unable to dispense the desired product or service prior to
5 subsequent return of such coins, the frame box having a side wall provided with coupling means for enabling mounting of an external return mechanism, an aperture provided in the side wall of said frame box and located so that an external return mechanism mounted by the coupling means to the side wall of the
10 frame box can discharge coins through the aperture into said frame box, said frame box providing a guiding ramp along which coins passing through the aperture travel towards a coin return duct for returning coins to the user, the system further including a cover for said frame box, the cover providing
15 openings for visual observation of an alphanumeric display mounted by the frame box and operable to show messages to the user, the cover further providing openings for enabling user access to operating buttons for operating the system, the cover further providing vertical slots for visual observation of the
20 contents of the upright tubes.

The system in use may have an external return mechanism mounted by the coupling means to the side wall of the frame box, the external return mechanism having coin storage means for storing coins of a denomination not expected to be inserted by
25 the user into the system but which are to be dispensed in change to the user.

The module for temporary storage of coins is preferably also arranged to receive and temporarily store coins introduced

by the user which are not recognised or accepted by the coin selector.

DESCRIPTION OF THE DRAWINGS

In order to complete the description being made, and to
5 assist better understanding of the characteristics of the invention, a set of drawings has been added to the present specification, as an integral part thereof, where the following has been shown in an illustrative and non-limiting manner:

Figure 1 shows a perspective view of a coin control system
10 for automatic machines made in accordance with the present invention, and

Figure 2 shows another perspective view of the preceding figure, from a different angle.

PREFERRED EMBODIMENT OF THE INVENTION

15 In the figures, it can be observed how the coin control system in accordance with the said improvements is assembled within a frame box (1), which has a vertically elongated rectangular shape, which in the example of the preferred embodiment shown in the figures is represented without the cover
20 which accesses the mechanisms thereof. In the upper surface of the frame (1) there is



provided an electronic coin selector (2) of any conventional type, but being preferably an electronic selector, the mouth (3) whereof for access of the coins projects through a window operatively made on the upper surface (4) of the frame box, as does the button (5) for returning reject coins, there being further provided on such surface a guide (6) for cable (7) for electrical connection of the system.

The selector (2), designed to receive, select and validate the coins, identifying each of them, discharges onto a classifier (8) provided within the frame (1) immediately below same, the purpose of the classifier being obviously to deviate the coins through different channels depending on the value of same, and preferably by means of the activation of electromagnets, an alphanumeric LCD display (9) being related to this classifier, which display is capable of showing messages and allows the performance of certain functions, the said display (9) being visible through a window operatively made in the cover of the frame box, not shown in the figures, at the same time as the buttons (10) for performing the said functions likewise emerge through respective openings in the cover.

The classifier (8) unloads onto a series of tubes (11) for storing the coins, corresponding to respective returns, each of which, and as is conventional, is provided with an engine, a gear box, an eccentric, an axle, and a gate, with respective supports for the coin storage tube, which tube is divided into various sections, such that whilst the lower section contains a card of emptying photodiodes, the upper section contains a card of filling photodiodes, though such elements have not been shown in the figures given that, as has been said, they are conventional and can be substituted by return mechanisms of any other type.





The repeatedly mentioned cover is provided, in correspondence with tubes (11) of the return mechanisms, with vertical slots which allow visual and direct ^{observation} ~~control~~ of the number of coins present therein.

In this lower area of the frame box (1) there is established a module (12) for temporary storage of coins which, as has already been said, allows the return of the coins introduced by the user in the event that the machine should be unable to supply the desired product or service.

The said module (12) provides the advantage that it renders greater autonomy for change in the system, given that if any person introduces a coin which does not usually enter the return tubes and the machine is lacking the desired product, or, in other words, purchase of such product cannot take place, in a machine lacking this module the coins would pass into the collecting tin or box, and the user would thus be unable to recover the coins, and this does not occur with module (12), since same stores temporarily and specifically the coins which have just been introduced by the user.

In accordance with the improvements being described, it is likewise possible to provide external auxiliary return mechanisms (13), fitted externally to the side walls of the frame box (1) and being coupled to slots (14) in the said walls through which the coins are channelled towards a coin duct (15) which guides same to the return channel. Obviously, such external return mechanisms (13), given their location, cannot receive coins from selector (2) of the system, and are provided for cases in which the need to return a certain coin is foreseen to be much more frequent than the introduction of such coin into the machine by the user.





Obviously, the system likewise includes the necessary ^{circuit board} ~~plate~~ which controls all the elements and accounts of sales and coins collected, to subsequently download such information onto a printer or computer.

It is not considered necessary to extend the present description any further for an expert in the art to understand the scope of the invention and the advantages derived therefrom.

The materials, shape, size and arrangement of the elements may vary, provided such variation does not imply a modification in the essentiality of the invention.

The terms used to described the present specification should be taken to have a wide and non limiting meaning.



The claims defining the invention are as follows:

1. A coin control system for an automatic dispensing machine, the system comprising a vertically elongated generally rectangular frame box, a coin selector located and mounted at an upper section of the frame box, the frame box having an upper surface provided with a slot for the introduction of coins which pass to the coin selector, the upper surface of the frame box also having a selectively operable button for return of rejected coins, the frame box having a middle section located directly below the coin selector and in which there is located a classifier for classifying and deviating coins passing through the coin selector, said classifier opening into a lower duct which is operative to channel coins selectively into a collecting container or into any one of a series of upright tubes located in a lower section of the frame box, the upright tubes having associated therewith respective coin return mechanisms for returning coins from the tubes, a module for temporary storage of coins which is located and mounted in the lower section of the frame box and operative to temporarily store coins introduced by the user when the associated automatic machine is unable to dispense the desired product or service prior to subsequent return of such coins, the frame box having a side wall provided with coupling means for enabling mounting of an external return mechanism, an aperture provided in the side wall of said frame box and located so that an external return mechanism mounted by the coupling means to the side wall of the frame box can discharge coins through the aperture into said frame box, said frame box providing a guiding ramp along which



coins passing through the aperture travel towards a coin return duct for returning coins to the user, the system further including a cover for said frame box, the cover providing openings for visual observation of an alphanumeric display 5 mounted by the frame box and operable to show messages to the user, the cover further providing openings for enabling user access to operating buttons for operating the system, the cover further providing vertical slots for visual observation of the contents of the upright tubes.

10 2. A system as claimed in claim 1 having an external return mechanism mounted by said coupling means to said side wall of the frame box, the external return mechanism having coin storage means for storing coins of a denomination not expected to be inserted by the user into the system but which are to be 15 dispensed in change to the user.

3. A system as claimed in claim 1 or 2 wherein the module for temporary storage of coins is also arranged to receive and temporarily store coins introduced by the user which are not recognised or accepted by the coin selector.

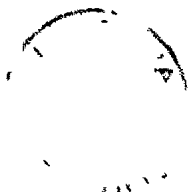
20 4. A coin control system for automatic machines substantially as hereinbefore described with particular reference to the accompanying drawings.

Dated this 26th day of July 1994

PATENT ATTORNEY SERVICES

25 Attorneys for

AZKOYEN INDUSTRIAL, S.A.



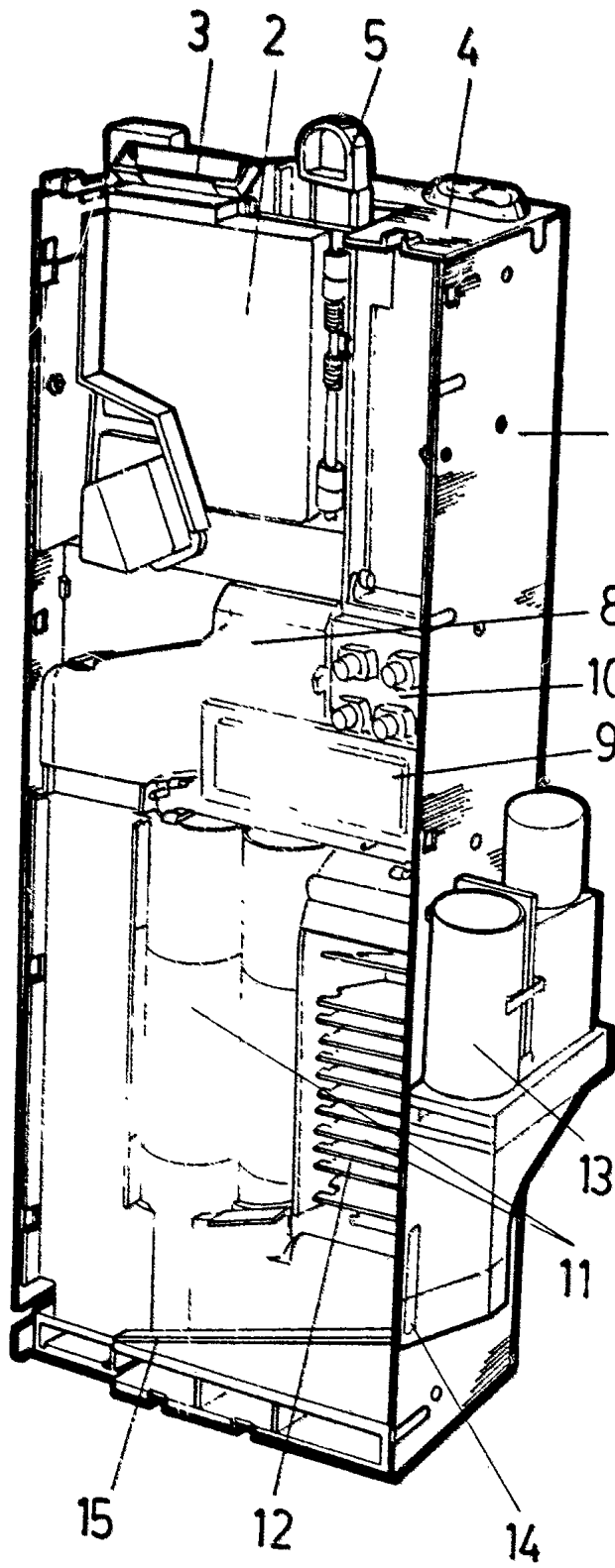


FIG-1

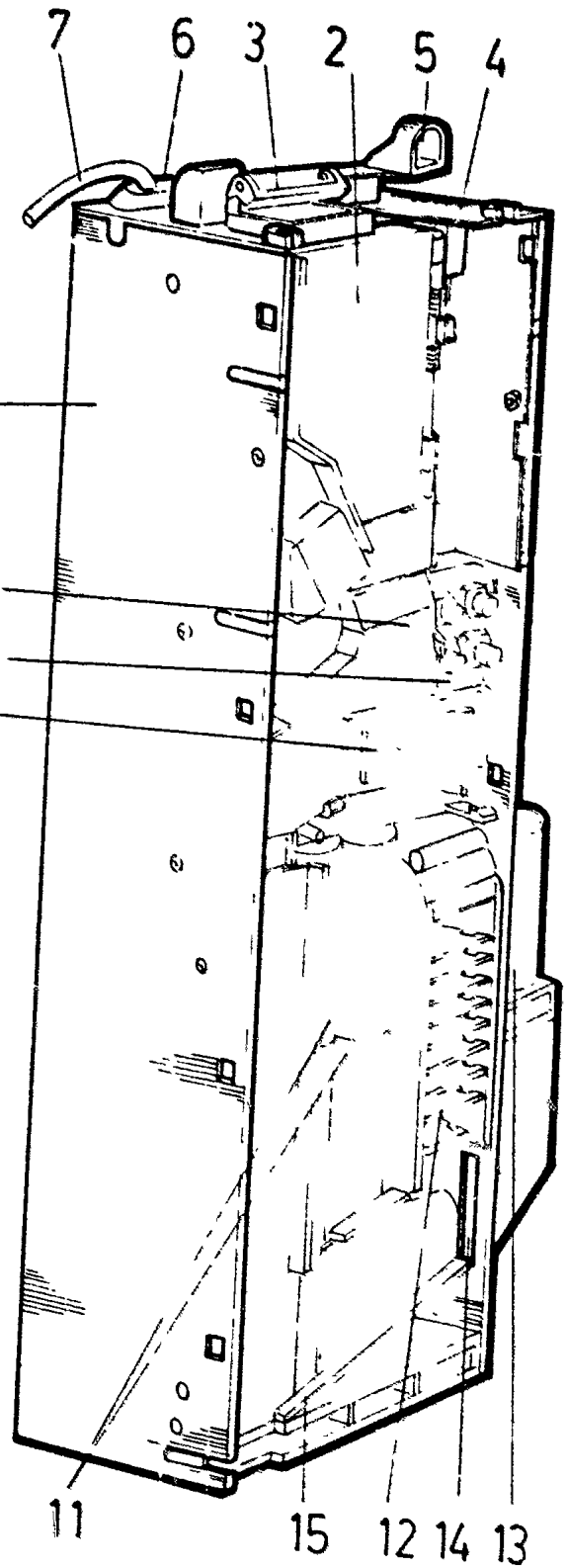


FIG-2

INTERNATIONAL SEARCH REPORT

International Application No PCT/ES 91/00042

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				
Int.Cl. ⁵ : G 07 F 5/24				
II. FIELDS SEARCHED				
Minimum Documentation Searched ⁷				
Classification System	Classification Symbols			
Int.Cl. ⁵ : G 07 F				
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 ⁴	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³		
X	US, A, 4883158 (KOBAYASHI) 28 November 1989 see column 4, line 35 - column 6, line 21	1		
X	US, A, 4763769 (LEVASSEUR) 16 August 1988, see abstract; column 7, line 53 - column 8, line 65	1		
A	US, A, 4347924 (HAYASHI) 7 September 1982, see abstract	1		
A	DE, A, 3924247 (LAUREL BANK) 25 January 1990 see abstract; column 14, lines 8-27	1		
A	DE, A, 3247019 (GAUSELMANN) 20 June 1984, see abstract; claims 1,2,6	1		
A	DE, A, 2651105 (BÖSINGER) 18 May 1978 see the whole document	1		
A	EP, A, 0076640 (MARS) 13 April 1983 see abstract; pages 16-18, 20	1		
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> ⁴ 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 </td> <td style="width: 50%; border: none;"> "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 </td> </tr> </table>			⁴ 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
⁴ 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		
23 October 1991 (23.10.91)		19 November 1991 (19.11.91)		
International Searching Authority		Signature of Authorized Officer		
European Patent Office				

ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO.

ES 9100042
SA 49010

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 11/11/91. The European 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	Publication date	Patent family member(s)	Publication date
US-A- 4883158	28-11-89	JP-A- 63236190	03-10-88
US-A- 4763769	16-08-88	JP-A- 63147291	20-06-88
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		JP-A- 52132895	07-11-77
		JP-B- 60057626	16-12-85
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		GB-A- 1566201	30-04-80
		GB-A- 1566202	30-04-80
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		JP-A- 2270094	05-11-90
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DE-A- 2651105	18-05-78	None	
EP-A- 0076640	13-04-83	EP-A, B 0167181	08-01-86
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		JP-A- 58078283	11-05-83
		US-A- 4491140	01-01-85

EP/A 11/11/91

INFORME DE BUSQUEDA INTERNACIONAL

Solicitud Internacional N° PCT/ES 91/00042

I. CLASIFICACION DE LA INVENCION (caso de ser aplicables varios simbolos de clasificacion indicarielos todos) ⁶		
Segun la clasificacion internacional de patentes (CIP) o segun la clasificacion nacional y la CIP		
Int.Cl. ⁵ : G 7 F 5/24		
II. SECTORES COMPRENDIDOS POR LA BUSQUEDA		
Documentacion minima consultada ⁷		
Sistema de clasificacion	Simbolos de clasificacion	
Int.Cl. ⁵ :	G 07 F	
Otra documentacion consultada ademas de la documentacion minima en la medida en que tales documentos forman parte de los sectores comprendidos por la busqueda ⁸		
III. DOCUMENTOS CONSIDERADOS PERTINENTES ⁹		
Categoría *	Identificacion de los documentos citados, ¹¹ con indicacion, en caso necesario, de los pasajes pertinentes ¹²	N° de las reivindicaciones a las que se refieran ¹³
X	US, A, 4883158 (KOBAYASHI) 28 Noviembre 1989 ver columna 4, línea 35 - columna 6, línea 21 --	1
X	US, A, 4763769 (LEVASSEUR) 16 Agosto 1988 ver resumen; columna 7, línea 53 - columna 8, línea 65 --	1
A	US, A, 4347924 (HAYASHI) 7 Septiembre 1982 ver resumen --	1
A	DE, A, 3924247 (LAUREL BANK) 25 Enero 1990 ver resumen; columna 14, líneas 8-27 --	1
A	DE, A, 3247019 (GAUSELMANN) 20 Junio 1984 ver resumen; reivindicaciones 1,2,6 --	1
A	DE, A, 2651105 (BOSINGER) 18 Mayo 1978 ver todo el documento --	1
<p>* Categorías especiales de documentos citados: ¹⁰</p> <p>"A" documento que define el estado general de la técnica, no considerado como particularmente pertinente</p> <p>"E" documento anterior, publicado ya sea en la fecha de presentación internacional o con posterioridad a la misma</p> <p>"L" documento que pueda plantear dudas sobre una reivindicación de prioridad o que se cita para determinar la fecha de publicación de otra cita o por una razón especial (como la indicada)</p> <p>"O" documento que se refiere a una divulgación oral, a un empleo, a una exposición o a cualquier otro tipo de medio</p> <p>"P" documento publicado antes de la fecha de presentación internacional, pero con posterioridad a la fecha de prioridad reivindicada</p> <p>"T" documento ulterior publicado con posterioridad a la fecha de prioridad y que no pertenece al estado de la técnica pertinente pero que se cita para comprender el principio o la técnica que constituye la base de la invención</p> <p>"X" documento particularmente pertinente: la invención reivindicada no puede considerarse como nueva ni que implique una actividad inventiva</p> <p>"Y" documento particularmente pertinente: la invención reivindicada no puede considerarse que implique una actividad inventiva cuando el documento se asocia a otro u otros documentos de la misma naturaleza, cuya combinación resulta evidente para un experto en la materia</p> <p>"&" documento que forma parte de la misma familia de patentes</p>		
IV. CERTIFICACION		
Fecha en la que se ha concluido efectivamente la búsqueda internacional	Fecha de expedición del presente informe de búsqueda internacional	
23 Octubre 1991	19 NOV 1991	
Administración encargada de la búsqueda internacional	Firma del funcionario autorizado	
OFICINA EUROPEA DE PATENTES	Mme N. KUIPER	

III DOCUMENTOS CONSIDERADOS PERTINENTES (CONTINUACION DE LOS DATOS INDICADOS EN LA SEGUNDA HOJA)		
Categoría	Identificación de los documentos citados, con indicación, en caso necesario, de los pasajes pertinentes	Nº de las reivindicaciones a las que se refieran
A	EP, A, 0076640 (MARS) 13 Abril 1983 ver resumen; páginas 16-18,20 -----	1

**ANEXO AL INFORME DE BUSQUEDA INTERNACIONAL RELATIVO A
LA SOLICITUD INTERNACIONAL DE PATENTE Nº ES 9100042**

SA 49010

Este anexo enumera los miembros de familias de patentes relativos a los documentos de patentes citados en el informe de búsqueda internacional mencionado.

Los miembros aparecen tal como están contenidos en el archivo EDP de la Oficina Europea de Patentes al 11/11/91

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Documento de patente citado en el informe de búsqueda	Fecha de publicación	Miembro(s) de familia de patentes	Fecha de publicación
US-A- 4883158	28-11-89	JP-A- 63236190	03-10-88
US-A- 4763769	16-08-88	JP-A- 63147291	20-06-88
US-A- 4347924	07-09-82	JP-C- 1330882	14-08-86
		JP-A- 52132895	07-11-77
		JP-B- 60057626	16-12-85
		DE-A, C 2718876	10-11-77
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