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(54) **MOULDED COVER FOR ELECTRICAL HOUSEHOLD APPLIANCES COMPRISING A BUILT-IN ELECTRONIC CONTROL SYSTEM**

GEFORMTE DECKPLATTE FÜR ELEKTRISCHE HAUSHALTSGERÄTE MIT EINGEBAUTER ELEKTRONISCHER STEUERUNG

COUVERCLE MOULE POUR APPAREILS MENAGERS, EQUIPE D'UN SYSTEME DE COMMANDE ELECTRONIQUE INTEGRE

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(56) References cited:
ES-T3- 2 041 262 ES-T3- 2 129 160
ES-U- 1 021 639 US-A- 3 034 226

• **PATENT ABSTRACTS OF JAPAN & JP 05 123 492**
A (MATSUSHITA ELECTRIC) 21 May 1993

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Description

OBJECT OF THE INVENTION

[0001] The object of this invention is related to a "Moulded cover for electrical appliances, with electronic control incorporated".

[0002] Even though the object described can be of application in a wide range of appliances such as washing machines, dryers or dish washers, the present description is centred, as a possibility and not exclusively, on washing machines and among these, preferably, those which are front-loading.

BACKGROUND OF THE INVENTION

[0003] The known front-loading washing machines have controls for manual regulation of their operation (selection of washing programs, regulation of temperature, door opening) located on the front part of the body, above the loading door. This arrangement limits the possibility of raising said door in position and, as a consequence, compels the user to bend more to carry out the operations of filling and emptying the revolving drum of the machine.

[0004] Moreover, the position of the controls described above, signifies that the electric power distribution for feeding the different receiving elements, has to be carried out on the interior of the general frame of the machine, with the ensuing difficulty for running and connecting the wiring.

[0005] In turn, the electric power distribution on the interior of the washing machine involves the dispersion of the points for testing the operation of its mechanisms, which supposes an added difficulty for locating possible faults.

[0006] Patent ES 2 129 160 refers to a top cover panel for appliances with fastening means. It incorporates an agglomerate flat board, a second frame for gripping the board against a peripheral frame, said second frame supporting electromechanical components of the appliance.

[0007] The origin of the invention can be established in the fact that the firm applying for this Patent is holder of patent of invention number ES 2167249 for a "Reinforced cover for electrical appliances and procedure for fabrication thereof", the essential characteristic of which consists in suppressing the wood conglomerate board which is an habitual component in the structure of electrical appliance covers and which disintegrates easily due to the humid medium in which it is usually located, replacing it with metallic reinforcements for its stiffening.

[0008] Later investigations into materials and thickness of moulded covers, have allowed the aforementioned metallic reinforcements to be suppressed without reducing the mechanical characteristics of the cover so that, even without them, it fulfils the requirements set out by the makers of electrical appliances concerning the magnitude and distribution of vertical loads which the cover has to support without impairment.

[0009] All this has allowed a large space to be freed inside the cover, delimited by the moulded plate and by the frame thereof, with a depth equal to that of the conventional covers with chipboard.

[0010] The idea of taking advantage of this space gave rise to the application for patent of invention number ES 2195754, the holder of which is also the firm applying for this one, and the essential feature of which consists in the use of this space to house a dispenser chamber for fabric conditioner.

DESCRIPTION OF THE INVENTION

[0011] The purpose of the invention consists in overcoming the drawbacks described above, inherent in the covers for known appliances, having been conceived, studied, designed and executed in pursuit of this priority objective.

[0012] The essential feature of this invention consists in the use of the configuration of the cover as an inverted rectangular basin, to house therein the electronic components of the control system for operation of the electrical appliance, such as a washing machine.

[0013] This basic idea is materialised by moulding the cover with housings in its interior, of shape, dimensions and relative position adequate to hold the electronic components or cards which will change from being located inside the chassis of the washing machine, to being inside the cover.

[0014] As a consequence thereof, the control panel will move from the front surface of the washing machine to the front segment of the frame of the cover; and its positional ascent will allow a certain height to be gained for the revolving recipient of the washing machine and to reduce the degree to which the user must bend in the filling and emptying operations thereof.

[0015] Another particularly important consequence of the movement of the electronic components to the interior of the cover, consists in the possibility of lifting it and removing it with all it holds, disconnecting at the same time all the internal circuits of the machine. Indeed, the presence is foreseen of a general connector from which all the aforementioned circuits run, the plug of which is situated in the frame of the washing machine and its socket in the cover (or vice versa), in positions coincident by superposition, for their coupling in the event of usage.

[0016] The general disconnection through withdrawal of the cover, offers the following advantages:

- Facility for checking at a single point the state of all the functional characteristics of the machine; through its respective circuits, since all of them pass through the connector.
- Detection by independent testing, of possible deviations in the standard values of the parameters for best operation under different working regimes and with different loads.

- Complete and safe isolation of the internal wiring, for working with it.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] To complete the description of the invention and to facilitate the interpretation of the formal, structural and functional characteristics of its object, the same is accompanied with drawings wherein different aspects of a preferred embodiment are shown schematically of the "Moulded cover for electrical appliances with electronic control incorporated" which constitutes the object of this Patent.

[0018] In said drawings:

Figure 1 shows in perspective the cover in the inverted position, to show its interior and therein, the housings of the electronic components of the means of regulation and control of the operation of the washing machine.

Figure 2 is an assembly, in exploded form, of the structural components of the cover.

Figure 3 shows in perspective the relative arrangement of the general connector and the conductors of the internal wiring of the washing machine.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0019] To show with clarity the nature and the scope of the "Moulded cover for electrical appliances, with electronic control incorporated" which constitutes the object of the invention claimed, its structure and operation are described hereunder, making reference to the drawings which, through representing a preferred embodiment of said object, informative in nature, are to be considered in their broadest sense and not as restrictions in the application and the content of the invention claimed.

[0020] The cover (5) has in its internal structure, housings (1) of shape, dimensions and relative position adequate for holding the electronic components or cards (2) which govern and control the operation of the washing machine whose control panel (3) is presented on the front segment of the frame (4) of the cover (5).

[0021] This is capable of being lifted and removed with all its content, disconnecting all the internal circuits (6) of the machine at the same time, since they all run from a general connector whose plug (7') is in the frame of the washing machine and whose socket (7'') is in the cover, or vice versa, in positions coincident by superposition, for their coupling in the event of usage.

Claims

1. - Moulded cover for electrical appliances, with electronic control incorporated, comprising a frame (4)

and a control panel (3) presented on the front segment of the frame (4), **characterised in that** it further comprises a cover plate (5) whose internal structure is fitted with housings (1) of shape, dimensions and relative position adequate for holding the electronic components or cards (2) which govern and control the operation of the electrical appliance.

2. - Moulded cover for electrical appliances, with electronic control incorporated, according to claim 1, **characterised in that** it comprises a connector socket (7'') or a plug (7') for their respective coupling to a plug (7') or a socket (7'') which is jointed to a general connector from which the internal circuits (6) of the electrical appliance run, allowing all the internal circuits being disconnected at the same time and the cover lifted and withdrawn with its content.

20 Patentansprüche

1. Geformte Deckplatte für elektrische Haushaltsgeräte mit eingebauter elektronischer Steuerung, enthaltend einen Rahmen (4) und ein Steuerpaneel (3), das auf dem vorderen Segment des Rahmens (4) angebracht ist, **dadurch gekennzeichnet, dass** sie weiterhin eine Abdeckplatte (5) enthält, deren innerer Aufbau mit Gehäusen (1) versehen ist, deren Form, Abmessungen und Relativpositionen dazu geeignet sind, die elektronischen Bauteile oder Leiterplatten zu halten, die den Betrieb des elektrischen Haushaltsgerätes regeln und steuern.
2. Geformte Deckplatte für elektrische Haushaltsgeräte mit eingebauter elektronischer Steuerung nach Anspruch 1, **dadurch gekennzeichnet, dass** sie eine Verbinderbuchse (7'') oder einen Stecker (7') für die jeweilige Verbindung mit einem Stecker (7') oder einer Buchse (7'') enthält, die/der mit einem Hauptverbinder verbunden ist, der die internen Schaltungen (6) des elektrischen Haushaltsgerätes versorgt, wodurch es möglich ist, sämtliche internen Schaltungen gleichzeitig zu trennen und die Abdeckung mit ihrem Inhalt anzuheben und wegzuziehen.

Revendications

1. Couvercle moulé pour appareils électriques, avec contrôle électronique incorporé, comprenant un cadre (4) et un panneau de contrôle (3) présenté sur le segment de face du cadre (4), **caractérisé en ce qu'il** comprend en outre une plaque de couvercle (5) dont la structure interne est munie de logements (1) de forme, dimensions et position relative adéquates pour maintenir les composants électroniques ou cartes (2) qui gouvernent et contrôlent le fonctionnement de l'appareil électrique.

2. Couvercle moulé pour appareils électriques, avec contrôle électronique incorporé, selon la revendication 1, **caractérisé en ce qu'il** comprend un socle de raccord (7") ou une prise (7') pour couplage respectif à une prise (7') ou un socle (7") qui est assemblé à un connecteur général à partir duquel les circuits internes (6) de l'appareil électrique partent, autorisant tous les circuits internes à être déconnectés en même temps et le couvercle soulevé et retiré avec son contenu.

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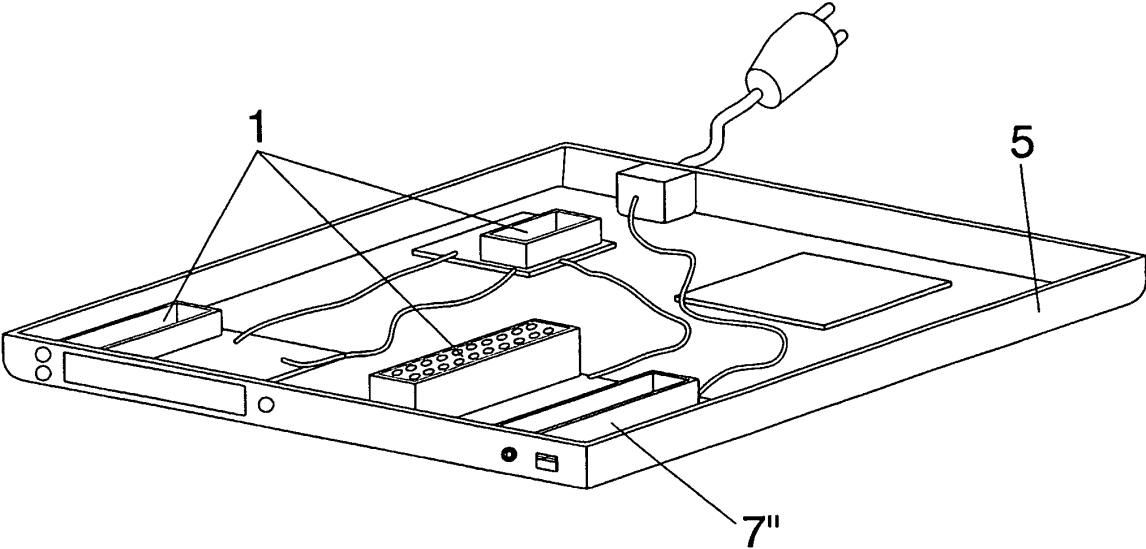


FIG.1

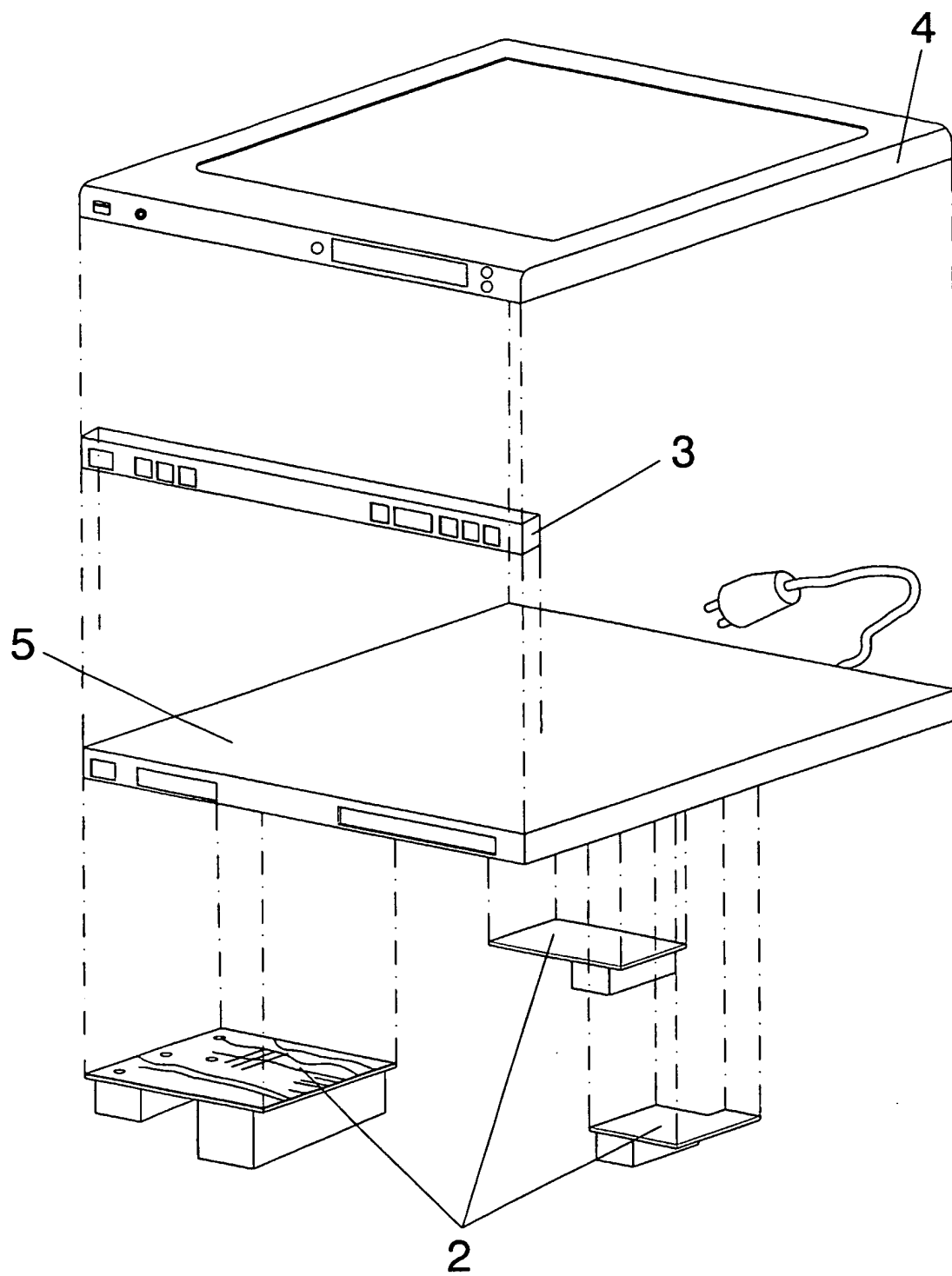


FIG.2

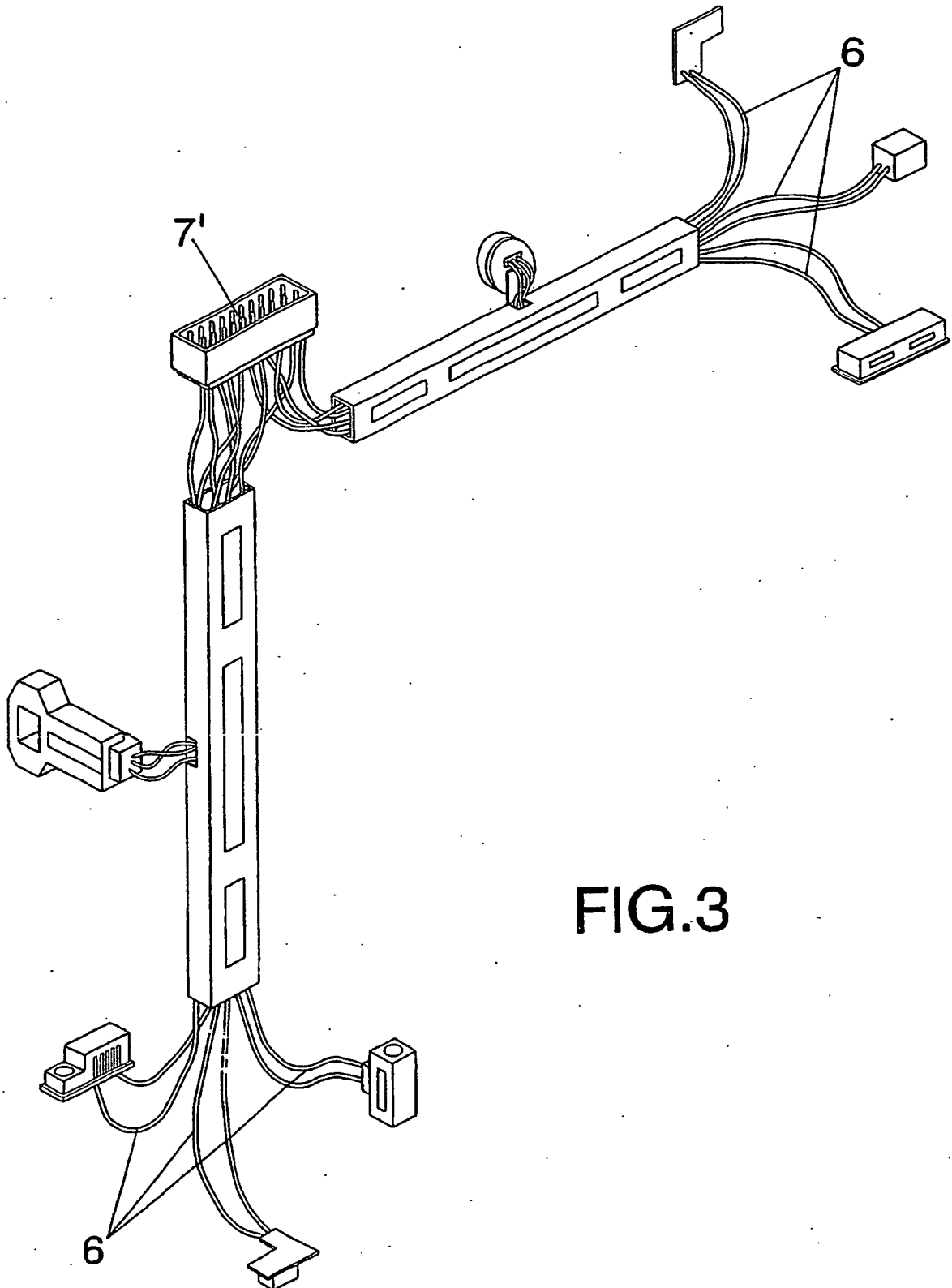


FIG.3

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- ES 2129160 [0006]
- ES 2167249 [0007]
- ES 2195754 [0010]