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(54) BATTERY MOUNTING FOR, E.G., A MAGNETIC-TAPE RECORDER, RADIO RECEIVER OR THE LIKE

(71) We, N.V. PHILIPS' GLOEILAMPEN-FABRIEKEN, a limited liability Company, organised and established under the laws of the Kingdom of the Netherlands, of Emma-singel 29, Eindhoven, the Netherlands, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to a portable battery-powered electrical apparatus comprising a battery compartment for accommodating a battery, and a contact carrier which is accommodated in the battery compartment and which has a contact for cooperation with a contact on the battery to establish electrical connection therewith and also to attach the battery to the contact carrier. Examples of such apparatus are magnetic-tape recorders, radio receivers or the like.

In a known commercially available apparatus of the above type, the contact carrier and the battery are accommodated loosely in the battery compartment with the result that in the event of the apparatus being subjected to vibration or impact the contact carrier, which is connected to the battery, can make undesired movements in the battery compartment, which can in turn give rise to annoying noises and mechanical stresses. Furthermore a loosely disposed contact carrier is mechanically connected to the apparatus only *via* the conductor wires which are connected to the complementary contacts. As a result of this it is not unlikely, in particular when a battery is replaced, that these wires are subjected to excessive mechanical stress, which may result in the wires being damaged or broken.

According to the invention there is provided a portable battery-powered electrical apparatus comprising a battery compartment for accommodating a battery, and a contact carrier which is accommodated in the battery compartment and which has a contact for cooperation with a contact on the battery to establish electrical connection

therewith and also to attach the battery to the contact carrier, wherein the contact carrier is pivotally connected to a wall of the battery compartment by means which permit a translational movement of the carrier in a direction perpendicular to a side wall of the battery compartment as well as a pivotal movement of the carrier into and out of the compartment, an elastic element being arranged in the compartment to urge the carrier in a direction away from said side wall. With this arrangement it is ensured that under the influence of the elastic element, which may be constituted by, for example, spring or a pad or block of rubber or foamed plastics, the contact carrier and the battery are always held firmly in the operating position in the battery compartment. Also, in order to permit the connection of the battery contacts to the complementary contacts on the contact carrier, the latter, with the complementary contacts mounted on it, can simply be pivoted out of the battery compartment without subjecting the conductor wires which are connected to the complementary contacts any significant mechanical load, thus preventing damage to the wires.

The means which pivotally connect the contact carrier to a wall of the battery compartment may comprise a spindle supported in two opposite side walls of the battery compartment and extending through a slotted guide on the contact carrier.

The battery compartment preferably comprises a stop on its bottom wall for limiting movement of the contact carrier under the influence of the elastic element when there is no battery attached to the contact carrier. Thus, the contact carrier also has a stable position in the battery compartment in the absence of a battery.

An embodiment of the invention is described hereinafter with reference to the accompanying drawings, in which

Fig. 1 is a plan view of a hand-held, battery-operated dictation apparatus according to an embodiment of the invention, and Fig. 2 is a cross-section of the battery

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compartment of the apparatus taken on the line II-II in Fig. 1 but drawn to a larger scale than Fig. 1.

The dictation apparatus shown in Fig. 1 comprises a rectilinear housing 1 having an opening in its upper side which can be closed by a sliding cover 3 which is guided by a groove-and-tongue joint 2. When the sliding cover 3 is open the apparatus accepts a cassette which contains a magnetic tape wound in two reels 4, 5 which can be observed through a window 6 in the sliding cover 3. For switching on the drive means for the magnetic tape the apparatus is provided with a switch (not shown) which is controlled by means of a sliding button 7 on a narrow side of the housing and by means of which the electrical devices of the apparatus such as amplifiers and the like can also be switched on. For recording or playing back the dictations which are to be or have been recorded on the magnetic tape, the apparatus comprises a built-in microphone and a built-in loudspeaker, which are disposed behind grids 8 and 9 in the upper wall of the housing.

The power supply of the apparatus is provided by an electrical battery 10, which is accommodated in a battery compartment 11 in the housing 1. The battery 10 is provided with two contacts 12 and 13 which in the usual manner take the form of a socket and a pin respectively and which can mate with complementary contacts in the form of a pin 15 and a socket 16 mounted on a plate-shaped contact carrier 14. The mating contacts not only establish electrical connections between the battery and the conductor wires (not shown) which are connected to the contacts on the carrier 14; they also attach the battery to the carrier. The contact carrier 14 is accommodated with the battery 10 in the battery compartment 11.

The contact carrier 14 is capable of a translational movement in the battery compartment 11 17 in a direction perpendicular to a side wall 18 of the battery compartment 11 and can also be pivoted into and out of the battery compartment 11 with the complementary contacts 15 and 16 mounted on it. The contact carrier is urged in a direction away from the side wall 18 by an elastic element 17 which is constituted by a pad or block of rubber or a foamed plastic and which is secured to the side wall 18. In order to render it movable both translationally and pivotally the contact carrier 14 has a slotted guide 19 through which passes a spindle 22 which extends transversely of the battery compartment 11 and is supported at its ends in side walls 20 and 21 of the compartment 11. As can be seen in Fig. 2, the guide 19 is disposed on the contact carrier 14 in such a way that, when the

contact carrier and battery together have been pivoted into the battery compartment 11, the slot of the guide, as viewed in Fig. 2, extends perpendicularly to the side wall 18 of the battery compartment 11 so that the contact carrier is movable translationally in this direction. On the bottom wall 23 of the battery compartment 11 a shoulder 24 is formed, which constitutes a stop against which the free end 25 of the plate-shaped contact carrier 14 bears under the influence of the elastic element 17 when the contact carrier 14 has been pivoted back into the battery compartment without the battery, so that the contact carrier also has a stable position in the absence of a battery.

Fig. 2 shows in dotted lines the contact carrier 14, with the complementary contacts mounted on it, pivoted out of the battery compartment 11. When a battery 10 is to be fitted its contacts 12, 13 are connected to the complementary contacts 15, 16 on the contact carrier 14, which is held by hand in the outwardly pivoted position shown in dotted lines, after which, by a pivotal movement in the direction of the arrow 26, the contact carrier 14 with the battery 10 attached to it is swung into the battery compartment 11 and positioned against the elastic element 17, the carrier compressing this element. When the battery 10 has been inserted into the battery compartment 11, the elastic element 17 presses against the contact carrier 14 so that the end 27 of the battery 10 which is remote from the contact carrier 14 bears against the side wall 28 of the battery compartment which is opposite the side wall 18 thereof with its end 27. For removal of the battery 10 from the battery compartment 11 the battery, together with the contact carrier 14, is first manually moved in the direction of the side wall 18 of the battery compartment 11 against the action of the elastic element 17 and is subsequently pivoted out of the battery compartment, after which the battery 10 can easily be separated from the contact carrier 14.

The elastic element 17 ensures that the battery 10 is always firmly retained in the battery compartment 11 and can make no undesired movements in the event of the apparatus being subjected to vibration or impact. The contact carrier 14 is mechanically connected to the apparatus *via* the spindle 22, so that when a battery is inserted or replaced the conductor wires, which are connected to the complementary contacts on the contact carrier are not subjected to any significant mechanical stress.

Modifications to the embodiment shown are possible, in particular in respect of the mounting of the contact carrier. For example, instead of a slotted guide which

extends over the full width of the contact carrier, it is possible to use two such guides of smaller width. Alternatively, mounting may be effected by coaxial pins on the
5 contact carrier engaging slidably and rotatably in guide slots in the side walls 20 and 21 of the battery compartment.

WHAT WE CLAIM IS:—

1. A portable battery-powered electrical
10 apparatus comprising a battery compartment for accommodating a battery, and a contact carrier which is accommodated in the battery compartment and which has a contact for cooperation with a contact
15 on the battery to establish electrical connection therewith and also to attach the battery to the contact carrier, wherein the contact carrier is pivotally connected to a wall of the battery compartment by means
20 which permit a translational movement of the carrier in a direction perpendicular to a side wall of the battery compartment as well as a pivotal movement of the carrier into and out of the compartment, an elastic element being arranged in the compartment to

urge the carrier in a direction away from said side wall.

2. An apparatus as claimed in Claim 1, wherein said means comprise a spindle supported in two opposite side walls of the
30 battery compartment and extending through a slotted guide on the contact carrier.

3. An apparatus as claimed in Claim 1 or 2, wherein the battery compartment comprises a stop on its bottom wall for limiting
35 movement of the contact carrier under the influence of the elastic element when there is no battery attached to the contact carrier.

4. A portable battery-powered electrical
40 apparatus substantially as herein described with reference to the accompanying drawings.

R. J. BOXALL,
Chartered Patent Agent,
Mullard House,
Torrington Place,
London WC1E 7HD.
Agent for the Applicants.

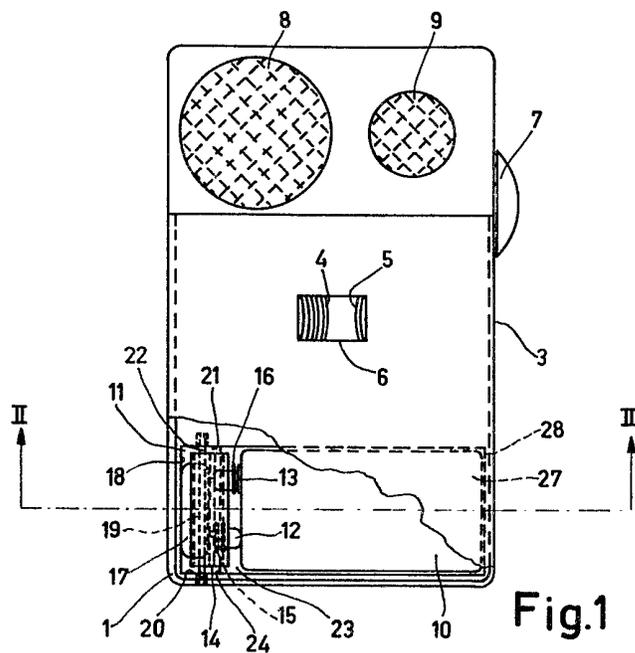


Fig.1

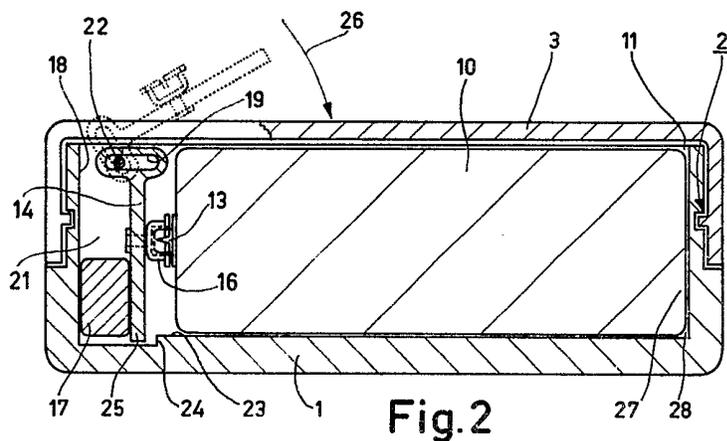


Fig.2