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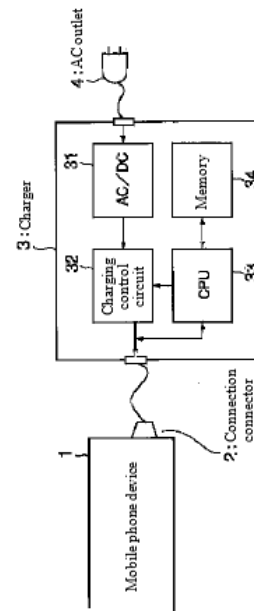
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(54) [Title of Invention] CHARGER FOR PORTABLE DEVICES

(57) [Abstract]

[Problem to be Solved] To obtain a charger for portable devices that can be used in common with different models of portable devices.

[Means to solve the Problem] The charger comprises a means for acquiring the type of portable device 1, which is connected thereto, and a charging control means 32, wherein the characteristics of the secondary battery built into the portable device 1 are recognized from the acquired type, and the charging control means 32 is operated to perform charging in accordance with the characteristics of the secondary battery.



[SCOPE OF THE PATENT CLAIMS]

[Claim 1] A charger for portable devices that charges the secondary battery built into a portable device by connecting the portable device, the charger comprising a means for acquiring the type of the portable device, which is connected thereto, and a charging control means, wherein the characteristics of the secondary battery built into the portable device are recognized from the acquired type, and the charging control means is operated to perform charging in accordance with the characteristics of the secondary battery.

[Claim 2] A charger for portable devices according to Claim 1, wherein the charger is the means for acquiring the type of the portable device, which is connected thereto, by transmitting a predetermined specific command from the charger to the portable device via the power supply connection terminal, and acquiring the type through the model number in reply from the portable device that has received this command.

[Claim 3] A charger for portable devices according to Claim 1, wherein the charger comprises a memory table storing the characteristics of a plurality of secondary batteries corresponding to the types of a plurality of portable devices, and the charging control means performs control in conformance to the model of each portable device to be connected thereto.

[Claim 4] A charger for portable devices according to Claim 1, wherein the charge control performed by the charging control means in conformance to the characteristics of the secondary battery is the control of the charging voltage value.

[Claim 5] A charger for portable devices according to Claim 1, wherein the charge control performed by the charging control means in conformance to the characteristics of the secondary battery is the control of the charging voltage value and charging current value.

[Claim 6] A charger for portable devices according to Claim 1, wherein the charge control that the charging control means performs in conformance to the characteristics of the secondary battery is the control of the charging voltage value, charging current value, and charging time.

[Claim 7] A charger for portable devices according to any of Claims 1 to 6, wherein the portable device is a mobile phone device.

[DETAILED DESCRIPTION OF THE INVENTION]

[0001]

[Technical Field of the Invention] The present invention relates to a charger for portable devices, more specifically to a charger for portable devices, such as mobile phone devices, which use built-in secondary batteries as an operating power source.

[0002]

[Prior Art] As mentioned above, this invention relates to a charger for portable devices that can be used for portable devices in general, which operate by charging the built-in secondary battery, such as mobile phone devices, however the prior art and the present invention will be explained below using mobile phone devices as an example. As is well known, mobile phone devices generally have a built-in secondary battery as a power source, and become usable when the built-in secondary battery is charged. However, there are

various types (models) of mobile phone devices, and the secondary batteries used differ depending on the model.

[0003] In other words, the secondary batteries used in mobile phone devices include lithium batteries, nickel-cadmium batteries, nickel-metal hydride batteries, etc., and the capacity thereof varies depending on each mobile phone device. Therefore, the charger for mobile phone devices differs for each model, and thus when purchasing and switching to a new mobile phone device, for example, a user must also purchase and switch to a new charger.

[0004]

[Problem to be Solved by the Invention] As described above, with conventional portable devices such as mobile phone devices, there is waste involved in having to prepare a charger that matches the model of the device.

[0005] The present invention has been made to solve such a problem, and aims to provide a charger for portable devices that can be used with different models of portable devices by equipping the charger with a means for recognizing the secondary battery being used.

[0006]

[Means to Solve the Problem] The charger for portable devices of the present invention is a charger for portable devices that charges the secondary battery built into the portable device by connecting the portable device thereto, wherein the charger comprises a means for acquiring the type of the connected portable device and a charging control means, and recognizes the characteristics of the secondary battery built into the portable device from the acquired type, and operates the charging control means to perform charging in accordance with the characteristics of the secondary battery.

[0007] In addition, the means for acquiring the type of the connected portable device is characterized in that the charger transmits a predetermined specific command to the portable device via the power supply connection terminal, and acquires the model number of the type from the portable device as a response to the command received thereby. It is also characterized in that the charger is provided with a memory table that stores the characteristics of a plurality of secondary batteries corresponding to a plurality of types of portable devices, and the charging control means performs control in accordance with the type of each connected portable device. The charging control performed by the charging control means in accordance with the characteristics of the secondary battery is further characterized by controlling the charging voltage value, charging current value, and charging time. The portable device is further characterized by being a mobile phone device.

[0008] As prior art related to the present invention, for example, includes Japanese Unexamined Patent Application Publication No. H8-167431, which provides for a ROM that stores charging parameters on the secondary battery side, Japanese Unexamined Patent Application Publication No. H8-37032, which determines the type of rechargeable secondary battery to be connected according to the shape of the battery and performs appropriate charging, and Japanese Unexamined Patent Application Publication No. H5-103429, which determines the type of battery according to a switch, however the present invention is configured to use the means already existing in most portable devices to receive the type signal of the portable device so that the invention recognizes the characteristics of the secondary battery according to this type, and charges the battery according to these characteristics, and is completely different in configuration and effect from this prior art.

[0009]

[Embodiment of the Invention] The embodiment of the present invention will be explained below, with reference to the figures. Figure 1 is a block diagram illustrating one embodiment of the present invention. In Figure 1, 1 is a mobile phone device with a built-in secondary battery (not shown), 2 is a connection connector for connecting the mobile phone device 1 to a charger, 3 is a charger, and 4 is an AC outlet for supplying commercial power to the charger 3. In the charger 3, 31 is an AC/DC converter that takes in commercial power and converts it to direct current, 32 is a charging control circuit that controls the charging current to charge the secondary battery built into the mobile phone device according to its characteristics, 33 is a CPU that controls the entire charger 3, and 34 is a memory that stores a memory table for recognizing the battery built into the mobile phone device from the model number of the mobile phone device.

[0010] The charger for portable devices of the present invention identifies the model of the portable device by the type signal output from the portable device, recognizes the built-in secondary battery from the type signal by referring to the memory table, and charges the battery at a voltage value, current value, and time that match the characteristics of the recognized secondary battery, thereby constituting a charger for portable devices that can be used in common for different models of portable devices. In other words, many of these types of portable devices are configured so that, when a specific command is input via the power supply connection terminal, mainly for maintenance purposes, the model number of the device is returned, and this model number can be used to identify the model.

[0011] If the model can be identified, the built-in secondary battery can be recognized, and therefore, if the characteristics of each built-in battery corresponding to each model number are stored in each memory table, the characteristics of the built-in battery can be recognized simply by connecting the portable device, and it will be possible to charge the battery with a voltage value, current value, and charge time (any one or two controls are also possible) that match the battery. Therefore, in the present invention, the charger 3 equipped with a CPU 33 and a memory 34 is configured to transmit a command from the CPU 33 to obtain the model number of the connected portable device and to collate this model number against the memory table to recognize the built-in battery of the mobile phone device and to charge the battery in accordance with the battery, thereby obtaining a charger for portable devices that can be used in common for different models portable devices of different.

[0012] The operation of the embodiment of the present invention is explained below using the flow chart in Figure 2. When the AC outlet 4 of the charger 2 is plugged into a commercial power source, the CPU 33 sends out a predetermined command to the connection connector 2 and monitors a signal from the connection connector 2 (step S1). When the connection connector 2 is connected to the mobile phone device 1, the mobile phone device 1 sends back its model number as described above. Therefore, when the CPU 33 receives this model number, it recognizes the type of the built-in secondary battery from this model number by referring to the memory table 34, and recognizes the type of the secondary battery (any of a lithium battery, nickel-cadmium battery, or nickel-metal hydride battery, etc.) and its capacity (steps S2, S3).

[0013] The CPU 33 measures the current voltage on the battery to determine if charging is necessary. If it is necessary, it sets the optimal voltage value and current value for charging the battery in the charging control circuit 32, sets a necessary and sufficient charging time, and executes the charging until the time elapses (steps S4, S5, S6). Thus, even if different models are connected, the charger can be configured so

that it can charge in accordance with the characteristics of the secondary battery mounted on the model, and can be used for a plurality of models in common.

[0014] For the memory 34 that stores the memory table, for example, an EEPROM (electrically erasable programmable read-only memory) is used, and it is configured so that the memory table can be rewritten or added to by connecting a personal computer to the connection connector 2.

[0015]

[Effects of the Invention] As explained above, the charger for portable devices of the present invention enables optimal charging in accordance with the characteristics of the built-in secondary battery, irrespective of its model. This makes it possible to charge different models of portable devices, and even if a new portable device is purchased for replacement, the charger can still be used as is. Moreover, the battery life can be extended because the battery can be charged optimally in accordance with the characteristics of the built-in secondary battery.

[BRIEF DESCRIPTION OF THE FIGURES]

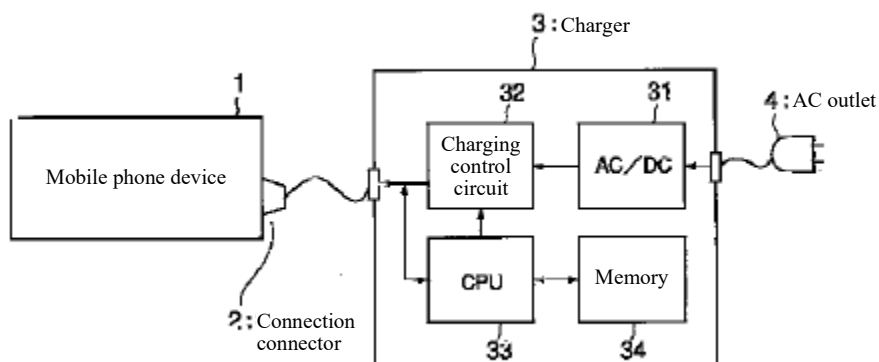
[Figure 1] A block diagram to explain one embodiment of the present invention.

[Figure 2] A flowchart showing the operation of the embodiment of the present invention.

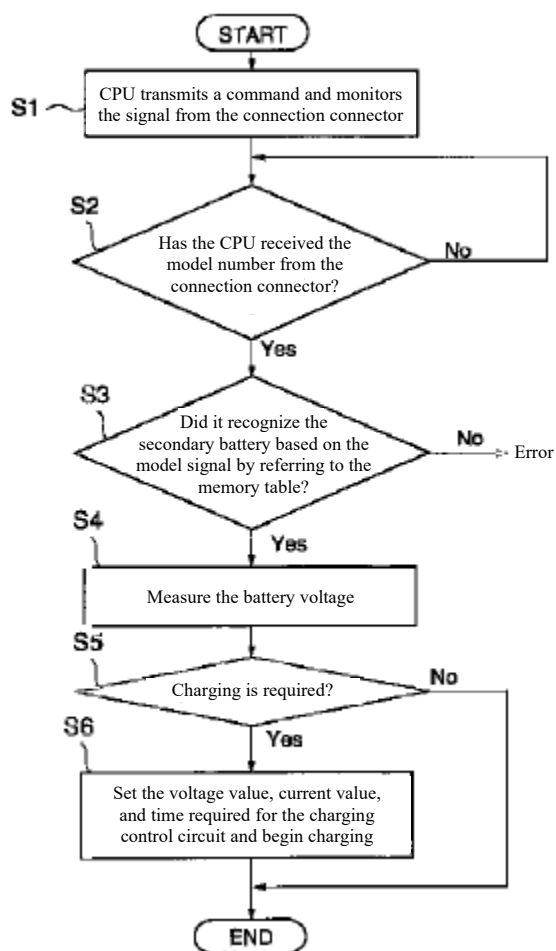
[Description of Reference Numerals]

- 1 Mobile phone device
- 2 Connection connector
- 3 Charger
- 4 AC outlet
- 31 AC/DC converter
- 32 Charging control circuit
- 33 CPU
- 34 Memory

[FIGURE 1]



[FIGURE 2]





April 14, 2025

Re: JP_2000323181_A - _Keirinbou_JA

To Whom It May Concern:

This is to certify that the above-referenced document (**390-46181 JP_2000323181_A - _Keirinbou_JA into EN****390-46181 JP_2000323181_A - _Keirinbou_JA into EN**) has been translated from Japanese into English by a professional translator on our staff who is skilled in the Japanese language.

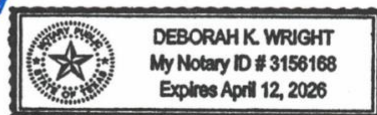
The English translation conforms essentially to the original Japanese except for those words or phrases for which there are no equivalents. Such words or phrases are noted in the translation along with the best English meaning.

All statements made in this declaration of our own knowledge are true, and all statements made on information and belief are believed to be true. We certify these statements under the understanding that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001). To the best of our knowledge, the aforementioned documents are a true, full, and accurate translation into English of the specified document.

Tonja Shepard
TONJA SHEPARD

Subscribed and sworn to before me on March 26, 2025.

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My commission expires on April 12, 2026