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Portable terminal unit containing radio paging receiver

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FIG. IA

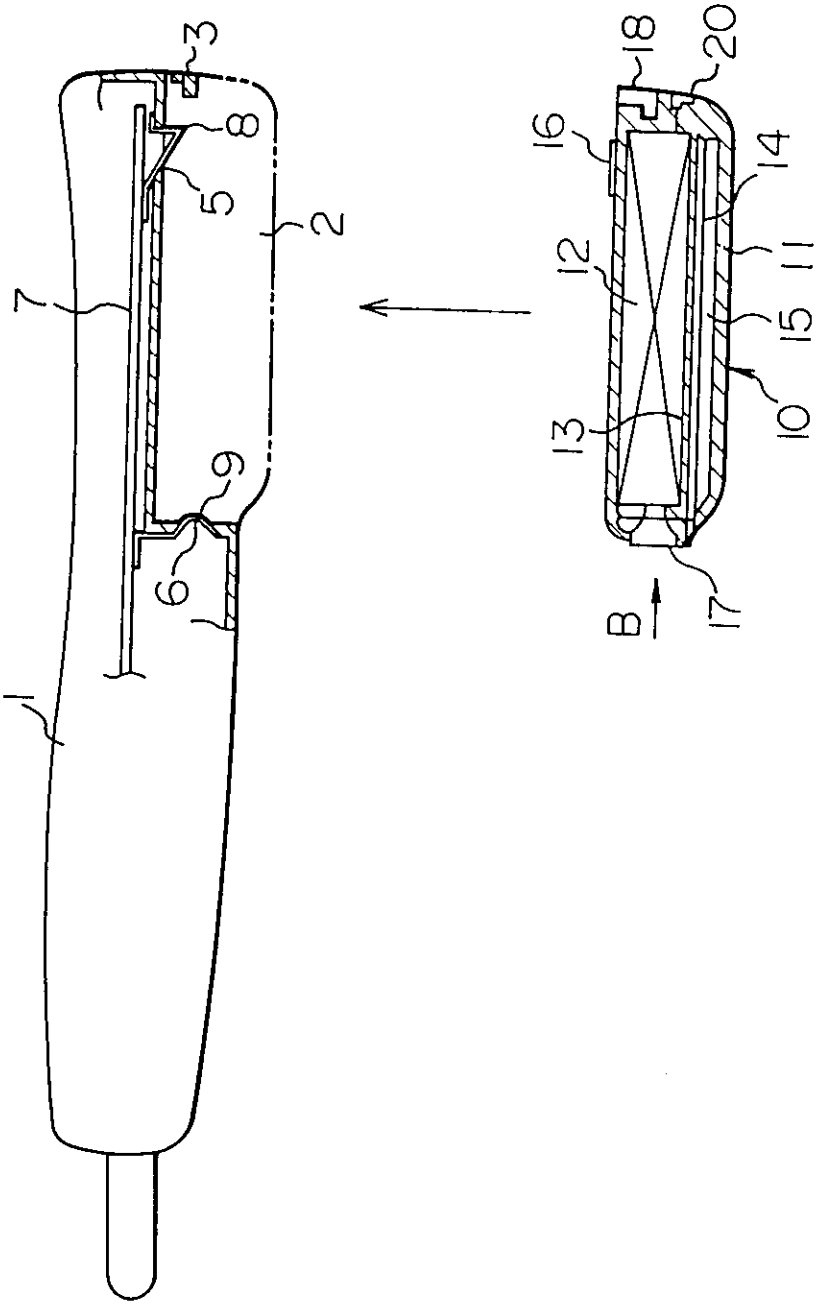


FIG. IB

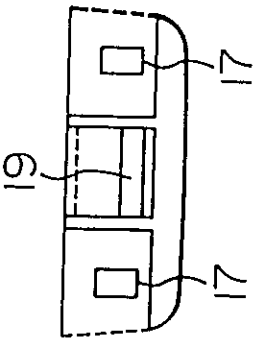
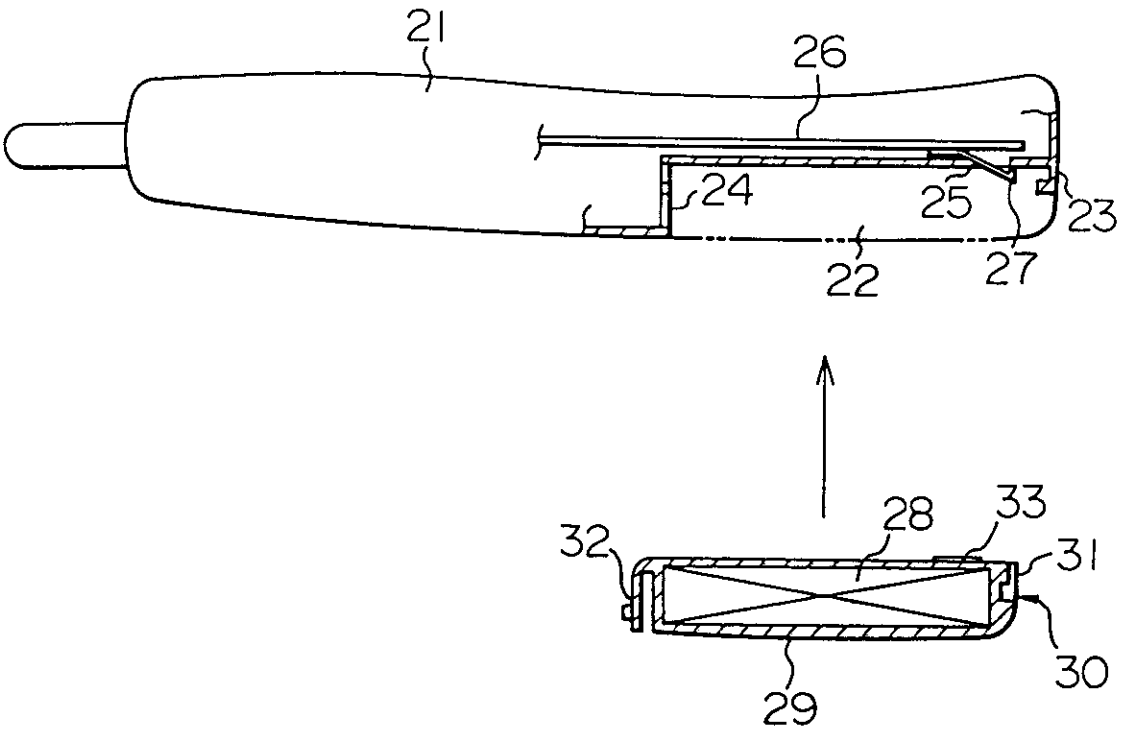


FIG. 2
PRIOR ART



2269072

PORTABLE TERMINAL UNIT CONTAINING RADIO PAGING RECEIVER

BACKGROUND OF THE INVENTION

This invention relates to a portable terminal unit having a radio paging receiver incorporated therein, which greatly improves the handiness and usability of the portable terminal unit for mobile radio communication.

Portable or handy terminal units, for example, a cordless telephone for the public telephone service, have extensively been used for both personal and business purposes. One example of a conventional cordless telephone will now be described with reference to Fig. 2.

Fig. 2 shows essential portions of the portable telephone, and reference numeral 21 denotes a body of the telephone, and reference numeral 30 denote a battery power pack. A power pack reception portion or power pack compartment 22 is formed in a rear of the body 21. This reception portion 22 is recessed into the body 21 so that the power pack 30, when installed, will not project outwardly from the body 21. A hole 25 is formed through a bottom wall (upper wall in Fig. 2) of the reception portion 22. A hole 24 and a pawl 23 which serve to retain the installed power pack 30 are provided respectively at upper and lower ends (left and right ends in Fig. 2) of the reception portion 22. A circuit board 26, containing a transmission/reception circuit and a control circuit, is mounted within the body 21 in adjacent relation to the reception portion 22. A pair of

power supply terminals 27, extending from the circuit board 27, pass through the hole 25, and are projected into the reception portion 22.

On the other hand, the power pack 30 includes a casing 29, and has a battery 28 contained in the casing 29. A pair of power terminals 33 are mounted on a rear surface of the casing 29, and are connected respectively to plus and minus terminals of the battery 28. A recess 31 and a hook 32 are provided at the opposite ends of the casing 29, respectively.

For installing the power pack 30 in the body 21, the hook 32 is engaged in the hole 24, and the power pack 30 is inserted into the reception portion 22 as indicated by an arrow in Fig. 2. Then, the lower end portion (the right end portion in Fig. 2) of the casing 29 is pressed, so that the recess 31 becomes engaged with the pawl 23. At the same time, the terminals 33 of the power pack 30 are connected to the terminals 27 of the circuit board 26, so that electric power can be supplied from the battery 28 to the body 21.

The portable telephone structured as above is used in a service area. A typical example of such portable or cordless telephone is Silverlink 2000 (tradename) manufactured by Motorola Inc. (U.S.A.).

An output of a cordless telephone is relatively small, and even when the user with the portable telephone is away from the registered service area, calling is first made in this service area, and therefore there is a possibility that the portable telephone fails to receive a call.

Accordingly, those users moving relatively long distances have also carried individual receivers for a radio paging system which cover a relatively wide service area, and the user, after being paged by the individual receiver, has made communication with the other party by the portable telephone.

The individual receiver for a radio paging system is a unit separate from the cordless telephone. Therefore, to carry the two adversely affects the portability, and is cumbersome. And besides, the above communication method is inconvenient.

SUMMARY OF THE INVENTION

In view of the above problems, it is an object of the invention to provide a portable terminal unit which is good in portability and usability.

Another object of the invention is to provide a portable terminal unit which achieves good usability and good economy.

To the above ends, the invention aims at incorporating the function of a radio paging receiver in a portable terminal unit.

More specifically, according to the invention, there is provided a portable terminal unit comprising: a body having a transmitter/receiver section; a power pack detachably installed in said body for supplying electric power to said body, said power pack having a battery therein; and a radio paging receiver contained in

said power pack, said radio paging receiver being connected to said power pack to be supplied with electric power from said power pack.

Since the individual receiver for a radio paging system covering a relatively wide service area is integrally incorporated in the above portable terminal unit, there is no need to additionally carry a separate radio paging receiver as before, and the portability and usability are improved. Furthermore, even during the time when the user is moving a long distance as mentioned above, the individual receiver incorporated in the portable terminal unit surely tells the paging, and therefore there is little possibility that a call fails to be received.

The individual receiver is contained in the power pack and is detachably installed in the body of the portable terminal unit. With this arrangement, even in a radio paging service area of a different frequency, the portable terminal unit can be suitably used by simply exchanging the power pack with another power pack designed for the different frequency. Thus, the only one portable terminal unit can be adapted to service areas of different frequencies, and this is economical.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1A is a partly-broken, side-elevational view showing a body and a power pack of a portable terminal unit according to an embodiment of the invention;

Fig. 1B is a view of the power pack as seen in a direction of arrow B of Fig. 1A; and

Fig. 2 is a partly-broken, side-elevational view of a conventional portable telephone.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A portable terminal unit according to an embodiment of the invention will now be described with reference to the drawings.

In Fig. 1A, reference numeral 1 denotes a body of a portable or cordless telephone, and reference numeral 10 denotes a battery power pack which can be detachably installed in the body 1. A mouthpiece, an earpiece, an operation/display portion, etc. are provided on a front surface of the body 1 of the portable telephone. These may be the same as those used in a conventional portable telephone, and therefore illustration and description thereof are omitted here.

A power pack reception portion or power pack compartment 2 is formed in a rear surface of the body 1. The reception portion 2 is recessed into the body 1 so that the power pack 10, when installed, will not project outwardly from the body 1. A hole 5 is formed through a bottom wall (upper wall in Fig. 1A) of the reception portion 2. A hole 6 and a pawl 3 which serve to retain the installed power pack 10 are provided respectively at upper and lower ends (left and right ends in Fig. 1A) of the reception portion 2. A circuit board 7, containing a transmission/reception circuit and a control circuit, is mounted within the body 1 in adjacent relation to the reception portion 2. A pair of power supply terminals 8, extending from the circuit board 7, pass through the hole 5, and are projected into the reception portion 2. Data reception terminals 9, extending

from the circuit board 7, pass through the hole 6, and are projected into the reception portion 2.

The power pack 10 includes a casing 11, and has battery 12 contained in the casing 11. A circuit board 14, constituting an individual receiver 15 for a radio paging system, is also contained in the casing 11. The circuit board 14 is disposed adjacent to the battery 12, with a sheet 13 interposed therebetween to isolate the circuit board 14 from the battery 12. An electric power is supplied from the battery 12 to the circuit board 14. A pair of power terminals 16 are provided at a rear surface of the casing 11, and are connected respectively to electrodes of the battery 12. As shown in Fig. 1B, a pair of data output terminals 17 are provided at an upper end (left end in Fig. 1A) of the casing 11, and are connected to the circuit board 14. A hook 19 and a recess 18 which serve to retain the power pack 10 are provided respectively at the upper and lower ends of the casing 11, and charging terminals 20 are provided at the lower end of the casing 11.

When the power pack 10 is installed in the reception portion 2 as indicated by an arrow in Fig. 1A, the pawl 3 of the reception portion 2 is engaged in the recess 18 of the casing 11, and also the hook 19 is engaged with the upper end of the reception portion 2. At this time, the pair of terminals 16 of the power pack 10 are brought into contact with the pair of terminals 8, respectively, and also the pair of data terminals 17 are brought into contact with the data reception terminals 9, respectively. Thus, the power pack

10 containing the individual receiver 15 is installed in the body 1 of the portable telephone.

The operation of the telephone of the above embodiment will now be described. When the power pack 10 is attached to the body 1, the individual receiver 15 incorporated in the power pack 10 becomes ready for operation. When the individual receiver 15 receives data, the thus received data is transmitted to the data reception terminals 9 through the data output terminals 17, and is further fed to the body 1 through the circuitry of the circuit board 7.

An electric power is supplied from the battery 12 to the body 1 of the portable telephone via the power terminals 16 and the terminals 8 in contact with the terminals 16.

In an individual receiver, it is necessary to indicate the received data by sound or by characters. In the above embodiment, this can be done using the earpiece or the display provided at the telephone, and therefore the cost of the unit as well as a running cost can be greatly reduced.

As described above, the battery 12 and the individual receiver 15 are integrally incorporated in the power pack 10, and by installing the power pack 10 in the body 1 of the telephone, the portable terminal unit equipped with the individual receiver is advantageously provided.

Another example of a portable terminal unit is the type of receiver (only capable of receiving an instruction) carried by a police officer or the like.

As is clear from the foregoing description, according to the invention, the portable terminal unit is provided with the function of the individual receiver, thereby improving the portability and usability. Where the individual receiver is contained in the detachable power unit or power pack, the portable terminal unit can be suitably used in radio paging service areas of difference frequency bands by simply exchanging the power unit having the individual receiver.

CLAIMS

1. A portable terminal unit comprising: a body having a transmitter/receiver section; a power pack detachably installed in said body for supplying electric power to said body, said power pack having a battery therein; and a radio paging receiver contained in said power pack, said radio paging receiver being connected to said power pack to be supplied with electric power from said power pack.

2. A portable terminal unit according to claim 1, wherein said body includes data reception terminals for receiving data from said radio paging receiver, and said power pack includes data output terminals which are connected to said data reception terminals when said power pack is installed in said body.

3. A portable terminal unit substantially as hereinbefore described with reference to figures 1A and 1B of the accompanying drawings.

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RENEWAL DETAILS

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