Electrical installation device having a charger and a holding capability for a mobile telephone

Description

The invention relates to an electrical installation device having a charger and a holding capability for a mobile telephone.

A multiplicity of chargers are known for charging the rechargeable battery in a mobile telephone. In order to allow a mobile telephone to be charged, the associated/appropriate charger must be available, must be connected to the mobile telephone to be charged, and the charger plug must be inserted into an available plug socket. In this case, there is often no holding capability for the mobile telephone in the immediate vicinity of this plug socket. The configuration is "loose" and "floating", that is to say there is, for example, a risk of somebody tripping over the mains cable or of the mains cable lying in an interfering manner on the kitchen worktop, where it restricts the working area.

The invention is based on the object of specifying an apparatus which makes it easier to charge a mobile telephone.

According to the invention, this object is achieved by an electrical installation device having a device cap which is in the form of a flush-mounted device, can be fitted in a commercially available flush-mounting box and has a charger, in particular a universal charger, and an electrical connection for an AC voltage power supply

system, wherein a charging connecting plug is provided on the front face of the device cap for the connection of a mobile telephone and a universal holder for holding/cradling this mobile telephone.

The advantages which can be achieved by the invention are, in particular, that a universal charger or a space-saving charging station which is installed in a fixed position at a location which is known by the user is provided for virtually all conventional bands and types of mobile telephones, as a flush-mounted device in a commercially available flush-mounting box. The mobile telephone can be connected easily by unfolding a flap and connecting to the charging connecting plug located underneath. During the charging process, the mobile telephone is held securely in the universal holder. This avoids the need to search for the appropriate charger and, in fact, the charging station is always at the same location. Furthermore, when not in use, the mobile telephone can occupy a fixed, known place in the universal holder of the charging station (even without having to charge it). This allows streamlined inclusion/integration in an installation device range, or switch and plug socket range, as well as a combination with further devices, for example switches/pushbuttons/dimmers/plug sockets, in this switch and plug socket range.

When a mobile telephone is newly purchased, the proposed charging station is, of course, still used. This on the one hand results in a cost advantage since there is no need to purchase a new charger, while on the other hand this results in a reduction in industrial refuse and therefore, overall, in a reduction in CO_2 emissions.

Expedient refinements of the invention are characterized in the dependent claims.

The invention will be explained in more detail in the following text with reference to the exemplary embodiments which are illustrated in the drawing, in which:

Figure 1 shows a side section through an electrical installation device having a charger and a holding capability for a mobile telephone,

Figures 2–4 show perspective views of an electrical installation device with a flap which can be opened at the side,

Figure 5–8 show perspective views of an electrical installation device having a flap which can be opened downwards,

Figure 9–12 show connection plans for different types of mobile telephone devices.

Figure 1 shows a side section with an electrical installation device having a charger and a holding capability for a mobile telephone. The electrical installation device 1 or 2 is in the form of a flush-mounted device having a device cap 4 (flush-mounted insert) which contains a charger 5 including a transformer, in particular a universal charger which is suitable for different mobile telephones. An electrical connection 6 in the device cap 4 makes the electrical connection to an AC voltage power supply system and is optionally also used as a bus connection. The device cap 4 is mechanically connected via its supporting ring 7 and/or via spring clips to a flush-mounting box 37, which is installed in a wall 38.

The electrical installation device 1 or 2 is completed by a central panel 8 that is accessed at the front, a cover frame 9 and a universal holder 20, that is to say a universal holder or parking station which represents a capability to hold a mobile telephone.

The central panel 8 has a hole 11 for a charging cable 13 to be passed through. A charging connecting plug 15, in particular a micro-USB standard interface, is fitted to the externally accessible end of the charging cable 13. A charging cable rolling-up apparatus 14 can optionally be provided in the device cap 4. Furthermore, the central panel 8 may optionally have:

- a holder 12 for the charging connecting plug 15,
- a visual indication 16 (preferably at least one LED) for signalling the charging process (a red LED denotes the charging status, green LED signals a charged mobile telephone rechargeable battery),
- an audible indication 17 for signalling the end of the charging process, and
- and on/off switch 18 for switching the charger on and off.

The installation device 1 or 2 is expediently fitted at "normal handle height", for example in cable ducts or in the kitchen area (above the worktop). The holding capability, which is only outlined schematically at reference number 20 in Figure 1, for a mobile telephone can be provided in various ways. Two alternatives are illustrated in the following figures, wherein

- the first alternative as shown in Figures 2-4 includes an electrical installation device 1 having a flap which can be opened at the side and allows a mobile telephone to be held "vertically", and
- the second alternative as shown in Figures 5-8 includes an electrical installation device 2 with a flap which can be opened downwards and allows a mobile telephone to be held "horizontally".

Figures 2-4 show perspective views of an electrical installation device having a flap which can be opened at the side. In the case of this electrical installation device 1, a flap 22 is attached via a side film hinge 23 to the central panel 8 and to the device cap 4. This flap 22, which engages over the cover frame 9 in the closed position, has three side boundary walls 24, 25, 26, with the side boundary wall 23 also being referred to as the lower boundary wall, and having a recess 27 through which the charging connecting plug 15, which is inserted into the charging connecting socket of a mobile telephone 36 (mobile radio, cellular phone), can grip.

After opening, that is to say pivoting, of the flap 22 through approximately 90° – see the arrow A in Figure 2 - the charging connecting plug 15 can be taken out of the holder 12 and can be plugged into the charging connecting socket on the mobile telephone 36, wherein the charging cable rolling-up device 14 simplifies this process by lengthening the accessible charging cable 13 briefly. The mobile telephone 36 is now inserted into the internal area or "pocket", which is bounded by the boundary walls 24, 25, 26, in the flap 22 from above or from the side and is placed on the lower boundary wall 26, such that the mobile telephone 36 is held securely during the charging process.

The charging process for the rechargeable battery in the mobile telephone 36 is started by switching on the on/off switch 18. A visual indication 16 in the form of a red LED expediently signals the charging process. As soon as the charging process is

ended, this is signalled by a visual indication 16 in the form of a green LED, and possibly additionally also by an audible indication 17, that is to say the charging connecting plug 15 is now pulled out of the charging connecting socket in the mobile telephone 36, and the mobile telephone 36 can be removed from the universal holder 20 and parking station. The visual indication 16 goes out, the on/off switch 18 is switched off, and the flap 22 is finally pivoted to the closed position.

Figures 5-8 show perspective views of an electrical installation device having a flap which can be opened downwards. In this electrical installation device 2, a flap 29 is attached via a lower film hinge 30 to the central panel 8 and to the device cap 4. This flap 29, which engages over the cover frame 9 in the closed position, has two side flaps 31 and 33, respectively, which are connected to the flap 29 via respective film hinges 32 and 34.

When a mobile telephone 36 is to be charged, the flap 29 is first of all pivoted downwards through approximately 90° - see the arrow B in Figure 5 - after which the two flaps 31 and 33, respectively, are each pivoted to the side through approximately 180° - see the arrows C and D, respectively, in Figure 6. This provides the sufficiently large holding surface or holding capability for a mobile telephone 36 as shown in Figure 7 and which is formed from the three flaps 31/29/33 which are arranged alongside one another on one plane, in which case it is advantageous for this holding capability to be universally suitable for mobile telephones of different size and with different dimensions. The charging connecting plug 15 can now be taken from the holder 12 and plugged into the charging connecting socket in the mobile telephone 36, in which case the charging cable rolling-up apparatus 14 simplifies this process by lengthening the accessible charging cable 13, briefly. The mobile telephone 36 is now placed on the flaps 31/29/33, as is shown in Figure 8.

The charging process for the rechargeable battery in the mobile telephone 36 is started by switching on the on/off switch 18. A visual indication 16 in the form of a red LED expediently signals the charging process. As soon as the charging process is ended, this is signalled by a visual indication 16 in the form of a green LED, and possibly additionally also by an audible indication 17, that is to say the charging connecting plug 15 is now pulled out of the charging connecting socket in the mobile

telephone 36, and the mobile telephone 36 can be removed from the holding capability formed by the flaps 31/29/33. The visual indication 16 goes out, the on/off switch 18 is switched off, and the flap 22 is finally pivoted to the closed position.

For both alternatives, it is self-evident that, in the case of a simpler embodiment without an on/off switch 18, the charging process for the rechargeable battery in the mobile telephone 36 is started automatically by plugging the charging connecting plug 15 into the charging connecting plug socket in the mobile telephone 36.

For both variants, it is also possible to provide a visual indication in the form of a display, which indicates all the information relating to the charging process and/or the status of the mobile telephone. Furthermore, incoming SMSs, calls, mails, etc. to the connected mobile telephone 36 can also be indicated by means of the display. Communication between the electrical installation device 1 or 2 and the display expediently takes place via the electrical connection 6 that has been mentioned (bus connection).

For both variants, the configuration with the charging connecting plug 15 can also be converted by means of appropriate interchangeable adaptors such that mobile telephone device types from different manufacturers can be connected to one and the same installation device 1, 2, and can be charged.

According to one alternative refinement to this, interchangeable charging cables 13A, 13B... each having different charging connecting plugs can also be provided, wherein the interchangeable charging cables have electrical plug contacts for electrical connection to an interface which is arranged in the central panel 8 and is electrically connected to the charger 5.

In this context, Figures 9-12 illustrate connection plans for different mobile telephone device types.

Figures 9 and 10 show the configuration with a central panel 8, as explained with reference to Figures 1-8 above, which central panel 8 has a hole 11 for the charging cable 13, which is firmly connected to the installation device, to be passed through. A

device type A charging connecting plug 15 is fitted to the end of the charging cable 13 and can make direct contact with a charging connecting plug socket 39 of a mobile telephone 36A of device type A, as is also illustrated in Figure 9. However, when the rechargeable battery in a mobile telephone 36B of device type B is to be charged, an adaptor 41 is also used for conversion from device type A to device type B and is inserted on one side into the charging connecting plug socket 40 in the mobile telephone 36B of device type B, and is inserted on the other side into the charging connecting plug 15 of the charging cable 13, as is illustrated in Figure 10.

In Figures 11 and 12, the charging cable is detachably connected to the installation device and the central panel 8, instead of being firmly connected, and different charging cables 13A, 13B are optionally available and can be used for different mobile telephones 36A, 36B of different device types A or B. For the detachable connection, the central panel 8 has an interface socket 42 into which the interface plug 43 of the charging cable 13A or 13B is optionally inserted. At the other end of the charging cable 13A or of the charging cable 13B, a charging connecting plug 15 for device type A or a charging connecting plug 44 for device type B is fitted in order to make contact with a respective charging connecting plug socket 39 on a mobile telephone 36A of device type A, or respectively with a charging connecting plug socket 40 on a mobile telephone 36B of device type B. This makes it possible to recharge the rechargeable battery in mobile telephones of different device types by selection and insertion of the appropriate charging cable 13A or 13B.

The exemplary embodiments shown in Figures 9 to 12 are, of course, not just restricted to two different device types A and B of mobile telephones, but any desired number of different device types of mobile telephones can be connected to the installation device by means of appropriately differently designed adaptors 41 and different charging cables 13A, 13B....

List of reference symbols

1	Electrical installation device in the form of a flush-mounted device
2	Electrical installation device in the form of a flush-mounted device
3	---
4	Device cap (flush-mounted insert)
5	Charger including transformer, in particular universal charger
6	Electrical connection (mains connections, possibly bus connection)
7	Supporting ring
8	Central panel
9	Cover frame
10	---
11	Hole for the charging cable to pass through
12	Holder for the charging connecting plug
13	13A or 13B, charging cable
14	Charging cable rolling-up apparatus
15	Charging connecting plug of device type A, in particular a micro-USB standard interface
16	Visual indication for signalling the charging process
17	Audible indication for signalling the end of the charging process
18	On/off switch for the charger
19	---
20	Universal holder, universal receptacle and parking station (holding capability) for a mobile telephone
21	---
22	Flap
23	Film hinge
24	Side boundary wall
25	Side boundary wall
26	Side boundary wall
27	Recess for the charging connecting plug
28	---
29	Flap
30	Film hinge
31	Side flap
32	Film hinge
33	Side flap
34	Film hinge
35	---
36	36A or 36B mobile telephone of device type A or B (mobile radio, cellular telephone) including rechargeable battery and charging connecting plug socket
37	Flush-mounting box
38	Wall
39	Charging connecting plug socket of device type A
40	Charging connecting plug socket of device type B
41	Adaptor for converting from device type A to device type B
42	Interface socket
43	Interface plug
44	Charging connecting plug of device type B

Patent Claims

1. Electrical installation device (1, 2) having a device cap (4) which is in the form of a flush-mounted device, can be fitted in a commercially available flush-mounting box (37),

- where by the device cap (4) is mechanically connected via its supporting ring (7) and/or via spring clips to a flush-mounting box (37), which is installed in a wall (38),

- where by the device cap (4) has a charger (5), in particular an universal charger, and an electrical connection (6) for an AC voltage power supply system, wherein a charging connecting plug (15) is provided on the front face of the device cap (4) for the connection of a mobile telephone (36) and a universal holder (20) for holding/cradling this mobile telephone (36) and

- where by the electrical installation device (1, 2) is completed by a central panel (8) that is accessed at the front and a cover frame (9).

2. Installation device according to Claim 1, characterized in that the charging connecting plug (15) is in the form of a micro-USB standard interface.

3. Installation device according to Claim 1 or 2, characterized in that the universal holder (20) is in the form of a flap (22) which can be opened at the side and is attached via a film hinge (23) at the side to a central panel (8) or to the device cap (4), and which flap (22) forms a "pocket" for holding the mobile telephone (36).

4. Installation device according to Claim 1 or 2, characterized in that the universal holder (20) is in the form a flap (29) which be opened downwards through approximately 90°, is attached via a lower film hinge (3) to a central panel (8) or to the device cap (4), and forms a rest surface for holding the mobile telephone (36).

5. Installation device according to Claim 4, characterized in that at least one side flap (31, 33), which can be pivoted through approximately 180°, is connected via a film hinge (32, 34) to the flap (29) in order in this way to create a larger resting surface for holding the mobile telephone (36).

6. Installation device according to one of the preceding claims, characterized in that the charging connecting plug (15) is connected to the charger (5) via a charging cable (13) which is accessible at the front.

7. Installation device according to Claim 6, characterized in that a charging cable rolling-up apparatus (14) is provided in the device cap (4).

8. Installation device according to Claim 6, characterized in that a holder (12) is provided for the charging connecting plug (15).

9. Installation device according to one of the preceding claims, characterized in that a visual indication (16) is provided for signalling the charging process.

10. Installation device according to one of the preceding claims, characterized in that an audible indication (17) is provided for signalling the end of the charging process.

11. Installation device according to one of the preceding claims, characterized in that an on/off switch is provided for switching the charger (5) on and off.

12. Installation device according to one of the preceding claims, characterized in that the charging connecting plug (15) can be converted by means of appropriate interchangeable adaptors (41) such that different mobile telephone device types with different charging connecting plug sockets (39, 40) can be connected to one and the same installation device (1, 2) and can be charged.

13. Installation device according to one of the preceding claims, characterized by interchangeable charging cables (13A, 13B) each having different charging connecting plugs (15, 44), wherein the interchangeable charging cables (13A, 13B) have electrical contacts for electrical connection to an interface which is arranged in the central panel (8) and is connected to the charger (5).