

RESERVE POWER SUPPLY WITH ELECTRODE PLATES CLIPPING WITH AUXILIARY CONDUCTORS

BACKGROUND OF THE INVENTION

5 (a) Field of the Invention

The present invention relates to a reserve power supply with electrode plates clipping with auxiliary conductors, whose mainly structural figure is installed with auxiliary conductors, wherein one or more electrode plates, which are installed with collecting current
10 terminals at two or more sides thereof, clipping with an auxiliary conductor, which is flat shape, strip, or mesh structure, and is made of the material and/or structure with conductivity better than that of the electrode plates; in which collecting current terminals are installed at two or more sides of the auxiliary conductor, for unilateral or multilateral parallel
15 linking with the collecting current terminals installed at two or more sides of the electrode plates, and which are used to be the general collecting current terminals to output current to the external part or to receive the input current from the external part; and there are insulators installed between the auxiliary conductor and the electrode plates to constitute an
20 electrode unit; the number of the above general collecting current terminals for inputting/outputting the collection current is one or more.

(b) Description of the Prior Art

The conventional reserve power supply, such as a variety of primary batteries, rechargeable batteries, capacitors, or super capacitors, whose
25 electrode plate is usually installed with one or more collecting current terminals with same polarity at single side; Fig. 1 is a schematic view showing an embodiment of conventional electrode plate unilaterally installed with a collecting current terminal, in which each electrode plate (P100) is unilaterally installed with a collecting current terminal (T100)
30 for the electrode plate performing the collecting current function of inputting/outputting current, or for connecting with another electrode plate

in series or parallel; because the electrode plate is only unilaterally installed with a collecting current terminal for inputting/outputting current, the current density on the electrode plate is uneven at the electrode plate region of the neighboring collecting current terminal, another side of the electrode plate, and the electrode plate region more far away from the collecting current terminal (T100), when large current inputs or outputs; if two or more collecting current terminals are installed at same side of the electrode plate, which is more progressive, the electrode plate will have two or more pathways for inputting/outputting current, and two or more collecting current terminals with same polarity are linked in parallel through linking a conductor; but, this way only improves the uniformity of the input/output current density at same side, and it is useless to the uneven input/output current density at another side of the electrode plate.

In addition, one or more collecting current terminals, which are individually outward extended, are installed at two or more sides of the electrode plate for improvement; Fig. 2 is a schematic view showing an embodiment, in which the two sides of the electrode plate are individually installed with a collecting current terminal; or one or more sides of the electrode plate (P100) are installed with two or more collecting current terminals (T100) for forming two or more pathways for inputting/outputting current to reduce the resistance; Fig. 3 is a schematic view showing that two collecting current terminals are installed at each of the opposite sides of the electrode plate; although the ways shown in Fig. 2 and Fig. 3 improve the uniformity of the input/output current density, there is still inconvenient to use with input/output terminals installed at two sides.

SUMMARY OF THE INVENTION

The present invention relates to a reserve power supply with electrode plates clipping with auxiliary conductors, which is applied to the desired positive and negative electrodes of reserve power supplies such as

primary batteries, rechargeable batteries, capacitors, or super capacitors, or of fuel cells with electrode plates; the above device is installed with anode auxiliary conductors, wherein one or more anode electrode plates, which are installed with at least one collecting current terminals at each of
5 two or more sides thereof, clipping with an anode auxiliary conductor, which is flat shape, strip, or mesh structure, and is made of the material and/or structure with conductivity better than that of the electrode plates; in which at least one collecting current terminals are installed at each of two or more sides of the anode auxiliary conductor, for unilateral or
10 multilateral parallel linking with the collecting current terminals installed at two or more sides of the anode electrode plates, and which are used to be the anode general collecting current terminals to output current to the external part or to receive the input current from the external part; and there are insulators installed between the anode auxiliary conductor and
15 the anode electrode plates to constitute a positive electrode unit; the number of the above anode general collecting current terminals for inputting/outputting the collection current is one or more.

Also, the above device is installed with cathode auxiliary conductors, wherein one or more cathode electrode plates, which are installed with at
20 least one collecting current terminals at each of two or more sides thereof, clipping with an cathode auxiliary conductor, which is flat shape, strip, or mesh structure, and is made of the material and/or structure with conductivity better than that of the electrode plates; in which at least one collecting current terminals are installed at each of two or more sides of
25 the cathode auxiliary conductor, for unilateral or multilateral parallel linking with the collecting current terminals installed at two or more sides of the cathode electrode plates, and which are used to be the cathode general collecting current terminals to output current to the external part or to receive the input current from the external part; and there are
30 insulators installed between the cathode auxiliary conductor and the cathode electrode plates to constitute a negative electrode unit; the

number of the above cathode general collecting current terminals for inputting/outputting the collection current is one or more.

BRIEF DESCRIPTION OF THE DRAWINGS

5 Fig. 1 is a schematic view showing an embodiment of conventional electrode plate unilaterally installed with a collecting current terminal;

 Fig. 2 is a schematic view showing an embodiment of conventional electrode plate installed with a collecting current terminal at each of two sides;

10 Fig. 3 is a schematic view showing an embodiment of conventional electrode plate installed with two collecting current terminals at each of the opposite sides;

 Fig. 4 is a schematic view showing three-dimensional structure of a electrode unit constituted by an auxiliary conductor, in which at least one
15 collecting current terminal is installed at each of at least two sides thereof, clipped by two electrode plates with same polarity, in which at least one collecting current terminal is installed at each of at least two sides thereof, at two laterals of the auxiliary conductor, and an insulator sandwiched therein, respectively, according to the present invention;

20 Fig. 5 is a front view of Fig. 4;

 Fig. 6 is a side view of Fig. 4;

 Fig. 7 is a schematic exploded view showing an embodiment, in which an electrode pair of a reserve power supply is constituted by a positive electrode unit composed of two anode electrode plates (1011)
25 clipping with an anode auxiliary conductor (1001), a negative electrode unit composed of two cathode electrode plates (1012) clipping with a cathode auxiliary conductor (1002), and an isolated body sandwiched therein;

 Fig. 8 is a schematic view showing an embodiment of combination
30 of the electrode pair constituting the reserve power supply shown in Fig. 7;

Fig. 9 is a schematic view showing the reserve power supply constituted by the electrode pair shown in Fig. 8 and the current paths thereof;

Fig. 10 is a schematic view showing an embodiment of combination
5 of two negative electrode units clipping with a positive electrode unit at two laterals thereof, according to the present invention;

Fig. 11 is a schematic view showing an embodiment of combination of two positive electrode units clipping with a negative electrode unit at two laterals thereof, according to the present invention;

10 Fig. 12 is a schematic view showing the second embodiment of combination of two negative electrode units clipping with a positive electrode unit at two laterals thereof, according to the present invention;

Fig. 13 is a schematic view showing the second embodiment of combination of two positive electrode units clipping with a negative
15 electrode unit at two laterals thereof, according to the present invention;

Fig. 14 is a schematic view showing an embodiment of further combination of at least two negative electrode units and at least two positive electrode units staggered placed for unilateral or bilateral parallel connecting the same polarity ones in an electrode tank, in which an anode
20 input/output general collecting current terminal 1051 of the positive electrode unit and a cathode input/output general collecting current terminal 1052 of the negative electrode unit, placed at intermediate portion, are used to be the general collecting current terminals for inputting/outputting current, according to the present invention;

25 Fig. 15 is a schematic view showing the second embodiment of combination of electrode units with same polarity for unilateral or bilateral parallel connection in an electrode tank, in which the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current
30 terminal 1052 of the negative electrode unit, placed at two laterals, are used to be the general collecting current terminals for inputting/outputting

current, according to the present invention;

Fig. 16 is a schematic view showing the third embodiment of combination of at least two negative electrode units and at least two positive electrode units staggered placed, in which the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current terminal 1052 of the negative electrode unit, placed at intermediate portion, are used to be the general collecting current terminals for inputting/outputting current, according to the present invention;

Fig. 17 is a three-dimensional schematic view showing the exploded structure of Fig. 16;

Fig. 18 is a three-dimensional schematic view showing the composition of Fig. 16;

Fig. 19 is a schematic view showing an embodiment of combination of electrode pairs constituted by positive and negative electrodes for staggered parallel superposition, in which the positive-negative electrode pair is clipped therein, according to the present invention;

Fig. 20 is a schematic view showing the second embodiment of combination of negative electrode units and positive electrode units for staggered placement, in which the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current terminal 1052 of the negative electrode unit, placed at two laterals, are used to be the general collecting current terminals for inputting/outputting current;

Fig. 21 is a schematic view showing the third embodiment of combination of negative electrode units and positive electrode units for staggered placement, in which the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current terminal 1052 of the negative electrode unit, placed at intermediate portion, are used to be the general collecting current terminals for inputting/outputting current;

Fig. 22 is a schematic view showing the combination of the electrode pair constituted by at least one positive electrode unit and at least one negative electrode unit, in which the polarities of two laterals, the monolithic positive polarity electrode plate, and the monolithic negative polarity electrode plate are staggered superposition, and the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current terminal 1052 of the negative electrode unit, placed at intermediate portion, are used to be the general collecting current terminals for inputting/outputting current;

Fig. 23 is a schematic view showing an embodiment of combination, in which a number of electrode pairs constituted by positive-negative electrode units placed in individual electrode tank 1030 are unilateral or multilateral connected in series by different polarity;

Fig. 24 is a schematic view showing the second embodiment of combination shown in Fig. 23, in which except for the anode input/output general collecting current terminal and the cathode input/output general collecting current terminal, which are used to input/output current, are exposed to the outside of the tank shell of the electrode tank 1030, the other collecting current terminals are hidden within the electrode tank 1030;

Fig. 25 is a schematic view showing an embodiment of combination, in which a number of electrode pairs constituted by positive-negative electrode units placed at individual electrode tank 1030 are unilateral or multilateral connected in series by different polarity;

Fig. 26 is a schematic view showing the second embodiment of combination shown in Fig. 25, in which except for the current terminals, which are used to input/output current, are exposed to the outside of the tank shell, the other collecting current terminals are hidden within the electrode tank 1030;

Fig. 27 is a three-dimensional structural schematic view showing the

electrode unit constituted by the auxiliary conductor, in which two input/output collecting current terminals are installed at each of two sides thereof, clipped by the electrode plate(s) with same polarity, in which two collecting current terminals are installed at each of two sides thereof, at one of two or two outer sides of the auxiliary conductor, and an insulator sandwiched therein, respectively, according to the present invention;

Fig. 28 is a front view of Fig. 27;

Fig. 29 is a side view of Fig. 27;

Fig. 30 is a three-dimensional structural schematic view showing the electrode unit constituted by the auxiliary conductor, in which a collecting current terminal is installed at each of four sides thereof, clipped by the electrode plate(s) with same polarity, in which a collecting current terminal is installed at each of four sides thereof, at one of two or two outer sides of the auxiliary conductor, and an insulator sandwiched therein, respectively, according to the present invention;

Fig. 31 is a front view of Fig. 30;

Fig. 32 is a side view of Fig. 30;

Fig. 33 is a three-dimensional structural schematic view showing the electrode unit constituted by the auxiliary conductor, in which two collecting current terminals are installed at each of four sides thereof, clipped by the electrode plate(s) with same polarity, in which two collecting current terminals are installed at each of four sides thereof, at one of two or two outer sides of the auxiliary conductor, and an insulator sandwiched therein, respectively, according to the present invention;

Fig. 34 is a front view of Fig. 33;

Fig. 35 is a side view of Fig. 33;

Fig. 36 is a schematic structural view showing an embodiment of application, in which the conductor is radial and the electrode unit is grid layout, according to the present invention;

Fig. 37 is a front view of Fig. 36;

Fig. 38 is a side view of Fig. 36;

Fig. 39 is a schematic structural view showing an embodiment of application, in which the electrode unit is plate type, according to the present invention;

Fig. 40 is a front view of Fig. 39;

5 Fig. 41 is a side view of Fig. 39;

Fig. 42 is a schematic view showing an embodiment of application, in which the electrode unit is used to be a winding type reserve power supply, according to the present invention;

Fig. 43 is a top view of Fig. 42; and

10 Fig. 44 is a side view of Fig. 42.

DESCRIPTION OF MAIN COMPONENT SYMBOLS

P100: Electrode plate

T100: Collecting current terminal

15 100: Auxiliary conductor

101: Side electrode plate

103: Insulator

104: Collecting current terminal

105: Input/output general collecting current terminal

20 120: Active substance

601: Collecting current terminal of the monolithic anode electrode plate 1031

602: Collecting current terminal of the monolithic cathode electrode plate 1032

25 1001: Anode auxiliary conductor

1002: Cathode auxiliary conductor

1011: Anode side electrode plate

1012: Cathode side electrode plate

1020: Isolated body

30 1030: Electrode tank

1031: Monolithic anode electrode plate

- 1032: Monolithic cathode electrode plate
- 1041: Anode collecting current terminal
- 1042: Cathode collecting current terminal
- 1051: Anode input/output general collecting current terminal
- 5 1052: Cathode input/output general collecting current terminal

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The conventional reserve power supply, such as a variety of primary batteries, rechargeable batteries, capacitors, or super capacitors, whose
10 electrode plate is usually installed with one or more collecting current terminals with same polarity at single side; Fig. 1 is a schematic view showing an embodiment of conventional electrode plate unilaterally installed with a collecting current terminal, in which each electrode plate (P100) is unilaterally installed with a collecting current terminal (T100)
15 for the electrode plate performing the collecting current function of inputting/outputting current, or for connecting with another electrode plate in series or parallel; because the electrode plate is only unilaterally installed with a collecting current terminal for inputting/outputting current, the current density on the electrode plate is uneven at the electrode plate
20 region of the neighboring collecting current terminal, another side of the electrode plate, and the electrode plate region more far away from the collecting current terminal (T100), when large current inputs or outputs; if two or more collecting current terminals are installed at same side of the electrode plate, which is more progressive, the electrode plate will have
25 two or more pathways for inputting/outputting current, and two or more collecting current terminals with same polarity are linked in parallel through linking a conductor; but, this way only improves the uniformity of the input/output current density at same side, and it is useless to the uneven input/output current density at another side of the electrode plate.

30 In addition, one or more collecting current terminals, which are individually outward extended, are installed at two or more sides of the

electrode plate for improvement; Fig. 2 is a schematic view showing an embodiment, in which the two sides of the electrode plate are individually installed with a collecting current terminal; or one or more sides of the electrode plate (P100) are installed with two or more collecting current terminals (T100) for forming two or more pathways for inputting/outputting current to reduce the resistance; Fig. 3 is a schematic view showing that two collecting current terminals are installed at each of the opposite sides of the electrode plate; although the ways shown in Fig. 2 and Fig. 3 improve the uniformity of the input/output current density, there is still inconvenient to use with input/output terminals installed at two sides.

The present invention relates to a reserve power supply with electrode plates clipping with auxiliary conductors, whose mainly structural figure is installed with auxiliary conductors, wherein one or more electrode plates, which are installed with at least one collecting current terminal at each of two or more sides thereof, clipping with an auxiliary conductor, which is flat shape, strip, or mesh structure, and is made of the material and/or structure with conductivity better than that of the electrode plates; in which at least one collecting current terminal is installed at each of two or more sides of the auxiliary conductor, for unilateral or multilateral parallel linking with the collecting current terminals installed at two or more sides of the electrode plates, and which are used to be the general collecting current terminals to output current to the external part or to receive the input current from the external part; and there are insulators installed between the auxiliary conductor and the electrode plates to constitute an electrode unit; the number of the above general collecting current terminals for inputting/outputting the collection current is one or more.

Fig. 4 is a schematic view showing three-dimensional structure of a electrode unit constituted by an auxiliary conductor, in which at least one collecting current terminal is installed at each of at least two sides thereof,

clipped by two electrode plates with same polarity, in which at least one collecting current terminal is installed at each of at least two sides thereof, at two laterals of the auxiliary conductor, and an insulator sandwiched therein, respectively, according to the present invention.

5 Fig. 5 is a front view of Fig. 4.

 Fig. 6 is a side view of Fig. 4.

 As shown in Fig. 4, Fig. 5, and Fig. 6, the mainly structural figure is installed with an auxiliary conductor 100, wherein one or more side electrode plates 101, which are installed with at least one collecting
10 current terminal 104 at two or more sides thereof, and coated with active substance 120 on the surface of the electrode plate, clipping with the auxiliary conductor 100, which is flat shape, strip, or mesh structure, and is made of the material and/or structure with conductivity better than that of the electrode plates; in which at least one input/output general
15 collecting current terminal 105 is installed at each of two or more sides of the auxiliary conductor 100, for unilateral or multilateral parallel linking with the collecting current terminals installed at two or more sides of the side electrode plates, and which are used to be the general collecting current terminals to output current to the external part or to receive the
20 input current from the external part; and there is an insulator 103 installed between the auxiliary conductor 100 and the side electrode plate 101 to constitute an electrode unit; the number of the general collecting current terminals 105 for inputting/outputting the collection current is one or more.

25 For the reserve power supply with electrode plates clipping with auxiliary conductors, which is applied to the reserve power supply, such as primary batteries, rechargeable batteries, capacitors, or super capacitors, or to the positive-negative electrode pair required for the fuel cell with electrode plate(s).

30 Fig. 7 is a schematic exploded view showing an embodiment, in which an electrode pair of a reserve power supply is constituted by two

anode electrode plates (1011) clipping with an anode auxiliary conductor (1001), two cathode electrode plates (1012) clipping with a cathode auxiliary conductor (1002), and an isolated body sandwiched therein.

Fig. 8 is a schematic view showing an embodiment of combination
5 of the electrode pair constituting the reserve power supply shown in Fig. 7.

Fig. 9 is a schematic view showing the reserve power supply constituted by the electrode pair shown in Fig. 8 and the current paths thereof.

10 As shown in Fig. 7, Fig. 8, and Fig. 9, the mainly structural figure is installed with an anode auxiliary conductor 1001, wherein one or more anode side electrode plates 1011, which are installed with at least one anode collecting current terminal 1041 at two or more sides thereof, and coated with the active substance 120 on the surface of the electrode plate,
15 clipping with the anode auxiliary conductor 1001, which is flat shape, strip, or mesh structure, and is made of the material and/or structure with conductivity better than that of the electrode plates; in which at least one anode input/output general collecting current terminal 1051 is installed at each of two or more sides of the anode auxiliary conductor 1001, for
20 unilateral or multilateral parallel linking with the anode collecting current terminals installed at two or more sides of the anode side electrode plates, and which are used to be the anode general collecting current terminals to output current to the external part or to receive the input current from the external part; and there is the insulator 103 installed between the anode
25 auxiliary conductor 1001 and the anode side electrode plate 1011 to constitute a positive electrode unit; the number of the anode input/output general collecting current terminal 1051 for inputting/outputting the collection current is one or more.

Also, a cathode auxiliary conductor 1002 is installed, wherein one or
30 more cathode side electrode plate 1012, which are installed with at least one cathode collecting current terminal 1042 at two or more sides thereof,

and coated with the active substance 120 on the surface of the electrode plate, clipping with the cathode auxiliary conductor 1002, which is flat shape, strip, or mesh structure, and is made of the material and/or structure with conductivity better than that of the electrode plates; in which at least one cathode input/output general collecting current terminal 1052 is installed at each of two or more sides of the cathode auxiliary conductor 1002, for unilateral or multilateral parallel linking with the cathode collecting current terminals installed at two or more sides of the cathode side electrode plates, and which are used to be the cathode general collecting current terminals to output current to the external part or to receive the input current from the external part; and there is the insulator 103 installed between the cathode auxiliary conductor 1002 and the cathode side electrode plate 1012 to constitute a negative electrode unit; the number of the cathode input/output general collecting current terminal 1052 for inputting/outputting the collection current is one or more.

The positive electrode unit integrated with the negative electrode unit is installed in an electrode tank for constituting the electrode pair.

Fig. 10 is a schematic view showing an embodiment of combination of two negative electrode units clipping with a positive electrode unit at two laterals thereof, according to the present invention; in which:

the negative electrode unit is constituted by two cathode side electrode plates 1012 coated with the active substance 120 on the surface of each electrode plate, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the cathode auxiliary conductor 1002, and clipping with the cathode auxiliary conductor 1002 at two laterals thereof; the cathode collecting current terminals 1042 placed at two sides of each of two cathode side electrode plates 1012 link with the cathode input/output general collecting current terminals 1052 placed at two sides of the cathode auxiliary conductor 1002 to constitute the negative electrode unit; and

the positive electrode unit is constituted by two anode side electrode plates 1011 coated with the active substance 120 on the surface of each electrode plate, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the anode auxiliary conductor 1001, and clipping with the anode auxiliary conductor 1001 at two laterals thereof; the anode collecting current terminal 1041 placed at two sides of each of two anode side electrode plates 1011 link with the anode input/output general collecting current terminals 1051 placed at two sides of the anode auxiliary conductor 1001 to constitute the positive electrode unit; the cathode input/output general collecting current terminals 1052 of the two negative electrode units are installed at two sides of the positive electrode unit for unilateral or multilateral parallel connection; and isolated bodies 1020 are installed between the two sides of the positive electrode unit and the two negative electrode units, respectively.

The positive electrode unit integrated with the negative electrode unit is installed in an electrode tank for constituting the electrode pair.

Fig. 11 is a schematic view showing an embodiment of combination of two positive electrode units clipping with a negative electrode unit at two laterals thereof, according to the present invention; in which:

the negative electrode unit is constituted by two cathode side electrode plates 1012 coated with the active substance 120 on the surface of each electrode plate, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the cathode auxiliary conductor 1002, and clipping with the cathode auxiliary conductor 1002 at two laterals thereof; the cathode collecting current terminals 1042 placed at two sides of each of two cathode side electrode plates 1012 link with the cathode input/output general collecting current terminals 1052 placed at two sides of the cathode auxiliary conductor 1002 to constitute the negative electrode unit;

the positive electrode unit is constituted by two anode side electrode

plates 1011 coated with the active substance 120 on the surface of each electrode plate, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the anode auxiliary conductor 1001, and clipping with the anode auxiliary conductor 1001 at two laterals thereof; the anode collecting current terminal 1041 placed at two sides of each of two anode side electrode plates 1011 link with the anode input/output general collecting current terminals 1051 placed at two sides of the anode auxiliary conductor 1001 to constitute the positive electrode unit; and

the anode input/output general collecting current terminals 1051 of the two positive electrode units are installed at two sides of the negative electrode unit for unilateral or multilateral parallel connection; and isolated bodies 1020 are installed between the two sides of the negative electrode unit and the two positive electrode units, respectively.

The positive electrode unit integrated with the negative electrode unit is installed in an electrode tank for constituting the electrode pair.

Fig. 12 is a schematic view showing the second embodiment of combination of two negative electrode units clipping with a positive electrode unit at two laterals thereof, according to the present invention; in which:

the negative electrode unit is constituted by the cathode side electrode plate 1012 coated with the active substance 120 on the surface of the electrode plate, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the cathode auxiliary conductor 1002, and clipping with the cathode auxiliary conductor 1002 at the lateral thereof; the cathode collecting current terminals 1042 placed at two sides of the cathode side electrode plate 1012 link with the cathode input/output general collecting current terminals 1052 placed at two sides of the cathode auxiliary conductor 1002 to constitute the negative electrode unit;

the positive electrode unit is constituted by two anode side electrode

plates 1011 coated with the active substance 120 on the surface of each electrode plate, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the anode auxiliary conductor 1001, and clipping with the anode auxiliary conductor 1001 at two laterals thereof; the anode collecting current terminal 1041 placed at two sides of each of two anode side electrode plates 1011 link with the anode input/output general collecting current terminals 1051 placed at two sides of the anode auxiliary conductor 1001 to constitute the positive electrode unit; and

the cathode input/output general collecting current terminals 1052 of the two negative electrode units are installed at two sides of the positive electrode unit for unilateral or multilateral parallel connection; and isolated bodies 1020 are installed between the two sides of the positive electrode unit and the two negative electrode units, respectively.

The positive electrode unit integrated with the negative electrode unit is installed in an electrode tank for constituting the electrode pair.

Fig. 13 is a schematic view showing the second embodiment of combination of two positive electrode units clipping with a negative electrode unit at two laterals thereof, according to the present invention; in which:

the negative electrode unit is constituted by two cathode side electrode plates 1012 coated with the active substance 120 on the surface of each electrode plate, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the cathode auxiliary conductor 1002, and clipping with the cathode auxiliary conductor 1002 at two laterals thereof; the cathode collecting current terminals 1042 placed at two sides of each of two cathode side electrode plates 1012 link with the cathode input/output general collecting current terminals 1052 placed at two sides of the cathode auxiliary conductor 1002 to constitute the negative electrode unit;

the positive electrode unit is constituted by the anode side electrode

plate 1011 coated with the active substance 120 on the surface of the electrode plate, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the anode auxiliary conductor 1001, and clipping with the anode auxiliary conductor 1001 at the lateral thereof; the anode collecting current terminal 1041 placed at two sides of the anode side electrode plates 1011 link with the anode input/output general collecting current terminals 1051 placed at two sides of the anode auxiliary conductor 1001 to constitute the positive electrode unit; and

the anode input/output general collecting current terminals 1051 of the two positive electrode units are installed at two sides of the negative electrode unit for unilateral or multilateral parallel connection; and isolated bodies 1020 are installed between the two sides of the negative electrode unit and the two positive electrode units, respectively.

The positive electrode unit integrated with the negative electrode unit is installed in an electrode tank for constituting the electrode pair.

Fig. 14 is a schematic view showing an embodiment of further combination of at least two negative electrode units and at least two positive electrode units staggered placed for unilateral or bilateral parallel connecting the same polarity ones in an electrode tank, in which the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current terminal 1052 of the negative electrode unit, placed at intermediate portion, are used to be the general collecting current terminals for inputting/outputting current, according to the present invention; in which

the negative electrode unit is constituted by two cathode side electrode plates 1012 coated with the active substance 120 on the surface of each electrode plate, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the cathode auxiliary conductor 1002, and clipping with the cathode auxiliary conductor 1002 at two laterals thereof; the cathode collecting current terminals 1042 placed

at two sides of each of two cathode side electrode plates 1012 link with the cathode input/output general collecting current terminals 1052 placed at two sides of the cathode auxiliary conductor 1002 to constitute the negative electrode unit;

5 the positive electrode unit is constituted by two anode side electrode plates 1011 coated with the active substance 120 on the surface of each electrode plates, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the anode auxiliary conductor 1001, and clipping with the anode auxiliary conductor 1001 at
10 two laterals thereof; the anode collecting current terminals 1041 placed at two sides of each of two anode side electrode plates 1011 link with the anode input/output general collecting current terminals 1051 placed at two sides of the anode auxiliary conductor 1001 to constitute the positive electrode unit; and

15 at least two negative electrode units and at least two positive electrode units are staggered placed in an electrode tank 1030, in which: the anode input/output general collecting current terminals 1051 of the positive electrode units are used for unilateral or bilateral parallel connecting the same polarity ones, the cathode input/output general
20 collecting current terminals 1052 of the negative electrode units are used for unilateral or bilateral parallel connecting the same polarity ones, and the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current terminal 1052 of the negative electrode unit, placed at
25 intermediate portion, are used to be the general collecting current terminals for the anodes and cathodes inputting/outputting current.

Fig. 15 is a schematic view showing the second embodiment of combination of electrode units with same polarity for unilateral or bilateral parallel connection in an electrode tank, in which the anode
30 input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current

terminal 1052 of the negative electrode unit, placed at two laterals, are used to be the general collecting current terminals for inputting/outputting current, according to the present invention; in which: at least two negative electrode units and at least two positive electrode units are staggered placed;

the negative electrode unit is constituted by two cathode side electrode plates 1012 coated with the active substance 120 on the surface of each electrode plate, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the cathode auxiliary conductor 1002, and clipping with the cathode auxiliary conductor 1002 at two laterals thereof; the cathode collecting current terminals 1042 placed at two sides of each of two cathode side electrode plates 1012 link with the cathode input/output general collecting current terminals 1052 placed at two sides of the cathode auxiliary conductor 1002 to constitute the negative electrode unit;

the positive electrode unit is constituted by two anode side electrode plates 1011 coated with the active substance 120 on the surface of each electrode plates, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the anode auxiliary conductor 1001, and clipping with the anode auxiliary conductor 1001 at two laterals thereof; the anode collecting current terminals 1041 placed at two sides of each of two anode side electrode plates 1011 link with the anode input/output general collecting current terminals 1051 placed at two sides of the anode auxiliary conductor 1001 to constitute the positive electrode unit; and

at least two negative electrode units and at least two positive electrode units are staggered placed in the electrode tank 1030, in which: the anode input/output general collecting current terminals 1051 of the positive electrode units are used for unilateral or bilateral parallel connecting the same polarity ones, the cathode input/output general collecting current terminals 1052 of the negative electrode units are used

for unilateral or bilateral parallel connecting the same polarity ones, and the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current terminal 1052 of the negative electrode unit, placed at two laterals, are used to be the general collecting current terminals for the anodes and cathodes inputting/outputting current.

Fig. 16 is a schematic view showing the third embodiment of combination of at least two negative electrode units and at least two positive electrode units staggered placed, in which the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current terminal 1052 of the negative electrode unit, placed at intermediate portion, are used to be the general collecting current terminals for inputting/outputting current, according to the present invention; in which:

the negative electrode unit is constituted by two cathode side electrode plates 1012 coated with the active substance 120 on the surface of each electrode plate, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the cathode auxiliary conductor 1002, and clipping with the cathode auxiliary conductor 1002 at two laterals thereof; the cathode collecting current terminals 1042 placed at two sides of each of two cathode side electrode plates 1012 link with the cathode input/output general collecting current terminals 1052 placed at two sides of the cathode auxiliary conductor 1002 to constitute the negative electrode unit;

the positive electrode unit is constituted by two anode side electrode plates 1011 coated with the active substance 120 on the surface of each electrode plates, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the anode auxiliary conductor 1001, and clipping with the anode auxiliary conductor 1001 at two laterals thereof; the anode collecting current terminals 1041 placed at two sides of each of two anode side electrode plates 1011 link with the

anode input/output general collecting current terminals 1051 placed at two sides of the anode auxiliary conductor 1001 to constitute the positive electrode unit; and

at least two negative electrode units and at least two positive
5 electrode units are staggered placed in the electrode tank 1030, in which:
the anode input/output general collecting current terminals 1051 of the
positive electrode units are used for unilateral or bilateral parallel
connecting the same polarity ones, the cathode input/output general
collecting current terminals 1052 of the negative electrode units are used
10 for unilateral or bilateral parallel connecting the same polarity ones, and
the anode input/output general collecting current terminal 1051 of the
positive electrode unit and the cathode input/output general collecting
current terminal 1052 of the negative electrode unit, placed at
intermediate portion, are used to be the general collecting current
15 terminals for the anodes and cathodes inputting/outputting current.

Fig. 17 is a three-dimensional schematic view showing the exploded structure of Fig. 16.

Fig. 18 is a three-dimensional schematic view showing the composition of Fig. 16.

20 Another structural mode of the present invention is shown as Fig. 19,
which is a schematic view showing an embodiment of combination of
electrode pairs constituted by positive and negative electrodes for
staggered parallel superposition, in which the positive-negative electrode
pair with input/output general collecting current terminals is clipped
25 therein, according to the present invention; in which, the positive
electrode unit placed at lateral is constituted by the auxiliary conductor
1001 placed at lateral clipping with the anode side electrode plate 1011
coated with the active substance 120 on the surface of the electrode plate,
wherein the insulator 103 is installed between the intermediate section of
the auxiliary conductor and the anode side electrode plate 1011; the anode
30 collecting current terminals 1041 placed at two sides of each of two anode

side electrode plates 1011 link with the anode input/output general collecting current terminals 1051 placed at two sides of the anode auxiliary conductor 1001 to constitute the positive electrode unit;

the negative electrode unit placed at another lateral is constituted by
5 the cathode auxiliary conductor 1002 placed at lateral clipping with the cathode side electrode plate 1012 coated with the active substance 120 on the surface of the electrode plate, wherein the insulator 103 is installed between the intermediate section of the auxiliary conductor and the cathode side electrode plate 1012; the cathode collecting current terminals
10 1042 placed at two sides of each of two cathode side electrode plates 1012 link with the cathode input/output general collecting current terminals 1052 placed at two sides of the cathode auxiliary conductor 1002 to constitute the negative electrode unit;

two cathode side electrode plates 1012 are coated with the active
15 substance 120 on each electrode plate, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the cathode auxiliary conductor 1002, and clip with the cathode auxiliary conductor 1002 at two laterals thereof, and the cathode collecting current terminals 1042 placed at two sides of each of two cathode side electrode
20 plates 1012 link with the cathode input/output general collecting current terminals 1052 placed at two sides of the cathode auxiliary conductor 1002 to constitute the negative electrode unit;

two anode side electrode plates 1011 are coated with the active substance 120 on each electrode plate, wherein the insulator 103 is
25 installed between the intermediate section of the electrode plate and the anode auxiliary conductor 1001, and clip with the anode auxiliary conductor 1001 at two laterals thereof, and the anode collecting current terminals 1041 placed at two sides of each of two anode side electrode plate1 1011 link with the anode input/output general collecting current
30 terminals 1051 placed at two sides of the anode auxiliary conductor 1001 to constitute the positive electrode unit; and

the above negative electrode units and positive electrode units are staggered placement for constituting the electrode pairs, the negative electrode unit and the positive electrode unit, placed at two laterals, are placed in the electrode tank 1030, and the isolated body 1020 is installed
5 between the positive and negative electrode units, which are staggered placement, in which: the anode input/output general collecting current terminal 1051 of each positive electrode unit is unilateral or multilateral connected with same polarity, the cathode input/output general collecting current terminal 1052 of each negative electrode unit is unilateral or
10 multilateral connected with same polarity, and the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current terminal 1052 of the negative electrode unit, placed at intermediate portion, are used to be the general collecting current terminals for inputting/outputting current.

15 Another structural mode of the present invention is shown as Fig. 20, which is a schematic view showing the second embodiment of combination of negative electrode units and positive electrode units for staggered placement, in which the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode
20 input/output general collecting current terminal 1052 of the negative electrode unit, placed at two laterals, are used to be the general collecting current terminals for inputting/outputting current; in which, the positive electrode unit placed at lateral is constituted by the auxiliary conductor 1001 placed at lateral clipping with the anode side electrode plate 1011
25 coated with the active substance 120 on the surface of the electrode plate, wherein the insulator 103 is installed between the intermediate section of the auxiliary conductor and the anode side electrode plate 1011; the anode collecting current terminals 1041 placed at two sides of each of two anode side electrode plates 1011 link with the anode input/output general
30 collecting current terminals 1051 placed at two sides of the anode auxiliary conductor 1001 to constitute the positive electrode unit;

the negative electrode unit placed at another lateral is constituted by the cathode auxiliary conductor 1002 placed at lateral clipping with the cathode side electrode plate 1012 coated with the active substance 120 on the surface of the electrode plate, wherein the insulator 103 is installed
5 between the intermediate section of the auxiliary conductor and the cathode side electrode plate 1012; the cathode collecting current terminals 1042 placed at two sides of each of two cathode side electrode plates 1012 link with the cathode input/output general collecting current terminals 1052 placed at two sides of the cathode auxiliary conductor 1002 to
10 constitute the negative electrode unit;

two cathode side electrode plates 1012 are coated with the active substance 120 on each electrode plate, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the cathode auxiliary conductor 1002, and clip with the cathode auxiliary
15 conductor 1002 at two laterals thereof, and the cathode collecting current terminals 1042 placed at two sides of each of two cathode side electrode plates 1012 link with the cathode input/output general collecting current terminals 1052 placed at two sides of the cathode auxiliary conductor 1002 to constitute the negative electrode unit;

20 two anode side electrode plates 1011 are coated with the active substance 120 on each electrode plate, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the anode auxiliary conductor 1001, and clip with the anode auxiliary conductor 1001 at two laterals thereof, and the anode collecting current
25 terminals 1041 placed at two sides of each of two anode side electrode plate1 1011 link with the anode input/output general collecting current terminals 1051 placed at two sides of the anode auxiliary conductor 1001 to constitute the positive electrode unit; and

the above negative electrode units and positive electrode units are
30 staggered placement for constituting the electrode pairs, the negative electrode unit and the positive electrode unit, placed at two laterals, are

placed in the electrode tank 1030, and the isolated body 1020 is installed between the positive and negative electrode units, which are staggered placement, in which: the anode input/output general collecting current terminals 1051 placed at two sides of each positive electrode unit coated with the active substance 120 on the electrode plate are unilateral or multilateral connected with same polarity, the cathode input/output general collecting current terminals 1052 placed at two sides of each negative electrode unit are unilateral or multilateral connected with same polarity, and the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current terminal 1052 of the negative electrode unit, placed at two laterals, are used to be the general collecting current terminals for the anodes and cathodes inputting/outputting current.

Another structural mode of the present invention is shown as Fig. 21, which is a schematic view showing the third embodiment of combination of negative electrode units and positive electrode units for staggered placement, in which the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current terminal 1052 of the negative electrode unit, placed at intermediate portion, are used to be the general collecting current terminals for inputting/outputting current; in which, the positive electrode unit placed at lateral is constituted by the auxiliary conductor 1001 placed at lateral clipping with the anode side electrode plate 1011 coated with the active substance 120 on the surface of the electrode plate, wherein the insulator 103 is installed between the intermediate section of the auxiliary conductor and the anode side electrode plate 1011; the anode collecting current terminals 1041 placed at two sides of each of two anode side electrode plates 1011 link with the anode input/output general collecting current terminals 1051 placed at two sides of the anode auxiliary conductor 1001 to constitute the positive electrode unit;

the negative electrode unit placed at another lateral is constituted by

the cathode auxiliary conductor 1002 placed at lateral clipping with the cathode side electrode plate 1012 coated with the active substance 120 on the surface of the electrode plate, wherein the insulator 103 is installed between the intermediate section of the auxiliary conductor and the cathode side electrode plate 1012; the cathode collecting current terminals 1042 placed at two sides of each of two cathode side electrode plates 1012 link with the cathode input/output general collecting current terminals 1052 placed at two sides of the cathode auxiliary conductor 1002 to constitute the negative electrode unit;

two cathode side electrode plates 1012 are coated with the active substance 120 on each electrode plate, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the cathode auxiliary conductor 1002, and clip with the cathode auxiliary conductor 1002 at two laterals thereof, and the cathode collecting current terminals 1042 placed at two sides of each of two cathode side electrode plates 1012 link with the cathode input/output general collecting current terminals 1052 placed at two sides of the cathode auxiliary conductor 1002 to constitute the negative electrode unit;

two anode side electrode plates 1011 are coated with the active substance 120 on each electrode plate, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the anode auxiliary conductor 1001, and clip with the anode auxiliary conductor 1001 at two laterals thereof, and the anode collecting current terminals 1041 placed at two sides of each of two anode side electrode plate1 1011 link with the anode input/output general collecting current terminals 1051 placed at two sides of the anode auxiliary conductor 1001 to constitute the positive electrode unit; and

the above negative electrode units and positive electrode units are staggered placement for constituting the electrode pairs, the negative electrode unit and the positive electrode unit, placed at two laterals, are placed in the electrode tank 1030, and the isolated body 1020 is installed

between the positive and negative electrode units, which are staggered placement, in which: the anode input/output general collecting current terminal 1051 of each positive electrode unit coated with the active substance 120 on the electrode plate is unilateral or multilateral connected with same polarity, the cathode input/output general collecting current terminal 1052 of each negative electrode unit is unilateral or multilateral connected with same polarity, and the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current terminal 1052 of the negative electrode unit, placed at intermediate portion, are used to be the general collecting current terminals for the anodes and cathodes inputting/outputting current.

The present invention is further shown as Fig. 22, which is a schematic view showing the combination of the electrode pair constituted by at least one positive electrode unit and at least one negative electrode unit, in which the polarities of two laterals, the monolithic positive polarity electrode plate, and the monolithic negative polarity electrode plate are staggered superposition, and the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current terminal 1052 of the negative electrode unit, placed at intermediate portion, are used to be the general collecting current terminals for inputting/outputting current; in which:

at least one negative electrode unit is constituted by two cathode side electrode plates 1012 coated with the active substance 120 on the surface of each electrode plate, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the cathode auxiliary conductor 1002, and clipping with the cathode auxiliary conductor 1002 at two laterals thereof; the cathode collecting current terminals 1042 placed at two sides of each of two cathode side electrode plates 1012 link with the cathode input/output general collecting current terminals 1052 placed

at two sides of the cathode auxiliary conductor 1002 to constitute the negative electrode unit;

at least one positive electrode unit is constituted by two anode side electrode plates 1011 coated with the active substance 120 on the surface of each electrode plates, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the anode auxiliary conductor 1001, and clipping with the anode auxiliary conductor 1001 at two laterals thereof; the anode collecting current terminals 1041 placed at two sides of each of two anode side electrode plates 1011 link with the anode input/output general collecting current terminals 1051 placed at two sides of the anode auxiliary conductor 1001 to constitute the positive electrode unit; and

the negative electrode unit and the positive electrode unit are respectively staggered with one or more monolithic electrode plate units and placed in the electrode tank 1030, in which, the monolithic anode electrode plate 1031 and the monolithic cathode electrode plate 1032 are coated with the active substance 120 on the electrode plates, and are staggered placed at two laterals of the positive electrode unit and the negative electrode unit by polarity; the isolated bodies 1020 are installed between the positive electrode unit, the negative electrode unit, the monolithic anode electrode plate 1031, and the monolithic cathode electrode plate 1032, respectively; the anode input/output general collecting current terminals 1051 of the positive electrode units, and the collecting current terminals 601 of the monolithic anode electrode plate 1031 are used for unilateral or multilateral parallel connecting the same polarity ones; the cathode input/output general collecting current terminals 1052 of the negative electrode units, and the collecting current terminal 602 of the monolithic cathode electrode plate 1032 are used for unilateral or multilateral parallel connecting the same polarity ones; and the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting

current terminal 1052 of the negative electrode unit, placed at intermediate portion, are used to be the general collecting current terminals for the anodes and cathodes inputting/outputting current.

5 The present invention is further shown as Fig. 23, which is a schematic view showing an embodiment of combination, in which a number of electrode pairs constituted by positive-negative electrode units placed in individual electrode tank 1030 are unilateral or multilateral connected in series by different polarity; in which:

10 at least two negative electrode units are constituted by two cathode side electrode plates 1012 coated with the active substance 120 on the surface of each electrode plate, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the cathode auxiliary conductor 1002, and clipping with the cathode auxiliary conductor 1002; the cathode collecting current terminals 1042 placed at
15 two sides of each of two cathode side electrode plates 1012 link with the cathode input/output general collecting current terminals 1052 placed at two sides of the cathode auxiliary conductor 1002 to constitute the negative electrode unit;

20 at least two positive electrode units are constituted by two anode side electrode plates 1011 coated with the active substance 120 on the surface of each electrode plates, wherein the insulator 103 is installed between the intermediate section of the electrode plate and the anode auxiliary conductor 1001, and clipping with the anode auxiliary conductor 1001; the anode collecting current terminals 1041 placed at two sides of each of
25 two anode side electrode plates 1011 link with the anode input/output general collecting current terminals 1051 placed at two sides of the anode auxiliary conductor 1001 to constitute the positive electrode unit; and

30 at least one or more negative electrode units and at least one or more positive electrode units are staggered placed for constituting the electrode pairs, and the isolated bodies 1020 are installed between each electrode unit for being placed in the same electrode tank 1030; if there are more

than one electrode units with same polarity placed in the same electrode tank 1030, the collecting current terminals of the electrode units with same polarity are mutually unilateral or multilateral parallel connected; in which, the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current terminal 1052 of the negative electrode unit, which constitute the electrode pair in each electrode tank 1030, are exposed to the outside of the tank shell of the electrode tank 1030, for unilateral or multilateral connection in series with the electrode pair in different electrode tank 1030 by different polarity; in different electrode tanks 1030, the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current terminal 1052 of the negative electrode unit in the electrode pair after connected in series are used to be the anode and cathode general collecting current terminals for inputting/outputting current after the connected in series.

Fig. 24 is a schematic view showing the second embodiment of combination shown in Fig. 23, in which except for the anode input/output general collecting current terminal and the cathode input/output general collecting current terminal, which are used to input/output current, are exposed to the outside of the tank shell of the electrode tank 1030, the other collecting current terminals are hidden within the electrode tank 1030.

As shown in Fig. 24, except for the anode input/output general collecting current terminal and the cathode input/output general collecting current terminal, which are used to input/output current, are exposed to the outside of the tank shell of the electrode tank 1030, the other collecting current terminals are hidden within the electrode tank 1030, and the other compositions are same as that of Fig. 23.

Fig. 25 is a schematic view showing an embodiment of combination, in which a number of electrode pairs constituted by positive-negative

electrode units placed at individual electrode tank 1030 are unilateral or multilateral connected in series by different polarity.

As shown in Fig. 25, the positive electrode unit in the electrode tank 1030 for inputting/outing the anode current after connected in series is constituted by the anode auxiliary conductor 1001 placed at the lateral, in which the insulator 103 is installed between the intermediate section of the auxiliary conductor and the anode side electrode plate 1011, and clipping with the anode side electrode plate 1011; the anode collecting current terminals 1041 placed at two sides of the anode side electrode plate 1011 link with the anode input/output general collecting current terminals 1051 placed at two sides of the anode auxiliary conductor 1001 to constitute the positive electrode unit placed at lateral;

two cathode side electrode plates 1012 coated with the active substance 120 on the surface of each electrode plate, in which the insulator 103 is installed between the intermediate section of the electrode plate and the cathode auxiliary conductor 1002, clip with the cathode auxiliary conductor 1002 at two laterals thereof; the cathode collecting current terminals 1042 placed at two sides of each of two cathode side electrode plates 1012 link with the cathode input/output general collecting current terminals 1052 placed at two sides of the cathode auxiliary conductor 1002 to constitute the negative electrode unit;

if there are more than one electrode units with same polarity placed in the electrode tank 1030, the collecting current terminals of the electrode units with same polarity are mutually unilateral or multilateral parallel connected;

also, the negative electrode unit in another electrode tank 1030 for inputting/outing the cathode current after connected in series is constituted by the cathode auxiliary conductor 1002 placed at the lateral, in which the insulator 103 is installed between the intermediate section of the auxiliary conductor and the cathode side electrode plate 1012, and clipping with the cathode side electrode plate 1012 coated with the active substance 120 on

the surface of the electrode plate; the cathode collecting current terminal 1042 placed at two sides of the cathode side electrode plate 1012 link with the cathode input/output general collecting current terminals 1052 placed at two sides of the cathode auxiliary conductor 1002 to constitute the
5 negative electrode unit placed at lateral;

two anode side electrode plates 1011 coated with the active substance 120 on the surface of each electrode plate, in which the insulator 103 is installed between the intermediate section of the electrode plate and the anode auxiliary conductor 1001, clip with the anode auxiliary conductor
10 1001 at two laterals thereof; the anode collecting current terminals 1041 placed at two sides of each of two anode side electrode plates 1011 link with the anode input/output general collecting current terminals 1051 placed at two sides of the anode auxiliary conductor 1001 to constitute the positive electrode unit;

15 if there are more than one electrode units with same polarity placed in the electrode tank 1030, the collecting current terminals of the electrode units with same polarity are mutually unilateral or multilateral parallel connected;

at least one or more negative electrode units and at least one or more
20 positive electrode units are staggered placed for constituting the electrode pairs placed in the individual electrode tank 1030 connected in series, and the isolated bodies 1020 are installed between each electrode unit for being placed in the same electrode tank 1030; if there are more than one electrode units with same polarity placed in the same electrode tank 1030,
25 the collecting current terminals of the electrode units with same polarity are mutually unilateral or multilateral parallel connected; in which:

the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current terminal 1052 of the negative electrode unit, which constitute the
30 electrode pair in each electrode tank 1030 connected in series, are unilateral or multilateral connected in series with the electrode pair in

different electrode tank 1030 by different polarity; in different electrode tanks, the anode input/output general collecting current terminal 1051 of the positive electrode unit and the cathode input/output general collecting current terminal 1052 of the negative electrode unit in the electrode pair
5 1030 after the connected in series are used to be the anode and cathode general collecting current terminals for inputting/outputting current after the connected in series.

Fig. 26 is a schematic view showing the second embodiment of combination shown in Fig. 25, in which except for the current terminals, which are used to input/output current, are exposed to the outside of the
10 tank shell, the other collecting current terminals are hidden within the electrode tank 1030.

As shown in Fig. 26, except for the anode input/output general collecting current terminal and the cathode input/output general collecting current terminal for inputting/outputting current, are exposed to the
15 outside of the tank shell, the other collecting current terminals are hidden within the electrode tank 1030, and the other compositions are same as that of Fig. 25.

For the reserve power supply with electrode plates clipping with auxiliary conductors, in practical application, two or more sides of the
20 auxiliary conductor are individually placed with one or more collecting current terminals, and unilaterally or bilaterally clip with the electrode plate with same polarity, which is installed with one or more collecting current terminals at two or more sides; the one or more collecting current
25 terminals placed at each of the two or more sides of the both are unilaterally or multilaterally parallel connected, and the insulators are installed between the both for constituting the electrode unit with a variety of geometric shapes; hereby give the following cases described below:

Fig. 27 is a three-dimensional structural schematic view showing the electrode unit constituted by the auxiliary conductor, in which two
30 input/output collecting current terminals are installed at each of two sides

thereof, clipped by the electrode plate(s) with same polarity, in which two collecting current terminals are installed at each of two sides thereof, at one of two or two outer sides of the auxiliary conductor, and an insulator sandwiched therein, respectively, according to the present invention.

5 Fig. 28 is a front view of Fig. 27.

Fig. 29 is a side view of Fig. 27.

As shown in Figs. 27, 28, and 29, the electrode unit constituted by the auxiliary conductor, in which two input/output collecting current terminals are installed at each of two sides thereof, clipped by the
10 electrode plate(s) with same polarity, in which two collecting current terminals are installed at each of two sides thereof, at one of two or two outer sides of the auxiliary conductor, and an insulator sandwiched therein, respectively, according to the present invention.

Fig. 30 is a three-dimensional structural schematic view showing the
15 electrode unit constituted by the auxiliary conductor, in which a collecting current terminal is installed at each of four sides thereof, clipped by the electrode plate(s) with same polarity, in which a collecting current terminal is installed at each of four sides thereof, at one of two or two outer sides of the auxiliary conductor, and an insulator sandwiched therein,
20 respectively, according to the present invention.

Fig. 31 is a front view of Fig. 30.

Fig. 32 is a side view of Fig. 30.

As shown in Figs. 30, 31, and 32, the electrode unit constituted by the auxiliary conductor, in which a collecting current terminal is installed
25 at each of four sides thereof, clipped by the electrode plate(s) with same polarity, in which a collecting current terminal is installed at each of four sides thereof, at one of two or two outer sides of the auxiliary conductor, and an insulator sandwiched therein, respectively.

Fig. 33 is a three-dimensional structural schematic view showing the
30 electrode unit constituted by the auxiliary conductor, in which two collecting current terminals are installed at each of four sides thereof,

clipped by the electrode plate(s) with same polarity, in which two collecting current terminals are installed at each of four sides thereof, at one of two or two outer sides of the auxiliary conductor, and an insulator sandwiched therein, respectively, according to the present invention.

5 Fig. 34 is a front view of Fig. 33.

Fig. 35 is a side view of Fig. 33.

As shown in Figs. 33, 34, and 35, the electrode unit constituted by the auxiliary conductor, in which two collecting current terminals are installed at each of four sides thereof, clipped by the electrode plate(s)
10 with same polarity, in which two collecting current terminals are installed at each of four sides thereof, at one of two or two outer sides of the auxiliary conductor, and an insulator sandwiched therein, respectively.

Fig. 36 is a schematic structural view showing an embodiment of application, in which the conductor is radial and the electrode unit is grid
15 layout, according to the present invention.

Fig. 37 is a front view of Fig. 36.

Fig. 38 is a side view of Fig. 36.

As shown in Figs. 36, 37, and 38, the structure of the reserve power supply with electrode plates clipping with auxiliary conductors is
20 constituted by a radial conductor and a grid layout electrode unit.

Fig. 39 is a schematic structural view showing an embodiment of application, in which the electrode unit is plate type, according to the present invention.

Fig. 40 is a front view of Fig. 39.

25 Fig. 41 is a side view of Fig. 39.

As shown in Figs. 39, 40, and 41, the structure of the reserve power supply with electrode plates clipping with auxiliary conductors is constituted by a plate type electrode unit.

Fig. 42 is a schematic view showing an embodiment of application,
30 in which the electrode unit is used to be a winding type reserve power supply, according to the present invention.

Fig. 43 is a top view of Fig. 42.

Fig. 44 is a side view of Fig. 42.

As shown in Figs. 42, 43, and 44, the structure of the reserve power supply with electrode plates clipping with auxiliary conductors is
5 constituted by an electrode unit, which is a winding type reserve power supply.

CLAIMS:

1. An electrode unit for a reserve power supply, comprising:
 - at least two electrode plates (101) having at least one current collecting terminal (104) extending from each of at least two sides of the at least two electrode plates (101), said at least two electrode plates (101) having an active surface on which is coated an active substance (120); and
 - at least one auxiliary conductor (100) having a conductivity higher than a conductivity of the at least two electrode plates (101), said at least one auxiliary conductor (100) having at least one current collecting terminal (105) extending from each of at least two sides of the at least one auxiliary conductor (100); and
 - an insulator (103) sandwiched between and joined to the at least two electrode plates (101) and to the at least one auxiliary conductor (100) to form said electrode unit,wherein said at least one current collecting terminal (104) extending from each of at least two sides of the electrode plate (101) and said at least one current collecting terminal (105) extending from each of at least two sides of the auxiliary conductor (100) are electrically connected to form at least two common input/output terminals on opposite sides of the electrode unit.
2. An electrode unit for a reserve power supply according to claim 1, wherein said at least one auxiliary conductor (100) is one of a planar structure, a strip structure, and a mesh structure.
3. An electrode unit for a reserve power supply according to claim 1, wherein said reserve power supply is one of a primary battery, rechargeable battery, capacitor, and super capacitor.
4. An electrode unit for a reserve power supply according to claim 1, wherein said input/output terminals have a same polarity.
5. An electrode unit for a reserve power supply according to claim 1, wherein one said current collecting terminal (104) and one said current collecting terminal (105) extend

from each of four sides of the respective electrode plate (101) and auxiliary conductor (100) to form input/out terminals on each of four sides of said electrode unit.

6. A reserve power supply, comprising:

an anode unit comprising:

at least one anode electrode plate (1011) having at least one current collecting anode terminal (1041) extending from each of at least two sides of the at least one anode electrode plate (1011), said at least one anode electrode plate (1011) having an anode active surface on which is coated an active anode substance (120); and

at least one anode auxiliary conductor (1001) having a conductivity higher than a conductivity of the at least one anode electrode plate (1011), said at least one anode auxiliary conductor (1001) having at least one current collecting anode terminal (1051) extending from each of at least two sides of the at least one anode auxiliary conductor (1001); and

an anode unit insulator (103) sandwiched between and joined to the at least one anode electrode plate (1011) and to the at least one anode auxiliary conductor (1001) to form the anode unit,

wherein said at least one current collecting anode terminal (1041) extending from each of at least two sides of the anode electrode plate (1011) and said at least one current collecting anode terminal (1051) extending from each of at least two sides of the anode auxiliary conductor (1001) are electrically connected to form common input/output terminals on the two sides the anode unit;

a cathode unit comprising:

at least one cathode electrode plate (1012) having at least one current collecting cathode terminal (1042) extending from each of at least two sides of the at least one cathode electrode plate (1012), said at least one cathode electrode plate (1012) having a cathode active surface on which is coated an active cathode substance (120);

at least one cathode auxiliary conductor (1002) having a conductivity higher than a conductivity of the at least one cathode electrode plate (1012), said at least one cathode auxiliary conductor (1002) having at least

one current collecting cathode terminal (1052) extending from each of at least two sides of the at least one cathode auxiliary conductor (1002); and

a cathode unit insulator (103) sandwiched between and joined to the at least one cathode electrode plate (1012) and to the at least one cathode auxiliary conductor (1002) to form the cathode unit;

wherein said at least one current collecting cathode terminal (1042) extending from each of at least two sides of the cathode electrode plate (1012) and said at least one current collecting cathode terminal (1052) extending from each of at least two sides of the cathode auxiliary conductor (1002) are electrically connected to form at least one common input/output terminals on the two sides of the cathode unit; and

an isolating body (1020) sandwiched between and joined to the anode unit and the cathode unit to form an integrated electrode pair, said integrated electrode pair being installed in an electrode tank (1032) of said reserve power supply.

7. A reserve power supply according to claim 6, comprising two of said cathode units joined by respective said insulating bodies (1020) to opposite lateral surfaces of said anode unit;

wherein each said cathode unit include two said cathode electrode plates (1012) coated with said active cathode substance (120) and joined to said cathode auxiliary conductor (1002) by respective said cathode unit insulators (103), said cathode unit insulators (103) being respectively installed between an intermediate section of said cathode electrode plate (1012) and an intermediate section of the cathode auxiliary conductor (1002), and said current collecting cathode terminals (1042) of said cathode electrode plates (1012) and said current collecting cathode terminals (1052) of said cathode auxiliary conductor (1002) are electrically connected to form said common cathode input/output terminals;

wherein said anode units include two said anode electrode plates (1011) coated with said active anode substance (120) and joined to said anode auxiliary conductor (1001) by respective said anode unit insulators (103), said anode unit insulators (103) being respectively installed between an intermediate section of said anode electrode plate (1011) and an intermediate section of the anode auxiliary conductor (1001), and said current collecting anode terminals (1041) of said anode electrode plates (1011) and said

current collecting anode terminals (1051) of said anode auxiliary conductor (1001) are electrically connected to form said common anode input/output terminals; and

wherein said common cathode input/output terminals of said two cathode units are further electrically connected to each other.

8. A reserve power supply according to claim 6, comprising two of said anode units joined by respective said insulating bodies (1020) to opposite lateral surfaces of said cathode unit;

wherein each said anode unit include two said anode electrode plates (1011) coated with said active anode substance (120) and joined to said anode auxiliary conductor (1001) by respective said anode unit insulators (103), said anode unit insulators (103) being respectively installed between an intermediate section of said anode electrode plate (1011) and an intermediate section of the anode auxiliary conductor (1001), and said current collecting anode terminals (1041) of said anode electrode plates (1011) and said current collecting anode terminals (1051) of said anode auxiliary conductor (1001) are electrically connected to form said common anode input/output terminals;

wherein said cathode unit includes two said cathode electrode plates (1012) coated with said active cathode substance (120) and joined to said cathode auxiliary conductor (1002) by respective said cathode unit insulators (103), said cathode unit insulators (103) being respectively installed between an intermediate section of said cathode electrode plate (1012) and an intermediate section of the cathode auxiliary conductor (1002), and said current collecting cathode terminals (1042) of said cathode electrode plates (1012) and said current collecting cathode terminals (1052) of said cathode auxiliary conductor (1002) are electrically connected to form said common cathode input/output terminals; and

wherein said common anode input/output terminals of said two anode units are further electrically connected to each other.

9. A reserve power supply according to claim 6, comprising two of said cathode units joined by respective said insulating bodies (1020) to opposite lateral surfaces of said anode unit;

wherein each said cathode unit include one said cathode electrode plate (1012) coated with said active cathode substance (120) and joined to said cathode auxiliary

conductor (1002) by said cathode unit insulator (103), said cathode unit insulator (103) being installed between an intermediate section of said cathode electrode plate (1012) and an intermediate section of the cathode auxiliary conductor (1002), and said current collecting cathode terminals (1042) of said cathode electrode plate (1012) and said current collecting cathode terminals (1052) of said cathode auxiliary conductor (1002) are electrically connected to form said common cathode input/output terminals;

wherein said anode unit includes two said anode electrode plates (1011) coated with said active anode substance (120) and joined to said anode auxiliary conductor (1001) by respective said anode unit insulators (103), said anode unit insulators (103) being respectively installed between an intermediate section of said anode electrode plate (1011) and an intermediate section of the anode auxiliary conductor (1001), and said current collecting anode terminals (1041) of said anode electrode plates (1011) and said current collecting anode terminals (1051) of said anode auxiliary conductor (1001) are electrically connected to form said common anode input/output terminals; and

wherein said common cathode input/output terminals of said two cathode units are further electrically connected to each other.

10. A reserve power supply according to claim 6, comprising two of said anode units joined by respective said insulating bodies (1020) to opposite lateral surfaces of said cathode unit;

wherein each said anode unit include one said anode electrode plate (1011) coated with said active anode substance (120) and joined to said anode auxiliary conductor (1001) by said anode unit insulator (103), said anode unit insulator (103) being installed between an intermediate section of said anode electrode plate (1011) and an intermediate section of the anode auxiliary conductor (1001), and said current collecting anode terminals (1041) of said anode electrode plate (1011) and said current collecting anode terminal (1051) of said anode auxiliary conductor (1001) are electrically connected to form said common anode input/output terminals;

wherein said cathode unit includes two said cathode electrode plates (1012) coated with said active cathode substance (120) and joined to said cathode auxiliary conductor (1002) by respective said cathode unit insulators (103), said cathode unit insulators (103) being respectively installed between an intermediate section of said cathode electrode plate (1012) and an intermediate section of the cathode auxiliary conductor (1002), and

said current collecting cathode terminals (1042) of said cathode electrode plates (1012) and said current collecting cathode terminals (1052) of said cathode auxiliary conductor (1002) are electrically connected to form said common cathode input/output terminals; and

wherein said common anode input/output terminals of said two anode units are further electrically connected to each other.

11. A reserve power supply as claimed in claim 6, comprising at least two of said cathode units and at least two of said anode units alternately joined to each other by respective said insulating bodies (1020);

wherein each said cathode unit include two said cathode electrode plates (1012) coated with said active cathode substance (120) and joined to said cathode auxiliary conductor (1002) by respective said cathode unit insulators (103), said cathode unit insulators (103) being respectively installed between an intermediate section of said cathode electrode plate (1012) and an intermediate section of the cathode auxiliary conductor (1002), and said current collecting cathode terminals (1042) of said cathode electrode plates (1012) and said current collecting cathode terminals (1052) of said cathode auxiliary conductor (1002) are electrically connected to form said common cathode input/output terminals;

wherein each said anode unit includes two said anode electrode plates (1011) coated with said active anode substance (120) and joined to said anode auxiliary conductor (1001) by respective said anode unit insulators (103), said anode unit insulators (103) being respectively installed between an intermediate section of said anode electrode plate (1011) and an intermediate section of the anode auxiliary conductor (1001), and said current collecting anode terminals (1041) of said anode electrode plates (1011) and said current collecting anode terminals (1051) of said anode auxiliary conductor (1001) are electrically connected to form said common anode input/output terminals; and

wherein said common cathode input/output terminals of said at least two cathode units are electrically connected to each other and said common anode input/output terminals of said at least two anode units are also electrically connected to each other.

12. A reserve power supply according to claim 11, wherein one of said common cathode input/output terminals at an intermediate position in said series of said alternating

cathode and anode units, and one of said common anode input/output terminals at an intermediate position in said series of alternating cathode and anode units, serve as respective general collecting current terminals for input and output of current between said reserve power supply and an external device.

13. A reserve power supply according to claim 12, wherein said general collecting current terminals are exposed to an outside of said tank (1030) and remaining said common anode input/output terminals and common cathode input/output terminals are hidden within said tank (1030).

14. A reserve power supply according to claim 11, wherein a respective said common anode input/output terminals of said end cathode and anode units serve as respective general collecting current terminals for input and output of current between said reserve power supply and an external device.

15. A reserve power supply according to claim 14, wherein said general collecting current terminals are exposed to an outside of said tank (1030) and remaining said common anode input/output terminals and common cathode input/output terminals are hidden within said tank (1030).

16. A reserve power supply according to claim 6, comprising at least two of said cathode units and at least two of said anode units alternately joined to each other by respective said insulating bodies (1020);

wherein one of said cathode units at an end of a series of said alternating anode and cathode units includes one said cathode electrode plate (1012) coated with said active cathode substance (120) and joined to said cathode auxiliary conductor (1002) by said cathode unit insulator (103), said cathode unit insulator (103) being installed between an intermediate section of said cathode electrode plate (1012) and an intermediate section of the cathode auxiliary conductor (1002), and said current collecting cathode terminals (1042) of said cathode electrode plate (1012) and said current collecting cathode terminals (1052) of said cathode auxiliary conductor (1002) are electrically connected to form said common cathode input/output terminals;

wherein each of said cathode units except said end cathode unit includes two said cathode electrode plates (1012) coated with said active cathode substance (120) and joined to said cathode auxiliary conductor (1002) by respective said cathode unit insulators (103), said cathode unit insulators (103) being respectively installed between an intermediate section of said cathode electrode plate (1012) and an intermediate section of the cathode auxiliary conductor (1002), and said current collecting cathode terminals (1042) of said cathode electrode plates (1012) and said current collecting cathode terminals (1052) of said cathode auxiliary conductor (1002) are electrically connected to form said common cathode input/output terminals;

wherein one of said anode units at an opposite end of said series of alternating anode and cathode units include one said anode electrode plate (1011) coated with said active anode substance (120) and joined to said anode auxiliary conductor (1001) by said anode unit insulator (103), said anode unit insulator (103) being installed between an intermediate section of said anode electrode plate (1011) and an intermediate section of the anode auxiliary conductor (1001), and said current collecting anode terminals (1041) of said anode electrode plate (1011) and said current collecting anode terminals (1051) of said anode auxiliary conductor (1001) are electrically connected to form said common anode input/output terminals;

wherein each said anode unit except said end anode unit includes two said anode electrode plates (1011) coated with said active anode substance (120) and joined to said anode auxiliary conductor (1001) by respective said anode unit insulators (103), said anode unit insulators (103) being respectively installed between an intermediate section of said anode electrode plate (1011) and an intermediate section of the anode auxiliary conductor (1001), and said current collecting anode terminals (1041) of said anode electrode plates (1011) and said current collecting anode terminals (1051) of said anode auxiliary conductor (1001) are electrically connected to form said common anode input/output terminals; and

wherein said common cathode input/output terminals of said at least two cathode units are electrically connected to each other and said common anode input/output terminals of said at least two anode units are also electrically connected to each other.

17. A reserve power supply according to claim 16, wherein one of said common cathode input/output terminals at an intermediate position in said series of said alternating

cathode and anode units, and one of said common anode input/output terminals at an intermediate position in said series of alternating cathode and anode units, serve as respective general collecting current terminals for input and output of current between said reserve power supply and an external device.

18. A reserve power supply according to claim 17, wherein said general collecting current terminals are exposed to an outside of said tank (1030) and remaining said common anode input/output terminals and common cathode input/output terminals are hidden within said tank (1030).

19. A reserve power supply according to claim 16, wherein a respective said common anode input/output terminals of said end cathode and anode units serve as respective general collecting current terminals for input and output of current between said reserve power supply and an external device.

20. A reserve power supply according to claim 19, wherein said general collecting current terminals are exposed to an outside of said tank (1030) and remaining said common anode input/output terminals and common cathode input/output terminals are hidden within said tank (1030).

21. A reserve power supply according to claim 6, comprising one said cathode unit and one said anode unit joined to each other by one said insulating body (1020);

wherein said cathode unit include two said cathode electrode plates (1012) coated with said active cathode substance (120) and joined to said cathode auxiliary conductor (1002) by respective said cathode unit insulators (103), said cathode unit insulators (103) being respectively installed between an intermediate section of said cathode electrode plate (1012) and an intermediate section of the cathode auxiliary conductor (1002), and said current collecting cathode terminals (1042) of said cathode electrode plates (1012) and said current collecting cathode terminals (1052) of said cathode auxiliary conductor (1002) are electrically connected to form said common cathode input/output terminals;

wherein said anode unit include one said anode electrode plate (1011) coated with said active anode substance (120) and joined to said anode auxiliary conductor (1001) by said anode unit insulator (103), said anode unit insulator (103) being installed between an

intermediate section of said anode electrode plate (1011) and an intermediate section of the anode auxiliary conductor (1001), and said current collecting anode terminal (1041) of said anode electrode plate (1011) and said current collecting anode terminals (1051) of said anode auxiliary conductor (1001) are electrically connected to form said common anode input/output terminals.

22. A reserve power supply according to claim 21, further comprising at least one monolithic anode plate (1031) having a positive terminal (601) and joined to the cathode unit by a second said insulating body (1020), and at least one monolithic cathode plate (1032) having a negative terminal (602) and joined to said anode unit by a third said insulating body (1020), said positive terminal (601) being electrically connected to the common input/output terminal of the anode unit and said negative terminal being electrically connected to the common input/output terminal of the cathode unit.

23. A reserve power supply according to claim 21, further comprising additional said monolithic anode plates (1031) and monolithic cathode plates (1032) stacked in alternating fashion on each side of said joined-together anode unit and cathode unit.

24. A reserve power supply according to claim 6, wherein said tank (1030) is divided into multiple cells, each containing one cathode unit and one anode unit.

25. A winding type electrode unit for a reserve power supply, comprising:
at least two anode side electrode plates (1011), said at least two anode side electrode plates (1011) each having an anode active surface on which is coated an anode active substance (120); and
at least one anode side auxiliary conductor (1001) sandwiched between said at least two anode side electrode plates (1011) and having a conductivity higher than a conductivity of the at least two anode side electrode plates (1011);
at least two cathode side electrode plates (1012), said at least two cathode side electrode plates (1012) each having a cathode active surface on which is coated a cathode active substance (120); and

at least one cathode side auxiliary conductor (1002) sandwiched between the at least two cathode side electrode plates having a conductivity higher than a conductivity of the at least two cathode side electrode plates (1012); and

a first insulator (1020) sandwiched between a first one of said at least two anode side electrode plates (1011) and a first one of said at least two cathode side electrode plates (1012); and

a second insulator (1020) sandwiched between a second one of said at least two anode side electrode plates (1011) and a second one of said at least two cathode side electrode plates (1012),

wherein said at least two anodes side electrode plates (1011), at least two cathode side electrode plates (1012), and respective said first and second insulators (1020) are alternately wound in a spiral configuration to form a winding type electrode unit.