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(54) Titre : APPAREIL DE VERIFICATION DU FILAGE DE DISPOSITIFS DE DOSAGE DE COURANT ELECTRIQUE
 (54) Title: WIRING TESTER OF MULTIFUNCTIONAL ELECTRIC ENERGY METERING DEVICE

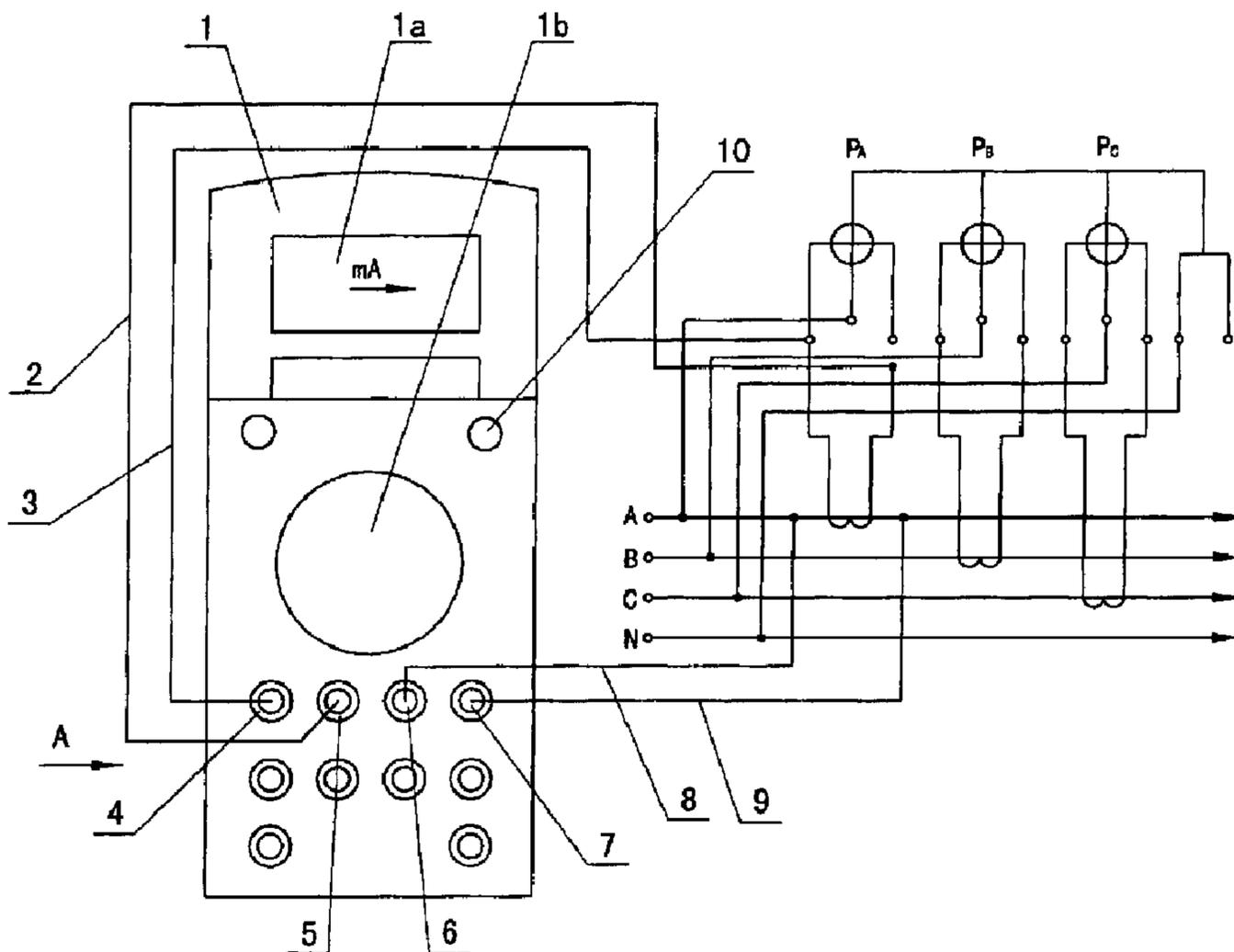


Fig. 1

(57) **Abrégé/Abstract:**

A wiring tester of a multifunctional electric energy metering device includes a phase volt-ampere meter (1), wherein a direct current power supply (11) is provided in a meter case, a pair of test sockets (4, 5) and a pair of electrode sockets (6, 7) are provided on the

(57) **Abrégé(suite)/Abstract(continued):**

meter case, one pole of the direct current power supply (11) is connected with one electrode socket (6), the other pole of the direct current power supply is connected with the other electrode socket (7) via a switch (10), the switch (10) is fixed on the meter case, the pair of test sockets (4, 5) are connected with two terminals of a transfer switch (1b) of the phase volt-ampere meter (1) respectively, and the wiring tester is also provided with test wires (2, 3, 8, 9) which match with each of the test sockets (4, 5) and the electrode sockets (6, 7). The wiring tester of a multifunctional electric energy metering device has the function of the phase volt-ampere meter. Moreover, when the wiring tester of a multifunctional electric energy metering device is needed to check and judge an electric energy metering loop, the test wires which match with each of the test sockets and the electrode sockets are connected with the corresponding sockets and then the phase volt-ampere meter can be used to check and judge the electric energy metering loop. The wiring tester according to present invention has a reasonable and reliable structure, can greatly simplify the process of the test and the wire connection/disconnection check of the electric energy metering device, and can check and judge accurately.

ABSTRACT

A wiring tester of a multifunctional electric energy metering device includes a phase volt-ampere meter (1), wherein a direct current power supply (11) is provided in a meter case, a pair of test sockets (4, 5) and a pair of electrode sockets (6, 7) are provided on the meter case, one pole of the direct current power supply (11) is connected with one electrode socket (6), the other pole of the direct current power supply is connected with the other electrode socket (7) via a switch (10), the switch (10) is fixed on the meter case, the pair of test sockets (4, 5) are connected with two terminals of a transfer switch (1b) of the phase volt-ampere meter (1) respectively, and the wiring tester is also provided with test wires (2, 3, 8, 9) which match with each of the test sockets (4, 5) and the electrode sockets (6, 7). The wiring tester of a multifunctional electric energy metering device has the function of the phase volt-ampere meter. Moreover, when the wiring tester of a multifunctional electric energy metering device is needed to check and judge an electric energy metering loop, the test wires which match with each of the test sockets and the electrode sockets are connected with the corresponding sockets and then the phase volt-ampere meter can be used to check and judge the electric energy metering loop. The wiring tester according to present invention has a reasonable and reliable structure, can greatly simplify the process of the test and the wire connection/disconnection check of the electric energy metering device, and can check and judge accurately.

WIRING TESTER OF MULTIFUNCTIONAL ELECTRIC ENERGY METERING DEVICE

FIELD OF THE INVENTION

5 [0001] The present invention generally relates to the field of electrical test apparatus, and in particular to a wiring tester of a multifunctional electric energy metering device.

BACKGROUND OF THE INVENTION

[0002] An electric energy metering device includes a power meter, a current
10 transformer, a voltage transformer, a secondary wire, a connection terminal and the like. In an electric energy metering device, if polarities of a current/voltage transformer are inaccurate, or if there is phenomenon, such as a fused primary fuse, a loose secondary connection wire or a wrong wiring in a voltage transformer, the correct function of the electric energy metering device will all be affected. For some users that consume very
15 large amounts of electric energy, a mistake in one piece of wire may lead to a metering error of thousands of or even millions of Kilowatt-hours, resulting in dissensions for metering and causing economic loss to a power supply enterprise. In order to ensure that the electric energy metering device performs correct metering, it may be needed to test the polarities of the current transformer and the voltage transformer, to verify the conduction
20 situation of the secondary wiring and the mark of the connection terminal, and to check the wiring connection of the electric energy meter. Presently, all those mentioned above are implemented by a traditional wire tracing method. However, the traditional wire tracing method needs a lot of equipment. Moreover, there is a small space in a metering cabinet or box with many intermediate conversions, which brings difficulty in the test and
25 the wire connection/disconnect check for the electric energy metering device, leading to not only a waste of time but also low efficiency and difficulty in guaranteeing the accuracy. Furthermore the existing phase volt-ampere meter can not solve the above problems.

SUMMARY OF THE INVENTION

[0003] The object of the present invention is to provide a wiring tester of a multifunctional electric energy metering device, which not only has the function of a phase volt-ampere meter but also can rapidly check and judge the wiring of a metering
5 loop of an electric energy metering device.

[0004] In order to achieve the above object, the present invention provides the following solution: a wiring tester of a multifunctional electric energy metering device, including a phase volt-ampere meter, wherein a direct current power supply is provided in a meter case, a pair of test sockets and a pair of electrode sockets are provided on the
10 meter case, one pole of the direct current power supply is connected with one electrode socket, the other pole of the direct current power supply is connected with the other electrode socket via a switch, the switch is fixed on the meter case, the pair of test sockets are connected with two terminals of a transfer switch of the phase volt-ampere meter respectively; the wiring tester is also provided with test wires which match with each of
15 the test sockets and the electrode sockets.

[0005] As seen from the above solution, the wiring tester of a multifunctional electric energy metering device provided by the present invention has the function of the phase volt-ampere meter. Moreover, if the wiring tester of the multifunctional electric energy metering device is needed to check and judge a electric energy metering loop, the test
20 wires which match with each of the test sockets and the electrode sockets are connected to corresponding sockets and then the phase volt-ampere meter can be used to check and judge the electric energy metering loop.

[0006] The wiring tester of the multifunctional electric energy metering device according to present invention has a reasonable and reliable structure, can greatly simplify
25 the process of the test and wire connection/disconnection check for the electric energy metering device, and can check and judge accurately.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] Figure 1 is a structural schematic diagram according to the first embodiment of the present invention;

[0008] Figure 2 is a view taken along A in Figure 1;

5 [0009] Figure 3 is a circuit diagram in which the electrode sockets connect with the direct current power supply in Figure 2;

[0010] Figure 4 is a schematic diagram in which the test sockets connect with the transfer switch of the phase volt-ampere meter in Figure 1; and

10 [0011] Figure 5 is a schematic view according to the second embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0012] The present invention will be further illustrated in conjunction with the embodiments and the accompany drawings as follows.

15 [0013] Reference is made to Figure 1, Figure 2, Figure 3 and Figure 4.

[0014] A wiring tester of a multifunctional electric energy metering device provided by the present invention includes a phase volt-ampere meter 1 which is the same as the existing product; a direct current power supply 11 provided in a meter case; a pair of test sockets, i.e., a test socket 4 and a test socket 5, provided on the meter case; a pair of electrode sockets, i.e., an electrode socket 6 and an electrode socket 7, also provided on the meter case, in which the negative pole of the direct current power supply 11 is connected with the electrode socket 7, and the positive pole of the direct current power supply 11 is connected with the other electrode socket 6 via a switch 10; the switch 10 fixed on the meter case. The test sockets 4 and 5 are connected with two terminals of a transfer switch 1b of the phase volt-ampere meter respectively, in which one test socket 4 is connected with the positive pole terminal of the transfer switch 1b and another test socket 5 is connected with the negative pole terminal of the transfer switch 1b. Furthermore, the wiring tester is also provided with a test wire 2, a test wire 3, a test wire 4 and a test wire 5 which match with each of the test sockets and the electrode sockets respectively. The switch 10 is a normally-open tact switch. The direct current power

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supply 11 is a storage battery having a voltage of 9 volts.

[0015] Reference is made to Figure 1.

[0016] The present application example is to test a current loop of a three-phase four-line low-voltage electric energy metering device. Specifically, the test method is as follows.

[0017] When a Group A element is tested, the transfer switch 1b is turned to the 0.05mA model. One terminal of the test wire 8 is inserted into the electrode socket 6 which is connected with the positive pole of the direct current power supply; and the other terminal thereof is connected to a primary power supply side of an A-phase current transformer. One terminal of another test wire 9 is inserted into the electrode socket 7 which is connected with the negative pole of the direct current power supply; and the other terminal thereof is connected to a primary load side of the A-phase current transformer. One terminal of the test wire 3 is inserted into the test socket 4 which is connected with the positive pole terminal of the transfer switch 1b; and the other terminal thereof is connected with a terminal knob of an A-phase current inlet wire of a junction box of the metering device. One terminal of another test wire 2 is inserted into the test socket 5 which is connected with the negative pole terminal of the transfer switch 1b; and the other terminal thereof is connected with an A-phase current outlet wire of a junction box of the metering device, in which the A-phase current outlet wire is disconnected with the terminal knob. Upon the switch 10 being pushed down, a detected signal passes through the transfer switch, the measurement circuit and the transformer of the phase volt-ampere meter via the test wires 2 and 3, and then the detected signal is input into a liquid crystal screen 1a of the phase volt-ampere meter. The liquid crystal screen 1a is observed. If the direction of the detected transient induced current which is displayed on the liquid crystal screen is the same as the correct direction of detected current in the A-phase current transformer, the wiring of the A-phase current loop is correct; otherwise, the wiring of the A-phase current loop is wrong. The test methods for a Group B element and a Group C element are similar to that for the Group A element.

[0018] Reference is made to Figure 5.

[0019] The present application example is to test a voltage loop of a three-phase four-line low-voltage electric energy metering device. Specifically, the test method is as

follows.

[0020] When a Group A element is tested, the transfer switch 1b is turned to the direct current 10V model. One terminal of the test wire 8 is inserted into the electrode socket 6 which is connected with the positive pole of the direct current power supply; and the other terminal thereof is connected to the primary power supply side of the A-phase current transformer. One terminal of another test wire 9 is inserted into the electrode socket 7 which is connected with the negative pole of the direct current power supply; and the other terminal thereof is connected to the N line of the power supply. One terminal of the test wire 3 is inserted into the test socket 4 which is connected with the positive pole terminal of the transfer switch 1b; and the other terminal thereof is connected with a terminal knob of an A-phase voltage of the junction box for the metering device. One terminal of another test wire 2 is inserted into the test socket 5 which is connected with the negative pole terminal of the transfer switch 1b; and the other terminal thereof is connected with N-phase terminal knob of the junction box of the metering device. The switch is pushed down and the liquid crystal screen 1a is observed. When the liquid crystal screen 1a indicates a voltage of approximately 9V, the voltage loop of the Group A element of the electric energy metering device is wired correctly. The test methods for a Group B element and a Group C element are similar to that for the Group A element.

[0021] Furthermore, the wiring tester of the multifunctional electric energy metering device provided by the present invention may further perform the following tests of an electric energy metering device: tests of the current and voltage loop of a three-phase three-line high-voltage electric energy metering device, and tests of polarities of a current transformer and a voltage transformer. The principles of those tests are similar to those of the above tests of the current and voltage loop of a three-phase four-line low-voltage electric energy metering device.

CLAIMS

What is claimed is:

1. A wiring tester of a multifunctional electric energy metering device, comprising a
5 phase volt-ampere meter, wherein a direct current power supply is provided in a meter
case, a pair of test sockets and a pair of electrode sockets are provided on the meter case,
one pole of the direct current power supply is connected with one electrode socket, the
other pole of the direct current power supply is connected with the other electrode socket
via a switch, the switch is fixed on the meter case, the pair of test sockets are connected
10 with two terminals of a transfer switch of the phase volt-ampere meter respectively, and
the wiring tester is provided with test wires which match with each of the test sockets and
the electrode sockets.

2. The wiring tester of a multifunctional electric energy metering device according to
15 claim 1, wherein the switch is a normally-open tact switch.

3. The wiring tester for a multifunctional electric energy metering device according to
claim 1, wherein the direct current power supply is a storage battery having a voltage of 9
volts.

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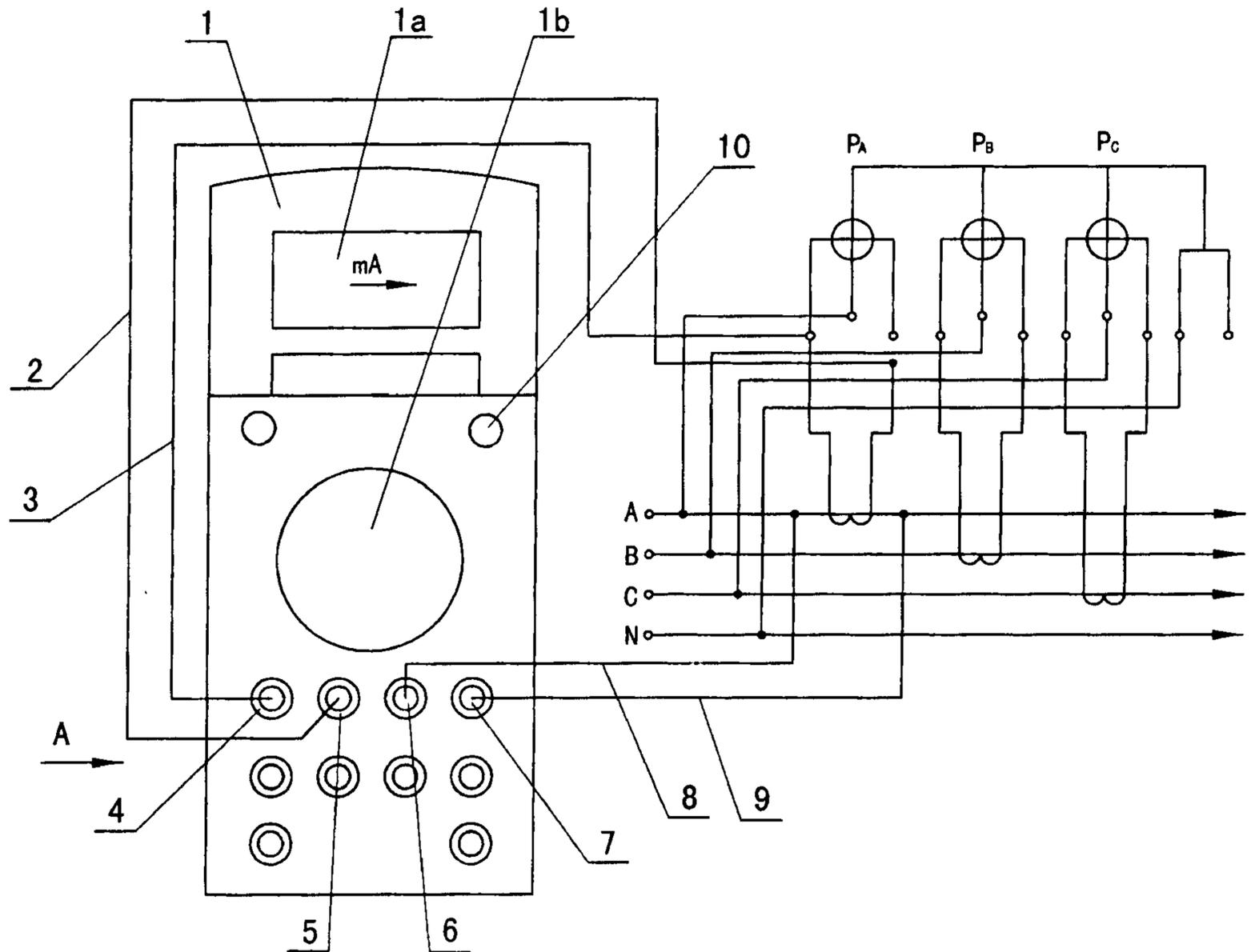


Fig. 1

A direct

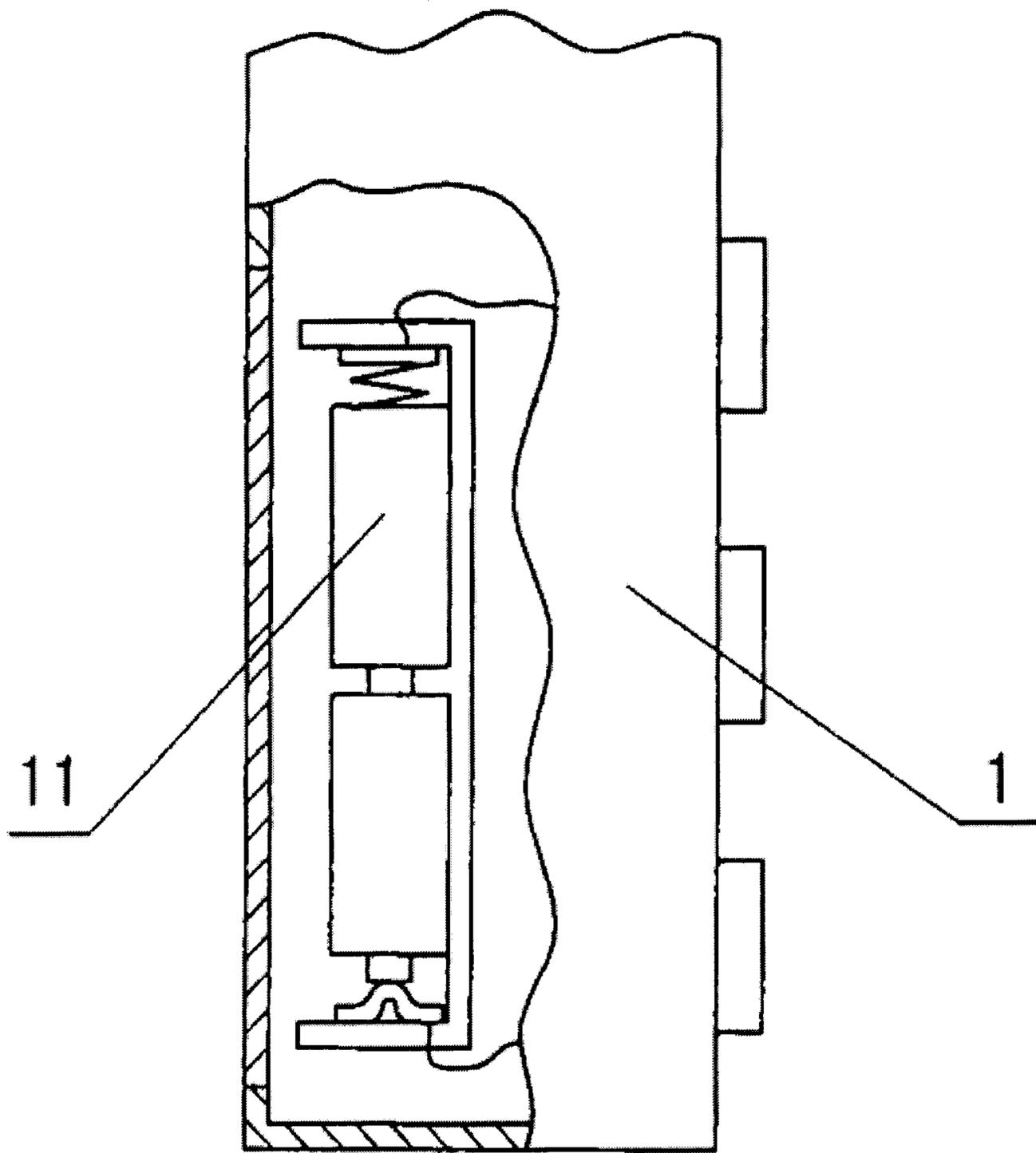


Fig. 2

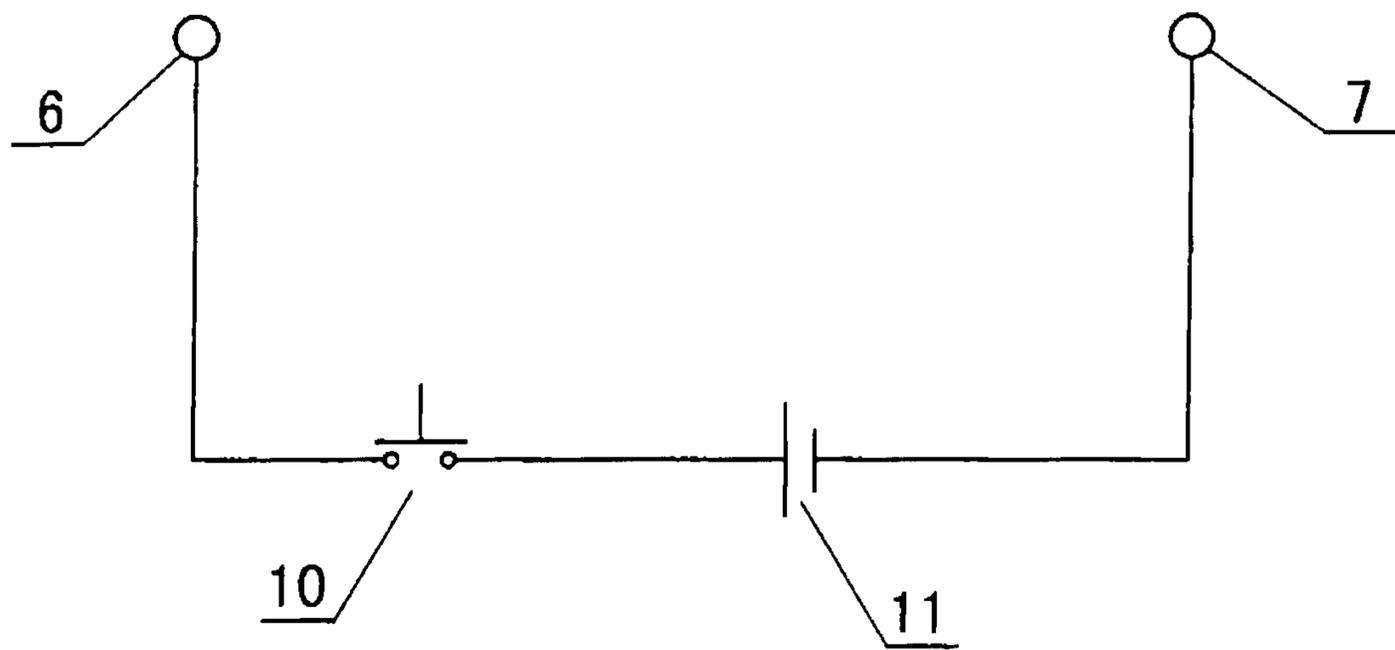


Fig. 3

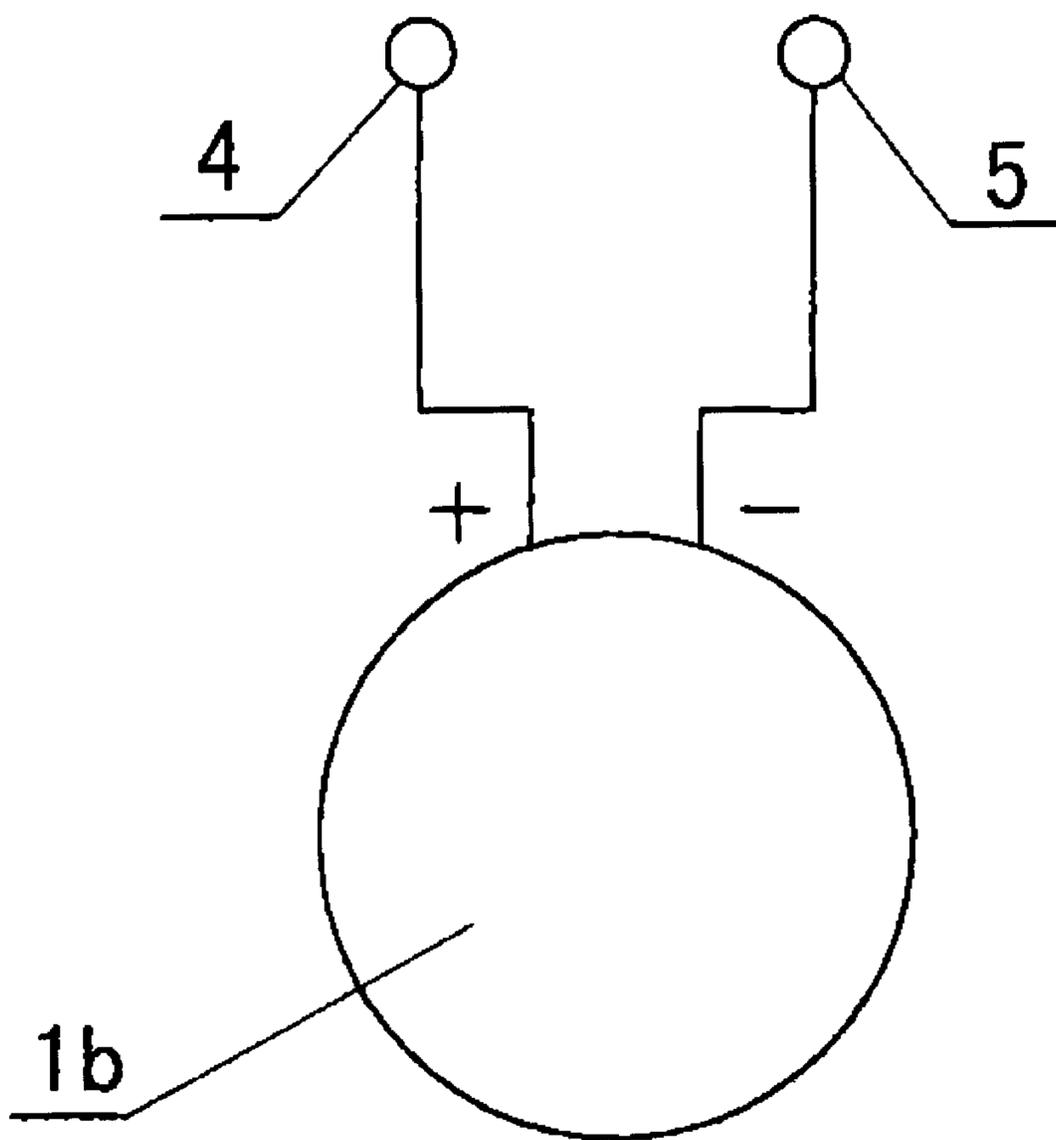


Fig. 4

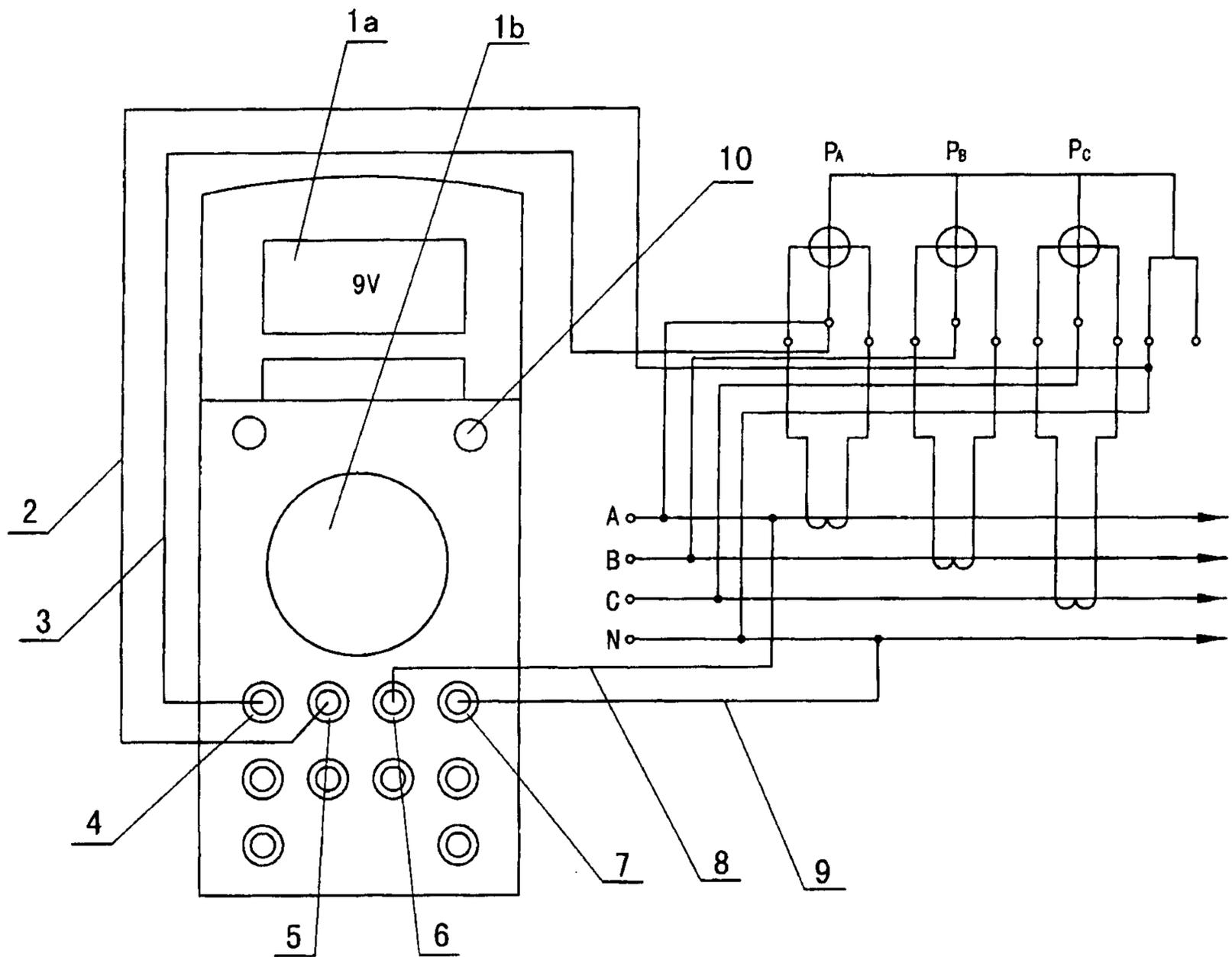


Fig. 5

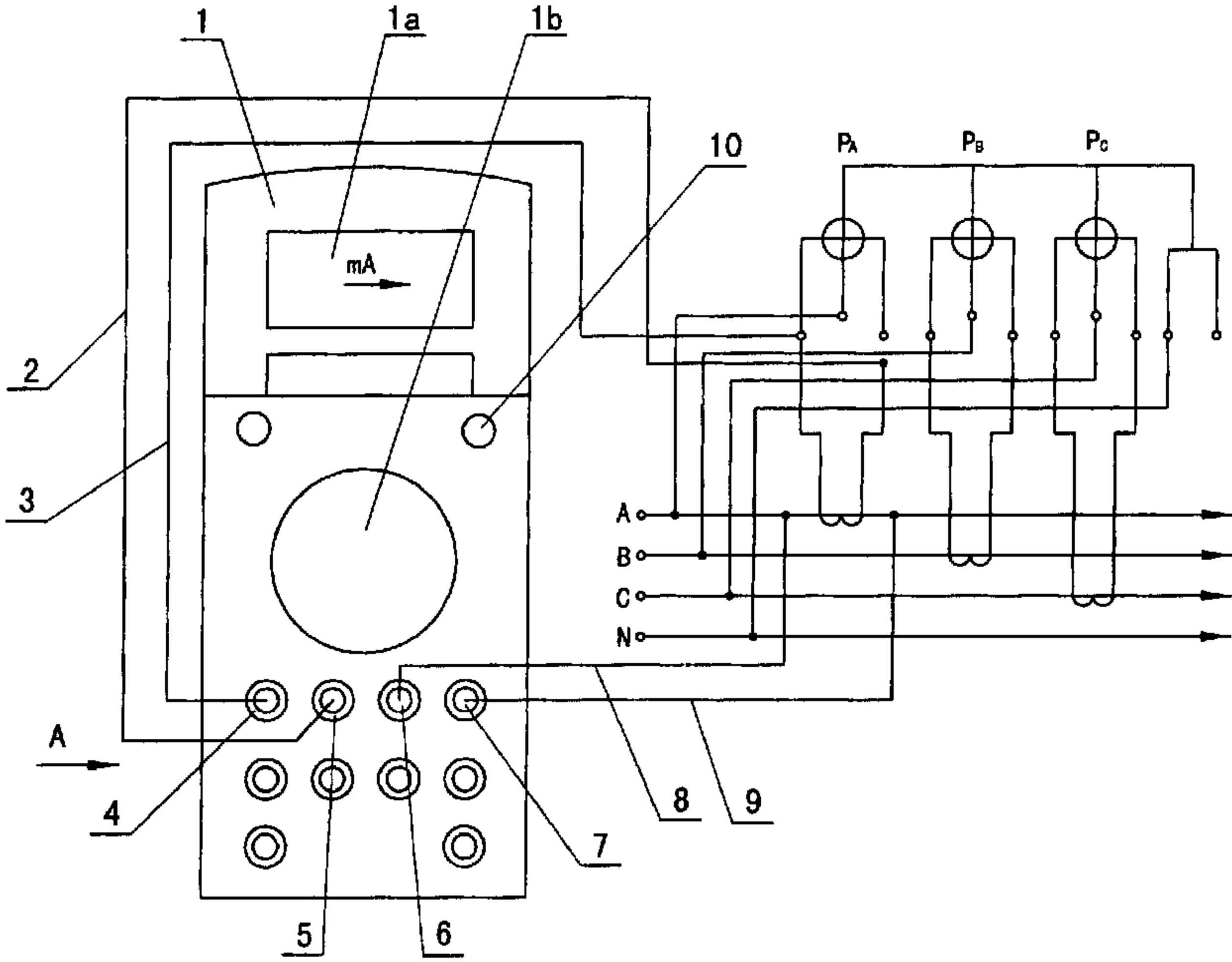


Fig. 1