

Nov. 21, 1939.

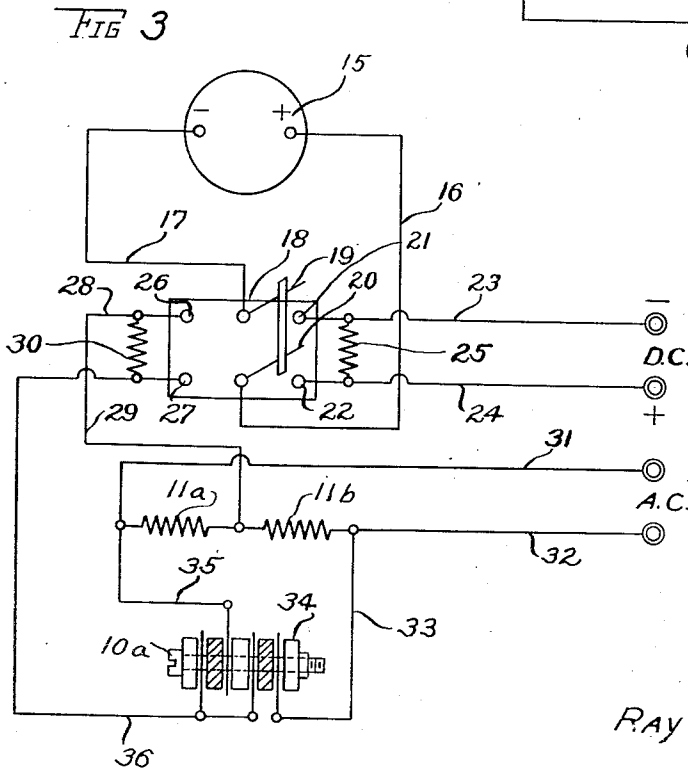
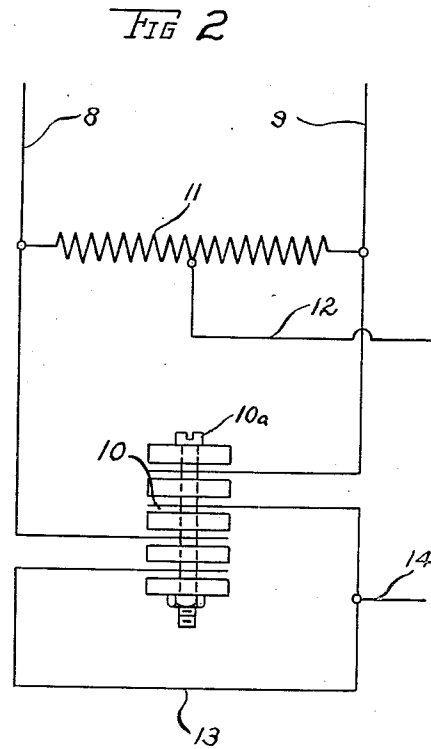
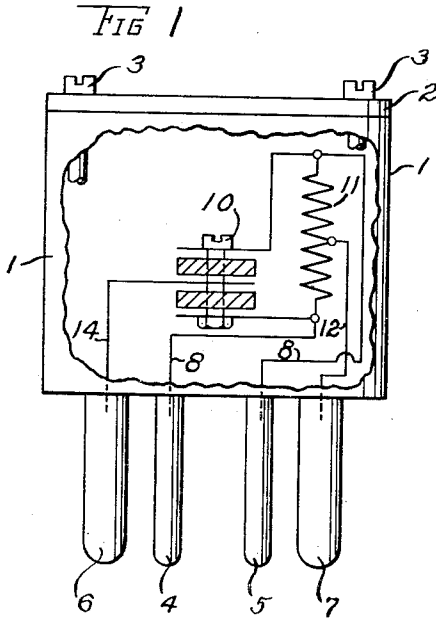
R. L. TRIPLETT

2,180,487

DETACHABLE RECTIFIER PLUG

Filed Oct. 20, 1937

3 Sheets-Sheet 1



RAY L. TRIPLETT
INVENTOR

By *Touhmin & Touhmin*
ATTORNEYS

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Fig. 4.

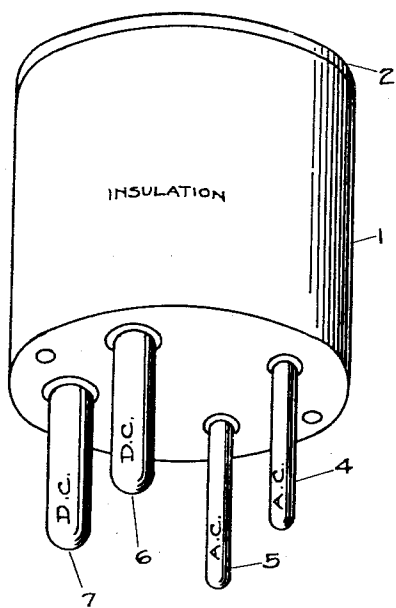


Fig. 5.

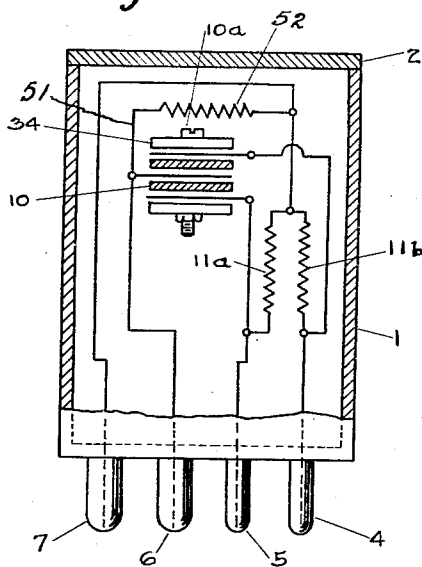
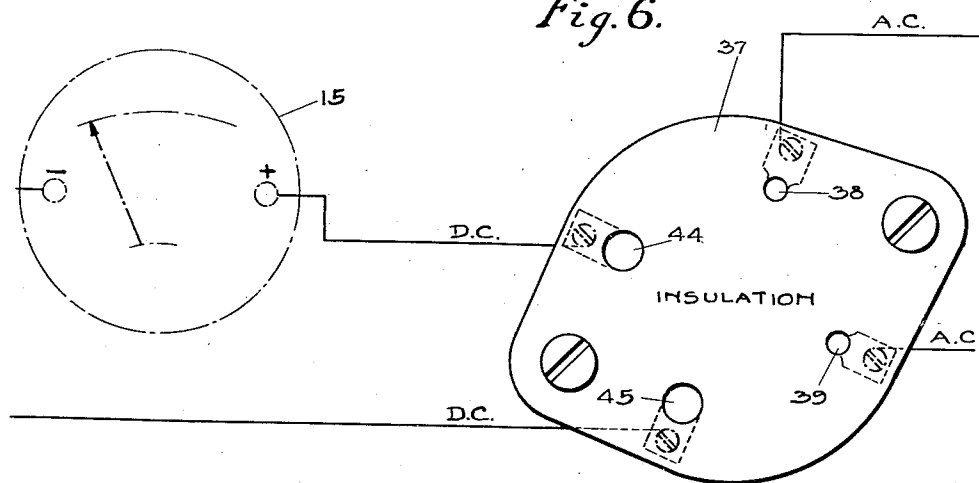


Fig. 6.



INVENTOR
RAY L. TRIPLETT
BY *Louhman & Louhman*
ATTORNEYS

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FIG 7

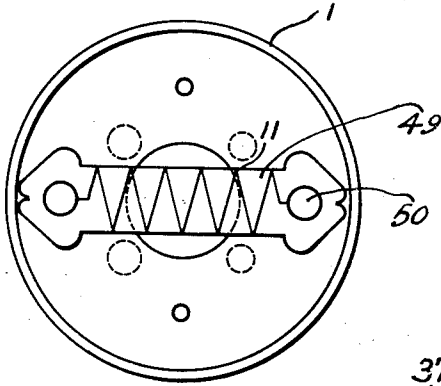


FIG 8

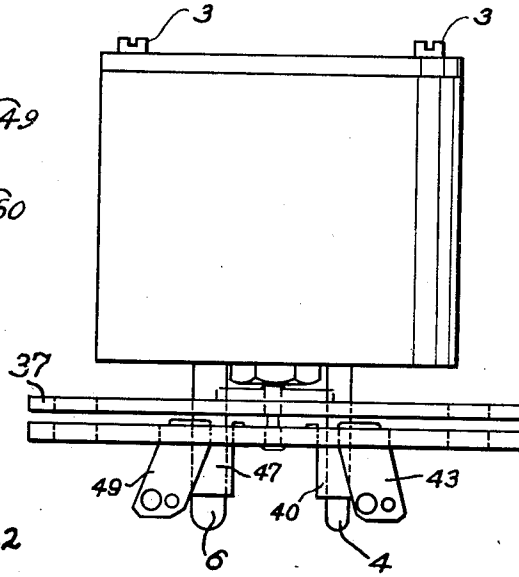


FIG 9

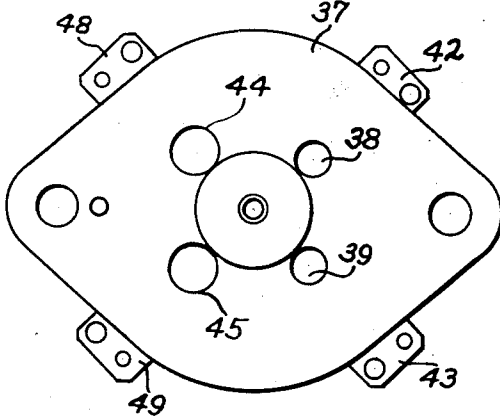


FIG 11

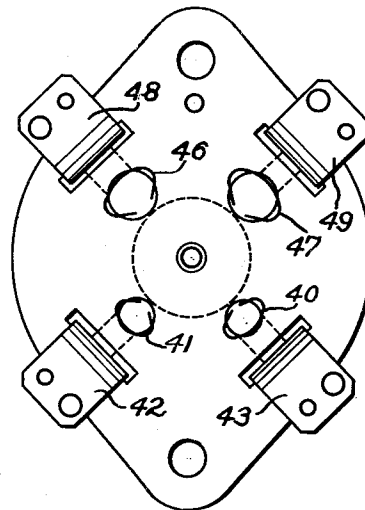
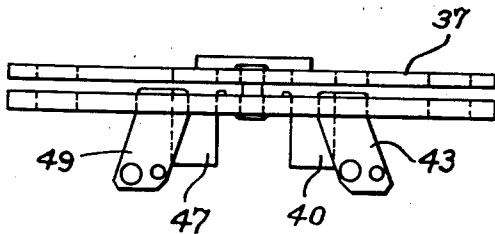


FIG 10



RAY L. TRIPLETT

INVENTOR

By *Louman & Louman*
ATTORNEYS

UNITED STATES PATENT OFFICE

2,180,487

DETACHABLE RECTIFIER PLUG

Ray L. Triplett, Bluffton, Ohio

Application October 20, 1937, Serial No. 170,075

10 Claims. (Cl. 175—363)

My invention relates to a detachable rectifier plug and an electric circuit therefor.

It is my object to provide a rectifier and resistors in a suitable housing having plug terminals so that it can be readily attached or detached in a socket.

It is an object to provide a circuit connection permanently made to the socket terminals while the connections for the rectifier and resistors can be made to the plug terminals.

It is a further object of this invention to make the rectifier and resistors removable from the circuit and readily replaceable, when necessary, with corresponding units, so that when a rectifier is damaged due to overloading, interchangeable rectifier units can be used replaceably for taking the place of the one that is damaged. Heretofore it has been necessary to have the entire piece of equipment in which the rectifier is used taken apart and returned to the manufacturer for replacing of these burned-out or otherwise defective rectifier units. By this invention a complete new rectifier unit with corresponding resistors may be plugged into the circuit without delay or inconvenience.

It is a further object to provide a plug consisting of a housing, a rectifier of crystalline structure, resistors for calibrating, etc., all removable from the socket.

It is a further object to provide a socket adapted to be permanently attached to the circuit with A. C. and D. C. inlets and outlets to the rectifier.

Figure 1 is a side elevation of a plug partially broken away showing a rectifier and resistor mounted therein and connected to the plug fingers for A. C. and D. C. connections.

Figure 2 is a wiring diagram showing a typical arrangement of a rectifier and resistors in circuit.

Figure 3 shows additional D. C. and A. C. calibrating resistors in a meter circuit.

Figure 4 is a perspective of the exterior of the plug and its contact fingers.

Figure 5 shows a modified circuit of the rectifier and resistors contained within the casing.

Figure 6 is a diagrammatic view of the socket connected to the A. C. and D. C. lines.

Figure 7 is a top plan view of the plug with the cover removed.

Figure 8 is a side elevation showing the plug and socket plate in engagement.

Figure 9 is a top plan view of the socket plate.

Figure 10 is a side elevation thereof.

Figure 11 is a bottom plan view thereof.

Referring to the drawings in detail, the socket

consists of a cylindrical case 1 having a removable cover 2 retained by the screws or bolts 3. The base of the plug is provided with a pair of A. C. connector fingers 4 and 5 and a pair of D. C. fingers 6 and 7. The A. C. supply lines 8 and 9 are connected to the rectifier generally designated 10. Across these lines is connected the calibrating resistor 11 to which is connected the negative side 12 of a D. C. line, while the circuit 13 is connected to the positive side of the D. C. line at 14.

Referring particularly to Figure 3, 15 is a meter connected by the wires 16 and 17 to a four-pole switch 18 having switch blades 19 and 20. In one position these switch blades engage the terminals 21 and 22 of the lines 23 and 24, across which is connected a calibrating D. C. resistor 25. The switch blades 19 and 20 also engage with the terminals 26 and 27 of the lines 28 and 29, across which is a calibrating A. C. resistor 30. The lines 23 and 24 are the D. C. lines, being respectively the negative and positive sides of the line. The lines 31 and 32 are A. C. lines, across which are connected the resistors 11a and 11b, into which is connected the line 29. The line 32 is connected by the line 33 to the rectifier generally designated 34. Likewise the line 31 is connected by the line 35 to the rectifier and the line 36 is connected to the rectifier back to the terminal 27.

The rectifier disks are of the crystalline structure type, preferably copper oxide made into disks and bolted together by the bolt 10a.

The socket plate comprises one or more strips of insulation designated 37 having apertures 38 and 39 for the A. C. fingers 4 and 5. Associated with these apertures are the spring clamps 40 and 41 connected to the clips 42 and 43 that are in turn connected to the A. C. lines.

Likewise the apertures 44 and 45 have spring fingers 46 and 47 and attaching clamps 48 and 49 for attaching the D. C. wires thereto. A meter 15 may be connected into the D. C. circuit.

As will be observed from Figure 7, the resistor and rectifier is supported on the support 49, which in turn is supported on the studs 50. By loosening the bolt holding the rectifier disks in position, the whole structure may be removed from the plug casing.

Figure 5 shows a modified form of connections. It will be noted that, in addition to the connections shown and described with respect to Figure 1, a connection 51 is taken from an intermediate terminal, e. g., the mid-terminal of the double wave rectifier through a resistor 52 to an intermediate terminal, e. g., the mid-tap on the

resistor 11. The resistor 52 may be employed for calibrating the output of the rectifier.

It will be understood that I desire to comprehend within my invention such modifications as may be clearly embraced within the claims and scope of my invention. For instance, a bridge type rectifier can be used in place of the resistors 11a and 11b.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A rectifier plug comprising a casing having a plurality of exteriorly mounted contact terminals, a multi-disk solid rectifier and a resistor within the casing, said resistor being connected across the end disks of the rectifier, an electrical connection between an intermediate disk of the rectifier and one of said terminals, electrical connections between the ends of the resistor and a pair of other terminals, and an electrical connection between an intermediate terminal on the resistor and another of said terminals.

2. A rectifier plug comprising a casing having a plurality of exteriorly mounted contact terminals, a rectifier and a resistor within the casing, the resistor being connected across the rectifier, connections between the ends of the resistor and a pair of said terminals, connections between an intermediate point on the resistor and another of said terminals, and a terminal on said rectifier other than the terminals to which the resistor is connected, being connected to another of said terminals.

3. A rectifier plug comprising a casing having a plurality of exteriorly mounted contact terminals, a rectifier and a resistor, said resistor being connected across the rectifier, connections between the ends of the resistor and a pair of said terminals, connections between an intermediate point on the resistor and another of said terminals, and a terminal on said rectifier other than the terminals to which the resistor is connected being connected to another of said terminals, said rectifier, resistor and connections being contained in said casing.

4. A rectifier plug comprising a casing having a plurality of exteriorly mounted contact terminals, a double wave rectifier and a resistor within the casing, said resistor being connected across the rectifier, connections between the ends of the resistor and a pair of said terminals, a connection between the mid-tap on said resistor and another of said terminals, a connection between the mid-terminal on said rectifier and another of said terminals, and a resistor connected between said rectifier mid-terminal and said resistor mid-tap.

5. A rectifier plug comprising a casing having a plurality of exteriorly mounted contact terminals, a double wave rectifier and a resistor, said resistor being connected across the rectifier connections between the ends of the resistor and a pair of terminals, a connection between the mid-tap on said resistor and another of said terminals, a connection between the mid-terminal on said rectifier and another of said terminals, and a resistor connected between said

rectifier mid-terminal and said resistor mid-tap, said rectifier, resistors and connections being contained within said casing.

6. A rectifier plug comprising a casing having a plurality of exteriorly mounted contact terminals, a double wave rectifier and a resistor within the casing, said resistor being connected across the rectifier, connections between the ends of the resistor and a pair of said terminals, a connection between the mid-tap on said resistor and another of said terminals, and a connection between the mid-terminal on said rectifier and another of said terminals.

7. A rectifier plug comprising a cylindrical casing having a plurality of exteriorly mounted contact terminals, a double wave rectifier of the oxide type within the casing and a resistor mounted on studs and positioned diametrically in said casing, said resistor being connected across the rectifier, connections between the ends of the resistor and a pair of said terminals, a connection between the mid-tap on said resistor and another of said terminals, and a connection between the mid-terminal on said rectifier and another of said terminals.

8. A rectifier plug comprising a cylindrical casing having a plurality of exteriorly mounted contact terminals, a double wave rectifier of the oxide type, a resistor, said resistor being connected across the rectifier, connections between the ends of the resistor and a pair of said terminals, a connection between the mid-tap of said resistor and another of said terminals, and a connection between the mid-terminal on said rectifier and another of said terminals, said rectifier and connections being contained within said casing, and said resistor being mounted in a diametral and horizontal position within said casing.

9. A rectifier plug comprising a casing having a plurality of exteriorly mounted contact terminals, a rectifier and a resistor within the casing, the resistor being connected across the rectifier, connections between the ends of the resistor and a pair of said terminals, connections between an intermediate point on the resistor and another of said terminals, a terminal on said rectifier other than the terminals to which the resistor is connected, being connected to another of said terminals, and a resistor connected between the last-mentioned terminal and the other resistor.

10. A rectifier plug comprising a casing having a plurality of exteriorly mounted contact terminals, a rectifier and a resistor within the casing, the resistor being connected across the rectifier, connections between the ends of the resistor and a pair of said terminals, connections between the mid-tap on the resistor and another of said terminals, a terminal on said rectifier other than the terminals to which the resistor is connected being connected to another of said terminals, and a resistor connected between the last-mentioned terminal and the said mid-tap on the other resistor.

RAY L. TRIPLETT,