No. 852,395. PATENTED APR. 30, 1907.

C. F. PATTERSON.

CIRCUIT CONNECTOR.

APPLICATION FILED JUNE 29, 1906.

Fig. 1,

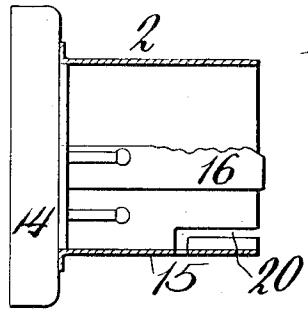


Fig. 2,

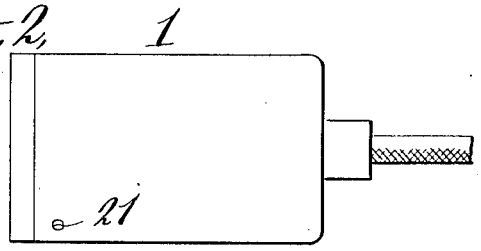


Fig. 3,

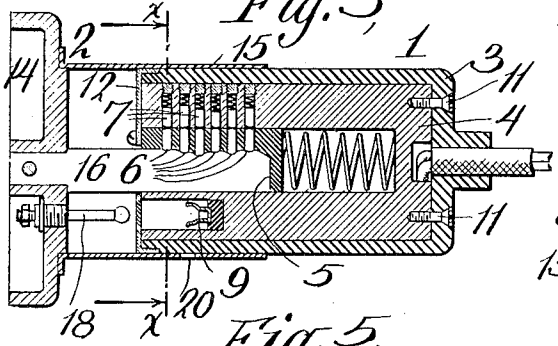


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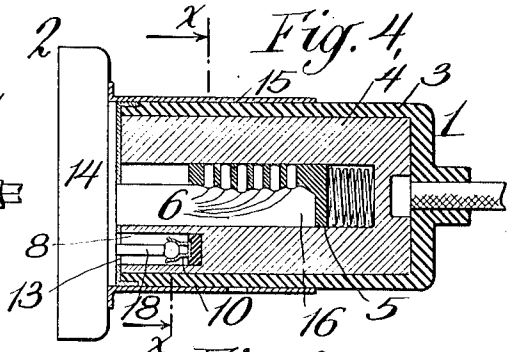


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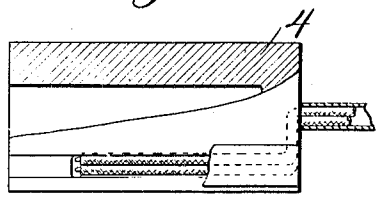


Fig. 6,

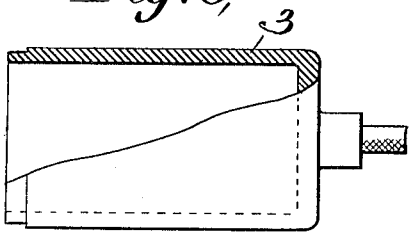


Fig. 7,

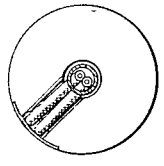


Fig. 8

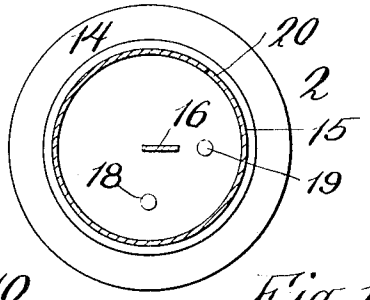


Fig. 9,

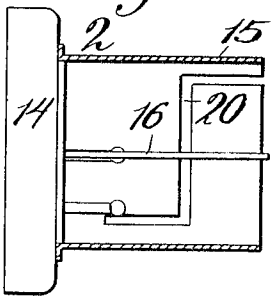


Fig. 10

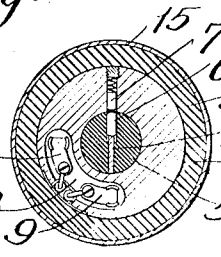
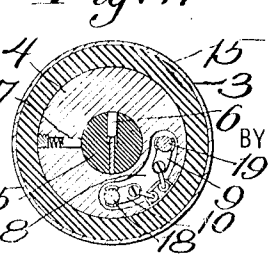


Fig. 11



WITNESSES:

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CHARLES F. PATTERSON, OF NEW YORK, N. Y.

CIRCUIT-CONNECTOR.

No. 852,395. Specification of Letters Patent. Patented April 30, 1907.

Original application filed June 14, 1906, Serial No. 321,725. Divided and this application filed June 29, 1906. Serial No. 324,008.

To all whom it may concern:

Be it known that I, CHARLES F. PATTERSON, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Circuit-Connector; and I do hereby declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in electric circuit connectors, and in the specific form illustrated in the drawings comprises a plug-and-socket circuit connector.

My invention consists in means whereby one of two separable members of a circuit connector is individualized with respect to its companion member, so as to be capable of use in connection therewith only, and in the many novel features of construction and arrangement hereinafter more fully described and particularly pointed out in the claims.

The objects of my invention are to individualize one of two separable members of a circuit connector with respect to its companion member, and thereby to prevent the completion of electrical connection except when two corresponding and relatively individualized members in such circuit are united; and to make such circuit connector simple, strong, reliable, and relatively inexpensive, to make it easy to operate, to prevent tampering with the mechanism of the device while the members thereof are separated, to permit easy inspection of such mechanism, and to so construct the device that its individualizing means shall be susceptible of a great variety of permutations, thus permitting the production of a large number of circuit connectors exactly similar as to size and construction, but the members of which are not interchangeable.

The circuit connector herein illustrated and described is particularly intended for use in the supervisory signaling system forming the subject-matter of my application for Letters Patent filed June 14, 1906, Sr. No. 321,725, of which application this is a division; but my circuit connector is not limited to use in such or in any similar system, but is adapted for general use.

I will now proceed to describe my invention with reference to the accompanying drawings, in which one form of circuit-connector embodying my invention is illustrated, and will then point out the novel features in claims.

In the said drawings:—Figure 1 shows a side view and partial section of the socket-member of such connector; Fig. 2 shows a side view of the plug member of such connector; Fig. 3 shows a central longitudinal section of both members with the plug partly in the socket; Fig. 4 shows a similar sectional view with the plug pressed into the socket as far as it will go; Fig. 5 shows a side view and partial section of the intermediate member of the plug; Fig. 6 a side view and partial section of the outer member of said plug; Fig. 7 shows an end view of said intermediate member, looking from the right of Fig. 5; Fig. 8 shows a transverse section of the socket; Fig. 9 shows a longitudinal section of the shell of the socket, on a plane at right angles to the plane of the section of Fig. 1; and Figs. 10 and 11 show transverse sections of the plug member of the device on the line *x*—*x* of Figs. 3 and 4, looking in the direction of the arrows.

In the said drawings, 1 designates the plug member of the circuit connecting device, and 2 the socket member. Said plug member comprises an outer shell 3, preferably of strong metal, an intermediate member 4, fitting within said shell, and an inner member 5, rotatable somewhat with respect to members 3 and 4, and carrying within it a series of plug-shaped tumblers, 6, of varying length, adapted to coact with similar tumblers 7, mounted in cells in member 4, and spring-actuated, as shown. Members 3 and 4 inclose between them a chamber 8, containing terminal clips 9 and 10 for circuit conductors; and said members are separable for convenience in wiring the plug, said members being rigidly connected, once the wires have been connected, by suitable means, as for example by screws 11 having their heads sealed over.

The inner member 5 of the plug corresponds substantially to the tumbler-barrel of a lock, and is arranged to be rotatable when a proper key is inserted within it. When so rotated, with respect to members 3 and 4, it may also be pushed back into the interior of the plug, against the action of a spring hereinafter mentioned. Said tumbler-barrel 5 is provided with a gate, 12, normally closing the chamber 8, and so preventing access to the circuit terminals 9 and 10, but having in it an opening 13 which, when

members 3 and 4 of the plug are rotated with respect to the tumbler barrel (as they may be after the insertion into said barrel of a proper key), uncovers chamber 8 and permits access to said circuit terminals.

The socket member 2 comprises a base 14, a socket or shell 15, and a key 16, adapted to be inserted into the slot of the tumbler barrel, and when so inserted to actuate the tumblers 6. Said base is further provided with circuit-terminals 18 and 19 adapted to enter chamber 8 of the plug, when said chamber is uncovered, and to make contact with the terminal clips 9 and 10. The shell 15 is provided with a bayonet-slot 20 adapted to receive a projection 21 on the plug, whereby said plug is guided when inserted into and withdrawn from the socket, and proper motion of said plug is insured.

The operation of the device is as follows: Supposing the plug 1 to be out of the socket 2, when said plug is first inserted the key 16 enters the slot 17 of the tumbler barrel and actuates the tumblers. If the key be the proper one for the particular plug inserted, it will line up the tumblers 6 and 7 with their adjacent faces just at the dividing line between members 4 and 5. The plug 1 may then be given a partial turn, as indicated by the shape of the bayonet slot 20, whereby the chamber 8 is uncovered by gate 12, and the plug may then be pushed still farther into the socket, the key barrel 5 retreating into the socket and the contact fingers 18 and 19 entering chamber 8 and making contact with circuit terminals 9 and 10. In disconnecting the plug from the socket the operations are just the reverse; the spring 22 pressing out the key barrel as the plug is withdrawn.

It will be seen that when the plug is removed from its socket, the circuit terminals 9 and 10 are entirely sealed against access. But an inspector or other suitable person having a key corresponding to the key 16, may at any time, when the plug is removed from the socket, open the plug and inspect said circuit terminals. This makes inspection of the device very easy.

As is well known, the permutation possible by varying the length of the tumblers of a locking mechanism such as shown, are almost without limit; likewise such mechanism may be installed in groups and sub-groups adjusted to have a master-key for the entire group and individual master-keys for the different sub-groups the same as is now done with locks. This greatly facilitates the work of inspectors, each of whom may have a master-key for the particular groups or sub-groups in his charge. The key 16 is so inclosed by the socket 15 that it is difficult to obtain access to take impressions therefrom, and an attempt to take such an impression is almost sure to be detected.

What I claim is:—

1. A series of circuit connectors of the same general type and size, each comprising relatively separable members, and individualizing means for said members, whereby each such member will coact in its own circuit connector and not in other circuit connectors of said series.

2. A circuit connector constituting one of a series of circuit connectors of the same general type and size, said circuit connector comprising in combination a plug constituting one of a series of such plugs, and a socket constituting one of a series of such sockets, and individualizing means for said plug and socket, adapting the same one to the other, but preventing said plug from coacting with other sockets of the series.

3. A circuit connector comprising a plug and a socket adapted to be fitted together separably, said plug and socket each constituting one of a series of similar plugs or sockets, said plug and socket comprising means fitting them together individually but preventing them from being fitted to other plugs or sockets of the series.

4. A circuit connector comprising a plurality of relatively separable members provided the one with a key and the other with corresponding lock mechanism, and contact devices.

5. A circuit connector comprising a plurality of relatively separable members, and contact devices arranged to be actuated by the bringing together in proper relation of said members, one of said members comprising locking means preventing operation of said contact devices until said locking means is operated, another of said members comprising means for operating said locking means.

6. A circuit connector comprising a plurality of relatively separable members, and contact devices arranged to be actuated by the bringing together in proper relation of said members, one of said members comprising locking means preventing operation of said contact devices until said locking means is operated, another of said members comprising a key for operating said locking means.

7. A circuit connector comprising a plurality of relatively separable members, and contact devices arranged to be actuated by the bringing together in proper relation of said members, one of said members comprising locking means including tumblers, another of said members comprising a key for operating said tumblers.

8. A circuit connector comprising two members, a plug and a socket, and contact devices arranged to be actuated by the bringing together in proper relation of said members, one of said members comprising locking means preventing the complete bringing to-

gether of said members until operated, the other comprising a key for said locking means.

9. A circuit connector comprising a plurality of relatively separable members and contact devices arranged to be actuated by the bringing together in proper relation of said members, one of said members comprising locking means preventing the complete bringing together of said members until operated, another of said members comprising a key for said locking means.

10. A circuit connector comprising a plurality of relatively separable members and contact devices, one of said members comprising a contact chamber, means for closing the same, and locking means preventing opening of said chamber until said locking means is operated and comprising lock-tumblers, another of said members comprising a key for operating said locking means.

11. A circuit connector comprising a plug and a socket and contact members adapted to coöperate, said plug and socket comprising locking mechanism and a key preventing complete union of the plug and socket until said locking mechanism is operated by said key.

12. In a circuit connector, the combination of two coöperative and relatively separable members, and contact means, one of said members comprising a main section and tumbler-barrel and tumbler-mechanism, the other of said members comprising a key for said tumbler mechanism, said tumbler mechanism preventing complete union of said members until operated by said key.

13. A circuit connector comprising two cooperative and relatively separable members, and contact devices, one of said members having a contact chamber and comprising a main section, a tumbler-barrel, means operated by said tumbler-barrel for opening and closing said contact chamber, and tumbler mechanism, the other of said members comprising a key for operating said tumbler mechanism.

14. A circuit-connector member comprising a main section, a tumbler-barrel, and tumbler mechanism, normally preventing movement of said barrel with respect to said main section, but adapted to be actuated by a key, and electric contact devices.

15. A circuit-connector member comprising a main section, a tumbler-barrel, and tumbler mechanism, normally preventing movement of said barrel with respect to said main section, but adapted to be actuated by a key, a contact chamber, contact devices therein, and means operated by movement of said tumbler-barrel relative to said main section for opening and closing said contact chamber.

16. A circuit-connector member comprising contact devices, a chamber inclosing same, means for opening and closing said chamber, and key-controlled locking mechanism controlling the opening and closing of such chamber.

17. A plug for circuit connectors comprising a main section having a contact chamber, contact means therein, a tumbler-barrel, tumbler mechanism adapted to be actuated by a key, and means controlled by said tumblers for opening and closing said contact chamber.

18. A plug for circuit connectors comprising a main section, a tumbler-barrel, and coacting tumblers in said tumbler-barrel and main section, said tumbler-barrel arranged to retreat into said main section when unlocked.

In testimony whereof I affix my signature, in the presence of two witnesses:

CHARLES F. PATTERSON.

Witnesses:

C. C. JOHNSON,

H. S. BULLOCK.