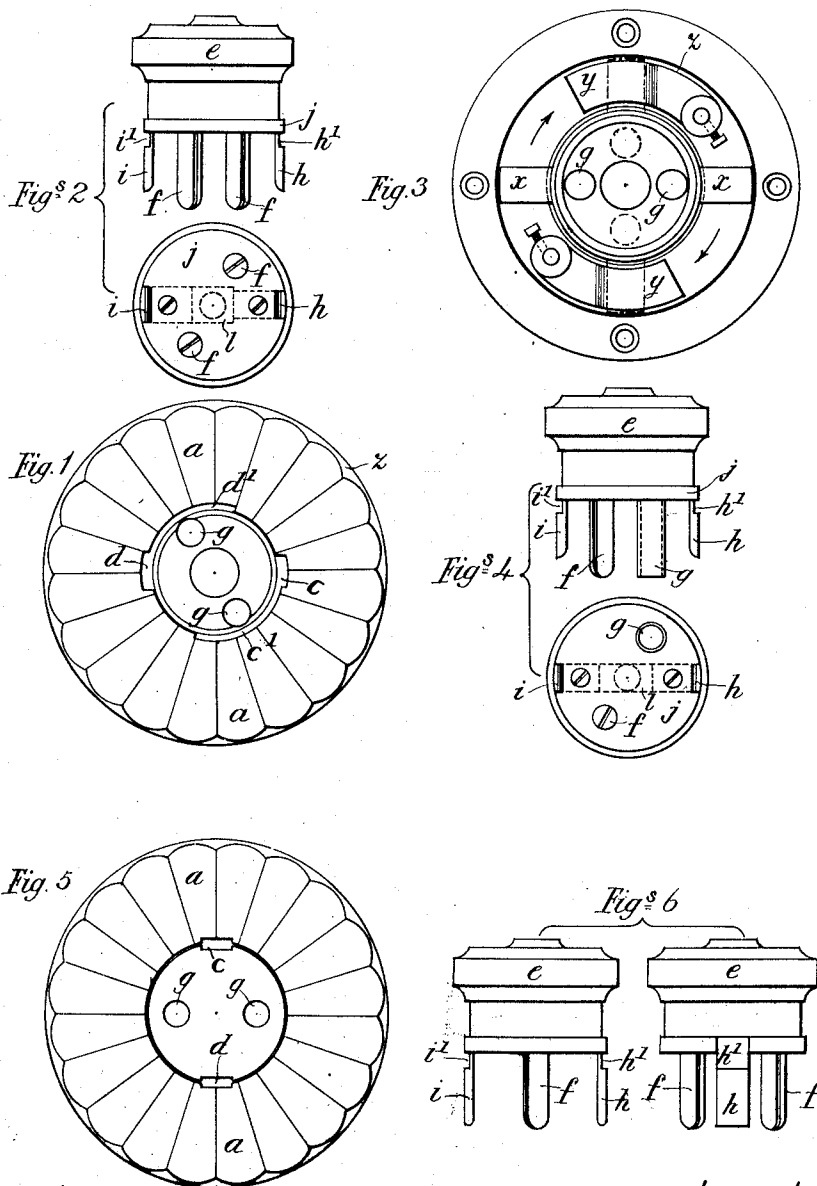


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 COMBINED ELECTRIC CONNECTION PLUG AND SOCKET AND SWITCH.
 APPLICATION FILED JUNE 1, 1908.

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Patented Dec. 20, 1910.

2 SHEETS—SHEET 1.



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Inventor
 William W. Buckton
 By his attorney
 [Signature]

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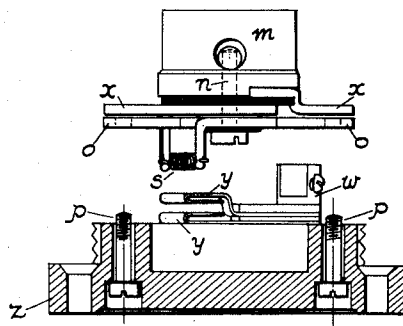


Fig. 7

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UNITED STATES PATENT OFFICE.

WILLIAM W. BUCKTON, OF LONDON, ENGLAND.

COMBINED ELECTRIC-CONNECTION PLUG AND SOCKET AND SWITCH.

978,841.

Specification of Letters Patent.

Patented Dec. 20, 1910.

Application filed June 1, 1908. Serial No. 436,074.

To all whom it may concern:

Be it known that I, WILLIAM WOODYER BUCKTON, a subject of the King of Great Britain, and resident of 72 Victoria street, Westminster, London, S. W., England, consulting engineer, have invented a new and useful Improved Combined Electric-Connection Plug and Socket and Switch, of which the following is a specification.

The present invention relates to a combined electric connection plug and socket, and switch, and in particular to that kind of socket which, on the plug being inserted in it, is capable of rotation through a portion of a revolution to operate the switch to open or close the circuit.

While plugs and sockets combined with a switch for interrupting the circuit before the plug is withdrawn from the socket are already known, they have hitherto for the most part been open to the objection that there is nothing to prevent the plug from being withdrawn from the socket without the current being first switched off, or to prevent similarly the plug being inserted with the switch in the "on" position, so that the object of the combination is not attained.

According to my invention I construct a plug and socket so that the plug cannot be withdrawn until the current through the connection has been switched off; neither can the plug be inserted in the socket unless the switch is in the "off" position. In other words, the terminal pins of the plug cannot be improperly used, as a switch, to either break or complete the circuit simply by removing or inserting the plug from or into the socket. These operations can only be done when the terminals of the socket have been rendered "dead" due to its being necessary for the switch to be in the "off" position before the plug can either be withdrawn or inserted.

I am aware that other devices have already been invented to bring about a locking of the plug to the switch and socket cover on the socket being turned to switch on the current, but they have not so far as I am aware been found satisfactory in practice, as they rendered the construction of the plug and socket somewhat complicated.

My invention is illustrated in the accompanying drawings.

Figure 1 is a plan view of a socket and switch and socket cover to which my inven-

tion has been applied. Figs. 2 are elevation and under plan views respectively of the corresponding plug. Fig. 3 is a plan view of a combined plug and socket and switch with the cover shown in Fig. 1 removed. Figs. 4 are views corresponding to Figs. 2 of a modified form of plug of known construction to which my invention has been applied. Fig. 5 is a plan view of a socket and switch and socket cover to which my invention has been applied in a slightly different manner. Figs. 6 are elevations at right angles to each other of the plug for use with the socket shown in Fig. 5. Fig. 7 shows elevations partly in section of the socket and switch shown in Fig. 1, the revoluble portion being shown detached from its base and one contact only being shown, viz., that which engages the left hand contact blade on the revoluble portion.

Referring now to Figs. 1 to 3 within the cover *a* is arranged a switch and socket of well known construction, *g g* being the contact sleeves in the revoluble portion *m* which is made to turn about the pivot *n*, carried by the plate *o*. This plate *o* is secured to the base *z* by screws *p p*. This revoluble portion is furnished with two arms or blades *x x*, each in electrical connection with one of the sleeves *g g*. Secured to the base are the spring plates *y y*, between which the blades *x x* are adapted to fit closely, on the part *m* being turned on its pivot to switch on the current. Terminal screws *w w* are secured to the base *z*, in electrical contact with the spring plates *y y*. A spring *s* tends to pull the revoluble part *m* around into the off position, except when the blades *x x* are turned fully into the on position. The cover *a* may be of metal or any other suitable material and is made to screw on to the base *z* or is otherwise fixed thereto and is provided with bayonet-shaped stepped recesses *c c' d d'*. On the plug *e*, which is furnished with the usual split pins *f f* for engaging in the sleeves *g g* in the socket, I provide projections *h i* arranged substantially parallel with the pins *f f*, and I provide them at their upper ends with recesses *h' i'*, which when the plug has been inserted to its full extent in the socket will be opposite the recessed edges of the cover *a* and will allow the socket to be turned to put the switch into the "on" position; this cannot be done unless the plug is pushed right home in the socket, as the projections *h i* fill the

wider parts *c d* of the recesses in the cover *a* and prevent the plug and socket being turned until the grooves *h' i'* in the projections *h i* are opposite the narrower recesses *c' d'*. This insures that the circuit cannot be completed until proper and full contact has been made through the connection. The plug *e* is now locked to the cover *a* and the pins *f f* cannot be withdrawn from the sleeves *g g* in the socket unless the socket is first turned back so that the switch is in the "off" position and the arms *x x* brought out of contact with the plates *y y*. In other words the current cannot be interrupted by withdrawing the plug from the socket when the switch is in the "on" position; nor can the plug be inserted in the socket unless the switch is in the "off" position.

The projections *h i* may be an integral part of the usual insulating disk or plate *j* to which the split pins *f f* of the plug *e* are attached, or they may be separate. In the latter case the projections may take the form of a single bent bar fitting into a recess in the insulating disk formed preferably in the side of the insulating disk adjacent to the plug *e*, a layer (not shown in the drawing) of mica or the like being inserted between the plug *e* and the disk *j*. The projections may however be made separate and insulated from one another by a fillet of insulating material as shown in Figs. 2 and 4 at *l*.

In order that the plug may be properly inserted in the socket so as to control the correct lead where this is essential, I may make the projections *h i* on the plug *e* of different sizes as shown in Figs. 2, and the recesses *c d* in the cover *a* of corresponding sizes, so that, for instance, the projection *i* fits into the recess *d*, but not into the recess *c*. The plug *e* can then only be inserted in one position.

Though I have shown the projections *h i* of different sizes in the drawings I wish it to be understood that this feature is not essential to the operative carrying out of my invention.

In Figs. 4 is illustrated a modified form of the plug shown in Figs. 2. Here I insure that the plug is inserted in its socket in the right way by furnishing the plug *e* with one pin *f* and one sleeve *g* in well-known manner, and providing a corresponding sleeve and pin on the socket. The projections *h i* can then be made of the same size, and this simplifies manufacture.

In Figs. 5 and 6 is illustrated an alternative method of putting my invention into practice. The recesses *c d* in the socket cover are not stepped in this case, but recesses are made in the socket, which when the socket is in the "off" position are opposite the recesses in the socket cover, and

allow the projections *h i* to be inserted. On the socket being turned into the "on" position, the projections *h i* will lock under the edge of the cover *a* as before.

I do not confine myself necessarily to 2-pin terminal plugs as the invention is equally applicable to plugs with other forms of terminal projections though the invention herein described and the drawings shown refer to this type as being convenient.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a combined socket and plug and switch, the combination of a plug, a revoluble portion on said plug having contact pins, sleeves on the revoluble portion into which the contact pins and plugs are inserted, contacts on the revoluble portion of the socket for switching on the current when this portion is partially revolved, a socket cover open above the revoluble portion of the socket and having recesses in its inner edge, vertical projections on the plug extending parallel with the contact pins thereon and so placed as to be opposite the recesses in the edge of the cover when the plug is inserted in the socket when the switch is in the "off" position and whereby the recesses in said projections engage the edges of the socket cover when the switch is turned to the "on" position.

2. A combined plug and socket and switch, comprising a plug, in combination with a socket having a revoluble portion, contacts on the revoluble portion for switching on the current when this portion is partially revolved, means for making detachable electrical contact between the plug and the revoluble portion of the socket, a socket cover, a stepped recessed portion in the edge of the cover, a vertical projection on the plug so placed as to be opposite the recessed portion in the edge of the cover when the plug is inserted in the socket and the switch is in the "off" position said projection having a shoulder with which the edge of the socket cover engages when the switch is turned to the "on" position.

3. A combined plug and socket and switch comprising a plug in combination with a socket having a revoluble portion, contacts on the revoluble portion for switching on the current when this portion is partially revolved, a contact pin and a contact sleeve on the plug, a corresponding contact sleeve and a contact pin on the revoluble portion of the socket for engaging the corresponding parts of the plug, a socket cover, a recessed portion in the edge of the cover, a vertical projection on the plug so placed as to be opposite the recessed portion in the edge of the cover when the plug is inserted in the socket and the switch is in the "off" position, and a recess in said projection with which the edge of the socket cover

engages when the switch is turned to the "on" position.

4. In a combined plug and socket and switch, the combination of a plug, a socket
5 having a revoluble portion and provided with contacts, a socket base having contacts adapted to engage with the contacts on the revoluble portion when the latter is partially revolved, means for making electrical
10 contact between the plug and the revoluble portion of the socket, a socket cover having recesses in its edges, projections on the plug so placed as to be opposite the recesses in the edge of the cover when the plug is inserted
15 in the socket and the switch is in the "off" position and said projections having interlocking portions which engage the recesses of the socket cover when the switch is turned to the "on" position and differently shaped
20 in cross section for insuring that the plug can be inserted in the socket in one way only.

5. In a combination plug and socket and switch, the combination of a switch portion having two contacts with a plug portion 25 provided with two contacts respectively engaging the contacts of the switch portion, and interlocking parts for holding the plug portion to the switch portion when the switch is closed and unlocking the said parts 30 when the switch is in its open position, said contacts on the plug and the switch portion maintaining their electrical connection while the interlocking parts are thrown into either the locked or unlocked positions. 35

In testimony that I claim the foregoing as my invention I have signed my name in presence of two witnesses this 19th day of May 1908.

W. W. BUCKTON.

Witnesses:

LOVELL U. RIDDIE,
BERNARD J. KENNEDY.