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H. A. STRAUSS.

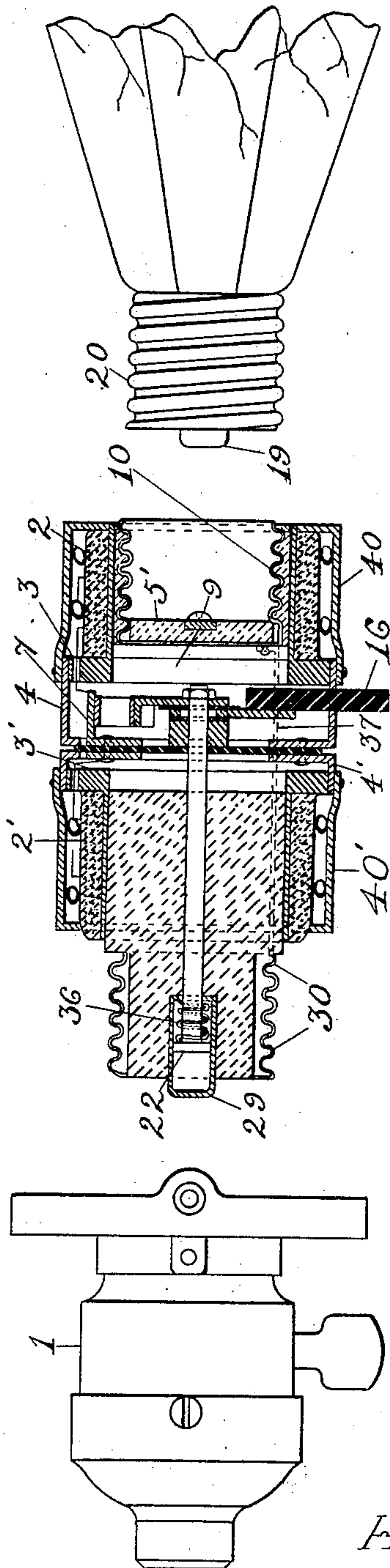
ELECTRIC CURRENT CONTROLLER FOR INCANDESCENT LAMPS OR MOTORS.

(Application filed Nov. 12, 1902.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



WITNESSES

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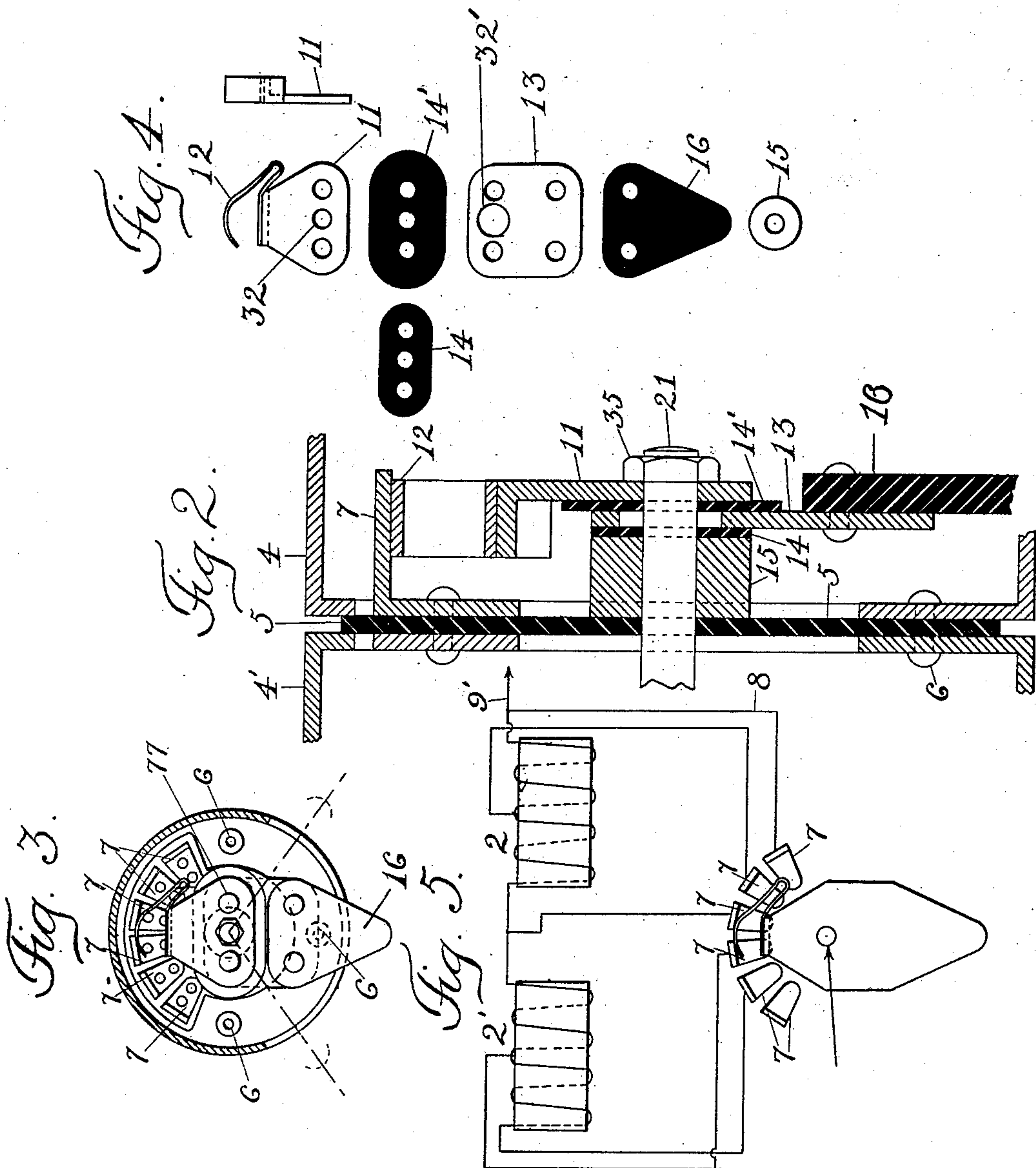
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## ELECTRIC CURRENT CONTROLLER FOR INCANDESCENT LAMPS OR MOTORS.

(Application filed Nov. 12, 1902.)

(No Model.)

2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

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ELECTRIC-CURRENT CONTROLLER FOR INCANDESCENT LAMPS OR MOTORS.

SPECIFICATION forming part of Letters Patent No. 717,468, dated December 30, 1902.

Application filed November 12, 1902. Serial No. 130,999. (No model.)

*To all whom it may concern:*

Be it known that I, HERMAN A. STRAUSS, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Electric-Current Controllers for Incandescent Lamps or Motors, of which the following is a specification.

10 My invention relates to electric-current controllers for use with incandescent lamps or other translating devices.

The object of my invention is to combine the current-controller itself and a suitable socket adapted to receive its counterpart plug in such manner as to secure compactness as well as the capacity to utilize a regulating resistance therewith in one and the same structure. It has before been proposed 20 to employ reactive coils for regulating the flow of current to incandescent lamps or other devices operated by alternating currents; but the attempt to use simple resistance for either alternating or continuous has hitherto resulted 25 unsatisfactorily, because of the extreme heating of the device or because of its extreme bulkiness when suitable provision is made to avoid the difficulty of heating.

The object of my present invention is to 30 provide a combined current-controller and socket operating by variations of electric resistance which shall be simple, compact, and neat in appearance and shall be free from the objectionable heating hitherto met with 35 in this class of devices.

My invention consists, substantially, in constructing the electric resistance as a hollow cylinder, the interior of which is fitted with the electric terminals of the socket or connector in such manner that when the cooperating contact-surfaces carried by the plug engage therewith the open end of the resistance-cylinder will incase or encircle said plug, thus forming or bearing the relation thereto of a 40 socket. By this means I not only secure large radiating-surfaces, but also reduce the length of the device to practicable dimensions.

Another part of my invention relates to the 50 construction of a combined electric-current controller and plug-and-socket device which is adapted for insertion into the socket of a

fixture of the kind usually employed to receive an incandescent lamp. This part of my invention consists, substantially, in constructing 55 the regulating resistance in two sections, each formed as a hollow cylinder, one section embracing or containing socket-terminals and the other embracing the insulating body or structure which forms the socket end 60 of the device and is adapted for insertion into an ordinary electric fixture.

My invention consists, further, in details of construction and combinations of devices, as hereinafter more particularly set forth and 65 then specified in the claims.

In the accompanying drawings, Figure 1 is a longitudinal section through a form of apparatus embodying my invention and shows in side elevation also at one end the base of 70 an incandescent lamp adapted for use with the socket end of the device and at the other end an ordinary socket-fixture with which the plug end of the device is adapted to be used. Fig. 2 shows in detail an enlarged section of 75 the central portion of the device, comprising the electric switch used for cutting portions of resistance into and out of circuit. Fig. 3 is an end elevation of the switch. Fig. 4 shows in detail parts of the electric switch 80 separated from one another. Fig. 5 is a diagram of circuits, showing the connection of the sections of artificial resistance with the contacts of the switch.

Referring to Fig. 1, 2 indicates a resistance-coil of any desired kind, preferably one 85 formed of resistance-wires embedded in an insulating material, like porcelain. This resistance-coil is preferably wound upon a spool or hollow cylinder 3, which may be made of any 90 desired material suitable for the purpose and is preferably provided with a head or flange at its inner end, as shown. Within the hollow resistance-spool is secured by cementing or otherwise the threaded cylindrical piece of 95 metal 10, which is of the ordinary construction used for electric sockets and is adapted to receive the threaded sleeve 20, forming the terminal of a lamp or other device adapted to screw into the socket 10 and to form a con- 100 nection for passing the current on to the incandescent-lamp filament or to other devices. The cooperating opposite terminal of the lamp (indicated at 19) is in the usual form of



a stud, adapted to engage with the contact-terminal 9 within the socket. As will be obvious, the terminals 20 and 19 might be the terminals of a flexible cord for conveying current to another device. The metal terminal 10 may be cemented or secured in any desired manner within the hollow resistance, and its outer end is preferably flush with the outer end of the resistance-coil or projects but slightly therefrom. The terminal 9 may be secured in the base of the metal terminal 10 by attachment to pieces of insulating material 5'. Said terminal 9 is suitably connected by a wire 9' with the electric-switch device and the coils of the regulating resistance, as shown more particularly in the diagram Fig. 5.

In the head of the spool 3, upon which the resistance is mounted, suitable openings may be formed, as shown, for the passage of the wires leading from the sections of the resistance-coil to the contacts 7 of the regulating-switch. When the resistance is used upon a device such as shown in Fig. 1, which embodies, in addition to the socket, a suitable plug, said resistance may be made in two divisions, the second one of which (indicated at 2') is similarly wound upon a suitable spool 3', encircling the insulating-body, upon which is mounted the sleeve 30, adapted for use as a plug to be inserted into the socket of a fixture 1. The pin-terminal for said plug, which coöperates with the sleeve-terminal 30, is indicated at 29. The insulating-body carrying said terminals is suitably cemented or otherwise secured within the hollow resistance-coil, as shown. The two resistance-coils 2 2' are secured together end to end in any suitable manner, with a suitable regulating-switch mounted between them and provided with a row of contacts connected severally to the divisions or sections of the artificial resistance after the manner of an ordinary rheostat. One of the ways in which said resistances may be secured together and provision at the same time made for mounting the parts of the regulating-switch will be now described, although I do not wish to be understood as limiting myself to such special construction nor to the mounting of the electric regulating-switch in any particular position upon the device.

Fastened to the heads of the spools 3 3' are the cup-shaped pieces of metal 4 4', whose bases are fastened together by riveting or otherwise securing them against the opposite faces of a plate of insulating material 5. The base of one of said cup-shaped pieces of metal is cut away, as better shown in Fig. 3, to provide a space within which the contacts 7 of the switch may be secured directly to the plate 5, of insulating material. Each contact may be of L form, as indicated, the base of the L being fastened to the plate 5, while the rectangular projection therefrom forms the surface over which the spring 12 of the switch may be adjusted in the arc of a circle in which

the contact-surfaces of said contacts lie, as clearly shown.

Attachment of the wires leading from the sections of resistance may be made by soldering or otherwise to the rectangular projections of said contacts or to the bases thereof, as will be obvious to electricians.

The location of the rivets or bolts which secure the bases of the cups 4 4' together is indicated at 6 in Fig. 3.

Electric connection with the switch-arm carrying the contact-spring 12 is made from the pin or stud terminal 29 of the plug portion of the device by the rod 21. Upon this rod the metal piece 11, carrying spring 12, is mounted directly and is adapted to turn thereon, being operated by means of a projecting arm 16, which projects through the side of the device and preferably through an opening in the metal cup 4.

The metal piece 11, carrying spring 12, is provided at 32 with a circular opening adapted to fit upon the rod 21, so that it may turn freely thereon. Said piece 11 is fastened to another metal piece 13, which also has an opening, as indicated at 32', through which passes the rod 21, but out of contact with said piece.

14 14' indicate washers, of insulating material, lying at opposite sides of the metal piece 13 and serving to keep the same out of electrical contact with the metal arm 11 and with the metal block 15, forming a bearing for the parts when subjected to the end pressure of the rod 21, as will be presently described. The washers 14 14' have central openings, as shown, which coincide with the openings 32 32', and the several parts 11, 14, 14', and 13 are secured together by rivets passing through the openings at either sides of said central openings.

The arm 16, which is preferably of insulating material, is secured directly by riveting or otherwise to the metal piece 13, as clearly shown in the section.

On the end of the rod 21 is a suitable head in the form of a nut 35, which is in electrical connection with the face of the plate 11 and through end pressure communicated to the rod 21 in the direction of the arrow aids in maintaining electrical connection between said rod and plate. This end pressure may be given to the rod by means of a spring 36, which is held under compression between a head 22 on the opposite end of the rod and the surfaces at the base of the hollow stud-terminal 29. The electrical connection by this means is made from the contact-terminal 29 to and through the spring 36, the rod 22, the rod 21, and to the metal arm 11 and spring 12, the circuit being continued from the latter through one or the other of the contacts 7 and to the connection 9', leading to the socket terminal or contact 9, whence it passes to the contact-stud 19 of any plug inserted into said socket.

For ordinary uses the hollow artificial re-



sistance may be divided into four sections or coils, as indicated in the diagram. In this case it is desirable to provide six contacts, (marked 7,) the first of which at the left of the figure would be a dead contact, so that when the switch-spring 12 is turned to rest thereon the connection through the device will be opened. The contact 7 at the other end of the row of contacts would be connected by wire 8 and wire 9' directly with the stud 9. From the contact 7 next to the dead contact a connection is run to one end of the hollow artificial resistance, while the other end of said resistance-coil is connected to the wire 9'. The remaining contacts are connected up, as shown, to the divisions of the coils and to the connection between the two parts 2 2'. It is obvious that when the spring is moved from the open-circuit position the first effect will be to throw all of the resistance into the circuit between the rod 21 and the stud 9, while as the switch is moved over the contacts the length of coil in circuit will be diminished by cutting out one section after another, until finally said spring will when resting on the last contact of the series cut out all of the resistance-coils, and the current can then flow without opposition from the graduating resistance.

A connection from the screw-terminal 10 to the screw-terminal 30 is formed in any suitable manner, as by a wire, (indicated in dotted lines at 37,) which runs lengthwise and is attached by soldering or otherwise to said screw-terminals 10 and 30. This provides for the return of the circuit from the sleeve 20 to the circuit-terminal 10 and thence to the plug-terminal 30, which engages in the well-known manner with the proper circuit-terminal in the fixture 1.

40 indicates a shell, which may be secured to the outer side of the cup 4 to inclose the resistance-coil, and 40' a similar shell secured to the cup 4'. These shells may be of any desired material, but are preferably perforated to allow circulation of air around the resistance-coils.

By my construction it will be seen that I not only get large radiating-surface for the resistance, thus insuring freedom from overheating, but I also obtain a maximum degree of compactness in the device by reason of the fact that the working parts of the socket are mounted within said resistance-coils.

What I claim as my invention is—

1. An electric-current controller and socket comprising a resistance-coil formed as a hollow cylinder and having the contact-surfaces of the terminals for the socket portion of the device mounted within said cylinder.

2. In an electric-current controller and socket, the combination substantially as described of a hollow spool or cylinder 3 having a resistance-coil wound upon it and a screw-threaded socket-terminal 10 secured within said hollow spool and having its axis concentric with the axis of said spool.

3. The combination substantially as described, of a sectional resistance-coil formed in two hollow cylindrical parts secured together end to end, a controller-switch mounted between them, an electric socket mounted within one part of said hollow resistance and a plug whose body portion is secured within the other part of said resistance.

4. In an electric controller, the combination substantially as described, of a resistance-coil formed as a hollow cylinder and made up in two parts secured together end to end, an electric socket having its working parts mounted within one hollow cylinder, and an electric switch supported between said parts and having contacts connected to divisions of said resistance, as and for the purpose described.

Signed at New York, in the county of New York and State of New York, this 11th day of November, A. D. 1902.

HERMAN A. STRAUSS.

Witnesses:

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ETHEL L. LAWLER.