

No. 664,554.

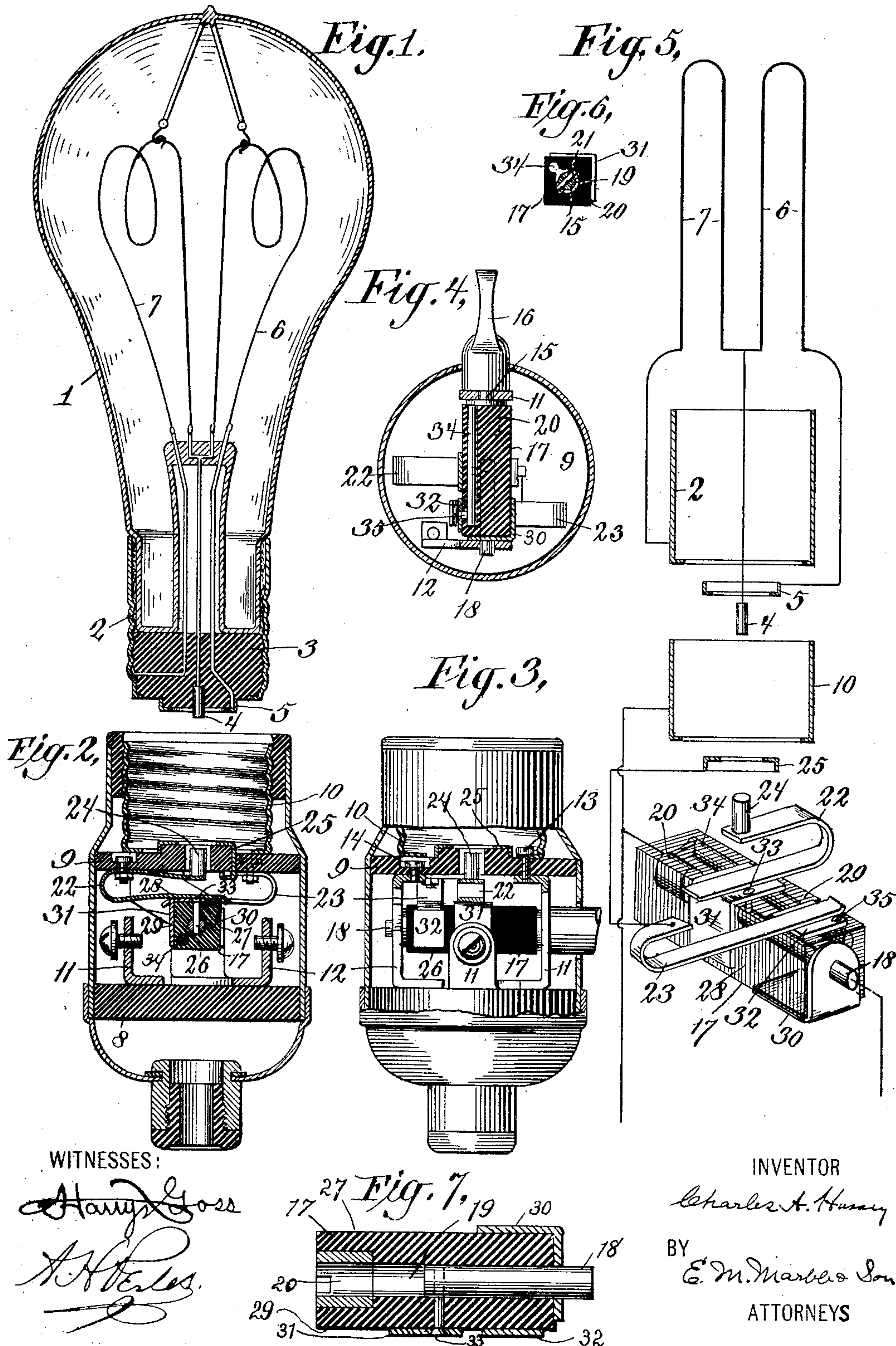
Patented Dec. 25, 1900.

C. A. HUSSEY.

REGULATING SOCKET FOR MULTIFILAMENT INCANDESCENT ELECTRIC LAMPS.

(Application filed Aug. 29, 1900.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

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## REGULATING-SOCKET FOR MULTIFILAMENT INCANDESCENT ELECTRIC LAMPS.

SPECIFICATION forming part of Letters Patent No. 664,554, dated December 25, 1900.

Application filed August 29, 1900. Serial No. 28,421. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES A. HUSSEY, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Regulating-Sockets for Multifilament Incandescent Electric Lamps; and I do hereby declare the following to be a full, clear, and exact description of the invention, 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 regulating-sockets for multifilament incandescent electric lamps, and more particularly for two-filament incandescent lamps; and it consists in the novel construction of a switch adapted to throw one of two filaments into circuit singly or to throw both of said filaments into circuit in series or in multiple at will.

The objects of my invention are to improve and simplify regulating-switches of multiple-filament incandescent lamps, and more particularly switches intended for throwing one of the filaments of a two-filament incandescent lamp into circuit singly or for throwing both filaments into circuit in series or in multiple at will and to make the switch as inexpensive as possible. These objects are attained in the switch herein described, and illustrated in the drawings which accompany and form a part of this specification, in which the same reference-numerals indicate the same or corresponding parts, and in which—

Figure 1 is a central vertical section of a two-filament lamp such as that with which my socket is particularly intended to be used. Fig. 2 is a corresponding central vertical section of the socket. Fig. 3 is an elevation and partial section of the socket looking from the left of Fig. 2. Fig. 4 is a horizontal section of the socket and commutator, the section being taken looking upward. Fig. 5 is a diagram illustrating the electric circuits. Fig. 6 is an end view of the commutator looking from the right of Fig. 3, the key-spindle being sectioned; and Fig. 7 is a central longitudinal section of the commutator.

In the drawings, 1 indicates the lamp-bulb. It may be of the ordinary construction and

may be provided with the usual screw-threaded base-sleeve 2, adapted to fit into a corresponding socket-bushing of the lamp-socket.

3 indicates the usual insulation at the base of the lamp.

4 is a center contact-pin, and 5 a contact-ring concentric with pin 4 and sleeve 2, but insulated therefrom by the insulating material 3.

6 and 7 indicate the two filaments. One end of each of these filaments is connected to the contact-piece 4 by a suitable conductor. The remaining end of filament 6 is connected to the contact-ring 5, and the remaining end of filament 7 is connected to the base-sleeve 2, which therefore forms a contact-piece for this filament.

The socket is provided with the usual base-piece 8 and top piece 9 of the switch mechanism, both base-piece and top piece being of insulating material and with the usual screw-threaded socket-bushing 10, adapted to receive the base of the lamp. The base-piece 8 of the socket and the top piece 9 are connected by two brackets 11 and 12, provided with suitable binding-screws. These brackets form the line-terminals of the switch. Bracket 11 is electrically connected with the socket-bushing 10 by a screw 13. The screw 14, which connects the bracket 12 to top piece 9, does not make contact with bushing 10, which bushing is therefore insulated from bracket 12.

The spindle 15 of the key 16 is revolubly mounted in bracket 11. Between brackets 11 and 12 is a commutator 17, provided at one end with a pivot-pin 18, fitting into a bearing-hole in bracket 12 and supported at the other end by the spindle 15 of the key 16, which spindle enters the center bore 19 of the commutator. Said commutator consists of a square block of insulating material, carrying certain contact-pieces hereinafter mentioned.

At the end of the commutator adjacent to the key there is a bearing-bushing 20. In the outer end of this bearing-bushing there are two slots adapted to receive the ends of a pin 21, carried by spindle 15. The slots are of such width as to permit some play of the pin in them.

The commutator 17 forms the movable ele-



ment of the switch of the socket. To the top piece 9 of the socket are connected two U-shaped springs or brushes 22 and 23. Brush 22 is connected at one end to a contact-pin 24, located in a central aperture of the top piece 9 and adapted to make contact with contact-pin 4 of the lamp when said lamp is in place in the socket. Brush 23 is connected to a contact-ring 25, carried by the top piece 9 of the socket and surrounding the contact-pin 24, but having a central aperture for the passage of the pin 4. All this is shown in Fig. 2. Contact-ring 25 corresponds to the contact-ring 5 of the base of the lamp, and is adapted to make contact therewith when the lamp is in place in the socket.

The arrangement of the contact-pieces on the commutator 17 is best shown in the diagram Fig. 5, in which figure a perspective view of the commutator and its brushes is shown, together with the connections, and the corresponding contact-pieces of the lamp and the socket, the commutator being shown as if transparent. Numerals 26, 27, 28, and 29 indicate the four faces of the commutator. Upon face 26 (which face is the rear face of the commutator, as shown in Fig. 5,) there are no contact-pieces. Upon face 27 there is a contact-piece 30 opposite brush 23 and extending over the end of the commutator, and therefore in electrical contact with bracket 12. Upon face 28 of the commutator there is a contact-piece 31, which also extends over upon face 29 of the commutator. This contact-piece is adapted to make contact with brush 22. Upon face 29 there is also another contact-piece 32.

The pivot-pin 18 of the commutator extends through the bore of the commutator to a point opposite contact-piece 31, which contact-piece is electrically connected to said pin by a pin 33. Contact-piece 32 is electrically connected to a pin 34, located near one corner of the commutator and extending longitudinally of the commutator by means of a pin 35. Pin 34 is electrically connected to the bearing-bushing 20 of the commutator.

The circuits may be followed upon Fig. 5. When the face 26 of the commutator is in contact with the brushes 22 and 23, both filaments are out of circuit. When the key is turned so as to bring face 27 under the brushes, brush 23 makes contact with contact-piece 30 and a circuit is completed from the bracket 11 and socket-bushing 10 to the base-sleeve 2 of the lamp, and thence through filaments 7 and 6 to contact-rings 5 and 25, brush 23, contact-piece 30, and bracket 12. The filaments are thus connected in series and give the lowest intensity of illumination. When the commutator is again turned so as to bring face 28 under the brushes, the circuit through brush 23 is broken, but a circuit is established through filament 7, contact-pins 4 and 24, brush 22, contact-piece 31, pivot-pin 18, to bracket 12, and so to the line.

Filament 7 is thereby connected to the line alone and the lamp produces illumination of medium intensity. When the commutator is turned still farther, so as to bring its face 29 under the brushes, the circuit through filament 7, just described, is continued, since brush 22 remains in contact with contact-piece 31, but a new circuit is completed from bracket 11 through bushing 20, pin 34, and contact-piece 32 to brush 23, and thence through contact-rings 25 and 5, filament 6, contact-pins 4 and 24, brush 22, contact-piece 31, and pin 18 to bracket 12, and so to the line. When the switch is in this position, therefore, the filaments are connected in multiple and the lamp gives illumination of the highest intensity. A further rotation of the commutator breaks the circuit. The commutator may be turned in either direction. Because of the loose connection between the key and the commutator the spring-brushes 22 and 23 are enabled to move the commutator sufficiently, independently of the key, to break the circuit quickly and to prevent arcing.

The construction of the socket is such that it will receive a single-filament lamp of the ordinary type, and the switch may be used to make and break the circuit of such single-filament lamp, though of course it cannot regulate the intensity of the illumination produced by a single-filament lamp. Likewise the base of the lamp is of such construction that it may be used as a single filament-lamp in an ordinary socket.

Contact-pieces 10, 24, and 25 may be termed "socket" contact-pieces to distinguish them from contact-pieces 2, 4, and 5, which are lamp contact-pieces, and from contact pieces or brushes 22 and 23, which may be termed "switch" contact-pieces. Likewise brush 22 may be termed a "two-filament" or "two-circuit" contact-piece, since it is connected to both filaments or branch circuits 6 and 7, and brush 23 may be termed a "single filament or circuit" contact-piece.

Having thus completely described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a two-filament lamp, having contact-pieces, one of which is common to the two filaments and the others of which are connected to a single filament only, of a socket having contact-pieces corresponding to the lamp contact-pieces, and having also two line-terminals, to one of which one of the single-filament contact-pieces is connected through its corresponding socket contact-piece, two switch contact-pieces in the socket electrically connected each to one of the other socket contact-pieces, and a movable commutator, adapted to make contact with such switch contact-pieces, and having contact-pieces and conductors whereby, by the operation of the commutator, said filaments may be connected to the line in series,



singly, or in multiple, through the said commutator and the said two switch contact-pieces.

2. The combination, with a two-filament lamp, having contact-pieces, one of which is common to the two filaments and the others of which are connected to a single filament only, of a socket having contact-pieces corresponding to the lamp contact-pieces, and having also two line-terminals, to one of which one of the single-filament contact-pieces is connected through its corresponding socket contact-piece, two switch contact-pieces in the socket electrically connected each to one of the other socket contact-pieces, and a revoluble four-sided commutator, formed of insulating material, but having contact-pieces suitably disposed upon its surface and adapted to make contact with such switch contact-pieces, and having also suitable conductors, connected to its contact-pieces, whereby, by the rotation of the commutator, said filaments may be connected to the line in series, singly, or in multiple, through the said commutator and the two switch contact-pieces.

3. The combination, with a two-filament lamp, having contact-pieces, one of which is common to the two filaments and the others of which are connected each to a single filament only, of a socket having contact-pieces corresponding to the lamp contact-pieces, and having also two line-terminals to one of which one of the single-filament contact-pieces is connected through its corresponding socket contact-piece, switch contact-pieces in the socket electrically connected to the other socket contact-pieces, and adapted to make contact with other contact-pieces on a movable commutator, a commutator, having two contact-pieces, electrically connected to the other line-terminal, corresponding to said switch contact-pieces, and adapted to make contact with their corresponding switch contact-pieces in different positions of the commutator, and a third contact-piece on said commutator, electrically connected to the first-mentioned line-terminal, and adapted to make contact with the single-filament switch contact-piece in a third position of the commutator in which the two-filament switch contact-piece is electrically connected with the second line-terminal, whereby the filaments may be connected to the line in series, singly, or in multiple.

4. The combination, with a two-filament lamp, having contact-pieces, one of which is common to the two filaments and the others of which are connected to a single filament only, of a socket having contact-pieces corresponding to the lamp contact-pieces, and having also two line-terminals, to one of which one of the single-filament contact-pieces is connected through its corresponding socket contact-piece, switch contact-pieces in the socket electrically connected to the other socket contact-pieces, and adapted to make contact with other contact-pieces on a movable commuta-

tor, and a revoluble four-sided commutator, formed of insulating material, one side of said commutator being blank, another side having a contact-piece electrically connected to the other line-terminal and adapted to make contact with the single-filament switch contact-piece, a third side having a contact-piece likewise connected to the last-mentioned line-terminal, and adapted to make contact with the two-filament switch contact-piece, and the fourth side having a contact-piece connected and disposed in the same manner as the contact-piece of the third side, and having also a contact-piece adapted to make contact with the single-filament switch contact-piece, and electrically connected to the first-mentioned line-terminal.

5. The combination, with a two-filament lamp having contact-pieces to which its filaments are electrically connected, one end of each filament being connected to a contact-piece which is insulated from the corresponding end of the other filament, of a socket having contact-pieces corresponding to the lamp contact-pieces, and having also line-terminals, one of said socket contact-pieces being electrically connected to a line-terminal, and two switch contact-pieces one of which is connected to a single filament through the socket and the other is connected to both filaments through the socket, and a movable commutator, adapted to coact with such switch contact-pieces, and having contact-pieces and conductors whereby, by the operation of the commutator, said filaments may be connected to the line in series, singly, or in multiple, through the said commutator and the said two switch contact-pieces.

6. In a switch for connecting two branch circuits in series, singly, or in multiple with a line-circuit, the combination, with means of connecting one of said branch circuits normally with one side of the line-circuit, and two switch contact-pieces, one adapted to be connected with each of said branch circuits, and the other adapted to be connected to that branch circuit which is not normally connected to the line, of a movable commutator, adapted to make contact with each of said switch contact-pieces, and having contact-pieces and conductors, connected to the line-terminals, whereby, by the operation of the commutator, said branch circuits may be connected to the line in series, singly, or in multiple, through the said commutator and the said two switch contact-pieces.

7. In a switch for connecting two branch circuits in series, singly, or in multiple, with a line-circuit, the combination, with means for connecting one of said branch circuits normally with one side of the line-circuit, and two switch contact-pieces, one adapted to be connected with each of said branch circuits and the other adapted to be connected to that branch circuit which is not normally connected to the line, of a revoluble four-sided commutator, formed of insulating material,



but having contact-pieces suitably disposed on its surface and adapted to make contact with said switch contact-pieces, and having also suitable conductors, connected to its contact-pieces and to line-terminals, whereby, by the rotation of the commutator, said branch circuits may be connected to the line in series, singly, or in multiple, through the said commutator, and the said two switch contact-pieces.

8. In a switch for connecting two branch circuits in series, singly, or in multiple with a line-circuit, the combination, with means for connecting one of said branch circuits normally with one side of the line-circuit, and two switch contact-pieces, one adapted to be connected to each of said branch circuits, and the other adapted to be connected to that branch circuit which is not normally connected to the line, of a commutator having two contact-pieces electrically connected to a terminal for the opposite side of the line to that to which one branch circuit is normally connected, corresponding to said switch contact-pieces, and adapted to make contact with their corresponding switch contact-pieces in different positions of the commutator, and a third contact-piece on the commutator corresponding to that switch contact-piece which is connected to but one branch circuit, and connected to a terminal for the same side of the line-circuit as that to which one branch circuit is normally connected, and adapted to make contact with its corresponding switch contact-piece in a third position of the commutator in which the two-circuit contact-piece is in contact with its commutator contact-

piece, whereby by the operation of the commutator the branch circuits may be connected with the line in series, singly, or in multiple.

9. In a switch for connecting two branch circuits in series, singly, or in multiple with a line-circuit, the combination, with means for connecting one of said branch circuits normally with one side of the line-circuit, and two switch contact-pieces, one adapted to be connected to each of the branch circuits, and the other adapted to be connected to that branch circuit which is not normally connected to the line, of a revoluble four-sided commutator, formed of insulating material, one side of said commutator being blank, another side having a contact-piece electrically connected to a line-terminal for the side of the line-circuit opposite to that to which one branch circuit is normally connected, a third side having a contact-piece likewise connected to the last-mentioned side of the line-circuit, and adapted to make contact with the two-circuit switch contact-piece, and the fourth side having a contact-piece connected and disposed in the same manner as the contact-piece on the third side, and having also a contact-piece adapted to make contact with the single-circuit switch contact-piece, and electrically connected to a line-terminal for that side of the line-circuit to which one branch circuit is normally connected.

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

CHARLES A. HUSSEY.

Witnesses:

HARRY M. MARBLE,  
A. H. PERLES.