

H. S. STONE.
 MEANS FOR REGULATING ELECTRIC LAMPS.
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1,048,003.

Patented Dec. 24, 1912.

Fig. 1.

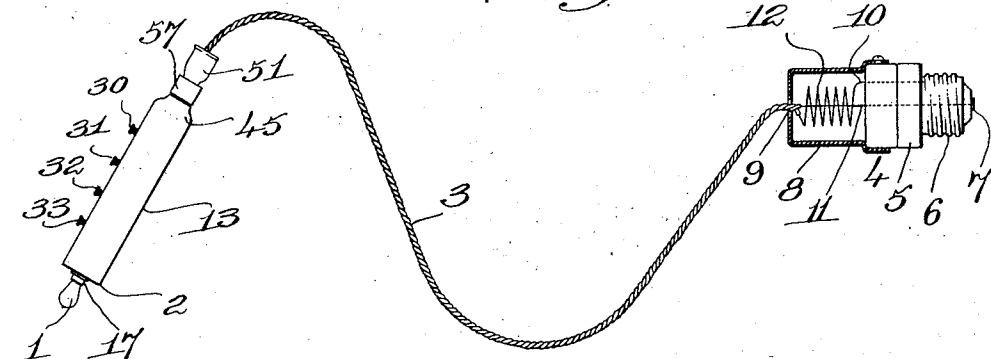
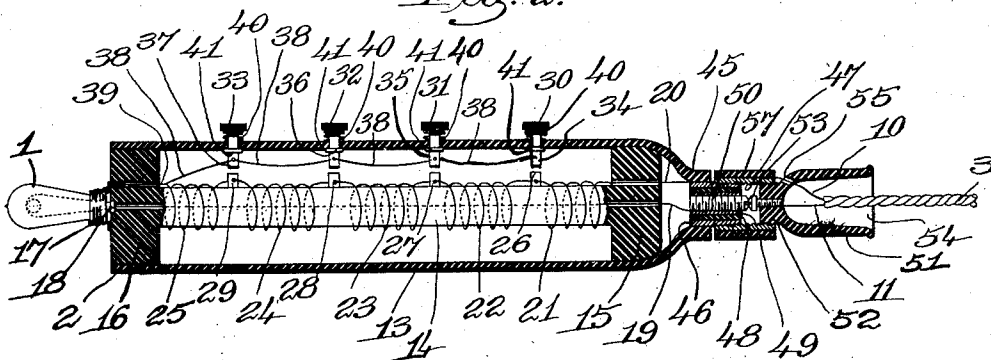


Fig. 2.



Witnesses:

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MEANS FOR REGULATING ELECTRIC LAMPS.

1,048,003.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HAROLD S. STONE, a citizen of the United States, residing at Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Means for Regulating Electric Lamps, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention has for its object to provide a novel device for holding and regulating the current for an electrical instrument by means of which a small low voltage electrical instrument may be connected to and operated from a high voltage circuit without detriment to the instrument, and by means of which the voltage in the instrument may be varied according to the requirements of the case.

My invention is capable of use with a variety of electrical instruments, and as illustrating one application thereof I have shown it as it might be used in operating a low voltage incandescent electric lamp from a high voltage electric circuit. A variety of other electrical instruments which are used in medical, dental, surgical, or therapeutical work might be substituted for the lamp, however, without departing from the invention.

A low voltage electric lamp is frequently used by dentists, oculists and physicians for examining the interior of the mouth, eyes or nose or other cavity, but, of course, a lamp of this nature cannot be connected directly with a high voltage circuit without the interposition of some resistance. It has been heretofore proposed to connect the low voltage lamp with the high voltage circuit by a combined flexible conductor and a resistance cord, that is, a flexible conductor embodying in itself both a conductor and a fixed resistance. One disadvantage of a construction of this nature is that no means are provided for varying the resistance of the conductor, and as a result the instrument must always be operated with a current of a certain strength. It has also been proposed to associate with an electric lamp a rheostat by which more or less resistance can be thrown into the circuit thereby controlling the voltage at the lamp.

In accordance with my invention I provide a novel regulating device which com-

prises a novel arrangement of resistance units associated with the lamp by means of which the voltage at the lamp can be readily controlled, and a make and break mechanism or switch by which the circuit of the lamp may be broken or closed, and other features of improvement all as will be more fully hereinafter described and then pointed out in the appended claims.

Referring to the drawings wherein I have shown a selected embodiment of my invention, Figure 1 is a general view showing my device as it would be attached to an ordinary electric lamp socket; Fig. 2 is an enlarged section through the lamp and the holder therefor.

The complete apparatus as herein shown comprises a low voltage electrical instrument (which in the illustrated embodiment of the invention is a low voltage incandescent lamp 1, but which might be any other suitable low voltage electrical instrument); a holder for the lamp or other instrument which is designated generally by 2, a flexible cord or conductor 3 and an attachment plug 4 for attaching the flexible conductor to a lamp socket, outlet box or other source of electrical supply. While any suitable attachment plug might be used, I propose to use a special form of attachment plug which has associated therewith a fixed resistance. The attachment plug herein shown comprises the usual body portion 5 having the screw shell terminal 6 and the end terminal 7 which are adapted to engage the screw shell and center terminal of the lamp socket in well known manner. The body 5 of the plug has secured thereto an inclosing shell 8 provided with an opening 9 through which the conductor cord 3 passes, said cord being made up of two separate conductors as usual. The two conductors 10 and 11 of the flexible connection are electrically connected to the terminals 6 and 7 of the plug in usual manner. One or both of the conductors has therein a resistance coil 12 having a fixed resistance which is situated within the shell 8.

The holder 2 is of novel construction and is provided with both a variable resistance and with a switch device for closing or opening the lamp circuit. The holder illustrated in the drawing, which shows the preferred form of the invention, comprises a shell 13 of insulating material having within it a core 14 provided at its ends with

heads 15 and 16 which fill the shell, the head 16 having the screw shell terminal 17 and center terminal 18 for the lamp 1. The conductor 11 of the flexible connection 3 connects with a conductor 19 which leads through the core 14 and connects with the center lamp terminal 18. The conductor 10, however, connects with a wire 20 which leads to a plurality of resistance units herein shown as coils 21, 22, 23, 24 and 25 of resistance wire that may wind about the core 14, although resistance units of any suitable character might be employed. Interposed between the resistance units 21 and 22 is a contact 26 to which said coils are connected, and interposed between the resistance units 22 and 23 is another contact 27, while other contacts 28 and 29 are interposed between the resistance units 23 and 24 and 24 and 25, respectively. The resistance unit 25 is connected with the lamp terminal 17 by means of a wire 39.

Supported in the shell 13 are a plurality of keys 30, 31, 32 and 33 of insulating material, each having associated therewith contacts designated 34, 35, 36, 37, respectively. These contacts are connected in series by means of a wire 38 which connects to the wire 39 interposed between the resistance unit 25 and the lamp terminal 17. The keys 30, 31, 32 and 33 and their associated contacts are normally held retracted, as shown in Fig. 2, by means of springs 40, the retracting movement of each key being limited by a collar 41 on the spindle thereof engaging the interior of the casing. When the keys are all retracted, as shown in Fig. 2, all of the resistance units are in the circuit. If, however, the key 33 is depressed to close the contacts 37 and 29, then the resistance unit 25 will be cut out of the circuit, while if the key 32 is depressed to close the contacts 35 and 28, the resistance units 24 and 25 are both cut out of the circuit. Similarly by depressing the other keys 30 or 31, further resistance units may be cut out of the circuit, as will be obvious.

I propose to use an amount of resistance 12 at the attachment plug which will be sufficient to cut down the voltage for the lamp circuit to that which is desired for running the lamp at substantially its greatest luminosity. By the use of the instrument herein shown, however, this added resistance can be thrown into the circuit so as to secure a comparatively fine adjustment of the luminosity of the lamp according to the use to which it is desired to be put.

My holder 2 constitutes also a convenient hand-hold for the operator's hand and the keys are in convenient position to be actuated by the operator's fingers.

In using a light or instrument of this nature it is frequently desirable to shut off the current from the lamp without the necessity

of going to the wall socket, and I have, therefore, associated with my holder a switch device by which the circuit can be easily made or broken. As herein shown the end of the holder is reduced to form the neck 45 within which is a sleeve 46 of brass or other good conducting material to which the wire 20 is connected. Inside of the sleeve 47 is a bushing 48 of insulating material within which is a sleeve 49 of conducting material, and said sleeve has screw-threaded thereinto a contact member 50.

51 is a contact-carrying member of insulating material which is provided with a screw-threaded neck 52 that screws into the end of a sleeve 47, which in turn has screw-threaded engagement with the sleeve 46, said sleeve 47 being preferably covered with an envelop 57 of insulating material. Said contact-carrying member carries at its central portion a contact 53 which is adapted to engage the contact 50, as shown in the drawings. Said contact 53 may conveniently have a screw-threaded stem which is screwed into the member 51 whereby it may be properly adjusted, and the wire 11 is shown as connected to said contact 53. The member 51 is shown as hollowed out at one end, as at 54, and the flexible connection 3 enters this hollow end, the conductor 10 passing through an aperture 55 and being gripped between the screw-threads of the sleeve 46 and neck 52, and thus being electrically connected with said sleeve. A slight turning movement of the sleeve 47 in one direction will disconnect the contacts 50 and 53 and thus break the lamp circuit, while a slight turning movement in the opposite direction will bring said contacts together, thus restoring the lamp circuit. This is a very simple construction by which the lamp can be turned on or off.

One advantage of my construction is that the operator can vary the voltage at the instrument or can shut off the current from the instrument while holding the device in his hand. In the operation of cauterizing and other surgical operations it is frequently necessary to vary the strength of the current according to the character of the operation being performed, and it is also frequently necessary to shut off the current from or turn it onto the instrument. If the device is connected to an ordinary lamp socket and is not provided with a switch in the handle thereof, then the current can only be shut off or turned on by the operator leaving his patient and going to the socket. With my device, however, the operator can regulate the current or can turn it on or shut it off while he is still holding the instrument in his hand and without removing the instrument from the patient.

Another advantage of my construction is that the holder 2 is somewhat elongated and

can be conveniently held in the hand. The provision of a plurality of separate keys for varying the resistance is also an advantage over the style of rheostat employing a swinging lever, for the keys can be readily depressed while the instrument is in use, while the swinging lever will be much more difficult to operate.

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

1. In a device of the class described, the combination with a chambered lamp holder having lamp terminals thereon, of a plurality of resistance units within the chamber of the lamp holder and connected in series, a fixed contact between each two adjacent resistance units, a corresponding series of movable contacts carried by the lamp holder and normally separated from the fixed contacts but movable into contact therewith, and means electrically connecting said movable contacts in series and with the lamp circuit.

2. In a device of the class described, the combination with a lamp holder comprising a shell having lamp terminals thereon, of a plurality of resistance units within the shell connected in series, a fixed contact between each two adjacent resistance units, a corresponding series of movable contacts carried by the shell and normally separated from the fixed contacts but movable into contact therewith, means electrically connecting said movable contacts in series and with the lamp circuit, and means exterior to the shell for depressing any movable contact into engagement with its fixed contact.

3. In a device of the class described, the combination with a lamp holder comprising a shell having lamp terminals thereon, of a core situated within the shell and sustaining a plurality of fixed contacts, a plurality of resistance coils wound about the core and connected with said contacts in series, movable contacts carried by the shell and adapted to be moved into engagement with the fixed contacts, and means electrically connecting the fixed contacts in series and with the lamp circuit.

4. In a device of the class described, the combination with a lamp holder having variable resistance therein, of a fixed con-

tact carried thereby and connected to one side of the lamp circuit, a contact carrier screw-threaded to the holder and carrying a movable contact which is also connected to one side of the lamp circuit whereby turning movement of the contact carrier will cause the lamp circuit to be made or broken.

5. In a device of the class described, the combination with a lamp holder having variable resistance therein and a fixed contact situated in the lamp circuit, of a contact carrier rotatably carried by the end of the holder and having a movable contact also in the lamp circuit, and means whereby rotative movement of the contact carrier will bring the movable contact into and out of engagement with the fixed contact.

6. In a holder and current regulator for an electrical instrument, the combination with a shell having terminals for said instrument, of a plurality of resistance units within the shell connected in series, a fixed contact between each two adjacent units, a corresponding number of independently-movable contacts carried by the shell and normally separated from the fixed contacts, means operative from the exterior of the shell to bring each movable contact separately into engagement with its fixed contact, and a shunt circuit including the movable contacts.

7. In a device of the class described, the combination with a lamp holder having a plurality of fixed contacts therein, of resistance units interposed between said fixed contacts, a plurality of movable contacts for engaging the fixed contacts thereby to vary the amount of resistance in the lamp circuit, a fixed contact at the end of the holder in the lamp circuit, a contact carrier rotatably carried by said end of the holder and having a movable contact also in the lamp circuit which is adapted to be brought into and out of engagement with the fixed contact by rotation of the contact carrier.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

HAROLD S. STONE.

Witnesses:

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