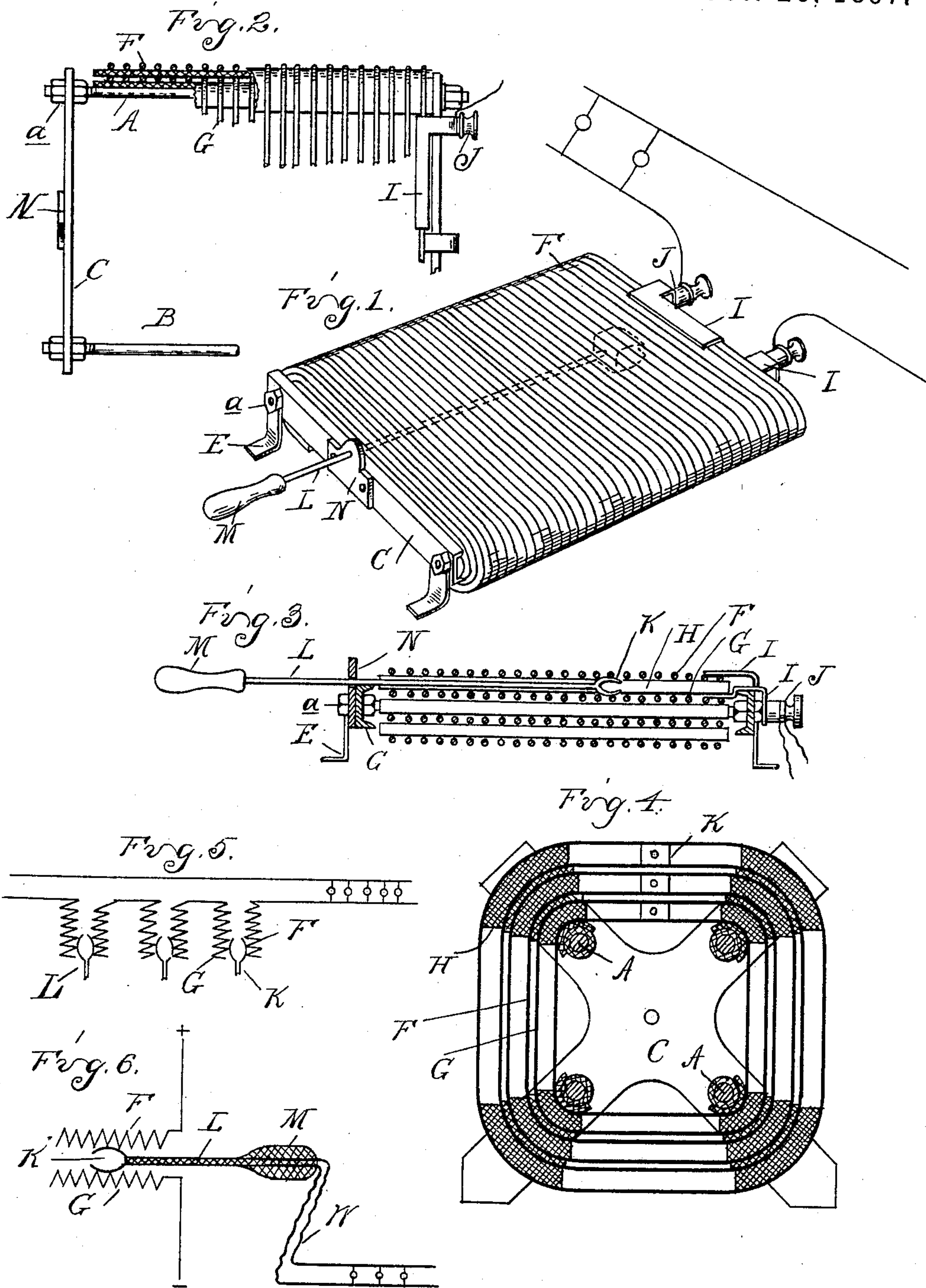


(No Model.)

E. E. ANTHONY.
ELECTRICAL RESISTANCE DEVICE.

No. 592,463.

Patented Oct. 26, 1897.



Witnesses
Otto F. Panther,
M. M. DeGherly

Inventor
Elliot E. Anthony
By *Wm. H. Magner & Son*
Attys.

UNITED STATES PATENT OFFICE.

ELLIOTT E. ANTHONY, OF DETROIT, MICHIGAN.

ELECTRICAL-RESISTANCE DEVICE.

SPECIFICATION forming part of Letters Patent No. 592,463, dated October 26, 1897.

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To all whom it may concern:

Be it known that I, ELLIOTT E. ANTHONY, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Electrical Resistance, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to produce a cheap, simple, and portable construction of electrical resistance which for many of its applications is quite as satisfactory, if not better, than the higher-priced constructions at present in use.

The invention consists in the peculiar manner in which the resistance-coils are arranged in relation to each other and combined with a movable contact, all as more fully herein-after described and shown.

Figure 1 is a perspective view of a resistance constructed in accordance with my invention in a simple form. Fig. 2 is a plan view thereof, partly broken away to disclose the construction. Fig. 3 is a vertical central longitudinal section thereof. Fig. 4 is a cross-section through a modified form of construction. Fig. 5 is a diagrammatic representation of Fig. 4 to illustrate its operation. Fig. 6 is a diagram showing a modified form of the movable contact.

My invention comprises a reel or skeleton frame upon which the wire forming the resistance is wound to form an even multiple of coils concentric with each other and with open spaces between them. The reel may be variously constructed. Its most simple form is used in the construction shown in Figs. 1 and 2 and consists of two rods or bars A B, rigidly united parallel to each other at the ends by frame-bars or standards C in any desired manner. In the drawings the bars A B are metal bars, screw-threaded at the ends and united to the bars C by screw-nuts *a*, short legs E being attached to support the frame. Upon this frame or reel are wound two, four, or any other multiple of coils of wire, the drawings showing two coils F G. Each coil is insulated from the other and from the frame by suitable strips H of fiber, asbestos sheet, or any other like insulating material, all in such manner that the windings

of each coil do not twist each other with any part of the adjacent coil or coils. To the end of each coil is secured by soldering a strip of copper I, which strips are in electrical connection with separate binding-posts J on the frame.

K is a spring jaw or jack located between the two coils of wire. It is formed of a bent piece of spring-metal plate and attached to a shank L and provided with a handle M. A guide-bearing N is preferably attached to the front of the frame, through which the shank L is free to slide.

In practice the device, being arranged and constructed as described, is intended to operate as follows: Suppose the resistance to be connected with its binding-posts to terminals in one of the conductors of an electric-light circuit. It will be seen that the position of the spring-jack between the two coils determines entirely the amount of resistance included into the circuit, and the operator by taking hold of the handle M and manipulating the sliding jack can vary the resistance instantly, as desired. Thus if the handle is drawn out to its full extent the whole resistance will be included, and if pushed in until it is interposed between copper strips the whole resistance will be cut out. There may be another pair of coils secured upon the reel in the same manner on top of the coils F and G with a separate sliding jack for regulating it, and the connections would then be substantially as shown in diagram in Fig. 5, wherein three pairs of coils, provided with three sliding jacks, are shown, each independent of the other. For larger resistance, however, I desire to make the reel substantially in the form as shown in Fig. 4, in which the reel is formed of four parallel bars A, secured and supported at the ends by spiders, which are adapted to form convenient standards. Upon this the coils are wound in the same manner as before described, the drawings showing six of such coils insulated from each other by the interposition of insulating material at the corners, the wire of each coil being drawn taut and with the helices far enough apart to prevent any possible short-circuiting. In the spaces between the pair of coils I again slidingly secure a spring-jack K, one for each pair of coils, operated in the same manner as

before described. The connection between the coil and with the circuit is indicated in Fig. 5 in diagram.

Fig. 6 shows a mode of connecting the resistance between the two opposite terminals of an electric circuit. In such an arrangement the spring-jack K is constructed in two electrically-separated halves, each of which is separately connected through the handle with the terminals of the circuit to be controlled, the part W of such connection being made, as in the usual manner, in the form of a flexible cord containing the two terminals.

My construction has several advantages over other constructions. While it may be used to advantage in any place where adjustable resistances have to be provided, it is of especial advantage over other constructions where frequent and constant adjustment of the resistance is required. Thus in its application for producing the different light effects upon the stage its portable nature will allow it to be placed anywhere where the operator can see the light effect in the circuit of his control, and a person with the most rudimentary knowledge of electricity can easily and quickly be taught the proper manipulation of the device understandingly.

As any number of coils can be used in the same reel, each pair of coils may be made to belong to a separate group of lights, each controlled by its own jack, and thus the operator may have a number of groups of light variously disposed upon the stage or in the body of the theater independently under his control and produce any desired combination of light effects.

It will be seen that my construction is very simple and cheap, and with proper construction and careful winding of the wire a very good contact is obtained, and as there are but few joints where the electric connection is liable to be broken the device is not liable to get out of order.

What I claim as my invention is—

1. In an electrical resistance, the combination of a skeleton frame or reel composed of a plurality of longitudinal bars secured at the opposite ends to common end frames or standards, two electric conductors or wires, or multiples thereof wound upon said reel to form a concentric series of flat-sided or polygonal coils electrically insulated from each other and with open air-spaces formed between each pair of coils, a movable contact between each pair of adjacent coils composed of a spring-jack in frictional contact with the coils and secured to a handle adapted to shift its position between the coil and electric connections, whereby the conductors are connected in series with suitable portions of the coils according to the adjustment of the movable contacts.

2. An electrical resistance composed of a concentric series of polygonal resistance-coils supported upon a reel or skeleton frame electrically insulated from each other by insulating material at the corners and air-spaces between and a sliding spring-jack in frictional adjustable contact between each pair of coils.

3. In an electrical resistance, the combination of a reel or frame composed of the longitudinal bars A, B, the end frames or supports C C to which the ends of said bars are secured, the conductors wound upon said reel or frame and forming two concentric coils insulated from each other by strips interposed between the bars and coils, the spring-jack provided with the shank and handle and adapted to form a movable contact, the guide N for the contact and the copper strips and binding-post for electrically connecting the resistance-coils into the circuit of an electric conductor.

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

ELLIOTT E. ANTHONY.

Witnesses:

M. B. O'DOHERTY,
OTTO F. BARTHEL.