

A. A. ZIEGLER.
CIRCUIT MAKE AND BREAK DEVICE.
APPLICATION FILED FEB. 18, 1910.

1,031,312.

Patented July 2, 1912.

2 SHEETS—SHEET 1.

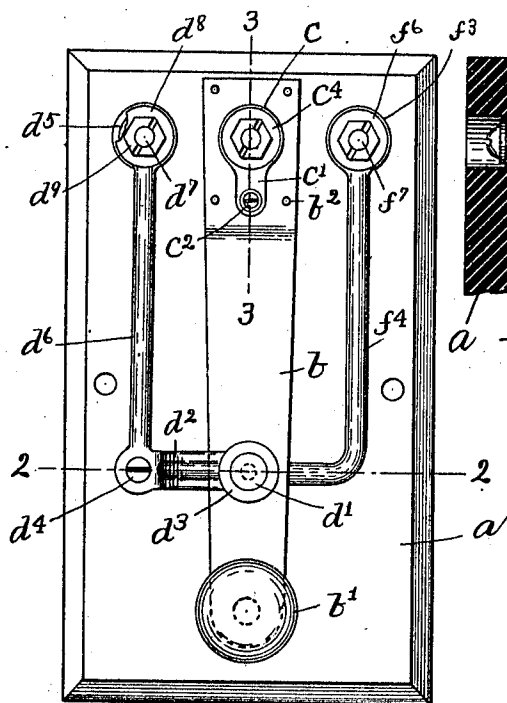


Fig. 1.

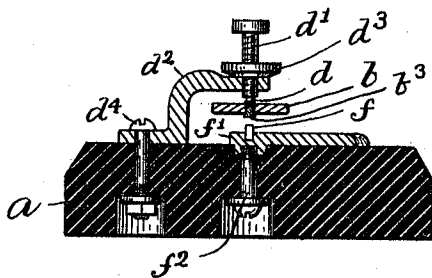


Fig. 2.

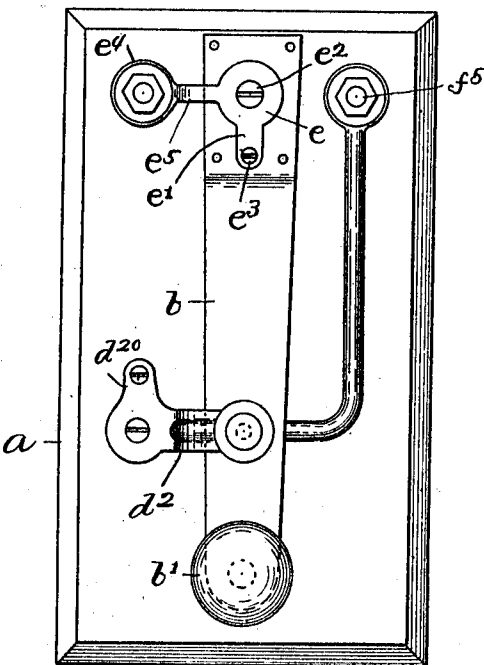
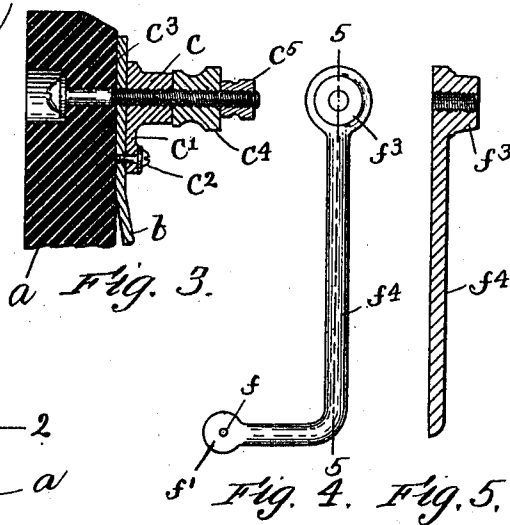


Fig. 6.

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1,031,312.

2 SHEETS—SHEET 2.

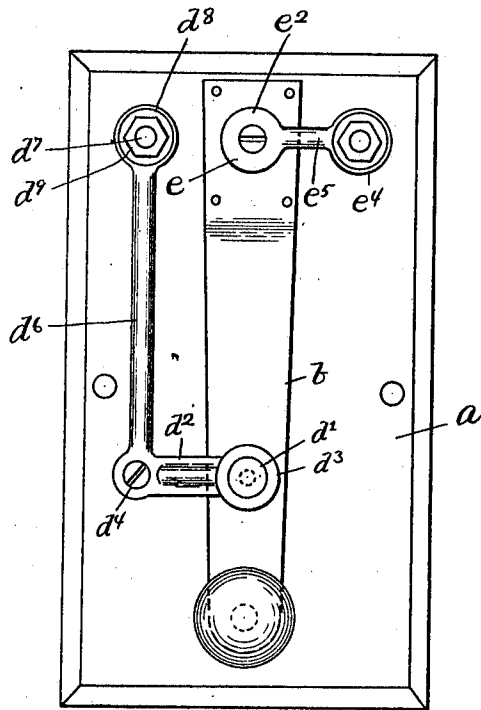


Fig. 7.

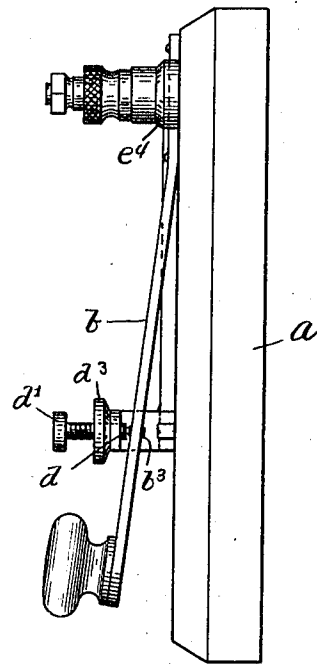


Fig. 8.

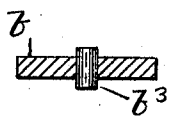


Fig. 9.

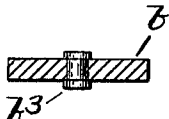


Fig. 10.

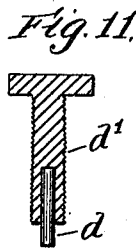


Fig. 11.

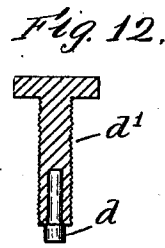


Fig. 12.

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UNITED STATES PATENT OFFICE.

ALFRED A. ZIEGLER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO UNITED ELECTRIC APPARATUS COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

CIRCUIT-MAKE-AND-BREAK DEVICE.

1,031,312.

Specification of Letters Patent.

Patented July 2, 1912.

Application filed February 18, 1910. Serial No. 544,530.

To all whom it may concern:

Be it known that I, ALFRED A. ZIEGLER, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Circuit-Make-and-Break Devices, of which the following is a specification.

This invention relates to circuit-operating keys, or electrical devices for making and breaking circuits, adapted to be used alone or in connection with other electrical devices.

It has for its object to construct a very strong, substantial and durable device having means for electrically connecting the parts thereof, whereby the employment of electric-wires is obviated; and having improved forms of electric-contacts, which are not liable to get out of order. Such a device is well suited to railway signaling work, where it is apt to be roughly used and given but little attention.

Figure 1 is a front view of a circuit-operating key embodying this invention. Fig. 2 is a transverse section of the same taken on the dotted line 2—2, Fig. 1. Fig. 3 is a longitudinal vertical section of the same, taken on the dotted line 3—3, Fig. 1. Fig. 4 is a front view of the under contact-member. Fig. 5 is a longitudinal vertical section of the same taken on the dotted line 5—5, Fig. 4. Figs. 6 and 7 are front views of modified forms of circuit-operating keys embodying this invention. Fig. 8 is a side view of the circuit-operating key shown in Fig. 7. Figs. 9, 10, 11 and 12 are details to be referred to.

a represents the base-plate, and *b* the movable lever of the key or contact-member, having at its outer end a knob *b'*, or provided with any other means by which it may be depressed. Said key-member *b* may be made as a flat plate or bar, preferably spring-acting, and connected at its inner end to the base-plate *a*. As shown in Fig. 1 it is attached to the base-plate by several pins *b²*, which are driven into the base-plate, and also by the attaching-means for a binding-post, of improved construction. The binding-post comprises a body *c* having a screw-threaded center-hole through it, see Fig. 3,

and having an ear *c'* extended laterally from it, and said body and ear are formed with a continuous flat surface adapting them to rest on the key-member *b*. The ear is attached to the key-member, as by a screw *c²*. A screw *c³* extends through aligned holes in the base-plate *a* and key-member *b* and body *c*, and projects a short distance above said body, and on the projecting end of said screw a binding-nut *c⁴*, herein shown as a thumb-nut, is turned, which is arranged to engage the top of the body *c*, or a wire arranged between them, and also on said projecting end a check-nut *c⁵* is turned to hold the binding-nut securely in place. The end of the check-nut may be slitted so that it may be pinched together to tightly grip the screw. When the parts of the binding-post, thus described, are assembled, rigidly connected with the base-plate, the key-member *b* is additionally secured to the base-plate, and as the body *c* of said post is a conductor for the current a very efficient electrical connection with said key-member is made, particularly as the ear *c'* is also a conductor for the current and also engages said key-member.

In lieu of arranging the binding-post *c* on the key-member, as shown in Fig. 1, a body-plate *e*, with or without an ear *e'*, may be arranged on the key-member, see Figs. 6 and 7, which is secured in place thereon by screws *e²*, *e³*, extending through the plate and key-member and into the base-plate, and said plate may be formed integrally with the body of a binding-post *e⁴*, by a link *e⁵*. Hence I do not desire to limit my invention to employing the attaching-screw *c³* of a binding-post to additionally secure the key-member to the base-plate, as said binding-post may be otherwise disposed and electrically connected with the key-member.

The outer end portion of the key-member occupies a position between two stationary contact-members, one or both of which may be connected with binding-posts. The upper contact-member comprises a contact-point *d*, formed on the end of a screw *d'*, which extends through a hole in a bracket *d²*, and a check-nut *d³* may be placed on said

screw. The bracket d^2 consists of an arm rising from a foot and curved to extend over the top of the movable key-member, and its foot rests upon the base-plate a , and is rigidly secured thereto by a screw d^4 , or other suitable means. In Fig. 1 said bracket d^2 is integrally connected with the body d^5 of a binding-post by a link d^6 . The body d^5 of the binding-post has a screw-threaded center-hole through it for a screw d^7 , which extends through the base-plate and body, and projects a short distance above the body and receives upon it a binding-nut d^8 , which is adapted to engage the top of the body or a wire arranged between them, and also may receive upon it a check-nut d^9 .

Referring to Fig. 6, the bracket d^2 is not integrally connected with a binding-post for the reason that the contact borne by it merely serves as a back-stop for the key-member; but said bracket has an ear d^{20} extended laterally from its foot, through which a screw passes to assist in holding the bracket.

Referring to Figs. 1, 2 and 6, the lower contact-member comprises a contact-point f , made as a small pin set in a socket in a supporting-plate f' , which rests upon the base-plate a , and which is rigidly secured thereto by a screw f^2 extending up through the base-plate and into a threaded socket in the under side of said supporting-plate, or by other suitable means. Said supporting-plate f' is integrally connected with the body f^3 of a binding-post by a link f^4 . The body f^3 has a screw-threaded center-hole through it, and a screw f^5 extends through the base-plate and body and projects a short distance above the body and receives upon it a binding-nut f^6 , which is adapted to engage the top of the body or a wire arranged between them, and also may receive upon it a check-nut f^7 . By providing supports for the stationary contact-members and integrally connecting them with the binding-posts, circuit-wires are not required to make these electrical connections. The key-member b has, near its outer end, a small hole extending through it, and a plug b^3 , of conducting material, is driven into and through said hole, the opposite ends of which are adapted to engage the upper and under stationary contacts.

Referring to Figs. 9 and 10, wherein a section of the key-member or plate is shown, a contact-pin b^8 , composed of platinum or some equivalent metal of high electrical conductivity, is driven through the hole in the key-member, and said pin is of a size to snugly fit the hole and of a length to project from both sides of the key-member. Said pin is then subjected to severe endwise pressure by suitable dies, whereby it is firmly fixed in the hole and its projecting

ends somewhat enlarged, thereby inseparably connecting it with the plate and forming large flat surfaces at its ends for engagement with other contacts.

Referring to Figs. 11 and 12, a contact-screw d' , or other member designed to have a contact-point at its extremity or elsewhere, has a hole drilled in it to receive a pin, and a pin which substantially fits the hole is driven into the hole and projects therefrom a short distance, and said pin is then subjected to endwise pressure by suitable dies, whereby it is firmly fixed in position in the hole and its projecting end somewhat enlarged, thereby inseparably connecting it with the screw or other member and forming a large flat surface at the end for the engagement of another contact. Referring to Figs. 7 and 8, the under contact-member is not connected with a binding-post and therefore merely serves as a stop for the key-member.

While the several component parts of the circuit-operating key herein shown, when assembled, form a very durable device, well suited for many purposes, yet parts of the device may be used in connection with other electric devices to good advantage.

The contact-pin b^8 , shown particularly in Figs. 9, 10, 11 and 12, secured in place by enlarging its body by endwise pressure upon it, forms the subject-matter of a divisional application, #693,120, filed April 25, 1912.

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

1. In a circuit-make-and-break device, a base-plate, a movable key-member attached thereto, a contact-point arranged below said key-member, a supporting-plate socketed to receive said contact-point and having in its under side a screw-threaded socket, a screw extending through the base-plate which enters said screw-threaded socket to thereby connect the supporting-plate with the base-plate, a binding-post secured to the base-plate having a body and a link integrally connecting said supporting-plate and body, substantially as described.

2. In a circuit make-and-break device, a base-plate, a resilient key-member attached at one end thereto, a bracket extended over said key-member having a foot resting on the base-plate, a contact-screw extended through the forward extremity of said bracket above the key-member adapted to be engaged by said key-member, a screw extended through the foot of said bracket into the base-plate, a binding-post having a body arranged on said base-plate, an attaching-screw for said binding-post connected with the base-plate, a link extending from the body of said binding-post to the foot of said bracket which is formed integrally there-

with whereby an integrally formed member is produced which is attached to the base-plate at both of its ends, and bears a contact-member at one end and has a connection for a circuit-wire at the other end, substantially as described.

In testimony whereof, I have signed my

name to this specification, in the presence of two subscribing witnesses.

ALFRED A. ZIEGLER.

Witnesses:

B. J. NOYES,
H. B. DAVIS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."