

No. 656,957.

Patented Aug. 28, 1900.

E. B. ELLICOTT & L. E. OEHRING.
ELECTRICAL SIGNALING APPARATUS.

(Application filed May 2, 1899.)

(No Model.)

Fig. 1.

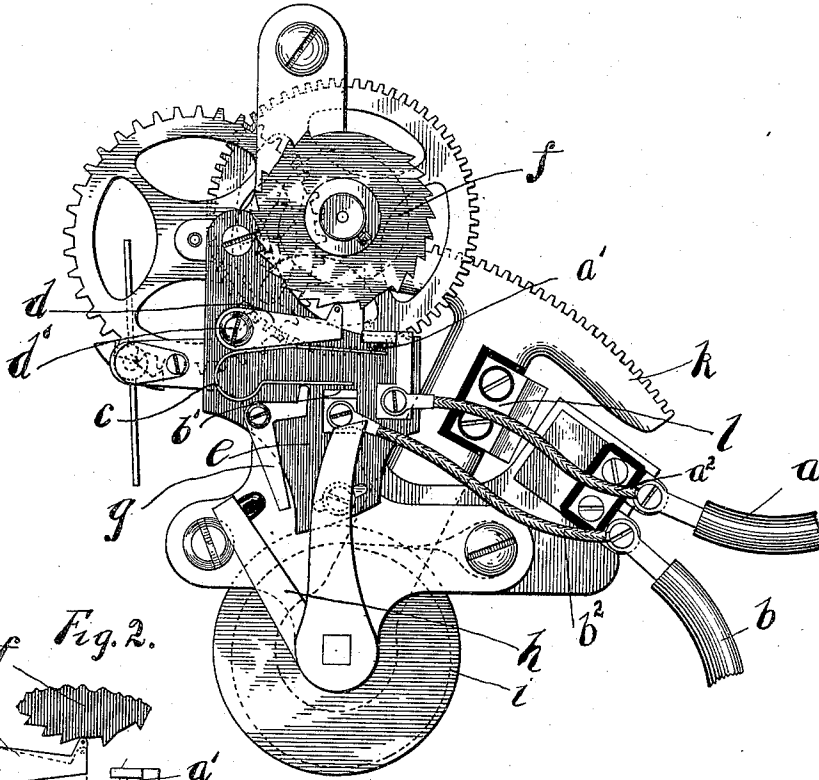


Fig. 2.

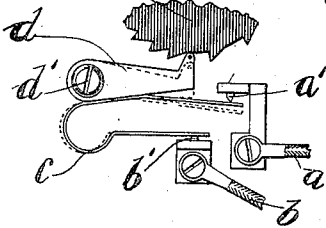
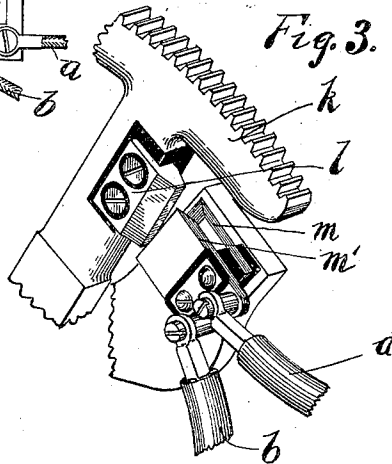


Fig. 3.



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UNITED STATES PATENT OFFICE.

EDWARD B. ELICOTT AND LOUIS E. OEHRING, OF CHICAGO, ILLINOIS, AS-
SIGNORS TO THE WESTERN ELECTRIC COMPANY, OF SAME PLACE.

ELECTRIC SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 656,957, dated August 28, 1900.

Application filed May 2, 1899. Serial No. 715,281. (No model.)

To all whom it may concern:

Be it known that we, EDWARD B. ELICOTT and LOUIS E. OEHRING, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Electrical Signaling Apparatus, (Cases Nos. 8 and 5,) of which the following is a full, clear, concise, and exact description.

Our invention relates to electrical signaling apparatus, and is designed particularly for application to fire-alarm-telegraph transmitters.

One object of our invention has been to improve the structure of such apparatus by eliminating entirely all movable pivot-joints from the current-carrying parts, since such joints have been found objectionable, working loose, and thus introducing unnecessary resistance into the circuit.

Our objects have been, further, to provide improved make-and-break mechanism and associated parts and, again, to provide improved means for cutting the delicate make-and-break contact mechanism from the circuit when the apparatus is at rest and cutting in to close the circuit a comparatively-massive short-circuiting switch which will not be injured by excessive current should the latter accidentally find its way to the line.

Our invention will be described by reference to the accompanying drawings and will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is an elevation of our improved signaling apparatus, and Figs. 2 and 3 are detail views of portions thereof.

Similar letters of reference are used to designate the same parts wherever they are shown.

The contact-points a' b' form the terminals of the line-circuit, being connected with the line conductors a b by supplemental conductors a^2 b^2 , and a contact-spring c , operated as hereinafter set forth, serves to make and break the circuit between said contact-points as required in sending a signal over the line. The contact-spring c is preferably U-shaped, as shown, and is mounted upon a lever d , pivoted at d' to the insulating-plate e , which le-

ver has a lug formed upon its outer end to be engaged by the teeth of a rotatable disk f . The latter is rotated by clockwork mechanism in the usual manner and may be notched or otherwise provided with any required number and arrangement of teeth or projections upon its periphery, according to the character of the signal which it is desired to transmit. As each tooth engages the lug upon the end of lever d the latter is depressed, thus breaking the circuit at contact-point a' , as indicated by dotted lines in Fig. 2. It will be observed that each time the circuit is thus broken at contact a' the end of the spring which engages contact b' does not remain stationary, but slides to and fro across the surface of said contact-point, thus effectually cleaning off any dust or dirt which may have accumulated there. We have found this to be an especially-valuable feature.

A bell-crank lever g is pivoted to the plate e , one arm whereof engages the lower end of the contact-spring c , and the other arm projects into the path of an arm h , rotated by the clockwork mechanism. As the latter reaches the end of its travel the arm h engages the bell-crank lever and acting through said lever serves to raise the lower end of contact-spring c from its seat upon contact-point b' , thereby breaking the circuit through said spring and protecting it and its contacts from any accidental flow of heavy current. At the same time a short circuit is established between the line-terminals through the heavy-current switch presently to be described.

The clockwork mechanism is driven by a spring i , acting through the segmental gear k . Upon an arm of the latter, but insulated therefrom, is mounted the heavy-current short-circuiting piece l , which is adapted when the gear-arm has reached the end of its travel to engage the jaws m m' , which are preferably formed of copper laminæ and are connected one with each of the line-terminals. This effectively short-circuits the delicate signal-transmitting contacts when the device is not in use, thus protecting them from excessive currents, which may accidentally be thrown upon the line. The switch-jaws m m'

may be mounted upon a portion of the framework of the apparatus, as indicated most clearly in Fig. 3.

It will be noted that nowhere in this device is current passed through any pivotal joint, so that danger of accidental interruption of the circuit by reason of the imperfections in the contact-making parts is minimized.

Having thus described our invention, we claim as new, and desire to secure by Letters Patent, the following:

1. In an electrical signaling apparatus of the character described, the combination with a pair of line-circuit terminals having contacts associated therewith, of a contact-spring extending from one to the other and adapted to make and break electrical connection between them, means for normally maintaining said spring out of engagement with its coacting contact a pivoted lever upon which said spring is mounted, and a rotating disk having teeth upon its periphery for engaging said lever and causing the same to oscillate, whereby the condition of the circuit is altered at each oscillation of the lever, substantially as described.

2. In an electrical signaling apparatus of the character described, the combination with a pair of line-circuit terminals having contact-points associated therewith, a U-shaped contact-spring, each arm whereof is adapted to engage one of said contact-points to complete the circuit between them through said spring, a rotating disk having teeth upon its periphery, and a lever engaging with said teeth and with one arm of the spring, whereby such arm is caused to make and break the circuit between said terminals as the disk rotates, substantially as described.

3. In an electrical signaling apparatus of the character described, the combination with a pair of line-circuit terminals having contact-points associated therewith, a U-shaped contact-spring, each arm whereof is adapted to engage one of said contact-points to complete the circuit between them through said spring,

a rotating disk having teeth upon its periphery and means for breaking the contact between one arm of said spring and its associated contact-point as each tooth upon said disk reaches a given position, substantially as described.

4. In an electrical signaling apparatus of the character described, the combination with a pair of line-circuit terminals having contact-points associated therewith, a U-shaped contact-spring, each arm whereof is adapted to engage one of said contact-points to complete the circuit between them through said spring, a rotating disk having teeth upon its periphery, a gear-train for rotating the said disk, means for breaking the contact between said spring and one of said contact-points as the gear-train comes to rest after transmitting a signal, and a heavy-current switch operated by said gear-train adapted simultaneously to close a short circuit between the line-terminals, substantially as described.

5. In an electrical signaling apparatus, the combination with a pair of line-circuit terminals, of contact-points associated therewith, a contact-spring extending from one contact-point to the other and adapted to make and break electrical connection between them, means for normally maintaining said spring out of engagement with its coacting contact a notched rotating disk and means for causing said disk as it rotates to break the contact between said spring and one of said contact-points, a gear-train for rotating said disk, and a heavy-current switch operated by said gear-train and adapted to close a short circuit around said contact-points and spring as the device comes to rest after transmitting a signal, substantially as described.

In witness whereof we hereunto subscribe our names this 4th day of March, A. D. 1899.

EDWARD B. ELLICOTT.
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Witnesses:

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