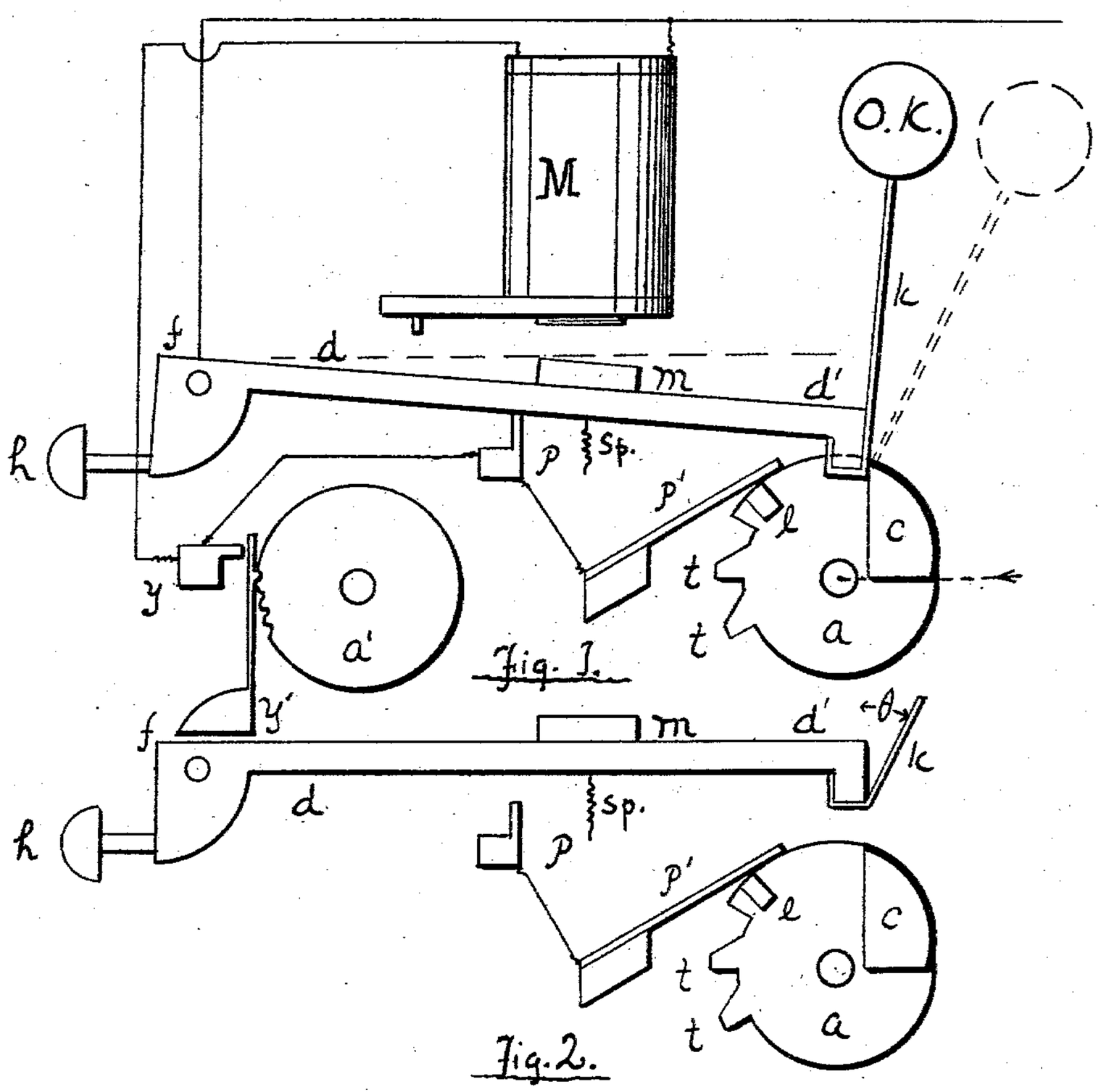
No. 715,347. Patented Dec. 9, 1902.

J. E. CARNEY.

TELEGRAPH.

(Application filed May 27, 1901.)

(No Model.)



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TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 715,347, dated December 9, 1902.

Application filed May 27, 1901. Serial No. 62,088. (No model.)

To all whom it may concern:

Be it known that I, JOHN EDWARD CARNEY, a citizen of the United States, residing at 737 South Perry street, in the city of Montgomery, State of Alabama, have invented certain new and useful Improvements in Telegraphs, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to that class of electrical telegraphs known as "series" or "multiple-series" call-boxes, in which a number of semi-automatic call-box-signaling instruments are arranged in series on a single circuit, the signals sent in by each box differentiating such box from its neighbors.

The object of my invention is to provide such an arrangement of the mechanism and circuits in such call-box as to prevent confusion from the simultaneous sending in of messages from two or more boxes by locking any box automatically in which it is attempted to send signals while any one box has first been operated and is sending in signals.

A further object is to provide a practical and simple method of answering calls from the central station, and a further object is to economize in battery-power and cost of magnets.

Referring to the drawings, Figure 1 is a diagrammatic view of the special mechanism and connections of my invention, such parts of the ordinary and well-known call-box as are not new being left out for the sake of clearness. Fig. 2 shows the detent-lever raised out of engagement with the signaling-wheel. Fig. 3 shows the detent-lever in locking position, and Fig. 4 shows a side view of signaling-wheel and cam.

In the drawings, a is the transmitting or signaling wheel, adapted to be revolved by spring-actuated gearing, as in ordinary call-boxes. $t\,t$ are teeth on said wheel, of which it is obvious any convenient number can be had.

p' is a spring-contact adapted to make an electrical connection with the teeth $t\,t$ and that part of the periphery of the wheel a having the same radius as the points of the teeth $t\,t$. Wherever "connection" is spoken of it means electrical connection.

d is a detent-lever pivoted at f and having an L-shaped extension d', adapted to engage a lug l, normal to the surface of the wheel a. Around the lower end of extension d' is fastened a flat spring k, carrying at its free end a signal "O K." At m on lever d is an armature, and Sp is a small spring tending to draw d into engagement with a, which spring may or may not be used, as advisable. A contact p is provided to connect with lever d when said lever is in position shown.

M is an electromagnet.

As shown in Fig. 1, the course of the current is as follows: through a into p', thence from p' through d to the source of energy, the magnet M being short-circuited, so that practically all the current takes the path indicated.

a' is a wheel for sending special signals in no way differing from those in use in ordinary call-boxes, except in the manner of connections, and it is operated in practically the same way.

Fig. 2 shows the lever d raised. Fig. 3 shows the detent in engagement with the lug l when the detent is down and the wheel a has made a part of a revolution. Fig. 4 is a side view of wheel a.

h is a movable push-plug extending through the side of the containing-casing for lifting the detent d by hand.

y and y' are contacts to be operated by the special-signaling wheel.

The operation of the apparatus is as follows: The lever d is raised by pushing in the pin h. The magnet will then be in circuit, as the short circuit will be broken at p. The magnet being energized will hold the lever d in the position shown in Fig. 2. The wheel a is then revolved as in present call-boxes. The current is interrupted between the teeth $t\,t$ and also during the revolution of the wheel a while that portion of said wheel having small radius is passing the contact. This will send in a signal, consisting in the present instance of two short and one long break. In practice it is the custom to send in a combination—such as "3 4 2" or like arrangement of breaks or makes—thus indicating the box-number; but for the sake of clearness only two teeth are shown on the signaling-wheel. From the wheel a' special signals are sent in in the same way by breaks in the circuit, the wheel a' being geared, as in ordinary boxes, to

commence sending in signals after the main signaling-wheel has ended its signals. This would be after the teeth had passed the contact-points. In the present apparatus signals are sent in by "breaks," and the special-signal wheel first makes and then breaks in alternate succession, continuing the signals after a comparatively long break immediately following the box-number signal. If while one box is being operated—say while wheel *a* is revolving from the position shown in Fig. 1 to that shown in Fig. 3—another box should be started, the result will be that on the first break in the circuit, caused by the first box in its operation, the magnet of the second box will be deënergized and the detent of the second box will fall, locking its mechanism by engaging the lug *l*, which is placed on the signaling-wheel just before the first break in the continuity of its periphery. The second operator can then wait a few moments and then send in his signal, which can be done by merely lifting his detent, as the mechanism would be already wound up by his attempt, the signal-wheel being operated by a spring-motor wound by a pull-lever, as in ordinary call-boxes. It is obvious that if the attempt to operate the second box is made after the wheel *a* of the first box has passed the position shown in Fig. 3 the current will be so interrupted that the detent of the second box cannot remain up long enough for the box to operate.

In answering calls the operation is as follows: At the end of its revolution the wheel *a* by means of an insulated cam *c* has lifted the detent to the position shown in Fig. 2, and as the magnet is then energized because not short-circuited the detent remains in such position. The spring *k* being free throws the signal "O K" to one side, (indicated by the dotted circle near the signal "O K" on Fig. 1.) If now there is a short interruption of current caused at the central station, the lever will drop and the spring *k* will be bent into proper position by the face of the cam *c*, and the "O K" signal will be exhibited behind a suitable orifice in the front of the containing-casing when said signal is in the position shown in the full lines on Fig. 1. The flat side of cam *c* is metallic and connected with wheel *a*, so that when the box has been answered there is a contact and continuous current through wheel *a* direct to detent-lever. This is in order to insure a complete circuit through the boxes regardless of imperfections in the movable contacts. It is obvious that a bell-signal could be used with equal effect and that a spring-actuated lever could be used in place of the more simple flat spring *k*. In the drawings *d*, *y*, *p*, and *p'* are all insulated from the box, while the wheels *a* and *a'* are connected together and with one branch of the external circuit. Owing to the fact that the magnet has no lifting to do, either less battery-power can be used or the magnets made of less resistance, as may be desired, and more call-boxes can be put on one circuit.

Under the provisions of and for the purpose set forth in Rule 107 I disclaim the following claim: "In a call-box telegraph, a call-answering signal, an electromagnet normally deënergized but energized when said answering-signal is moved to inoperative position, and adapted to hold said signal inoperative and to release said signal when said magnet is deenergized, and means for moving said signal to inoperative position by the sending of calls," as I am not the first inventor thereof.

Having described my invention, what I claim is—

1. In a call-box telegraph, a detent normally adapted to lock the signaling mechanism, an electromagnet normally short-circuited, and adapted when energized to hold said detent withdrawn from operative position, means for putting said magnet in circuit when said detent is withdrawn from operative position, whereby said detent will be held inoperative as long as said magnet is in circuit and the current uninterupted, and a signaling device for answering calls, operated by interrupting the circuit and releasing said detent.

2. In a telegraph call-box, a signaling mechanism, a detent normally adapted to lock the signaling mechanism, an electromagnet normally deënergized, but energized when said detent is moved into inoperative position and adapted to hold said detent inoperative and to release said detent when said magnet is deenergized, and a signaling device for answering calls operated by the release of said detent, substantially as described.

In witness whereof I have hereto set my hand this 25th day of May, A. D. 1901.

Montgomery, Alabama.

JOHN EDWARD CARNEY.

Witnesses:
THOS. H. WATTS,
DAVID W. W. FULLER.