

(No Model.)

C. H. CARTER.

SIGNAL BOX FOR DISTRICT AND FIRE ALARM TELEGRAPHS.
No. 298,945.

Patented May 20, 1884.

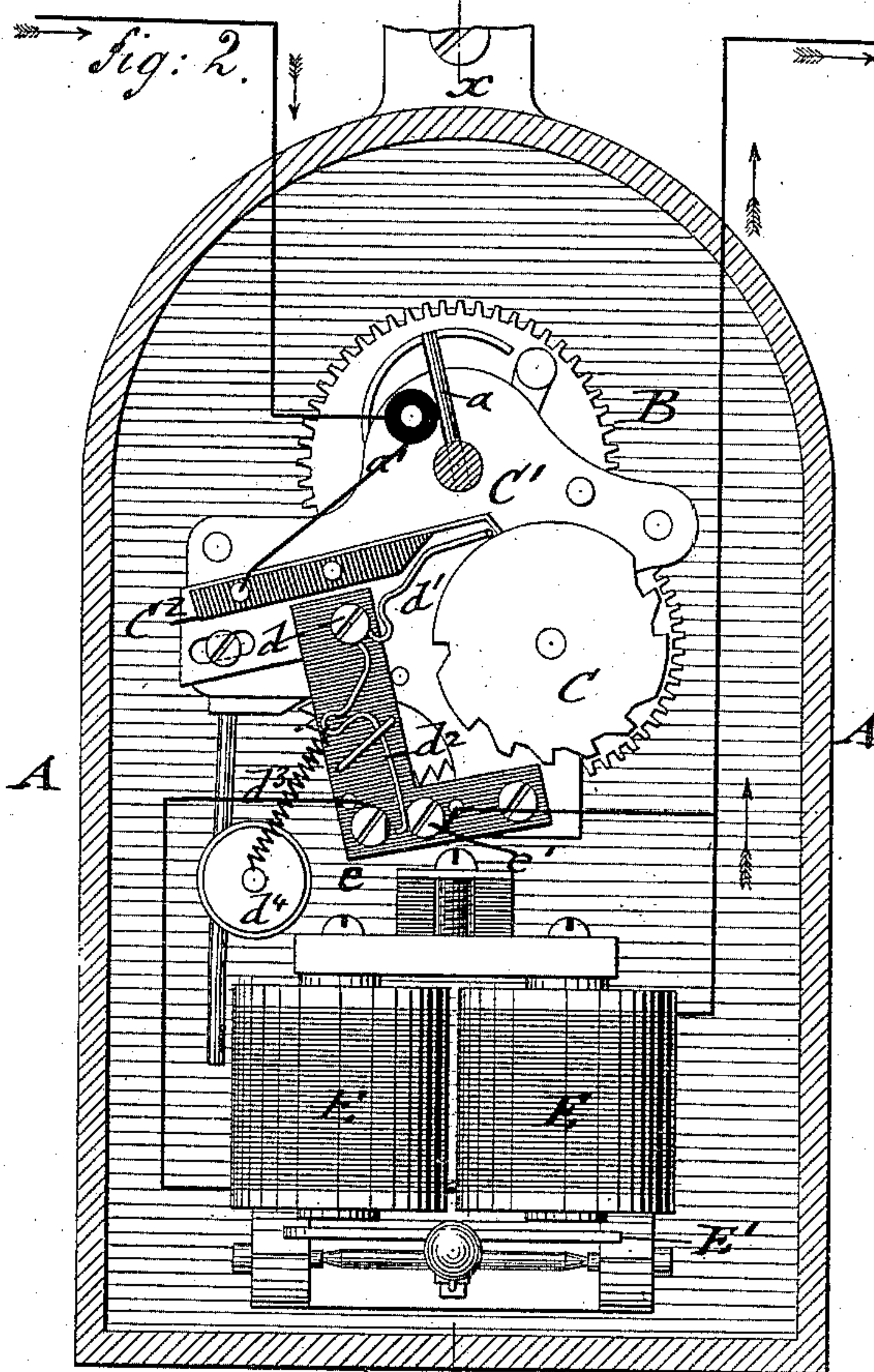
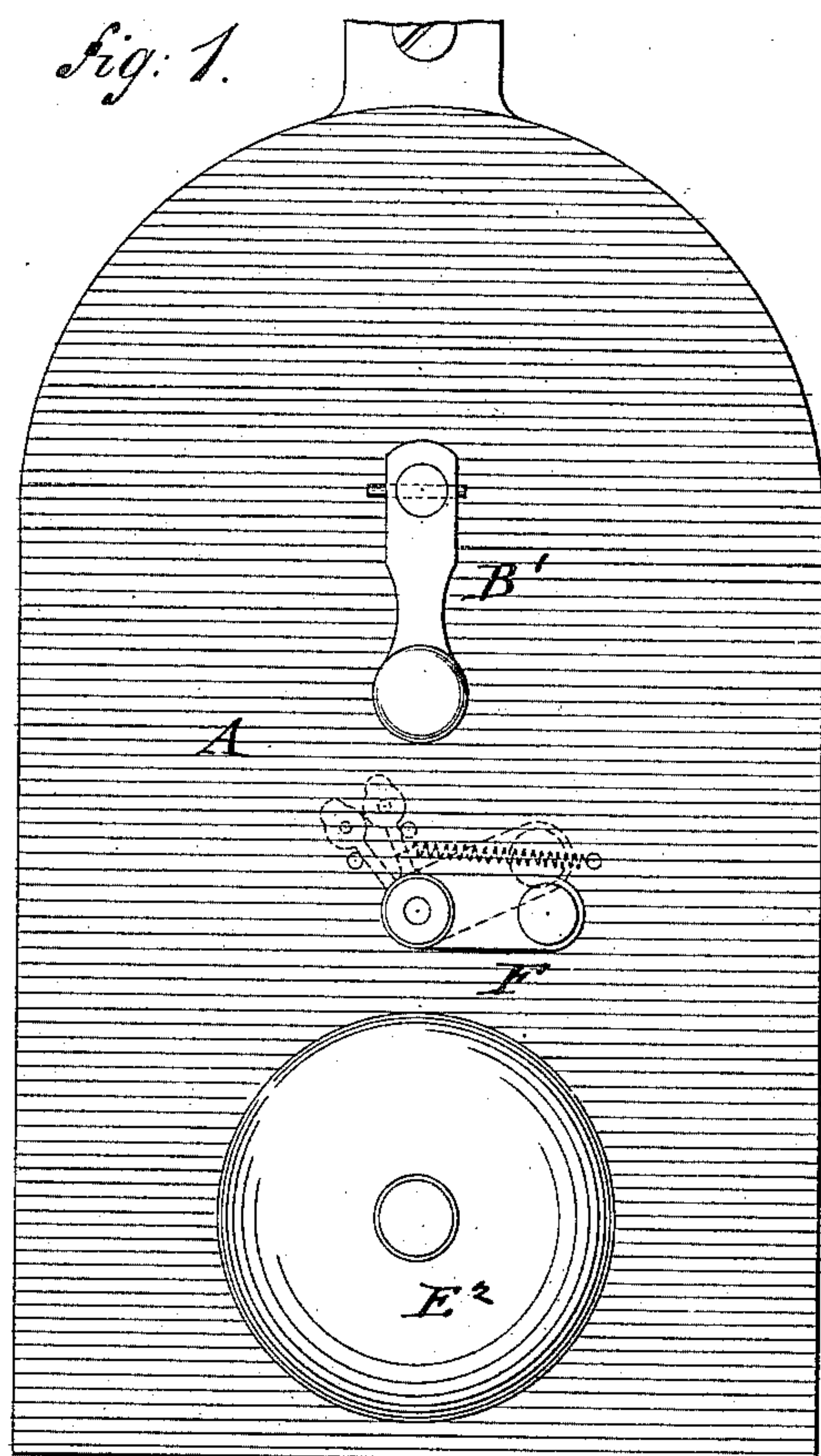


fig. 3.

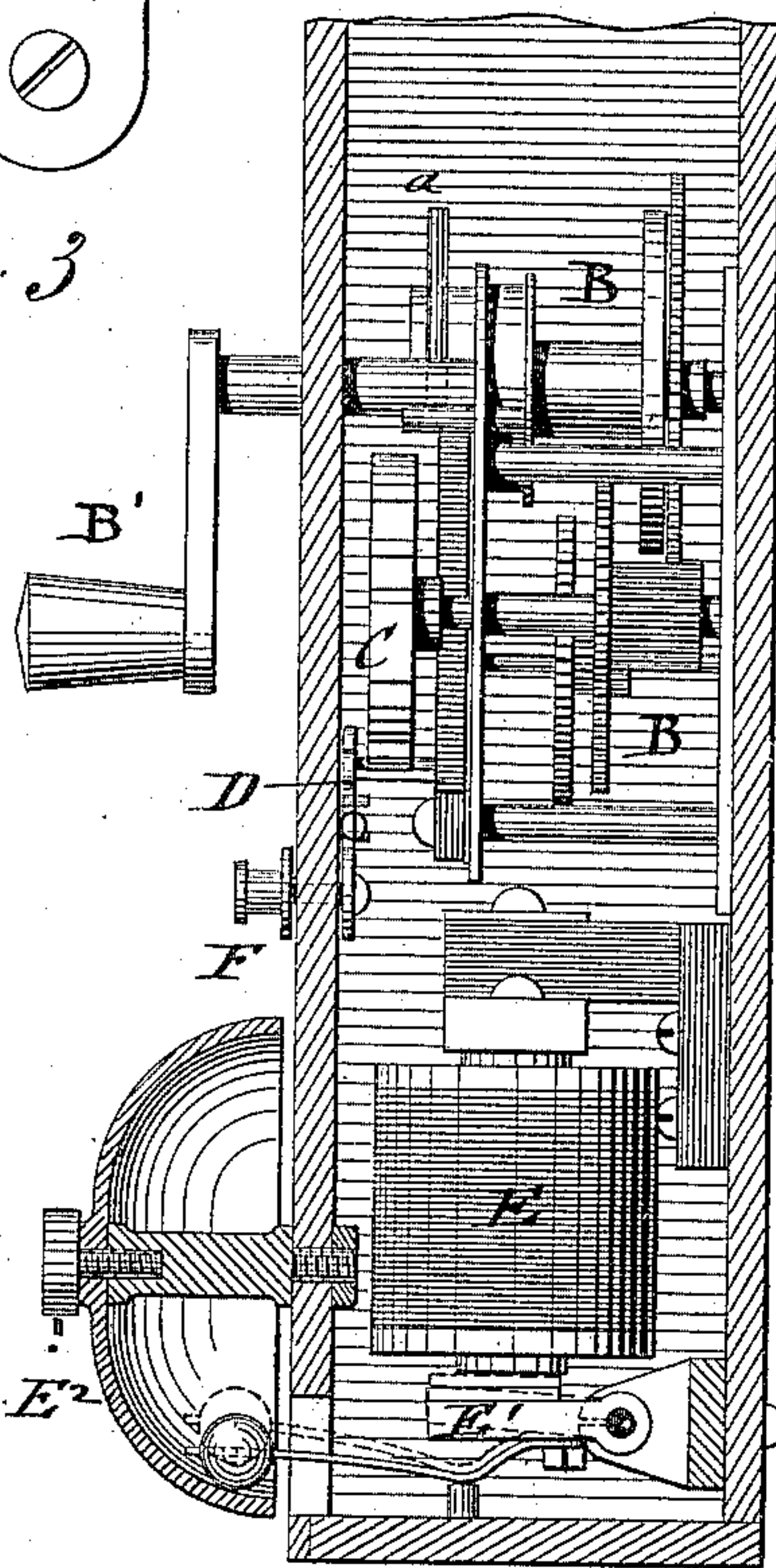
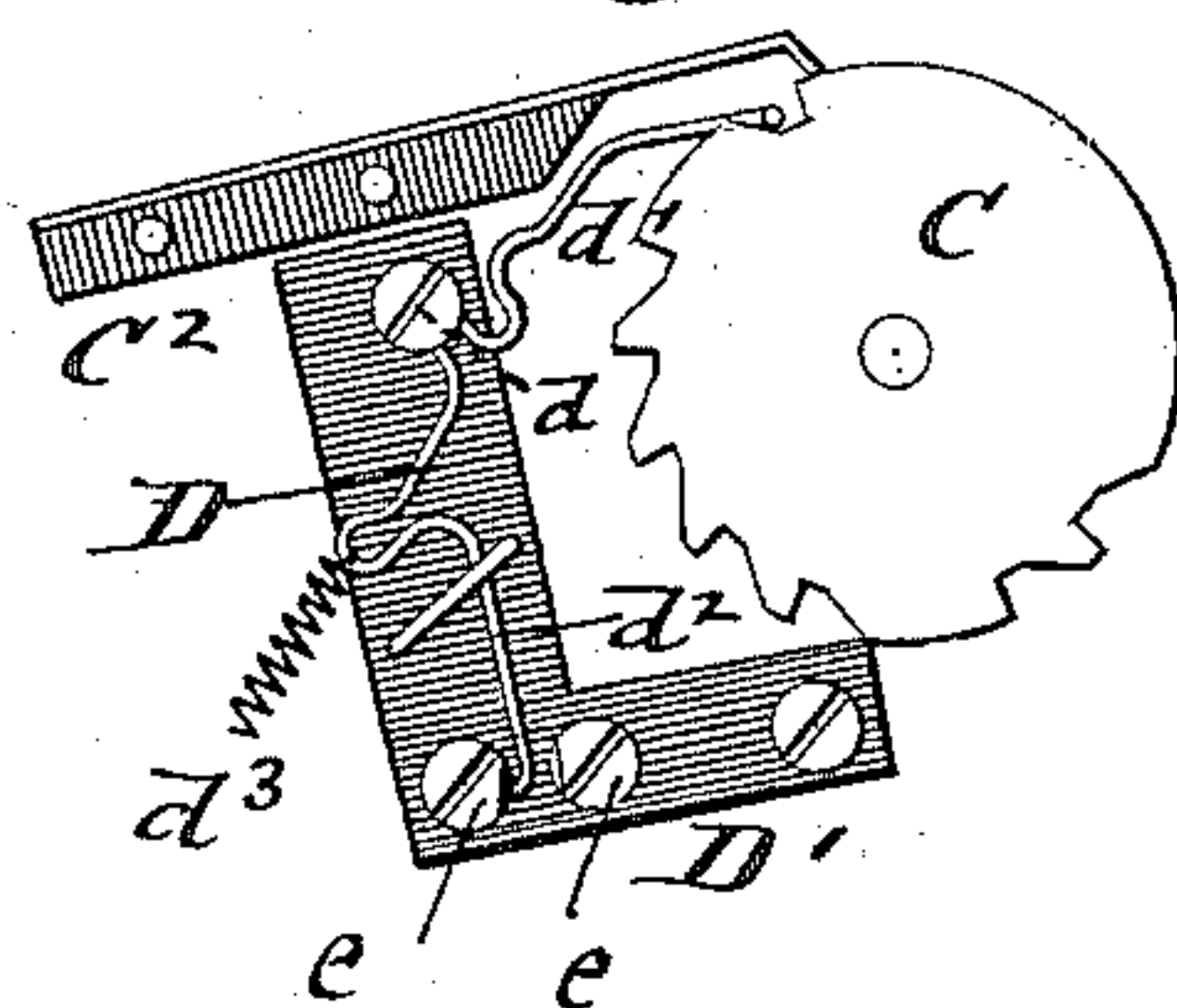


fig. 4.



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SIGNAL-BOX FOR DISTRICT AND FIRE-ALARM TELEGRAPHS.

SPECIFICATION forming part of Letters Patent No. 298,945, dated May 20, 1884.

Application filed September 27, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. CARTER, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Signal-Boxes for District and Fire-Alarm Telegraphs, of which the following is a specification.

This invention has reference to improvements in that class of signal-boxes for fire-alarm and district telegraphs known as "return-signal boxes," which indicate that the signal has been received at the central station, and by which the fact that the line is in working order may be ascertained at any time. Different attempts have been made heretofore to accomplish this object—for instance, by arranging in each call-box an electric signal-bell; but as these bells were placed in the circuit they consequently responded to the calls or signals of any one of the boxes or signals in the circuit, which caused considerable annoyance and required a large amount of battery-power for working them.

The object of my invention is to furnish a signal-box in which the signal-bell is sounded only when a call is sent from its signal-box to the central station, or at any other time when it is desired to test the line.

The invention consists of the combination, with a fire-alarm or district telegraph signal-box of any approved construction, of an automatic switch device that is arranged in contact with the circuit-breaking wheel and connected to a bell or other signaling device which repeats the signals of the circuit-breaking wheel, and consequently the number of the signal-box of the party sending the signal to the central station.

The invention consists, secondly, of the combination, with a signal-box, of a switch device and a bell or other signaling device, and means whereby the switch can be moved independently of the circuit-breaking wheel, so the signaling device is thrown into action, and thereby the line tested.

In the accompanying drawings, Figure 1 represents a front elevation of my improved signal-box for district and fire-alarm telegraphs. Fig. 2 is a front elevation of the same with the front plate removed. Fig. 3 is a vertical transverse section on line *xx*, Fig.

2; and Fig. 4 is a detail of the circuit-breaking wheel and of the automatic switch device, showing the position of the latter when the controlling signaling device is thrown into circuit.

Similar letters of reference indicate corresponding parts.

A in the drawings represents the casing of my improved signal-box for district and fire-alarm telegraphs. At the upper part of the box is arranged a suitable approved call mechanism, which consists of a circuit-breaking wheel, C, the circumference of which is divided with recesses that correspond to the number of the box. A circuit-closing spring, C', is attached to an insulating-support, C², and so arranged as to press upon the circumference of the break-wheel C when the same revolves, but to break the contact of the same when the spring passes over the recesses in the circumference of the wheel. The break-wheel C and circuit-closing spring C' are connected to the line in the usual manner, the break-wheel being set in motion by a clock-train, B, operated by a crank, B', at the outside of the box. The break-wheel C is short-circuited in the usual manner, whenever it arrives at its normal position of rest, by means of a pin, *a*, on the crank-shaft forming contact with the line-wire wound around an insulated post, *a'*, as shown in Fig. 2.

An automatic switch, D, is supported on an insulated plate, D', that is attached to the frame of the clock-train B, said switch being made of any suitable construction, that shown in the drawings being bent of a piece of wire of suitable thickness, that is pivoted at *d*, and provided with an upwardly-extending arm, *d'*, that forms contact with the circumference of the break-wheel C and with a lower arm, *d''*, that is connected by a spring, *d'''*, with a fixed post, *d⁴*. The switch D is adapted to be oscillated between two contact-stops, *e e'*, of which the contact-stop *e* is electrically connected to the coil of an electro-magnet, E, of a bell or other suitable signaling device, E², while the contact-stop *e'* is connected to the line beyond the opposite end of the electro-magnet and to the line, as shown in Fig. 2. The signaling device and its electro-magnet are arranged at the lower part of the inclosing-casing A. The

armature E' of the electro-magnet rings the bell E^2 in the usual manner whenever the electro-magnet E is thrown into circuit. This is accomplished in the following manner: When the signal-box is in its normal position of rest, the break-wheel C is cut out of circuit and the switch D in contact with the circumference of the break-wheel, as shown in Fig. 1. The lower arm, d^2 , of the switch is in contact with the stop e' , and thereby connected with the line. As soon as the break-wheel is set in motion, so as to send its signals to the central station, the circuit-closing spring C' and the upper arm, d , of the switch D pass along the circumference of the break-wheel until the first recess presents itself to the spring and switch, which recess causes the dropping of the upper end of the arm d' into the recess immediately before the circuit-closing spring leaves the circumference of the same, as shown in Fig. 4. At this moment the lower arm, d^2 , of the switch D is thrown by its spring d^3 into contact with the stop e , whereby the signaling device is thrown into circuit and actuated. The moment the circuit-closing spring C' leaves the circumference of the break-wheel the circuit is interrupted and the signaling device cut out. The circuit-closing spring and the switch, after passing the first recess, form contact with the intermediate portion of the circumference of the break-wheel, whereby the arm d' of the switch is raised and the contact of the lower arm, d^2 , with the stop e interrupted, and said arm brought back into contact with the stop e' , so as to close the circuit. The next recess produces the same result by throwing in for an instant the electro-magnet of the signaling device, and so on, so that when the break-wheel has completed its revolution the breaks of the same have not only been signaled to the central station, but also repeated by the signaling device of the box.

Whenever it is desired to test the line and ascertain whether the signal-box is properly connected and in circuit with the central station, a lever or other suitable device, F , is actuated, by which the lower arm of the switch D is engaged and moved away from the contact-stop e' and thrown in contact with the contact-stop e , whereby the electro-magnet E and the signaling device are thrown into circuit and the armature attracted, so that the ringing of the bell will indicate thereby that the line is in working order. By this simple ar-

55 rangement of the switch device, in connection with a signaling device and means for actuating the latter at any time, so as to test the line, the efficiency of the signal-boxes of fire-alarm and district telegraphs is considerably enhanced, as thereby every subscriber can at any moment ascertain whether his signal-box is in connection with the central station, and also whether the signal sent by him has been received at the central station. Whenever this is not the case, the line is interrupted and due notice has to be given at the central station, so that the line can be repaired and the connection re-established. 65

The essential feature of my construction is that the electro-magnet of the signaling device is cut out of the main circuit when the box is in a position of rest, but that is thrown in when the box is in operation, so that only the signaling device of the box in action is sounded, while those of the remaining signal-boxes are not thrown into action, while, in the constructions heretofore in use, when one box was operated, the controlling-signals were repeated by all the signal-boxes in the same circuit, which created confusion and annoyance. 75

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

1. In a signal-box for district and fire-alarm telegraphs, the combination, with a circuit-breaking wheel and its circuit-closing spring, of a switch arranged in contact with the break-wheel, and a signaling device which is thrown into circuit when the switch drops into the recesses of the break-wheel, substantially as set forth. 85

2. In a signal-box for district and fire-alarm telegraphs, the combination, with a circuit-breaking wheel and its circuit-closing spring, of a switch device placed in contact with the break-wheel, a signaling device that is thrown in or out of circuit by the switch, and means, substantially as described, whereby the switch may be actuated and the signaling device thrown into circuit for testing the line, substantially as and for the purpose specified. 95

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses. 100

CHARLES H. CARTER.

Witnesses:

PAUL GOEPEL,
SIDNEY MANN.