

(No Model.)

G. M. PHELPS.

SIGNAL BOX FOR DISTRICT AND ALARM TELEGRAPHS.

No. 253,759.

Patented Feb. 14, 1882.

Fig. 1.

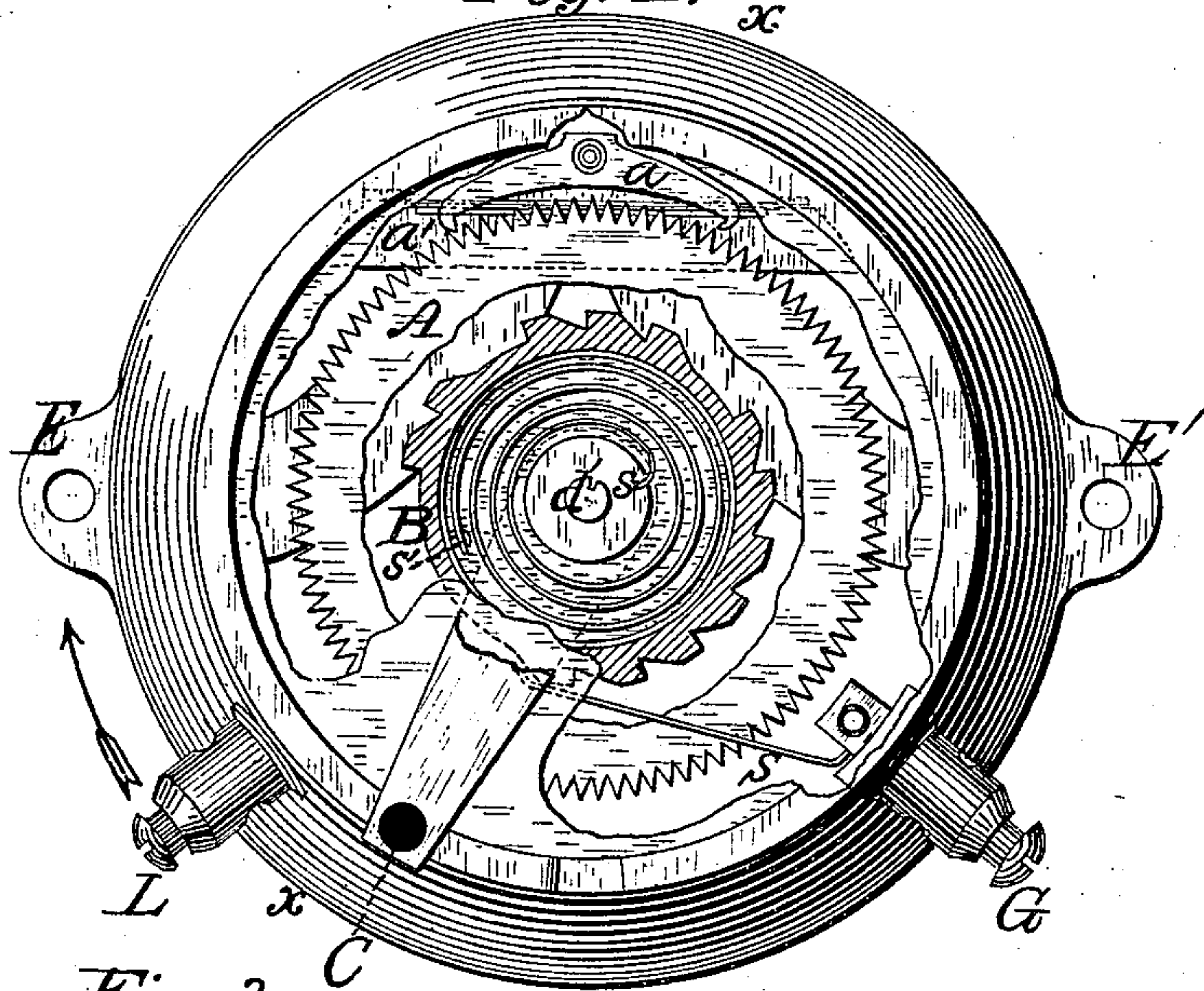


Fig. 2.

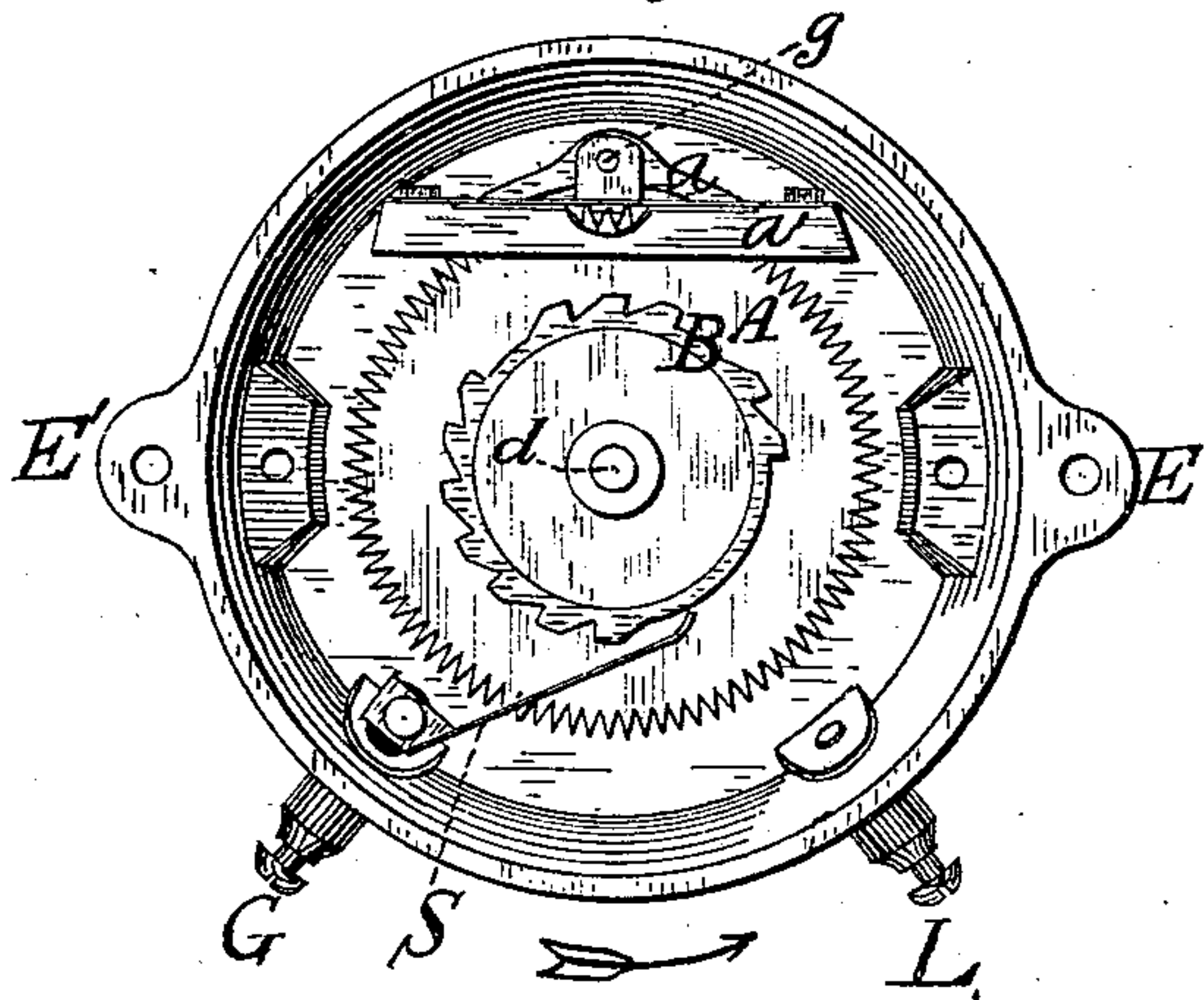


Fig. 3.

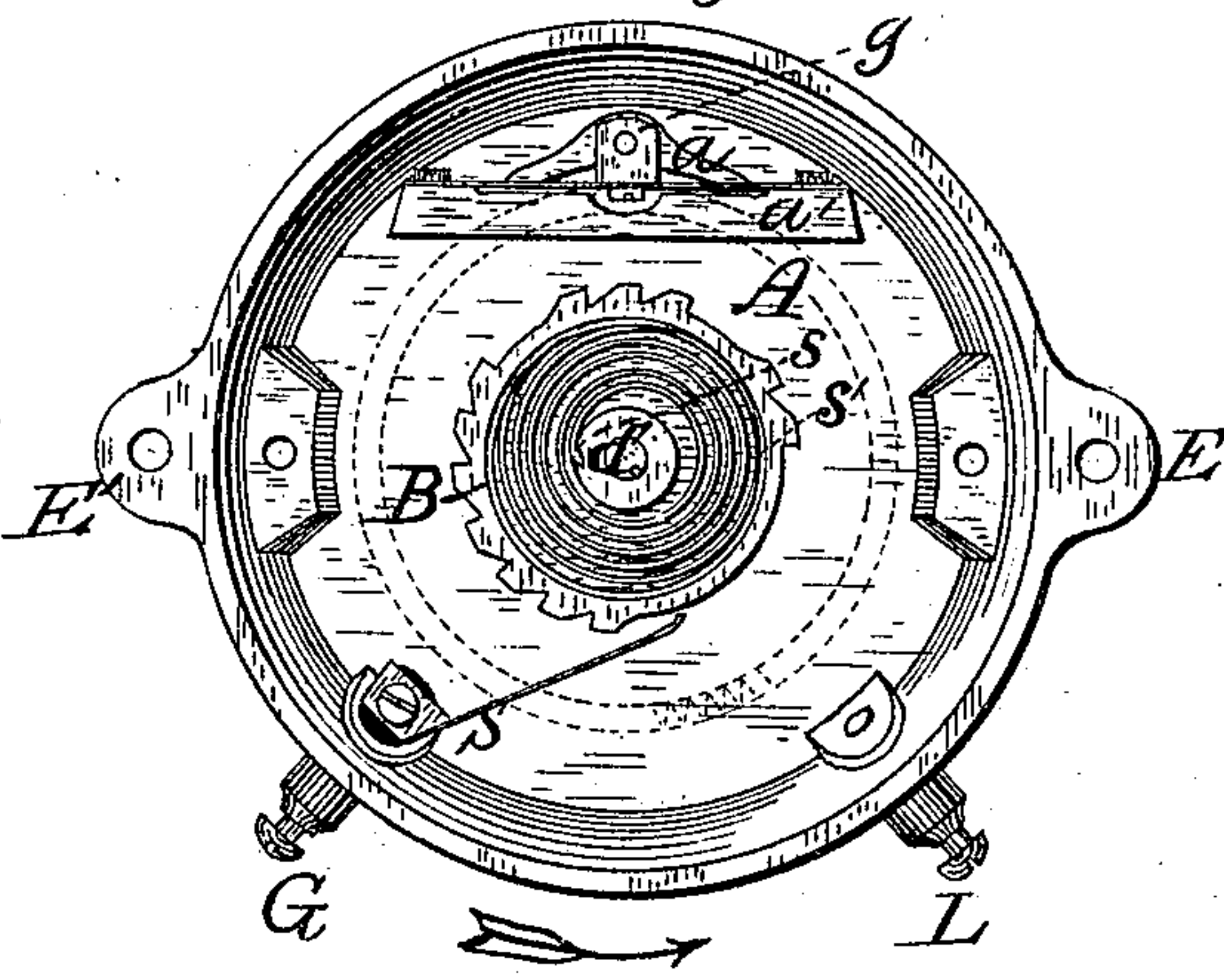
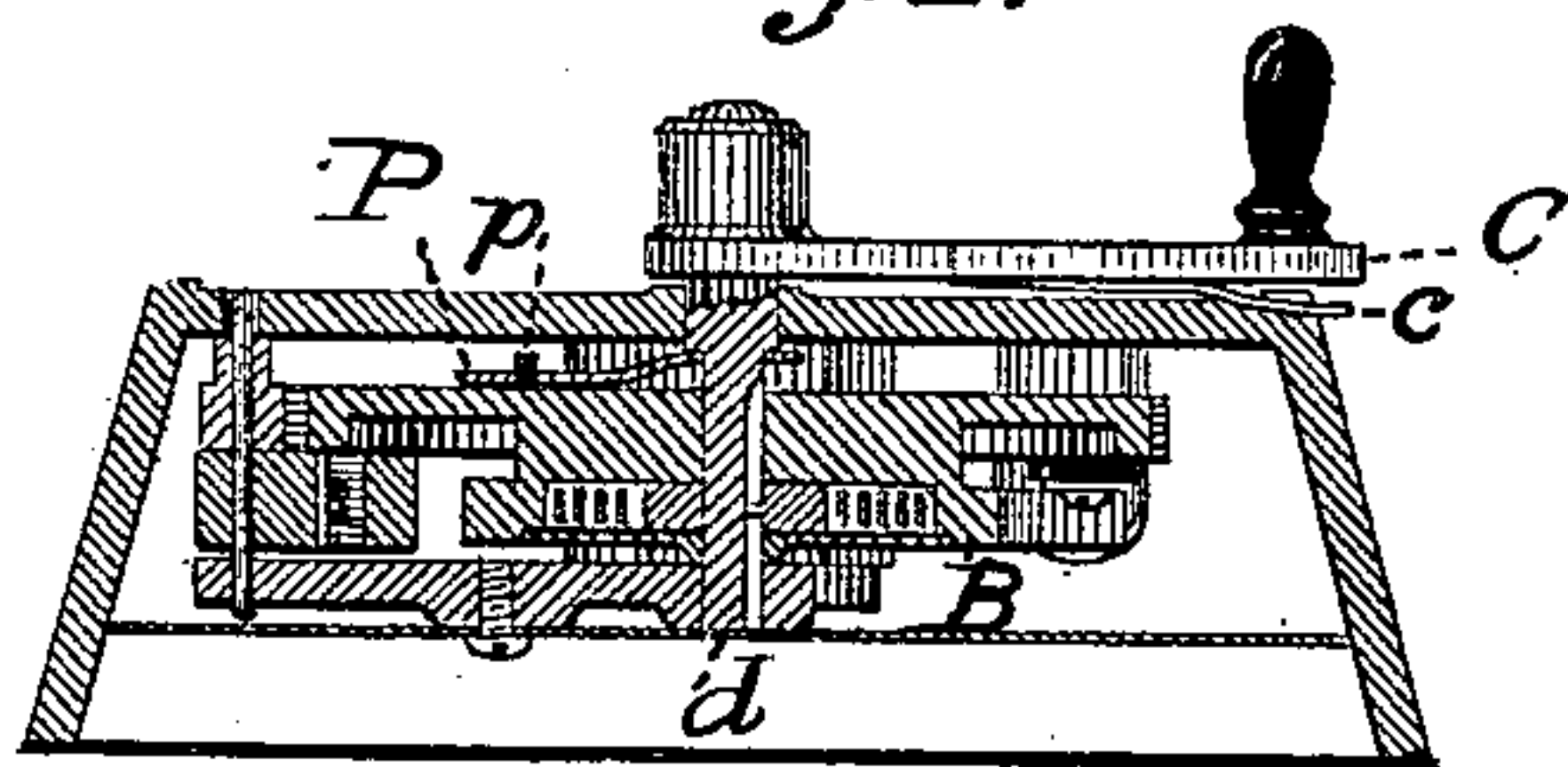


Fig. 4.



Witnesses:

W. B. Vanne
Wm. Arnold

Inventor:

George M. Phelps
by his Attorney,
C. L. Buckingham

UNITED STATES PATENT OFFICE.

GEORGE M. PHELPS, OF BROOKLYN, NEW YORK.

SIGNAL-BOX FOR DISTRICT AND ALARM TELEGRAPHS.

SPECIFICATION forming part of Letters Patent No. 253,759, dated February 14, 1882.

Application filed December 13, 1881. (No model.)

To all whom it may concern:

Be it known that I, GEORGE M. PHELPS, of the city of Brooklyn, county of Kings, State of New York, have invented a new and useful
5 Improvement in Signal-Boxes for District and Alarm Telegraphs, of which the following is a description, reference being had to the accompanying drawings.

The object of this invention is to enable subscribers to automatically transmit various predetermined signals to a central office, as to
10 summon a messenger, the police, or fire department.

The transmission of signals in a district-telegraph system is ordinarily effected by making
15 and breaking the circuit through the agency of a sliding bar or rotary wheel provided with teeth arranged in one or more groups or series. The different signals are therefore understood
20 by the various combinations of makes and breaks of the circuit and the period of time intervening between each pulsation or series of pulsations. Signals thus transmitted are ordinarily registered upon an electro-magnetic bell
25 or a receiving-register of any appropriate form. Each make and break registers a stroke on the bell or a mark on the receiving-register, and as it is necessary, in order to render the signals intelligible, to distinguish the interval of time
30 occurring between two beats of any one series from the period between the last beat of one series and the first stroke of the next, it is essential that the velocity of rotation of the transmitting circuit-breaker, whether a rotary
35 wheel or sliding bar, should have at least an approximately uniform velocity of rotation.

My invention has for its object the uniform rotation of a rotary circuit-breaker which is impelled by the hand of an operator through
40 the agency of a crank; and to this end the shaft of the hand-crank and circuit-breaking wheel are connected by a spiral or volute spring, and the movement of the circuit-breaking wheel is governed and rendered approximately uniform
45 by means of an escapement, notwithstanding the fact that more power is applied to the crank and greater velocity attained at certain points of its revolution than at others. At the maximum and above the mean of the irregular velocity of the crank, power will be stored in the
50 volute spring, which will only be expended to maintain the velocity of the circuit-breaker

during intervals when less than a mean force is applied to the crank.

Referring to the drawings, Figure 1 is a front view of the mechanism of my improved box. 55
Figs. 2 and 3 are rear views. Fig. 4 is a transverse view through line *x x*, Fig. 1.

The casing or box of the mechanism is preferably of cast-iron. The front and sides may
60 be cast in one piece, and a back of sheet-iron or some light material may be fitted therein. The box is provided with ears *E E'*, by which it may be fastened to its support.

In Figs. 2 and 3, *A* is a wheel, in the periphery
65 of which are cut teeth, preferably about twenty to the inch. The ratchet-bar *a* is provided with a weight, *a'*, and forms an escapement, pivoted at *g*. Any suitable form of escapement
70 will answer the purpose, however.

B is a circuit-wheel, having projections or
75 teeth upon its periphery arranged in groups, so that any group, or combination of two or more groups, will indicate the signal which the box is designed to register.

d is an arbor, to which the crank *C* is firmly
80 attached. The circuit-wheel *B* is firmly fastened to the wheel *A*. Both play freely upon the arbor *d*. The central part of the wheel *B* is reamed out sufficiently to allow the spiral
85 or volute spring *s*, Fig. 3, to be sunk therein. The outer end of this spring is fastened to the wheel *B* at *s'*, and the inner end is fastened to the arbor *d* at *d'*.

On the front side of wheel *A* is placed a projecting stop or pin, *p*. 85

From the arbor *d*, carrying crank *C*, projects a spring, *P*. When the arbor *d* is revolved by movement of crank *C* the spring *P* strikes the
90 pin *p* and carries wheel *A* with it, provided the velocity of rotation of crank *C* is sufficient to gain one revolution upon the speed of wheel *A* propelled by the recoil of spring *s*.

S is a finger or spring attached to the insulated screw-cup *G*, and so placed that the teeth
95 of the wheel *D* when rotated will make contact therewith.

L is a screw-cup for the reception of the line-wire, and is in metallic connection with wheel
100 *B*. Screw-cup *G* is for the reception of the ground-wire or earth-connection.

Crank *C* is provided upon its underside with a flat spring, *c*, which sinks into a shallow slot in the edge of the box when crank *C* is at its

starting-point, thus arresting it at the end of a revolution.

The operation of the mechanism is as follows: The person desiring to send a signal turns the crank C in the direction of the arrows, Figs. 1, 2, once around. This tends to coil springs on the arbor 1; but the spring immediately, when crank C is started, begins to recoil, carrying wheels B and A with it in the direction in which the crank is turned. The wheels A and B revolve with a substantially uniform speed, regardless of the speed of rotation of crank C, their movement being controlled and rendered nearly uniform by escapement *a*. As the wheels revolve the teeth or projections on wheel B make contact with the finger S, thus completing and closing the circuit on earth at each contact between the projections of wheel B and finger S. It will be understood that this form of the signal-box is intended for operation in a circuit normally open, so that at each contact between wheel B and finger S the circuit will be closed and the receiving-instrument actuated to register a character, and with one revolution of the wheel the receiving-instrument at the central station will be actuated to register a signal comprising characters in one or more groups, according to the construction of wheel B in any particular instance. Pin *p* in the wheel A prevents the crank from making a movement of more than one rotation in its advance during the time the wheels are making one or more revolutions, as spring P cannot pass pin *p*.

The mechanism can be adapted to the closed-circuit system by arranging finger S to make contact with wheel B in its normal position in a manner well understood.

What I claim, and desire to secure by Letters Patent, is—

1. In an automatic signal-box, the combination of a crank capable of continuous rotation in one direction, an automatic circuit-breaker capable of continuous rotation in the same direction as that of the crank, and a volute spring whose opposite ends are respectively connected to said crank and circuit-breaker.

2. In an automatic signal-box, the combination of a crank capable of continuous rotation in one direction, an automatic circuit-breaker capable of continuous rotation in the same direction as that of the crank, a volute spring whose opposite ends are respectively connected to the crank and circuit-breaker, and an escapement or governor for rendering the movement of the circuit-breaker uniform.

3. An automatic circuit-breaker having a stop upon its disk, and a crank operating said circuit-breaker through the medium of a spring, whereby in the rotation of the automatic circuit-breaker the crank cannot revolve in advance of said circuit-breaker to the extent of more than one revolution.

GEO. M. PHELPS.

Witnesses:

W. B. VANSIZE,
WM. ARNOUX.