(No Model.) 2 Sheets—Sheet 1.

C. E. SCRIBNER.

DISTRICT SIGNAL BOX.

No. 488,579. Patented Dec. 27, 1892.

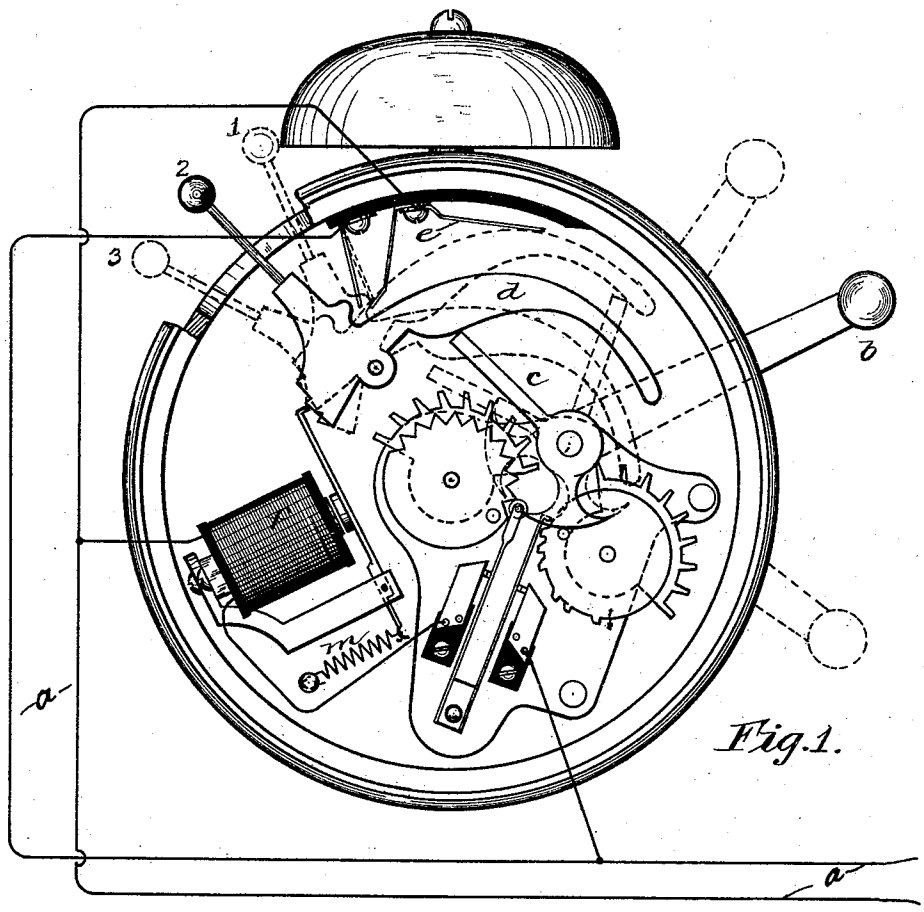

Fig. 1.

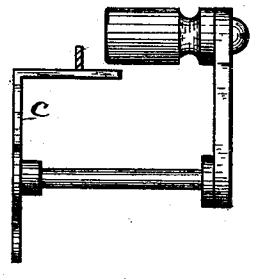

Fig. 2

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(No Model.) 2 Sheets—Sheet 2.

C. E. SCRIBNER.

DISTRICT SIGNAL BOX.

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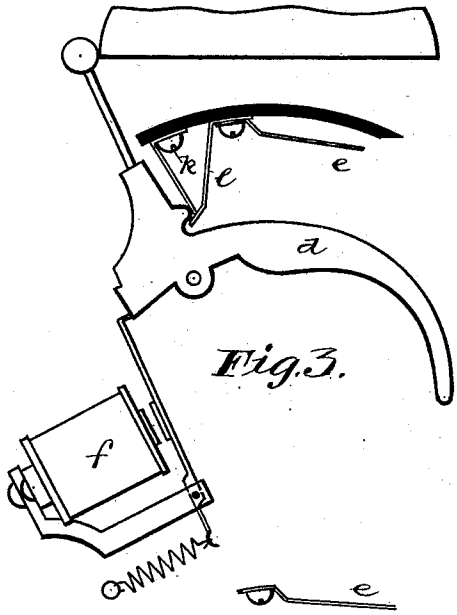

Fig. 3.

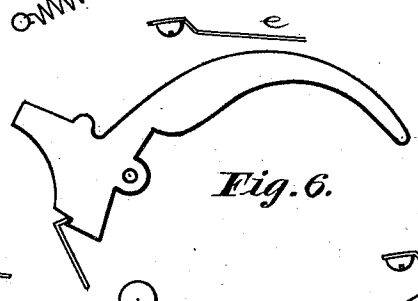

Fig. 6.

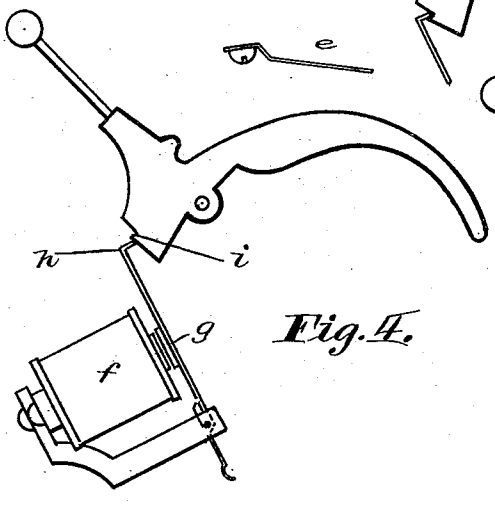

Fig. 4.

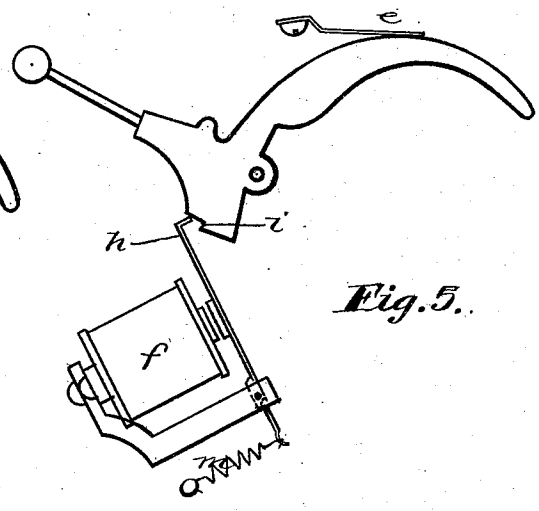

Fig. 5.

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UNITED STATES PATENT OFFICE.

CHARLES E. SCRIBNER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN ELECTRIC COMPANY, OF SAME PLACE.

DISTRICT SIGNAL-BOX.

SPECIFICATION forming part of Letters Patent No. 488,579, dated December 27, 1892.

Application filed July 3, 1888. Serial No. 278,918. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SCRIBNER, a citizen 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 District Signal-Boxes, (Case No. 168,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to electric signal systems in which signal boxes are placed upon a circuit at different points and so arranged as to indicate upon a register or other receiving instrument particular numbers or wants. In such systems it has been found desirable to provide what is termed an answer-back attachment upon each box so arranged that after a signal has been turned in, the central office, by sending an increased battery current over the circuit, may indicate at the box that the signal has been received. Heretofore such answer-back attachments have been of such character that a considerable amount of increase of battery power has been necessary to operate the answer-back signal, and, on this account, the answer-back signal is unreliable.

As to the state of the art prior to my invention, reference is made to Letters Patent No. 189,717 granted Stephen D. Field, April 17, 1877.

My invention is designed to provide an answer-back attachment upon district signal boxes which shall be reliable and capable of being operated by only a moderate increase of battery current.

In the accompanying drawings which are illustrative of my invention, Figure 1 is a front elevation of a district signal box provided with my answer-back signal attachment. Fig. 2 is a detailed side elevation of the handle and the arm attached for changing the position of the bell striker, Figs. 3, 4, 5 and 6 are detailed detached views showing different positions of the answer-back or response signal attachment.

Like parts are indicated by similar letters of reference throughout the different figures.

Referring to Fig. 1, *a* is the signal circuit upon which, at different points, may be placed any convenient number of signal boxes. The signal box illustrated somewhat in detail in Fig. 1 is provided with the ordinary clock spring and break wheels so arranged that when the handle *b* is pulled down and released, the particular signal desired will be sent over the line *a*, *a*.

Attached to the handle *b* I have provided an arm *c* which is placed in such position with respect to the under curved surface of the bell striker *d* that when the handle *b* is pulled down, the bell striker will be brought to the position indicated in Fig. 5. The spring *e* which is connected with the circuit, as shown, being thus brought into contact with the bell striker *d*, shunts out the coils of the electromagnet *f*. It will be seen that one side of the electro magnet *f* is connected with the spring *e;* the other side of the electro magnet is normally connected with the frame of the box through the medium of the contact point to which that side of the electro magnet is wired, and the break spring normally resting against that contact point, which break spring is permanently connected with the frame of the box. Now as the bell striker *d* is also connected with the frame of the box contact between bell striker *d* and the spring *e* must result in shunting or short circuiting electro magnet *f*. The armature *g* thereupon is released and falls away from the poles of the electromagnet, as indicated in Fig. 5. The hook *h* of the armature lever is now in the path of the notch *i* of the bell striker, and the bell striker immediately moves back to the position indicated in Fig. 6 to engage with said notch *i*. The bell striker falls back to the position shown in Fig. 6 by the force of gravity on the release of the handle, and the shunt circuit about the magnet *f* is thus interrupted. The bell striker is thus held by the hook during all the time that the signal is being sent in. The armature *g* during this time having fallen back from the poles of electromagnet *f*, will not be liable to be attracted by the electromagnet energized only by the force of the ordinary signal current. When, however, the signal has been sent in, the signal current is reinforced by increased battery sent over the signal circuit from the central office. The force of electro-

magnet *f* is thus increased sufficiently to move the armature *g*, and hence the hook *h* is withdrawn from the notch *i*. The bell striker being thus released, strikes against the gong assuming the position shown in Fig. 3. In this position of the bell striker, spring *k* is brought against spring *l* thus cutting the entire box out of circuit.

The normal position of the bell striker is shown in Fig. 3. On pulling down the handle the bell striker is brought in its course to the position shown in Fig. 4 with the hook *h* resting upon the tooth of the notch *i*. In passing over the tooth, the armature *g* is brought so near the poles of the electromagnet *f* that the force of said electromagnet energized by the ordinary current will be sufficient to cause the armature to stick to the poles. The armature *g* remains against the poles of the electromagnet *f* until, as before described, the bell striker comes against the spring *e* thus shunting out the electromagnet *f*, when the armature *g* falls back acted upon by retractile spring *m* to the position shown in Fig. 5 so as to be in the path of the tooth of the notch *i* with which said hook *h* engages, as shown in Fig. 6, immediately thereafter. While the hook is thus in engagement with the bell striker, the armature *g* is so far removed from the poles of the electromagnet *f* that the ordinary signal current upon circuit *a*, *a*, will not energize the electromagnet sufficiently to move the armature *g* and withdraw the hook *h* from the notch. A slight increase in the current will, however, be sufficient to accomplish this result. By this construction of the answer-back attachment, the force of retractile spring *h* may be so adjusted that when armature *g* is closed to the poles of electromagnet *f* it will be retained when the ordinary signal current is closed over the circuit *a*, *a*. When, however, the armature *g* is at a short distance from the poles as shown in Figs. 3, 5 and 6, the strength of the electromagnet when thus energized, will not be sufficient to overcome the retractile spring.

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

1. The combination with the bell striker included in a shunt around an electro magnet, of an answer back signal attachment for district signal boxes, said bell striker being provided with a notch with which the hook is engaged and a spring against which the bell striker is brought to shunt out the electro magnet and bring the hook into position to engage with the notch, substantially as described.

2. The combination with the handle provided with the radially projecting arm, of the pivoted bell striker included in a shunt circuit around the electro magnet provided with a curved surface against which the arm is brought when the handle is pulled down to change the position of the bell striker with respect to the hooked armature lever of said electromagnet, the bell striker being brought into contact first with a connection to short circuit the said electro-magnet and cause the armature to fall away to bring the hook into the path of a notch upon the bell striker to engage and hold the same while the normal current is sent through the electromagnet, said hook being disengaged when the current is increased to release the bell striker, substantially as and for the purpose specified.

3. The combination with an electro magnet and its armature, of a bell striker which engages with said armature, a shunt around said electro magnet adapted to be closed momentarily by the bell striker when the box is operated, whereby the armature is released and the engagement of the bell striker with the armature made certain, substantially as described.

In witness whereof I hereunto subscribe my name this 23d day of May, A. D. 1888.

CHARLES E. SCRIBNER.

Witnesses:
GEORGE P. BARTON,
CHAS. C. WOODWORTH.