

(No Model.)

I. B. LIVINGSTON.

FIRE TELEGRAPH.

No. 246,163.

Patented Aug. 23, 1881.

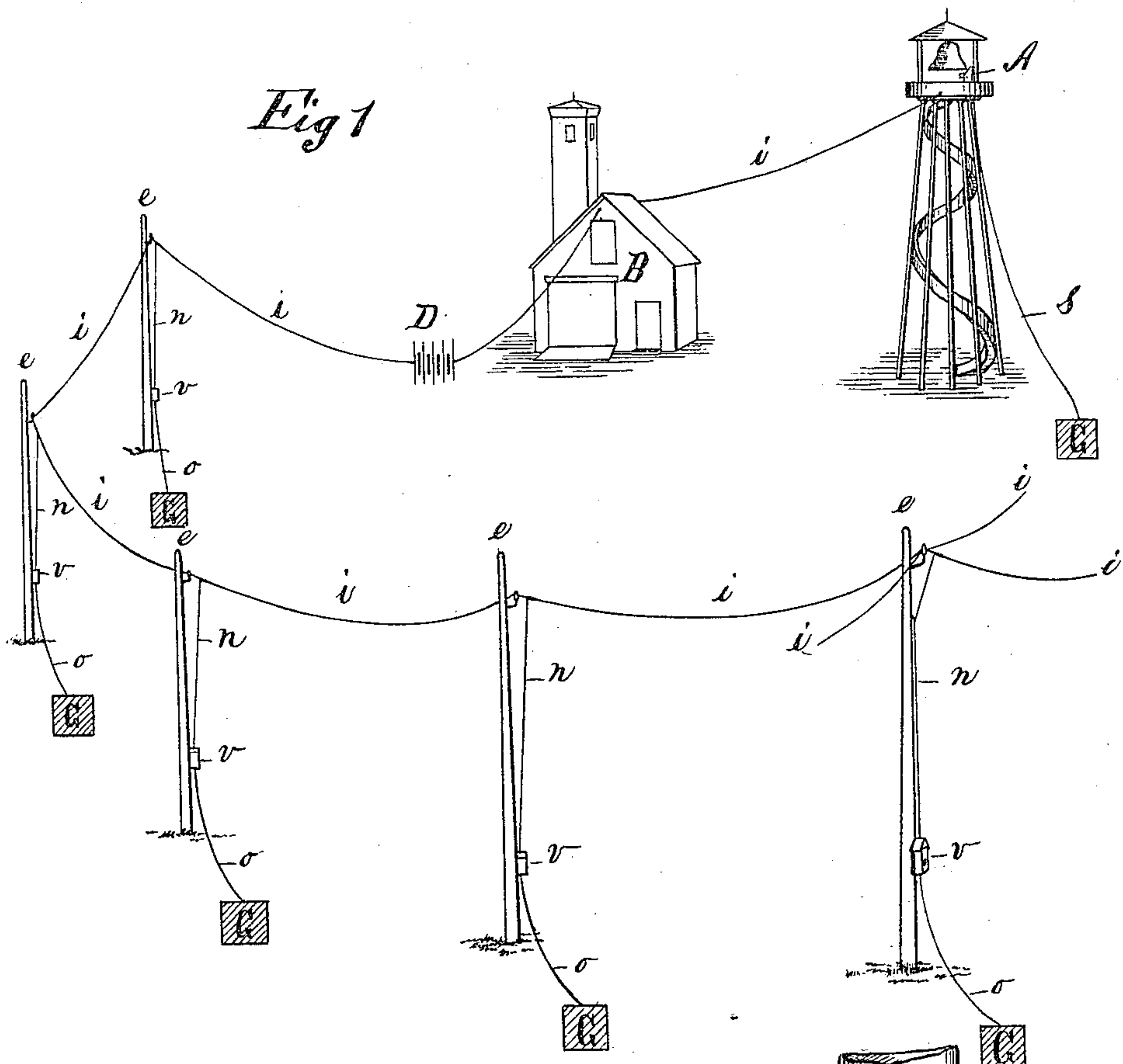


Fig 3

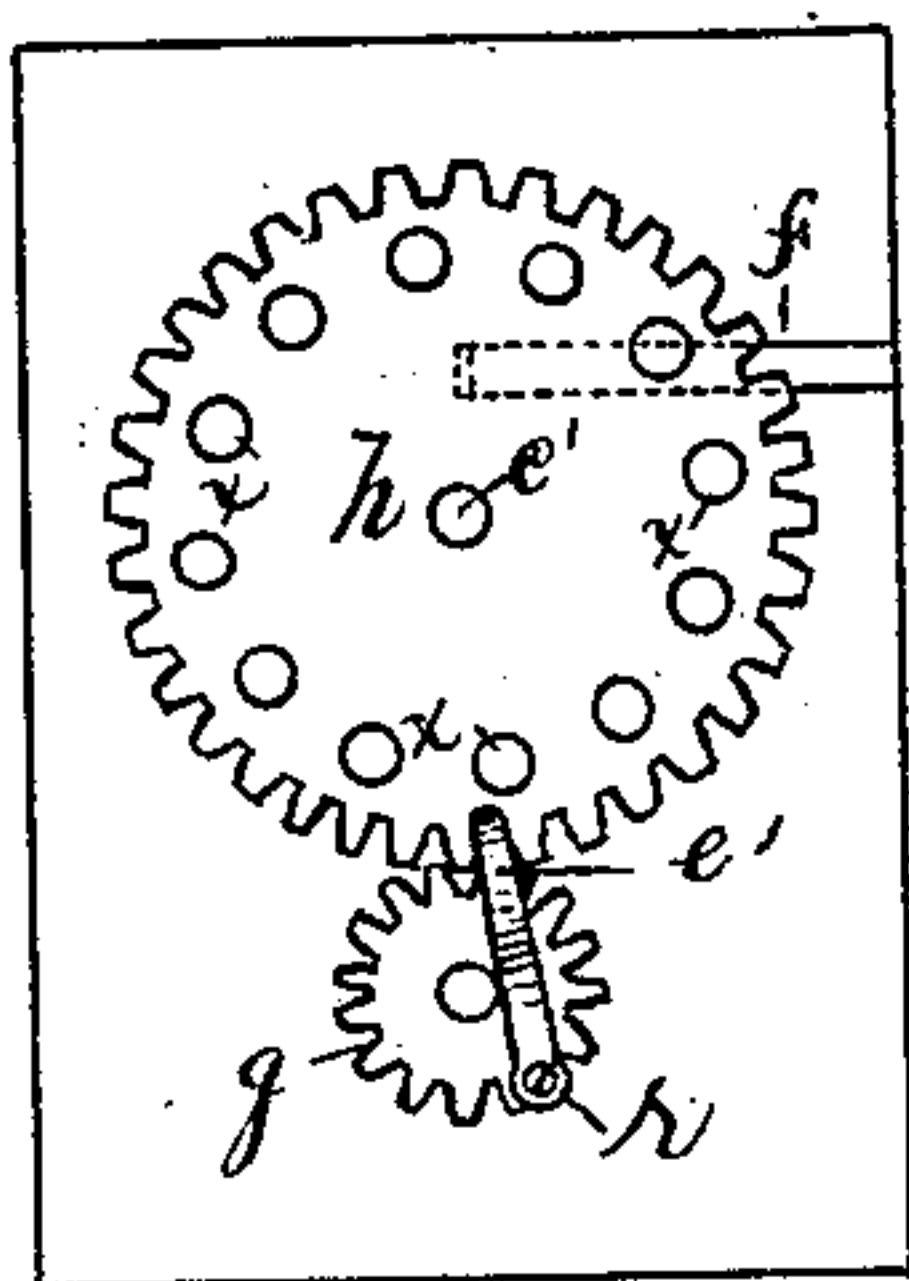
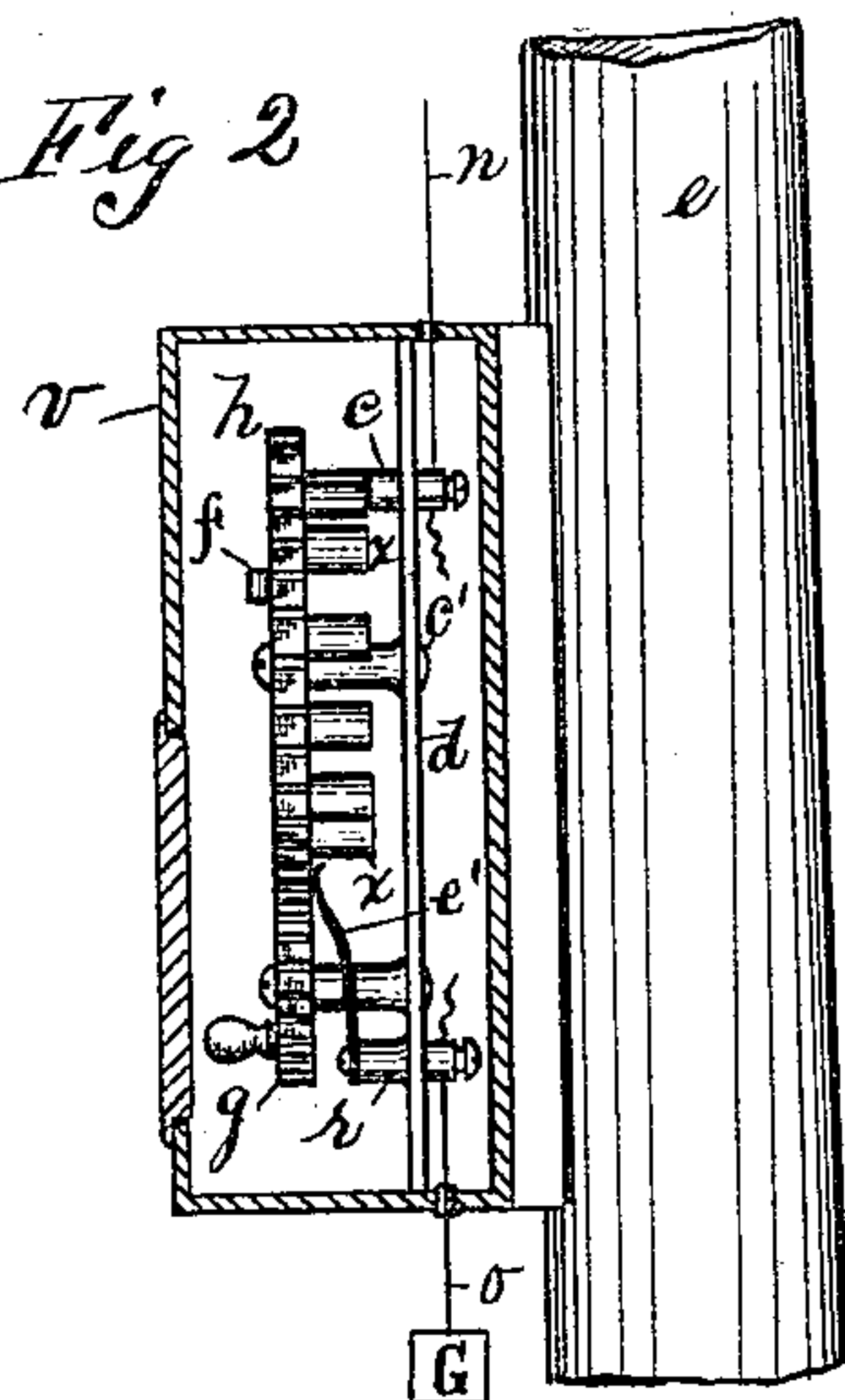


Fig 2



Witnesses
J. D. Gasfield
C. S. Parkhurst

Inventor
Isaac B. Livingston
By Henry A. Chapin
Att'y

UNITED STATES PATENT OFFICE.

ISAAC B. LIVINGSTON, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR OF
ONE-HALF TO EZEKIEL KEITH, OF SAME PLACE.

FIRE-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 246,163, dated August 23, 1881.

Application filed April 18, 1881. (No model.)

To all whom it may concern:

Be it known that I, ISAAC B. LIVINGSTON, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Telegraphic Fire-Alarm Systems, of which the following is a specification.

This invention relates to the construction of telegraph fire-alarm systems having a continuously unbroken line-wire running from one pole of the battery, with which connections are made to the signal-boxes, and from the latter to the ground, the line from the other pole of the battery running to an alarm-bell and thence to the ground, the object being to provide a normally open circuit fire-alarm telegraph-line, which circuit is closed when alarms are given.

In the drawings forming part of this specification, Figure 1 represents an improved telegraphic fire-alarm system embodying my improvements. Fig. 2 is a side elevation of a section of a wire-supporting post and a circuit making and breaking apparatus attached thereto. Fig. 3 is view of the rear side of the operative parts of the make-and-break wheel, its pinion-and-spring connection shown in Fig. 2.

In the drawings, A is the striker device, of any suitable construction. B is the engine-house. D is the battery. *e e e e e* are telegraph-poles. *i* is the line-wire. *n* are the wires connecting the make-and-break apparatus upon each pole with the main line *i*. *o* are the ground-connections at each post. *s* is the ground-connection from the striker. *v* is the make-and-break apparatus on each post. *h* is the make-and-break wheel. *x* are pins in wheel *h*. *g* is a pinion-wheel engaging with wheel *h*, and provided with a handle, as shown, by which to turn it. *c* is a connection-stud on the support to wheel *h*, to which is connected the wire *n*. *r* is a like stud, to which is connected the ground-wire *o*. *e'* is a spring secured to stud *r* and lying against wheel *h*. *f* is a stop-spring engaging with the front face of wheel *h*.

Like letters refer to like parts in the several figures.

I construct the make-and-break apparatus *v* much in the usual manner by making the wheel *h* of metal, setting into it a series of metallic pins, *x*, and fitting it to be revolved on a central stud, *c'*, which is set in the non-conducting partition *d*, and upon another stud set in said partition I hang the pinion *g*, by turning which wheel *h* is rotated. A connecting-stud, *c*, is set in partition *d*, to which the wire *n* is secured, and one end thereof projects far enough through said partition to cause it to be hit by each of the pins *x* in wheel *h* when said wheel is rotated. To the second stud, *r*, in said partition the ground-wire *o* is connected, and upon the opposite end of said stud is secured a metallic spring, *e'*, which bears against the rear face of wheel *h*. A spring, *f*, located in front of wheel *h*, and having a stop-tooth on it to engage in a suitable depression in the face of said wheel, serves to indicate when said wheel has been turned once around.

As shown in the drawings the main-line wire runs from the striking apparatus A through the engine-house B, where it may be connected with any suitable alarm device to operate when an alarm is given, and thence forms a continuous single line, or one having lines branching therefrom, as indicated, which is supported in the usual manner upon the posts *e*. The said line-wire *i* is connected with the battery D, which is located between the engine-house and the main-line alarm-connections, said engine-house and the striker devices being located on said line between the battery and the ground-connection beyond said striker devices. The wires *n* are connected to the main line *i* and to stud *c* in the make-and-break apparatus, and the stud *r* in said apparatus is connected with the ground by the wires *o*.

By the use of the construction and devices herein shown and described, it will be seen that the running of two wires from the battery around the entire alarm-circuit is obviated, and the expense of maintaining a battery in a closed circuit is dispensed with, for through the single-wire connection *i*, which constitutes with its connections an open circuit, efficient means are always available for calling the requisite electric impulses which are de-

manded for signaling and striking purposes into immediate action, while the whole line is entirely free from any electric action, excepting during the interval in which an alarm is being
5 sounded.

The metallic wheel *h* in the make-and-break apparatus applied to each call-station is provided with such a number of pins *x* as will make the call from each distinctive from every
10 other one, as it is understood that every separate contact of one of pins *x* with stud *c* causes an alarm, and one revolution of wheel *h* causes the number of strokes on the alarm-bell which corresponds to the number of the
15 station calling.

As above stated, an indicating-spring, *f*, acts on wheel *h* to tell when one revolution of said wheel has been made when turned by hand; but, if desirable, said wheel may be run by
20 clock-work, and the regularity of its rotating movement be assured by the employment of any of the well-known devices applicable to such a purpose.

The construction herein shown and described,
25 and the combination, with the battery *D*, of suitable ground-connections operating through a proper make-and-break apparatus and an alarm-striker, produces the following results in operation: Upon turning wheel *h* to give an
30 alarm each of the pins *x* is brought successively into contact with stud *c*, and a permanent ground-connection is by spring *e'* and wire *o* made with wheel *h*. Thus when one of pins *x* is in contact with stud *c*, which
35 through wire *n* is in connection with the line-wire *i*, a continuous ground-connection is made from one pole of the battery *D* through the

make-and-break apparatus which is being operated, and said connection is broken and made
intermittently as said wheel *h* is rotated. The
40 opposite pole of said battery is connected with the ground through the engine-house *B*, and the striker device *A* by the wire *s*. Therefore each contact of one of pins *x* with the stud *c* makes
45 such an electric connection with battery *D*, through one of the ground connections *o* and the wire *s*, as causes the striker devices to operate and give the alarm; but when said pin *x* and stud *c* are not in contact the circuit
50 through the line is broken.

I am aware that in fire-alarm telegraphs it is not new to connect one pole of the battery, at or near the main station with the earth and use alarm-boxes which have each a ground-
55 wire connection, and I do not claim, broadly, such construction; but

What I claim as my invention is—

The combination, in a telegraphic fire-alarm system, of a battery, *D*, of an alarm-bell, *A*, of
60 a ground-wire running from one pole of said battery to said bell and thence to the ground, of a continuously-unbroken line-wire, *i*, running from the opposite pole of said battery, supported by a series of posts, *e*, and constituting a normally-open circuit, of one or more
65 signal-boxes, *v*, each provided with suitable make-and-break mechanism, and a permanent ground-connection, and each connected with the line-wire *i* by the single wire *n*, substantially as set forth.

ISAAC B. LIVINGSTON.

Witnesses:

H. A. CHAPIN,
J. D. GARFIELD.