

(No Model.)

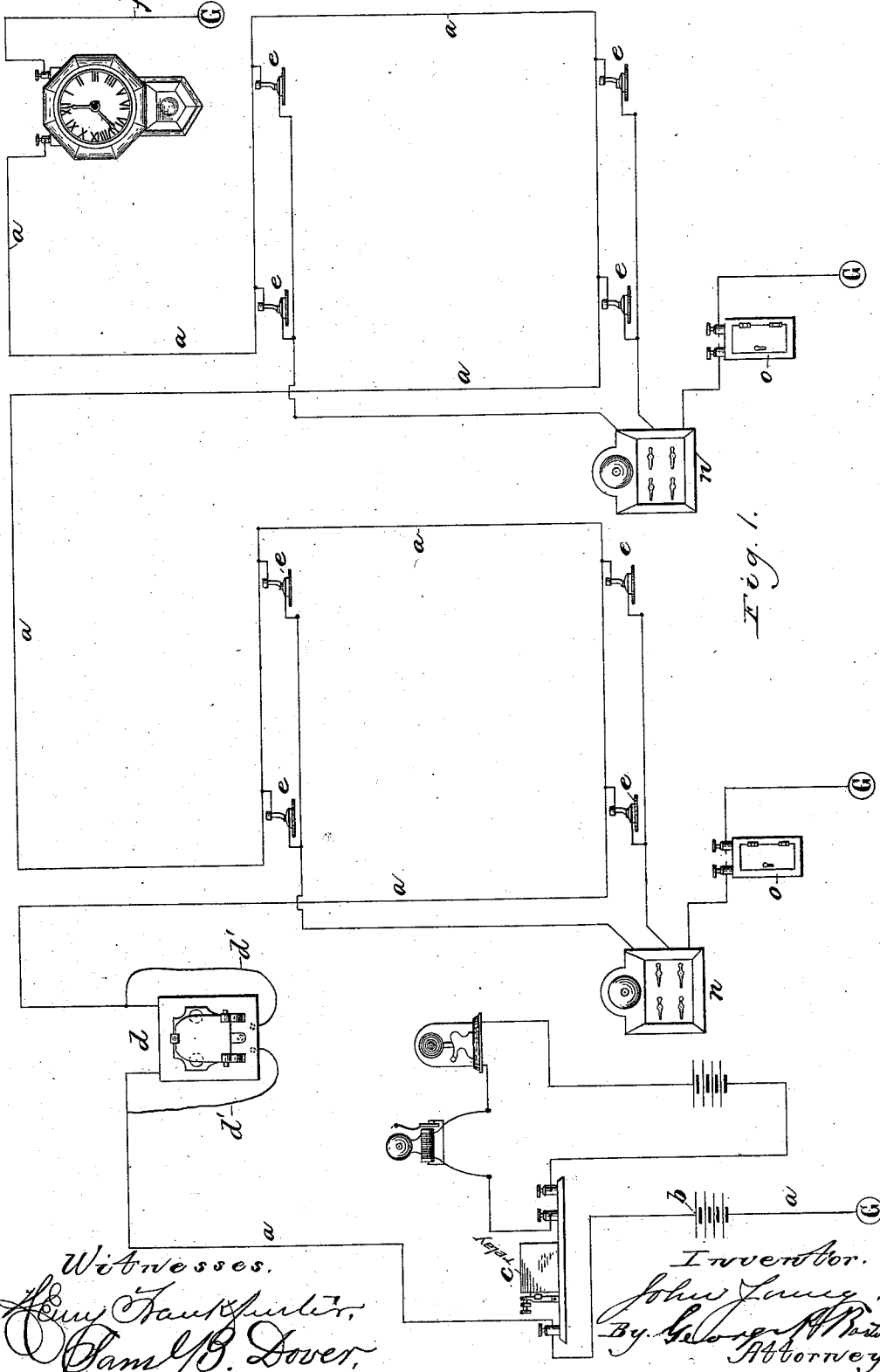
2 Sheets—Sheet 1.

J. YOUNG.

TESTING APPARATUS FOR FIRE ALARMS.

No. 402,642.

Patented May 7, 1889.



(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

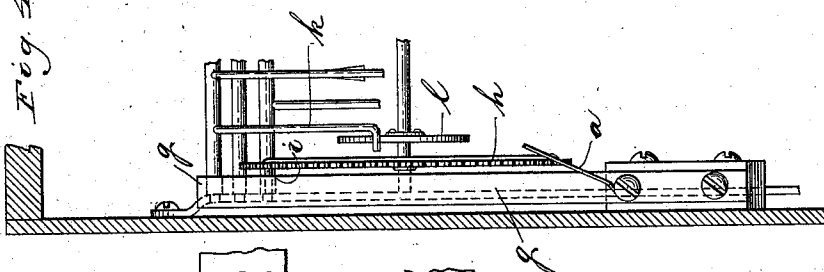


Fig. 3.

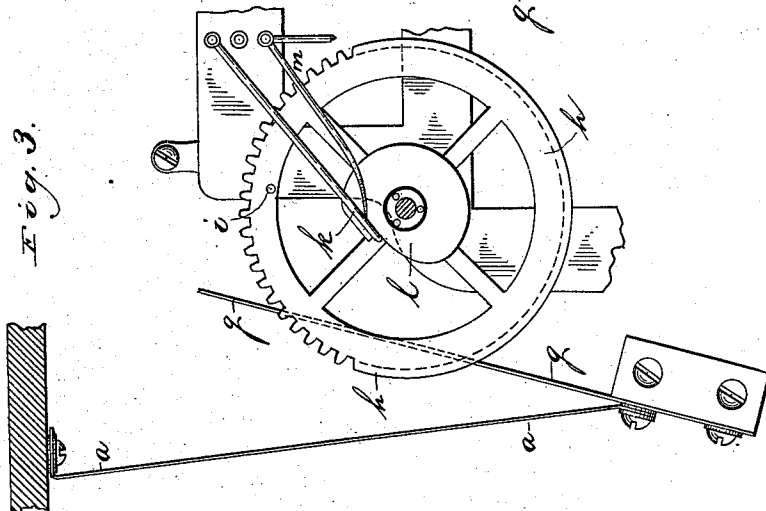
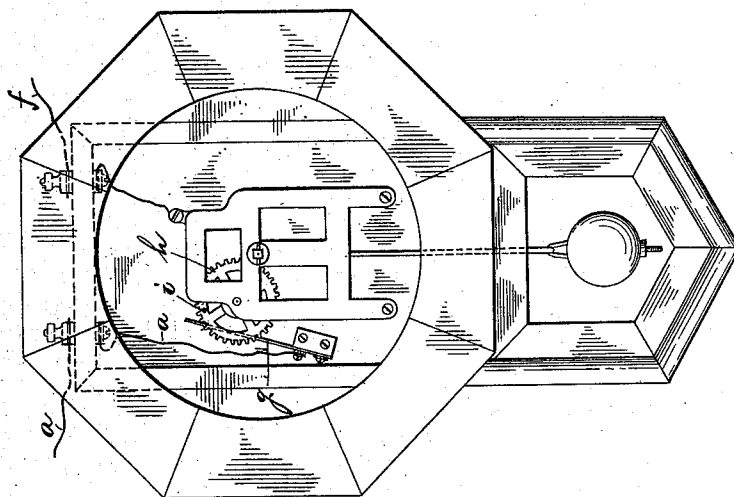


Fig. 2.



Witnesses

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Inventor.

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UNITED STATES PATENT OFFICE.

JOHN YOUNG, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN ELECTRIC COMPANY, OF SAME PLACE.

TESTING APPARATUS FOR FIRE-ALARMS.

SPECIFICATION forming part of Letters Patent No. 402,642, dated May 7, 1889.

Application filed November 21, 1884. Serial No. 148,540. (No model.)

To all whom it may concern:

Be it known that I, JOHN YOUNG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented a certain new and useful Improvement in Testing Apparatus for Automatic Fire-Alarms, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings,
10 forming a part of this specification.

My invention relates to testing apparatus for automatic fire-alarms; and it consists in a circuit extending from the central station through different buildings to circuit-closing
15 mechanism of a clock, and a normally-open ground-circuit, to which the circuit is closed at intervals by the movement of the clock, and an annunciator of high resistance included in the circuit at the patrol-station, and
20 a short circuit around said annunciator, which is automatically closed by the falling of the shutter.

The object of my invention is to provide an automatic test at frequent intervals for fire-
25 alarm circuits which will be reliable, and which will not interfere with the alarms caused by fire, or give false alarms or indications upon the registering apparatus at the patrol-station.

30 My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a diagram of a fire-alarm circuit embodying my invention. Figs. 2, 3, and 4
35 are detailed views of the automatic circuit-closing mechanism of the clock.

As shown in Fig. 1, the fire-alarm circuit *a* may be traced from the ground at the patrol-station through battery *b*, relay *c*, high-resistance annunciator *d*, and thence through the
40 rooms of the building and to one side of each of the different thermostats *e e*, as shown, and thence to the circuit-closing mechanism of the clock. The normally-open ground-circuit *f* extends from the clock to ground.

45 The clock may be driven by a weight or spring and provided with the usual train of wheels.

Since the ordinary parts of a clock are well known, I have in Figs. 2, 3, and 4 illustrated
50 only parts of the circuit-closing mechanism, this being sufficient to make my invention

clearly understood. As shown in Fig. 2, the circuit-wire *a* is connected from one binding-post of the clock to the contact-spring *g*. The normally-open ground-circuit wire *f* is connected from the other binding-post to the
55 wheel *h*, which carries the metallic pin *i*. This wheel is normally held by the detent *k*, resting in the notch of the cam *l*, as shown more clearly in Figs. 3 and 4. 60

The clock is regulated so that at stated intervals the lever *m* is forced against the detent *k*, lifting detent *k* from the notch, and the wheel *h*, being released, is set in motion, the
65 mechanism being operated like the striking mechanism of alarm-clocks. The wheel in its revolution carries the metallic pin *i* against the contact-spring *g*. The fire-alarm circuit is thus closed for a moment through the clock to the normally-open ground-circuit *f*. As
70 the wheel *h* revolves rapidly, the contact between the spring and the pin, though sure, will be but for a moment.

The clock may be regulated so that the wheel will be released at such intervals as
75 may be desired. I have found that once an hour is sufficient.

Referring now to Fig. 1, it will be seen that a short wire, *d'*, normally open, is connected
80 around the high-resistance coil of the annunciator. When the circuit of battery *b* is closed to ground through the clock, the shutter of the annunciator will be thrown down, thus closing the short wire *d'*, and thus shunting out
85 the resistance of the annunciator-coil.

The annunciator I have shown and prefer to use is of the form patented to Franklin G. Beach, assignor, in Patent No. 245,931, dated
90 August 23, 1881. Any other form of circuit-closing annunciator may be used to close the circuit as the shutter is thrown down.

The signal-bell and registering apparatus in the local circuit of the relay may be of any known construction, and, since they form no
95 part of the invention, require no further description.

The thermostats consist, preferably, of mercury-bulbs, and are adjusted to close the circuit when the mercury is raised by heat to a given
100 point. The local annunciators *n* and the signal-boxes *o* may be placed in the circuit and used in the ordinary manner. The resistance

of the coil of the annunciator should be so great that as long as it remains in circuit with the relay by reason of the adjustment of its retractile spring will not operate to close the local circuit, though the main circuit may be closed to ground. It is quite common to adjust relays, so that they will not be operated to close their local circuits while current remains below a certain strength. It thus appears that it is necessary to make the resistance of the annunciator sufficiently high to cut the current down to such an extent as to prevent the operation of the relay as long as the coils of the annunciator remain in circuit. This resistance of the annunciator is cut out as soon as the shutter has fallen. By the time the shutter is down the circuit of the clock will be again open. Thus during the moment that the circuit is closed through the clock the resistance of the annunciator will remain in circuit, so that the relay and registering apparatus will not be affected by the momentary closing of the circuit to the nor-

mally-open ground-connection of the clock. The watchman at the central station as soon as the shutter falls restores it again, so that the resistance of the coil of the annunciator may be in circuit at the next hour or signal. As long, therefore, as the shutter falls at stated intervals, it will be known at the patrol-station that the line is in good condition.

I claim—

The combination, in a fire-alarm circuit, of an automatic circuit-closing mechanism operating at stated intervals, a high-resistance annunciator in the circuit at the patrol-station, and a shunt around said annunciator-coils closed by the falling of the shutter, substantially as and for the purpose specified.

In witness whereof I hereunto subscribe my name this 7th day of November, A. D. 1884.

JOHN YOUNG.

Witnesses:

GEORGE P. BARTON,
F. H. McCULLOCH.