

(No Model.)

3 Sheets—Sheet 1.

C. E. BUELL.

ELECTRIC FIRE EXTINGUISHER AND FIRE ALARM SYSTEM.

No. 280,906.

Patented July 10, 1883.

Fig. 1.

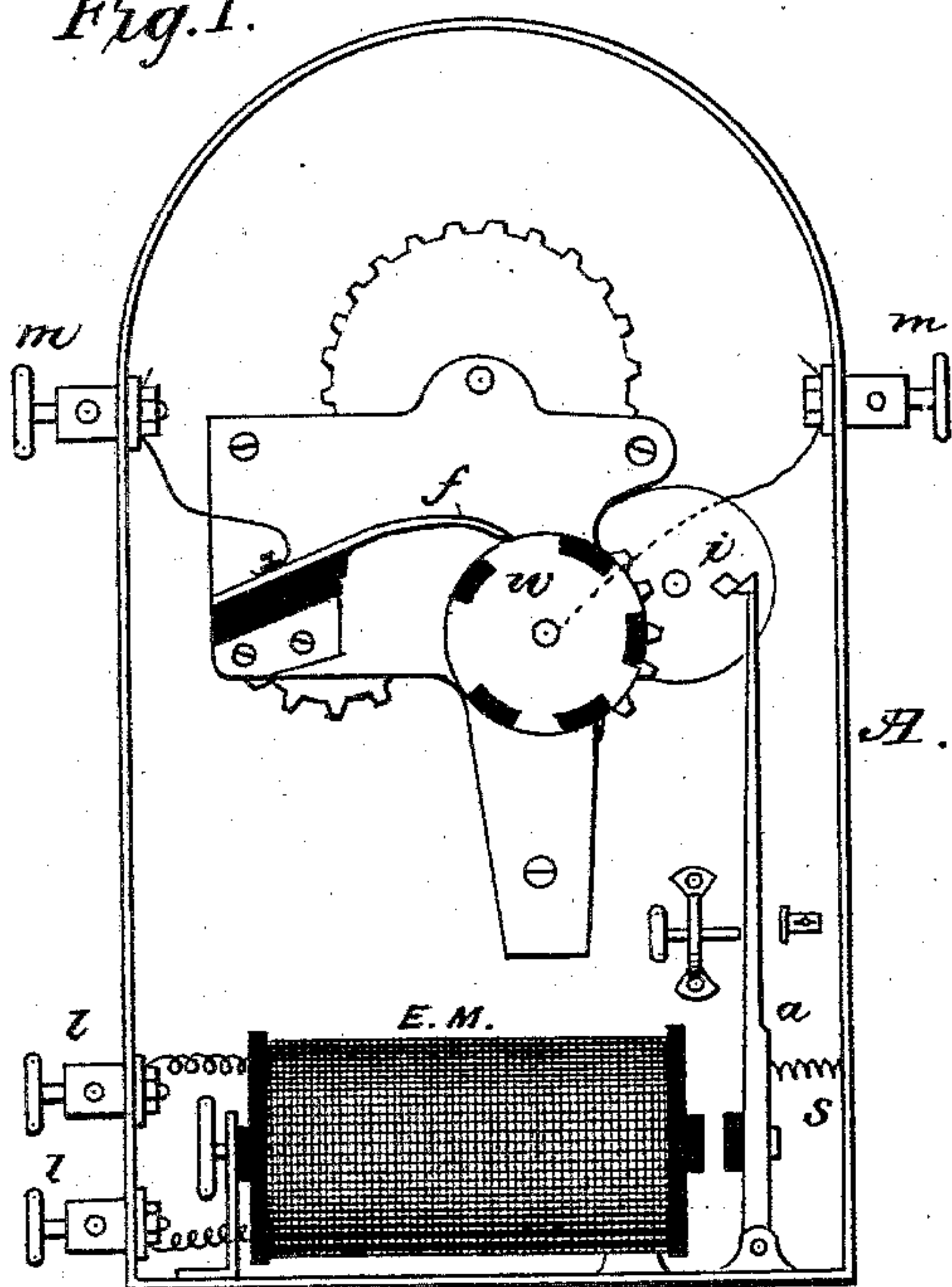


Fig. 5.

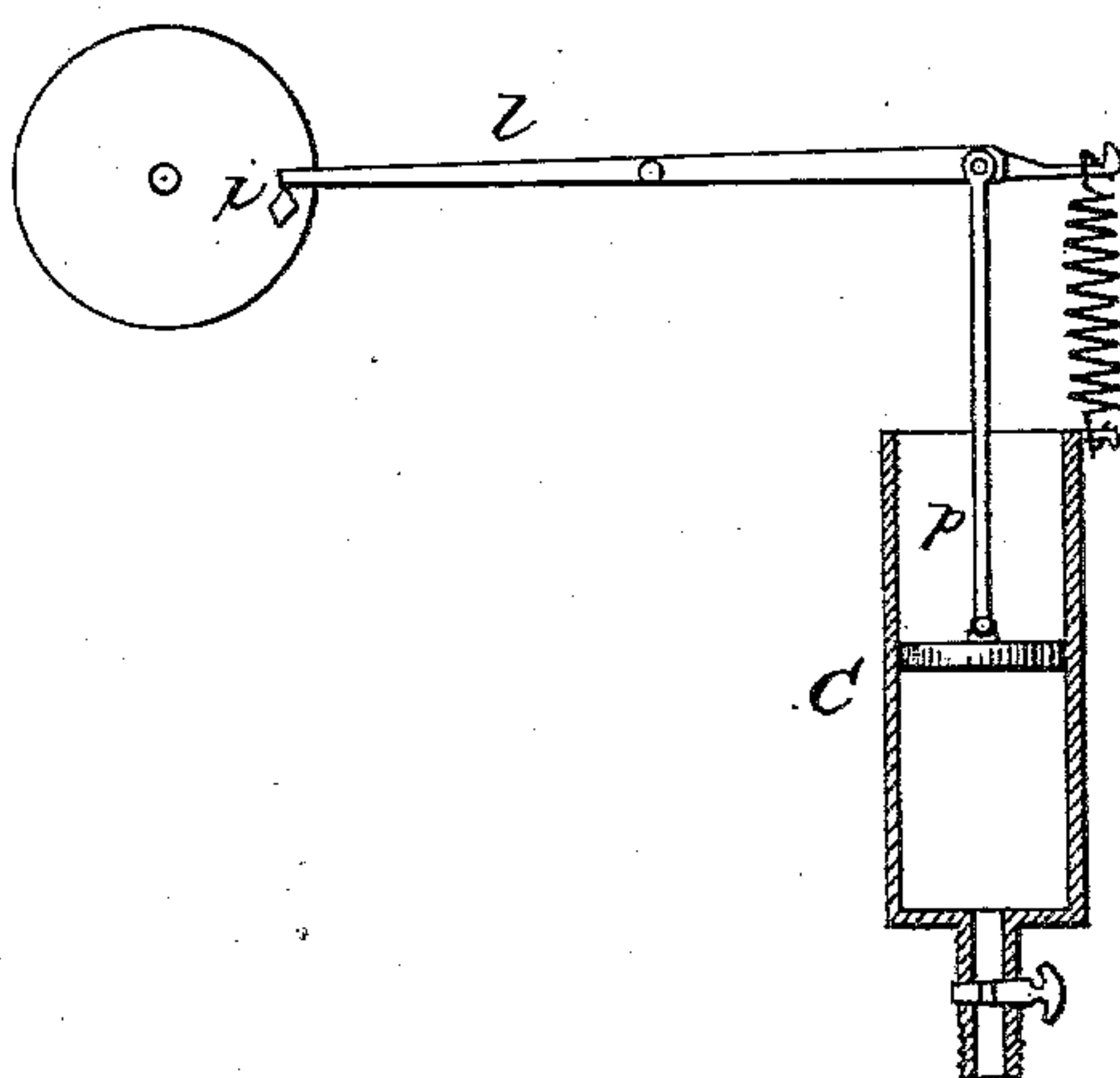
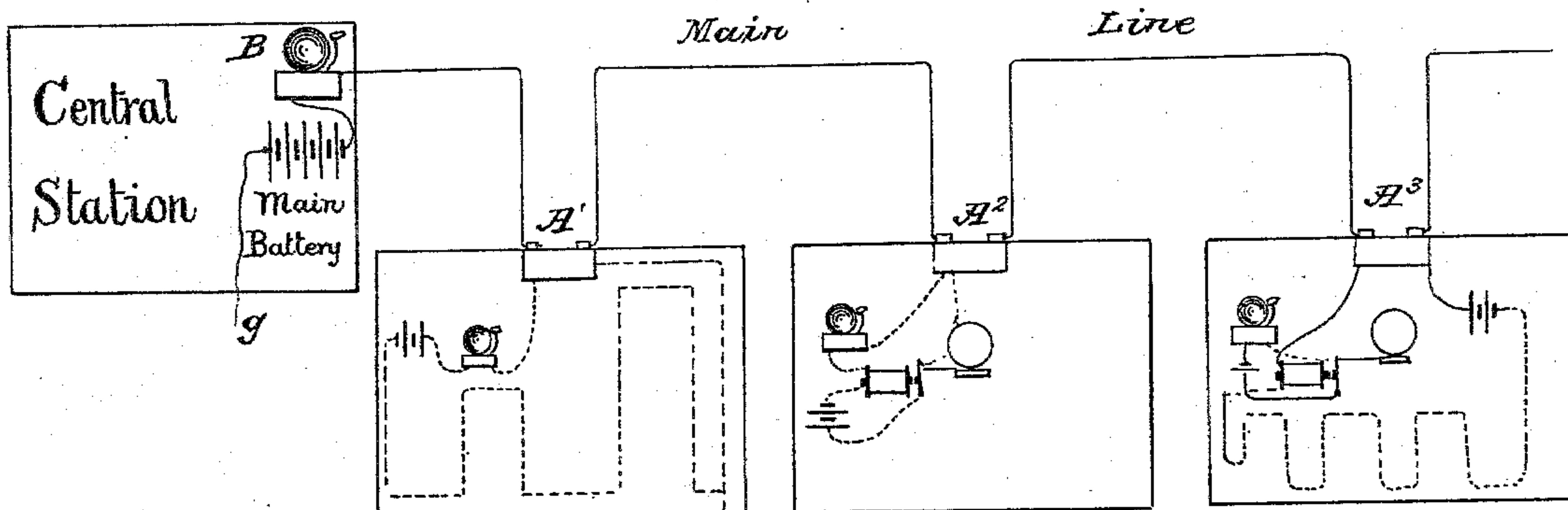


Fig. 3.



WITNESSES:

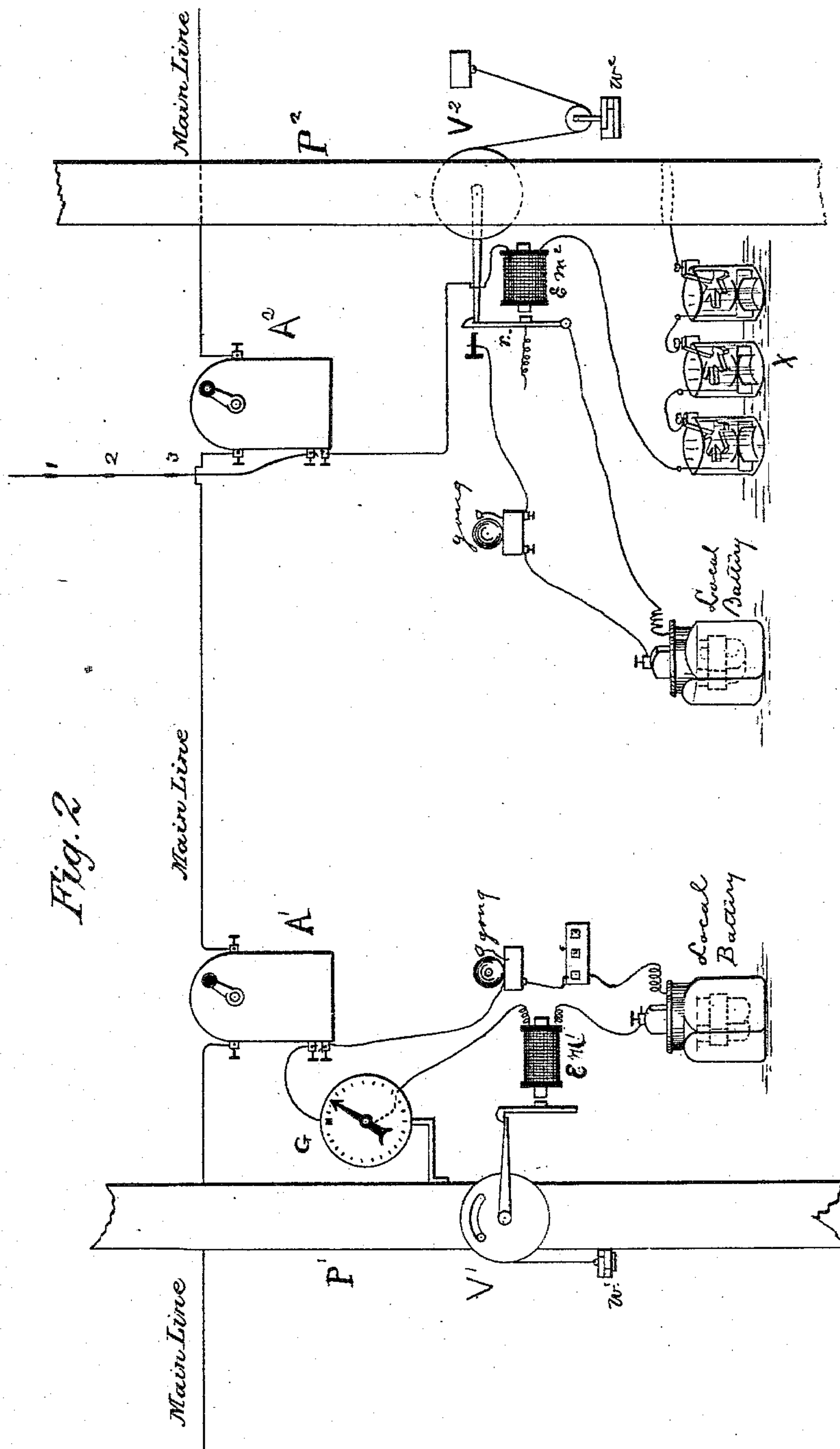
Wm. L. Dieterich  
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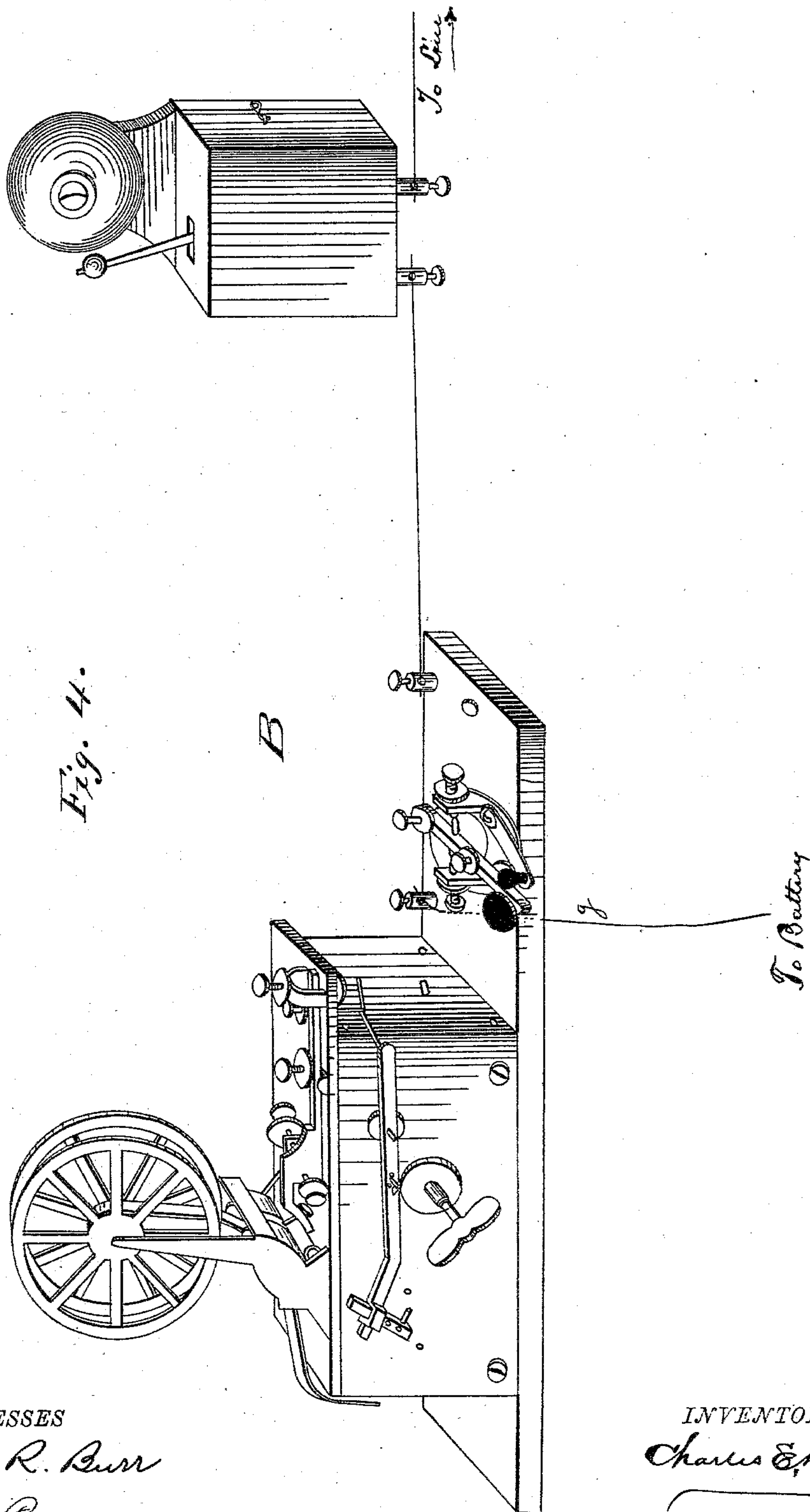
*Charles E. Buell*

(No Model.)

3 Sheets—Sheet 3.

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ELECTRIC FIRE EXTINGUISHER AND FIRE ALARM SYSTEM.  
No. 280,906. Patented July 10, 1883.



WITNESSES  
Chas. R. Burr  
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# UNITED STATES PATENT OFFICE.

CHARLES E. BUELL, OF NEW HAVEN, CONNECTICUT.

ELECTRIC FIRE-EXTINGUISHER AND FIRE-ALARM SYSTEM.

SPECIFICATION forming part of Letters Patent No. 280,906, dated July 10, 1882.

Application filed December 30, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES E. BUELL, of the city and county of New Haven, State of Connecticut, have invented Improvements in  
5 Combined Fire-Extinguisher and Fire-Alarm Systems, of which the following is a specification.

My invention consists, primarily, in the combination, with a series of fire-extinguisher systems, of a main electric circuit extending from  
10 each of the said series to a central station, with devices at each of the said series adapted to be made operative by the action of their respective systems, and to transmit a definite alarm-signal for each to the said central station, with  
15 apparatus thereat to indicate, announce, and record, or either, the said transmitted alarm-signals, substantially as hereinafter described.

My invention further consists in novel combinations which will be hereinafter described.

Figure 1 represents the mechanism of a signal-box for carrying out my invention. Fig. 2 shows apparatus at two points on a main circuit, arranged according to my invention. Fig. 3 is a plan view of a series of buildings with circuits and apparatus for carrying out my invention. Fig. 4 represents a register of well-known construction for use at a central  
30 station in carrying out my invention. Fig. 5 represents a detailed view of the catch-wheel *i*, adapted to be controlled by the pressure of the water in a system of fire-extinguisher pipes.

Referring to Fig. 1, A is a rear elevation, showing the mechanism of a signal-box of well-known construction. It is designed to have the actuating-spring of said mechanism wound or partly wound up, and the circuit-breaking wheel *w* and contact-spring *f* normally completing the main circuit, which enters at posts *m m*, and held to be released by the retracting of the armature *a* of the electro-magnet E M, which interlocks with the catch-wheel *i* when the circuit controlling the  
45 electro-magnet E M is broken, or when a normally-open circuit is employed the attracting of the armature *a* may be made to release the mechanism in an obvious manner. I have also shown, Fig. 5, the lever *l* of the pressure-gage  
50 C interlocked with catch-wheel *i*, so that the said mechanism would be released by a decrease of pressure upon the piston P of gage

C. This latter form can be employed when it is desired to avoid using electricity. The running down of the mechanism can be made to ring a bell at the box and turn in a definite signal to the central station. By having the mechanism partly wound up to produce signals when it is released, the box can be used for signaling by hand manipulation by winding  
60 it up still further and letting it run back to interlock with armature *a* or lever *l*, as the case may be.

In Letters Patent of the United States No. 266,579, of October 24, 1882, I have described  
65 a system of fire-extinguisher consisting of pipes arranged to conduct water through a building, and provided with valves which open by heat, together with an electric circuit and devices to indicate the pressure in said  
70 pipes and operate said electric circuit when the pressure in said pipes becomes less than normal, and thus to turn on a water-supply to said pipes for extinguishing any fire that may have occurred, and also to instantly sound  
75 an alarm upon a gong.

In Fig. 2 the pipe P', gage G, valve-wheel V', and electric circuit are arranged as set forth in said issued patent. In addition to the local alarm sounded by the gong, I include  
80 the electro-magnet E M in the signal-box A' (shown in Fig. 1) in the circuit made operative by the varying of the pressure in the pipe P', (by the action of gage G,) which in this case is a normally-open circuit. I have also shown  
85 in Fig. 2 the pipe P<sup>2</sup> with valve-wheel V<sup>2</sup> interlocked with armature *r* of an electro-magnet, which forms a part of a closed circuit, consisting of lengths of wires not easily fused held in electrical continuity by an easily-fusible solder, as  
90 described in Letters Patent of the United States numbered 169,954, of November 16, 1875, in which closed circuit the controlling electro-magnet of the signal-box A<sup>2</sup> is included, the local alarm being sounded by a normally-open  
95 circuit closed by armature *r* of the electro-magnet E M<sup>2</sup> when the said closed circuit is broken by the melting of one of the soldered joints 1 2 3. The several signal-boxes of a series are arranged to operate a main circuit,  
100 preferably by being included in the direct main circuit, as shown, although each box can be made to ground a main circuit that is normally incomplete by being contained in a nor-



mally-open ground branch, which would be closed by the action of their respective circuit-controlling wheels in an obvious manner.

By using a normally-closed main line, as shown, with the contact-spring and break-wheel of each box normally completing the circuit, the main line may be employed for other systems of signaling and communicating without defecting its use for the fire-alarm service.

Fig. 3 shows a central station with a main battery for charging the main line, a signaling-bell or ordinary register and bell, B, for indicating and recording incoming signals, with the wire *g* leading to earth or other return-circuit.

Fig. 4 is an apparatus for announcing and recording signals at the central station, and consists of a self-starting register and gong, B. Both the register and gong, being of well-known construction, require no description.

The main line passes through the boxes A' A<sup>2</sup> A<sup>3</sup> to earth or return-circuit, the boxes A' A<sup>2</sup> A<sup>3</sup> being similar to the box shown in Fig. 1 and described, the local circuits for controlling said boxes being shown in their respective buildings in dotted lines.

The operation of the system is as follows: Each of the boxes A' A<sup>2</sup> A<sup>3</sup>, being provided with a circuit-breaking wheel that gives a different number of breaks for each when making a revolution, is partly wound up and its parts interlocked with the armature of an electro-magnet that is included in a circuit in the building where the box is located. The operation of the circuits located in the building acts to release their respective box, which, in running down, transmits a definite number-signal peculiar to itself to the central station over the main line, said definite number-signal being announced or recorded, or both, by the apparatus provided for that purpose at the central station, thus locating the origin of the alarm, so that men can at once go to the scene of fire or leakage. At the same time, in event of fire, a water-pressure is turned on to supply water for automatically extinguishing the fire, and a local alarm is vigorously sounded by the gong included in the local circuit, to give warning to any person employed to watch the building.

Several circuits may lead to one central station and pass through suitable switch devices and annunciators for making operative a system and for combining other modes of communicating and signaling therewith.

The different floors of large buildings may be provided with an alarm-signal box (shown in Fig. 1 and described) to more definitely locate a fire or a leakage of water.

Annunciators should be placed in large buildings to guide local watchmen, the mode of connecting and arranging such annunciators with local alarms being shown and described in my issued Patent No. 266,579, previously referred to.

What I claim is—

1. A main circuit, a battery or batteries for charging said circuit, apparatus at a central station adapted to receive signals over said circuit, and a series of stations along said circuit, each provided with a call mechanism adapted to transmit a predetermined call over said circuit, a local circuit adapted to be made operative by heat and to make operative said call mechanism, and devices controlled by said local circuit for turning on a water-supply and for giving an alarm-signal at said station.

2. A main circuit, a battery or batteries for charging said circuit, apparatus at a central station adapted to receive calls sent over said circuit, and a series of stations, each provided with a call mechanism, a local circuit at each, which is normally open and which is adapted to make operative said call mechanism when closed, with devices for closing said circuit by a variation of water-pressure, and devices controlled by said local circuit for producing a signal at said station when said circuit is closed.

3. A main circuit and devices for receiving signals sent over said circuit, a series of stations along said circuit, each provided with a call mechanism adapted to be made operative by hand manipulation or by a local circuit, and a local circuit and devices adapted to make operative said call mechanism to transmit a signal over said main circuit, and devices for making operative said local circuit, substantially as described.

4. A main circuit and devices adapted to receive signals over said circuit, a series of stations, each provided with pipes held closed by valves that open by heat, a call mechanism at each adapted to transmit a definite number-signal over said main circuit, and intermediate devices between said pipe and said call mechanism adapted to make operative said call mechanism when said pipe is opened, substantially as described.

5. The combination, with the releasing electro-magnet of the call mechanism A, of a local circuit which includes an electro-magnet for controlling a valve mechanism, a gong controlled by said local circuit, and devices, substantially as described, for making operative said local circuit.

6. The combination, with a call mechanism adapted to be made operative by hand manipulation to transmit a definite signal over one circuit, of an electro-magnet in an independent circuit and mechanism in connection with said electro-magnet whereby said call mechanism is adapted to be made operative to transmit said definite signal by the operation of said independent circuit through the intermediate action of said electro-magnet.

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Witnesses:

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J. W. BUELL.