

J. S. HARLEY.  
ELECTRIC SIGNALING SYSTEM.  
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988,465.

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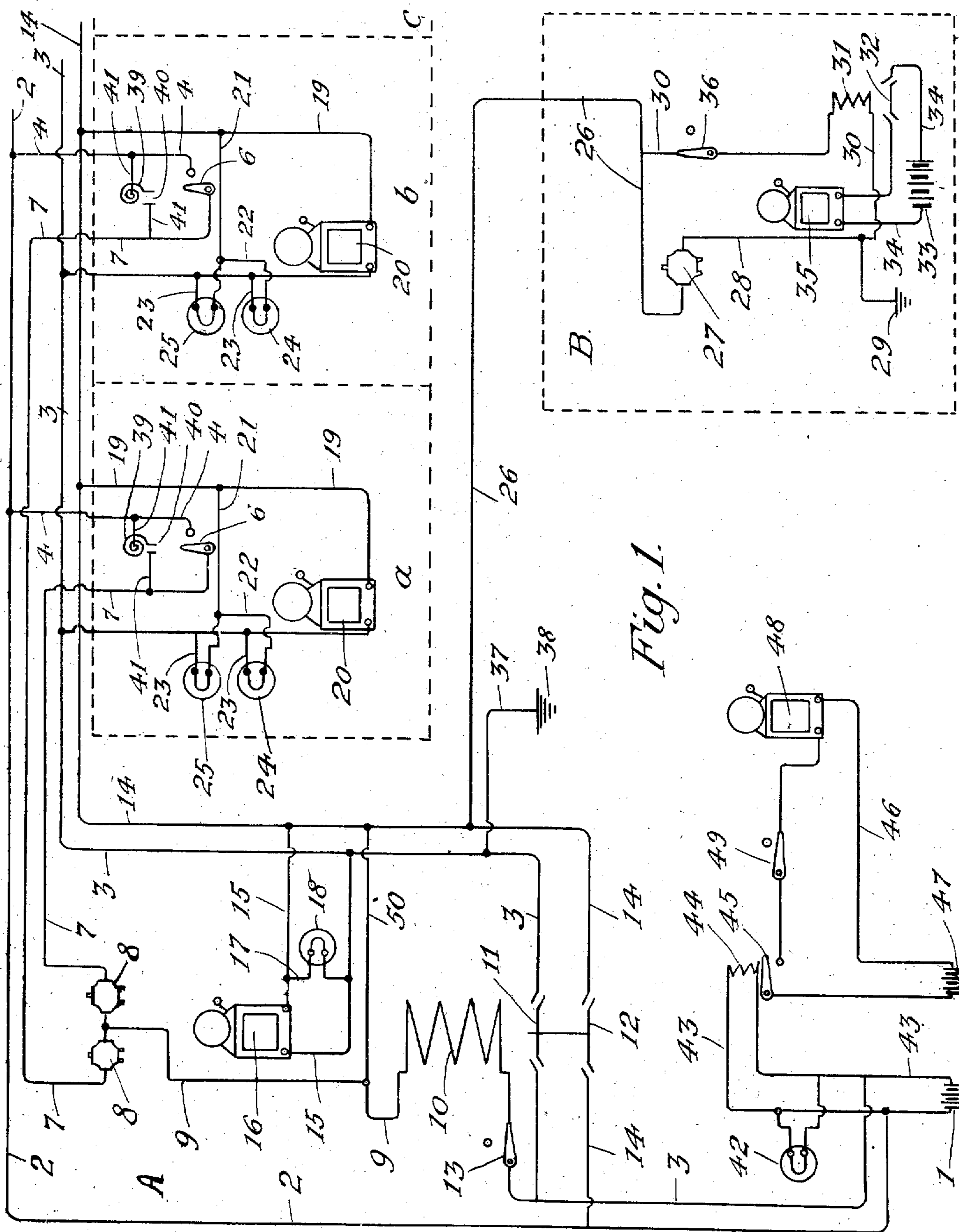


Fig. 1.

Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## ELECTRIC SIGNALING SYSTEM.

988,465.

Specification of Letters Patent.

Patented Apr. 4, 1911.

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*To all whom it may concern:*

Be it known that I, JOHN S. HARLEY, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Electric Signaling Systems, of which the following is a specification.

My invention relates to electric signaling systems and especially to such as are adapted to give fire alarm signals; and its object is to produce an improved electrically-operated signaling system adapted for use in hotels, factories, office buildings, and the like, and which, when an alarm is turned in, is capable of delivering a signal not only to a fire department but also to the main office and all of the rooms of the building in which the system is installed, the annunciator at the fire department indicating the system or building from which the alarm is sent and the annunciator in the office of the building indicating the particular room in which the electric circuit was closed to give the alarm.

My improved electric signaling system is illustrated in the accompanying drawings, in which the figure represents diagrammatically the principal features of the improved system.

In such drawing A designates the main office of a hotel or other building, and *a, b, c*, etc., different rooms of the building; and B a fire department building.

From a battery 1, or other source of electricity or electric energy, a main or lead wire 2 extends throughout the system to the different rooms *a, b, c*, etc., of the building, and a return wire 3 for returning the current to the source. Shunt circuits are established from the main wire 2 for the successive rooms by means of branch wires 4.

The wiring and the signaling, alarm, lamp, and other devices for each room of the system may be identical or substantially the same; and hence specific description of the devices, circuits, etc., for one of the rooms, room *a* for instance, is deemed sufficient.

A switch 6 in room *a* is connected to a return wire 7 for making contact with the terminal of the wire 4. By closing the switch the current will pass from the wire 7 to an annunciator or indicator 8, located preferably in the office A, and operate it to indicate the number of the room in which the circuit was closed. The current passes

through the annunciator and onward on the wire 9 to a solenoid 10, which serves to close the double-pole switch 11 and 12, and it flows thence by way of a closed switch 13 to the return wire 3 to complete the circuit. The closing of the second switch 12 serves to close a circuit from the main wire 2 on a line-wire 14 leading to the rooms *a, b, c*, etc. A shunt circuit by way of the connected wire 15 leads to a bell 16 and by way of a shunt wire 17 to a lamp 18 located in the office of the building, the circuit being completed over the return wire through the wire 3. The closing of the switch 12 also permits a portion of the current to flow onward through the line wire 14 and through a shunt-wire 19 provided for each room embraced in the system to a bell 20 located in the room and thence to the return wire 3. A portion of the current from the wire 19 flows by way of shunt-wires 21, 22, and 23 to a pair of lamps 24 and 25, located in each room, and one of which preferably shows a red light.

To give an alarm at the fire department a branch wire 26 is connected to the line-wire 14 and to an annunciator 27 at the fire department B, which will indicate the building from which the signal was sent, and the current would flow from the annunciator on the wire 28 to the ground at 29. At the same time a portion of the current will flow from the wire 26 to the shunt-wire 30 to a solenoid 31 and thence to the grounded wire 28. The solenoid will close a switch 32 and complete a circuit from a local battery 33 on the wires 34, including a signal-bell 35. The actuation of the bell 35 can be stopped by turning a switch 36 from the position shown in the drawing, and thereby opening the circuit which controls the solenoid 31. To complete the circuit the return wire 3 is also grounded at the building by a branch wire 37 grounded at 38.

In place of or in addition to the switch 6 a thermostat 39 may be provided for each room and adapted upon a rise of temperature to a predetermined degree to close a pair of contacts 40 on branch wires 41 which connect the wire 4 with the wire 7.

To open the circuit and stop the signaling the switch 13 which connects the solenoid 10 with the return wire 3 is opened.

In order to indicate that the system is in operative condition a suitably located lamp

42 is provided which is on a shunt circuit 43 connected with the battery 1. A solenoid 44 is provided in the circuit and serves normally to hold in open position a switch 45 that forms part of a local circuit 46 from a battery 47 for ringing a bell 48. For want of a sufficient current the lamp 42 will be extinguished, and the switch 45 being released by the solenoid 44 will gravitate to close the circuit 46 and cause the ringing of the bell 48. The circuit 46 can be opened to stop the ringing of the bell 48 by turning the switch 49.

In operation, whenever the circuit is closed, either by operation of the switch 6 or the thermostat 39 in one of the rooms, a general alarm throughout the system is given. The appropriate annunciator 8 in the office will indicate the room in which the closing of the circuit occurred. In sequence an alarm will be sent in to the fire department by the wire 26; the bell 16 will be rung and the lamp 18 lighted; and the bell 20 will be rung and the lamps 24 and 25 in each room lighted. And these operations will continue until the circuit is broken by opening the switch 13. When the circuit is closed either by means of the switch 6 or thermostat 39 the solenoid 10 will continue to be energized by current from the line-wire 14 passing through a branch wire 50 to the wire 9 and thence to and through the solenoid to the return wire 3.

Having described my invention, what I claim and desire to secure by Letters Patent is—

1. An electric signaling system, comprising a main circuit, a series of branch circuits tapping the main circuit, a switch for controlling each of the branch circuits, an annunciator in each of the branch circuits, a solenoid common to all of the branch circuits, a double-pole switch controlled by the solenoid, and signaling circuits, including signaling devices, connected with the main circuit by means of said double-pole switch.

2. An electric signaling system, comprising a main circuit, a series of branch circuits tapping the main circuit, an open circuit thermostat for controlling each of the branch circuits, an annunciator in each of the branch circuits, a solenoid common to all of the branch circuits, a double-pole switch controlled by the solenoid, and signaling circuits, including signaling devices, connected with the main circuit by means of said double-pole switch.

3. An electric signaling system, comprising a main circuit, a series of branch circuits tapping the main circuit, current-controlling means provided in each branch circuit, a grouped series of annunciators corresponding with and connected with the branch circuits, a solenoid common to all of the branch circuits, a double-pole switch

controlled by the solenoid, and signaling circuits, including signaling devices, connected with the main circuit by means of said double-pole switch.

4. An electric signaling system, comprising a main circuit, a series of branch circuits tapping the main circuit at different locations, current-controlling means provided in each branch circuit, a grouped series of annunciators corresponding with and connected with the branch circuits, a solenoid common to all of the branch circuits, a double-pole switch controlled by the solenoid, and signaling circuits connected with the main circuit by means of said double-pole switch and including signaling devices located correspondingly with said branch circuits.

5. An electric signaling system, comprising a main circuit, a series of branch circuits tapping the main circuit at different locations, current-controlling means provided in each branch circuit, a grouped series of annunciators corresponding with and connected with the branch circuits, a solenoid common to all of the branch circuits, a double-pole switch controlled by the solenoid, and signaling circuits connected with the main circuit by means of said double-pole switch and including a branch circuit to a fire department station and including signaling devices located correspondingly with said branch circuits.

6. An electric signaling system, comprising a main circuit, a series of branch circuits tapping the main circuit, current-controlling means provided in each branch circuit, a grouped series of annunciators corresponding with and connected with the branch circuits, and a shunt-circuit including signaling means for indicating a deficiency of current in the main circuit.

7. An electric signaling system, comprising a main circuit, a series of branch circuits tapping the main circuit, a switch for controlling each of the branch circuits, an annunciator in each of the branch circuits, a solenoid common to all of the branch circuits, a double-pole switch controlled by the solenoid, signaling circuits, including signaling devices, connected with the main circuit by means of said double-pole switch, and a switch for opening and closing the signaling circuit.

8. An electric signaling system, comprising a main circuit, a series of branch circuits tapping the main circuit, current controlling means provided in each branch circuit, a grouped series of annunciators corresponding with and connected with the branch circuits, a shunt circuit, a second circuit, signaling means operable by said second circuit, and means controlled by said shunt circuit for causing said second circuit to operate said signaling means when a

deficiency of current occurs in the main circuit.

9. An electric signaling system, comprising a main circuit and branch circuits tapping the same, a shunt circuit connected with and energized by the source of current of the main circuit, a solenoid in said shunt circuit, a second and independent circuit, a signaling device operable by said second circuit, a switch for closing said second circuit to cause the same to operate the signal, said switch being held open when the solenoid is energized by proper current in the main circuit, and closing upon deficiency of said current.

10. An electric signaling system, comprising a main circuit, a series of branch circuits

tapping the main circuit, current controlling means provided in each branch circuit, signaling circuits, including signaling means, means common to all the branch circuits for connecting said signaling circuits to the main circuit and thereby operating all of the signaling means, each unit of said signaling means including a colored warning light, an illuminating light, and an alarm bell.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses this 14th day of May, 1910.

JOHN S. HARLEY.

Witnesses:

P. H. GUNCKEL,  
H. A. BOWMAN.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents Washington, D. C."

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