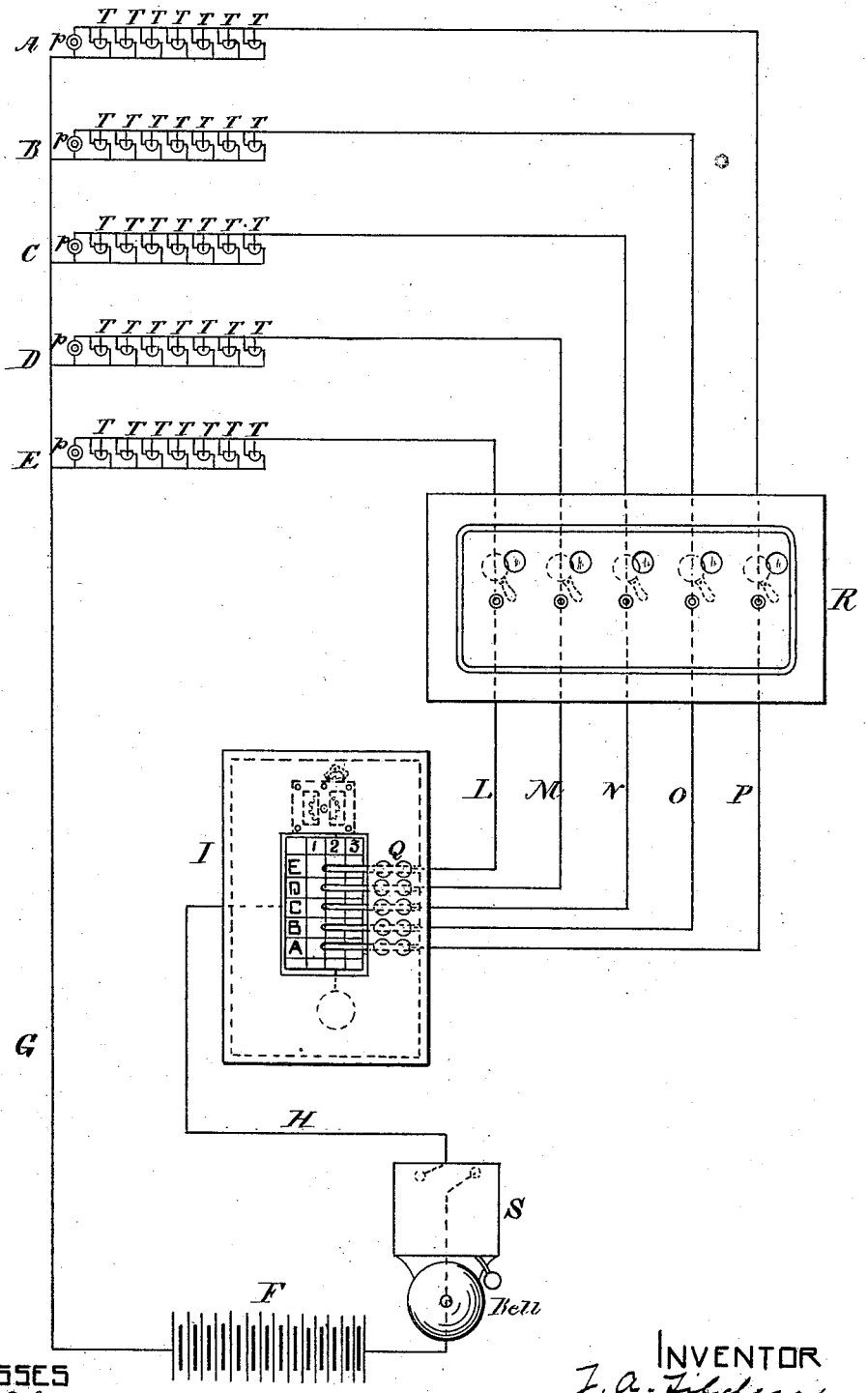
(No Model.)

J. A. TILDEN.

COMBINED FIRE ALARM AND TIME DETECTOR.

No. 301,645. Patented July 8, 1884.



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JAMES A. TILDEN, OF HYDE PARK, MASSACHUSETTS.

COMBINED FIRE-ALARM AND TIME-DETECTOR.

SPECIFICATION forming part of Letters Patent No. 301,645, dated July 8, 1884.

Application filed December 10, 1883. (No model.)

To all whom it may concern:

Be it known that I, J. A. TILDEN, of Hyde Park, in the county of Norfolk and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Combined Automatic Fire-Alarm and Time-Detector, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming a part of this specification, in explaining its nature.

It is important, where automatic fire-alarms actuated by electric thermostats are employed, to have a means of testing the circuit, and this means of testing the circuit ought to be combined with a time-detector or watchman's clock, so that not only the presence of the watchman in making his rounds shall be recorded, but also the fact that each circuit is in proper working condition. There are, however, some difficulties about this, for the testing-connection ought not to start the alarm.

In the drawing is given a representation of several electric thermostatic circuits, which may be considered to be the circuits of the different floors of the same building. They are lettered A, B, C, D, and E. In each circuit P is a push-button, which makes a connection between the wires of the circuit.

T indicates the thermostats, placed between the two wires of the circuit, and serving to connect them in case of fire.

F is the battery. G is one of its main wires, and H is the other.

I is the register-clock. It is a cylinder contrived to revolve once in twelve hours, and this cylinder is adapted to carry a paper register divided by ruling the lines into hour-spaces that run around the periphery of the cylinder. These hour-spaces may be further subdivided into spaces for the fractions of an hour. There is a space provided longitudinally along the cylinder for receiving an indicating-mark for each of the different circuits. Alongside of this cylinder are arranged a series of electrical magnets with puncturing-arms arranged with their markers in line parallel to the axis of the cylinder, such as are ordinarily employed in chronographs. This series of electrical magnets is marked Q. There is one of them for each of the circuits. They connect with the main wire H on one side, and respectively with the wires L, M, N, O, and P, leading to the respective circuits on the other side.

Between the clock and the various circuits is located an annunciator, R, having a series of pivoted targets—one for each circuit—with the numbers of the circuits upon them, and each of the wires L, M, N, O, and P is arranged to sensitize an electrical magnet, which, when excited, tends to draw its target into a proper position to be observed; but these pivoted targets are so arranged as to operate but sluggishly, so that the mere pressure of the push-button in closing the circuit for test will not throw its targets up, while the connection made when a thermostat is called into operation will be more durable and keep the annunciator-magnet excited long enough to throw its target into position for observation.

Usually the annunciator-targets are released when the button is pushed, because they are wanted to indicate speedily. In this case their operation is reversed, so that they may act sluggishly. Between the clock and the battery is located the alarm-bell, which alarm-bell is of the vibrating type, and provided with a heavy hammer, so that an instantaneous closing of the circuit for test will not give to the hammer sufficient capability of vibration to strike the alarm-bell; but a thermostatic closing of the circuit which continues for some time will do so. The chronograph-magnets G are sensitive to a momentary connection of the circuit.

The manner in which this apparatus is used is as follows: If the thermostats work to close the circuit, they will throw up their respective targets, so as to indicate in which of the circuits the fire has occurred, and will also strike the alarm-bell; but if the watchman is making his rounds and there is no fire, he simply touches the push-button on each circuit, and an instantaneous current runs through the circuit, not exciting the magnets of the annunciator R sufficiently to throw the annunciator up, and not exciting the magnets of the alarm-bell sufficiently to cause that to work, but sufficiently exciting the chronograph-magnet Q, connected with the circuit on which the push-button has been pressed, to make a mark upon the divided dial-paper of the clock. This stroke gives a perforation or mark which will show the time of the testing

of the circuit, and which serves the double purpose of checking the faithfulness of the watchman and the working condition of the apparatus. This form of chronograph-clock, in connection with its accompanying electro-magnetic indicating apparatus, has been in use since 1869 as a watchman's time-detector; but it has not hitherto been combined with a thermostatic alarm apparatus, and it will be observed that, in order to make the combination in such manner that the testing of the wires and the presence of the watchman at a certain place to make the record of his test and of his presence in such manner that the alarm shall not be set off, it is requisite that the chronograph-magnets Q shall be sensitive to instantaneous attack, while the annunciator-magnets do not act to set the targets of the annunciator until the electric contact has been continued for some time, and that the alarm apparatus shall also operate comparatively slowly. In referring to these two modes of action, I describe the chronograph-magnets as quick and the annunciator and alarm apparatus as sluggish. It is also novel, I believe, to place on one circuit a manual circuit-closer, an annunciator, a chronograph-recorder, an alarm, and a series of thermostatic circuit-closers.

It is obvious that a bell arranged to strike different strokes for each circuit would be an annunciator as well as an alarm, and would embody in itself the combination of alarm and annunciator of this invention.

The peculiarity of this combination of watchman's time-detector and automatic fire-alarm is that the same wire and battery serve for the two things—namely, to give an alarm in case of fire, and to check the inspection-visits of the watchman from time to time; and not only that, but to test the condition of the circuit for the transmission of the fire-alarm in case of fire by the necessary use that is made of it by the watchman; and this grouping thermostats and key upon the remote parts of a circuit, and the alarm, indicator, and chronograph at or about a central point, is a novelty. It is obvious that the objects of this grouping in having the circuit serve two purposes, each auxiliary to the other, will be accomplished whether the intermediate circuit be open or closed; but for general purposes I prefer the open circuit on economical grounds, although this grouping may be made on a closed circuit, where one is already in existence, or where a person should prefer it, or may be made upon a combination-circuit one part of which is open and the other part closed.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. The combination, with an electrical chronograph-clock, adapted to receive from several circuits and record instantaneous connections of said several circuits, made by a push-button in each circuit, of the sluggish-moving annunciator R, and the sluggish-acting alarm S, and a series of thermostats arranged within each circuit, substantially as described.

2. The combination, with a watchman's electrical time-detector having a central chronograph-clock and several circuits, each adapted to be actuated by its own push-button, each with its independent chronograph-recorder adapted to make a time-record for each circuit by an instantaneous connection on the circuit, of a series of thermostats in each circuit, a series of sluggish annunciator-targets—one for each circuit—and a sluggish alarm, substantially as described.

3. The combined automatic fire-alarm system and watchman's time-detector, consisting of an electric circuit or series of electric circuits communicating with a central station, at which central station is a watchman's electrical register, alarm apparatus, and indicating apparatus, each of the electric circuits connecting with the central station having arranged upon it, at points remote from the central station, thermostats and a circuit-key, whereby the rounds of the watchman and his record of those rounds on the chronograph are made to serve as tests and records of tests of the electrical efficiency of the circuit for fire-alarm purposes, substantially as described.

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Witnesses:
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