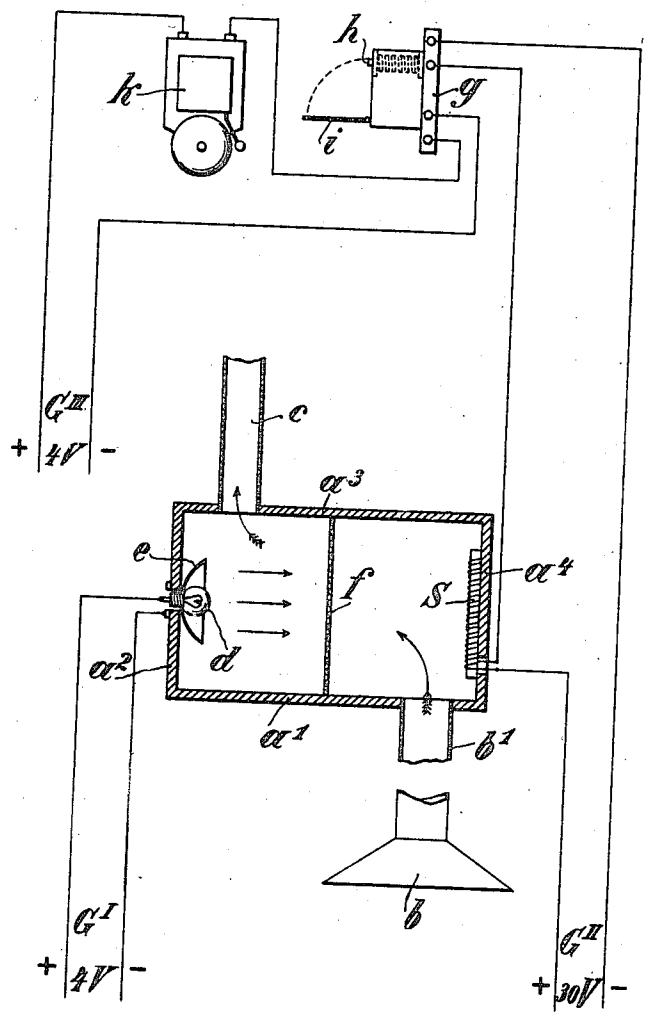
E. STEIGER.

FIRE ALARM.

APPLICATION FILED APR. 22, 1916.

1,256,740.

Patented Feb. 19, 1918.



Witnesses:-
D. F. Schilling
Thomas Hinsky

Inventor:-
Eugen Steiger
by Otto D. Schilling
his attorney.

UNITED STATES PATENT OFFICE.

EUGEN STEIGER, OF ZURICH, SWITZERLAND.

FIRE-ALARM.

1,256,740. Specification of Letters Patent. Patented Feb. 19, 1918.

Application filed April 22, 1916. Serial No. 92,959.

To all whom it may concern:

Be it known that I, EUGEN STEIGER, a citizen of the Swiss Confederation, and residing at Zurich, Switzerland, have invented certain new and useful Improvements in Fire-Alarms, of which the following is a specification.

The present invention has reference to improvements in fire alarms, and relates more specifically to a device for turning in an alarm or for directly releasing a fire extinguishing mechanism, on the formation of smoke in the room to be safeguarded.

The fire alarms or fire extinguishers now in use nearly all depend for their action upon the increased temperature of the air in the vicinity of the fire, as for instance in the electrical contact thermometer, or of the burning away of certain fusible compositions or cords which are positioned in exposed situations in the room to be protected. Another known form of device comprises a closed chamber having at one end a selenium cell and at the other end an incandescent lamp, the chamber being provided at points between said ends with an inlet and outlet pipe shaped to prevent the entry of a foreign light but allowing any smoke to easily pass through them and pass between the source of light and the selenium cell. The first two systems, especially the second, operate only at a relatively extensive rise of temperature, which obviously obtains only after the fire has gained considerable headway, and the third system only acts when very dense volumes of smoke are produced, whereas my new device functionates in the first stage of smoke generation, that is at the inception of a fire, prior to the actual bursting out of flames, when it is yet relatively easy to control the fire.

My invention will best be understood, when described with reference to the accompanying drawing, which shows diagrammatically, by way of example, one constructional embodiment of my inventive idea, partly in section.

The apparatus essentially consists of the light box, sources of electricity, an electrically controlled switch or relay, and the audible or visible alarm device proper, or an extinguisher, such as a water sprinkler system or the like.

With the light box a^1, a^2, a^3, a^4 communicates the induction tube b^1 with down-facing funnel b, and the leading-away tube or chimney c. To the wall a^2 is secured the electric miniature lamp d with reflector e, which lamp is fed by the 4 volt circuit G^I. To the opposite wall a^4, facing the lamp, is secured the selenium cell S, which is connected up through the switch or relay g to the 30 volt primary circuit G^{II}. The box is divided into two chambers by a perforated partition wall or grid f, so that the induction tube b^1 opens into the one, and the eduction tube c into the other chamber and any smoke entering the induction tube must pass through the orifice in f before it can pass to the eduction tube c. The switch, as shown by way of example, is in the form of a drop relay, whose permanently excited coil h normally retains the drop member i in the inoperative position, in contact with the electromagnet. The drop armature i is connected up to the 4 volt secondary circuit G^{III}, which latter includes an alarm or safety device of conventional construction, as shown here a bell k, and the operation is such that on lessening of the electric current flowing through the coil h, the armature is released and drops to operate the alarm or safety device in well known manner. The described device is conveniently attached to the ceiling, the funnel b pointing downwardly and the chimney c leading into the atmosphere or into a flue of the building.

If now smoke arises in the room it will be sucked up by natural draft through the funnel tube into the box and through the grid f therein, where its passage is obviously somewhat retarded and its density enhanced. The light rays emanating from the lamp toward the selenium cell now encounter these compressed smoke pencils and are dimmed thereby and then impinge on the cell with reduced brightness, with the result that the electrical resistance of the cell is enhanced, which in turn allows of less primary current to flow through the relay coil h. The attractive power of the magnet is correspondingly decreased and it is forced to let go the armature i, which drops and thereby closes the secondary alarm circuit G^{III}.

What I claim is:—

In a fire alarm, in combination, a box, a lower smoke ingress near one end and an upper smoke egress near the other end of said box, a perforated partition wall dividing the box and separating the smoke ingress

from the smoke egress, a source of light within the one thus obtained compartment, and a selenium cell in the other compartment facing said source of light, a relay operable by said selenium cell, an alarm or safety device operable by said relay, and electrical circuits respectively operatively including the several said parts.

In testimony whereof I affix my signature in presence of two witnesses.

EUGEN STEIGER.

Witnesses:
CARL GUBLER,
BERTHA C. GROB.