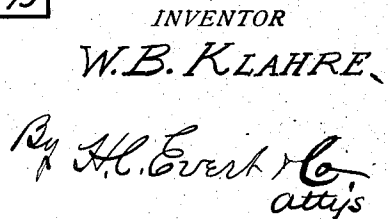


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UNITED STATES PATENT OFFICE.

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FIRE-ALARM SYSTEM.

932,399.

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To all whom it may concern:

Be it known that I, WILLIAM B. KLAHRE, a citizen of the United States of America, residing at Johnstown, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Fire-Alarm Systems, of which the following is a specification, reference being had, therein to the accompanying drawing:

This invention relates to fire alarm systems, and the invention relates more particularly to an electric fire alarm operated in connection with the telephone circuit of a central energy telephone.

My invention has for its object the provision of positive and reliable means for effecting an audible and visible signal in a central telephone station, whereby an alarm of fire can readily be observed and reported to a fire department.

Another object of this invention is to provide a device which in conjunction with a suitable thermostat, will transmit a plurality of impulses of a short duration to an annunciator or notification device.

With the above and other objects in view, which will more readily appear as the invention is better understood, the same consists in the novel construction, combination and arrangement of parts to be presently described in detail, illustrated and specifically claimed.

Referring to the drawing forming part of this specification, like numerals of reference designate corresponding parts throughout the several views, in which:—

Figure 1 is a front elevation of my improved device, Fig. 2 is a perspective view of a fan governor, Fig. 3 is an edge view of a peg contact, disk or wheel, Fig. 4 is a detail sectional view of a portion of the same, Fig. 5 is a diagrammatic view of my device as used in an electric alarm system, in conjunction with a central energy telephone circuit, and, Fig. 6 is a plan view of a portion of the structure shown in Fig. 1.

Briefly described, my device consists of a wooden case containing a small motor, two dry batteries, and a train of gears which reduces the speed of the motor, the speed of the motor being also regulated by an adjustable fan-governor on the motor shaft; this motor when started operates the train of gears to revolve a brass disk or wheel mounted in the case, which disk carries a

series of circumferentially-arranged brass pegs set in such a manner as to represent a desired number. This disk or wheel is electrically connected to one of the wires of a central energy telephone. An arm of spring brass is fastened to the side of the case and insulated therefrom, and is so positioned as to come in contact with the pegs in the aforesaid disk or wheel when the latter revolves. This arm is electrically connected through a wire to the other wire of the aforesaid telephone, and, as the device is connected to the telephone in multiple, and as the disk or wheel when not in motion is set so that the brass arm does not touch any of the pegs, the telephone circuit is not short circuited or interfered with in any way. The batteries in the case are for operating the motor and cause the revolution of the peg-carrying disk or wheel, the motor circuit being kept normally open by a thermostat or thermostats and closed by same in case of an excessive rise in temperature.

In the accompanying drawing, I have illustrated diagrammatically a thermostat adapted to be located in a building. This thermostat is of a conventional form embodying possibly a bi-metallic strip adapted to expand by excessive heat or a rise in the temperature of the compartment in which the thermostat is located and will thus complete an electrical circuit through batteries 2 and wires 3 and 4, and a motor 5, the batteries and motor being arranged within a suitable casing 6, located at any desired point. The batteries 2 are of sufficient strength to operate the motor 5, when a circuit is completed through said batteries.

Upon the armature shaft 6^a of the motor 5 is mounted a pinion 7 and a fan governor 8, the former being one of a train of gears for reducing the speed of the motor, while the governor is of any ordinary type which can be adjusted to further regulate the speed of the motor. The pinion 7 meshes with a gear wheel 9 mounted upon a shaft 10, journaled in an arm 11^a of a depending bracket 11 carried by the casing 6. Upon the shaft 10 is mounted a pinion 12 adapted to mesh with a disk or wheel 14, which is mounted upon a shaft 15 journaled in an arm 11^b of the bracket 11. The disk or wheel 14 is provided with a plurality of circumferentially arranged screw threaded openings 16 and in some of said openings are detachably mounted

ed pegs 17, the object and arrangement of which is fully set forth above.

In a central energy telephone system, as is well known, the central station has on its switch board a small incandescent electric lamp for every line on the board, except in the case of a party line, in which case, one lamp serves for all the parties on the line. It is also equipped with a night bell which can be switched in or out at will. When a subscriber raises the receiver on his telephone, the circuit is closed, and the miniature lamp over his number becomes lighted, and if the call comes at night, and the operator has the night bell cut in, it will ring at the same time the lamp is burning. If the operator does not answer when called, it is customary to rattle the receiver hook which causes the lamp to flicker and attract the attention of the operator.

In Fig. 5, I have illustrated a central energy telephone circuit consisting of a lamp or lamps 18 as being in circuit with an electric night or alarm bell 19, a telephone 19^a and a battery 20, these elements being connected to the transmitter by wires 21 and 22. The wires 21 and 22 are connected to the ordinary wires of a telephone, employed to connect a telephone with the "central" station, as shown in Fig. 1. The wire 21 is connected to a binding post 23, which in turn is connected by a wire 24 to the disk or wheel 14, preferably by a contact arm 24^a, as shown in Fig. 6. The wire 22 connects with a binding post 25, which connects with a spring brass arm 26, carried by and insulated from the case 6, said arm contacting consecutively with the pegs 17 of the disk or wheel 14, as the latter is rotated. It is customary to provide a switch 19' by means of which the signal bell 19 may be cut out at any time desired. The pegs 17 are arranged in the ordinary manner of devices of this character, as for instance, for the purpose of illustration, the pegs are grouped to represent a call-box designated as "two-four-five" or two hundred forty-five, that is to say, a group of two of the holes occupied by pegs then a vacant hole and then four of the holes occupied by pegs and then another vacant space and then five of the holes occupied by pegs.

Since the current of the batteries 20 intermittently passes through the disk or wheel 14, I have found it necessary to insulate the wheel 12 from the shaft 10, as at 27, it being understood that the binding posts are suitably insulated from the casing of the device.

Should the thermostat 1 be located in a compartment or station known as "two-four-five," the device to be used in connection with the thermostat is set by arranging the pegs 17 in the openings 16 in three groups, shown, one group of two pegs, one of four pegs, and another of five pegs. A plurality

of thermostats can be used at each station, said thermostats being placed in different rooms or parts of rooms.

Operation: When the thermostat is actuated by excessive amount of heat, a circuit 70 is immediately closed through the batteries 2, thus starting the motor 5, and through the train of reduction gears 7, 9, and 12, imparts a rotary movement to the disk or wheel 14. As the wheel or disk 14 revolves, the pegs 17 make and break contact with the arm 26, and complete circuits of short duration through the batteries 20, lamp or lamps 18 and bell 19, producing an audible signal and a visible signal, the latter being in the form of flashes. The telephone central operator by observing the number of flashes can readily ascertain the number of the building or compartment in which the thermostat is located, and can forward the same to a fire department. The flashes of the lamp or lamps 18 are somewhat similar to the "Morse" system, in so much that a sufficient interval occurs between the groups of flashes to distinguish the different numbers of the alarm. After the alarm has been repeatedly sounded, a switch 28 in circuit with the battery 2 can be opened to break the circuit, said switch normally remaining closed.

A particular feature of my invention resides in the fact that I use the ordinary telephone circuit thereby incurring no additional expense in maintaining separate wires. In this manner I provide an unfailing night watchman for fire, at a small additional cost above the regular telephone rates, and without interfering with the day usefulness of the telephone.

Lamp 18 is the regular telephone call signal, and the bell 19, and batteries 20, are the ones regularly in use at the exchange, consequently it will be observed that all that is necessary to install my device is to connect same up by the wires 21 and 22 to the telephone wires. If the lamp at the exchange were to light up and remain lighted, the operator would answer the call, and, under ordinary conditions would probably conclude the line was short circuited, but when my device is installed on a line, and the transmitter-mechanism starts to work due to a circuit having been closed through the motor 5, the lamp starts to flash, and the operator knowing the device is installed on that line, will be informed that there is a fire, and can immediately notify the nearest fire company; if the device be set to signal numbers as herein illustrated, the operator will know at once what company to call.

It is thought from the foregoing description that my improved fire alarm device and system will be readily understood, and I wish it to be understood that various minor changes in the material, size, arrangement

and minor details of construction may be resorted to without departing from the spirit and scope of the invention.

What I claim and desire to secure by Letters Patent is:—

10 In a fire alarm system, a motor, a circuit therefor, a pinion driven by the motor, a transmitter in the motor circuit, a disk having peripheral teeth, said disk being formed
15 with a plurality of circularly arranged apertures disposed transversely of the teeth, pre-arranged contact pins removably secured in the apertures, a casing having top, bottom and side walls inclosing the motor and disk,
a depending bracket operatively supporting the disk and pinion, said bracket being

formed T-shaped and secured by a right angular end to the top wall of the casing and by a second right angular end to one of the side walls of the casing, insulation for the second right angular end, a terminal connected with the bracket, a spring contact arm having a right angular end secured thereby to the said side wall and engaging at its free end the contact pins, and a terminal for the contact arm.

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

WILLIAM B. KLAHRE.

Witnesses:

A. L. GRAHAM,
HARRY H. KITTO.