(No Model.)

G. W. MacKENZIE.

ELECTROPNEUMATIC ALARM.

No. 587,998. Patented Aug. 10, 1897.

Fig. 2.

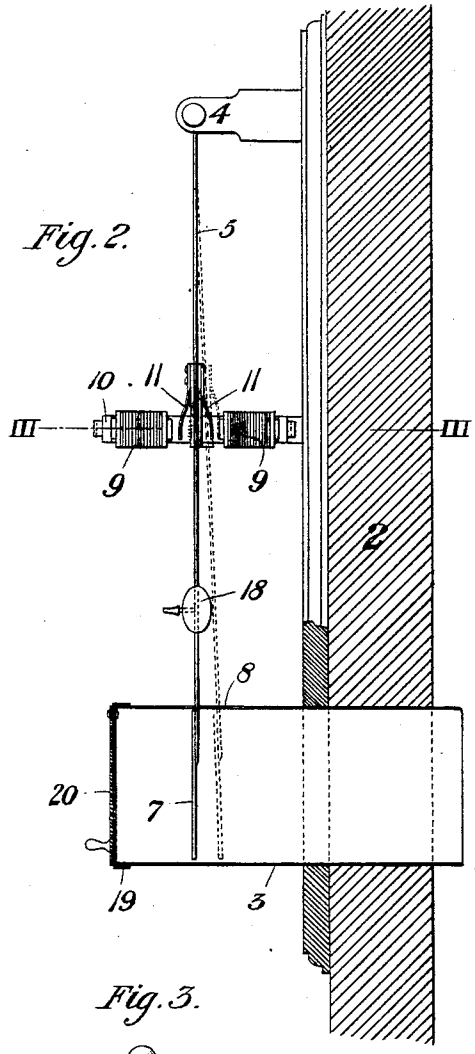


Fig. 1.

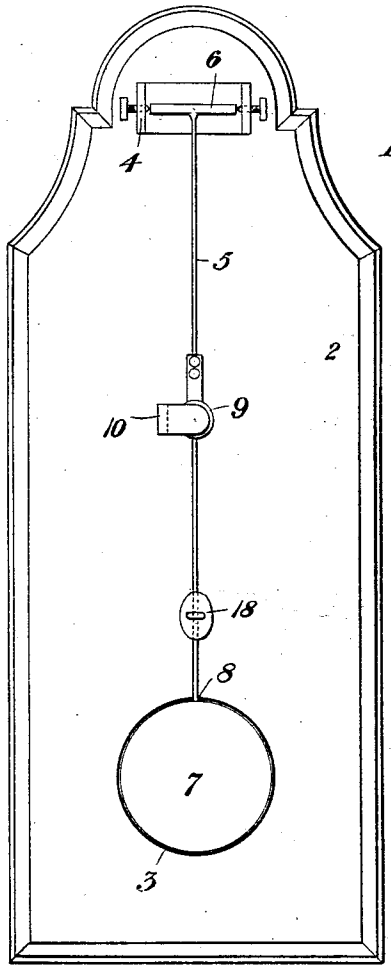


Fig. 3.

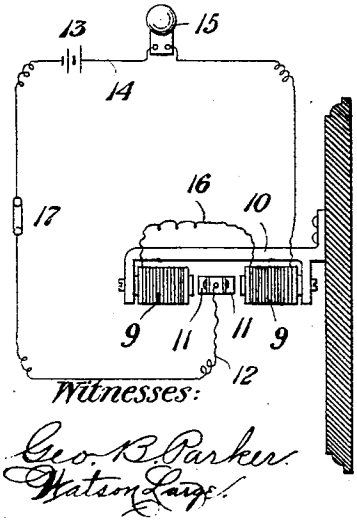
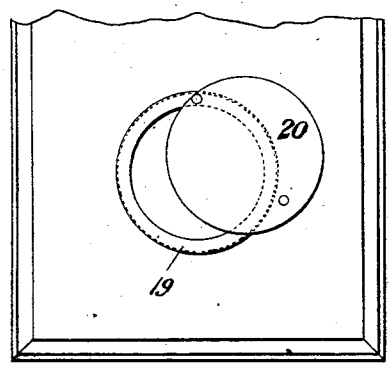


Fig. 4.



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by O. M. Clarke
his attorney.

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UNITED STATES PATENT OFFICE.

GEORGE W. MACKENZIE, OF BEAVER, PENNSYLVANIA.

ELECTROPNEUMATIC ALARM.

SPECIFICATION forming part of Letters Patent No. 587,998, dated August 10, 1897.

Application filed April 15, 1897. Serial No. 632,357. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. MACKENZIE, a citizen of the United States, residing at Beaver, in the county of Beaver and State of Pennsylvania, have invented or discovered a new and useful Improvement in Electropneumatic Alarms, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a face view of my device. Fig. 2 is a central vertical section through a wall, showing the alarm in position. Fig. 3 is a cross-section on the line III III of Fig. 2. Fig. 4 is a face view of the draft-tube, showing the controlling-door.

My invention consists of an alarm designed to operate by atmospheric disturbance, and is embodied in the mechanism shown in the accompanying drawings and described in the following specification.

Referring to the drawings, 2 is a base-board adapted to be placed against or upon a partition-wall, having in its bottom a transverse draft-tube 3, which extends out beyond the face of the board and also backwardly through the partition into the adjoining room. It is obvious that by extending the tube so as to connect with any suitable opening other than a room—such as a wall air-space, chimney-flue, or register—that the device may be made to operate equally well with a single room—as, for instance, a banking-room—and such application and operation are clearly within the scope of my invention. This tube, therefore, constitutes a communicating passage, and when the ends are uncovered will allow air to pass freely in either direction, as induced by any cause in either room, such as opening of a door or window, or by the combustion of a fire, or any other cause tending to disturb the atmosphere or change the pressure.

At a considerable distance above the tube is located a pivotal bearing 4, in which is supported the upper end of a pendulum-rod 5, having a cross-bar 6, and at the bottom of the rod is secured a disk or diaphragm 7 of light metal or other suitable material, a longitudinal slot 8 being made through the top of the tube 3 to admit of the swinging of the rod 5.

The disk or diaphragm 7 neatly fits within the tube 3 with slight clearance, and when so suspended in position a very slight pressure on either side will cause it to vibrate, so that if the pressure of the air on either side is changed the draft immediately induced through the tube will effect the disk and throw it away from the perpendicular position, as indicated in dotted lines in Fig. 2.

For the purpose of utilizing such movement to sound an alarm I have mounted on the base-board, on each side of the rod, at any convenient point between the pivotal support and the disk, two electromagnets 9 9, suitably supported in brackets 10, and to the rod are secured contact-springs 11 11, which will come into contact with either one of the magnets under a very slight movement of the disk and rod.

To the springs and in electrical contact therewith is connected a terminal wire 12 from the battery 13, the other wire 14 leading through a bell 15 and to one of the magnets 9, the other magnet being connected in series therewith by wire 16.

It will be seen that when the rod is deflected in either direction, as described, electrical contact will be made with one of the magnets through spring 11, closing the circuit, ringing the bell, and also energizing the magnet, so that the spring is held against it, and the bell will continue to ring until the circuit is broken, which may be done by means of a key or switch 17, inserted at any convenient point in the line 12.

An adjustable regulating-weight 18, fitted with a thumb-screw so as to be secured at any point on the rod, assists in controlling the swing of the rod, and its movement may be regulated thereby according to the strength of draft.

At either end the tube 3 is preferably covered by a cap 19, the front cap having a central opening covered by a swinging door 20, which may be placed in any position of opening, as shown in Fig. 4, thus controlling the admission or exit of air, and the back cap, when in use, is removed.

My device is applicable as a burglar or fire

alarm and is very sensitive and efficient in operation and simple in construction, so that it may be installed and operated by those unfamiliar with electricity.

What I claim is—

1. A draft-tube, a diaphragm within the tube, a supporting-rod, electromagnets in proximity to the rod for attracting the rod magnetically when the magnets are energized by a current established by contact with the rod, and an alarm device in circuit with the magnets, substantially as set forth.

2. In combination with a pivoted rod supporting a diaphragm within a draft-tube provided with contact-terminals secured to the rod: an open circuit adapted to be closed by one of the rod-terminals and an electromagnet in series with the circuit adapted to be energized and to magnetically attract the rod when the circuit is closed, substantially as set forth.

3. In combination with a pivoted rod supporting a diaphragm within a draft-tube, provided with contact-terminals secured to the rod: an open circuit adapted to be closed by one of the rod-terminals, an electromagnet for attracting the rod magnetically when the magnet is energized by a current established by contact with the rod through the terminal, and an alarm device in series with the circuit, substantially as set forth.

In testimony whereof I have hereunto set my hand this 18th day of March, 1897.

GEORGE W. MACKENZIE.

Witnesses:
C. M. CLARKE,
GEO. B. PARKER.