No. 880,691. PATENTED MAR. 3, 1908.

T. NORPOTH.

ELECTRIC ALARM.

APPLICATION FILED APR. 10, 1907.

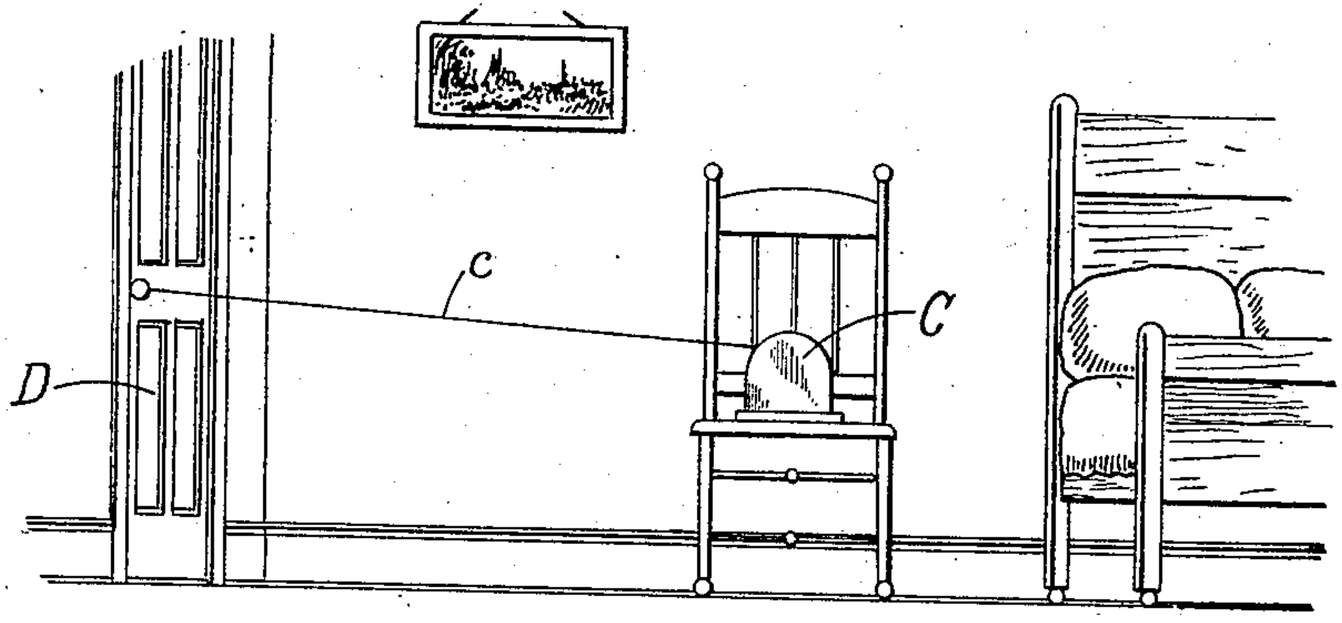

FIG. 1.

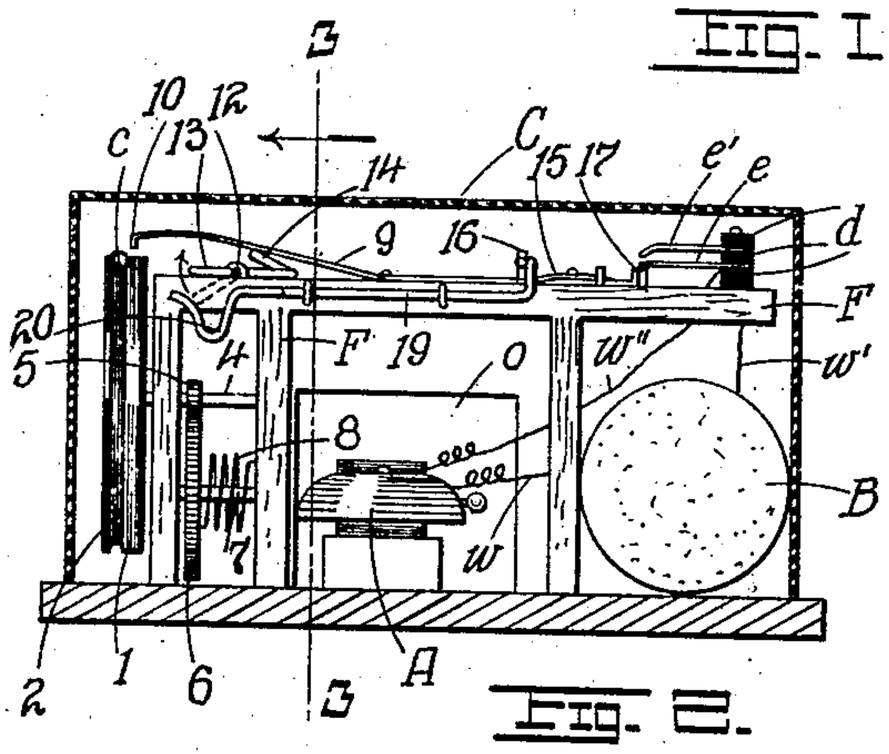

FIG. 2.

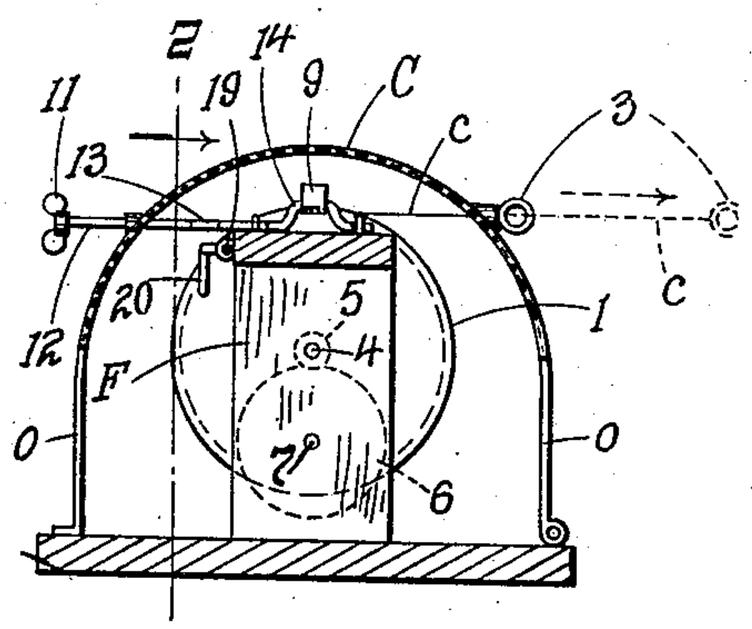

FIG. 3.

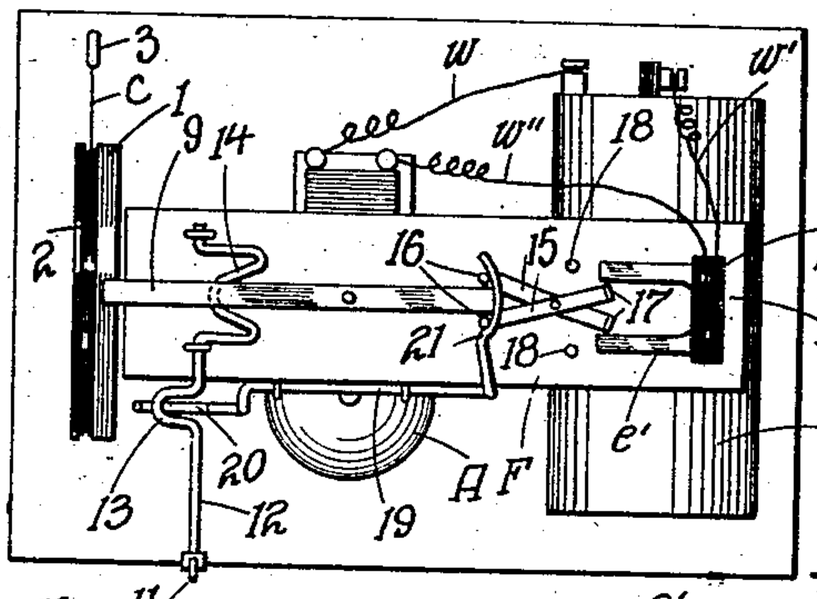

FIG. 4.

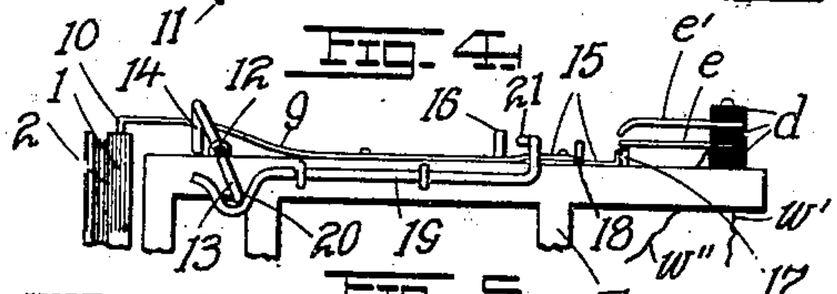

FIG. 5.

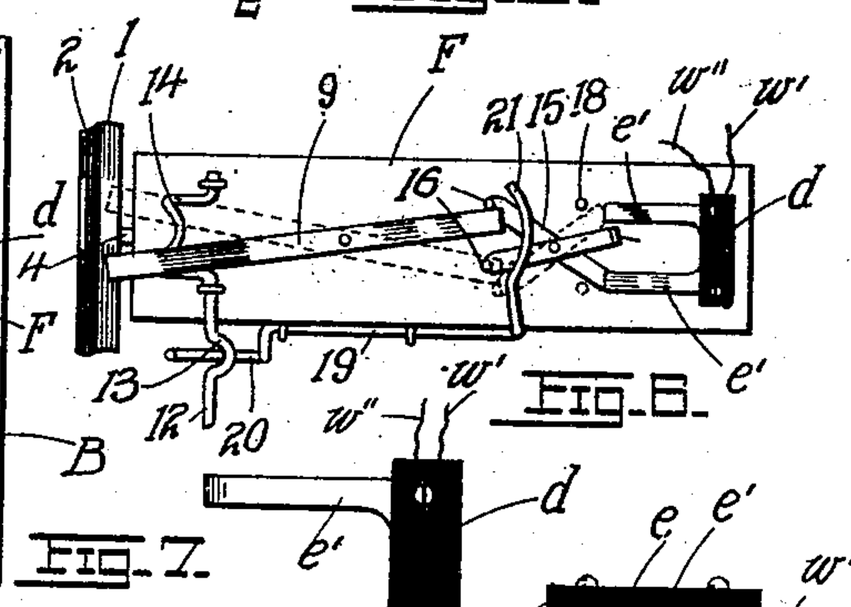

FIG. 6.

FIG. 7.

FIG. 8.

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ELECTRIC ALARM.

No. 880,691. Specification of Letters Patent. Patented March 3, 1908.

Application filed April 10, 1907. Serial No. 367,410.

To all whom it may concern:

Be it known that I, THEODOR NORPOTH, citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Electric Alarms, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in electric alarms; and it consists in the novel details of construction more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a perspective of a bed-room showing the application of my invention; Fig. 2 is a vertical longitudinal section on the line 2—2 of Fig. 3 taken through the casing of the alarm, the operating parts being shown in side elevation and in disengaged position; Fig. 3 is a vertical cross section on the line 3—3 of Fig. 2; Fig. 4 is a top plan of Fig. 2; Fig. 5 is a side elevation of the parts shown in Fig. 2 rocked to operating position; Fig. 6 is a top plan of Fig. 5; Fig. 7 is a top plan of the electrodes or poles, Fig. 8 is a side elevation of Fig. 7; and Fig. 9 is a rear view of Fig. 7.

The object of my invention is to construct an electric alarm which will respond at the least provocation, being extremely sensitive; one which supplies its own current to the bell or annunciator entering as an element of its construction; one which can be coupled to any movable object such as a door, a door-knob, window-sash, a key, the slightest displacement of which will at once close an electric circuit and sound an alarm.

The advantages of the invention will be better apparent from a detailed description thereof which is as follows:

Referring to the drawings, C, represents a box or casing having openings *o o* for the escape of sound, the casing serving to house the operating parts of the mechanism. Mounted in the casing is a frame F, at one end of which is mounted a disk 1 having a peripheral groove 2 for the winding of a cord or wire *c* which is conducted through an opening in the casing and may terminate in a ring 3 by which the cord may be seized. The disk 1 is carried at the end of a shaft 4 on which is mounted a pinion 5 which meshes with a gear wheel 6 on a parallel shaft 7, the latter shaft being encompassed by a spring 8 coiled about it, and having one end secured to the frame and the opposite end to the gear-wheel 6, whereby upon drawing on the cord and rotating the disk 1, the spring 8 will be wound up, and upon release of the cord, the spring will automatically wind the cord back on the disk. Such an arrangement is very common in certain classes of tape-measures, and no claim is made specifically thereto. Located within the casing is a dry-battery B and an electric bell or annunciator A, one wire *w* leading from the battery to the bell, another wire *w'* leading from the battery to one of the terminals or poles *e* of the circuit, the second pole or terminal *e'* having a return wire *w''* leading back to the bell. In the event the terminals or poles *e*, *e'*, (normally separated to keep the circuit broken) are brought together, the circuit will be closed and the bell will ring.

In my present improvement the electrodes *e*, *e'*, are substantially U-shaped (Figs. 7, 8, 9) being spaced by insulating blocks *d*, *d*, *d*, the terminals of each arm of the upper electrode *e'* being bent downward (Fig. 8), and the arms of the lower electrode *e* being springy, and normally tending to spring away from the ends of the opposite arms *e'*. So that by a slight upward pressure on the arms *e*, a contact is immediately effected and the circuit is closed.

My invention is specially directed to the features by which the circuit is closed and the details of these may be described as follows: Mounted pivotally on top of the frame and pivoted near its middle is an oscillating spring bar or member 9 the forward portion thereof being bent upwardly and terminating in a tooth 10, which when the parts are set, is allowed to engage the edge of the disk 1 (Fig. 5). Mounted transversely across the frame beneath the upturned spring end of the member 9, and adapted to be actuated by a thumb-piece or wing 11 on the outside of the casing is a rock-shaft 12, said shaft having formed thereon a crank-arm 13, just beyond the frame and to one side thereof, and a saddle 14 immediately over the frame, the saddle being substantially V-shaped, that is to say having converging sides, the base of the saddle being too, removed slightly to one side of the axis of rotation of the shaft 12. The plane of disposition of the saddle 14 too, is at an angle to the plane of disposition of the crank-arm 13. It thus necessarily follows that when the shaft has been rocked to bring the crank 13 into a horizontal plane, the saddle 14 will

point upwardly and force the superposed end of the member 9 upwardly so that the tooth 10 becomes disengaged from the disk 1 (Fig. 2); and when the shaft 12 is rocked so as to depress the crank 13 (Fig. 5), a corresponding depression of the saddle 14 results, and allows the arm of the member 9 to spring toward the frame, whereupon the tooth 10 will frictionally engage the periphery of the disk 1. When the saddle 14 is rocked upwardly as shown in Fig. 2, the spring member 9 bears against it with some force, the inclined sides of the saddle guiding the arm toward the base or bend of the saddle, so that when the parts are finally lowered or rocked to the position shown in Fig. 5, the member 9 occupies a position truly parallel to the axis of the frame as shown in Fig. 4, that is to say said member is not deflected to one side or the other on account of any disturbance or rotation of the disk 1, so that until the disk is actually disturbed, the member 9 occupies a position at right angles to the axis of the rock-shaft 12, and also at right angles to the plane of rotation of the disk 1. Suppose however, that an unauthorized person in an attempt to open a door D, to a sleeping apartment draws on the cord *c* so as to rotate the disk 1 in one direction, or by clipping the cord *c*, and thus suddenly releasing the disk, the latter would be rotated under the action of the winding spring 8 in the opposite direction. Then, since the tooth 10 was in forcible engagement with said disk, the slightest turn of the latter, would instantly oscillate the member 9 from its central or normal position, in one direction or the other, according to the direction in which the disk 1 had been turned under the disturbing action referred to, and the member 9 would then assume either the full position or dotted position shown in Fig. 6. The member 9 when thus deflected from its normal position serves to effect contact between the electrodes *e e'*, as follows: On a central line between the arms of the U-shaped electrodes *e*, *e'*, are pivoted about a common axis, a pair of circuit-closing levers 15, 15, having terminal pins 16 at the ends adjacent the member 9, the latter in its lateral deflections impinging against the pins 16 and swinging the levers 15 sufficiently to force their opposite ends under the resilient electrodes *e*. The levers 13 terminate in wedge-shaped or inclined heads 17 so that they better pass under the electrode *e*, and force the latter into contact with its opposite electrode *e'* (Fig. 8). To prevent the levers 15 from passing beyond the electrodes in any sudden deflection of the member 9, I provide limiting pins 18 by which their movement in one direction may be arrested. Before any deflection of the member 9 takes place, the levers 15 are sufficiently closed to withdraw their ends 17 from under the electrodes *e*, so that the circuit remains broken; but the moment one or the other of the levers is deflected to force its end 17 under the electrode *e*, the circuit closes and an alarm is immediately sounded, (Fig. 8).

Mounted on the side of the frame, and adapted to reciprocate longitudinally or in a line parallel to the axis of rotation of the disk 1, is a brake-bar 19 terminating at one end in an open loop or hook 20 whose sides the crank 13 is adapted to engage so that when the shaft 12 is rocked to swing the crank 13 to releasing position (Fig. 2) the crank engages the loop on one side and pulls the bar 19 after it; and when rocked to setting position the crank engages the opposite side of the loop 20 and pushes the bar 19 before it (Fig. 5). Thus with the rocking of the shaft 12, the bar 19 is moved in one direction or the other. The opposite end of the bar 19 terminates in a brake-arm 21 which is bent up over the frame from the straight portion of the bar 19, said arm 21 for the released position of the parts (Figs. 2, 4) frictionally engaging the pins 16 of the levers 15, and thus serving as a lock or brake against any accidental diturbance of the said levers, and thereby avoiding the sounding of an alarm except when wanted. When the parts are "set" for operation, the brake arm 21 will of course be automatically forced sufficiently away from the pins 16 (Figs. 5, 6) to allow the circuit closing levers 15 sufficient movement to wedge themselves under the electrodes *e*, and close the circuit.

The operation is apparent from the foregoing, but in brief may be summarized as follows: The operator rocks the shaft 12 so as to throw the crank 13 to the position indicated in Figs. 4 and 5. This allows the tooth 10 of the flexed spring end of the member 9 to engage the disk, and the brake-arm 21 is disengaged from the pins 16, allowing the levers 15 to be oscillated with any oscillation of the member 9. Should a burglar attempt to enter the room, by either drawing on the cord *c* in opening the door, or by turning the door knob sufficiently to permit the disk 1 to rotate in either direction, the disk 1 will turn, and deflect the member 9, which in turn will force one or the other of the levers 15 under the electrode *e*, and close the circuit. When the apparatus is not in use, the shaft 12 is rocked to the position indicated in Figs. 2, 4, in which movement the tooth 10 is lifted off the disk 1, and the levers 15 are automatically closed, the curved contour of the brake-arm 21 engaging the pins 16, forcing the levers 15 to a closed or inoperative position as clearly obvious from the drawings (Fig. 4). The brake-arm 21 thus serves not only to fold or close the levers 15, but to bear against the pins 16 thereof so the levers may not become accidentally displaced and sound an alarm when not needed. When the saddle 14 is down, it affords sufficient room for the

necessary lateral movement of the member 9 in the event of rotation of the disk 1. When the saddle is turned up, the inclined sides thereof serve to "right" the member 9, that is to say, they serve to centralize its position, or cause it to assume a parallelism with the axis of the frame F or a line parallel to the axis of rotation of the disk 1. Obviously, as an alarm it may be used for a variety of purposes, and its application need not be in any wise restricted for detecting burglars. In lieu of the winding spring 8, a weight may be substituted as fully understood in the art.

Having described my invention, what I claim is:

1. In an electric alarm, a normally open electric circuit, an annunciator or bell in the path of the circuit, a rotatable disk, an oscillating bar having one end in frictional engagement with the disk, and actuated by said disk, and intermediate circuit-closing devices interposed between the bar and circuit for closing the latter upon rotation of the disk, substantially as set forth.

2. In an electric alarm, an electric circuit having its terminals or electrodes spaced a suitable distance apart, an annunciator or bell in the path of the circuit, a spring-controlled disk adapted to be connected to any object upon the disturbance of which rotation will be imparted to the disk, an oscillating member having one end frictionally engaging the disk and actuated by the disk, and intermediate circuit-closing devices interposed between said member and the separated electrodes for forcing the electrodes together and thereby closing the circuit, upon rotation of the disk in either direction, substantially as set forth.

3. In an electric alarm, an electric circuit having normally separated electrodes, an annunciator in the path of the circuit, a rotatable member, an oscillating bar pivoted between its ends, one arm of said bar being resilient or springy and adapted to normally bear against the rotatable member, a rock-shaft disposed transversely to the axis of rotation of the rotatable member, a yoke having converging sides formed on the shaft, the base of the yoke being removed to one side of the axis of the rock-shaft, said yoke serving to force the spring-arm out of engagement with the rotatable member with the rocking of the rock-shaft in one direction, a pair of pivoted circuit-closing levers adapted to be actuated by the oscillating bar upon deflection thereof with any rotation of the rotatable member, the circuit-closing levers being provided with formations adapted upon deflection of the oscillating bar to be forced against one of the electrodes of the circuit and force the latter into contact with its opposite electrode, and thus close the circuit, substantially as set forth.

4. In an electric alarm, an electric circuit having normally separated electrodes, an annunciator in the path of the circuit, a rotatable spring-controlled disk having a peripheral groove for a winding cord, an oscillating bar pivoted between its ends, one arm thereof being resilient and provided with a terminal tooth normally engaging the periphery of the disk, a transverse rock-shaft disposed beneath the spring arm of the oscillating bar, and having a saddle formed thereon with converging sides engaging the spring arm, the base of the saddle being disposed to one side of the axis of rotation of the rock-shaft whereby upon rocking the shaft in one direction the saddle will force the spring-arm away from the rotatable disk, a pair of circuit-closing levers pivoted about a common center and provided at one end with pins for engaging the adjacent end of the oscillating-bar, and having wedge-shaped heads at the opposite ends for engaging the adjacent electrodes of the open circuit, a reciprocating brake-bar terminating in a transversely disposed curved brake-arm adapted to engage the pins on the circuit-closing levers for a movement of the brake-bar in one direction, and intermediate formations between the brake-bar and rock-shaft for shifting the former to releasing position for the set or engaged position of the spring arm and rotatable disk, and for shifting the brake-arm to engaging position for a released position of the spring-arm, whereby the circuit-closing levers are swung out of contact with the electrodes by the movement of the curved brake-arm against the pins carried by said levers, and whereby under the action of the converging sides of the saddle, the oscillating bar is caused to assume a central position or in line with the axis of rotation of the disk, the parts operating substantially as, and for the purpose set forth.

5. In an electric alarm, a normally open electric circuit, an annunciator in the path thereof, a rotatable member, an oscillating bar pivoted intermediate its ends and having one arm engaging said member and adapted to be deflected by the latter upon rotation of the member in either direction, and circuit-closing devices actuated by the deflection of the bar, substantially as set forth.

6. In an electric alarm, a normally open electric circuit, an annunciator in the path thereof, a rotatable member, an oscillating bar pivoted about a fixed center and normally disposed parallel to the axis of rotation of the rotatable member, and having a portion engaging said member, the latter being adapted to deflect said bar from its normal position upon rotation of the member in either direction, and circuit-closing devices adapted to be actuated with any deflection of the bar aforesaid, substantially as set forth.

7. In an electric alarm, an electric circuit,

an annunciator, a rotatable member having a cord wound thereon for effecting electric contact upon disturbance of the cord, and means for effecting a partial rewinding of the cord upon release thereof during such disturbance, and a full rewinding thereof after contact has been effected, whereby the cord is restored to its fully wound position on the member, substantially as set forth.

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

THEODOR NORPOTH.

Witnesses:
EMIL STAREK,
JOS. A. MICHEL.