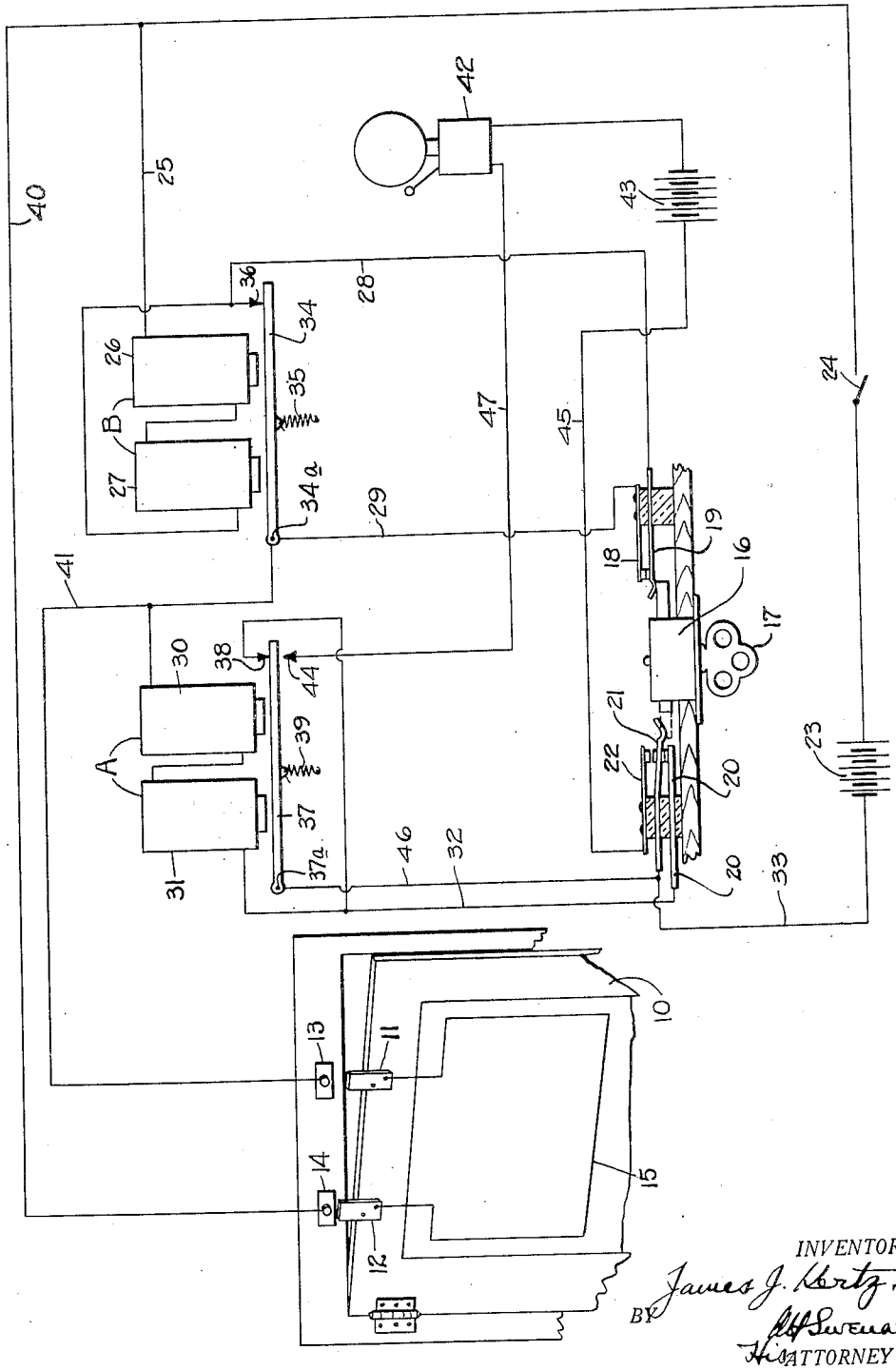
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BURGLAR ALARM SYSTEM

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BURGLAR-ALARM SYSTEM

Application filed February 8, 1929. Serial No. 338,355.

This invention relates to burglar and similar signal or alarm systems responsive to movement of a member such as a door or window to change in circuit connections through such member. An object is to simplify such a signal system and insure greater safety against accidental signal operation. Another object is to insure continued actuation of the signal once it has been set off. Another object is to enable the signal control mechanism to be set in readiness regardless of whether the door controlling the signal is opened or closed.

Specifically these objects are accomplished by the provision of an electrically operated signal responsive to movement of a door or other member. There is also provided a switch in the signal circuit with means for releasing the switch and for holding the switch in a position to guard against the signal actuation. A control member is mounted in the office of the factory in which the system is applied for example, or in a central office, and in one position the control member places the signal in readiness for actuation while in its other or day position it makes the signal impossible of actuation. While the signal, when once set off cannot be stopped by an adjustment of any connections around the door, nevertheless, an actuating relay for the signal may be brought into readiness and the signal shut off by said control mechanism regardless of whether the door is open or closed.

The single figure in the drawing is a wiring diagram illustrating the construction and operation of the alarm system.

In the embodiment illustrated, the signal is applied to a door 10 having contacts 11 and 12 arranged to engage other contacts 13 and 14 on the door frame when closed. The conductor 15 connecting the contacts 11 and 12 is preferably shaped to conform to the type of door used, for example, if the door has one or more panels which would be likely to be removed, it would be desirable to have the conductor 15 pass across each panel so in event of removal of any one panel, the circuit would be open in the same manner as if the entire door were opened.

The control mechanism which is preferably placed in the room occupied by the night watchman when the system is installed in an office building, includes a shiftable lock-bolt 16 actuated by a key 17. When the bolt is moved to the right as in the full-line position illustrated, the spring contact arm 19 engages the yieldable contact arm 18 to close a circuit through these arms or terminals. In this position the spring contact arm 21 engages the yieldable contact arm 20 for closing the circuit between these arms or terminals, and on shifting the lock-bolt 16 to the left, as in the broken line position illustrated, the spring contact arm 21 is raised for engagement with the yieldable arm 22 and breaks the connection with the arm 20. When the bolt 16 is in its day position as illustrated, and switch 24 is closed, current from the battery 23 passes through the switch 24 to the conductor 25 into the electro-magnets 26 and 27 energizing the relay B, through the conductor 28 thence through the closed connection formed by the arms 18 and 19, through the conductor 29 to the electro-magnets 30 and 31 of the relay A, thence through the conductor 32, through the connection formed by the arms 20 and 21 and the conductor 33 to the battery 23. On the energizing of relay B its armature 34, which is pivoted at 34^a, is drawn up against the action of the spring 35 to close the circuit between the armature 34 and the contact 36, thus permitting current to pass directly into the relay A without having to pass through the arms 18 and 19. Similarly when the relay A is energized, its armature 37, which is pivoted at 37^a, is drawn counter to a spring 39 to close a circuit through its armature and contact 38. When the relay A is thus energized, the contact formed by the arms 20 and 21 is short-circuited and the lock-bolt 16 may be shifted to the left into its night position without de-energizing relay A. From the foregoing description it will be seen that the relay A is energized regardless of whether the door 10 be open or closed. In the event the door is closed, current for energizing relay A will pass from the battery 23, through conductor 25, conductors 40 and 41, electro-

magnets 30 and 31 and back to the battery. In this last case, relay B is short-circuited by the door connections and the wires 40 and 41 so that insufficient current passes through it to hold up its armature when the door 10 is closed and the lock-bolt 16 is moved into its day position.

After the lock-bolt 16 has been shifted to the left into its night position, contact is made between the arms 21 and 22 so that as soon as the door 10 is opened and the relay A de-energized, its armature 37 engages contact 44 to ring the bell 42 or to actuate any other signal. The bell circuit is from the battery 43 through the conductor 45, contact arms 21 and 22, conductor 46, armature 37, contact 44, conductor 47, bell 42 and back to battery 43. It will also be seen that it will be impossible to stop the bell ringing by reclosing the door or otherwise endeavoring to close the circuit as before, because the circuit through the relay A is always open when the bolt is in its night position and after the armature 37 is disengaged from contact 38.

When the lock-bolt 16 is shifted to the right into the day position, whether or not the armature 34 is drawn up depends on whether or not the circuit through the door and the conductors 40 and 41 is closed so that movement or non-movement of the armature 34 may serve as an indicator or signal as to the condition of the door, that is, whether or not it is open.

Since the day position of the control lock requires current consumption from the battery 23, the switch 24 may be provided to be opened and dispense with the unnecessary current consumption during the day when the signal system is not to be used, although, of course, it should be closed before the lock-bolt 16 is removed from its day position. After the signal has been set off by de-energizing relay A, it is necessary to shift the lock-bolt 16 from its night position to its day position in order to open the signal circuit through the contact arms 21 and 22 and stop the bell ringing.

In many cases the alarm signal can be advantageously positioned on the outside of a building. The switches, the relay and the interconnecting circuit, exclusive of the alarm itself, may all be encased within a tamper-proof box, either adapted to be locked by the lock 16 or by a separate lock.

The switch 24 is opened only when it is desired to render the system inoperative and is, of course, to be suitably concealed, so as to prevent it being tampered with by strangers.

Various changes from the details of construction shown herein within the scope of the appended claims may be made without departing from the spirit of my invention.

Having thus described my invention, what I claim and desire to obtain by United States Letters Patent is:

1. The combination with a signal, of a source of current, circuit connections therefor, a spring closed electro-magnetically opened switch in said circuit, a manually operated switch also in said circuit, a protective circuit including electro-magnetic relays controlling the electrically operated switch in the signal circuit, a second spring closed switch in a relay circuit, a second relay for closing the circuit through the first relay, a member movable to one position to operate said second spring closed switch for closing the circuit through both relays and opening both switches in the signal circuit, the armature of said second relay shunting said second spring closed switch when said relay is energized, and when moved to another position for closing the manually operated switch in the signal circuit and opening the spring controlled switch in the circuit of the first relay whereby the signal circuit may be closed on de-energizing the first relay on rupture of said protective circuit.

2. The combination with a signal, of a source of current, circuit connections therefor, a spring closed electro-magnetically opened switch in said circuit, a manually operated switch also in said circuit, a protective circuit including electro-magnetic relays controlling the electrically operated switch in the signal circuit, a spring closed switch in the relay circuit, a second relay for closing the circuit through the first relay, a member movable to one position to operate said second spring closed switch for closing the circuit through both relays and opening both switches in the signal circuit, the armature of said second relay shunting said second spring closed switch when said relay is energized, and when moved to another position for closing the manually operated switch in the signal circuit and opening the spring controlled switch in the circuit of the first relay whereby the signal circuit may be closed on de-energizing the first relay on rupture of said protective circuit, and a door controlled switch in shunt with said second relay.

Signed at New York, in the county of New York, State of New York, this 4th day of February, 1929.

JAMES J. KERTZ.