March 30, 1926. 1,579,150

O. SANDWEISS

ALARM APPARATUS

Filed April 4, 1921 2 Sheets-Sheet 1

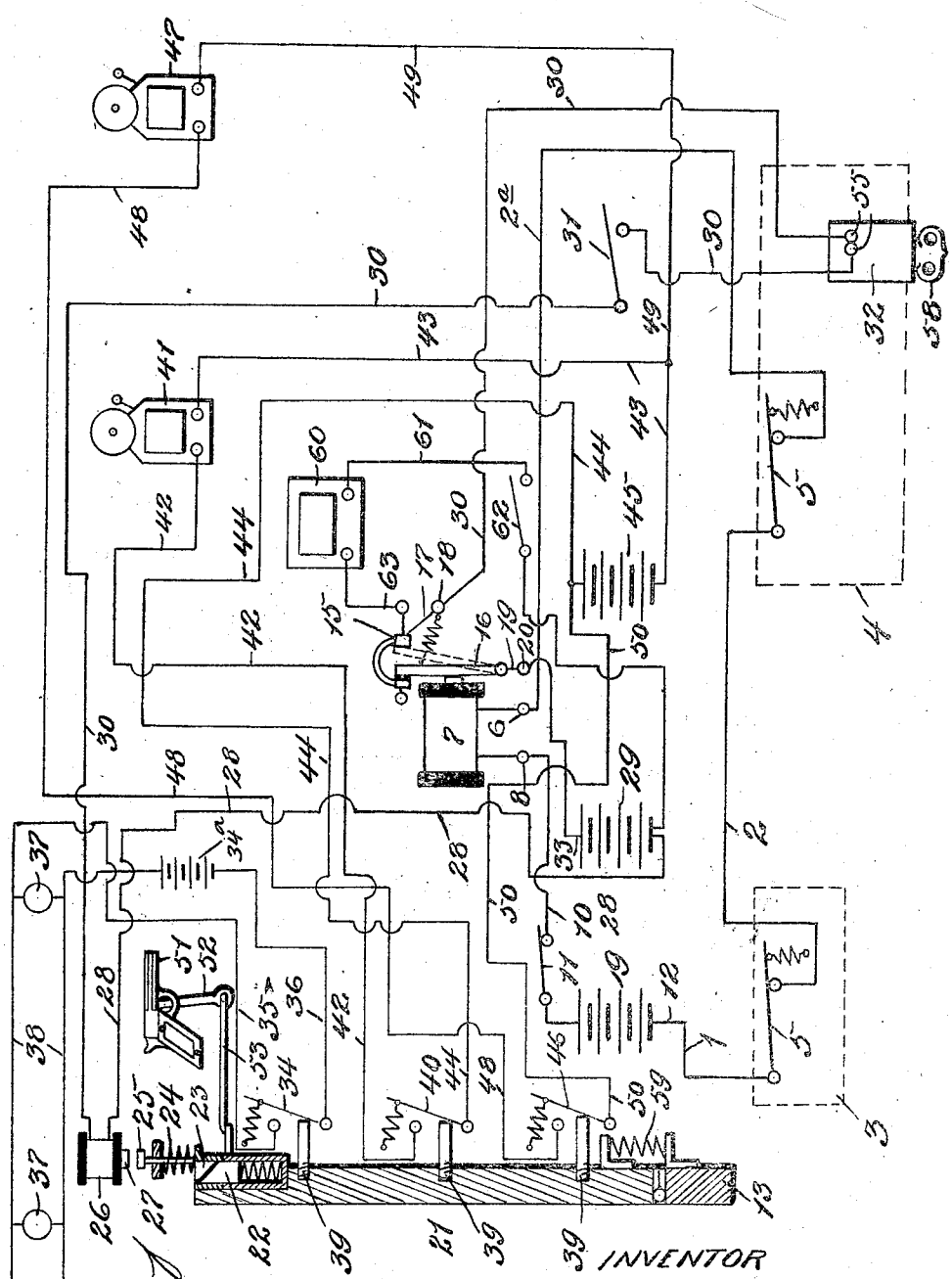


Fig. 1

INVENTOR

OSCAR SANDWEISS,

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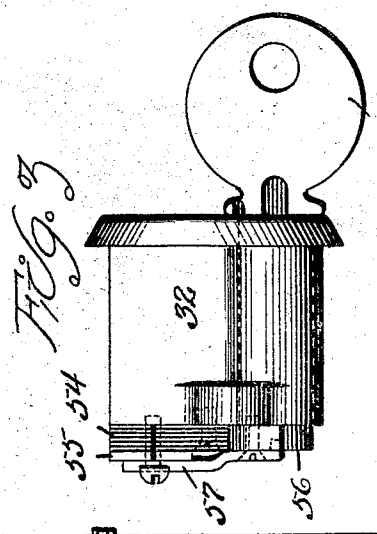


Fig. 3

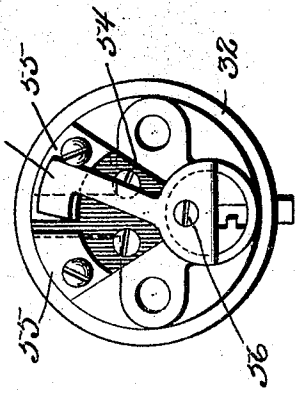


Fig. 4

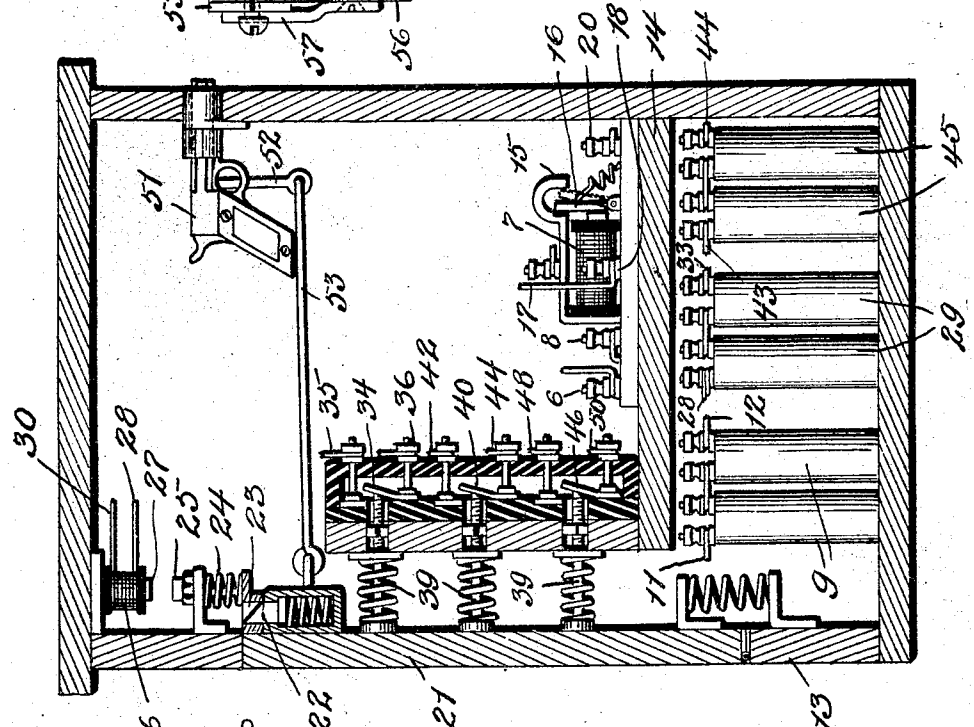


Fig. 2

INVENTOR

OSCAR SANDWEISS,

by Ralph Kalish Attorney.

Patented Mar. 30, 1926. 1,579,150

UNITED STATES PATENT OFFICE.

OSCAR SANDWEISS, OF ST. LOUIS, MISSOURI.

ALARM APPARATUS.

Application filed April 4, 1921. Serial No. 458,324.

To all whom it may concern:

Be it known that I, OSCAR SANDWEISS, a subject of Russia, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Alarm Apparatus, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

This invention relates generally to alarm apparatus, and, more particularly, to certain new and useful improvements in alarm apparatus of the type or class designed especially for the "protection" of buildings, offices, stores, and the like to give an alarm, either local or distant, upon unauthorized, or attempted unauthorized, entrance thereinto.

The principal object of my present invention is to provide an alarm apparatus of the class mentioned which may be conveniently and inexpensively installed upon and about the premises to be protected and which is efficient and effective in sounding or giving an alarm upon an unauthorized entrance into the protected premises.

Another object of my invention is to provide an apparatus of this type in which the sources of electrical energy and control-switches of the apparatus are compactly centralized, whereby care and supervision thereof may be accomplished from a single point and the expense of maintenance of the system or apparatus minimized.

A further object of my invention is to provide an apparatus of this type including a cabinet in which is housed the control switches of the alarm circuit or circuits, and of which cabinet a movable element, such as a door or closure, is equipped with an electro-mechanical lock adapted for release actuation on a breaking of the protection circuit, the control switches and cabinet-door having such co-operation that the control switches are automatically closed, on an opening of the door, to actuate the alarm circuits.

A still further object of my present invention is to provide an apparatus of this type including a key-operated switch located in the system at preferably one of the "protected" openings of the premises, whereby an authorized entrance or exit may be made through such opening without effecting an alarm.

With the above and other objects in view, my present invention resides in the novel construction, arrangement, and combination of parts hereinafter described and afterwards pointed out in the claims.

In the accompanying drawings,

Figure 1 is a diagrammatic view illustrating the arrangement of the elements and electric circuits of an alarm apparatus embodying my invention;

Figure 2 is a vertical sectional view of a cabinet forming part of the apparatus which encloses and houses service, alarm, and control devices of the apparatus, and whose door is permitted to open on a breaking of the main or protection circuit, an actuation of the alarm devices being automatically effected electrically on a movement of the cabinet-door to open position;

Figure 3 is a side elevational view of a key-controlled switch preferably employed in and forming a part of the apparatus; and Figure 4 is an end elevational view of the key-controlled switch.

Referring now more in detail to the said drawings, which illustrate a practical embodiment of my invention, and in which like reference-characters refer to like parts throughout the several views, 1—2 designate the wire of the main protecting or alarm circuit, which as will be understood, is suitably strung about the premises to be protected, and included in series with which are the "openings" of the premises, such as the window 3 and door 4, to be protected. In the present instance and for the purposes of illustration, I show one only of the windows and doors to be protected, but obviously any number thereof may be included in series in the main wire 1—2. Included in the wire 1—2 at each of said openings, is preferably a so-called switch or circuit making and breaking device 5, having connection with the window or door, as the case may be, in such manner that the switch, and consequently the main circuit, is normally closed when the window or door is closed and intact and automatically opened when the window or door is opened or its glass or other portions broken, as will be well understood.

Forming substantially a part of the main circuit, and leading from wire 1—2 to one terminal 6 of a relay or other suitable magnet coil 7, is a wire 2^a, and leading from the other terminal 8 of the relay-coil 7 to one side of a battery 9, is a wire 10, interposed in which for manual operation is a suitable

switch or circuit making and breaking device 11; connecting the other main wire 1—2 to the opposite side of battery 9, is a branch wire 12.

The battery 9, as well as other instruments of the apparatus, as later herein more fully appearing, are preferably contained and housed within a suitable apertured cabinet or the like 13, which may be suitably located upon the premises to be protected or elsewhere, as may meet the requirements of any particular installation; and preferably arranged upon a shelf or the like 14 disposed within the cabinet 13, is the relay 7 in circuit with the main wire 1—2 as described.

Included in and forming substantially part of the relay 7, is the usual bridge contact or terminal 15, and 16 indicates the spring-pulled movable armature of the relay-coil, the bridge-contact 15 having electrical connection through a wire 17 with the terminal-post 18 of the relay, and the armature 16 having electrical connection through a wire 19 with the other terminal post 20 of the relay.

Hinged upon the cabinet 13 for closing its aperture, is a door or other suitable member 21 provided with a spring-bolt 22 adapted for co-operation with a movable keeper 23 operatively mounted within the cabinet, as best seen in Figure 2, for releasably locking the door or other member 21 in closed or normal position. The keeper 23 is normally held yieldingly in bolt-engaging position by means of a spring 24 and is formed or provided with a so-called armature 25 adapted for actuation electrically out of locking engagement with the bolt 22 to permit the door or other member 21 to open or move to release position by means of an electro-magnet 26 mounted within the cabinet 13 with its core 27 in operative relation to the armature 25. As seen in Figure 1, one terminal of the magnet 26 is in electrical connection through a wire 28 with one side of a battery 29 preferably housed in the cabinet 13, and its other terminal is in electrical connection by means of a wire 30, included in which is a suitable switch 31 and a special lock-switch 32 hereinafter more fully described, with the relay-post 18. Electrically connecting relay-post 20 with the opposite side of battery 29, is a wire 33.

Disposed within the cabinet 13 adjacent the door 21, is preferably a spring switch 34 in circuit by means of wires 35, 36, and 38 and a source of current 34ª with suitable visible signalling devices, such, for instance, as incandescent lamps 37 disposed about the premises to be protected or at a distance therefrom, as may be desired, to give a visible alarm on an unauthorized entrance into the protected premises. Mounted within the cabinet 13 for movement between the door 21 and switch 34, is a push-stem 39 adapted under pressure of the door 21 when the same is in normal closed position, as seen in Figure 2, to engage the switch 34 to open the signalling lamp circuit.

A second switch 40 constructed, located, and operating similarly to the switch 34 is provided for the actuation of a local audible signal, such as a bell 41, which is in normally open circuit through the switch 40 and wires 42, 43, and 44, with a third source of electrical energy, such as the battery 45, also housed within the cabinet 13.

Likewise a switch 46, also similar in construction, location, and operation to the switches 34 and 40, is provided for the actuation of a distant audible alarm, such as the second bell 47, which is in normally open circuit with the switch 46 and battery 45 through wires 48, 49, 43, and 50.

Augmenting the local audible signal, namely, the bell 41, I provide within the cabinet 13 a detonator, such as the gun 51, whose trigger 52 is connected with the door 13 for actuation when the door or other member 21 opens or moves to release position by means of a detachable hook link or other suitable means 53.

The lock-switch or key-controlled switch 32 included in the circuit of the magnet 26 for making or breaking the same is preferably installed at one of the "protected" openings, as, for instance, the door 4. This lock-switch 32, which is illustrated in detail in Figures 3 and 4, is preferably, as here shown, of a well known type, to the body of which is secured an insulating block 54 upon which are mounted spaced contacts 55—55 in connection electrically with the wire 30, as seen in Figure 1. To the "barrel" 56 of the lock 32 is secured a blade 57, which is movable, as by the key 58, to complete or break the wire 30 at the contacts 55—55. In Figure 4, the blade 57 is shown as moved by the key 58 to break the wire 30 and consequently open the circuit of the coil 26, and it will be obvious that upon a movement of the key to close the lock 32, the blade 57 will be actuated to bridge the contacts 55—55, as in Figure 1, and thereby complete the wire 30 to close the circuit of the coil 26.

Suitably mounted within the cabinet 13, as seen in Figures 1 and 2, is a suitable spring or the like 59 which is put under compression by and when the door 21 is in closed position and which functions to force the door 21 out of closed position when keeper 23 is retracted or drawn out of locking engagement with the door-bolt 22.

In use or operation, switch 11 being closed, the main or protecting circuit is normally closed when all the several "protected"

windows, doors or other openings or the like included in series in the main circuit are closed, and when the main circuit is so closed, the relay-coil 7 is constantly energized to electrically or magnetically hold the armature-member 16 against the pull of its retracting spring out of electrical engagement with the relay contact 15, or in the position thereof illustrated in full lines in Figure 1. With the relay-contact or armature 16 so held out of engagement with contact 15, it will be observed that the circuit of the lock-actuating magnet coil 26 is further broken at the relay 7.

Presume now that, as in night-time, for instance, switch 31 has been actuated to closed position and the blade 57 of lock switch 32 actuated to bridge the contacts 55—55, the circuit of magnet-coil 26 being thus closed at both the switches 31 and 32 and the main circuit also closed as before described. Should now unauthorized ingress into the protected premises be attempted through any of the "protected" openings, as, for instance, through window 3 or door 4, the normally closed main circuit will be at once automatically broken, whereupon relay-coil 7 is de-energized and armature-member 16 at once permitted under the pull of its retracting spring to engage electrically with contact 15, as shown by dotted lines in Figure 1. Thereupon wires 30—33 of the circuit of coil 26 are electrically connected through wire 17, armature 16, and wire 19, and the circuit of coil 26 thus completely closed and magnet-coil 26 energized to attract keeper-armature 25 to draw keeper 23, against the tension of its spring 24, out of locking engagement with the door 21. The door 21 being so released and permitted to move or swing to open or release position, spring 59 functions to force the door 21 sharply open. In such movement of the door 21, the several push-stems 39 move yieldingly out of engagement with their respective co-operating switches 34, 40, and 46, whereupon the several alarm circuits are completed or closed through said switches and lights 37, local bell 41, and distant bell 47 energized and actuated to give a most decided alarm, the detonator or gun 51 being also actuated through the pull on its trigger 51 imparted thereto on the forcible opening of the door 21. The door 21 thus performs not only the function of a closure for the aperture of the cabinet 13, but also the additional function of a circuit maker and breaker through the several carried projections or push-stems 39 for the several alarm circuits.

An opening of the switches 11 and 31 serves to conveniently open the entire system when, as in the day-time, alarm service upon the premises is not desired. The lock-switch 32 is further of such type that the key 58 can only be withdrawn when the lock is closed, and it will be observed that when the lock is closed, the blade 57 bridges the contacts 55—55. Normally, as is well known, the keys of such locks are withdrawn. Consequently, the switch 31 is utilized to break the circuit of coil 26 when the main circuit is not in service, as, for instance, in the day-time, or whenever it is desired to cut the several alarm circuits out of service. Now, in order that the proprietor of the protected premises or other authorized person may effect egress from, or ingress into, the protected premises without effecting an alarm when both the main circuit and also the switch 31 are closed, the key 58 is inserted into lock 32 and barrel 56, and its blade 57 actuated to unlocking position to open the lock and also break the circuit of coil 26 at the contacts 55—55. With the circuit of coil 26 so broken, it will be evident that authorized entrance or exit from the protected premises may be made without effecting an alarm, although the main circuit is broken, the circuit of coil 26 being again completed, so far as lock 32 is concerned, when the barrel 56 and its carried blade 57 have been turned to locking and contact-bridging position.

In order that the proprietor of the protected premises or other authorized person may readily ascertain whether or not the main protecting circuit is closed and the several "openings" or the like included in the circuit are guarded, I provide the system with a testing device comprising an audible or other suitable signalling or indicating member, such as a buzzer 60. One terminal of the buzzer 60 is connected by a wire 61 with one side of the battery 29, included in and forming part of which wire 61 is a normally open testing switch 62. The other terminal of the buzzer 60 is electrically connected by a wire 63 with the relay-contact 15.

As has been stated, when the main circuit is in service and fully or normally closed, both by switch 11 and the several circuit making and breaking devices at the "protected" openings, the relay armature-member 16 is held under the energy of coil 7 out of electrical contact with the relay-contact 15, and that whenever the main circuit is broken, the armature-member 16 engages electrically with the contact-member 15. Consequently, on an opening of magnet-circuit switch 31 and a closing of the testing-switch 62 to test the main circuit, should the buzzer fail to "buzz" the proprietor is at once aware that the main-circuit is fully closed and working. On the other hand, should the buzzer 60 "buzz", the proprietor is informed that the main-circuit is open at some point and not working, the buzzer circuit in such later event being completed

from contact 15 through the armature member 16, wire 19, and wire 33 to the other side of the battery 29.

The alarm apparatus as a whole is simple in form and arrangement, may be conveniently and inexpensively installed, is exceedingly flexible, and is most efficient in effecting under the conditions described both local and distant alarms.

I am aware that changes in the construction, arrangement, and combination of the several parts of my new alarm apparatus may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

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

1. An electric alarm apparatus comprising, in combination with an apertured enclosing cabinet, a movable closure for the aperture of the cabinet, an electrically actuable spring-bolt for normally releasably locking the closure in aperture closing position, and a spring for actuating the closure when released by said bolt, a normally closed main circuit including a magnet coil concealed in the cabinet, a second circuit including a second magnet coil and a switch also concealed within the cabinet, said switch being magnetically controlled by the first magnet coil to open the second circuit when the main circuit is closed and adapted to close the second circuit on an opening of the main circuit, an alarm circuit including a second circuit closing-switch disposed within the cabinet, and a projection on the closure adapted, when the closure is in apertured closing position for engagement with the second switch to open the alarm circuit, said second switch being adapted to automatically close the alarm circuit when said projection is out of engagement therewith and the second magnet being adapted on a closing of the second circuit to actuate said bolt to release the closure for actuation by said spring to carry said projection out of circuit opening engagement with the second switch.

2. An electric alarm apparatus comprising, in combination with an apertured enclosing cabinet, a swingable closure for the aperture of the cabinet, an electrically actuable spring-bolt for normally releasably locking the closure in apertured closing position, and a spring for swinging the closure when released by said bolt, a normally closed main circuit including a magnet coil within the cabinet, a second circuit including a second magnet coil and a switch also disposed within the cabinet, said switch being magnetically controlled by the first magnet coil to open the second circuit when the main circuit is closed and adapted to close the second circuit on an opening of the main circuit, an audible signal within the cabinet, an alarm circuit including a second circuit-closing switch disposed within the cabinet, a push-stem on the closure adapted, when the closure is in aperture closing position, for engagement with the second switch to open the alarm circuit, said second switch being adapted to automatically close the alarm circuit when said push-stem is out of engagement therewith and the second magnet being adapted on the closing of the second circuit to actuate said bolt to release the closure for actuation by said spring to carry said push-stem out of circuit opening engagement with the second switch, and means having connection with the closure and with the audible signal for actuating said signal when the closure is released and actuated by said spring.

In testimony whereof, I have signed my name to this specification.

OSCAR SANDWEISS.