

O. JACOBSON.
BURGLAR ALARM.
APPLICATION FILED NOV. 21, 1918.

1,344,178.

Patented June 22, 1920.

2 SHEETS—SHEET 1.

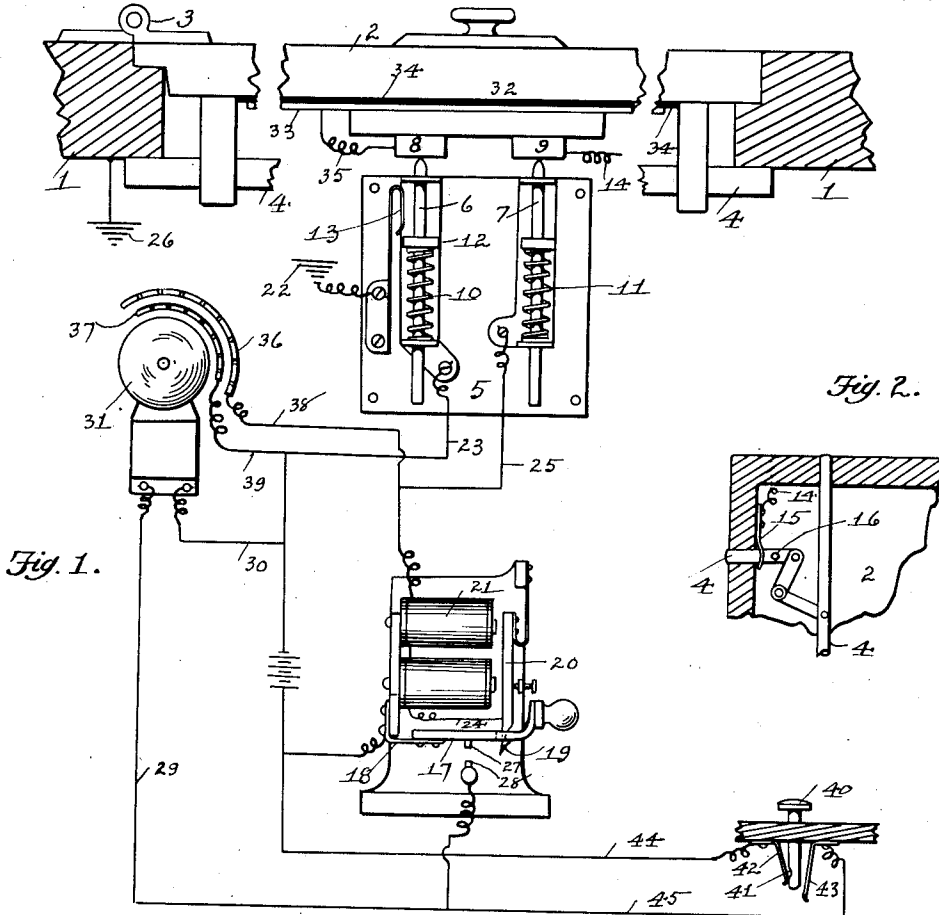


Fig. 2.

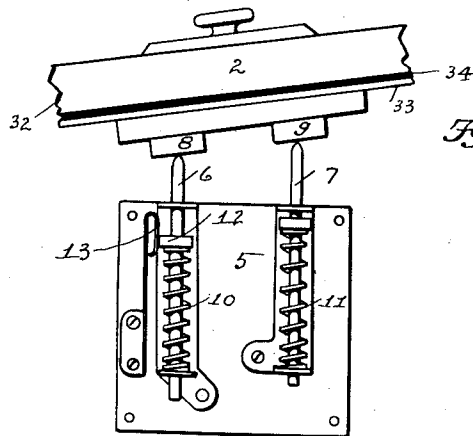
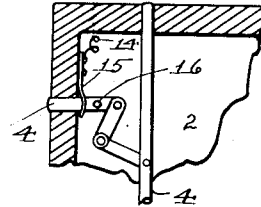


Fig. 5.

Witnesses
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Inventor:

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Fig. 3.

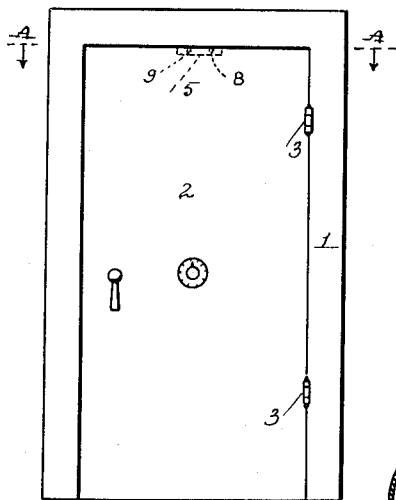


Fig. 6.

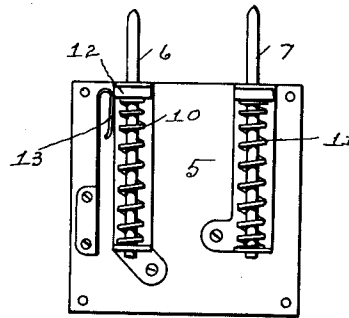


Fig. 4.

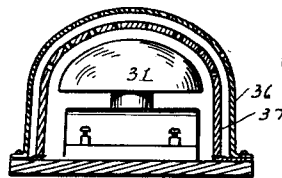


Fig. 7.

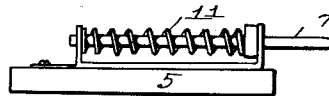
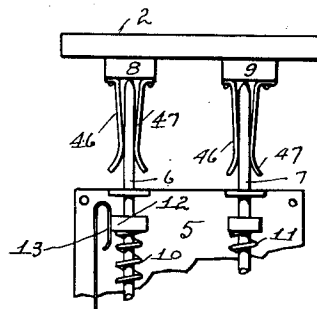


Fig. 8.



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UNITED STATES PATENT OFFICE.

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BURGLAR-ALARM.

1,344,178.

Specification of Letters Patent. Patented June 22, 1920.

Application filed November 21, 1918. Serial No. 263,456.

To all whom it may concern:

Be it known that I, OLE JACOBSON, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented new and useful Improvements in Burglar-Alarms, of which the following is a specification.

The present invention relates to burglar alarms, especially such as are used for the protection of bank vaults and the like; and its objects are, generally, to provide an improved device of that character; and more particularly, to provide such a device which, by merely closing and locking the vault's door, will be put into operable mode, and which by merely unlocking and opening the door will be put into inoperable mode; and further, to provide in combination with the means for effecting such ends, means for operating the alarm by drilling through the door.

These and any other objects hereinafter appearing are attained by, and the invention finds preferable embodiment in, the structure hereinafter described and illustrated by the accompanying drawings, in which:—

Figure 1 is a top plan view of a vault door (parts of which are broken away) and of certain members of the alarm operating mechanism adjacent thereto, exhibiting also in side view other members of said mechanism with electric connections diagrammatically shown, and also parts of the vault's wall in horizontal section taken on line A—A of Fig. 3;

Fig. 2 is a fragmentary view of the inside of the vault's door showing portions of the bolts of the lock, etc.;

Fig. 3 is a front view of the outside of the vault door;

Fig. 4 is a view of the alarm bell or gong with its casing shown in central section;

Fig. 5 is a top plan view of certain members of the alarm operating mechanism, showing their position when the door is partially opened on its hinges;

Fig. 6 is a like view of the same members showing their position when the door is open;

Fig. 7 is a side view of one of said members; and

Fig. 8 is a top plan view of said members illustrating a modified construction of their electric contacting points.

In the embodiment of the invention chosen for illustration by the drawings and for detailed description in the body of this specification, the burglar alarm is shown in connection with a bank vault having the wall 1 and door 2 hinged at 3 and having a suitable lock whose bolts are seen at 4, all in common form. In suitable position inside the vault and adjacent the door when closed and preferably near the top thereof, are mounted, as on the plate 5, a pair of movable electric contact elements, being in the form shown the plungers 6, 7, spring-pressed into contact with the electric contact points 8, 9 (carried by the door) when the door is shut, as seen in Fig. 1, and adapted to follow (under the impulse of the springs 10, 11) the door in such contact at the beginning of the door's opening movement. When the door is shut, the contact point 12 of the plunger 6 is separated from the contact point or spring 13, but when the door opens the spring 10 causes contact between the point 12 and said spring. The contact point 9 is electrically connected by wire 14 with the contact spring 15 mounted on the inside of the door, so that when the door is shut and locked by the lock's bolts 4, an electric contact point 16 on one of said bolts (see Fig. 2) contacts with said spring.

In the electric circuit containing said alarm operating members is lever arm 17 spring mounted at 18 and upheld by engagement with the hooked end 19 of the armature 20 of the electro magnet 21.

The operation of the device is as follows:

If the closed and locked door is blown open by an explosive, the contact points 8, 9, moving away with the door from the plate 5 on which the plungers 6, 7 are mounted, said contact points are followed and still contacted by the plungers under the pressure of their springs. This movement brings the contact point 12 of plunger 6 into contact with the spring 13, thereby closing the circuit through the ground 22, spring 13, contact point 12, plunger 6, wire 23, spring 18, lever 17, armature 20, wire 24, magnet 21, wire 25, plunger 7, contact point 9, wire 14, spring 15, contact point 16, and then through the bolt, the door, the wall and to the ground 26.

The magnet 21 being thus energized, its armature 20 is drawn back, releasing the

lever arm 17, whereby the points 27 and 28 contact and close the circuit through the wires 29, 30, causing the alarm indicated at 31, (and which may be placed outside the bank building or at police headquarters, etc.) to sound.

By providing the separable contact points 7 and 9, the wiring between this point 9 and contact spring 15 is carried by the door and not extraneously thereof, there being thus no swinging wire between the magnet and the contact spring 15 otherwise necessary.

The door 2 has the outer metal plate 32 and the inner metal plate 33, with an insulating sheet 34 between them. If the closed and locked door is drilled through, the drill will electrically connect the said outer and inner metal plates, whereupon the circuit will be closed through the inner plate, the wire 35, the contact point 8 and the plunger 6, wire 23, battery, spring 18, lever 17, armature 20, wire 24, magnet 21, wire 25, plunger 7, contact point 9, wire 14, spring 15, contact point 16, the lock's bolt, the door and its outer plate 32, thus causing the alarm to sound.

The alarm bell or gong 31 has a casing composed of spaced members 36, 37. If the outer member be crushed into contact with the inner member in an attempt to destroy the alarm, the circuit will be closed by said contact, through the wires 38, 39. The circuit may also be closed by pressing the pedal 40 in the bank, thus carrying its notch 41 into holding engagement with the contact spring 42 and also causing its contact with the opposite contact spring 43, thus sounding the alarm through the wires 44, 45.

In Fig. 8 a modified construction of the contact points 8 and 9 is shown. Each of these is furnished with the contact springs 46, 47 between and in sliding engagement with which the plungers 6, 7 move a considerable distance, in order to make certain the electric contact in case the door is suddenly blown open.

It will be seen that when the door is closed and locked the spring 15 and contact point 16 are in contact, but the contact point 12 has already been moved out of contact with the spring 13; and that when the door is unlocked the point 16 is moved away from the spring 15 before the door can be opened. There is therefore no sounding of the alarm by opening the door in the normal way, but only by blowing it open. The alarm is thus put into operative mode merely by closing and locking the door and is put in inoperative mode merely by unlocking it. Thus the alarm needs no clock to govern the time of its operative mode nor needs any attention whatever.

The invention being intended to be pointed

out by the claims, is not to be limited to or by details of construction shown or described.

I claim:

1. In a device of the character described; 70 a door; a lock therefor; an alarm; a normally open electric circuit for operating the alarm; a circuit closer and opener in the circuit, closed by the locking operation of the lock and opened by the unlocking operation of the lock; an independently operated circuit closer and opener in the circuit comprising a contact point carried in connection with the door and a movable contact element adapted to be held by the shut door and to move in the door's opening movement in circuit closing position with said point, and a second contact point and a second movable contact element adapted to be held by the shut door in circuit opening position with said second point and to move in the door's opening movement into contact with said second point to close the circuit and operate the alarm.

2. In a device of the character described; 90 a door; a lock therefor; an alarm; a normally open electric circuit for operating the alarm; a circuit closer and opener in the circuit, closed by the locking operation of the lock and opened by the unlocking operation of the lock; an independently operated circuit closer and opener in the circuit comprising a contact point carried in connection with the door and a spring-pressed contact plunger adapted to be moved against its spring by the door's closing movement and to be held by the shut door in circuit closing position with said point, and a second contact point and a second spring-pressed plunger adapted to be moved against its spring by the closing movement of the door and to be held by the shut door in circuit opening position with said second point and to be moved by its spring in the door's opening movement into contact with said second point to close the circuit and operate the alarm.

3. In a device of the character described; 115 a door; a lock therefor; an alarm; an electric circuit for operating the alarm; a circuit closer and opener in the circuit, closed by the locking operation of the lock and opened by the unlocking operation of the lock; an independently operated circuit closer and opener in the circuit comprising a contact point carried in connection with the door and a movable contact element adapted to be held by the shut door and to move in the door's opening movement in circuit closing position with said point, and a second contact point and a second movable contact element adapted to be held by the shut door in circuit opening position with said second point and to move in the door's opening movement into contact 130

with said second point to close the circuit and operate the alarm; an electrically conducting sheet inside the door and separated from the outside of the door by an insulating sheet; a third contact point carried in connection with the door and electrically connected with said conducting sheet and contacting with the second movable contact element in the shut position of the door; the outside of the door being electrically conducting.

4. In a device of the character described; a door; a lock therefor; an alarm; a normally open electric circuit for operating the alarm; a circuit closer and opener in the circuit, closed by the locking operation of the lock and opened by the unlocking operation of the lock; a device comprising an independently operated circuit closer and opener in the circuit opened by shutting the door and closed by opening the door and comprising also a pair of separable electric contact points in the circuit, one of which points is carried by the door and the other extraneously thereof,

the electric wiring between the said point carried by the door and the first-mentioned circuit closer and opener being carried by the door and not extraneously thereof.

5. In a device of the character described; a door; a lock therefor; an alarm; a normally open electric circuit for operating the alarm; a circuit closer and opener in the circuit, closed by the locking operation of the lock and opened by the unlocking operation of the lock; a device comprising an independently operated circuit closer and opener in the circuit opened by shutting the door and closed by opening the door and comprising also a pair of separable electric contact points in the circuit, one of which points is carried by the door and the other extraneously thereof; means for contacting said points during the beginning only of the door's opening movement.

In testimony whereof I have hereunto set my hand at Grand Rapids, Michigan, this 18th day of November, 1918.

OLE JACOBSON.