(No Model.)

J. E. CHURCH.

BURGLAR ALARM.

No. 338,388. Patented Mar. 23, 1886.

Fig. 1.

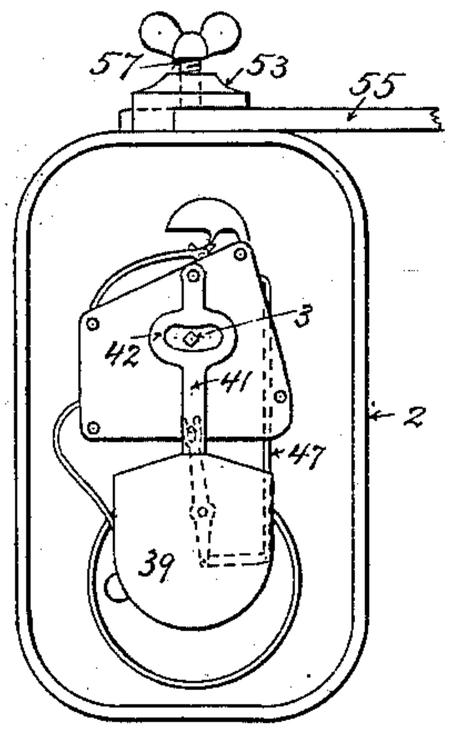


Fig. 2.

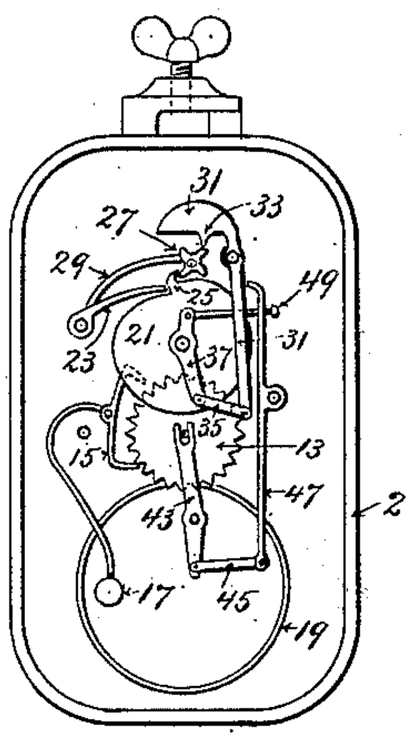


Fig. 3.

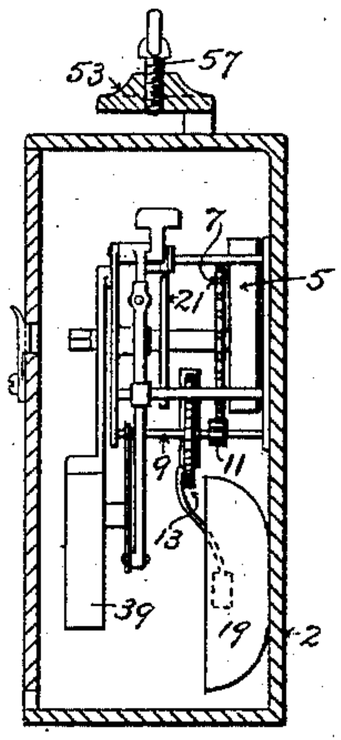


Fig. 4.

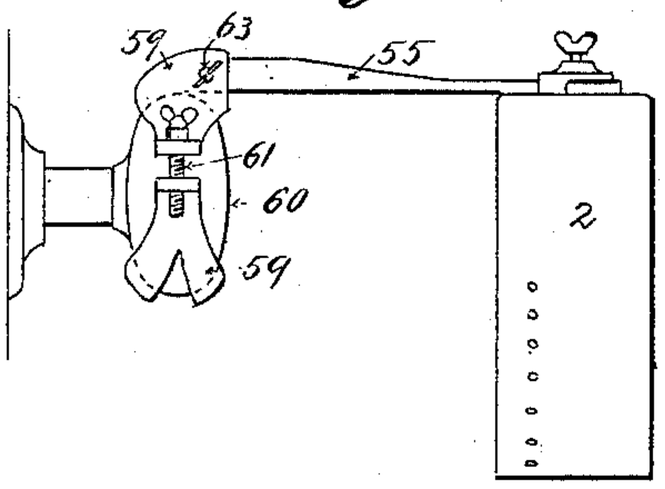


Fig. 5.

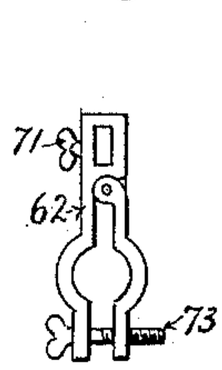


Fig. 6.

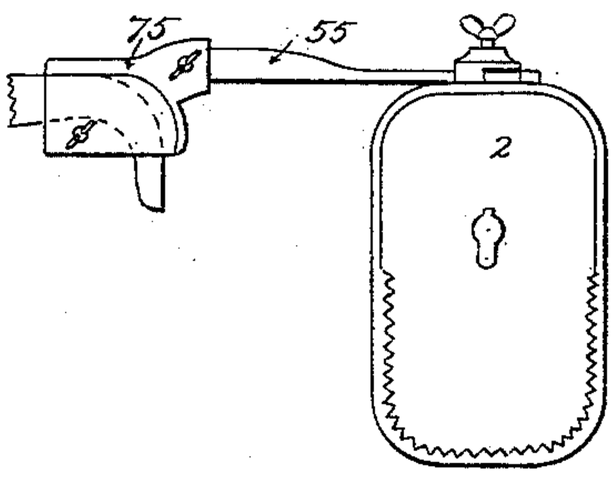
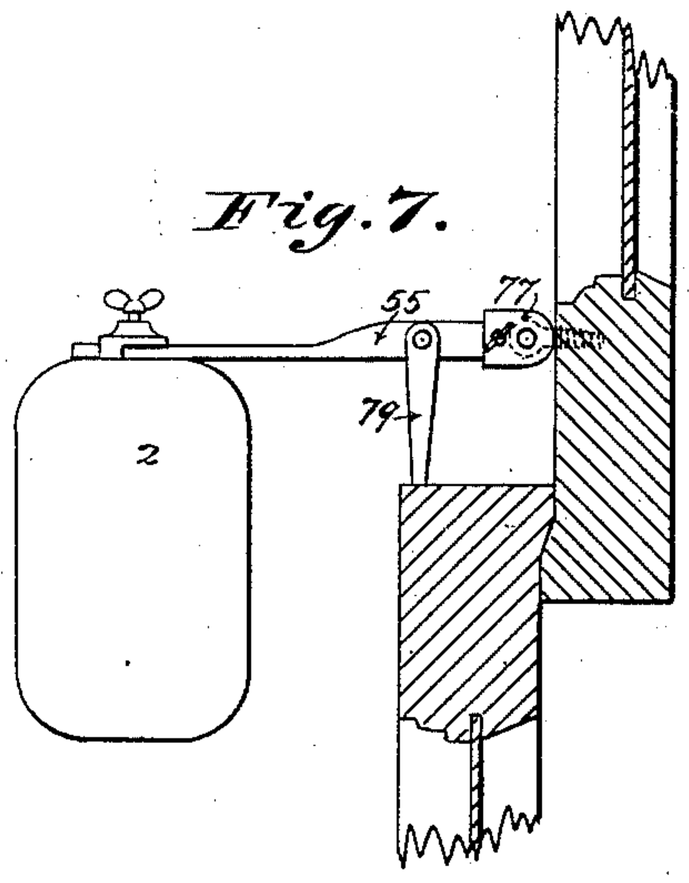


Fig. 7.



Witnesses
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UNITED STATES PATENT OFFICE.

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BURGLAR-ALARM.

SPECIFICATION forming part of Letters Patent No. 338,388, dated March 23, 1886.

Application filed January 11, 1886. Serial No. 188,190. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. CHURCH, a citizen of the United States, and a resident of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain Improvements in Burglar-Alarms, of which the following is a specification.

The object of my invention is to provide an alarm that can be applied either to a door or a window, and will be operated when the knob or latch of the door is moved or the sash of the window is opened.

To this end my invention consists, generally, in the construction and combination hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of the alarm with the outer plate or front of the casing removed. Fig. 2 is a similar view, the weight and supporting-plate being removed to show the interior mechanism of the alarm. Fig. 3 is a sectional side elevation. Fig. 4 is a view showing the alarm applied to the knob of a door. Fig. 5 is a view showing a clamp adapted to be applied either to a knob-spindle or to a latch. Fig. 6 is a view showing the device applied to the latch of a door. Fig. 7 is a view showing the alarm applied to a window.

In the drawings, 2 represents the casing of the alarm, which may be of any suitable construction or material. Within this casing is a suitable frame that supports the mechanism of the alarm.

3 is the main or spring shaft, having connected thereto in any suitable manner the main or driving spring 5, and carrying the gear-wheel 7 and the detent-wheel 21. A shaft, 9, carries a pinion, 11, that meshes with the gear 7 on shaft 3, and also carries the escapement-wheel 13. This wheel operates the hammer 17 through the escapement 15, causing it to strike upon the gong 19. When the spring is wound, its tension causes the gong to be sounded until the spring is run down or the spring-shaft is stopped.

I provide a device in connection with the detent-wheel 21 that will hold the spring-shaft until the casing is tilted by the movement of the door or window, with which it is connected. The spring-shaft is then released, and the gong is operated until the wheel 21 has made one revolution, when the spring-shaft is stopped to be again released, when the casing is again tilted. This device consists of a stop-pawl, 23, that engages the detent 25 on the wheel 21, and holds the wheel while the spring is being wound up. The wheel 21 and gear 7 are each connected to the spring-shaft 3 by a ratchet and pawl, in the usual manner, so that the shaft can turn in one direction to wind the spring without turning these wheels. A star-wheel, 27, engages the detent 25 on the wheel 21, so that when one point of the star-wheel is in contact with the detent and the star-wheel is kept from turning the wheel 21 cannot revolve, and the alarm mechanism is stopped. The star-wheel is carried by a swinging arm, 29, that is pivoted to the frame. A weighted arm or lever, 31, having a detent, 33, is pivoted above the wheel 21. This arm is in such position that when one point of the star-wheel is in engagement with the detent 25 the detent 33 will engage with the opposite point of the star-wheel, and thereby keep it and the wheel 21 from turning. The opposite end of the lever 31 extends below the shaft 3, and is connected by a link, 35, with a lever, 37, that is pivoted on the shaft 3. A weight, 39, is suspended by a hanger, 41, pivoted to the upper part of the plate of the frame. This hanger has a yoke, 42, that passes around the key-shaft 3, so that the weight is free to oscillate as a pendulum. When the casing is tilted in either direction in the plane of oscillation of the pendulum, the gravity of the pendulum causes it to remain in a substantially perpendicular position. A lever, 43, is pivoted to the near side of the weight 39, and its upper end is fulcrumed upon the shaft 9. The lower end of the lever 43 is connected by a link, 45, with the lower end of a pivoted rod, 47. The upper end of the rod 47 is bent inward and is adapted to bear against the lower part of the lever 33 when the lower end of the rod is moved outward. A pin, 49, is connected to the upper end of the lever 37 and passes freely through a perforation in the rod 47. The end of the pin is provided with a head that takes against the rod when the upper end of the rod is moved outward. It will be seen that by tilting the casing either to the right or the left from the position shown in Figs. 1 and 2, the

lower end of the lever 43 will be moved in the opposite direction, and this movement through the link 45 will be communicated to the lower end of the rod 47 and its upper end will move in the opposite direction. When the upper end of the rod is moved inward, it strikes the lever 31 and thereby raises the detent 33 on the upper or weighted end of this lever from the star-wheel. The spring-shaft is thereby released, and it revolves, causing, through the gear 7, pinion 11, and escapements 13 15, the alarm to be sounded. This movement will continue until the detent-wheel has made one revolution, even though the casing is immediately returned to an upright position. When the detent-wheel has made one revolution, the star-wheel engages the detent, and if the casing has been returned to its upright position the detent 33 engages the opposite point of the star-wheel, and the mechanism is held until the casing is again tilted, when the operation is repeated. When the upper end of the rod is moved outward, the lever 31 is operated through the pin 49, lever 37, and link 35.

The casing may be connected by any suitable means with a door or window, so that any person attempting to open either will cause the casing to be tilted and the alarm mechanism to be set in operation as described.

I have shown in the drawings preferable means for connecting the alarm with a door-knob or latch or with a window. The casing has upon its top a bridge, 53, through which a flat bar, 55, may be passed. This bar may be passed under the bridge from the side or front of the casing, and be secured in position by a set-screw, 57.

In Fig. 4 I have shown a clamp, 59, that is secured by a clamp-screw, 61, upon a door-knob, 60. The upper part of the clamp receives the end of the bar 55, and a set-screw, 63, is provided for fastening the bar to the clamp. The face or back of the casing is placed toward the door, so that when the knob is turned in either direction the casing is tilted and the alarm mechanism is set in operation.

In Fig. 5 I have shown a clamp, 62, that may be applied either to a latch or to the spindle of a knob. In the upper part of the clamp is an opening that may be passed over a latch-lever, and the lower part is constructed to clasp the spindle between the door-knob and door. Screws 71 73 are provided for clamping the spindle or latch lever.

In Fig. 6 I have shown a clamp, 75, attached to the thumb-piece of a common latch, and the bar 55 secured to this clamp. In this instance the side of the casing is toward the door, and the casing is tilted by the raising of the inner end of the thumb-piece.

In Fig. 7 I have shown the device attached to a window, so that the casing will be tilted by a movement of either of the sashes. The end of the bar is pivoted to a plate, 77, that is secured preferably by a screw to the upper sash, and the bar is also pivoted to a support, 79, that rests on the top of the lower sash. When either sash is moved, the bar is also moved and the casing is tilted.

Other suitable means may be used for connecting the lever 31 with the weight 39, so that when the casing is tilted in either direction the detent 33 will be raised from the star-wheel 27.

I claim as my invention—

1. The combination, in a burglar-alarm, with the gong-operating mechanism, of the detent-wheel 21, the star-wheel 27, adapted to engage therewith, the weighted lever 31, having the detent 33 engaging said star-wheel, and means for raising said detent as the mechanism is tilted, all substantially as and for the purpose set forth.

2. The combination, in a burglar-alarm, with the gong-operating mechanism, of the detent-wheel 21, the star-wheel 27, engaging therewith, the lever 31, having the detent 33 engaging said star-wheel, the suspended weight 39, and means connecting said weight with the lever 31, whereby the detent 33 is raised as the mechanism is tilted, as and for the purpose set forth.

3. The combination, with the casing and the described alarm mechanism arranged therein, of the bridge 53, the bar 55, the clamp-screw 57, and means for securing the opposite end of said bar to a door or window, whereby said casing is tilted as the door or window is opened.

In testimony whereof I have hereunto set my hand this 5th day of January, 1886.

JAMES E. CHURCH.

In presence of—
A. C. PAUL,
R. H. SANFORD.