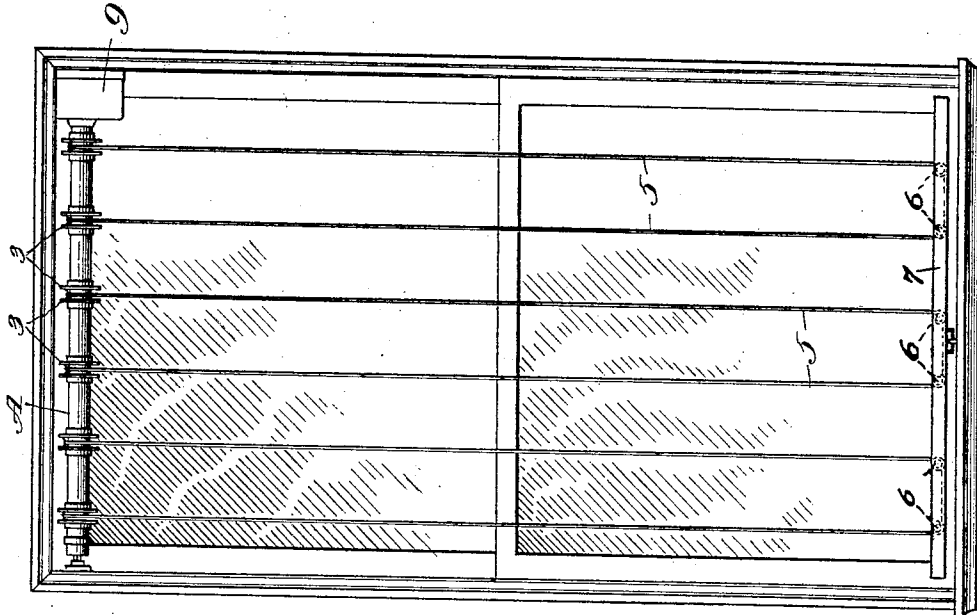


1,030,067.

Fig. 1. Fig. 2. Fig. 3. Fig. 4. Fig. 5. Fig. 6.



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Fig. 7.

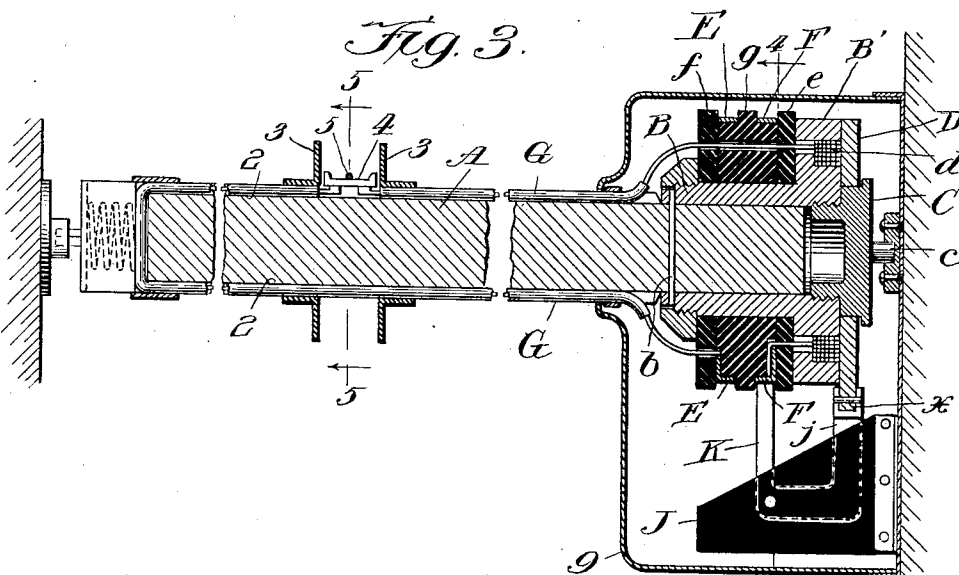
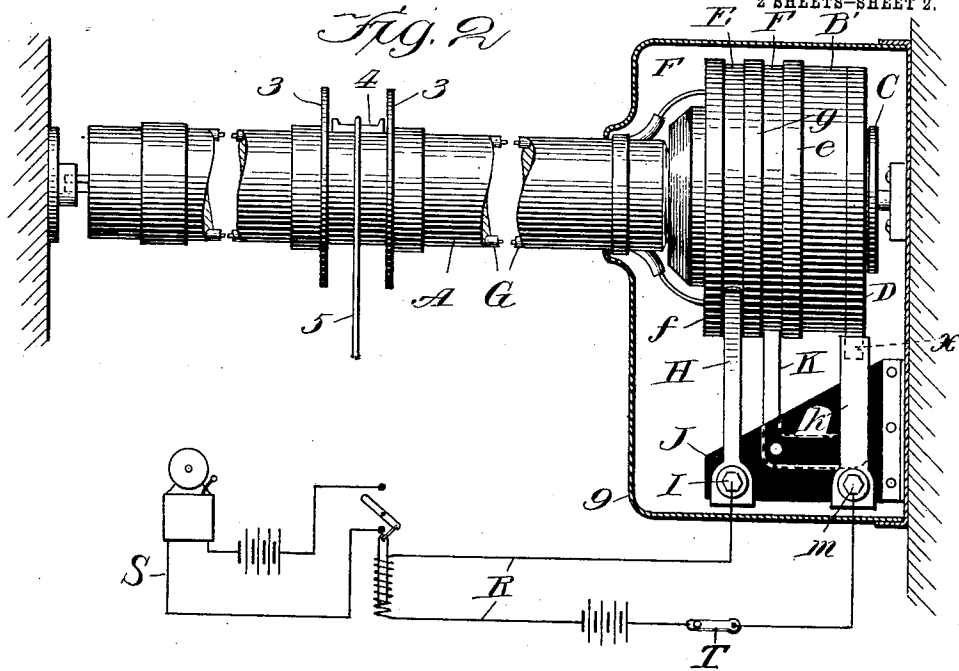
By Frank D. Harrison
att'y

W. W. ERWIN.
 AUTOMATIC BURGLAR ALARM.
 APPLICATION FILED NOV. 26, 1909.

1,030,067.

Patented June 18, 1912.

2 SHEETS-SHEET 2.



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UNITED STATES PATENT OFFICE.

WILLIAM W. ERWIN, OF NEW YORK, N. Y.

AUTOMATIC BURGLAR-ALARM.

1,030,067.

Specification of Letters Patent.

Patented June 18, 1912.

Application filed November 26, 1909. Serial No. 529,991.

To all whom it may concern:

Be it known that I, WILLIAM W. ERWIN, a citizen of the United States, residing at New York, in the borough of Manhattan and State of New York, have invented new and useful Improvements in Automatic Burglar-Alarms, of which the following is a full, clear, and exact description.

My invention relates to burglar alarms and annunciators.

The object of my invention is to provide a burglar alarm which can be applied to a closed or open window, or other opening which cannot be removed or manipulated or tampered with either to permit the passage of the body or anything else therethrough without causing an alarm to sound; which consists principally of a curtain composed of a series of cords depending from an automatically rewinding roller of the conventional type having an electro-magnetic or other suitable clutch on one end that can be made very economically, and which permits of the most perfect ventilation possible.

A further object of my invention is to provide an alarm device which may readily be moved into or out of operative position, and which may be made to give the alarm at a point located near to or removed at a distance from the same.

It is also an object of my invention to provide a device which is perfect in itself, and one that can be very readily installed anywhere to guard an opening in a building, or rolled up and stored away in some inconspicuous place, or carried around from place to place.

It is yet another object of my invention to enable a number of my improved alarm devices to be used in different places and each to have its separate annunciator device, or all to have a common annunciator device, or each to operate a series of annunciators when tampered with. This I accomplish by the means hereinafter fully described, and as particularly pointed out in the claims.

In the drawings:—Figure 1 is a front elevation of a window having my invention applied thereto. Fig. 2 is a front view of an automatically rewinding shade roller, broken at points along its length and drawn to a larger scale, and having my improvements applied thereto. Fig. 3 is a longitudinal section of the same. Fig. 4 is a transverse section taken on dotted line 4, 4, Fig. 3. Fig. 5 is a transverse section taken on

dotted line 5, 5, Fig. 3. Fig. 6 is a transverse section through the supporting bracket showing the contacts and the lower broken away portion of the clutch disk, with its depending lug embraced by said contacts.

Referring to the drawings, A represents an ordinary commercial shade-roller having the usual spring in one end for rewinding it, but with the dogs removed, and having mounted on its other end a suitable clutch mechanism. I prefer to employ an electro-magnetic clutch in this connection which will comprise a metallic sleeve B, which is secured to the roller by a transverse pin *b*, so that its opposite end extends beyond the adjacent end of said roller, and which has this extended end increased in diameter to provide a circumferential flange B', and the inner circumference of said extended portion screw-threaded. A plug C is screwed into this extended end of the sleeve, until the shoulder of the head or outer end thereof bears against the adjacent face of flange B', and this plug has a journal *c* extending outward therefrom that is journaled in ordinary roller fixtures, secured to the framework of the window or opening to which my improvements are applied, substantially as shown.

The outer circumference of the head of plug C is rabbeted to afford a seat for the non-revoluble clutch-disk, D, which latter, preferably corresponds in diameter with the adjacent flange B', the smooth face of which it is adapted to engage. This engaged face of the flange B' is provided with a circular groove, the radius of which exceeds the radius of the head of the plug, and in which is placed an electro-magnet *d*.

The portion of sleeve B, between its flange B' and its opposite end, is covered with an insulation comprising a couple of disks *e* and *f*, with a circular filler *g* between them whose central portion is about the same in diameter as the said disks *e* and *f*, but whose outer edges are rabbeted, as shown. These rabbeted portions of the filler *g* provide annular grooves in which metallic contact rings E and F are seated, that are prevented from having independent rotation by means of inwardly projecting lugs *h* that enter suitable recesses in said filler made for their accommodation. Contact-ring F nearest the clutch-disk is connected, through the medium of one of these

lugs *h* with one of the terminals of the electro-magnet *d*, and the other contact-ring E is connected to the terminal of the same side of the electric circuit G, as will hereinafter be more fully described.

The contact rings E and F are, respectively, engaged by copper brushes; one, H, of which extends down from its point of engagement with ring E, and has its lower end secured to a binding-post, I, supported by a bracket J of insulating material attached to and projecting from the adjacent wall, and the other, K, of which, extends down from its point of contact with ring F, and forms one of the vertical branches of a U-shaped copper strip, the horizontal portion of which is secured to the side of bracket J opposite binding-post I. The other vertical branch of said U-shaped strip extends above the upper edge of the bracket and constitutes one, *j*, of a pair of spring-fingers, the other *k*, of which, has its lower end secured by a binding-post, *m*, on the opposite side of the supporting bracket. These two fingers are in the same vertical plane as the clutch-disk, and the latter has a lug *x*, projecting radially downward therefrom, which is, preferably incased in copper, and enters and normally establishes a contact between the upper ends of said spring-fingers.

The other terminal of the electro-magnet, opposite that connected to ring E, is soldered to one end of the wire constituting the circuit G, and this wire is, preferably, insulated, except at certain points along its length, and extends, preferably, in longitudinal groove 2 in the roller A, from the electro-magnet, to the opposite end of said roller, transaxially to the opposite side of the same and back in a corresponding groove to the ring E.

Binding-posts I and *m* are connected to the terminals of a primary circuit, R, which through the medium of a solenoid *r* operates a switch that closes a normally open bell-circuit S, that actuates an annunciator whenever the circuit is closed, and this happens whenever the roller A is revolved sufficient to move the clutch and break the circuit through lugs *x* and fingers *j* and *k*. It will be understood that these terminals I and *m* may be connected to any kind of a bell-circuit, and that if several of my improved curtains are used they may be connected in series and adapted to operate a single annunciator located either near or remote therefrom, or operate several annunciators, or may each be connected with individual annunciator circuits distinct and independent of the others.

At stated points along the entire length of the roller A, it is provided with sheaves, each of which is, preferably, made by securing collars 3, 3, on the roller that have circumferential flanges projecting from

their adjacent edges. One branch of the portion of circuit G secured to the roller is cut, between the flanges of each sheave, and the wire ends thus made are bent outward so as to project out of the groove in which said wire is seated, slightly beyond the circumference of the roller. One end of an elastic segmental copper-plate, 4, whose opposite end is secured by brads or otherwise to the rollers, is kept normally depressed and bearing against said wire ends so as to keep the circuit closed. This I accomplish by means of a cord 5, one end of which is secured to the roller adjacent to the fixed end of said segmental plate, 4, and extends around the roller, over said plate 4, and then depends down to and around small grooved pulleys 6 journaled between the parallel portions of a U-shaped bar 7, (corresponding to the conventional "curtain-stick") and then back to the next sheave on the "roller."

When it is desired to "set" my improved burglar-proof curtain, the bar 7 is drawn down and suitably attached to the sill of the window, and the disk-clutch will remain stationary so that lug *x* thereof is between and in contact with fingers *j* and *k*. The switch T is then turned so that the circuit will pass through circuit R, thus locking the magnet *d* to the disk D so that any slight rotation of the curtain roller will move lug *x* away from finger *j* or *k* and bend the opposite finger and cause a break in said circuit. As the clutch-mechanism of my invention is inclosed in casing 9, to prevent tampering with it, and as the depending cords 5 and the sheaves 4 for the upper ends thereof are arranged every five or six inches apart, any attempt to disturb the roller or the cords will immediately break the circuit and cause the alarm to sound. For example, if an attempt is made to enter by cutting one or more of the cords 5, the tension thereon being released will permit the segmental spring plate 4 to rise to its normal position, thus breaking the circuit and causing the closing of the separate alarm circuit to sound the alarm. Should any attempt be made to roll up the curtain by releasing the bar 7 from the sill, the roller A will necessarily revolve and through the electro-magnetic clutch will cause the ring or disk D to move. This will move one or the other of the leaf terminals *j* or *k* and break the circuit, causing the alarm to be sounded through the automatic closing of the respective alarm circuit. It is, of course, necessary to release this clutch when it is desired to discontinue the operation of the device and this can be readily accomplished by turning the switch T and opening the clutch circuit.

It is apparent that my invention can be used either in connection with a closed or open window or other opening, and be ab-

solutely effective for the purpose designed, and it is also apparent that I may modify the construction of some of the other parts of the same without substantially changing its construction and operation.

If desired the tension of the means for holding the roller when the curtain is "set" may be varied, so that when any of these varied tensions is disturbed the alarm will be given. Moreover the construction of the switches for normally connecting the ends of the sections of wire on the roller, as well as of the means employed for retaining the tension cords when wound on said roller may be changed without departing from the spirit of my invention.

What I claim as new is:—

1. A burglar alarm comprising a suitable roller, a normally closed electric alarm circuit a portion of the wire of which is secured longitudinally to said roller and is divided at suitable points along its length into sections, depressible means carried by said roller that connect the adjacent ends of said sections, and cords wound upon said roller that depress said means when taut, and release the same and break said circuit when slack.

2. A burglar alarm comprising a suitable automatically rewinding roller, a clutch consisting of an electro-magnet permanently secured to one end of said roller, and an independent armature member for said magnet, a normally closed electric alarm circuit connecting the terminals of the coils of said magnet, and contact members in said circuit which are electrically connected through said armature to hold said armature member and magnet relatively stationary, and are disconnected by the movement of said armature and roller to open said circuit to sound the alarm and release said armature and magnet.

3. A burglar alarm comprising a suitable roller, having a longitudinal groove, a normally closed electric alarm circuit a portion of the wire of which is secured in said groove and is divided at suitable points along its length into sections, the ends of which are bent out of said groove, depressible means carried by said roller that connect the adjacent ends of said sections, and cords wound upon said roller that depress said means when taut, and release the same and break said circuit when slack.

4. A burglar alarm comprising a suitable automatically rewinding roller, having sheaves at intervals along its length each made by securing a pair of collars thereto having opposing circumferential flanges, a normally closed electric alarm circuit a portion of the wire of which is secured longitudinally to said roller and is divided between the collars of said sheaves into sections, depressible means secured to and car-

ried by said roller that connect the adjacent ends of said sections, and cords wound upon said roller in said sheaves that depress said means when taut and release the same and break said circuit when slack.

5. A burglar alarm comprising a suitable automatically rewinding roller, a clutch consisting of an electro-magnet permanently secured to one end of said roller and a metallic clutch disk attracted by said magnet and having a lug projecting therefrom, a normally closed electric alarm circuit connecting the terminals of the coils of said magnet and contact members which normally embrace said lug and hold said disk stationary, but which when disconnected by the movement of said disk open said circuit to sound the alarm and release said disk.

6. A burglar alarm comprising a suitable automatically rewinding roller, a metallic sleeve secured to one end thereof whose outer portion is flanged, an electro-magnet seated in a suitable recess in the outer face of said flanged end of the sleeve, a metallic clutch-disk attracted by said magnet and having a lug projecting therefrom, a normally closed electric alarm circuit connecting the terminals of the coils of said magnet and contact members that embrace said lug and, normally hold said disk stationary, but which, when disconnected by the movement of said disk open said circuit to sound the alarm and release said disk.

7. A burglar alarm comprising a suitable automatically rewinding roller, a clutch consisting of an electro-magnet permanently secured to one end of said roller, and an independent armature member adapted to engage the same, two rings insulated from said roller one of which is connected to one of the terminals of the magnet coil, a normally closed electric alarm circuit, a portion of the wire of which is secured to said roller and connects the opposite terminal of the magnet coil to the other ring, two metallic brushes, one of which connects the last mentioned ring with one end of said circuit and the other of which is connected to the other end of the circuit and forms one of a pair of contacts, whose mate is connected with the first mentioned ring which contacts normally hold said armature member stationary, and are electrically disconnected by the movement of said armature to sound the alarm and render said magnet inert.

8. A burglar alarm comprising a normally open bell circuit, a suitable automatically rewinding roller, an electric circuit having a portion of the wire thereof secured longitudinally to said roller and divided at suitable points along its length into sections, the other portion of which is supported independently of said roller and controls said normally open bell circuit, means that normally connect the ends of said sec-

tions, an electro-magnetic clutch connected to said circuit, and devices which connect the portion of the circuit carried by said roller to the independent portion thereof, said circuit being opened by the movement of said means thereby closing the bell circuit.

9. A burglar alarm comprising a suitable roller; a circuit consisting of a wire, one portion of which is secured longitudinally to said roller and divided into suitable sections between the ends of the roller, and another portion of said circuit is independent of said roller; and tension devices connecting the terminals of said sections, said circuit being closed when the terminals of said sections are connected and open when said terminals are electrically disconnected.

10. A burglar alarm comprising a suitable roller; an electric circuit consisting of a wire, one portion of which is divided into sections and secured longitudinally to said roller, another portion of which forms a magnetic coil at one end of said roller, and another portion of which is independent of said roller; tension devices electrically connecting the terminals of said sections; a suitable magnet energized by said coil; and an armature movable with the magnet when the latter is energized and means operated by said armature for breaking the circuit when the armature is moved.

11. A burglar alarm comprising a suitable roller; an electric circuit consisting of a wire one portion of which is divided into sections and secured longitudinally to said roller, another portion of which forms a magnetic coil at one end of said roller, and another portion of which is independent of said roller; segmentally shaped tension devices electrically connecting the terminals of said sections; a suitable magnet movable with said roller and energized by said coil; and an armature movable with the magnet when the latter is energized and means operated by said armature for breaking the circuit when the armature is moved.

12. A burglar alarm comprising a suitable roller; an electric circuit consisting of a wire one portion of which is divided into sections and secured longitudinally to said roller, another portion of which forms a magnetic coil at one end of said roller, and another portion of which is independent of said roller; segmental tension devices partly surrounding and secured to said roller that electrically connect the terminals of said

sections; a rotatable magnet energized by said coil; and an armature movable with the magnet when the latter is energized and means operated by said armature for breaking the circuit when the armature is moved.

13. A burglar alarm comprising a suitable roller; an electric circuit consisting of a wire one portion of which is divided into sections and secured longitudinally to said roller, another portion of which forms a magnetic coil at one end of said roller, and another portion of which is independent of said roller; tension devices electrically connecting the terminals of said sections; a suitable magnet energized by said coil; and an armature movable with the magnet when the latter is energized and means operated by said armature that breaks the circuit when the armature is moved.

14. A burglar alarm comprising a suitable roller, an electric circuit consisting of a wire one portion of which is divided into sections and secured longitudinally to said roller, another portion of which forms a magnetic coil at one end of said roller, and another portion of which is independent of said roller and has flexible terminals, tension devices electrically connecting the terminals of said sections; a suitable magnet energized by said coil; and an armature movable with the magnet when the latter is energized and provided with means that engages said flexible terminals for breaking the circuit when the armature is moved.

15. A burglar alarm comprising a suitable roller, a normally closed main electric circuit a portion of the wire of which is secured to said roller and divided along its length into sections, depressible means carried by the roller that connect the adjacent ends of said sections, an electro-magnet permanently secured to said roller and connected into said circuit, an independent armature member for said magnet, contact-members in said circuit that are engaged by said armature, and a normally open bell-circuit controlled by said main-circuit, said bell-circuit being closed by the opening of said main circuit.

In witness whereof I have hereunto set my hand this 27th day of October, 1909.

WILLIAM W. ERWIN.

Witnesses:

WILLIAM DARLINGTON,
W. H. HILL.