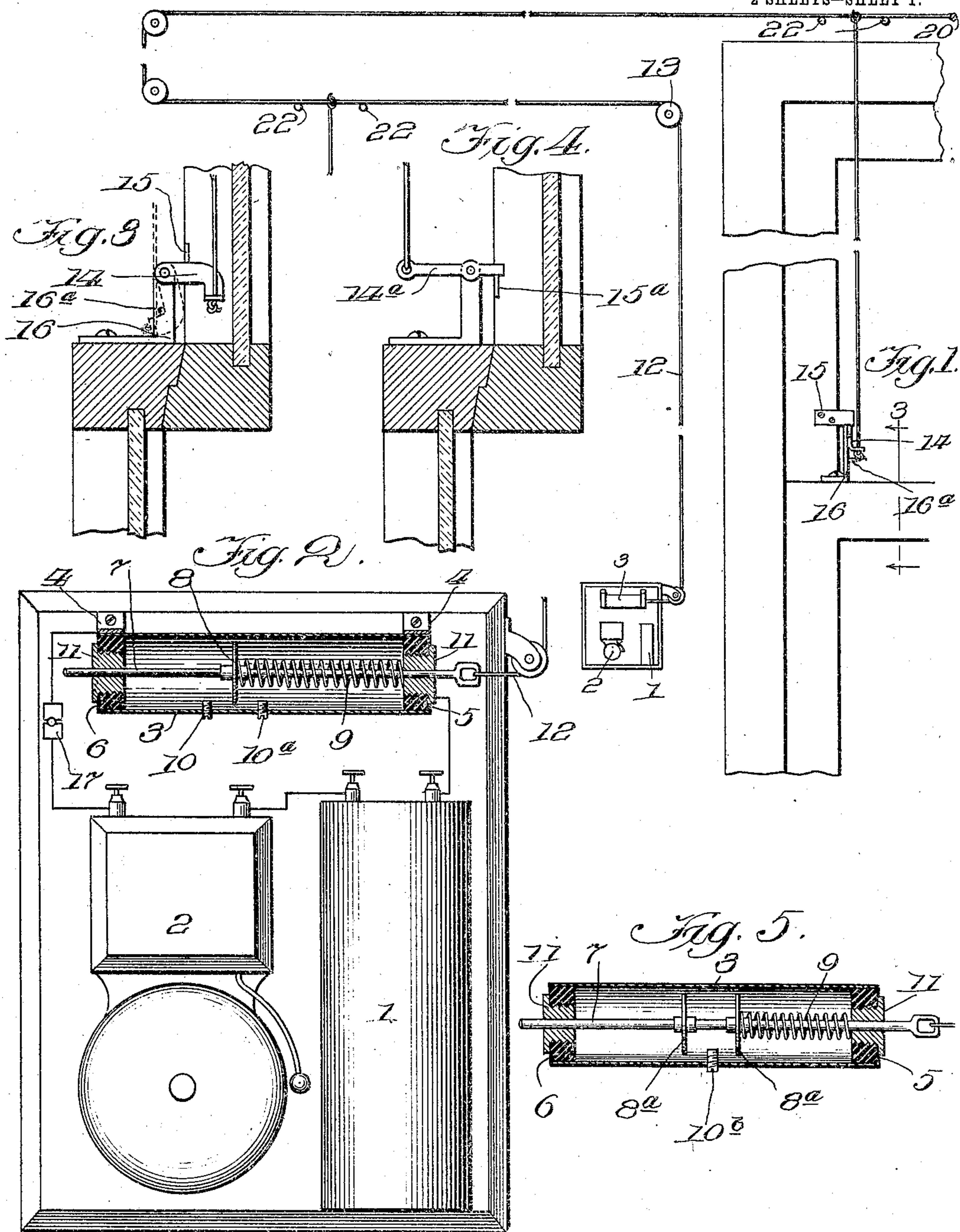


No. 793,775.

PATENTED JULY 4, 1905.

P. M. ESSER.  
FIRE AND BURGLAR ALARM.  
APPLICATION FILED AUG. 29, 1904.

2 SHEETS—SHEET 1.



Witnesses:  
H. S. Gaitner  
Fred. G. Fischer

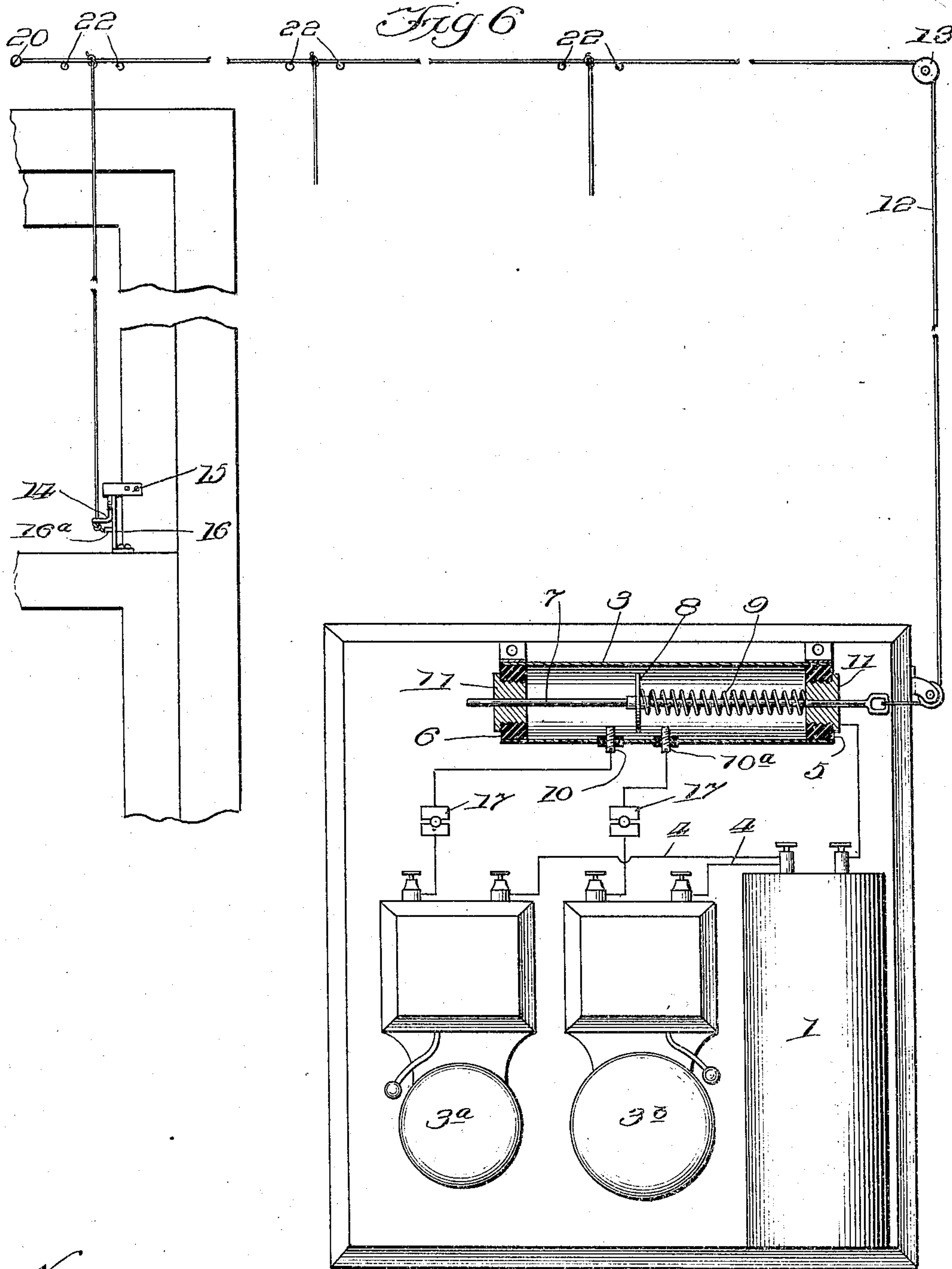
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Peter M. Esser  
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Attorneys

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2 SHEETS—SHEET 2.



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## FIRE AND BURGLAR ALARM.

SPECIFICATION forming part of Letters Patent No. 793,775, dated July 4, 1905.

Application filed August 29, 1904. Serial No. 222,518.

*To all whom it may concern:*

Be it known that I, PETER M. ESSER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Fire and Burglar Alarms, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The purpose of this invention is to provide an improved device for automatically giving alarm upon unwarranted intrusion through any household being guarded by it or upon the occurrence of fire in any apartment with which it is connected.

It consists of the features of construction set out in the claims.

In the drawings, Figure 1 is a partly-diagrammatic view showing a portion of a window connected with my alarm, the alarm-box being shown without details in front elevation. Fig. 2 is a partly-sectional view of my alarm-box with the cover removed, showing the contents, section being made axially through the contact-inclosing cylinder. Fig. 3 is a detail section at the line 3 3 on Fig. 1, showing, on an enlarged scale, the sash connections for operating my alarm. Fig. 4 is a view similar to Fig. 3, showing a modified construction. Fig. 5 is an axial section of the circuit-closer in modified form. Fig. 6 is a partly-sectional front elevation showing a modified form of circuit-closer and alarm connections and operating connections to closures shown diagrammatically.

The alarm-box contains a dry cell 1, an alarm-bell 2, and the contact devices which comprise a cylinder 3, supported by brackets 4 4 on the box, by which it is sufficiently insulated. The cylinder has heads 5 and 6, of insulating material, such as fiber board, in which there is mounted for reciprocation axially in the cylinder a rod 7, having rigid with it within the cylinder a disk 8, which is free from contact with the cylinder-walls. A spring 9, coiled about the rod, is stopped at one end on the disk and at the other end on the head 5, tending to thrust the rod toward the head 6.

10 and 10<sup>a</sup> are contact-pins set in through

the side of the cylinder at a little distance apart at opposite sides of the disk 8.

From one pole of the cell connection is made to the cylinder, as by attaching the wire to one of the supporting-brackets, and from the other pole connection is made to the rod 7. For convenience this latter connection may be made to a metal bushing or bearing 11, mounted in the head 5 and forming the immediate support of the rod in that head. This, however, is not to be distinguished in any essential respect from direct connection through the rod. The end of the rod outside the head 5 is connected by a cord 12, which extends over suitable guide-pulleys and supports through any apartment with which the alarm is to be connected for the purpose of indicating fire, where it is preferably exposed near the ceiling, where heat from fire will be greatest. If it is to be connected also with openings for guarding against burglary, the same cord may extend to the closure of such opening—door or window-sash. I have illustrated the connection as made to both the upper and lower sash of a window in such manner that the moving of either sash from closed position will draw the cord, as in the construction shown in Figs. 1 and 3, or will slack up on the cord, as shown in Fig. 4. The cord will be secured normally at such position as to hold the disk 8 intermediate between the contact-pins 10 and 10<sup>a</sup>. If the cord is cut or burned, the spring 9 will force the disk against the pin 10, closing the circuit and causing the alarm to sound. If the cord is slacked by the opening of either sash in the form shown in Fig. 4, the same result will follow. If the connection with the sash is made as in Fig. 3, the opening of the sash will draw upon the cord and pull the disk to the contact-pin 10<sup>a</sup>, closing the circuit and sounding the alarm in case of movement in the other direction upon slacking the cord.

I do not limit myself to the particular mechanical means by which the moving of the sash or other opening closure from closed position slacks or draws upon the cord; but the particular devices shown may be described. In the form shown in Figs. 1 and 3 the cord



running over a guide-pulley 13 at the top of the window-casing is connected with a lever 14, fulcrumed upon the upper edge of the lower sash and stopped against a stop 15, 5 mounted on the face of the side bar of the upper sash and projecting above the lever. With this construction either the raising of the lower sash or the lowering of the upper sash, causing the lever 14 to fulcrum on the 10 lower edge of the stop 15, will draw upon the cord until the stop passes the point of connection of the cord to the lever and in so drawing will bring the disk 8 into contact with the pin 10<sup>a</sup> and close the circuit. If the 15 cord is burned or by any other means severed between the alarm-box and its fastening to the lever 14, the cord will be slacked and the disk 8 will be pulled by the spring into contact with the pin 10 for closing the circuit.

20 In the form shown in Fig. 4 instead of the lever 14 a lever 14<sup>a</sup> is employed, extending both ways from its fulcrum-support on the lower sash and having the cord connected to the outer end, the inner end being stopped 25 against a stop-plate 15<sup>a</sup>, mounted on the face of the side bar of the upper sash below the lever. With this construction the raising of the lower sash or lowering of the upper sash will slack the cord and cause the disk 8 to be 30 moved by the spring into contact with the pin 10 for closing the circuit.

In Fig. 5 an obvious modification of the contact is shown, consisting in providing two disks 8<sup>a</sup> 8<sup>b</sup> and one contact-pin 10<sup>b</sup> between 35 the disks instead of having one disk between two pins.

A specific advantage pertains to the construction which involves two contact-pins and one disk when combined with a mode of connecting the cord to the closure which is to be 40 guarded such that the cord is drawn upon instead of being slacked by opening the closure, because the contact which is made by burning or cutting the cord is with a different pin 45 from that which is made by opening the closure, and it is thus rendered possible by proper devices to distinguish between an alarm of fire and an alarm of burglary. For the purpose of making such distinction the structure 50 may be modified, as shown in Fig. 6, the contact-pins being insulated from the cylinder, and from one pole of the battery two wires 4 and 4 extend to two different alarm-bells 3<sup>a</sup> and 3<sup>b</sup> of different tone and from the bells to 55 the contact-pins, respectively, so that one bell will sound when the current is closed through one of the contact-pins and the other bell will sound when it is closed through the other pin. Obviously any other two distinguishable 60 signals may be employed instead of bells of different tone, or, if preferred, the circuit which is closed by opening the closure, as in case of burglary, may contain lights, causing an illumination instead of sounding an alarm. In 65 order to obtain the advantage above pointed

out from the construction in which the cord is pulled or drawn upon by the opening of either sash, it is necessary to provide that when the lever 14 has been swung to the position at which the stop 15 can pass it it shall not be 70 liable to swing back above that stop, since that would cause the cord to be slacked and the other alarm to be sounded. For this purpose the lever 14 is given a downward bend at the inner end a little in excess of the distance from the fulcrum of the lever to the 75 stop-plate 15 and the cord is connected at the lower end of said downward bend on a pin which extends off inward from said lower end sufficiently to insure that the cord will clear 80 the stop when the lever swings out past the latter, and by this means it will be seen that the point of attachment of the cord is carried outward—that is, away from the plane of the window—past the fulcrum of the lever by the 85 movement of the stop 15 past the lever, so that the stress of the cord will prevent the lever from returning, and the lever being stopped at the position shown in dotted line in Fig. 3, as by a projection 16<sup>a</sup> on the ful- 90 crum-post 16, the cord is held in this position and is prevented from being slacked by the further opening of the window. If only one form of signal is employed, so that it is not material from which contact-pin the circuit is 95 closed for sounding the signal, it is not necessary to make this provision for locking the lever against return after it is swung out, because the lever swinging in after it passes the contact-plate 15 will cause the cord to be 100 slacked, and the disk 8 will simply fly from one contact-pin to the other without any change in the effect upon the signal, the circuit being closed at both positions and being 105 open only for the unappreciable extent during which the disk is moving from one pin to the other under the reaction of the spring.

The special advantage of employing a closed chamber, as the cylinder 3, within which the contact for closing the circuit is made, is that 110 thereby the contact devices 8 and 10 10<sup>a</sup> are protected against the lodgment of dust thereon and measurably against corrosion, which would prevent good contact.

A switch 17 may be employed, as shown in 115 Fig. 2, for disconnecting the alarm-signal, so that the opening of windows or other closures with which the device is connected in the daytime or at any time when such opening would not indicate unlawful intrusion may not cause 120 the annoyance of constant sounding of the alarm. When the device is constructed with two alarm-signals—one for fire and the other for burglary, as in Fig. 6—each of said signals will be connected with the circuit by a separate switch 17. In that case the fire-alarm 125 signal may remain closed, so that the alarm will operate upon such action of the device as will be caused by burning of the cord, while the other signal connected with windows or 130



other closures may be out of operation except when its switch is closed. The only purpose of the switch in connection with the fire-alarm signal is that the signal may be disconnected and the waste of the current prevented after the sounding of the alarm has effected its purpose by calling attention to the fire. The other switch serves a similar purpose—permitting the alarm to be disconnected after it has been sounded and while the closure whose opening causes it to be operated still remains open.

In order that the device may be employed for connection with a multiplicity of closures in a house—doors and windows—so as to sound an alarm whenever any one of them is interfered with, and in order that also the cord may extend through any number of apartments in the house for giving alarm against fire in any one of them and that adaptation to serve either use shall not defeat adaptation to the other use, the preferable arrangement is to extend the cord from the rod 7 about suitable guides throughout all the apartments which are to be guarded, the cord being fastened at the end of the course, as seen at 20 in Fig. 1. This main-line cord being exposed in all the apartments, so as to be burned in case of fire in any one of them, being preferably at the top of the rooms may have its several branches extending down alongside the doors and windows for connections as described. The branches leading off at right angles to the main-line cord will not prevent the latter cord from yielding longitudinally if it is severed at any point, because such yielding will merely carry the point of connection of the branch a little one way or the other without drawing upon the branch. An alarm of fire will thus be given if the cord burns through at any point, notwithstanding the cord is connected at many points by the branches to the closures which are to be guarded. In order that a pull upon any branch cord caused by an attempt to open the closure with which it is connected may draw upon the main-line cord in the direction running toward the alarm-box to approximately the full extent of the pull or movement of the closure and without danger of drawing upon the main-line cord in the direction toward its secured end, which would tend to break it, supports 22 22 are provided for the main-line cord, one at each side of each branch cord, sufficiently near so that the downpull which may be made upon the main-line cord by the branch will draw upon the main-line cord in whichever direction the latter will yield and sufficiently separated so that the yielding movement of the main-line cord in case of its severance by burning or otherwise will not bring the branch cord to the support, and therefore will not draw materially upon the branch cord.

I claim—

65 1. An automatic alarm comprising an alarm-

signal and its operating-circuit; a spring-operated circuit-closer adapted to close the circuit by movement either in the direction caused or in that opposed by the spring, a combustible cord connected to the circuit-closer adapted to hold the latter open when the cord is taut, such cord being extended through the space to be guarded, and connected also to a closure to be guarded as to burglary, said connection being adapted to draw upon the cord when the closure is moved in one direction, and slack it when it is moved in the opposite direction.

2. An automatic combined fire and burglar alarm comprising two distinguishable alarm-signals; circuits in which they are operated comprising a movable circuit-closer and an electrode thereon connected with one pole of the current-generator, and two electrodes insulated from each other connected with the two signals respectively; a spring reacting to move the circuit-closer toward one of the terminals adapted to resist yieldingly its movement toward the other; a combustible cord strained taut from the circuit-closer and holding it out of circuit-closing position and also connecting said circuit-closer with the closure to be guarded, said latter connection being adapted to be drawn upon by the opening movement of the closure.

3. An automatic alarm comprising an alarm-signal and its operating-circuit; a spring-operated circuit-closer adapted to close the circuit by movement either in the direction caused or in that opposed by the spring, a cord strained taut from the circuit-closer and holding it out of circuit-closing position; a branch from said cord connected to a closure to be guarded, the connection being such that the opening movement of the closure draws upon the taut cord.

4. An automatic alarm comprising an alarm-signal and its operating-circuit; a spring-operated circuit-closer; a cord strained taut from the circuit-closer and holding it out of circuit-closing position; a plurality of branches from such cord extending off transversely thereto for connection with closures to be guarded; means for connecting them with such closures adapted to cause the opening movement of the closure to draw said branch cords in direction to exert a transverse pull upon the taut cord, and lateral stops for the taut cord in position to oppose such transverse pull at a little distance each side from the branch cords respectively.

5. An automatic combined fire and burglar alarm comprising an alarm-signal and its operating-circuit; a spring-operated circuit-closer; a combustible cord connected to the circuit-closer and extending through the apartments to be guarded, and secured at the remote end holding the circuit-closer open against the tension of its spring; branch cords extended from such combustible cord trans-



versely thereto and means connecting such branch cords with the closures to be guarded respectively adapted to draw upon such branch cords when the closures are open, and supports for the main-line cord at short distances each side of the branch cords respectively.

6. An automatic alarm device comprising an alarm-signal; an electric circuit in which the signal is operated; an inclosed chamber; a circuit-closer comprising a rod mounted movably in such chamber and protruding therefrom for actuation; an electrode mounted on the rod for movement therewith; an electrode protruding in the chamber in the path of movement of the electrode on the rod; a spring for yieldingly thrusting the rod in direction for bringing the electrodes into contact; a cord connected with the rod for holding and drawing it against the action of the spring, the cord being extended to a point of fastening and having a combustible portion exposed intermediate said point of fastening and its connection to the rod in the apartment to be guarded against fire.

7. An automatic alarm device comprising an alarm-signal; an electric circuit in which the signal is operated; an inclosed chamber; a circuit-closer mounted movably in such chamber and protruding therefrom for actuation; an electrode mounted on the rod for movement therewith; two electrodes protruding within the chamber in the path of movement in opposite directions of the electrode on the rod; a spring operating on the rod to thrust it yieldingly in one direction, and a cord connected to the rod and adapted to be connected to a closure to be guarded by the alarm so as to hold the electrode on the rod intermediate the other electrodes when the cord is taut.

8. An automatic alarm device comprising an alarm-signal; an electric circuit in which the signal is operated; an inclosed chamber; a circuit-closer mounted movably in such chamber and protruding therefrom for actuation; an electrode mounted on the rod for movement therewith; two electrodes protruding within the chamber in the path of movement in opposite directions of the electrode on the rod; a spring operating on the rod to thrust it yieldingly in one direction; a cord connected to the rod and adapted to be connected to a closure to be guarded by the alarm so as to hold the electrode on the rod intermediate the other electrodes when the cord is taut, and

means for connecting the cord to the closure adapted to cause movement of the closure in either direction from closed position to operate the cord for drawing or slacking it.

9. An automatic alarm device comprising an alarm-signal and its operating-circuit; a spring-operated circuit-closer; a cord connected to the circuit-closer adapted to hold the circuit open when the cord is taut; a lever fulcrumed upon one sash of a window to be guarded by the alarm and stopped upon the other sash when both sashes are at closed position, the cord being connected to said lever in such relation to its fulcrum as to hold it against its stop on the other sash whereby movement of either sash for opening either draws or slacks the cord.

10. An automatic alarm device comprising an alarm-signal and its operating-circuit; a spring-operated circuit-closer; a cord connected to the circuit-closer adapted to hold it open when the cord is taut; a lever fulcrumed on one sash of the window to be guarded by the alarm and stopped against the other sash in direction contrary to the opening movement of the latter, the cord being connected to such lever in such relation to its fulcrum as to hold it against such stop.

11. An automatic alarm device comprising an alarm-signal and its operating-circuit; a circuit-closing device comprising three electrodes distributed on a fixed and a movable support, two upon one of such supports and one upon the other intermediate the two in the path of the movable support; a spring acting upon the movable support and a cord connected to the latter for holding it against the tension of the spring; a lever fulcrumed on one sash of the window to be guarded by the alarm and stopped against the other sash in direction contrary to its opening movement, the cord being connected to the lever so that at closed position of the sashes it holds the fixed and movable electrodes out of contact, with the one intermediate the two, and in such relation to the fulcrum of the lever that it holds it against its said stop.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 17th day of August, A. D. 1904.

PETER M. ESSER.

Witnesses:

CHAS. S. BURTON,  
M. GERTRUDE ADY.