

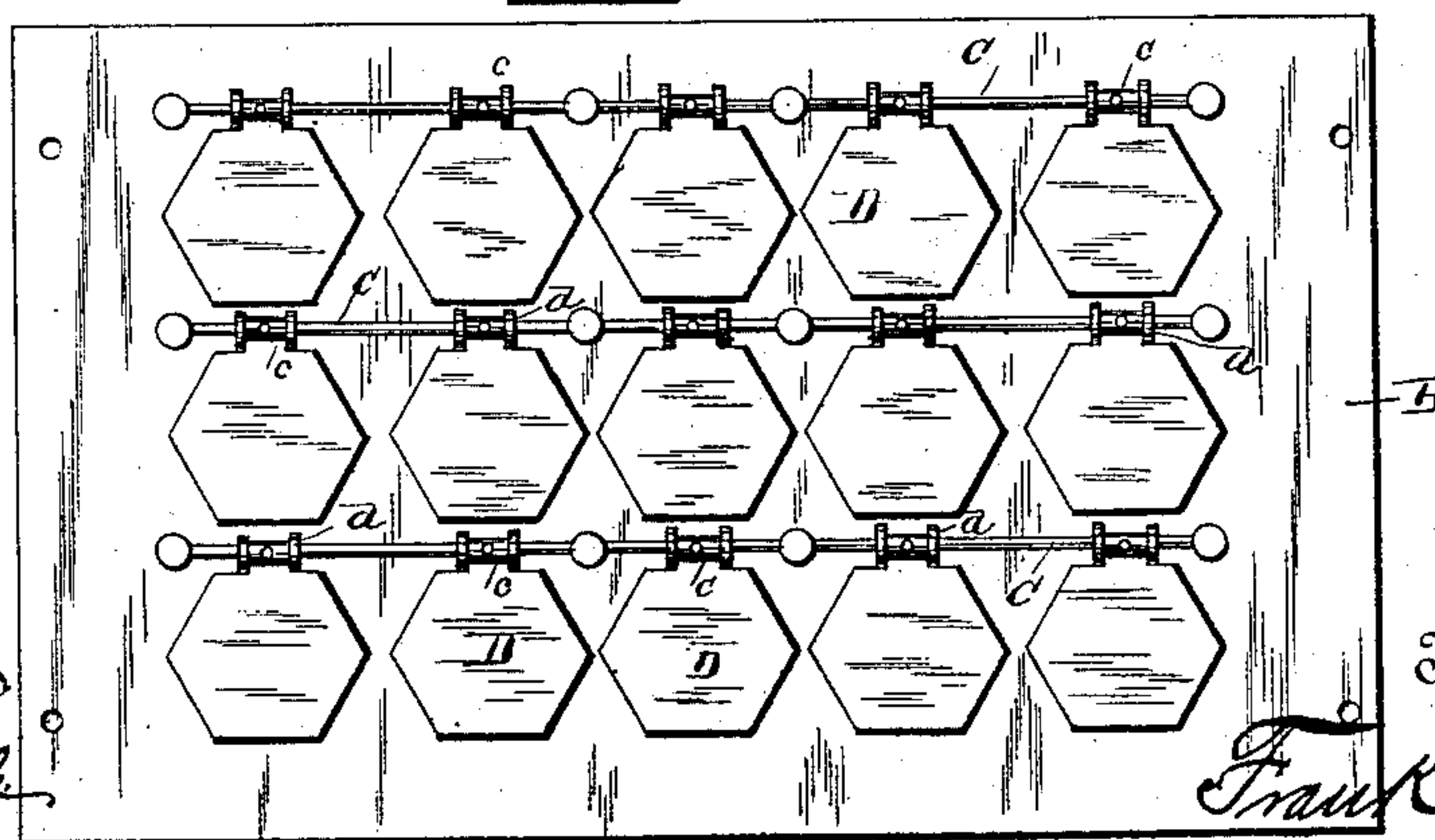
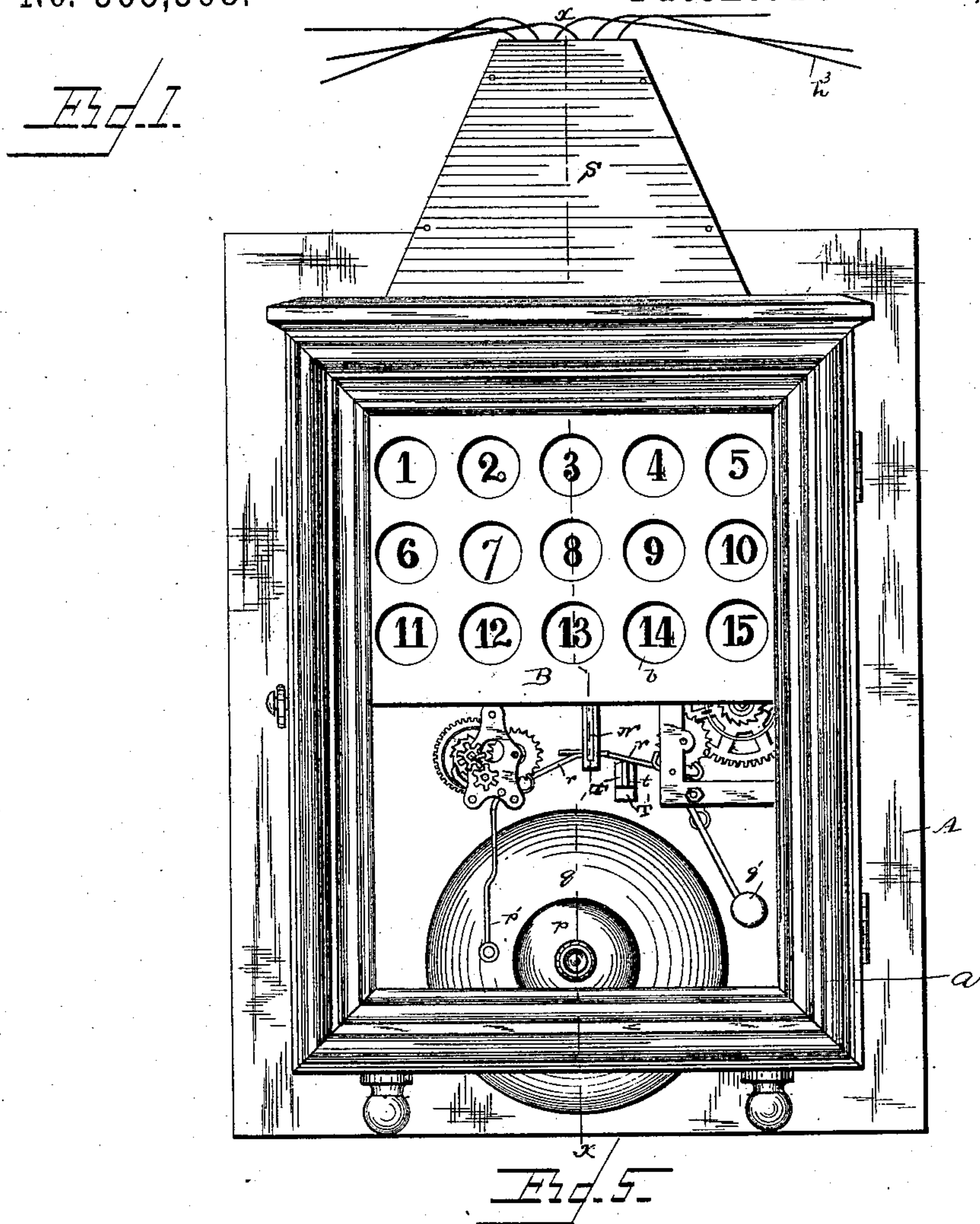
(No Model.)

3 Sheets—Sheet 1.

F. CROSS.
BURGLAR ALARM AND CALL BELL.

No. 365,368.

Patented June 28, 1887.



Witnesses

C. E. Doyle

Inventor

Frank Cross

By his Attorneys

W. B. Berkeley

C. A. Snowden

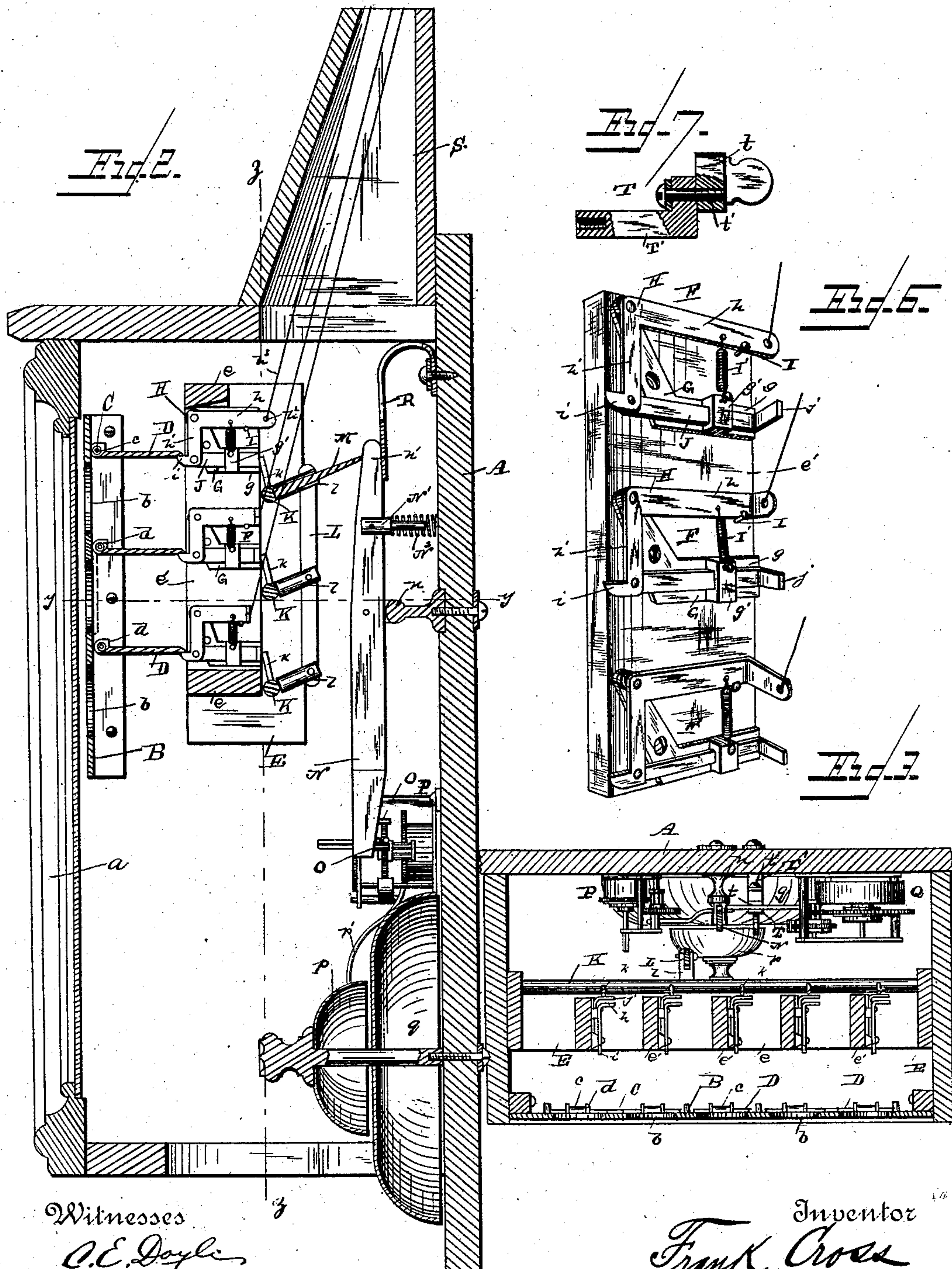
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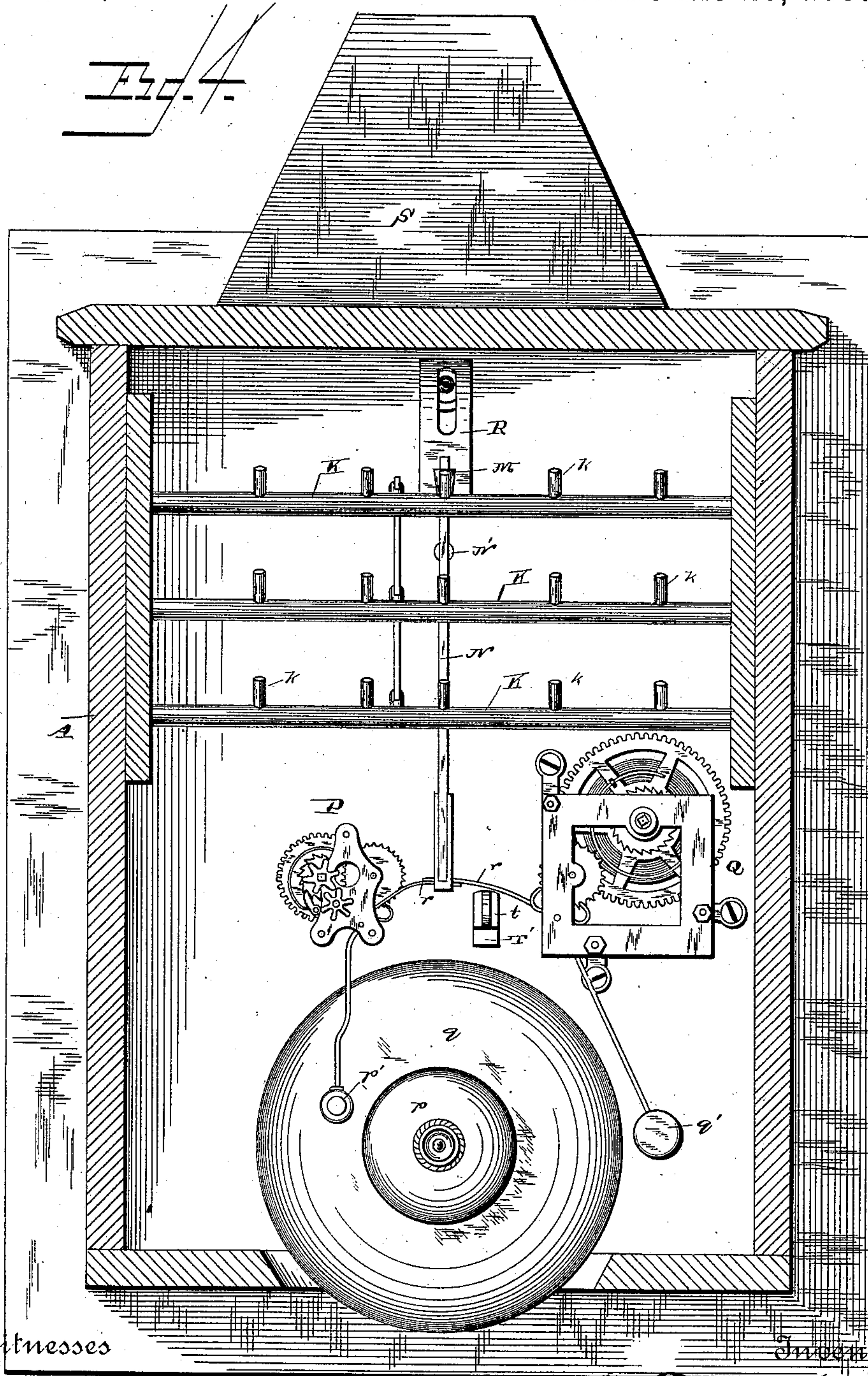
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UNITED STATES PATENT OFFICE.

FRANK CROSS, OF LOUISVILLE, KENTUCKY, ASSIGNOR OF ONE-HALF TO
HARRY A. BUEK, OF NEW ALBANY, INDIANA.

BURGLAR-ALARM AND CALL-BELL.

SPECIFICATION forming part of Letters Patent No. 365,368, dated June 28, 1887.

Application filed November 10, 1886. Serial No. 218,484. (No model.)

To all whom it may concern:

Be it known that I, FRANK CROSS, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Improvement in Burglar-Alarms and Call-Bells, of which the following is a specification.

My invention relates to improvements in burglar-alarms; and it consists of the peculiar combination of devices and novel construction and arrangement of the various parts for service, substantially as hereinafter fully described, and particularly pointed out in the claims.

The primary object of my invention is to provide a burglar-alarm with improved mechanism which shall be automatically operated when a door, window, or other place with which the alarm is connected is opened or forced, so as to simultaneously sound an alarm and indicate to the owner or watchman the place where the door or other device is located. With this end in view I employ an improved tripping device, which normally holds a name or drop plate in an elevated position and concealed from view, and also prevents the detaining-rod of the alarm mechanism from releasing the latter, whereby when a pull is exerted on the tripping device the name-plate is released to expose the name or number of the place with which the tripping device is connected, and the detaining-rod is released to actuate the alarm mechanism, both of these operations taking place simultaneously.

A further object of my invention is to provide a tripping device which shall be automatically returned to its proper normal position, so that the name or drop plate can be readily adjusted, and which shall be simple in construction, as well as effective in operation, the said device being easily and readily adjusted by hand after the plate has been dropped.

A further object of my invention is to provide a burglar-alarm with improved alarm mechanisms of different power or volume, which can be set for operation either singly or jointly, as may be desired, in order to give alarms of different degrees of volume or power, and to provide one or both of the said alarm

mechanisms with a device for throwing either one or both out of operation at will.

A further object of my invention is to provide the detaining-rod of the alarm mechanisms with means for throwing the pins thereof into engagement with the bell hammers of the alarm mechanisms, so that when the pull on the cord or wire of the detaining device is released the rod will be re-engaged with the bell-hammers of both alarm mechanisms to prevent the same from further operation, which device can also be readily adjusted out of the way of the detaining-rod to permit the alarm mechanisms to continue in operation until they have run down.

In the accompanying drawings, which illustrate a burglar-alarm embodying my present improvements, Figure 1 is a front elevation thereof. Fig. 2 is a vertical transverse sectional view through the same on the line *xx* of Fig. 1. Fig. 3 is a transverse horizontal sectional view on the line *yy* of Fig. 2. Fig. 4 is a vertical sectional view on the line *zz* of Fig. 2. Fig. 5 is a detached detail view of the dial-plate of the alarm. Fig. 6 is a detached perspective view of the tripping mechanism. Fig. 7 is a like view of the device for controlling the bell-hammer of the alarm mechanism.

Referring to the drawings, in which like letters of reference denote corresponding parts in all the figures, A designates the inclosing-case of my improved burglar alarm, which is made substantially rectangular in form and provided with a hinged swinging door, *a*, at its front, which has a pane of glass secured therein, so that the dial and alarm mechanisms of the apparatus can be readily observed, and through which ready access can be had to the various parts in order to adjust and set them for operation.

B designates the dial or face of my improved apparatus, which is rigidly affixed to the inclosing-case at the upper front portion thereof, and this dial or face is preferably made of a flat piece of metal or other suitable material. The dial has a series of viewing-openings, *b*, preferably fifteen (15) in number, which are arranged in three series with five (5) to a series, although the number and arrangement of the viewing-openings can be varied, as may

be desired or deemed necessary. On its rear side the dial-plate is provided with a series of longitudinally-arranged rods or bars, C, which are arranged between the series of openings therein. Preferably three rods are employed, one for each series of openings. These longitudinal rods are arranged parallel with each other, and they are connected to the dial-plate by means of short posts, which are rigidly affixed to the plate, and in which the parallel longitudinal rods are rigidly secured or affixed. Each of these rods has a series of stops, *c*, which are rigidly affixed thereto or formed therewith, and these stops are arranged equidistant on the rod, for a purpose presently described.

D designates the name or drop plates, which correspond in number with the number of openings in the dial-plate, these drop-plates being of round, hexagonal, or of any other desired form and shape. The drop-plate is provided at its upper edge with a pair of integral parallel lugs, *d*, which have aligned openings therein, through which the rods or bars C are passed. These lugs of each drop or name plate are fitted on one of the rods, on opposite sides of the fixed stop thereon, so that the name or drop plate is prevented from moving longitudinally of the rod, and is thereby held in its proper place thereon to close the viewing-opening in the dial-plate. Each name or drop plate is thus pivoted independently on one of the rods C of the dial-plate, and it is free to swing thereon without hinderance from the rod and from the other plates of the series, each drop or name plate being designed to cover one of the openings in the dial-plate, so that the figure, numeral, character, &c., thereon can be readily seen through the said opening in order to indicate to the owner or watchman the place where the attempted burglary is being performed. The dial-plates are preferably numbered—in the instance herein shown from one to fifteen, inclusive—as shown in Fig. 1; but the figures can be replaced by letters or other suitable characters to designate the different parts around a dwelling or other structure to which the different tripping devices of the apparatus are connected.

E designates a main supporting-frame, which is arranged in rear of the dial-plate and its name or drop plates, and this frame is arranged in the upper portion of the inclosing-case, and is rigidly affixed or secured therein by any suitable or preferred devices. The frame preferably comprises the parallel horizontal bars *e* and the vertical bars *e'*, which are arranged equidistant from one another and parallel, as shown. The vertical bars correspond in number with the number of viewing-openings to a series in the dial-plate, and the horizontal and vertical bars of the frame can be cast or formed of a single piece of metal; or the frame can be made of wood and the several bars thereof firmly and securely united or connected together.

F designates the tripping devices or mechanisms, which are supported by the frame E, and are shown in detail in Fig. 6 of the drawings. A series of these tripping devices are employed, which correspond in number with the number of drop or name plates employed, one tripping device being provided for each of the name-plates, which it alone is designed to operate, the tripping device and its name-plate being operated independently of the other devices and without affecting the same. Each of the tripping-devices is arranged upon one side of one of the vertical pieces of the frame E, and it is located immediately in rear of the drop or name plate which it is designed to control or actuate. Each tripping device consists of a base-plate, G, which is cast or formed in a single piece of metal, and has a horizontal arm, *g*, upon which is cast or formed a loop, *g'*, which constitutes a fixed guide for the pushing-arm of the tripping device, presently described. This base plate is provided with suitable transverse openings, through which are passed the screws or other devices which rigidly affix the said plate upon one of the vertical pieces of the frame, and to the upper end of the vertically-disposed base-plate is pivotally connected a bell-crank lever, H, which has the horizontal arm *h* and the vertical arm *h'*, the two arms being united and formed in a single piece. The bell-crank lever is pivoted to the upper end of the base-plate by means of a suitable pin or shaft, which passes through the lever at the point where the two arms join or are connected together, and the rear end of the horizontal arm of the said lever has a transverse opening, *h*², therein, through which is passed one end of a wire or cord, *h*³, which is thus connected to the pivoted lever of the tripping mechanism.

The lower end of the vertical arm *h'* of the bell-crank lever is provided with a catch, *i*, which is cast or formed in a single piece with the lever, and this catch projects beyond the front vertical edge of the vertical arm of the lever and beyond the corresponding edge of the vertical piece *e'* of the frame to which the tripping device is connected. This catch is provided on its lower side with a beveled portion, and the catch is adapted to receive the free edge of one of the swinging drop-plates to support the same in a horizontal elevated position to conceal its distinguishing numeral or character from view. The downward movement of the horizontal arm of the bell-crank lever, and consequently the forward movement of the lower end of the vertical arm of the said lever, is limited by the rear end of the horizontal arm of the lever coming in contact with a stop-pin, I, which is rigidly affixed to one of the vertical pieces of the frame E and arranged in the path of the free end of the said horizontal arm. The horizontal arm of the lever is normally drawn down into contact with this fixed stop-pin by means of a coiled spring, I', which is connected at one end to the horizon-

tal arm of the lever and at its opposite end with the fixed guide of the base plate of the tripping mechanism.

J designates the push arm or rod of the tripping mechanism, which is arranged in a horizontal position and passes through the fixed guide of the base-plate. The front end of this push arm or plate is pivotally connected to the lower terminal end of the vertical arm h' of the bell-crank lever, so as not to interfere with the action of the catch thereof, and the rear end of the said push plate or bar is extended through the fixed guide and in rear of the vertical piece e' of the frame E, where it is provided with a right angled lug or flange, j , which is formed integral therewith, and which is adapted to impinge upon a fixed post on an oscillating or rock shaft, K, to actuate the latter when the tripping device is moved.

In order to set the alarm, the free end of the swinging drop or name plate is elevated by hand until its rear edge impinges against the lower beveled side of the catch on the bell-crank lever of the trip mechanism, and pressure is then applied to the drop-plate to cause the bell-crank lever to move on its pivot and thereby distend the coiled retracting spring, the pressure being of sufficient power to overcome the resistance of the spring. The free edge of the drop-plate clears the catch on the lever, and the latter is then returned to its normal position by the spring. The downward movement of the bell-crank lever is limited by the fixed stop-pin, and the free edge of the drop-plate is allowed to rest upon the catch to support the same in a horizontal position. The strain or pull upon the operating-cord h^3 is brought on the horizontal arm of the bell-crank lever to raise the same against the tension of the coiled spring, which movement withdraws the lower end of the vertical arm and the catch thereon from beneath the free edge of the drop-plate, which then falls or drops by gravity to cover the viewing opening and expose the distinguishing figure or character on its face, and thus indicate to the owner or watchman the place where the attempted burglary is taking place. Immediately after the strain on the operating-cord is released, the spring returns the bell-crank lever to its normal position, and the drop or name plate can be readily reset by merely elevating it by hand until the free edge thereof clears the catch on the said lever. There are three of these rock-shafts K employed, which correspond in number with the number of series of openings employed. The rock-shafts are arranged in horizontal positions in rear of the frame E of the apparatus, and they are loosely journaled at their terminal ends in suitable bearings or openings provided therefor in the frame E. Each shaft is provided with a series of vertically-disposed posts, k , which are rigidly affixed thereto and arranged in line with each other longitudinally of the shaft. Each of these fixed posts is arranged in line with and in rear of the rear end of the push-arm of its respective

tripping mechanism, and when the push arm or plate is forced rearwardly by the action of the bell-crank lever thereon it impinges against the post, and thus causes the rock-shaft to oscillate in the bearings in the frame, as will be readily understood. The rock-shafts are connected for simultaneous operation, so that when one is moved the others are also moved, by means of a vertically-disposed coupling-bar, L, which is pivoted to suitable arms, l , which are rigidly affixed to the said shafts, and one of the rock-shafts is provided with an operating-arm, M, which projects or extends rearwardly from the same.

N designates a vertically-disposed detaining-bar, which is arranged in the rear part of the inclosing-case in rear of the rock-shafts therein. This detaining-bar is pivoted at an intermediate point of its length in a suitable post or standard, n , which is rigidly affixed to the rear wall of the inclosing-case A. The upper outer edge of this detaining-bar is inclined and reduced, as at n' , and against this inclined portion of the bar rides or impinges the outer terminal end of the operating-arm M of one of the rock-shafts, whereby when the free end of the operating-arm is depressed it rides against the inclined portion of the detaining-bar, to press or force the upper end of the same rearwardly toward the rear wall of the inclosing-case and to press the lower end of the said detaining-bar toward the front of the case. The detaining-bar is provided with a guide-pin, N' , which is pivotally connected thereto, and the other end of this guide-pin works in a suitable opening in the rear wall of the inclosing-case, so as to properly guide the bar in its movements; and this pin is encircled by a coiled spring, N^2 , which impinges against the rear wall of the case and the detaining-bar, to normally press the lower free end of the latter inwardly into engagement with the bell-hammers of the alarm mechanisms, and when the operating-rod does not impinge against the widest portion of the inclined face of the said bar. The lower end of this detaining-bar is provided with parallel pins or spurs o , which are rigidly affixed or secured in place thereon, and these spurs or pins are adapted to engage the bell-hammers of alarm mechanisms P Q. These alarm mechanisms are arranged at the lower end of the vertical detaining-bar, and they are rigidly affixed to the rear wall of the case on opposite sides of the said detaining-bar. The alarm mechanism P has a bell, p , which is smaller than the bell q for the other alarm mechanism, Q, and these bells p q are adapted to give sounds of different strengths, and they are supported on a shaft which is common to both bells.

The alarm mechanisms are each provided with an escape-wheel, which is driven by a spring through intermediate gearing; and this escape-wheel controls a pallet, to which are connected the bell-hammers p' q' of the bell-striking or alarm mechanisms. Each of these

bell-hammers of the independent alarm mechanisms is provided with an inwardly-extending arm, *r*, which meet or cross one another, and are adapted to be engaged by the spurs or pins on the lower end of the detaining-bar, as shown. The alarm mechanisms are of different sizes, and they are arranged above their respective bells. The said mechanisms are adapted to be wound separately, so that either one can be employed; or both of the said alarms can be wound, so that they can be set for joint operation, and thus give a very violent ringing alarm.

It will be seen that when one of the push plates or arms of the tripping devices has been forced rearwardly by the bell-crank lever it will impinge against the post provided therefor on one of the rock-shafts; and as the said rock-shafts are connected for simultaneous operation by the intermediate coupling-bar, the rock-shaft that has the operating-rod *M* will be actuated or moved in its bearings, so that the free end of the said operating-arm will be depressed. The free end of the operating-arm rides upon the inclined portion of the vertically-disposed operating-bar and moves the upper end thereof inwardly against the tension of the spring, so that the lower end is forced outwardly and withdraws the pins or spurs thereof from engagement with the meeting arms of the bell-hammers, thereby releasing the alarm mechanisms. The spring on the guide-pin of the detaining-bar is not of sufficient power to return the lower end of the rod and the pins thereof into contact with the arms of the bell-hammers, and thus the latter are allowed to run down, or until the alarm has been reset, which can be accomplished by the proper adjustment of the detaining-bar, so that its pins will re-engage with the arms of the bell-hammers.

R designates a powerful spring, which is pivoted at one end to the rear wall of the case, and arranged so that its free end can be turned to impinge against the upper end of the detaining-bar, so that when the operating-arm is depressed the detaining-bar will be moved against the tension of the said spring, and when the movement of the rock-shaft ceases the spring serves to elevate the operating-arm and press the lower end of the detaining-bar inwardly, and thereby re-engage the pins thereof with the hammers of the alarm mechanism, which are prevented from operating after the strain or pull on the operating-wire of the tripping mechanism has ceased.

The inclosing-case *A* of the machine or apparatus is provided with a cone-shaped cap-piece, *S*, which is rigidly affixed thereto, and this cap communicates with the chamber of the case, and has a central opening, through which is passed the operating cords or wires which are connected with the various tripping mechanisms of the machine, the said wires or cords thus coming through a common outlet-opening and running in various directions to different parts of the house, &c.

T designates a detent for retaining the arm of the bell-hammers against movement. This detent comprises a cam-block, *t*, which is pivoted so as to turn freely on a screw, *t'*, which connects it to a fixed bracket, *T*, which is rigidly secured to the rear wall of the inclosing-case. This cam-block is provided with a suitable finger-piece, by means of which it can be readily turned or rotated, and the device is arranged beneath the arm of the bell-hammers, so as to elevate the latter and prevent the hammer from coming in contact with the bell and giving an alarm. The cam-block can be readily turned on its pivot in order to elevate the arm of the bell-hammer, and thus prevent the same from striking, and it can also be turned out of the way of the bell-hammer to permit it to operate. One or both of the alarm mechanisms can be provided with this detent, so that they can be thrown out of operation at the will of the owner after the alarm mechanism has been wound up and set.

This being the construction of my improved burglar-alarm, the operation thereof is as follows: One or both of the alarm mechanisms is wound up, and all of the name-plates are elevated and engaged with the tripping devices. When a pull is exerted on one of the operating wires or cords, the tripping device to which the same is connected is operated to release the proper name or drop plate, which falls by gravity and exposes the number or character on its face, and simultaneously with the release of the name plate the push arm or plate is operated to impinge upon one of the fixed posts on one of the rock-shafts. As all of the rock-shafts are connected, the operating-arm is pressed until the lower end of the detaining-bar is forced from engagement with the arms of the bell-hammers to release the latter, and thus allow one or both of the alarm mechanisms to be set free, which thus gives the alarm.

It will be understood that I provide a series of independently-operating tripping devices, a detainer-bar or detainer to release the alarm, and transmitting mechanism intermediate of the detainer and the tripping mechanism, which transmitting mechanism is operated upon by the tripping devices to actuate the detainer and release the alarm.

One of the essential features of my invention is the limiting spring or brake for the detainer, by means of which the alarm mechanism will not sound after the direct strain or pull on the tripping mechanism has ceased. Again, the detent or cam to elevate the releasing-rod or hammer of one of the alarms out of contact with the detainer performs a useful function.

It will thus be seen that I provide improved means for sounding an alarm for notifying the owner or attendant of the place where the burglary is attempted, and that the operations are performed automatically and simultaneously.

The alarm or alarms can be very readily wound up and the name or drop plate reset to

adapt the apparatus for service again. I thus provide an improved burglar-alarm which is simple, strong, and durable in construction, effective and reliable in operation, easily set or adjusted and controlled, and which can be manufactured at a comparatively small sum.

I desire to state that while I deem the mechanisms herein shown and described as best adapted for carrying my invention into practice, still I reserve the right to make such changes and modifications in the minor details of construction and form and proportion of parts as may fall within the principle or scope of my invention.

My invention can be also adapted for use as a call-bell, in which event the small alarm mechanism only is to be employed, and it can also be used as hotel-annunciators and for other places, the operating cords or wires leading to the various rooms, and are to be pulled to release the name-plate and sound the alarm simultaneously.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a burglar-alarm, the combination of the tripping mechanism and a gravitating swinging name-plate supported in an elevated position by the tripping mechanism, which name-plate falls by gravity when released by the said tripping mechanism, substantially as described, for the purpose set forth.

2. In a burglar-alarm, the combination of the tripping mechanism having the push arm or rod, the alarm mechanism, and devices intermediate of the push-plate and the alarm mechanism for setting the latter in motion when said intermediate devices have been acted upon by the push plate or rod, substantially as described, for the purpose set forth.

3. In a burglar-alarm, the combination of the tripping mechanism, the swinging name or drop plate, supported in an elevated position by the tripping mechanism and falling by gravity when released from the tripping mechanism, the alarm mechanism, and devices intermediate of the alarm and tripping mechanisms for releasing the alarm mechanism simultaneously with the release of the name or drop plate, substantially as described, for the purpose set forth.

4. In a burglar-alarm, the combination of a tripping device having the catch, the swinging drop or name plate to rest upon and be supported in an elevated position by the catch, and the dial to which the name-plate is connected, substantially as described, for the purpose set forth.

5. In a burglar-alarm, the combination of a tripping mechanism having the bell-crank lever provided with a catch, the spring for returning the said lever and catch to their normal position, and the name or drop plate to rest upon and be supported in an elevated position by the catch, substantially as described, for the purpose set forth.

6. In a burglar-alarm, the combination of a

tripping device having the pivoted bell-crank lever provided with the catch, the fixed stop for limiting the play of the said lever, the swinging name or drop plate to rest upon the catch, and a spring for depressing the lever and holding the catch in the path of the free edge of the name-plate, substantially as described, for the purpose set forth.

7. In a burglar-alarm, the combination of the alarm mechanism, the tripping mechanism having the push-plate, the rock-shaft having the fixed post arranged in the path of the push-plate and the operating-arm, and the detaining-bar, against which the operating-arm impinges, which detaining-bar engages the alarm mechanism at its lower end, substantially as described, for the purpose set forth.

8. In a burglar-alarm, the combination of the alarm mechanism, the tripping mechanism having the fixed guide, and the push-plate working through the said guide, the rock-shaft having the post arranged in the path of the push-plate, the vertical detaining-bar pivoted at an intermediate point of its length and having the spurs at one end to engage the alarm mechanism and the inclined portion at its upper end, and the operating-arm affixed to the rock-shaft and impinging against the inclined portion of the detaining-bar, substantially as described, for the purpose set forth.

9. The combination, in a burglar-alarm, of the series of independent tripping devices, each having the push-rod, the series of rock-shafts connected for simultaneous operation and having the fixed posts arranged in the path of the push rods or plates, the detaining-bar, the alarm mechanism, and the operating-arm affixed to one of the rock-shafts and riding upon the detaining-bar, substantially as described, for the purpose set forth.

10. In a burglar-alarm, the combination of two or more independent tripping mechanisms, the independently-journaled rock-shafts coupled for simultaneous operation, so as to be operated simultaneously when either of the tripping devices are moved, the alarm mechanism, and devices intermediate of the rock-shaft and the alarm mechanism for operating the latter, substantially as described, for the purpose set forth.

11. In a burglar-alarm, the combination, with the detaining-bar, of the independent alarm mechanism disposed on opposite sides of the said bar and having the inwardly-extending arms on their bell-hammers adapted to be connected to the detaining-bar, substantially as described, for the purpose set forth.

12. In a burglar-alarm, the combination, with the alarm mechanism, of the detent for preventing the movement of the bell-hammer of the said mechanism, and the tripping mechanism connected with the alarm mechanism, as set forth, substantially as described, for the purpose set forth.

13. In a burglar-alarm, the combination, with the bell-hammer of the alarm mechanism,

of the fixed support and the cam-block pivoted in the support and arranged to be turned to engage the bell-hammer, and the tripping mechanism connected with the alarm mechanism, substantially as described, for the purpose set forth.

14. In a burglar-alarm, the combination of tripping mechanism, the rock-shafts, the alarm mechanism, the detaining-bar, the operating-arm carried by one of the rock-shafts to impinge upon the detaining-bar, and the pivoted spring to be adjusted to bear against the upper end of the detaining-bar and to normally press the lower end thereof into engagement with the bell-hammer of the alarm mechanism, substantially as described, for the purpose set forth.

15. In a burglar-alarm, the combination of the dial-plate having the series of openings, the independently suspended drop or name plates to be operated to close the openings, the independent tripping mechanisms, each having the catch to retain the drop-plate in an elevated position, and the push-plate, the rock-shafts having the aligned posts arranged in the path of the push-plates, the bar connecting the rock-shafts, the detaining-bar, the operating-arm carried by one of the shafts and riding against the detaining-bar, and the alarm mechanism, to which the detaining-bar is connected, substantially as described.

16. The dial-plate having the series of openings, the fixed parallel rods arranged to one side of the openings, and the independently swinging name or drop plate connected to the rods and held against movement or displacement longitudinally of the said rods, substantially as described.

17. The trip mechanism herein described, comprising the base-plate having the fixed guide, the bell-crank lever pivoted to the base-plate and having the catch, and the push-plate passing through the fixed guide and connected to the bell-crank lever, substantially as described, for the purpose set forth.

18. The case A, containing the tripping and alarm mechanism and having the operating cords or wires therefor, said case being secured with its back close to the wall of the building and having an opening in the top for the passage of the wires, and the hollow conical cap-piece secured to the top of the case and inclosing the wires, as set forth.

19. In combination with the alarm mechanism and the casing, the detainer to which the alarm mechanism is connected, said detainer being pivoted to the case, the tripping mechanism to bear against the detainer and set the

alarm in operation, and a limiting device connected with the case and bearing against the detainer at will to limit the movement of the detainer, so that the latter will not move and the alarm will not sound after the strain or pull on the tripping mechanism has ceased, as set forth.

20. In combination with the alarm mechanism and the casing, the detainer to which the alarm mechanism is connected, said detainer being pivoted to the case, the tripping mechanism to bear against the detainer and set the alarm mechanism in operation, and the limiting spring or brake connected with the case and bearing against the detainer, to limit the movement thereof and prevent the alarm from sounding after the strain or pull on the tripping mechanism has ceased, as set forth.

21. In combination with the duplicate set of alarm mechanisms and the casing, the detainer, to which is connected the operating or releasing rods of the alarm mechanism, said detainer being pivoted to the casing, the tripping mechanism to bear against and release the detainer, and the detent arranged in close proximity to the detainer to operate against the releasing rods of one of the alarm mechanisms and hold said releasing-rod out of engagement with the detainer, as set forth.

22. In combination with the series of independently-operating tripping mechanisms, the alarm mechanism, the casing, the detainer for the bell-hammer thereof to trip the same and set the alarm in operation and pivoted to the casing, and transmitting mechanism between the tripping mechanism and the detainer, which transmitting mechanism is connected for simultaneous operation and arranged in close proximity to the tripping mechanism, so as to be operated upon by either one of the independently-operating tripping mechanisms, the transmitting mechanism operating against the detainer, as set forth.

23. In combination with the independently-operating tripping mechanism, the series of rock-shafts connected for simultaneous operation, the detainer set in operation by the rock-shafts, the latter being actuated by the tripping mechanism, and alarm mechanism actuated by the detainer, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

FRANK CROSS.

Witnesses:

JOHN H. SIGGERS,
E. G. SIGGERS.