

(No Model.)

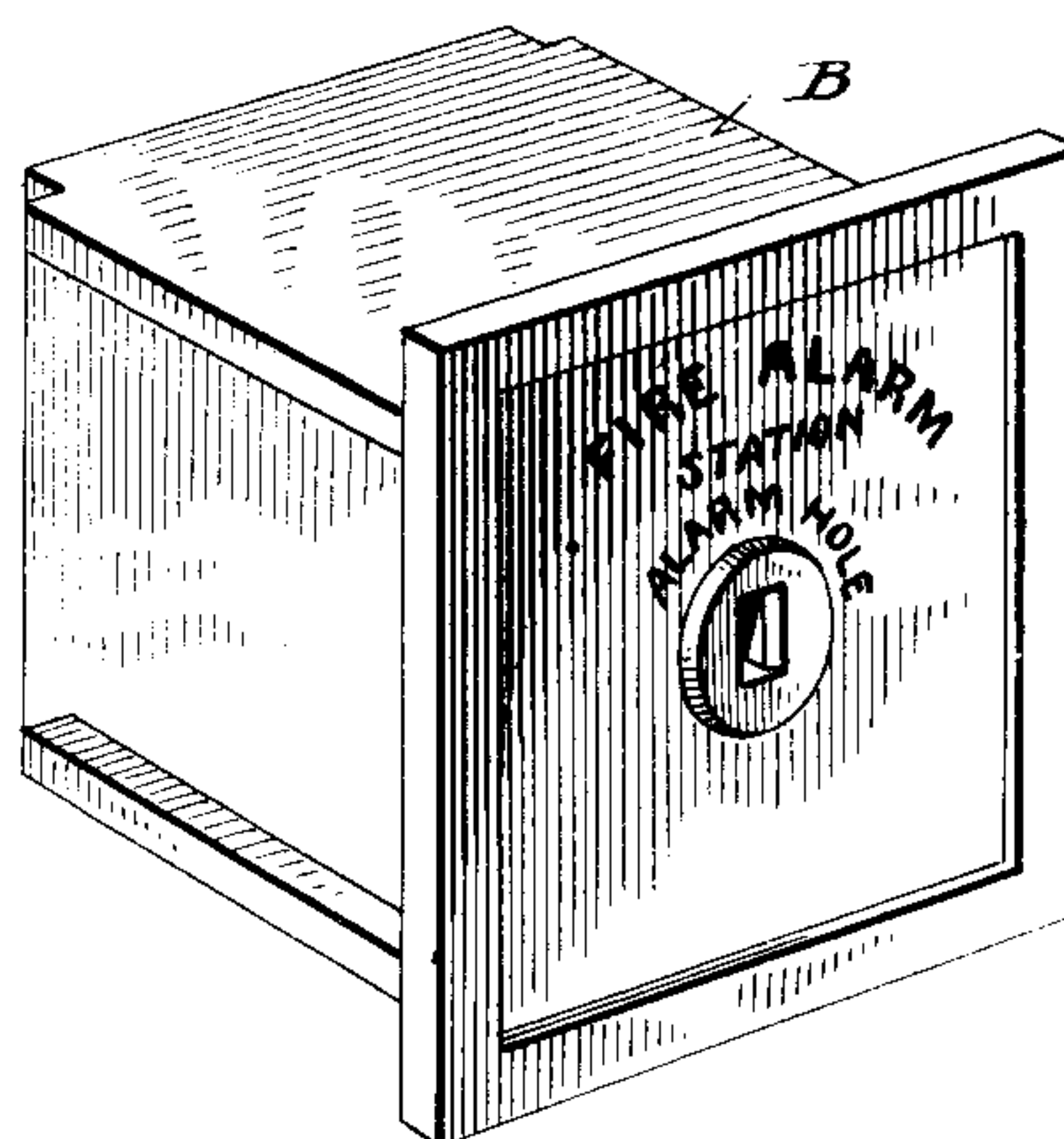
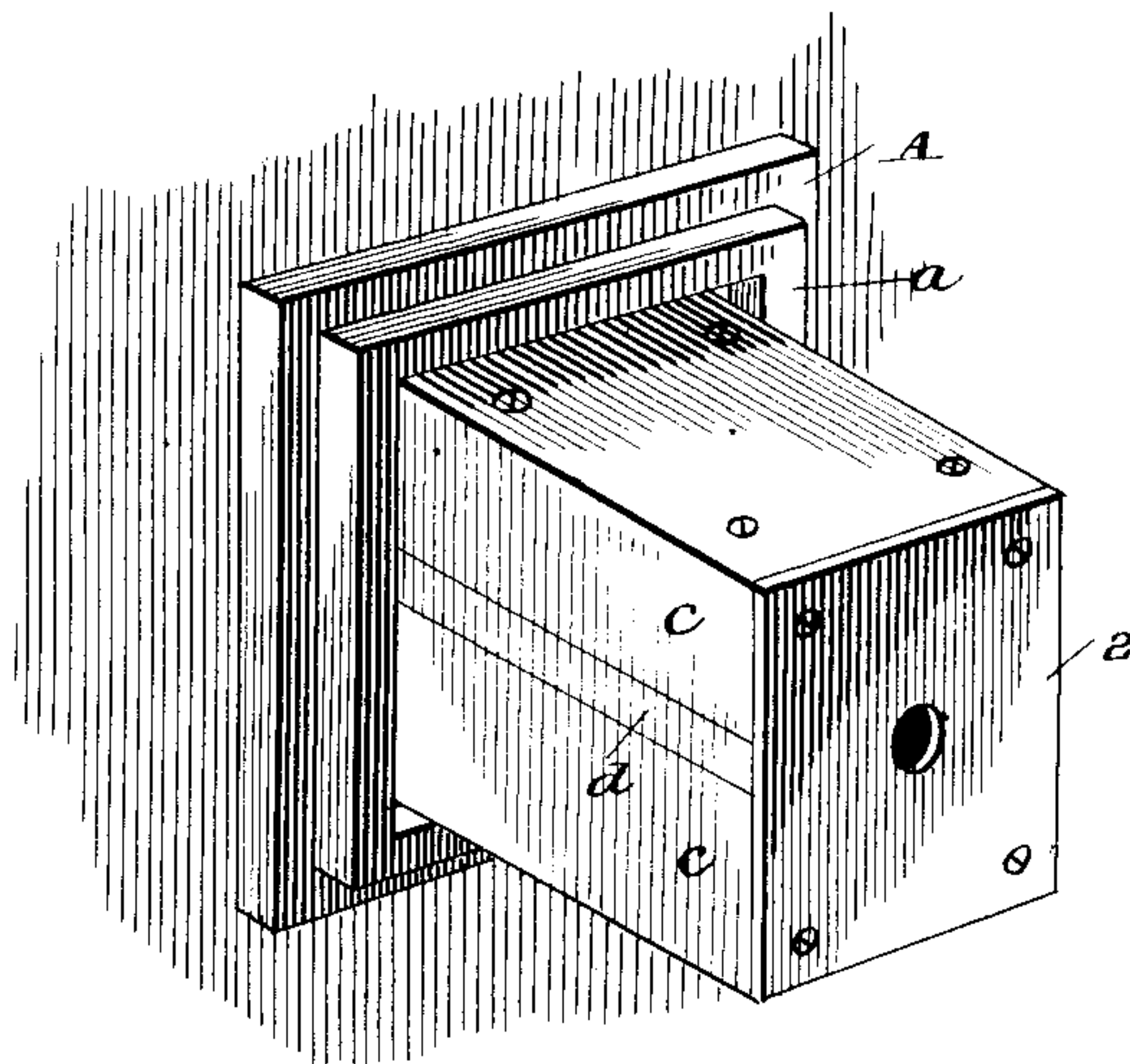
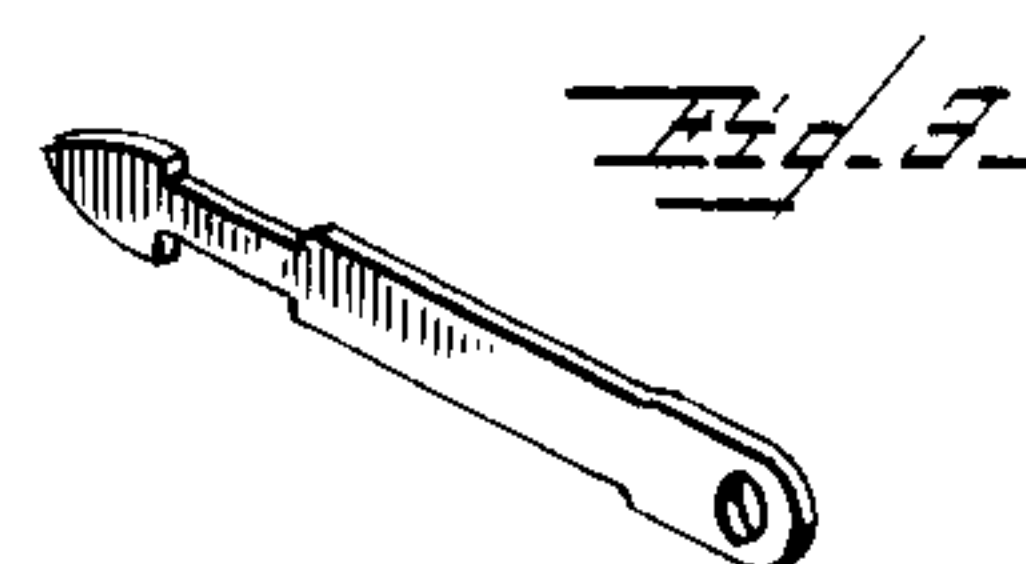
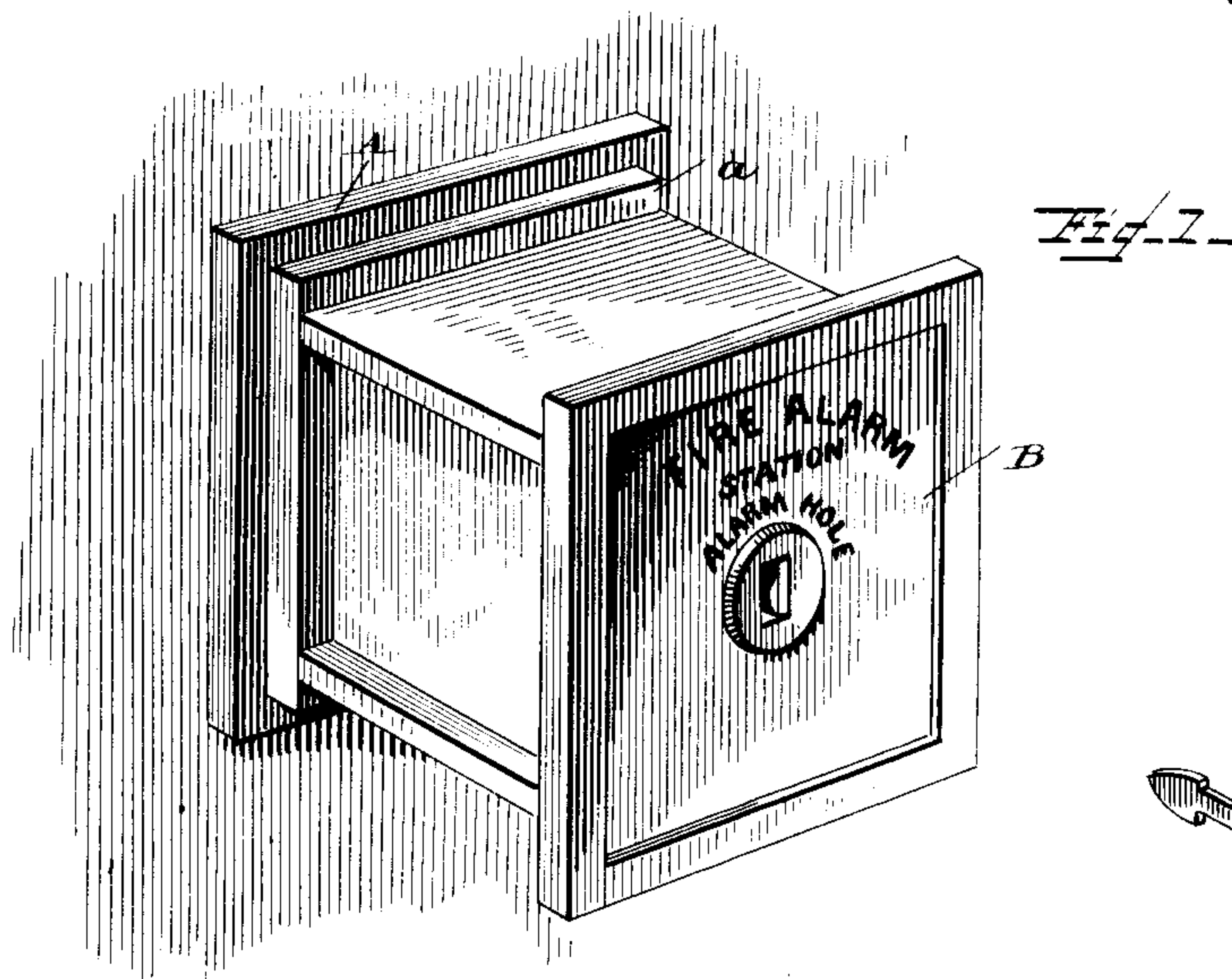
2 Sheets—Sheet 1.

S. A. CHASE.

ELECTRIC FIRE ALARM SIGNAL BOX.

No. 388,631.

Patented Aug. 28, 1888.



WITNESSES,

Edwin L. Yewell,

E. Everett Ellis,

Sidney A. Chase,  
INVENTOR,

By

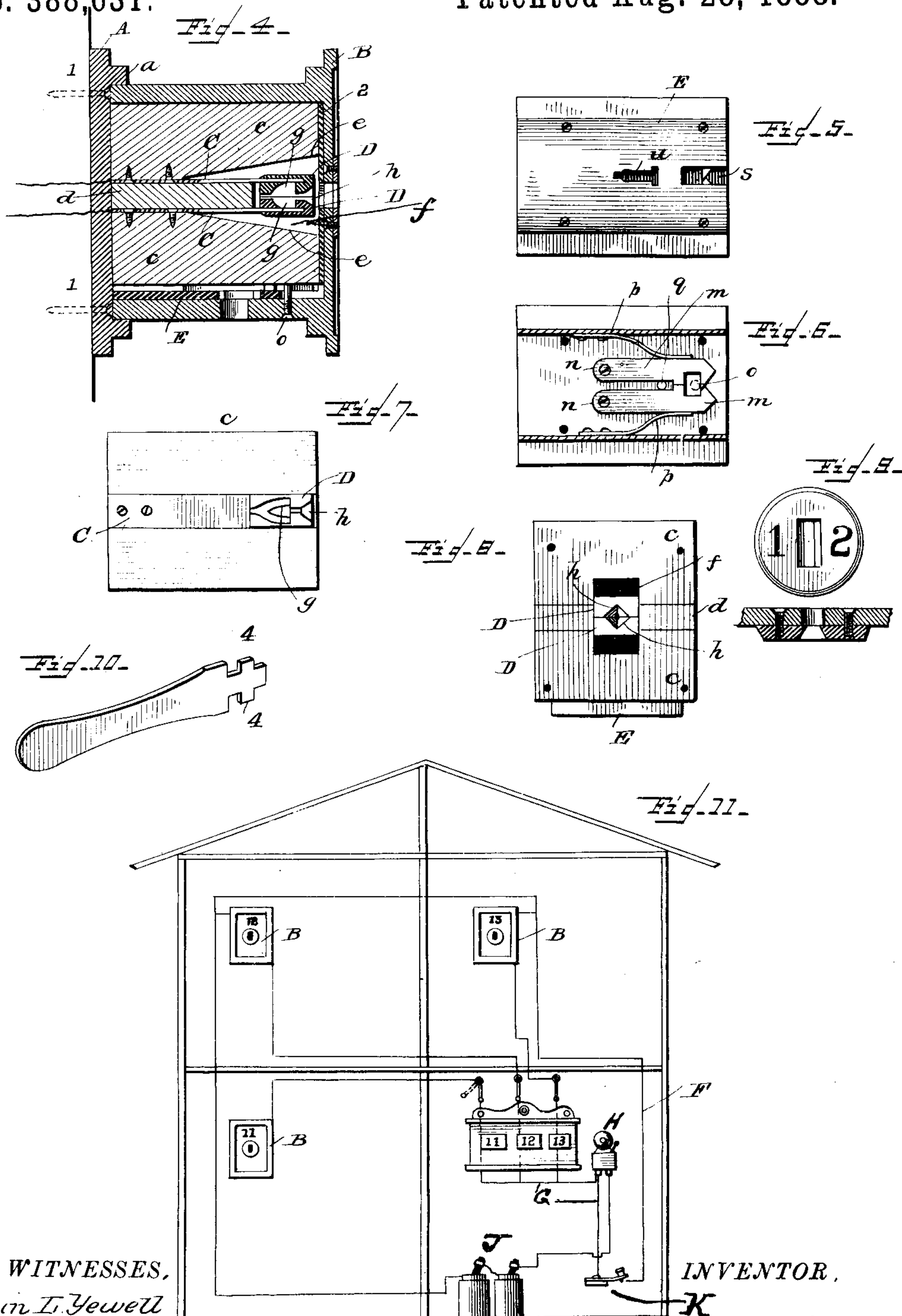
By Ym. Everett Ellis, Attorney,

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*INVENTOR,*

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By Spencer Entire Attorney



# UNITED STATES PATENT OFFICE.

SIDNEY A. CHASE, OF EVART, MICHIGAN.

## ELECTRIC FIRE-ALARM SIGNAL-BOX.

SPECIFICATION forming part of Letters Patent No. 388,631, dated August 28, 1888.

Application filed March 31, 1888, Serial No. 269,126. (No model.)

*To all whom it may concern:*

Be it known that I, SIDNEY A. CHASE, a citizen of the United States, residing at Evart, county of Osceola, Michigan, have invented  
5 new and useful Improvements in Electric Fire-Alarm Signal-Boxes, of which the following is a specification.

This invention relates to certain new and useful improvements in electric fire-alarm signal-boxes; and it consists, substantially, in such  
10 features of arrangement, construction, and combination of parts as will hereinafter be more particularly described or pointed out.

The object of my invention is to provide an  
15 electrical fire-alarm signal-box of such construction that by the insertion of an instrument or key specially designed for the purpose the electric circuit of the system will be closed or established and the alarm thereby sounded.  
20 Further, my invention has for its object to provide the interior of the box of a construction and arrangement by which the electric circuit of the system is maintained normally open and to prevent the sounding of an alarm  
25 except by the use of a circuit-closing key of special construction.

Further, my invention has for its object to provide a construction and arrangement of circuit-controlling devices for the boxes, by  
30 which, when the circuit-closing key is inserted for the purpose of sounding an alarm, the said key will be caught or retained in such manner as to render it impossible to be removed until the box itself is unlocked, thus enabling it to  
35 always be discovered as to whether the party sounding the alarm is in rightful possession of circuit-closing key, and serving frequently to the detection of persons maliciously disposed.

Further, my invention has for its object to  
40 provide a lock for securely maintaining the box in a closed condition, and also for preventing withdrawal of the circuit-closing key until unlocked by a key of special construction held  
45 by the inspector or other party of authority, the said lock being much more secure and simple than many former inventions on the subject.

Finally, my invention has such other objects in view as will more fully hereinafter appear  
50 when taken in connection with the accompanying drawings, wherein—

Figure 1 represents a perspective view of an electric fire alarm signal-box of my invention as it appears when closed and in a condition for

use or operation. Fig. 2 is a similar view of both  
the box and its cover or casing, the latter being  
detached for the purpose of better illustrating  
the arrangement of the parts of the former  
which it incloses. Fig. 3 is a view in perspective  
of the specially-designed key for closing  
60 the electric circuit to sound an alarm. Fig. 4 is a longitudinal sectional view of the box, taken about centrally through the same, more clearly indicating the interior construction  
and disposition of parts contributing to my  
65 invention. Fig. 5 is a top or plan view of the lock with its casing attached; and Fig. 6 is a view thereof with the casing removed, so as to more clearly show the interior. Fig. 7  
is a top view of one of the interior blocks, the  
70 same indicating the manner of attachment thereto of one of the circuit-controlling springs. Fig. 8 represents a front view of the two interior blocks, showing the ends of the insulator-blocks and the shape of the opening into which  
75 the circuit-closing key is inserted. Fig. 9 is a view representing the shape of and attachment to the box of the key-hole guard. Fig. 10 represents in perspective a view of the specially-designed key for opening the lock on the  
80 under side of the box, and indicated at Figs. 5 and 6. Fig. 11 represents in general the arrangement of a system of boxes of my invention, the said view also indicating the use and arrangement of a test mechanism by which the  
85 condition of the controlling-circuit may always be learned, and also by which defects of such circuit may be readily compensated for.

As will be understood before proceeding with a more full description, my invention is  
90 particularly designed for use in connection with such electrical fire alarm and other signals as are employed in large manufacturing establishments, depot-grounds, mill-yards, hotels, and the like, as well also as municipal  
95 and like signal systems; and I desire to state that an electric fire alarm signal-box constructed in accordance with my invention is not adapted particularly to any one system  
alone, but is equally applicable to any electric-  
100 signal system where a normal open circuit is maintained.

In carrying my invention into effect I provide the back of the box with suitable holes  
for the passage of screws for holding the box  
105 to the side of a wall or other support, and cast or formed therewith is a flange or projection following the general shape or contour of



said back. To the inner side of this back or wall-piece I secure two blocks of wood or equivalent non-conducting material, held apart by an intermediate smaller block, each of said  
 5 two blocks being formed centrally with a slanting or inclined channel or groove, forming between them an opening of sufficient capacity to admit of the necessary movement or play of the circuit-closing springs and their at-  
 10 tached insulator-blocks. The circuit-closing springs are secured to the contiguous sides of the upper and lower blocks of wood, and secured to their outer or free ends in any suitable manner are blocks of gutta-percha or  
 15 other insulating material, each of which is formed with a cavity or opening leading to the springs, so that on insertion of the specially-designed circuit-closing key of conducting material the circuit will be closed or es-  
 20 tablished and the alarm thereby sounded. Each of the insulator-blocks is also formed in its upper front edge with a cavity or recess of such shape as that between the two an open-  
 25 ing is formed for the ready admission and guidance of the circuit-closing key.

Normally the electric circuit is maintained in an open condition by virtue of the intermediate block keeping the springs from contact with each other. To the inner ends of  
 30 the springs, attachment is made of the two wires forming the electric circuit, which wires will be understood as being also in proper battery-connection. It is by the act of inserting the circuit-key that the electric circuit is  
 35 established, and it is due to the particular form or shape of the insulator-blocks that such key is prevented from withdrawal until the box is unlocked or opened, and this latter can only be accomplished by a specially-prepared  
 40 key in the hands of the proper one in authority.

The case or cover of the box is provided in its front side with an opening coinciding with the cavities or depressions in the insulated  
 45 blocks, and it is through this opening that the circuit-closing key is inserted. Surrounding said opening is a guard, preferably made separate and attached by screws and having formed thereon the number of the box or alarm. This  
 50 form is preferred for cheapness in casting the number, and since the two sides of the circuit-closing key are flat I prefer to form the two sides of the opening in the key-hole guard of a beveled or slanting nature, such construction  
 55 serving to permit of a much more ready insertion and guidance of said key to its place.

To the under side of preferably the lower spring-holding block I locate or arrange the locking mechanism for maintaining the box  
 60 closed or locked against any attempt to tamper therewith, and this mechanism also securely prevents the withdrawal of the circuit-closing key until unlocked. The said mechanism consists of two pivoted hooks or catches held to  
 65 engagement with a stud on the inside of the cover or casing by means of suitable springs, thereby securing said casing in place, and it

is by insertion of a key through an opening in the casing that said pivoted catches are forced  
 70 apart against the action of their springs to enable the said casing to be removed. On removal of the casing the circuit-closing key can be easily withdrawn from between the insu-  
 75 lator-blocks by simply giving to the same a quarter-turn to the right or left. This locking device is contained within the box and cannot be tampered with by persons maliciously or otherwise disposed.

For the purpose of ascertaining at all times the conditions of the electric circuit of the sys-  
 80 tem, I resort to certain devices, which will be described more particularly hereinafter.

Reference being had to the several parts by the letters marked on the accompanying drawings, A represents the back of the box, the  
 85 same being formed or provided with a projection or flange, *a*, and having suitable holes for the passage of screws 1 1, for securing the box to a wall or other support.

B represents the cover or casing of the box, 90 which, as shown, is so constructed as to be received by the projection or flange on the back of the box.

Secured to the inner side of the back A are two blocks, *c c*, of wood or other equivalent  
 95 non-conducting material, between which is arranged and secured an intermediate block, *d*, of similar material. The said intermediate block is shorter than the others, and the lat-  
 100 ter are each provided with an inclined channel or recess, *e*, the two forming between them a flaring or bell-shaped opening, *f*, to admit of the necessary movement or play of the circuit-  
 105 controlling springs and their attached insulator-blocks.

CC represent the circuit-controlling springs, they being attached by screws, as shown, to the corresponding sides of the upper and lower  
 110 blocks, *c c*. These springs have fitted to or secured upon their outer or free ends, in any suitable manner, blocks D, of rubber or other  
 115 proper insulating material, the said blocks being formed with an opening, *g*, reaching to the springs, and having also in their tops, at the forward end, a beveled opening, *h*, acting to  
 120 receive and guide the circuit-closing key when the same is inserted through the key-hole in the front of the casing of the box. Before the ends of the blocks I prefer to employ a guard-plate, such as is represented at 2, Fig. 2; but  
 125 this, however, is not essential.

The use of a specially-designed key is necessary in the practice of my invention—such as is shown in Fig. 3—and when the same is  
 130 inserted between the insulated blocks its conical or arrow-shaped end will be caught between the two blocks and thereby held, while at the same time the electric circuit is closed or established by reason of the edges of the key coming in electrical contact with the two  
 135 springs C C, such contact being permitted through the openings in the blocks, into which the end of the key slips.

The lock for the box consists of two hooks



or catches, *m m*, pivoted, as at *n n*, to the under side of, preferably, the lower block *c*, which hooks engage with a stud, *o*, secured to the inner side of the cover or casing, and are maintained to such engagement by the action of two bent springs, *p p*, secured to the lock, as shown. A small stud, *q*, is provided on the back of the lock, and, being between or intermediate of the catches, serves to prevent such catches from becoming overlapped at their ends, which might occur in the event of one spring being stronger than the other, and this would interfere with a free and perfect operation. The said stud *q* effectually prevents any such trouble.

The cover or casing *E* of the lock is formed or provided with a slot or opening, *s*, to admit of the passage therethrough of the pin or projection *o* on the inner side of the casing of the box, and with which the two spring-actuated hooks or catches engage for maintaining the box in a locked condition. The said cover or casing *E* of the lock is also formed or provided with an additional slot or opening, *u*, of approximate T shape, for the entrance of the key for effecting the release of the spring-catches from their engagement with the stud *o*.

The key for the lock is of special construction, and is shown in Fig. 10. The said key is formed with two projections, *4 4*, and the manner of releasing the lock is by inserting this key through the opening *u*, then turning the same, and sliding it along such opening, whereupon the projections *4 4* will act to separate the catches, and thus enable the cover or casing of the box to be removed.

The lock shown and described herein is such as is preferred by me in the practice of my invention; but it will be understood that other locks could be employed and still permit of the accomplishment of the same results from the other parts of the box.

From the foregoing description it will be seen that when the cover or casing of the box is slipped over the blocks into place the said cover or casing will become locked automatically. It will further be seen that when the circuit closing key is inserted between the insulator-blocks the alarm will be at once sounded by virtue of the electric circuit thus established, and also that such key will be trapped and held against removal until the lock of the box has been opened.

In Fig. 11 I have shown one general arrangement of systems with which my improved boxes are proposed to be used, and in connection with such arrangement I have shown what I term a "testing device" for enabling it to be ascertained at any time whether the conditions of the electric circuit are good or correct. It frequently happens with these systems that from various causes the circuit gets out of order and no alarm is sounded when wanted, thus causing delays and damage to both life and property.

My testing device consists of a wire, *F*, additional to those completing the general cir-

cuit but in connection therewith electrically. Then I employ another wire or conductor, *G*, in electrical connection with a bell, *H*, which in turn is in electrical communication with the battery *J*, the said conductor *G* having at its end a push-button, *K*. By this arrangement it is simply necessary to force the button *K* into contact with wire *F*, and if the circuit is in proper order the bell *H* will sound an alarm or signal the same, as it will do on the sounding of an alarm from any one of the boxes of the system.

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

1. In an electrical fire-alarm signal-box, the combination of two springs forming a part of the electric circuit, blocks *c c* of insulating material for supporting said springs within the box, and an intermediate stationary or immovable block of insulating material for maintaining the springs apart, substantially as described.

2. In an electrical fire-alarm signal-box, the combination, with two springs insulated from each other and forming a part of the electric circuit, of insulators attached to the springs and having openings reaching thereto, and a key for closing the circuit, substantially as and for the purpose described.

3. An electrical fire-alarm signal-box having arranged therein two springs forming a part of the electric circuit, the said springs having attached thereto blocks of insulating material, having openings therein adapting them to receive and interlock with a key, substantially as described.

4. An electrical fire-alarm signal-box having arranged therein two springs insulated from each other and forming a part of the electric circuit, the said springs having attached thereto blocks of insulating material formed with openings reaching to the springs, and having bevel shaped recesses in their outer edges, so as to adapt them to receive and interlock with a key, the end of which is conical or bevel shaped, substantially as described.

5. In an electrical fire-alarm signal-box, the combination, with the box and a suitable lock therefor, of two springs forming a part of the electric circuit, the insulators attached to the springs, and a key having a conical or arrow-shaped end for making electrical contact between the springs, substantially as described.

6. In an electric fire-alarm signal-box, the combination, with the box and a suitable lock therefor, of the blocks *c c* and *d*, the springs *C C*, the insulators attached to the springs having openings communicating therewith, and a key for closing the circuit, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

Witnesses: SIDNEY A. CHASE.  
E. EVERETT ELLIS,  
CURTIS LAMMOND.