No. 850,853. PATENTED APR. 16, 1907.

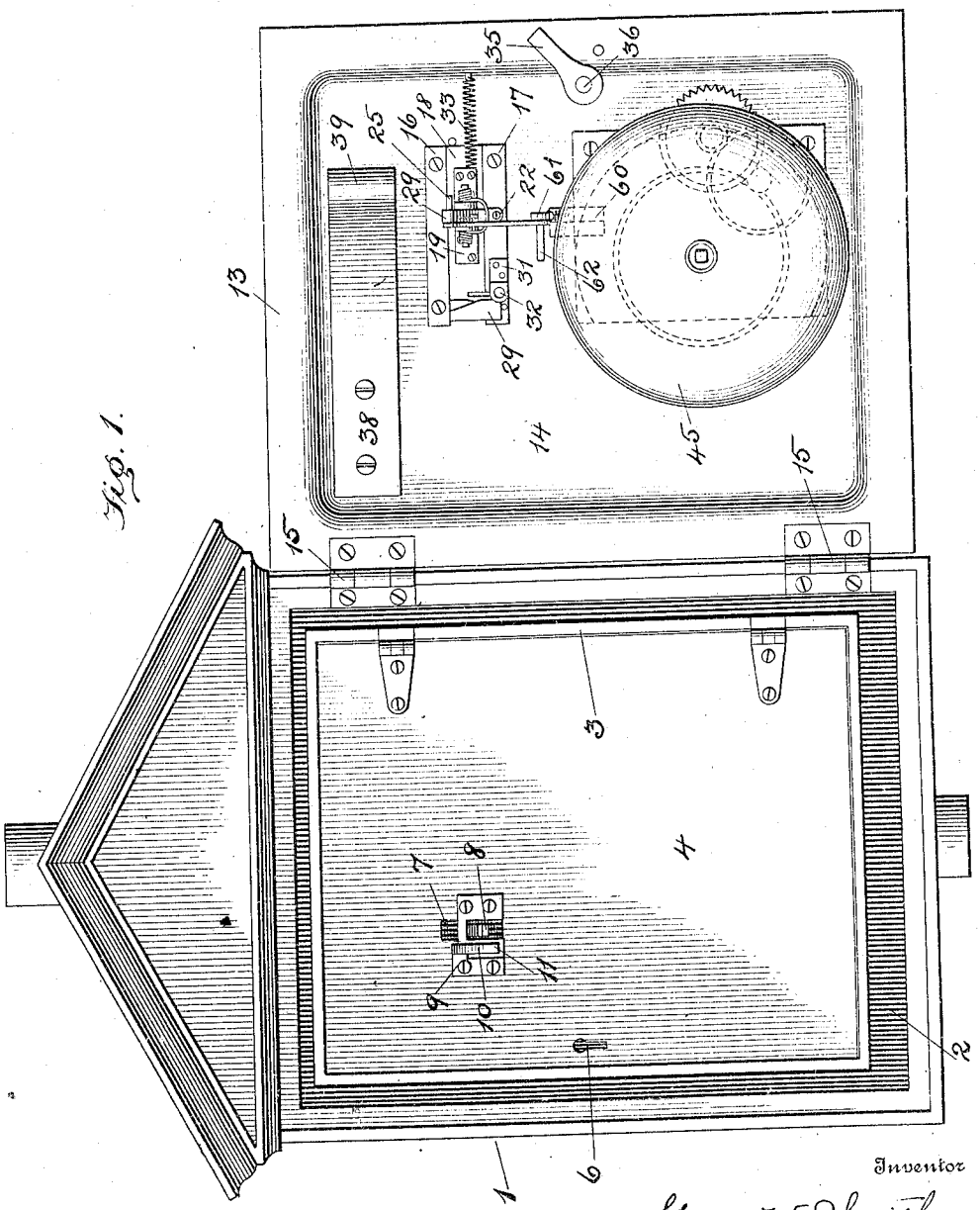
G. W. SMITH.

FIFE ALARM APPARATUS.

APPLICATION FILED DEC. 8, 1906.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses

Edwin L. Bradford

G. Ferdinand Vogt.

Inventor

George W. Smith

By Munn & Co,

Attorneys.

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3 SHEETS—SHEET 2.

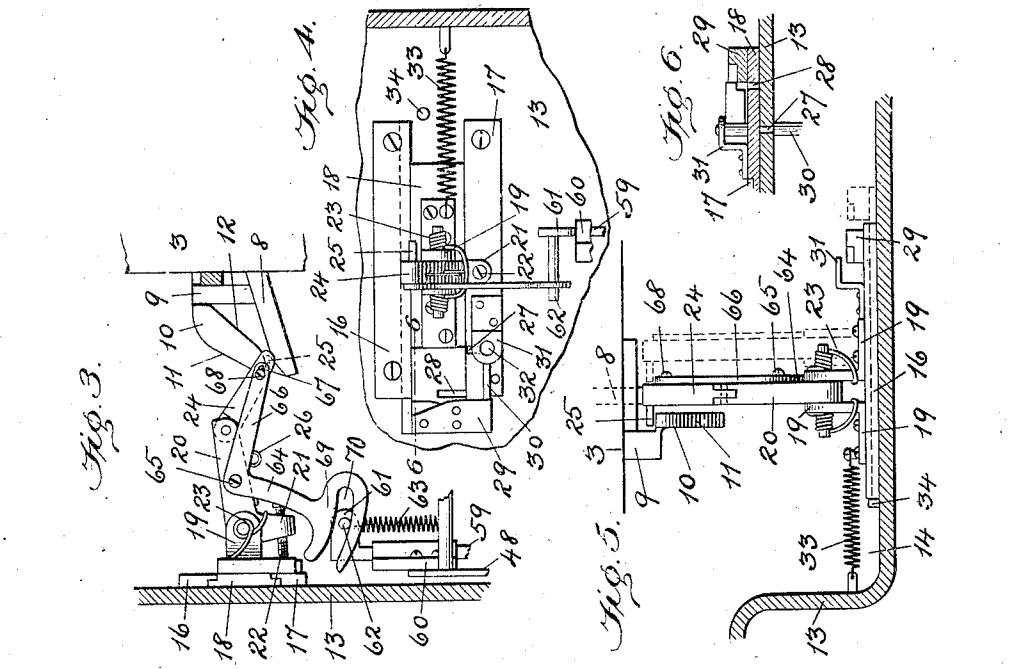


Fig. 4.

Fig. 6.

Fig. 3.

Fig. 5.

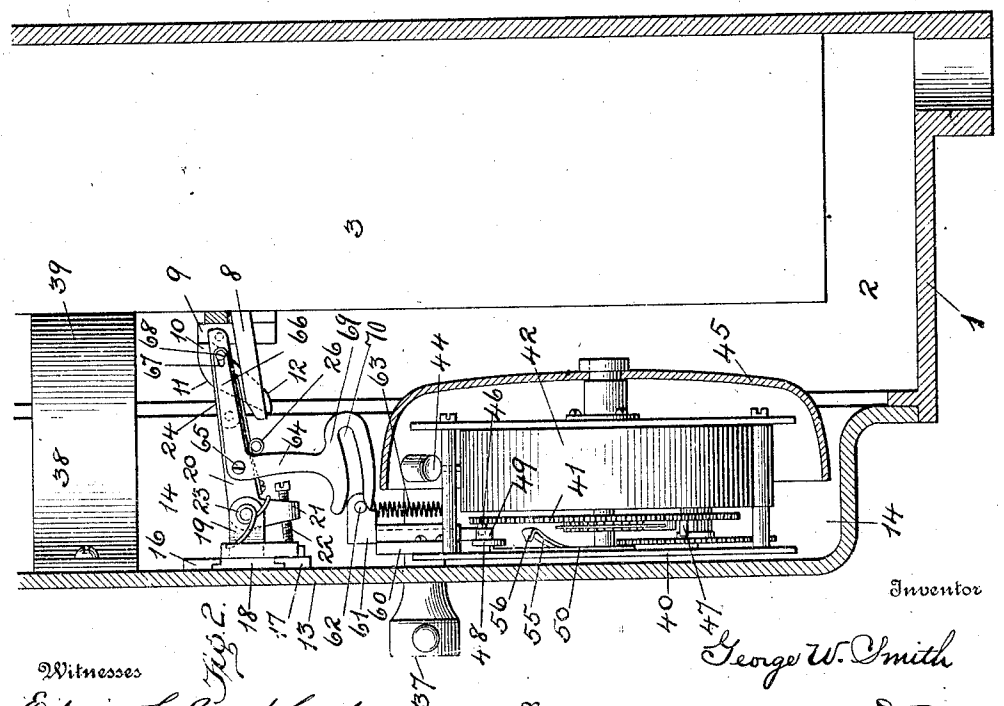


Fig. 2.

Witnesses

Edwin L. Bradford

G. Ferdinand Vogt.

Inventor

George W. Smith

By Munn & Co,

Attorneys

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3 SHEETS—SHEET 3.

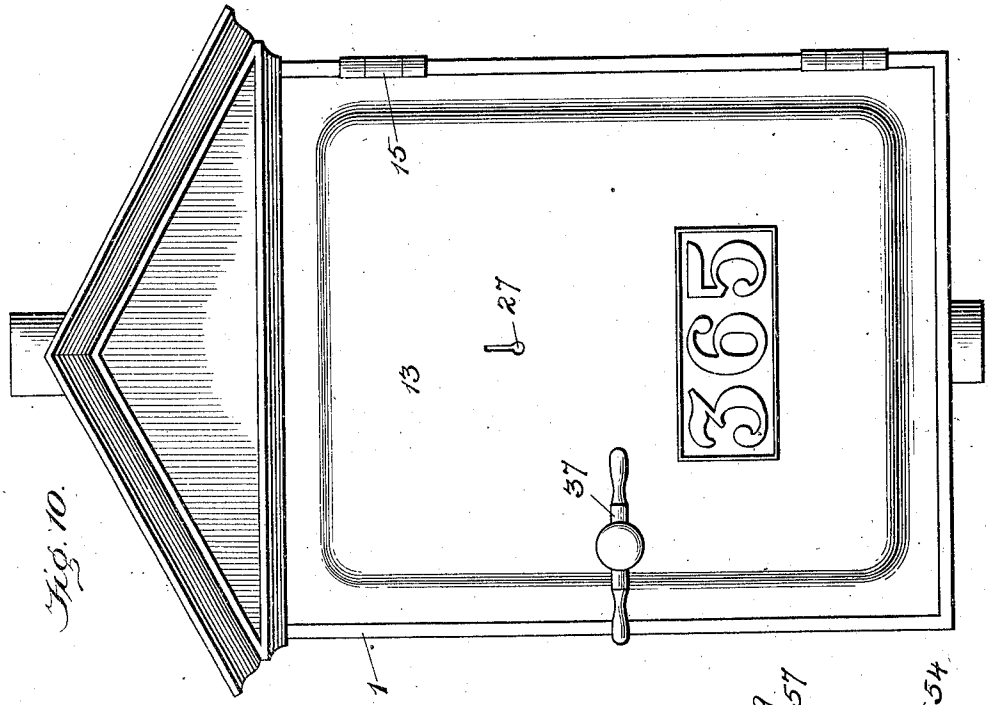


Fig. 10.

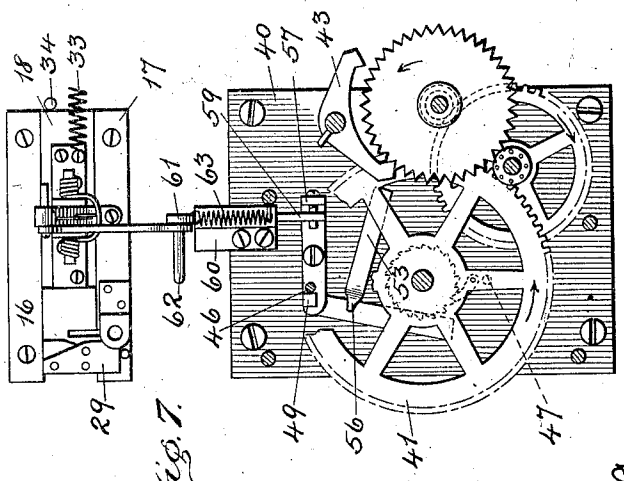


Fig. 7.

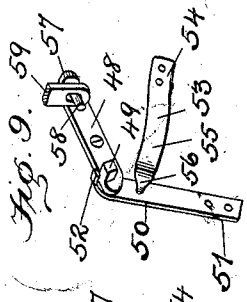


Fig. 9.

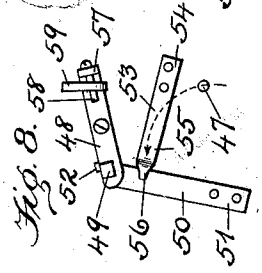


Fig. 8.

Witnesses

Edwin L. Bradford

G. Ferdinand Vogt.

Inventor

George W. Smith

By Munn & Co,

Attorneys

UNITED STATES PATENT OFFICE.

GEORGE W. SMITH, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF TO AUGUST EMRICH, OF BALTIMORE, MARYLAND.

FIRE-ALARM APPARATUS.

No. 850,853. Specification of Letters Patent. Patented April 16, 1907.

Application filed December 8, 1906. Serial No. 346,854.

To all whom it may concern:

Be it known that I, GEORGE W. SMITH, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Fire-Alarm Apparatus, of which the following is a specification.

This invention relates to improvements in mechanism for fire-alarm boxes.

One object of the invention is to provide an improved fire-alarm-box mechanism, so that the opening of the door of the box for the purpose of sending in an alarm will cause the operation of a signal at the box to notify the citizens in the neighborhood and by such latter signal to deter persons from sending in false alarms.

Another object of the invention is to provide a construction whereby the movement of the door in the opening of the box will cause both alarm mechanisms to be operated.

Another object of the invention is to provide a construction of the door whereby the alarm mechanisms may both be concealed and protected.

Another object is to construct the door in such manner that the local alarm mechanism may be applied thereto and the invention thus be capable of attachment to the boxes now in use by the substitution of the new doors in the place of the old ones.

Another object of the invention is to provide a construction whereby after the alarms have been operated the parts may again be brought into operative relation merely by closing the door.

Another object of the invention is to provide a construction whereby by a single operation the alarm mechanisms may be rendered inoperative by an authorized person desiring to inspect the mechanism, so the door may be opened without sounding either alarm.

The accompanying drawings illustrate the invention, in which—

Figure 1 illustrates a front elevation of a fire-alarm box the door of which is open wide and is provided with my improved mechanism. Fig. 2 illustrates a vertical sectional view of the box with the door closed. Fig. 3 shows a sectional detail through a portion of the box and illustrates my improved devices in side elevation and in the position for sounding an alarm. Fig. 4 illustrates a rear elevation of the improved devices attached to the inside of the door, the same being in a position to enable the door to be opened by an inspector without sounding either alarm. Fig. 5 illustrates a plan view of the devices for operating the alarms. Fig. 6 shows a sectional plan detail of the key and the devices engaged thereby for shifting the mechanism to permit inspection without sounding the alarms. Fig. 7 illustrates a rear elevation of the improved mechanism with the exception of the gong, vibrating hammer, and spring, all of which have been removed. Figs. 8 and 9 illustrate two views of the trip devices for releasing the local alarm mechanism, and Fig. 10 shows a front elevation of the box as seen from the exterior.

Referring to the drawings by numerals, 1 designates a box, which may be of any desired shape, but which in the present instance is of the conventional form employed in numerous cities. The box is provided with a compartment 2, containing an inner box 3, which latter is also provided with a door 4. This inner box is designed to contain any suitable form of fire-alarm mechanism which when operated will give an alarm at a distant point, such as the fire-alarm headquarters. This mechanism is inaccessible except to authorized persons having a key, which may be inserted in the keyhole 6 of the door 4. The door 4 of the inner box is provided with a slot 7, and a so-called "hook" 8 has one end projecting outwardly through this slot, while its other end is connected to the fire-alarm mechanism, so as to form a trip. Upon depressing or pulling down the outer end of this hook the fire-alarm mechanism will be released and set in motion and the proper signal of a fire to designate the location will be received at the headquarters, when the alarm is then sent out to the department. As a number of alarm devices of this depressible-hook character are now in use, I have preferred to illustrate my invention in connection therewith, so that my improved means may be readily attached or applied to those devices. It is to be understood, however, that my invention is not limited to any particular form or construction of fire-alarm mechanism, but is applicable to any form of device where a trip may be operated to set the alarm mechanism in motion.

In the construction shown the door 4 of the inner box 3 is provided with a vertically-extending slot 7, through which the hook or trip-lever 8 of the fire-alarm mechanism pro-

jects. A bracket 9 is rigidly secured to the door 4 adjacent the slot, and said bracket has an arm 10, which projects downward and outwardly and extends away from said slot and lies in a vertical plane at the side of the trip-lever 8. This bracket has an upper inclined surface 11 and a bottom inclined guide-surface 12, which serve useful purposes in the actuation of the signal mechanism and in the resetting of said mechanism, as will presently be described. With the exception of the bracket just described the inner box 3 and door 4 are precisely the same in construction as heretofore employed in ordinary fire-alarm mechanisms.

The local alarm mechanism and the devices employed to operate the fire-alarm mechanism have been especially designed to be attached to the inner side of and carried by the outer door of the box, so as to be concealed. This mechanism will now be described.

The outer door 13 of the box is provided with a recess or compartment 14, and this door in the present instance is hinged at 15 to a vertical side of the box 1.

Two guide-strips 16 and 17 are rigidly secured to the inner side of the door 13, and a slidable plate 18 has position between said guide-strips and is movable lengthwise or in a horizontal direction between said guide-strips. Brackets 19 are secured to the slidable plate 18, and an arm 20 is pivoted between said brackets and is movable in a horizontal plane with said brackets and plate. A lug 21 is provided on the lower side of the arm 20, and a set-screw 22 screws through said lug and has its inner end resting against the guide-strip 17. A spring 23 serves to draw the lug 21 toward the guide-strip, and thus keep the inner end of the screw in contact with the said strip. By adjusting the screw the free end of the arm 20 may be set—that is, raised or lowered—so as to properly position it with respect to the arm 10 on the front of the inner door 4. An operating-arm 24 is pivotally connected to and carried by the free end of the arm 20, and this arm projects toward the door 4 of the inner box and at its extreme end is provided with lug or pin 25, which projects laterally and lies in the same vertical plane as the arm 10 on the door 4. A spring 26 at the under side of the arms 20 and 24 and overlapping the two serves to hold the arm 24 up and prevent its free end from dropping; but this spring enables the free end of said arm 24 to be depressed when the force of the spring is overcome. The position of the arms 20 and 24 with respect to the projecting end of the trip-lever 8 of the fire-alarm mechanism is such that they will lie in the same vertical plane and directly over said trip-lever, while the pin 25 will project laterally and beneath the bottom inclined surface 12 of the arm 10 when the outer door 13 is closed, as clearly seen in Fig. 2.

It is to be understood that the arms 20 and 24 are both indirectly carried by the slidable plate 18 and that when the said plate is moved laterally between the guide-strips 16 and 17 the arms will also be moved laterally. The devices for accomplishing this lateral movement of the plate and arms and the purpose of moving them will now be explained.

The outer door 13 of the fire-alarm box is provided with a keyhole 27, (see Fig. 10,) and this keyhole has position immediately in front of the slidable plate 18 and the lower guide-strip 17, as can be seen in Figs. 4 and 6. A slot 28 is also provided in the slidable plate 18, and when said plate is in the normal position the slot 28 will register with the keyhole in the outer door. At the side of the slot 28 and secured to the slidable plate 18 there is a lug 29, against which the key 30 strikes when it is turned in the keyholes. As this lug is rigid on the plate 18, the turning of the key will cause said plate to be shifted laterally, as seen in full lines in Fig. 6 and in broken lines in Fig. 5.

By referring to Fig. 5 it will be clearly seen that by shifting the plate 18 laterally the arms 20 and 24 and the pin or lug 25 will all be moved laterally from their normal position over the trip-lever 8, and the door 13 may then be opened without causing any downward movement of said arms and without operating the trip-lever. This, of course, can only be done by a person who is provided with a suitable key. A bracket 31 is secured to the lower guide-strip 17 and is provided with a perforation 32, which receives and serves as a bearing for the inner end of the key to turn in. A spiral spring 33 continually draws on the slidable plate 18 and tends to keep said plate in the normal alarm-operating position, and when the key is turned to shift the said plate such movement of the plate must be against the action of the spring. A pin 34, projecting from the door 13, serves to limit the movement of the plate in the direction of the pull of the spring.

The mechanism and devices heretofore described coact to operate the fire-alarm mechanism upon the movement of the outer door, and then operation is as follows: Referring to Figs. 2 and 5 of the drawings, it will be seen that when the outer door 13 is closed the pin 25 on the arm 24 projects behind the stationary arm 10 on the door of the inner box, while said arm 24 is directly over the trip-lever 8. This position of the said arm and pin is readily attained through the aid of the adjusting-screw 22. When the outer door 13 opens, the pin 25 will project beneath the lower inclined edge 12 of the bracket 10, and the free end of the arm 24 will be required to move downwardly, as seen in Fig. 3, and by such downward movement to depress the trip-lever 8, and thus release the fire-alarm mechanism. As the outer movement of the

door 13 continues the pin will be drawn entirely from beneath the bracket 10 and upon being freed therefrom will be forced up by the spring 26, so as to again project parallel with the arm 20. It will thus be seen that the improved mechanism here employed will cause the operation of the fire-alarm mechanism when the door moves outwardly.

An important feature of the invention in connection with the mechanism heretofore described is that the resetting of the alarm-operating mechanism is accomplished automatically or by the closing of the door.

It has been explained that after the door has been opened sufficiently to free the pin 25 from the bracket 10 that the arm 24 will be elevated by the spring 26 and assume the same position with respect to the door as that shown in Fig. 2. When the door is being closed, however, the said pin 25 will contact with the upper inclined surface 11 of the bracket 10, and the further closing of said door will cause said pin to ride up said inclined surface, elevating the arms 20 and 24 against the tension of the spring 23, and when the door is fully closed said pin will have traveled entirely over said surface 11 and dropped down to its reset position behind the bracket 10, as shown in Fig. 5. The screw 22 then holds the pin and arms in position over the trip-lever 8 until the door is again opened.

A suitable latch 35 at the inner side of the door 13 is mounted on a stem 36, which projects through the door, and a hand-lever 37 is mounted on the outer end of the stem and has position on the exterior of the door. By turning this hand-lever the door may be opened, and no lock or key is employed.

It may be desirable to employ some means to cause the door to be forced open upon the operation of the latch 35 to release it, and for such purpose I provide a spring 38, which I attach to the inner side of the door and the free end 39 of which will contact with and be compressed against the inner door 4 when the outer door 13 is closed.

As has heretofore been pointed out, one object of this invention is to combine with the improved mechanism for operating the fire-alarm mechanism suitable additional mechanism which will be automatically operated by the movement of the door to give a local or neighborhood alarm. This latter mechanism may vary widely from that shown. It may be in the form of a bell-alarm, as I have here illustrated; but no matter what form or construction it may assume it is to be operated upon the opening of the door. In the present instance I have arranged the local alarm mechanism so that its trip device will be operated by the movement of the same devices that operate the trip of the fire-alarm mechanism.

Beneath the slidable plate 18 and secured to the inner side of the outer door 13 is a base-plate 40, which carries the local alarm mechanism. This mechanism in the present instance comprises a train of gears, the main gear 41 of which is mounted on the power-shaft, which is operated by a spring 42. An escapement 43 is provided to control the speed or rotation of the gears, and a vibrator or hammer 44 is operated by the escapement, so as to strike the gong 45.

The devices to directly coact with the train of gears whereby to start and stop the rotation of the latter will now be described.

By reference to Figs. 2, 7, 8, and 9 it will be seen that the large gear 41 is provided with two laterally-projecting pins 46 and 47. The pin 46 has position near the periphery of the gear, while the pin 47 is located at a point nearer the center or hub of the gear. The pin 46 is employed as a stop for the train of gears after the gear 41 has made one complete revolution, and said pin is caught and released by devices now to be described. A rocking bar 48 is pivotally secured to the base-plate 40, and one end of said bar is provided with a side lug 49, which projects laterally toward the side of the gear 41 and in the path of the pin 46 on said gear. When the bar 48 is in the position shown in Figs. 2 and 7, the pin 46 will contact with and be held stationary by the lug 49, and consequently the train of gears will be held against movement. A spring-arm 50 has one end 51 riveted to the base-plate 40, and the other or free end of said arm projects between the rocking bar 48 and base-plate and springs outwardly toward said bar, and this spring end is provided with a laterally-projecting lug 52, which when the rocking bar is tilted, as shown in Figs. 8 and 9, will project over the lug end of said rocking bar and hold the latter down for a given period. The object in holding the lug end of the rocking bar down temporarily is to release the pin 46 and permit the gears to revolve. After the pin 46 has passed over the lug 49 the rocking bar 48 must be released by the lug 52, so said bar can be returned to its normal position to stop the revolution of the gear 41 as it completes a single revolution.

In order to remove the lug 52 from over the end of the rocking bar, I provide a spring-arm 53, one end 54 of which is riveted to the base-plate and the other or free end 55 of which projects outwardly and is provided with a bend 56, which has position between the gear 41 and the spring-arm 50, as clearly seen in Fig. 2.

The position of the outwardly-projecting end 55 of the spring-arm is such as to be in the path of travel of the pin 47 on the gear 41, and when the gear revolves and carries the pin over said end 55 the latter will be pushed laterally, so its bend 56 will contact with the spring-arm 50 and push said arm and its lug 52 away from and release the

rocking bar. When the rocking bar is thus released, it will be returned to its normal position to place its lug 49 in the path of the pin 46.

In order to cause the rocking bar 48 to be operated at the proper time, so the local alarm may be sounded by the opening of the door, I connect said rocking bar with the devices that operate the fire-alarm mechanism, so both alarms may be operated by the same devices.

One end of the rocking bar 48 is provided with a laterally-bent end 57, which end carries a pin 58, and to this pin I loosely connect the lower end of a vertically-movable trip-bar 59. This trip-bar slides in a suitable guide or case 60, which is secured to the base-plate, and the upper end of said trip-bar is provided with a head 61, which carries a horizontally-projecting pin 62. It will be understood that if the trip-bar 59 is drawn upwardly such movement of the bar will cause the bar 48 to be rocked, and the lug 49 on said rock-bar will be lowered and moved from in front of the pin 46 and the gears thus permitted to begin revolving. While the pin 46 is passing over the lug 49 the rocking bar is held in its rocked position by the lug 52; but upon the release of said lug, as heretofore explained, the rocking bar will be returned by the action of the spiral spring 63, which is connected to the head 61 of the trip-bar.

In order to draw the trip-bar 59 upwardly to set the local alarm mechanism in operation, I provide a sort of bell-crank lever 64, which I pivotally connect at 65 to the arm 20, and one branch 66 of this bell-crank lever extends parallel with and at the sides of the arms 20 and 24, and the end of this branch is provided with a slot 67, through which pin 68 passes loosely to retain said end at the side of and to the end of the said arm 24, as clearly seen in Figs. 2 and 3. The lower end of this bell-crank lever is provided with a head 69, having a segment-slot 70 therein, and this segment-slot receives the pin 62 on the trip-bar 59.

It is to be understood that the bell-crank lever is carried by the arms 20 and 24 and moves laterally with said arms when the latter are shifted by the key 30 to prevent sounding an alarm, as heretofore explained. When the door 13 is opened, however, for the purpose of sounding an alarm, the same movement of the arm 24 that operates the trip-lever 8 will also operate the bell-crank lever to raise the trip-bar 59 of the local alarm, and consequently both alarms will be sounded by the movement of the door. When, however, the slidable plate 18 has been shifted to permit the door to be opened without sounding an alarm, the opening of the door will not depress the arm 24, and consequently neither of said alarms will be operated. It will thus be noted that in order to cut out both alarms the single operation of moving the slidable plate will accomplish this result.

In the operation of the local alarm mechanism it has been described how the upward movement of the trip-bar 59 actuates the rock-bar 48 and raises the stop-lug 49 so the pin 46 can pass under it and permit the train of gears to revolve. It has also been explained that the rock-bar and lug 49 are returned to their normal positions so as to again stop the revolution of the gears after or upon a single revolution is important for the reason that it prevents the continuous revolution of the gears until the entire spring force is expended and by thus stopping the movement of said gears at the completion of each revolution enables the local alarm mechanism to be reset merely by closing the door and without the necessity of immediately rewinding the spring. The speed of revolution of the large gear 41 is slow, and the local alarm would therefore be sounded for a long enough period to serve its purpose, while the said alarm would still be in condition to several times repeat its operation without the necessity of rewinding.

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

1. A fire-alarm apparatus comprising a box; a door for said box; a fire-alarm mechanism in said box; a local alarm mechanism carried by the door; an alarm-operating means also carried by the door, said means serving to operate both alarms, and means for shifting the alarm-operating means to prevent its operating the alarms.

2. A fire-alarm apparatus comprising a box; a door for said box; a fire-alarm mechanism in said box; a local alarm mechanism also in said box; an arm pivotally sustained on the inside of said door; means coacting between the pivoted arm and the fire-alarm mechanism; means coacting between said arm and the local alarm mechanism both of said coacting means being operated by the movement of the door, and a catch for holding the door closed.

3. A fire-alarm apparatus comprising a box; a door for said box; a fire-alarm mechanism in said box; a local alarm mechanism also in said box; an arm pivotally sustained on the inside of the door; means carried by the arm for operating the fire-alarm mechanism; means also carried by the arm for operating the local alarm mechanism, and means for moving the alarm-operating devices away from the alarm mechanisms.

4. A fire-alarm apparatus comprising a box; a door for said box; a fire-alarm mechanism in said box; a local alarm mechanism also in said box; an arm mounted on the inside of the door and capable of vertical move-

ment; means carried by said arm to operate the fire-alarm mechanism; means also carried by said arm to operate the local alarm mechanism and means for causing the actuation of both of said operating means by the movement of the door.

5. A fire-alarm apparatus comprising a box; a door for said box; a fire-alarm mechanism in said box; an arm mounted on the inside of the door and having an upward vertical movement; a depressible arm carried by said upwardly-movable arm; means for causing the depression of said arm during the opening of the door to actuate the fire-alarm mechanism, and means for moving the other arm upwardly to reset the said arms during the closing of the door.

6. A fire-alarm apparatus comprising a box; a door for said box; a fire-alarm mechanism in said box; a local alarm mechanism also in said box; an arm mounted on the inside of the door and having an upward movement; a depressible arm carried by said upwardly-movable arm; means for causing the depression of said arm to actuate both alarms when the door is being opened, and means for moving the arms upwardly during the closing of the door to reset said arms.

7. A fire-alarm apparatus comprising a box; a door for said box; a fire-alarm mechanism in said box; a local alarm mechanism also in said box; a stationary bracket in said box; an arm mounted on the inside of the door and operated by the bracket when the door is opening to engage the fire-alarm mechanism, and means carried by the arm to actuate the local alarm mechanism when said arm is operated.

8. A fire-alarm apparatus comprising a box; a door for said box; a fire-alarm mechanism in said box and having a trip-arm; a local alarm mechanism in said box and also having a trip-arm; a stationary bracket adjacent the trip-arm of the fire-alarm mechanism; an arm pivotally sustained from the inner side of the door and engaging said bracket, and a lever connected with the trip of the local alarm mechanism and operated by the pivoted arm and bracket.

9. A fire-alarm apparatus comprising a box; a door; a fire-alarm mechanism having a trip; a local alarm mechanism also having a trip; a stationary bracket adjacent the trip of one of said alarms; an arm sustained from the inner side of the door and engaging said stationary bracket; means for connecting said arm with one of said trip devices, and means whereby the arm may be moved out of engagement with said bracket.

10. A fire-alarm apparatus comprising a box; a door; a fire-alarm mechanism having a trip; a local alarm mechanism also having a trip; a stationary bracket adjacent the trip of the fire-alarm mechanism, an arm pivotally and slidably sustained from the inside of the door and engaging said bracket; a lever pivotally mounted on said arm, said lever engaging the trip of the local alarm mechanism, and a catch independent of said devices for holding the door closed.

11. A fire-alarm apparatus comprising a box; a door; a fire-alarm mechanism having a trip; a local alarm mechanism also having a trip; a stationary bracket adjacent the trip of the fire-alarm mechanism, said bracket having an upper and a lower inclined guide-surface; an arm pivotally sustained from the inside of the door; means coacting between said arm and the trip of the local alarm whereby the opening of the door will operate both alarms and the closing of the door will reset the operating devices.

12. A fire-alarm apparatus comprising a box; a door; a fire-alarm mechanism; a local alarm mechanism; an arm pivoted to the inside of the door; an arm pivoted to said door-arm and movable independently of the latter to operate the fire-alarm mechanism, and a lever operated by the arm that actuates the fire-alarm mechanism to operate the local alarm mechanism.

13. A fire-alarm apparatus comprising a box; a door; a fire-alarm mechanism; a local alarm mechanism having a vertically-movable trip; an arm slidably and pivotally sustained from the inside of the door; means coacting between said arm and the fire-alarm mechanism; a bell-crank lever pivoted to said arm and engaging said vertically-movable trip of the local alarm, and a catch for holding the door closed.

14. A fire-alarm apparatus comprising a box; a door; a fire-alarm mechanism; a local alarm mechanism; a trip device for said latter mechanism; means on the inside of the door for operating said trip device when the door is opened; means coacting with said local alarm mechanism to cause the latter to operate for a given period, and means whereby said alarm mechanisms are reset and ready for another operation upon the closing of the door.

15. A fire-alarm apparatus comprising a box; a door; a fire-alarm mechanism in said box; a local alarm mechanism in said box; means for holding the local alarm mechanism against operation; a trip device for operating said holding means; means on the inside of the door for operating the trip as the door is opened; means for stopping the operation of the local alarm after a given period, and means whereby the mechanisms are reset and made ready for another operation by the closing of the door.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE W. SMITH.

Witnesses:

CHARLES B. MANN, JR.,

ARMSTEAD M. WEBB.