

(No Model.)

J. M. GARDINER.
FIRE ALARM SIGNAL BOX.

No. 509,573.

Patented Nov. 28, 1893.

FIG. 2.

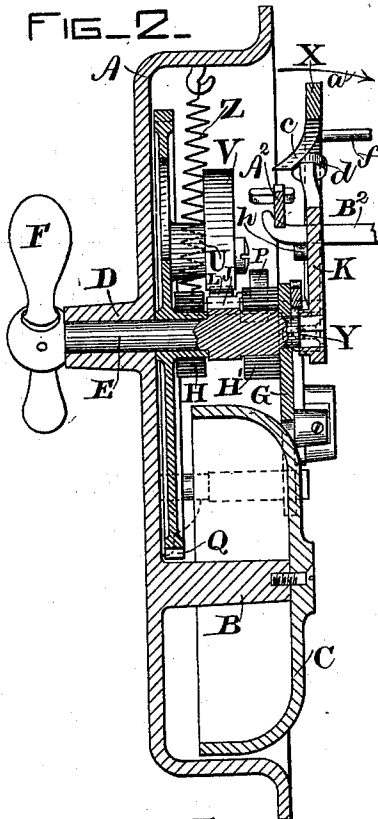


FIG. 1.

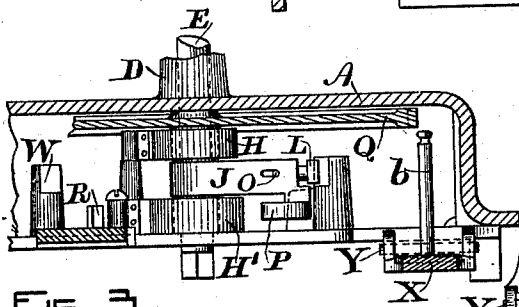
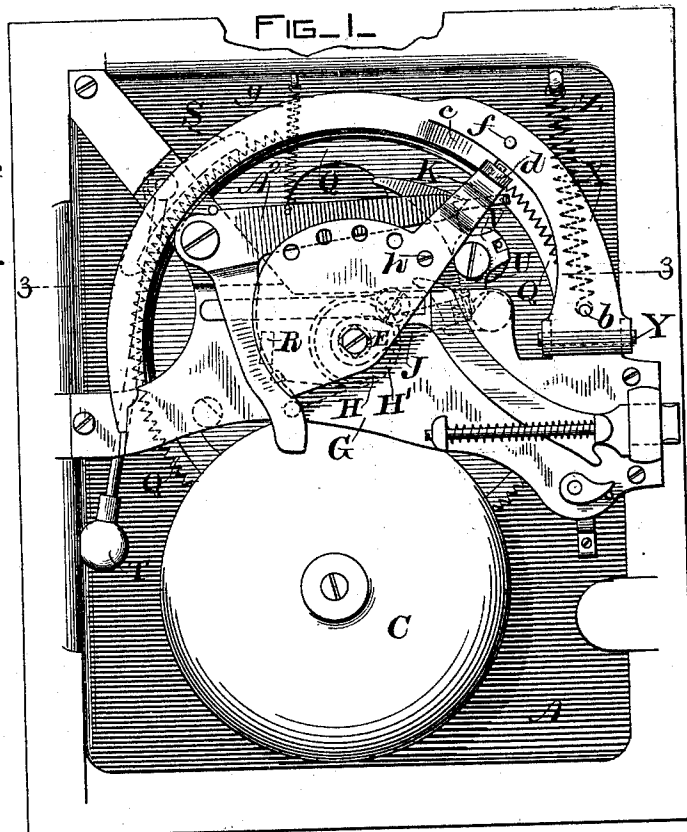


FIG. 3.

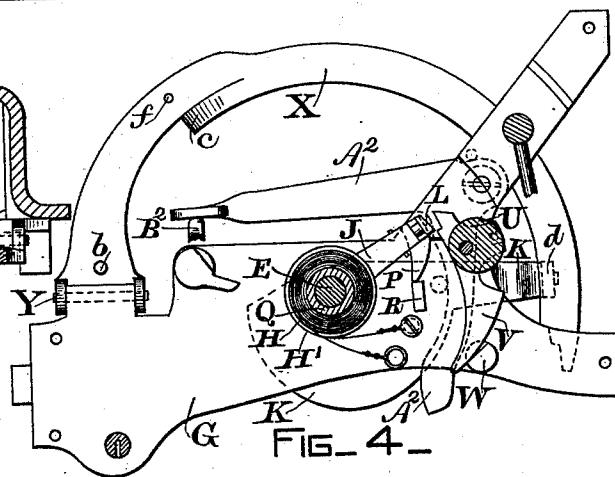


FIG. 4.

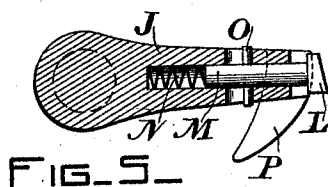


FIG. 5.

WITNESSES

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FIRE-ALARM SIGNAL-BOX.

SPECIFICATION forming part of Letters Patent No. 509,573, dated November 28, 1893.

Application filed August 16, 1893. Serial No. 483,247. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. GARDINER, a citizen of the United States, residing at Newton, county of Middlesex, State of Massachusetts, have invented a certain new and useful Improvement in Fire-Alarm Signal-Boxes, of which the following is a specification.

My invention relates to that type of boxes in which provision is made for turning in an alarm without opening the door of the box so that any one can send an alarm without the necessity of first procuring a key to open the box. It is usual in such cases to provide a large bell which will be sounded for a certain time before the alarm can be sent, and also for a certain time after the alarm has been sent. The object of this is to prevent unauthorized alarms being sent by calling attention to the fact that the box is being operated. My invention consists in certain details by which in a box of this kind the act of turning the handle to send an alarm will automatically effect the necessary operations for throwing the non-interference mechanism of the box into operative condition.

Referring to the accompanying drawings Figure 1 is an elevation showing the door of a fire alarm box, to which the mechanism constituting my invention is applied. Fig. 2 is a vertical central section of the same. Fig. 3 is a horizontal section on the lines 3—3 of Fig. 1. Fig. 4 is a rear view of the mechanism shown in Fig. 1, and Fig. 5 is a detail of the latch arm.

In Figs. 1 and 2 A represents the door of a fire alarm box, the same being provided with an interior projecting lug B carrying the bell C, and a small outside lug D which is bored to form a bearing for the main shaft E for the operating mechanism. The shaft E has at one end a handle F outside of the box, and at the other end has a bearing in a frame G attached to the inside of the box. The shaft E carries radial arms J and K, the former being referred to herein as the "latch arm," and the latter as the "cam arm." The office of the former is to engage by means of a latch with a spring-driven wheel having teeth upon its periphery which engage with a pallet carrying the hammer of the bell. The office of the latter is to press back against the action of a spring a

curved plate which carries a pin normally engaging with the armature of the non-interference magnet. The latch arm is shown in Figs. 3 and 5. It will appear by reference to these figures that a latch L is carried by a bolt M inserted longitudinally in the end of the arm J and normally spring-pressed outward by means of a coiled spring N. The movement of latch L is limited in both directions by a pin O moving in a slot in the arm J. The said arm is also provided with an extension P adapted to engage with a stop R, Fig. 4, and thereby limit the movement of the arm.

Q is a toothed wheel carried on a sleeve concentric with shaft E. The teeth on its periphery engage with a pallet S carrying the hammer T of the bell C so that as the wheel is rotated the pallet and hammer are vibrated and the bell sounded.

U is a stud upon wheel Q upon which is pivoted a hook V adapted to engage with the latch L on the end of arm J. The shape of hook V is best seen in Fig. 4 where it is represented as just coming out of engagement with latch L. The shape of hook V is such that as wheel Q is turned a curved projection on the hook comes against a post W and slightly turns it so as to release it from latch L. Two flat coiled springs H and H' concentric with shaft E are provided, the former acting upon wheel Q and the latter upon shaft E. When, however, the shaft E is connected with the wheel Q by the engagement of latch L with hook V both springs act upon the shaft E so that the operator in turning the handle F must wind up both springs.

X is the curved plate above referred to which is pivoted at the point Y, while its opposite end has a loose bearing in the frame G. This plate is normally pressed inward in the direction of the arrow a, Fig. 2, by means of a spring Z which acts on the outer end of a pin b projecting from the plate. A short portion c of the plate X is turned up to form a cam as shown in Figs. 1 and 2, and against this portion c rests a friction wheel d on the end of the cam arm K so that the turning of the shaft E will cause the simultaneous movements of arms J and K and the movement of the wheel d on the cam c will force the plate X outward against the force of spring Z and

thereby withdraw a pin *f* projecting from the face of plate X out of engagement with the armature of the non-interference magnet.

I have not shown herein the non-interference mechanism which is affected by the withdrawal of the pin *f* as my invention relates simply to the mechanism illustrated herein by means of which the pin is withdrawn as described. I may say, however, that the non-interference device is one generally known in the art as the "Gardiner device" wherein the armature of the non-interference magnet carries an insertion piece adapted to come in between the operating hook and releasing lever of the time train whenever the said armature is in its attracted position. Whenever the door of the box is closed the armature is forced into the said attracted position by a mechanical connection with the said door so that the opening of the door leaves the armature free to be retracted if the circuit is open. It is the function of the small pin *f* above referred to, to serve as the mechanical connection between the door and the armature of the non-interference magnet so that when an alarm is to be sent the pin will be withdrawn as above shown and the same result be secured as if the door of the box were open.

A² is an angle lever pivoted to the frame G with its under arm horizontal and upheld by a spring *g*. The horizontal arm of said lever extends over the releasing hook B² so that when it is depressed it pulls down the said hook and starts the box. The shorter and vertical arm of angle lever A² extends in the path of the pin *h* placed in one of a series of holes in the sector forming the inner end of the cam lever K so that the turning of the said lever K finally brings the pin *h* into engagement with the angle lever A² which, as above described, comes in contact with the hook B² and thus pulls the box.

The operation of the mechanism thus described is as follows: Assuming that it is desired to send an alarm the operator simply grasps the handle F and turns the shaft E. As the latch on the end of arm J is normally in engagement with the hook V the wheel Q will be turned at the same time, the movement being made against the pressure of both springs H and H'. The bell will immediately be sounded and will continue to sound until the cam arm K has moved far enough to cause the engagement of pin *h* with the end of angle lever A² thus starting the signal mechanism of the box. About the same time the extension on hook V will be brought into engagement with the post W as shown in Fig. 4 and thereby releases the said hook from engagement with latch L. This will permit the wheel Q to return under the influence of spring H although the shaft E is still held by

the hand of the operator and causes the alarm to continue to sound for some time. When the operator lets go of handle F the shaft E returns under the influence of H' and restores the parts to their normal condition.

I do not claim herein the device shown for operating the bell, such being substantially shown in Patent No. 346,847, to B. S. Flanders, dated August 3, 1886, but

What I claim here, and desire to secure by Letters Patent, is—

1. The combination with a fire-alarm box and signaling mechanism therein, of an external handle, a bell operated by said handle, a connection from said handle to the releasing device adapted to start the mechanism of the box after a definite movement of the handle, and means positively operated by said handle for setting the non-interference mechanism of the box.

2. The combination with a fire-alarm box, and signaling mechanism therein, of an external handle, a bell actuated thereby, and means for setting the non-interference mechanism of the box by the movement of said handle, consisting of a curved plate carrying a pin acting upon said non-interference mechanism, and having a cam surface engaged by an arm on the shaft of the said handle.

3. The combination with a fire-alarm box and signaling mechanism therein, of an external handle, a bell actuated thereby, an adjustable connection between said handle and the releasing device for said mechanism, consisting of an arm on the shaft of the said handle provided with a pin adjustably placed, and an angle lever having one arm in the path of said pin and the other arm adapted to engage with the said releasing device.

4. The combination with a fire-alarm box, and signaling mechanism therein, of an external handle, a bell operated thereby, and two arms extending from the shaft of said box, one adapted to connect said shaft to the alarm and the other adapted to operate the releasing mechanism of the box and also to act positively upon the non-interference mechanism of the box.

5. The combination with a fire-alarm box and signaling mechanism therein, of an external handle, a curved plate having bearings at opposite ends, a pin on said plate acting on the non-interference mechanism of the box, and an arm on the shaft of the said handle engaging with a cam surface on the said plate.

In testimony whereof I have hereto set my hand this 15th day of August, 1893.

JAMES M. GARDINER.

Witnesses:

A. O. ORNE,
H. J. LIVERMORE.