

J. F. KIRBY.
Fire-Alarm Telegraphs.

No. 148,833.

Patented March 24, 1874.

Fig. 1.

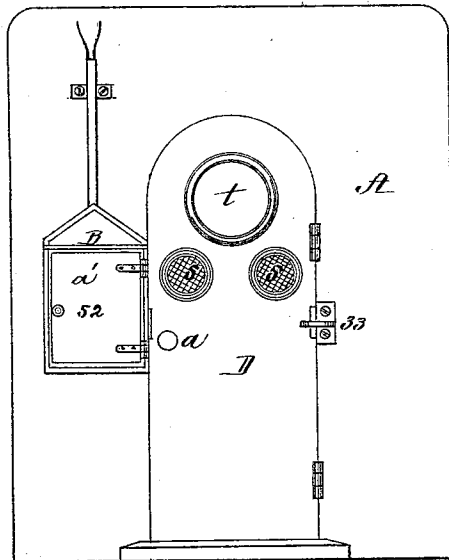
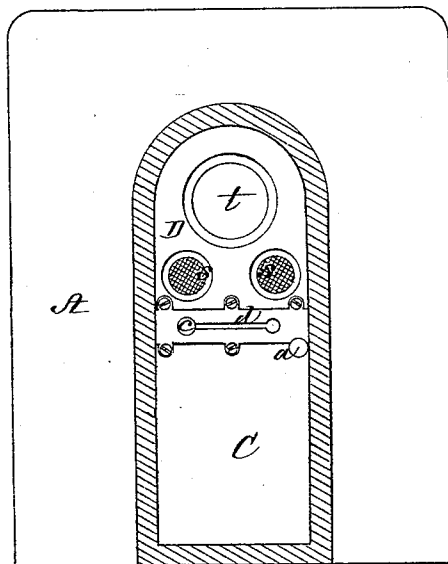


Fig. 2.



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Fig. 3.

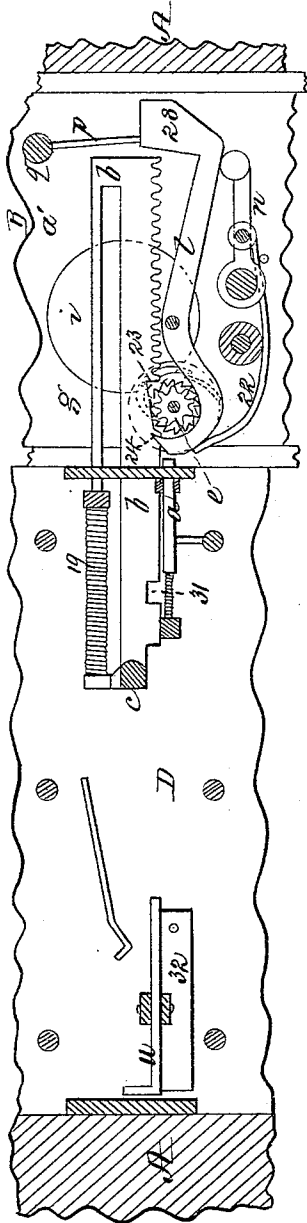


Fig. 4.

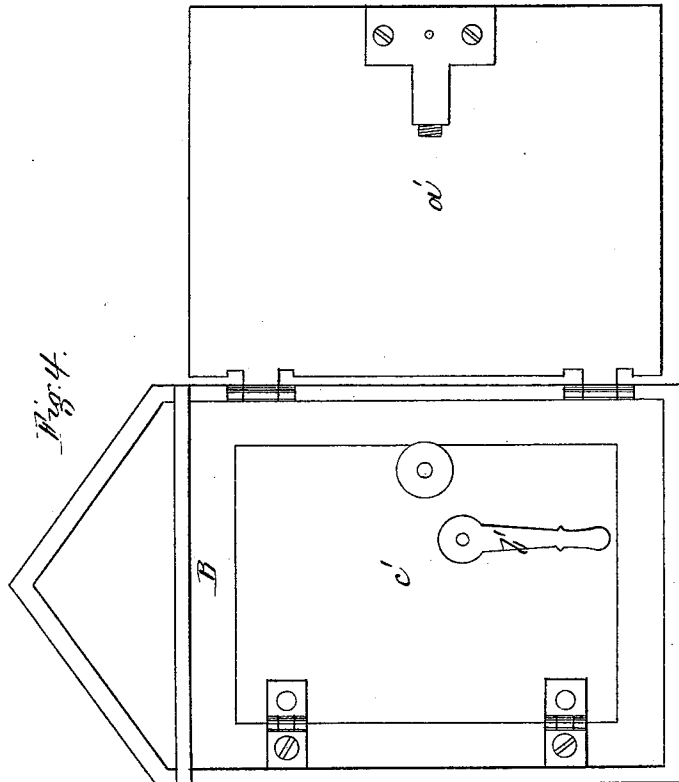
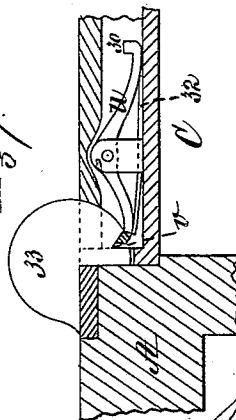


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN F. KIRBY, OF BOSTON, ASSIGNOR TO HIMSELF AND FREDERICK W. NICHOLS, OF LYNN, MASSACHUSETTS.

IMPROVEMENT IN FIRE-ALARM TELEGRAPH APPARATUS.

Specification forming part of Letters Patent No. 148,833, dated March 24, 1874; application filed December 31, 1873.

To all whom it may concern:

Be it known that I, JOHN F. KIRBY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Telegraphic Fire-Alarm Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 is a front elevation of a fire-alarm signal-box attached to the outside of a building, having a closet or chamber formed therein in accordance with my invention. Fig. 2 is a section through the closet, showing the inner side of the door and some of the operating parts. Fig. 3 is a sectional elevation, enlarged. Fig. 4 is a front elevation, enlarged, of the signal-box, with its outer door open. Fig. 5 is an elevation of the signal-box, with both its inner and outer doors open. Fig. 6 is an elevation of the clock-work and mechanism connected therewith, the front plate being removed; Figs. 7, 8, and 9, details to be referred to.

In cities and towns provided with a telegraphic fire-alarm system, serious delay in giving an alarm of fire is often occasioned by not being able to procure the key of the signal-box, the police officer or other person authorized to carry such key being absent, or the store or other place of deposit for the key being closed. The time thus lost is often the cause of a serious conflagration, which could have been avoided had it been possible to have given the alarm at the first discovery of the fire.

My invention has for its object to avoid this delay, and provide a means whereby any person may give an alarm from the signal-box without opening it, and which will at the same time prevent the liability of false alarms by confining for a certain length of time the person giving the alarm, in order that he may be detected and arrested if he can give no sufficient reason for so doing; and my invention consists in combining with the signal-box a closet or chamber, into which a person who wishes to give an alarm, and is unprovided with a key, must enter and close its door, the signal being given by the act of bolting or

locking the door which sets in motion the clock-work within the signal-box, the lock or fastening being caught and held by a suitable device connected with the clock-work, which prevents the door from being opened by the person confined in the closet until the expiration of a given time, thus enabling an officer to arrest the person therein, if necessary.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A represents the side of a building, to which is attached the telegraphic signal-box B, connected with the fire-alarm system. On one side of the box B is a closet or chamber, C, formed in the wall of the building, and provided with a door, D, which is kept closed by an ordinary knob-latch, *a*. To the inner side of the door is attached the casing of a long bolt, *b*, which is pushed out against the resistance of a spiral spring, 19, by a handle, *c*, projecting through a slot, *d*. The bolt is provided with teeth on its under side, and, when thrown out by a person within the closet, enters a narrow slot, 20, in the side of the signal-box and locks the door D, the bolt engaging with a pinion, *e*, which is thus revolved, and, by means of a ratchet-wheel and pawl, communicates its motion to a pinion, *f*, outside the plate *g*. This pinion *f* engages with a toothed wheel, *h*, which is connected with a barrel, *i*, containing the mainspring 21, which is thus wound up. *k* is another pinion, connected with a train of clock-work, and also engaging with the teeth of the large wheel *h*, by which means the clock-work is driven when the spring is wound up, a circuit-wheel, 18, outside the plate *g* being connected with the clock-work, whereby the desired signal is given. During the winding up of the mainspring the motion of the wheel *h* is not at first communicated to the pinion *k*, as a portion of the periphery of the wheel *h* is unprovided with teeth, and when the pinion is rotated by the pushing in of the bolt *b*, its motion is not communicated to the train of clock-work, which is, however, driven by a ratchet-wheel and pawl when the pinion is rotated in the opposite direction by the wheel

h as the mainspring is unwinding. As the bolt *b* is pushed in, the point of a hooked lever, *l*, engages with the teeth on its under side, being thrown up by a spring, 22, and prevents it from being withdrawn, but does not interfere with its advance; and when the bolt has been pushed out to its full extent a notch, 23, is brought opposite the pinion *e*, and the point of the lever *l* engages with the last tooth 24 in the bolt *b*, and holds it in the position seen in Fig. 3. The pinion being no longer in contact with the teeth of the bolt, the wheel *h* commences to be revolved by the mainspring and rotates the pinion *k*, thus setting the clock-work in motion and giving the signal, as desired. The speed of the clock-work is regulated by a fly, 25, and when the toothless portion of the wheel *h* reaches the pinion *k*, the wheel suddenly slips around, a pin projecting from its inner side at the same time striking and depressing an arm, 26, the outer end of which strikes a lever, *m*, Figs. 5 and 9, and raises it so as to cause a tooth or projection, 27, to engage with the pinion *k*, thus stopping the clock-work. The downward movement of the arm 26 raises another arm, *n*, connected therewith, this latter arm striking the lever *l*, and withdrawing its point from the tooth 24 of the bolt *b*, which is instantly withdrawn by the spring 19. The door *D* can now be opened by the person within the closet *C*, who has thus been kept confined during the time of giving the alarm, the mechanism being so adjusted that the door will be kept locked sufficiently long to enable an officer to reach the box and ascertain who has given the alarm, and detain the person if justified in so doing. The liability of false alarms being given by mischievous persons is thus entirely avoided, as their detection would be certain. The length of time which must elapse before the door can be opened cannot be diminished by pushing in the bolt a short distance only, as it is caught and prevented from being withdrawn by the lever *l*, while the clock-work, by which the lever is depressed to release the bolt, cannot be set in motion until it is pushed in to its full extent, as the pinion *e* cannot turn until the notch 23 is brought opposite to it. When the wheel *h* commences to be rotated by the pushing in of the bolt *b*, the pin on its inner side, which operates the arm 26 and lever *m*, is moved into such a position that the arm 26 will be raised by the action of the spring 22 on the lever *l* and arm *n*, when the lever *m* will drop by its own weight, thus withdrawing the tooth 27 from the pinion *k*, and allowing it to be rotated by the teeth of the wheel *h*, the length of the toothless portion of this wheel being sufficient to allow the lever *m* to drop before the pinion commences to be revolved. It is evident that if a person acquainted with the construction of the mechanism should depress and hold down the point of the lever *l* by a wire or other instrument inserted through the slot 20 in the side of the signal-box, he could

enter the closet, push in the bolt *b* to set the clock-work in action to give the alarm, and then instantly withdraw the bolt and escape, the lever *l* being held out of action by the wire, or otherwise, to allow of this being done. To prevent an alarm from being so given, I employ a device for preventing the clock-work from being set in motion when the point of the lever *l* is held down, which I will now describe. At the rear end of the longer arm of the lever *l* is an enlargement, 28, provided with an inclined projection or shoulder, 29, which, when the point of the lever *l* is depressed, bears against a spring-arm, *p*, projecting down from the arbor *g*, to which the inner end of the lever *m* is attached, and keeps this lever up in the position seen in Fig. 5, with its tooth 27 in the pinion *k*, and consequently the clock-work cannot be set in motion so long as the incline 29 bears against the spring-arm *p*. When, however, the point of the lever *l* is up in its proper position to catch and hold the bolt *b*, the incline 29 is carried down so as not to interfere with the arm *p*, and the lever *m* is free to drop by its own weight, when allowed to do so by the movement of the pin on the inner side of the wheel *h*. The slot 20 in the side of the box *B* is covered by a plate, *r*, Fig. 8, which is pressed back against the resistance of a spring by the door *D* when closed. This door is provided with circular openings *s*, covered with wire netting for the admission of air, and with a window, *t*, to admit light. To prevent the bolt *b* from being thrust out and tampered with when the door *D* is open, it is locked by a lever, *u*, provided with a projection, 30, which enters a notch, 31, in the bolt, the lever being held in this position against the resistance of a spring, 32, by a circular plate, 33, Fig. 7, against the periphery of which it bears, this plate being fastened to the door-frame, and being provided with a notch, *v*, into which the end of the lever *u* is forced by the spring 32 when the door is closed, and the projection 30 is thus withdrawn to allow of the bolt *b* being advanced by its handle *c*. As soon as the door *D* commences to open, the bent end of the lever is carried out of the notch in the plate 33, and rests against its periphery, which vibrates the lever and locks the bolt, as desired. When the key to the signal-box can be procured without delay, the alarm can be given without going into the closet and operating the bolt *b*, it being simply necessary to open the outer door *a'*, and swing the arm *b'* on the inner door *c'* to the left-hand side. This arm *b'* is connected with a short arm, *d'*, on the inner side of the door *c'*, which bears against a pin, 34, projecting from the wheel *h*, and thus, as the arm *b'* is moved around its center, the wheel *h* is rotated to wind up the mainspring, and on releasing the arm *b'*, the clock-work is set in motion and the signal given, as desired.

I do not wish to confine myself to the employment of the particular mechanism above

described, as any other suitable mechanism may be used which will lock the closet-door and set in motion the clock-work within the signal box, to give the alarm and prevent the door of the closet from being opened until the expiration of a predetermined time.

What I claim as my invention, and desire to secure by Letters Patent, is—

In combination with a signal-box, a door attached to a suitable closet, and provided with a mechanism for locking such door from

the inside, and at the same time operating the signal-box, and a mechanism for preventing the closet from being opened until the expiration of a predetermined time, substantially as and for the purpose set forth.

Witness my hand this 26th day of December, 1873.

JOHN F. KIRBY.

In presence of—

P. E. TESCHEMACHER,
W. J. CAMBRIDGE.