

A. BALLARD.
Fire-Telegraph Boxes.
No. 215,083. Patented May 6, 1879.

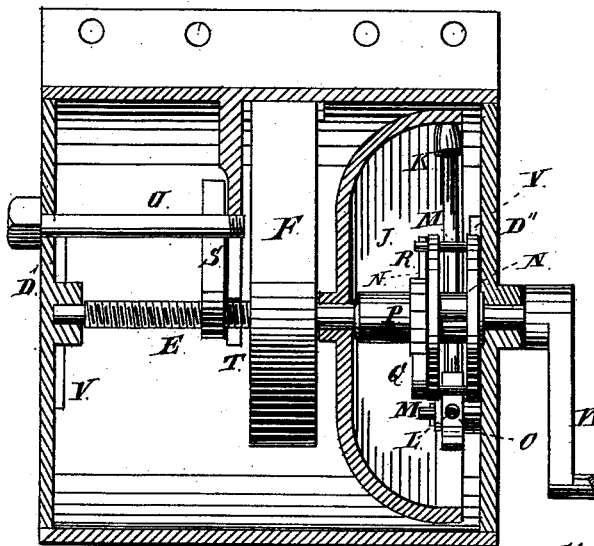
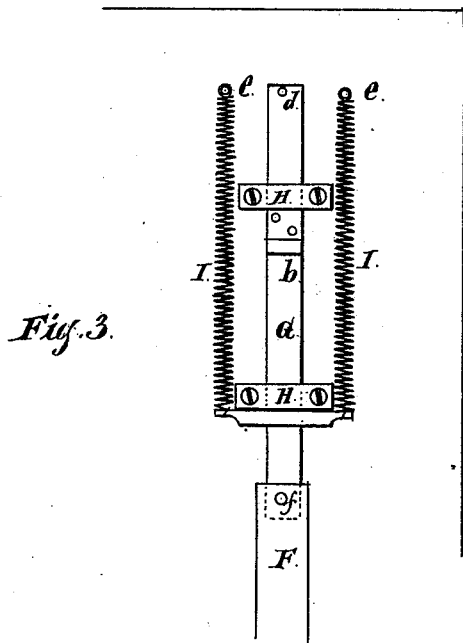
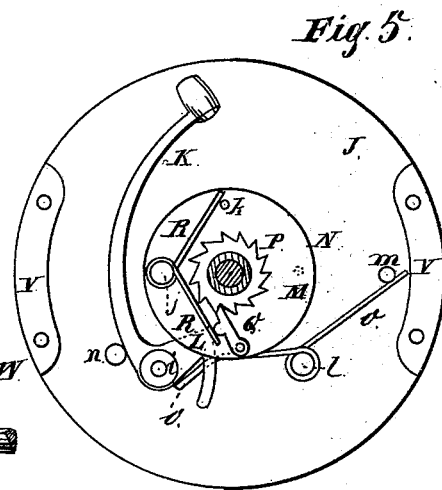


Fig. 4.



Witnesses:
O. W. Bond
H. L. Bruns.

Inventor:
Addison Ballard

UNITED STATES PATENT OFFICE

ADDISON BALLARD, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN FIRE-TELEGRAPH BOXES.

Specification forming part of Letters Patent No. **215,083**, dated May 6, 1879; application filed April 30, 1878.

To all whom it may concern:

Be it known that I, ADDISON BALLARD, of the city of Chicago, Cook county, State of Illinois, have invented new and useful Improvements in Fire-Alarms, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation with a portion of the secondary case or receptacle broken away; Fig. 2, a section on line *xx* of Fig. 1; Fig. 3, a detail showing the devices for returning the sliding bar; Fig. 4, a vertical longitudinal section, enlarged, of the secondary case or receptacle and its devices; Fig. 5, a detail, enlarged, of the devices for striking the gong or bell.

The object of this invention is to construct an attachment, to be used in connection with automatic fire-alarms, to avoid the necessity of opening the door of the box for the purpose of turning in an alarm, and to connect with such device an arrangement for striking a gong or bell, for the purpose of notifying persons in the vicinity of the box that an alarm is being turned in therefrom; and its nature consists in providing a mechanism located inside of the case or box, to engage with the device for starting the alarm, and connected with a spring or ribbon operated from the outside of the case or box; in providing a sliding bar, located outside of the case, and having a projection or catch so arranged as to engage with the hook or device for starting an ordinary alarm, and operated by a spring or ribbon located outside of the case; in providing a spring, one end of which is secured to the sliding catch-bar or other mechanism, and the other to a shaft, around which the spring or ribbon can be wound or coiled; in providing the sliding catch-bar with stops so arranged as to prevent the bar from operating too far in either direction; in providing spirally-coiled springs, attached at one end to the sliding bar, to readjust the sliding bar or mechanism for the next operation; in providing a gong or bell, located around the shaft, with a hammer and devices so arranged that the revolving of the shaft will strike the gong or bell; in providing the lower end of the hammer arm or lever with an arm having an incline, so ar-

ranged as to engage with pins or cross-bars on revolving disks, for operating the hammer, and a curved projection to receive the end of the hammer-spring; in providing a ratchet and pawl, so arranged as to connect the disks and shaft, to operate the hammer and sound the gong or bell when the alarm is being turned, and to disconnect them when the recoil of the spring takes place, to prevent injury to any portion of the mechanism from such recoil; in providing a suitable inclosing case or receptacle to receive the spring and other devices, to enable the devices to be readily attached to an ordinary box; in providing the shaft with a lock-nut so arranged as to prevent the spring from being wound too tight and to stop the force of the recoil, and to prevent winding of the spring in the wrong direction; in so constructing and arranging the spring and its operating-shaft that the winding of the spring on the shaft will, through the sliding bar or other mechanism, turn in the alarm, and the recoil of the spring will return the sliding bar or mechanism automatically to the proper position to be again operative, so as to dispense with the necessity of independent readjustment, thus making the device self-adjustable, and in the several parts and combination of parts hereinafter set forth as new.

In the drawings, A represents the case or box for the signaling mechanism; B, the front or door of the case; C, the signaling mechanism; D, the secondary case or receptacle containing the operating mechanism; E, the shaft; F, the spring or ribbon; G, the sliding bar; H, the guideways or bars; I, the returning-springs; J, the gong or bell; K, the hammer; L, the arm having a curved extension; M, the cross bars or pins; N, the disks; O, the hammer-spring; P, the ratchet; Q, the pawl; R, the pawl-spring; S, the stop-nut; T, the stop for preventing overwinding of the spring; U, the strengthening-bolt; V, the end flanges; W, the crank; D' D'', the heads of the case; *a*, the hook of the alarm; *b*, the catch or projection; *c*, the cross-bar on the sliding bar G; *d*, the pin or stop; *e*, the pins or screws for attaching the upper ends of the spirally-coiled springs I; *f*, the pin or hook for attaching the

spring F; *g*, the opening for the passage of F; *h*, the attaching-flange; *i*, the hammer-pivot; *j k*, the pins or supports for the spring R; *l m*, the pins or supports for the spring O; *n*, the pin against which the hammer strikes in its forward movement.

The case A may be made of cast metal or other suitable material, and may be of the ordinary construction, or of any desired form and size suitable to receive the signaling mechanism C, which may be secured therein in the usual manner, the signaling mechanism being of the usual construction of such devices, which are operated by pulling down a hook or other device.

The front B may be cast with the case, or it may be a separate piece, suitably secured thereto, or it may be provided with hinges to form the ordinary door, and in case the front B is cast with the case a suitable opening is to be provided to enable access to be had to the signaling mechanism C for the purpose of repairs, which opening can be closed by means of a plate, sliding door, hinged door, or other device suitable for the purpose.

The case or receptacle D may be cast or formed with the case A, or it may be a separate case of cast metal, or other suitable material, and may be of any desired form, so long as it is capable of receiving the spring or ribbon and gong and their operating devices. In the form shown, the case D is made separate from the case A, and is secured thereto by means of the flange *h*, which flange, as shown, is secured to the front B by means of suitable bolts or screws. This form of case is designed to be used with boxes having the ordinary door, the flange *h* being secured to the door in any suitable manner. The case D is provided at each end with heads D' and D'', which heads, as shown, are secured by means of screws to flanges V, projecting down from the inner face of the cylinder near each end, of a sufficient depth and thickness to receive and hold the screws. Instead of the flanges V, ears might be cast on the outer surface of the case D, to which the heads could be secured by means of bolts or screws, or the heads can be secured to the case in any other suitable manner.

At the center of the heads D' D'' are located the bearings for the shaft E, which shaft extends across the case, and one end thereof projects some distance beyond the head, and to it is suitably secured a handle or crank, W, by means of which the shaft can be rotated. The other end of this shaft E is provided with a screw-thread from its center out, and on this end is a stop or nut, S, having a corresponding screw-thread, so located and arranged that the revolving of the shaft will cause the nut or stop to travel forward and back thereon. To this shaft E is secured one end of the spring or ribbon F, the other end of which passes up through a suitable opening, *g*, formed in the cylinder D and bottom of the case A,

and is secured to the pin or hook *f* at the lower end of the bar G, which bar is located inside of the front or door B, and slides up and down in the plates or guides H, by means of which it is held in position. Near the lower end of this bar G is a cross-piece, *c*, the ends of which project some distance beyond the sides of the bar, and to each end is secured the lower end of a spirally-coiled spring, I, the upper ends of which springs are held in place by pins or screws *e*, located each side of the bar G on the front or door B. Near the top of the bar G may be located a pin or stop, *d*, so arranged as to strike against the upper guide-bar, H, to prevent the bar G from being drawn too far down.

On this sliding bar G, and between the guide-bars H, as shown, is a projection, *b*, the location and arrangement of which, with reference to the hook or other device which starts the signaling mechanism, is such as to bring the projection immediately over and in contact with the hook or other device, so that any downward movement of the bar G will, through the projection *b*, pull down the hook or other device. As shown, the bar G is located directly in front of the hook *a*, which position is necessary when it is desired to have the projection *b* act directly on the hook.

Two spirally-coiled springs, I, are shown, one on each side of the bar G; but a single spring might be used, one end being secured to the top of the bar G, and the other to the front or door B. The projection or catch *b* might be so arranged with its relation to the hook *a* and guide-bars H as to act as a stop for the sliding bar G, as well as a means for engaging the hook *a*.

By making the spring F sufficiently heavy and elastic the recoil of this spring will be sufficient to return the sliding bar G to position, in which event the spirally-coiled springs I are not absolutely essential, but may be used, if desired. Other means than the sliding bar G, provided with the projection engaging the hook *a*, might be used for making the connection with the spring or ribbon F. A lever might be pivoted to the front or door B, one end being so arranged as to engage the hook *a*, and the other being so connected with the spring or ribbon that as the spring or ribbon is wound on the shaft it will depress the end of the lever in contact with the hook and carry the hook down, or the end of the spring or ribbon might be provided with a catch or hook interlocking with the hook *a*, or some other mechanism might be connected with the spring or ribbon for engaging with and operating the hook *a*; but the arrangement shown is simple and effective, and enables the device to be readily applied to doors of ordinary fire-alarm boxes, so that a downward action can be had on the hook *a* in a straight line therewith.

The spring or ribbon F need not necessarily be made from steel or other similar elastic material, but by using a spring having some elas-

ticity such elasticity will be found useful in returning the parts to position. A ribbon having no elasticity could be used, and good results be attained therefrom, the spirally-coiled springs I being made sufficiently strong and elastic to insure the proper return of the parts, such springs being necessary for this purpose when a non-elastic ribbon is used.

Other means than the nut or hanger S might be employed to stop the overwinding of the spring; but such device is efficient and easily applied, and by locating it inside of the cylinder it cannot be tampered with. The bolt U is provided to strengthen the flange or stop T, so that the nut as it strikes against the flange will not break it, as might be the case if no bolt were used. The flange T is provided with a suitable opening for the passage of the shaft E, and is cast with the cylinder D, as shown.

The bell or gong J, as shown, is permanently secured to the shaft E, and is located on the shaft, between the spring F and head D". Between this bell and the head D" is a loose collar, on which are two disks, N, connected together at their outer edges by means of pins or cross-bars M, arranged at equal distances apart.

The lever or arm of the hammer K is pivoted at its lower end to the stud or projection i, formed on or secured to the head D", and is provided at its lower end with an arm so arranged as to pass between the two disks N in such a manner as to bring the upper face thereof in contact with the pins M when the disks N are revolved by the shaft. The under face of the arm L is provided with a downward extension, with which one end of the spring O engages, the other end of which spring comes in contact with the pin or projection n on the head D", the spring being secured to the pin or projection l by means of its coil passing around such pin. As shown, the curved extension of the arm L is provided with an opening for making the engagement with the hammer-spring O.

On the head D" is formed or secured a pin, n, the location of which in reference to the hammer is such as to prevent the spring O from throwing the hammer too far; the arm of the hammer striking against the pin or stop n. Between the bell J and the disks N is a ratchet-wheel, P, permanently secured to the shaft E and to the head or disk N. Next to the ratchet-wheel is pivoted a pawl, Q, so as to engage with the ratchet-wheel, which pawl is held in place by the spring R, secured to the stud or pin j on the disk N, one end of the spring engaging the pawl, and the other coming in contact with the pin or stop k.

The construction and arrangement of these devices for striking the gong are shown in Figs. 4 and 5.

By securing the ratchet-wheel P permanently to the shaft E, and its ratchet-R to one of the disks N, which disks are loose on the shaft E, it will be seen that the ratchet and pawl will be

engaged when the shaft is revolved for turning in the alarm, and, by reason of such engagement, the disks N must revolve with the shaft; but when the shaft is revolved in the opposite direction, or the recoil of the spring takes place, no engagement will be had between the pawl and ratchet, and no connection is therefore made between the shaft and disks, so that the shaft is free to revolve without communicating motion to the disks.

The nut S not only serves as a stop to prevent the shaft from revolving too far in either direction, but it also prevents the shaft from being turned in the wrong direction, as it cannot be turned any farther in one direction after the nut is in contact with the head D' or flange T.

In use the alarm is turned in by taking hold of the crank W and revolving the shaft E in the direction to wind the spring or ribbon F thereon, and as this spring or ribbon is wound up it will carry down the sliding bar G and its projection b, or other mechanism which engages with the hook a, or device for starting the alarm, and send in the alarm. The shaft is revolved until the nut S as it travels thereon reaches the stop or flange T, against which it strikes, which prevents the further revolving of the shaft in that direction, at which time the hook a has been pulled down sufficiently to turn in the alarm. The shaft E is then to be released, when it will be revolved in the opposite direction by reason of the recoil of the spring F, or the action of the springs I, until the nut S has reached the end of the shaft and is in contact with the head D', which stops the revolving of the shaft in that direction, during which time the sliding bar G and its projection b, or other mechanism which engages the hook a, will have been carried back to their first position, by reason of the recoil of the spring F or the action of the springs I, which allows the hook a to return to its position, and brings the parts into proper position to again turn in an alarm. As the shaft E is revolved to turn in the alarm, the disks N will revolve therewith, because the ratchet P and pawl Q are engaged, and as these disks revolve the pins M will be brought consecutively into contact with the arm L of the hammer lever or arm, drawing the hammer back until the pin M has passed the arm L, when the spring O will throw the hammer forward, striking the bell or gong, so that the same action that operates the alarm will also strike the gong or bell, thereby giving notice of the turning in of the alarm to those in the vicinity. When the shaft revolves in the opposite direction no action will be had on the gong.

By this arrangement it will be seen that the alarm can be turned in quickly and easily, and that the opening of the door of the box for this purpose is dispensed with, so that no key need be provided for opening the door, and no door is essential, so far as the turning in of the

alarm is concerned, and is only necessary to enable access to be had to the signalling mechanism for the purpose of repairs. It will also be seen that any person can turn in the alarm readily, as all that is necessary to be done is to revolve the crank, so that as soon as a fire is discovered a person can run to the box and instantly turn in the alarm, and not be to the trouble and delay of looking around for a key with which to open the door.

By adding a gong or bell, which will be rung by revolving the shaft when an alarm is turned in, it gives a warning to parties in the vicinity of the fact, and it also prevents the turning in of the alarm by parties for mischief, as the instant the crank is turned the gong or bell will sound, giving notice thereof.

My improvement may be attached to any of the ordinary fire-alarm boxes now in use which employ a hook or other pulley device for turning in the alarm. As heretofore constructed, to pull the hook and start the alarm the door of the box has to be opened; but with my improvement attached to such boxes the necessity of opening the door for this purpose is dispensed with, and the alarm is turned in with the box or case closed.

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

1. In an automatic fire-alarm, the combination of the spring or ribbon F and a mechanism for winding the same, located outside of the case of the signaling mechanism, with a mechanism to engage with the hook *a*, located inside of the case and connected with the spring or ribbon F, whereby the winding of the spring or ribbon will turn in the alarm, substantially as and for the purposes specified.

2. In an automatic fire-alarm, the combination of a mechanism for engaging the hook *a* with the spring F and a mechanism for winding the spring, located outside of the case of the signaling mechanism, whereby the winding of the spring will turn in the alarm and its recoil aid in readjusting the hook-engaging mechanism for the next operation, substantially as specified.

3. In an automatic fire-alarm, the combination of the sliding bar G and a device for engaging the hook *a* with the spring or ribbon F and a mechanism for winding the spring or ribbon, located outside of the case of the signaling mechanism, for enabling the alarm to be turned in from the outside, substantially as specified.

4. In an automatic fire-alarm, the projection *b*, arranged to engage with the hook *a*, in combination with the spring or ribbon F and a suitable mechanism for winding the spring or ribbon, located outside of the case of the signaling mechanism, for turning in the alarm, substantially as and for the purposes specified.

5. In an automatic fire-alarm, the sliding bar G, provided with the projection *b*, arranged to engage with the hook *a*, in combination with the spring F and a mechanism for

winding the spring, whereby the spring will act to turn in the alarm and to aid in readjusting the sliding bar for the next operation, substantially as specified.

6. In an automatic fire-alarm, the sliding bar G, provided with the projection *b*, arranged to engage with the hook *a*, in combination with the spring or ribbon F, shaft E, and coiled spiral springs I, for operating the sliding bar and adjusting the device for the next operation, substantially as specified.

7. In an automatic fire-alarm, the sliding bar G, provided with the projection *b*, arranged to engage with the hooks *a* and stops *c d*, in combination with the guide-bars H, spiral coiled springs I, spring or ribbon F, shaft E, and a suitable mechanism for revolving the shaft, substantially as and for the purposes specified.

8. In an automatic fire-alarm, the sliding bar G, provided with the projection *b*, arranged to engage with the hook *a*, spring or ribbon F, and shaft E, in combination with the gong or bell J and a mechanism for striking the gong or bell operated by the shaft E, whereby the bell will be rung by the revolving of the shaft when turning in the alarm, substantially as and for the purpose specified.

9. In an automatic fire-alarm, the shaft E, for operating the signaling mechanism through the winding of a spring or ribbon thereon, in combination with the bell or gong J and the striking mechanism, substantially as described, located on and operated by the shaft, whereby the revolving of the shaft when operating the alarm will ring the gong or bell, as and for the purposes specified.

10. In an automatic fire-alarm, the bell J, secured to the shaft E, which operates the devices for turning in the alarm, in combination with the hammer K, having its arm or lever provided with the inclined extension L, spring O, and disks N, provided with the pins M and located on the shaft E, for giving notice when an alarm is being turned in, substantially as specified.

11. In an automatic fire-alarm, the bell J, hammer K, having its arm or lever provided with an inclined extension, L, disks N, pins M, ratchet P, pawl Q, springs O R, and stop *n*, in combination with the shaft E, spring or ribbon F, sliding bar G, provided with the projection *b*, and springs I, for turning in the alarm, giving notice thereof, and preventing the recoil of the spring when adjusting the devices for the next operation from injuring any portion of the mechanism, substantially as specified.

12. In an automatic fire-alarm, the secondary case or receptacle D, inclosing the devices for operating the alarm and giving notice thereof, consisting of the spring or ribbon F, shaft E, bell or gong J, and its operating mechanism, in combination with the case A, for protecting the devices and enabling the

mechanism to be readily attached to an ordinary fire-alarm box, substantially as and for the purposes specified.

13. In an automatic fire-alarm, the shaft E, arranged to wind the spring or ribbon thereon, and provided with a screw-thread at one end, in combination with the nut S, flange T, and head D', for limiting and stopping the

revolutions of the shaft in both directions, substantially as and for the purpose specified.

ADDISON BALLARD.

Witnesses:

O. W. BOND,
F. F. BRUNS.