2 Sheets--Sheet 1.

A. ROSENBUSCH.
Fire-Alarm Telegraph.

No. 162,953. Patented May 4, 1875.

FIG. 5.

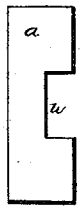


FIG. 1.

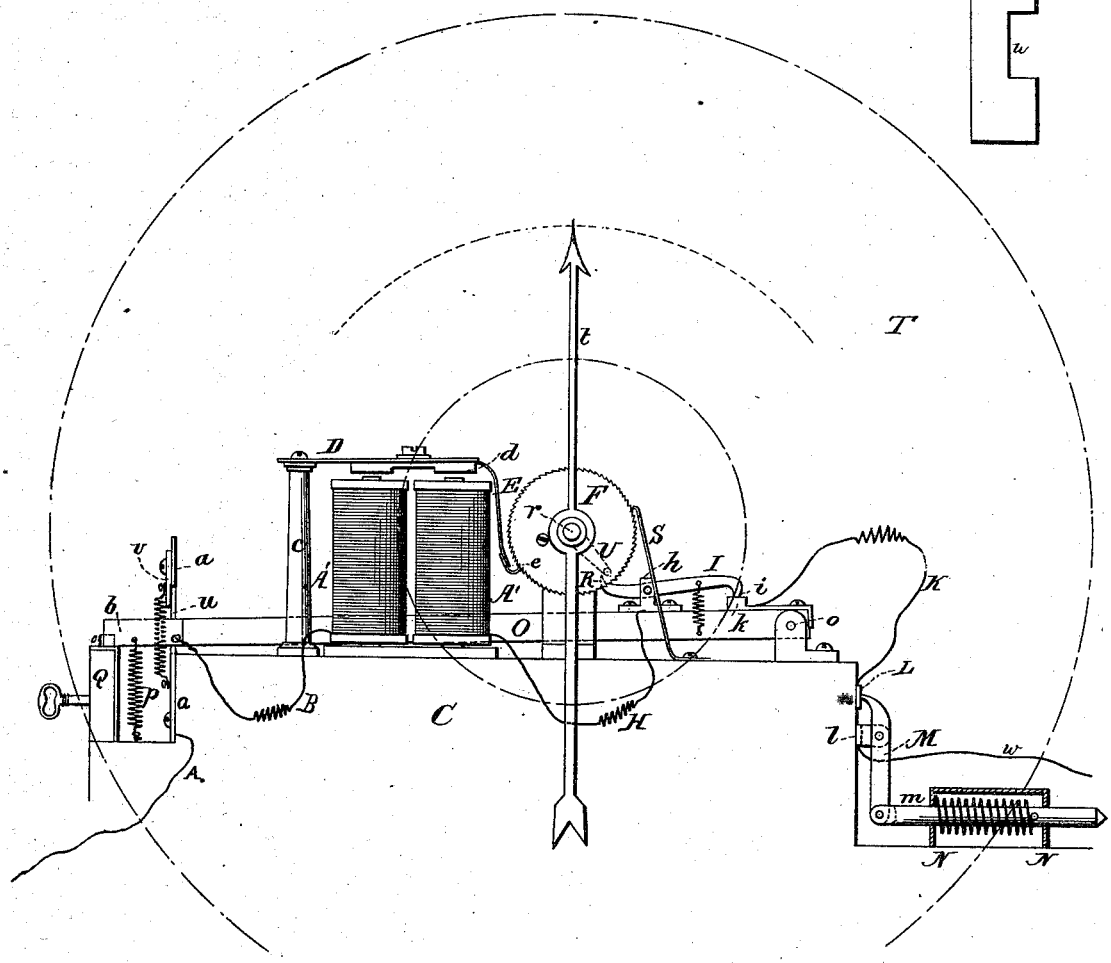
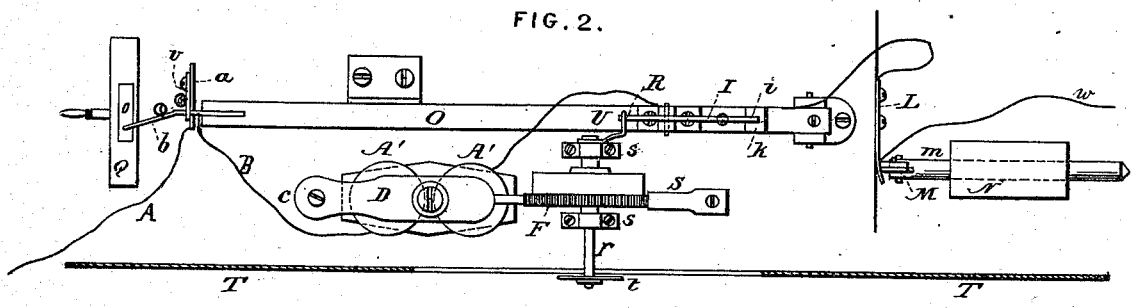


FIG. 2.



WITNESSES.

W. Hendley
Fred R. Goodridge

INVENTOR.

Andrew. Rosenbusch

BY Cox and Cox ATTY'S.

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

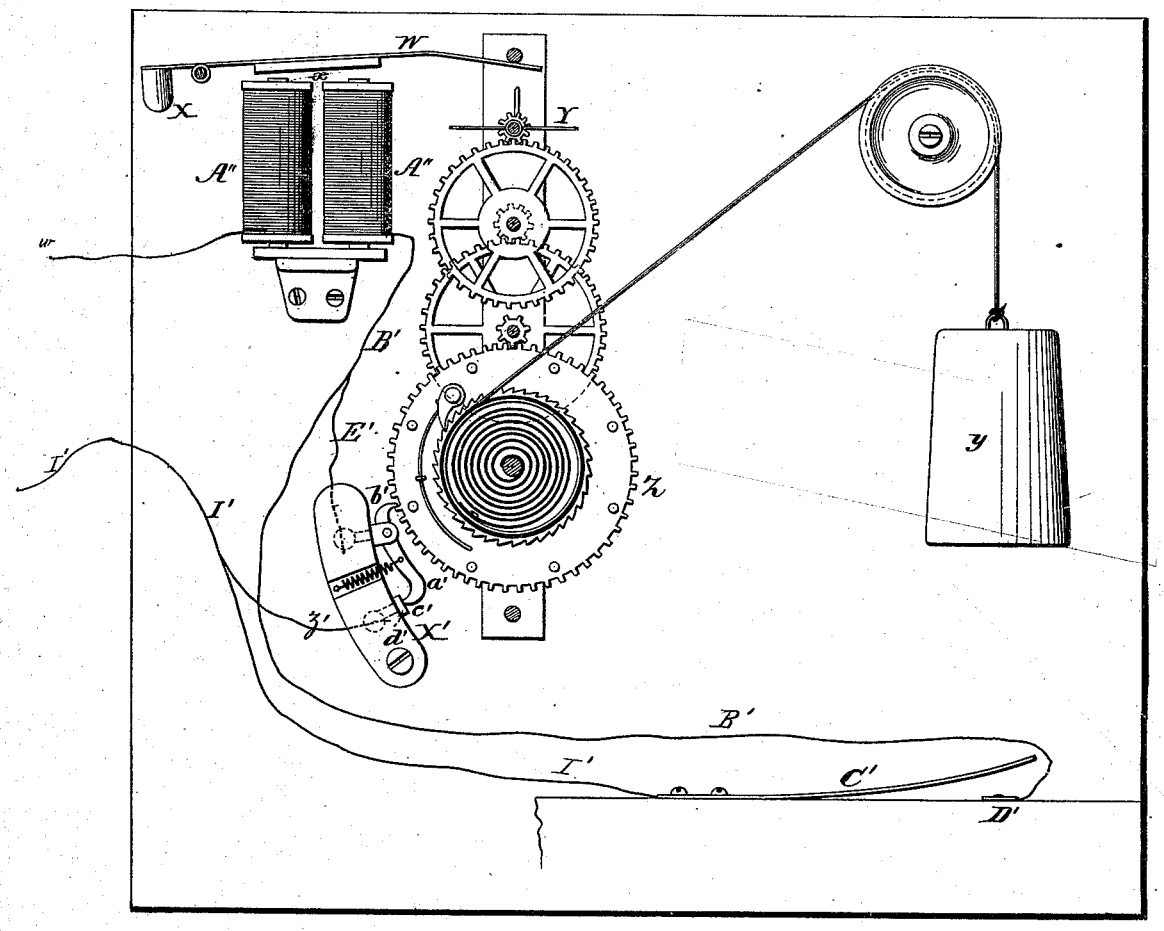
2 Sheets--Sheet 2.

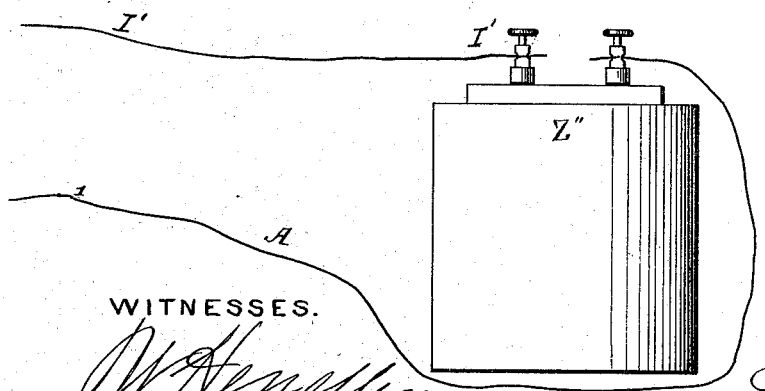
A. ROSENBUSCH.

Fire-Alarm Telegraph.

No. 162,953. Patented May 4, 1875.

FIG. 3.





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UNITED STATES PATENT OFFICE.

ANDREW ROSENBUSCH, OF QUINCY, ILLINOIS, ASSIGNOR OF ONE-HALF HIS RIGHT TO THEODORE W. KREITZ, OF SAME PLACE.

IMPROVEMENT IN FIRE-ALARM TELEGRAPHS.

Specification forming part of Letters Patent No. **162,953**, dated May 4, 1875; application filed March 3, 1875.

To all whom it may concern:

Be it known that I, ANDREW ROSENBUSCH, of Quincy, Illinois, have invented certain new and useful Improvements in Electrical Fire-Alarm Telegraph Systems, of which the following is a description, reference being had to the accompanying drawings.

The invention relates to an improvement in systems of electrical fire-alarms; and consists in a group of devices constantly in circuit and so arranged that an alarm is sounded whenever the circuit is broken, as more particularly hereinafter specified.

The object of the invention is to provide an efficient means of communicating signals by aid of electricity and the mechanisms hereinafter described.

Figure 1 is a front view of the lower part of the device. Fig. 2 is a top elevation of same; and Fig. 3, a front elevation of the upper parts of the device. Fig. 4 is a detached view of the plate *a*.

A in the accompanying drawings is an insulated wire connecting the battery Z″ with the base of the vertical plate *a*, whence the current passes through the tongue *b* to the wire B, connecting it with an electro-magnet, A′ A′. The mechanism is mounted upon the non-conducting platform C, a standard, *c*, being placed at one side of and in line with the coils A′, to the upper end of the standard there being attached one end of a bar-spring, D, having an upward tension and provided upon its under side with an armature, *d*, which, when the coils A′ are excited, is drawn downward in contact therewith. To the loose end of the spring D is secured the spring-pawl E, having on its lower end the hook *e*, engaging the teeth upon the wheel F, so that at each downward movement of the spring D the hook *e* catches upon a lower tooth, and, as the spring rises, the wheel F is rotated proportionately. The coils A′ are connected by the wire H with the base of the pivot-stand *h*, between the uprights of which is pivoted the lever I, extending a suitable distance, provided on the under side with a spring to give it downward bearing, and having near its end, on its under side, the vertical pin or tooth *i*, which, when the lever is depressed, impinges upon the block *k*, to the opposite end of which the wire K is attached, leading to a plate, L, upon one end of the platform C. Below the plate L is secured another plate, *l*, at one end of which is pivoted the lever M, the upper end of which impinges upon the plate L, the lower end being pivoted to one extremity of an insulated rod, *m*, working through apertures in the ears N secured on the under side of the platform C, and having between them a spiral spring, there attached to the rod *m*, so as to give it an outward bearing. Opposite the end of the rod *m* an aperture is made in the box or casing, so that a key may be inserted, and the rod forced inward, removing the point of the lever M from impact with the plate L, thus breaking the circuit.

The course of the circuit is from the battery through the wire A to the plate *a;* thence through the tongue *b* on the wire B to the coils A′; thence on the wire H to the pivot-stand *h;* thence through the lever I to the block *k;* thence on the wire K to the plate L; thence through the lever M to the plate *l;* thence to the other boxes on the wire *w* leading out of the casing. Thus all boxes are connected and placed in circuit. The pivot-stand *h* is mounted upon a lever, O, of non-conducting material, having at one end a conducting-tongue, *b*, whereto is attached one end of the wire B, the other end of which connects with the coils A′, the tongue *b* being placed above the bolt *o* of the lock Q, secured in proper position and operated by a key admitted through a properly placed aperture in the casing, the other end of the lever O being pivoted upon the platform C, a spring, *p*, being properly provided to give the lever O a downward pressure, so that the edge of the tongue *b* shall rest upon the lower edge of the recess *u* in the plate *a*. The end of the lever I, opposite that at which the tooth or pin *i* is placed, is provided with the detent R. The wheel F is rigidly mounted upon the shaft *r*, working in bearings *s*, and has on the side opposite that on which the pawl E operates the spring-check pawl S. The shaft *r* extends on one side beyond the vertical plane of the dial-face T, and is there provided with the index-hand *t*. The other end extends beyond the adjacent

bearing and has its extremity provided with an eccentric, or the curved tooth *v*, of such length that, when the lever O is elevated and the shaft *r* rotated by the revolution of the wheel F, the end of the tooth U shall come in contact with the detent R, depressing it and thus elevating the pin *i* from contact with the block *k*, breaking the current, depriving the coils A′ of their attractive power, and thus arresting the movement of the spring D, and consequently stopping the revolution of the wheel F. The end of the platform C, adjacent to the tongue *b*, is provided with the vertical plate *a*, having in it the recess *u*, upon the lower edge of which rests the lower edge of the tongue *b*, when the lever O is depressed. To the outer side of the plate *a* is pivoted one end of the swinging tooth *v*, a stud being properly placed to prevent it falling too far, so that, as the tongue *b* is elevated it comes in contact with the tooth *v*, raising it until the ascent of the tongue is stopped by its coming in contact with the upper edge of the recess *u*. Thus, when the lever O is down, the circuit is through the plate *a* and tongue *b;* when raised the current is broken, and re-established when the tongue *b* comes in contact with the swinging tooth *v*, the object of which is to prevent any oscillation or break in the current by the snapping of the bolt *o* when sprung.

From the plate *l* the wire *w* leads to the box containing the gong and striking apparatus, which, for the sake of convenience, is herein denominated as the signal-box, the case whereof the wire *w* enters and passes upward to a pair of coils, A″, which becomes a sluggish magnet when charged, from which a wire, B′, leads downward to the bar D′, and a short distance from the coils A″ is connected, by the wire E′, with the circuit-breaking lever *a′*, from which another wire, *z′*, leads to the exit-wire I′, the terminus of which is the spring C′. Above the coils A″ there is pivoted a lever, W, one end of which is provided with the weight X to uphold the other, which is provided on its under side with the armature *x*, which, when the coils A″ are excited, is, with the end of the lever W, drawn down upon the coils, in which position the end of the lever comes in contact with the rotating bar Y, which is connected, by suitable gearing, with a series of clock-work wheels operated by a weight, *y*, and operating a large ratchet-wheel, *z*. Thus, when the lever W is depressed, the movement of the clock-work is checked; the lever being elevated by the weight X, whenever the coils A″ are not excited, permits the clock-work to operate. Hence, the circuit being broken by any means—as, for instance, a breakage of the wire, loss of power in the battery—the magnetic power of the coils A″ is determined, the lever W rises, freeing the clock-work, which, operated by the weight, *y*, causes a gong to strike, or other signal to be given. From the point where the wire *w* enters the signal-box, a second wire, I′, connects, through a wire, *z′*, with a circuit-breaker on an arched bar, X′, of non-conducting material, the circuit-breaker consisting of a lever, *a′*, pivoted near one end adjacent which is provided the pawl *b′*, which engages the teeth upon the ratchet-wheel Z. The lever *a′* has a spring giving it bearing toward the bar X′, and at its free end a head, *c′*, which, when depressed, is in contact with the rest *d′*. Thus, as the wheel Z revolves, the pawl *b′* is forced up and the circuit broken while it is passing a tooth of the wheel, and is re-established when the head *c′* descends upon the rest *d′*, as it does when the pawl *b′* enters a notch in the wheel Z. The circuit-breaker last aforesaid is also connected with the coils A″ by the wire E′ leading to the wire B′ connecting with the coils A″. From its junction with the wire *z′* the wire *w* continues to a point nearly below the place where the weight *y* would fall where it is connected with one end of a spring, C′, secured upon the base of the case, having its other end properly elevated above the same, the spring being of such flexibility that when the weight *y* descends it shall be forced down upon the bar D′, placed upon the base of the case immediately below the elevated end of the spring C′, and connected by a wire, B′, with the coils A″. Thus, when, by the descent of the weight *y*, the spring C′ is forced down upon the bar D′, the circuit is established, and the danger of a break therein, by the lever *a′* remaining poised, is obviated. There are two circuits in the mechanism of the signal-box, as follows: First, the current entering on the wire *w* from the plate *l* in the alarm-box, passes into the coils A″; thence on the wire B′, by the wire E′, to the lever *a′;* thence on the wire *z′* to the wire I′, whence it passes out to other boxes. Second, the current passes from the coils A″; thence, on the wire B′, to the bar D′; thence, when the weight *y* descends, to the bar-spring C′; thence, on the wire I′, leading to the battery through the other boxes, the wire I′ being the exit-wire.

Upon the end of the shaft *r*, which projects through the dial-face T, is secured the index-hand *t*, which is arranged upon the shaft *r*, with relation to the curved tooth U, so that the hand shall stop at the name or number on the dial-face indicating the station or box when the wheel has so revolved the tooth U as to bring it in contact with the detent R, thus breaking the circuit permanently, and permitting the index-hand *t* to remain stationary.

The operation is as follows: It is obvious that all the boxes and signal-stations are in one circuit, which is a constant circuit, upon the breakage of which, in any manner, the mechanisms operate simultaneously, and will everywhere indicate the same point upon the dial. To "turn in" an alarm, the bolt of the lock Q is sprung, elevating the tongue *b* and the end of the lever O, breaking the circuit which determines the magnetic influence of

the coils A″ in the signal-box, permitting the weight X to operate, which elevates the end of the lever W clear of the bar Y, whereupon the clock-work mechanism begins to operate, actuating the ratchet-wheel Z, which operates the lever *a′* as a circuit-breaker, at every ascent of which the circuit is broken, being re-established at every descent, the latter process remagnetizing the coils A′ in the alarm-box, bringing down the armature *d* and spring D, operating the pawl E. Thus at each successive break and re-establishment of the current the wheel F is rotated one tooth, and the index-hand *t* moved proportionately over the dial-face T, which movement of the wheel F continues until the curved tooth U comes in contact with the detent R, thus elevating the pin *i* above the block *k*, breaking the current permanently, the index-hand *t* remaining stationary, and the clock-work mechanism in the signal-box operating, striking the gong until the weight *y* descends upon the spring C′, when the alarm ceases to strike, and another circuit is established, which is used as hereinafter set forth. To establish the circuit, it is only necessary to retract the bolt of the lock Q, which permits the tongue *b* of the lever O to resume its position in contact with the lower edge of the recess *u* in the plate *a*, which has direct connection with the battery. When the weight *y* has descended another circuit is established, which is intended for the convenience of the officers of the fire department, and is utilized as follows: The bolt of the lock Q is first retracted, then a key of proper construction is inserted into the aperture opposite the outer end of the rod *m*, so that it bears upon the same. The rod being forced inward, the point of the lever M is thus removed from contact with the plate L, and the circuit thus broken, which produces the effect above described, so far as the movement of the wheel F is concerned, and causes the tooth U to pass over the detent R, revolving the index-hand *t*, but the mechanism in the signal-box is not affected. The pressure from the key last mentioned is relieved and repeated rapidly, each movement rotating the wheel F one notch until the index-hand *t* reaches the names or words or symbol on the dial indicative of the wishes of the operator, when the key is withdrawn and the movement checked, the index-hands on all dials showing the same as that at the box whereat the operator is manipulating.

It is obvious that there is a cessation of operation in the alarm-boxes when the circuit is established; also, that the mechanism of the signal-boxes will continue to act until the weight *y* has run down, when the invention may be operated in the manner last aforesaid.

The wires employed are all insulated wires. The exit-wire leading from the last box connects with the battery, thus placing all the boxes in one circuit.

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

1. A system of fire-alarm signal-boxes in a common closed circuit, with an alarm-box common to them all, upon the breaking and making of which circuit at any signal-box the number of said box is automatically transmitted from the common alarm-box and indicated at all the other boxes.

2. The lever I, provided with the detent R, in combination with the curved tooth U, operated by the shaft *r*, substantially as set forth.

3. The lever O, of non-conducting material, provided with the tongue *b*, and operated by the lock Q, substantially as set forth.

4. The curved tooth U, for the purpose specified.

In testimony that I claim the foregoing improvements in electrical fire-alarm telegraph systems, as above described, I have hereunto set my hand and seal this 24th day of July, 1874.

ANDREW ROSENBUSCH. [L. S.]

Witnesses:

WM. H. GOVERT,

D. B. BAKER.