

S. CHESTER.

SIGNAL BOX FOR FIRE ALARM TELEGRAPHS.

No. 112,017.

Patented Feb. 21, 1871.

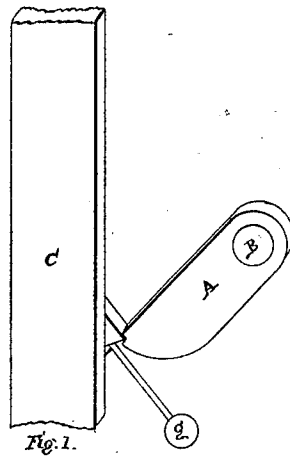


Fig. 1.

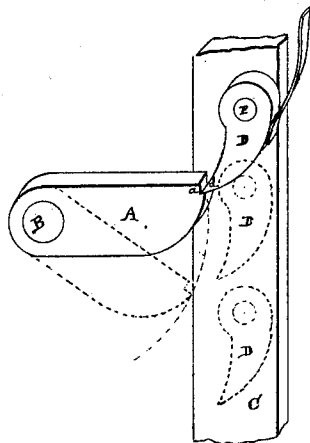


Fig. 2.

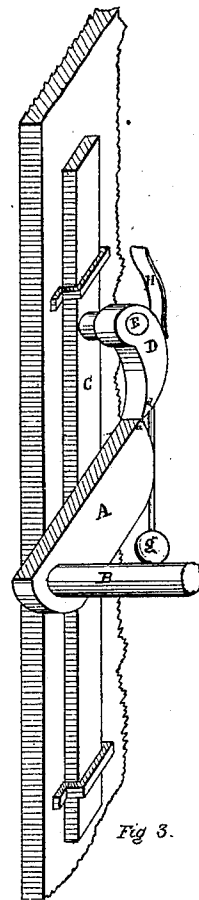


Fig. 3.

Witness

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Letters Patent No. 112,017, dated February 21, 1871; antedated February 18, 1871.

IMPROVEMENT IN SIGNAL-BOXES FOR FIRE-ALARM TELEGRAPHS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, STEPHEN CHESTER, of the city, county, and State of New York, have invented a new and useful Improvement in the method of setting in operation the machines used for Fire-Alarm Telegraphs, or for operating any kindred or similar machinery; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings forming part of this specification, and to the letters and figures marked on respective parts of drawings; and

In order to fully explain the nature of my invention it is necessary to refer to the machinery to which it is particularly applied.

This is the so-called "fire-alarm signal-box," of which several patterns are in general use, consisting of certain clock-work machinery, which, when set in motion, causes a wheel with alternating conducting and non-conducting surfaces to revolve in contact with springs connected with wires, batteries, magnets, or alarm apparatus, thus causing, through alternate closings and breaks of an electric circuit, signals of various kinds to be sent and received. This clock-work is set in motion by the movement of a bar or lever connected with the shaft of the drum or principal wheel of the clock-work, which bar being moved turns the drum, winding up the spring or weight, as the case may be, and, being released, the clock-work commences its motion.

Generally, the winding motion of this lever is communicated to it by a pin projecting from a sliding-bar or actuator, controlled by a button or handle projecting from the door of the box. This apparatus is particularly described in the specification and claims of the Letters Patent No. 71,701, issued to Charles T. Chester December 3, 1867.

It is obvious, however, that this apparatus has this grave defect, viz:

If the sliding-bar be pulled down and released, and again pulled down after the wheels have commenced their revolution, the projecting pin, meeting the slowly returning bar or lever, will arrest the entire motion of the machine, interrupting the transmission of the signal, causing a pause where no pause should occur, thus causing a false signal to be conveyed, indicating some locality remote from the acting box.

It can readily be conceived that, by the means described, the machinery intended to convey signal 6, (six uniformly consecutive strokes,) can be caused to transmit 33, (--- ---) or 24, or 42, or any other combination of six strokes. This often occurs, as these boxes are operated by those who are not telegraphic experts.

The nature of my invention consists of a device which, while causing the sliding-bar or actuator to engage with the winding-bar or lever, when both are

in their normal position or at rest, and to remain so engaged during the whole of the motion of the actuator required to carry the winding-bar to the limit of its action when winding, yet which will disengage itself from the winding-lever at any other point than when the latter is at its position of rest, if the sliding-bar be at any point so far released as to permit the revolution of the wheel to commence, and which can not be caused to engage with the winding-lever at any other point than when it is in the position of rest.

Figures 1, 2, and 3 in the accompanying drawings represent different views of my invention, and so much of the apparatus described as is necessary to an understanding of said invention or device, and in each of these figures—

The letter A represents the winding-bar or lever.

The letter B, the shaft or winding-drum.

The letter C, the sliding-bar or actuator, which is to be moved by the operator.

D is a swinging bar or lever, the point of which, *d*, hangs over the extreme end of the bar A, when the latter is in its position of rest.

A notch, *a*, is cut in the end of lever A.

In the drawings—

The sliding-bar C is represented as moving in a perpendicular line, the swinging-lever D as being retained in its natural position by its own gravity, and the winding-bar A is represented as resting in a horizontal position. These are not arbitrary conditions. It is only essential that the lines formed by the motion of the point *a* of bar A and by the point *d* of swinging lever D, when the sliding-bar C and pawl are moving independently of A, should "cut" each other at a point near the position of both when at rest, but should depart from each other when moving from thence.

These conditions being observed, it is obvious that when both A and C are in their resting positions that the end of swinging-lever D will overhang the end of bar A in such manner that if, by the movement of C it be carried toward A, the point *d* would impinge upon the extreme end of A, and, meeting a resistance, would move toward the center of motion of A until, being interrupted by the notch at *a*, it would engage with and carry the latter forward, remaining engaged therewith, and moving it until the required motion is attained. But, if at any point the swinging-lever D be allowed to rise sufficiently to release the clock-work, as the bar A, being restrained by the clock-work, would not rise or follow the point *d* immediately, the latter, no longer held by pressure in the notch *a*, would drop into the line of motion described when C and D are moving independently of A. As this line does not touch the line produced by the motion of *a*, except at the point where both start from rest, it is obvious that

D, when once released, as described, cannot again engage with A, whatever motion is communicated to C, until A has returned to its starting-point.

As before remarked, it is not essential that the swinging-lever D shall hang perpendicularly. It may be supported in any other position, by a spring or springs, which, while supporting it in any desired position when moving independently, will permit it to be deflected from that position, by the resistance of A, to meet the required conditions above described.

As the swinging-lever D may not all times move with perfect freedom upon its center, a plummet, *g*, may be attached to the bottom of swinging-lever to increase its tendency to hang perpendicularly; or a spring, H, may be so placed that the swinging-lever D, when returning to its position of rest, will certainly be forced to a position to engage with A when that bar also is at its position of rest.

The spring H is shown in figs 2 and 3 of drawings; the plummet *g* is shown on figs. 1 and 3.

The dotted lines in fig. 2 show the different positions assumed by A and D.

I do not claim the sliding-bar C, nor lever A, nor any other part of the machinery described in the Letters Patent 71,701, before alluded to, nor do I claim the general idea of causing the lever to be operated upon by the actuator only when the machinery is not in motion, by any means similar to that described in Letters Patent 92,275, granted to M. J. Cram and Edw. Rogers July 6, 1869; but

I do claim—

1. The combination of a swinging-bar or lever with sliding-bar and lever, for winding in such manner that the lines described by the independent movement of hanging-bar D with sliding-bar C, and by the winding-lever A, shall intersect each other at the point from which both start, but shall separate and depart from each other from thence, while the swinging or movable bar D is capable of being deflected from that position by the resistance of the bar A when the point of the former is caused to impinge upon the latter.

2. The attachment of a movable bar or swinging-lever to the actuator of fire-alarm boxes, for the purpose of causing the said actuator to engage with the winding apparatus of said machinery, substantially for the purpose and in the manner described.

3. The arrangement of the movable lever in such a manner that it will be governed in its motions by gravity, as and for the purpose as set forth.

4. The combination of a spring or springs with the movable lever, as and for the purpose as set forth.

5. The combination of the spring H with the movable bar D, substantially for the purpose and in the manner described.

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Witnesses:

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