

Sylvanus D. Cushman.

Signal box for Fire Alarm Telegraphs.

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PATENTED SEP 20 1870

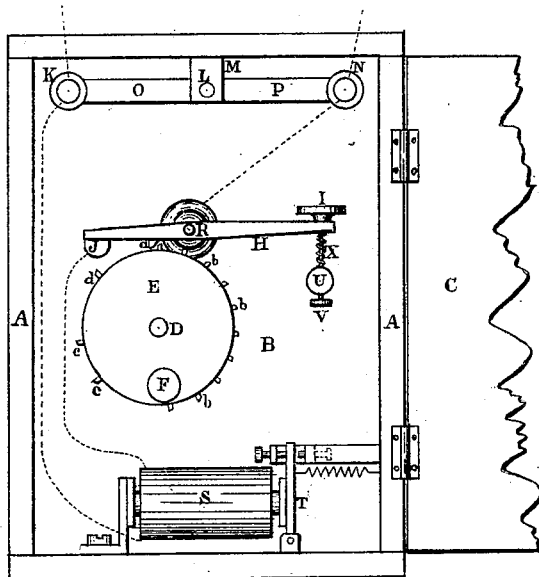


Fig. 1.

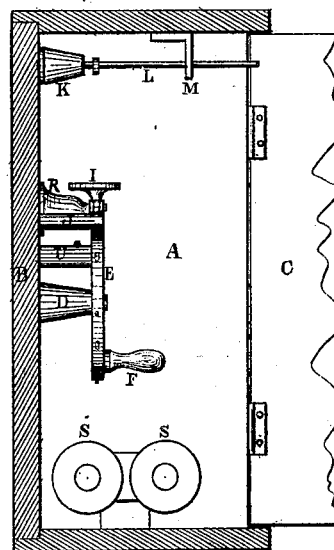


Fig. 2.

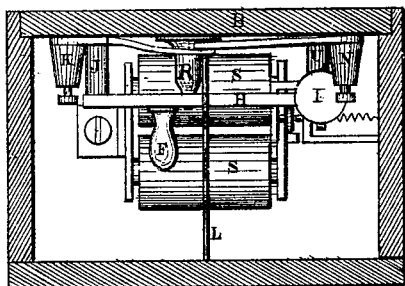


Fig. 3.

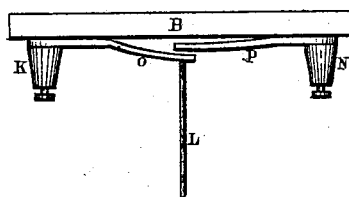


Fig. 4.

Wm. W. Hedges
Andrew Chaffin Witnesses.

Sylvanus D. Cushman Inventor.
by J. A. Abbott Attorney.

United States Patent Office.

SYLVANUS D. CUSHMAN, OF NEW LISBON, ASSIGNOR TO THE AUTOMATIC FIRE-ALARM COMPANY, OF LEETONA, OHIO.

Letters Patent No. 107,460, dated September 20, 1870.

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, SYLVANUS D. CUSHMAN, of New Lisbon, Columbiana county, Ohio, have invented certain new and useful Improvements in Signal-Boxes for Fire-Alarm Telegraphs; and that the following is a full, clear, and exact description thereof.

Nature and Objects of my Invention.

My invention relates to the combination with a signal-box for fire-alarm telegraphs, of a switch mechanism, which is operated by the closing of the door of the signal-box, and which is so constructed and arranged with respect to the electrical mechanism in said signal-box, as to switch the whole of said electrical mechanism out of the main telegraph circuit whenever the door of the signal-box is closed.

The objects of my invention are—

First, to reduce the amount of battery power required to work the circuit, a result to which my invention largely contributes, by switching the whole of the operating mechanism out of the circuit when the box is closed, and such operating mechanism is not in service, thus avoiding the electrical resistance due to the half mile or more of wire on the electro-magnets, and the effects of any imperfect contact in the telegraph-key or other parts of the mechanism forming a part of the circuit when the box is in service.

The second object of my invention is to protect the mechanism of the signal-box from injury by atmospheric electricity, which desirable result is effected by my invention by switching the whole of this mechanism out of the circuit, except when the box is in service, so that the lightning might strike the wire, and even pass through the signal-box, without coming on to any portion of the operating mechanism, thus avoiding any danger of injury to such mechanism.

The third object of my invention is to prevent the calling out of the fire department by false alarms, which may be turned in by malicious persons, who obtain access to the signal-box by surreptitious means, a result to which my invention is a valuable aid, as persons who turn in false alarms seldom would wait at the signal-box until the alarm was completed, for fear of being detected; but, after turning in the alarm, would naturally close the signal-box door and run away, but this closing of the door would switch the signal-box mechanism out of the circuit, and would thus cut off the alarm; and, as alarms should always be of a precise and definite length, the firemen would at once see that only a portion of an alarm had been given, and would conclude that the alarm was a false one.

Description of Accompanying Drawing.

Figure 1 is a front elevation of a signal-box embodying my invention, with the door removed.

Figure 2 is a side elevation of the same, with one side removed.

Figure 3 is a plan of the same, with the top removed. Figure 4 is a plan of the switch mechanism.

General Description.

A A represents the frame of the signal-box, which is provided with the door C, and the back B of which is fitted into the frame A A, for convenience in removing the operating mechanism.

The telegraph-key H is of an ordinary form, and is pivoted on a post, R, secured in the back B, with its end resting on the anvil-post J.

The finger-knob I is arranged at the rear end, which is supported by the spring X, placed around the screw V in the post U, which is secured in the back B, said screw V serving to regulate the amount of movement of the key H.

The circuit-wheel E is pivoted on a post, D, in the back B, and is provided with a crank, F, and the pins or teeth *b b c c d d* are arranged on the periphery of the wheel E, in a manner depending on the number and character of the signal required for the box.

In the example shown, the box is supposed to be No. 21, and an alarm-signal of ten rapid blows is interposed between any two successive box-signals, as is more fully described in reissued Letters Patent No. 4,012, granted June 7, 1870, to Alexander Allen, for fire-alarm signals and apparatus.

The block *a*, having its lower end beveled off, as shown, is secured on the under side of the key H, so that, as the circuit-wheel E is revolved from right to left by means of the crank F, the pins *b c d* strike the under side of the block *a*, and thus raise the key H from the anvil-post J, by which the circuit is broken, as required.

The electro-magnets S are of an ordinary form, and have the pivoted armature-lever T, with the usual attachments combined with them, as shown.

The screw-cups K N are arranged in the back B, and under them are arranged the elastic plates O and P, as shown in figs. 1 and 4.

The rod L is attached to the plate O, and extends through the bracket M, on the frame A A, to the front of the box, as shown in figs. 2 and 3, and is of such length that, when the door C is closed, it shall strike the end of the rod L, and force it back sufficiently to press the plates O P together.

Insulated wires, indicated by dotted lines, connect the screw-cup N with the key H or its pivot-post R, and the anvil-post J with one end of the wire on the electro-magnets S, and the screw-cup K with the other end of the wire on said electro-magnets, as shown in fig. 1.

The ends of the main circuit-wires are secured in the screw-cups K N, as indicated by dotted lines in fig. 1.

The elastic plates O P are bent into such form that, when the rod L is not pressed back by the door C, said plates stand apart from each other, as shown in fig.

4, from which it is seen that, when the door C is open, the electric circuit is from the screw-cup N, over insulated wire, to pivot-post R, thence through post R and key H to anvil-post J, thence through insulated wire to electro-magnets S, thence over wire on electro-magnets, and over insulated wire, to the screw-cup K.

In this position the whole of the operating mechanism of the signal-box is in the main circuit, and signals can be transmitted by means of the key H, either by pressing on the knob I, or by rotating the circuit-wheel E, either by means of the crank F, or by means of clock-work combined with the circuit-wheel, in a manner similar to that shown in various forms of automatic telegraph-signalizing apparatus, well known to all electricians, and signals can also be received by means of the electro-magnets S and its pivoted armature lever T.

But, if the door C be closed, the switch-plates O P will be brought together, and will thus form an electrical connection between the screw-cups K N, and the electric current will traverse this short connection instead of following the longer connections N R H J S K, thus switching the whole operating mechanism out of the main circuit.

Various modifications in the construction and arrangement of the switch mechanism will readily suggest themselves to any mechanic, and any other construction which can be operated by the door of the signal-box, and which will switch out the whole of the

operating mechanism when closed, may be substituted for that herein described.

I am aware that switches have been applied to signal-boxes, which were operated by the closing of the door of the signal-box; hence I lay no claim to the application of a switch to a signal-box, nor to operating the same by the door of the box, except when said switch is so arranged as to switch the whole of the operating mechanism out of the main circuit, as is herein described.

Claims.

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

1. The combination of the screw-cups K N, elastic switch-plate O, plate P, or its electrical equivalent, press-rod L, and door C, the several parts being arranged substantially as and for the purpose specified.
2. A signal-box, for fire-alarm telegraphs, provided with suitable operating mechanism, and with a switch mechanism, so constructed and arranged as that the closing of the door of the signal-box acts to switch the whole of the operating mechanism out of the main circuit, substantially as is herein specified.

As evidence of the foregoing, witness my hand this 21st day of July, 1870.

Witnesses: SYLVANUS D. CUSHMAN.

JOHN McVICKER,

JOHN A. MYERS.