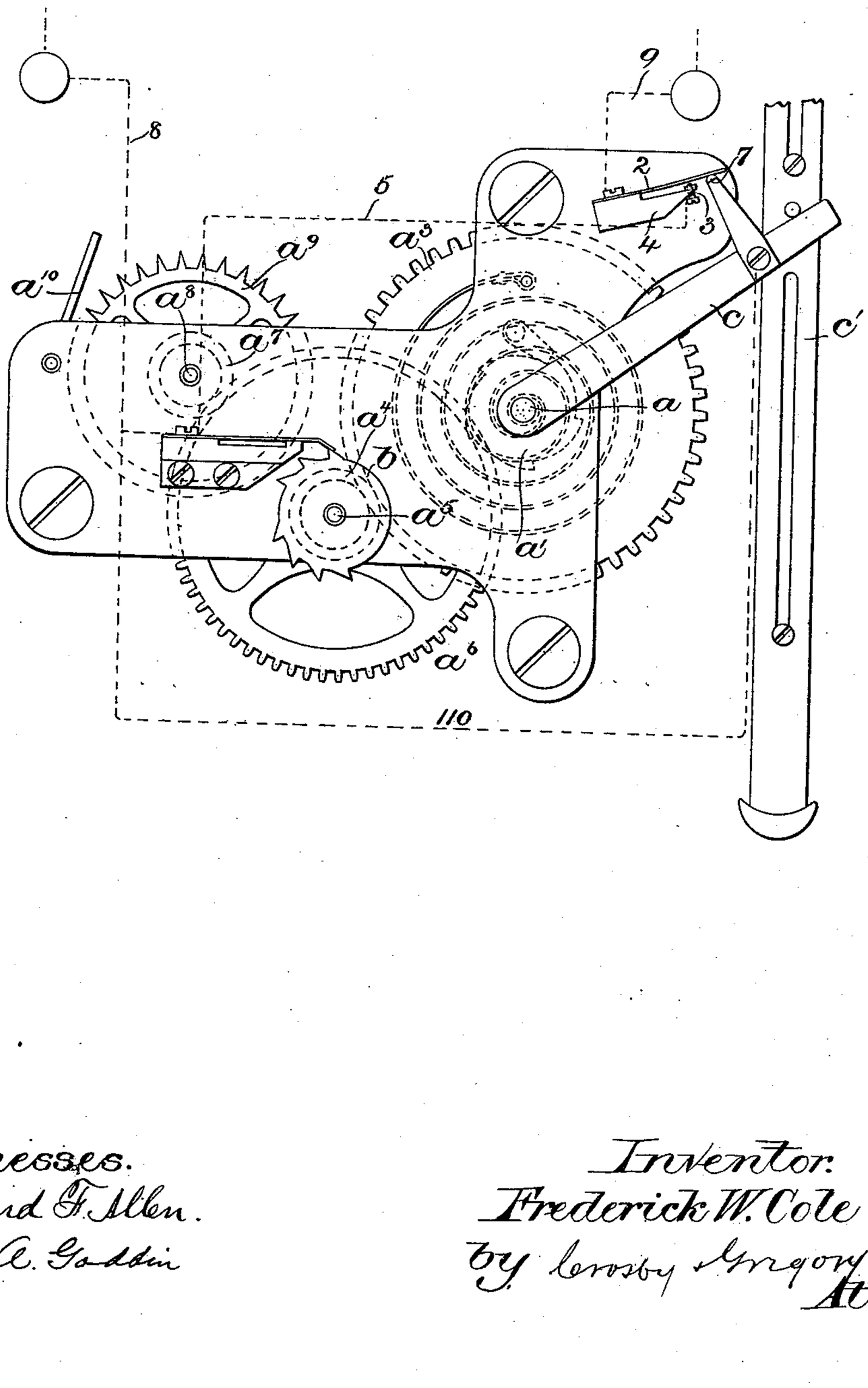
(No Model.)

# F. W. COLE.

## SIGNAL BOX.

No. 447,869. Patented Mar. 10, 1891.




Witnesses.
Edward F. Allen.
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# UNITED STATES PATENT OFFICE.

FREDERICK W. COLE, OF NEWTON, MASSACHUSETTS.

## SIGNAL-BOX.

SPECIFICATION forming part of Letters Patent No. 447,869, dated March 10, 1891.

Application filed December 23, 1890. Serial No. 375,553. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK W. COLE, of Newton, county of Middlesex, State of Massachusetts, have invented an Improvement in Signal-Boxes, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

In another application, filed October 10, 1889, Serial No. 326,607, a non-interference signal-box is shown containing, among other prominent features, two switches, one of which is arranged to shunt out the non-interference magnet and circuit-wheel and the other to cut out the said non-interference-magnet and circuit-wheel, said switches being operated in succession, thereby constituting an absolute cut-out for the box. This feature has been found to be a very important one in connection with signal-boxes other than non-interference signal-boxes, and by this application it is intended to generically claim this absolute cut-out, in combination with the signal-transmitting mechanism, as will be hereinafter pointed out at the end of this specification.

The drawing shows in front elevation a signal-transmitter provided with an absolute cut-out embodying this invention. The signaling-train consists of the winding-shaft $a$, on which is secured a ratchet-wheel $a'$, (see dotted lines,) which is engaged by a pawl $a^2$, borne by a toothed wheel $a^3$, mounted on said winding-shaft, which toothed wheel engages a pinion $a^4$, (see dotted lines,) secured to the shaft $a^5$, to which shaft is secured a toothed wheel $a^6$, which engages a pinion $a^7$, secured to a shaft $a^8$, carrying the escape-wheel $a^9$, with which co-operates a suitable pallet $a^{10}$. The signal-wheel $b$ is mounted on the shaft $a^5$ and is adapted to be rotated synchronously with the toothed wheel $a^6$. The winding-arm $c$ is attached to the winding-shaft $a$, which is adapted to be engaged and operated by any suitable pull, as $c'$, for instance.

The absolute cut-out consists of a pen 2, secured to a block 4 of insulation and a conducting block or stud 3 on said block 4 beneath the pen 2, and on the winding-arm $c$ a conducting-block 7 is secured. The leading-in wire 9 is connected to the contact-pen 2, a wire 5 connects the stud 3 with the signaling-pens, and the leading-in wire 8 is also connected to said pens. Another wire 10 also connects the wire 8 with part 7. The conducting-block 7 on the winding-arm $c$ is located beneath the outer end of the contact-pen 2 and is made high enough to engage and lift said pen free from contact with the conducting block or stud 3 when the winding-arm $c$ is in its normal position, as shown in Fig. 1. With the parts in this position the circuit is maintained over the wire 8, wire 10, block 7, contact-pen 2, and wire 9. It will be seen that with the parts in this position the wires leading to the signal-wheel are disconnected from the circuit at the conducting-block 3. As the winding-arm $c$ is depressed the conducting-block 7 allows the contact-pen 2 to engage with the conducting-block 3, and thereafter said conducting-block 7 is disconnected from the contact-pen 2, leaving said pen bearing firmly on the conducting-block 3. With the parts in this position the circuit is maintained over the wire 9, contact-pen 2, conducting-block 3, wire 5, including the signaling-pens, and wire 9. With the parts in this position the signal may be transmitted. As the winding-arm $c$ is restored to its normal position the conducting-block 7 first engages the contact-pen 2 and forms a shunt for the box by wire 10, and immediately thereafter the contact-pen 2 is lifted away from the stud 3 and the box is absolutely cut out, yet the continuity of the main circuit is maintained. The conducting-block 7, co-operating with the contact-pen 2 when the latter is bearing on the conducting-block 3, serves as a shunt-switch for the signaling mechanism, and when the said pen 2 is freed from contact with the block or stud 3 the said conducting-block 7 and the contact-pen 2 serve to maintain the continuity of the line and cut out the signaling mechanism.

This absolute cut-out is a very important feature in signal-boxes, as it completely disconnects the box from the signaling-circuit when not in operation, and high-tension current could not pass through the signaling mechanism in the box should a high-tension wire come in contact with the signaling-circuit.

In lieu of the particular form of signaling-train herein shown any well-known form could be employed, and also in lieu of the

specific form of absolute cut-out herein shown any equivalent form may be employed, whereby the same results are accomplished.

I claim—

In a signal-box, a train and signal-wheel, combined with a switch for shunting out the said signal-wheel and another switch for cutting out the said signal-wheel, said switches being operated in succession to first shunt out and thereafter cut out the said signal-wheel, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDERICK W. COLE.

Witnesses:

AUGUSTA E. DEAN,

EDWARD F. ALLEN.