(No Model.)

C. SELDEN.

RAILWAY CROSSING SIGNAL.

No. 567,753. Patented Sept. 15, 1896.

Fig. 1.

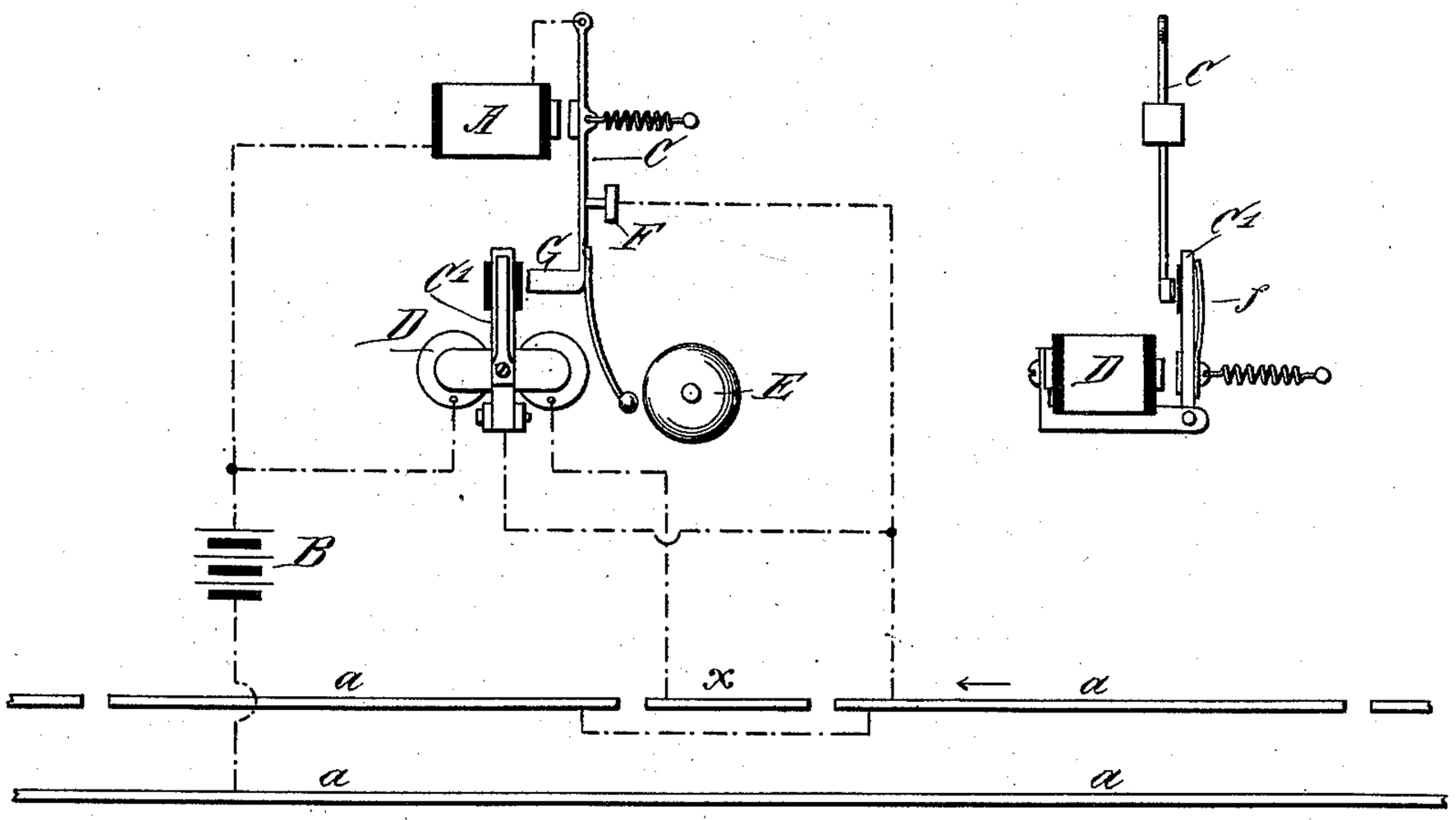


Fig. 2.

Fig. 3.

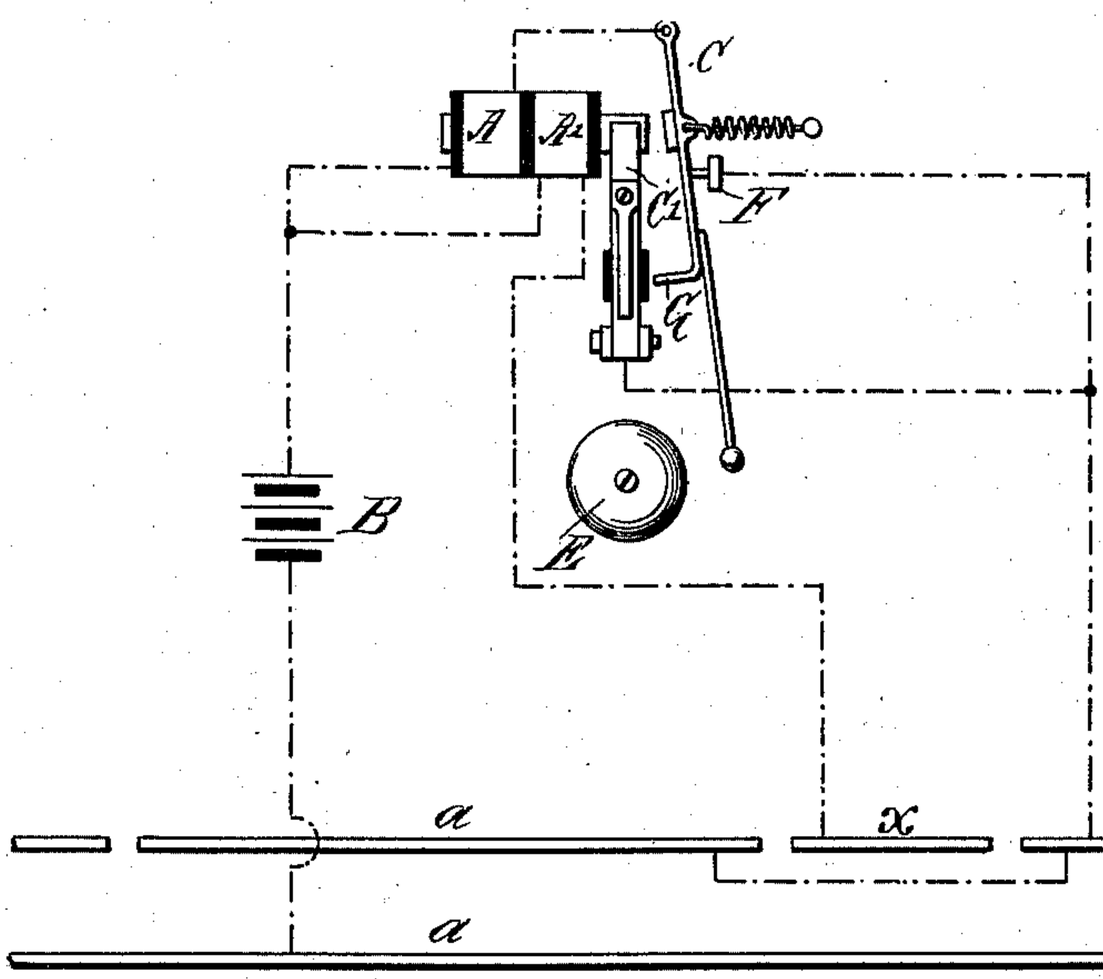
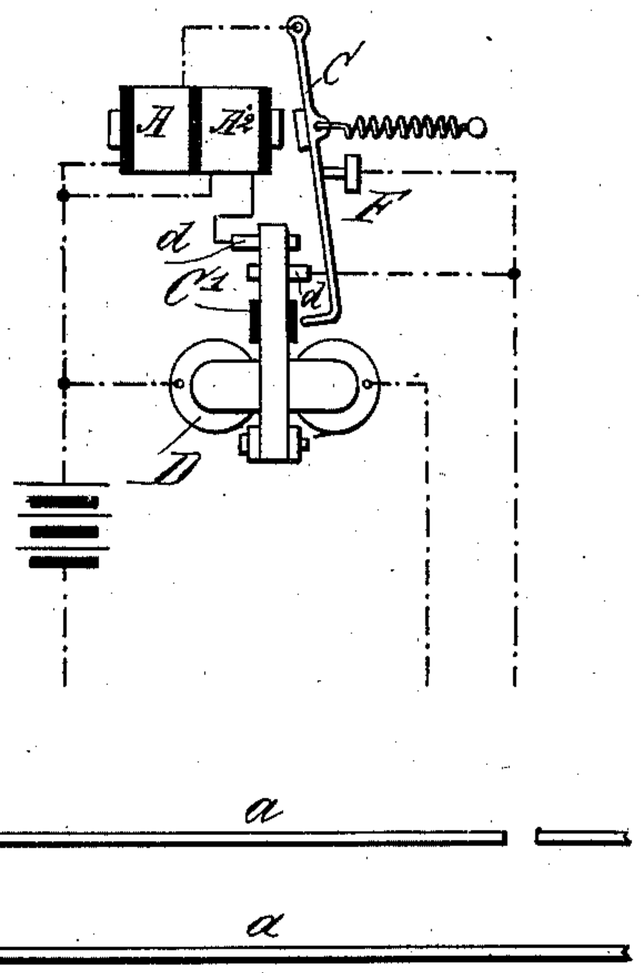


Fig. 4.



WITNESSES:

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RAILWAY-CROSSING SIGNAL.

SPECIFICATION forming part of Letters Patent No. 567,753, dated September 15, 1896.

Application filed April 21, 1896. Serial No. 588,434. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SELDEN, a citizen of the United States, and a resident of Baltimore, in the State of Maryland, have invented a certain new and useful Railway-Crossing Signal, of which the following is a specification.

My invention relates to railway-crossing signals adapted to give an alarm as a train approaches a crossing from either direction.

The object of my invention is to provide a simple and effective combination of apparatus whereby the alarm or signal may be thrown out of action at an intermediate point in the passage of the train from the point on one side of the crossing when the alarm begins to sound to the point on the other where it will begin to sound by passage of a train in the opposite direction (such intermediate point being at or near the crossing) and may remain out of action as the train passes over the circuit-closing points or section beyond the crossing.

My invention consists in the combination, with a railway-crossing signal and the magnet therefor, of means for closing the circuit thereof at both sides of the crossing, and a supplemental armature actuated by another or the same magnet at an intermediate point in the passage of the train through the operation of suitable circuit-closing devices, said armature being adapted to throw the signal out of action and to hold it out of action while the train passes the circuit-closing devices at the other side of the crossing, so that the action of the train on the latter will not cause the alarm to sound. I prefer in carrying out my invention to operate this supplemental armature by a second electromagnet and circuit-closer therefor, but might operate it by the magnet of the signal or alarm instrument. In order that this supplemental armature may throw the alarm or signal instrument out of action, I cause it to operate on a suitable circuit over which a current may be made to flow for energizing a magnet that shall hold up the armature-lever of the alarm or signal and prevent it in the case of a vibratory signal or bell from vibrating. This circuit may be a shunt to the vibrator-contacts, so that the current may flow uninterruptedly through the coils of the vibrator-magnet itself, or the circuit closed by said supplemental armature may be through additional coils which shall operate on the signal-armature to hold it up. In addition to these devices a locking device connected to the armature of a signal apparatus is employed to hold the supplemental armature up after it has once been drawn up until by the discharge of the signal-magnet, or a magnet in the circuit thereof as the train passes off the section or the circuit-closer beyond the crossing, the signal-magnet will be discharged and unlock the supplemental armature, thereby restoring the parts to normal position in readiness for a succeeding train passing either in the same or the opposite direction.

In the accompanying drawings I have illustrated in Figure 1, diagrammatically, an organization of apparatus adapted for carrying out my invention. Fig. 2 shows the signal armature-lever and the supplemental armature-lever in position at right angles to Fig. 1. Fig. 3 shows a modification wherein the supplemental armature is operated by the same magnet which actuates the lever of the alarm or signal. Fig. 4 illustrates, diagrammatically, a modification wherein the circuit closed by said supplemental armature instead of including the coils which actuate the alarm include separate coils, which may be either on the same core or on a separate core.

A indicates the signal-electromagnet, here shown as operating on an armature-lever C, which carries the bell-hammer for a gong E, and in moving makes and breaks the circuit of magnet A at the contacts F to produce the vibrating alarm or signal in the usual or well-known manner. The circuit of the magnet A includes suitable circuit-closing devices at opposite sides of the crossing to be protected, said circuit-closing devices being preferably, for simplicity, a section of rail-

road-track *a*, adapted to be bridged by car wheels and axles to close the circuit of the magnet A.

B is any suitable generator supplying energy for operating the signal.

C is the supplemental armature of my invention, adapted to be operated through a circuit closer or controller of any suitable description at or near the crossing and here typified as a section of railway-track X, through which the circuit of a magnet D is closed in obvious manner by the car wheels and axles, thereby attracting the armature-lever C′. The supplemental armature-lever C′, when so attracted, is adapted to close the shunt around the contacts F, thereby permitting the current to flow uninterruptedly through the coils of magnet A, so as to hold the armature-lever C up and prevent it from vibrating. The supplemental lever C′ is locked in such position until the magnet A is discharged by the train passing off the section of track beyond the crossing. In order to lock it, the lever C may be furnished with a suitable dog or projection G and the lever C′ arranged to vibrate in a plane transverse to the plane of vibration of C, as indicated in Figs. 1 and 2. Normally the supplemental lever stands in the position shown in Fig. 2. It is furnished on its side next the dog G with a piece of insulation to prevent it from closing circuit as it moves forward. On its back it is furnished with the closing-spring *f*, which will make contact with the dog G when the latter passes behind the lever C′. This contact establishes a shunt-circuit around the contacts F through armature-lever C′ and lever C.

The operation of the device is as follows: A train on approaching the crossing closes the circuit of A and the alarm begins to sound and continues to sound until when the train reaches the crossing the armature-lever C′ is actuated. The movement of C is a vibratory one, and the lever C′, if it makes contact with G in moving up, does not close the shunt-circuit. As the lever C, however, vibrates back to its contact F, the armature C′ may slip by and when the lever C comes forward again it will pass behind C′, and at the same time close the shunt-circuit described, so that magnet A will be energized uninterruptedly and the armature-lever will be held up, thereby stopping the sounding of the signal and at the same time locking the supplemental armature-lever C′ in position to keep the signal out of action. When, therefore, the train has passed the crossing, the interruption of circuit at X will not set the signal into action again, and the closure of circuit as the train passes beyond the crossing instead of causing the signal to operate will only be instrumental in holding it out of action. When, however, the train passes off the section of circuit-closing devices *a*, then the magnet A will be discharged and drop back to normal position, thus freeing supplemental lever C′. The apparatus will now be in position to operate by passage of another train in the same or the opposite direction. Instead of operating the supplemental lever C′ by the separate magnet D, it may be operated by the action of a coil A′ on the signal-magnet, as indicated in Fig. 3. In this case the supplemental armature-lever C′ would have its retractor adjusted with the tension which could only be overcome by the combined action of the coils A A′. The general operation will be the same as already described. Instead of holding the signal-lever C up by the action of the coil A, by which it is vibrated, it may be held up by a supplemental coil or electromagnet A^2, as indicated in Fig. 4, which coil may be wound on the same core with A and placed in a circuit closed by the supplemental lever C′ at the contacts *d d* in obvious manner, said contacts being preferably spring or yielding contacts.

Other modifications in the details of construction or arrangement of the magnets and circuits may be made, as will be obvious, without any resultant change in the essential principles of the combination and operation of circuits, magnets, and devices already described.

In practice some railroads desire that the alarm shall cease when the first pair of wheels strikes the insulated rail shown at X, while other railroads prefer that the gong shall continue sounding until the last pair of wheels in the train has passed this point. To meet the first-cited practice I will employ the spring *f* on the supplemental armature. To meet the second I do away with that spring, and the action is as follows: When the first pair of wheels reaches the insulated rail shown at X, the supplemental armature is attracted and passes by the vibrating armature, as hereinbefore explained, to such a distance as not to make contact with its back stop or side. Hence the gong continues to sound. When, however, the last pair of wheels passes over the rail (marked X) the supplemental armature is drawn backward by its retractile spring and shunts the circuit through the magnet A, thus stopping the vibration. When the train passes out of the section, all parts are restored to their normal condition.

What I claim as my invention is—

1. In a crossing-signal, the combination with a vibrator having a circuit adapted to be closed at both sides of the crossing, a magnet having a circuit closed at the crossing, and an armature therefor controlling a shunt around the vibrator-contacts, the lever of the vibrator being adapted to lock said armature in the shunting position, as and for the purpose set forth.

2. In a crossing-signal, the combination with a vibrator electrically operated and having circuits closed at both sides of the crossing, the vibrator-lever being provided with locking means, a shunt around the vibrator-

contacts, and an armature controlling said shunt and movable in the path of said locking means, as and for the purpose set forth.

3. In a crossing-signal, the combination with a two-coil magnet, of an electrical vibrator-signal controlled by one of said coils and having a lever provided with locking means, a shunt around the contacts of the vibrator, and an armature actuated by the second coil, movable in the path of said locking means and adapted to control said shunt, substantially as and for the purpose set forth.

Signed at Baltimore city, in the State of Maryland, this 20th day of April, A. D. 1896.

CHARLES SELDEN.

Witnesses:

E. J. SILKMAN,

H. MCNEIL, Jr.