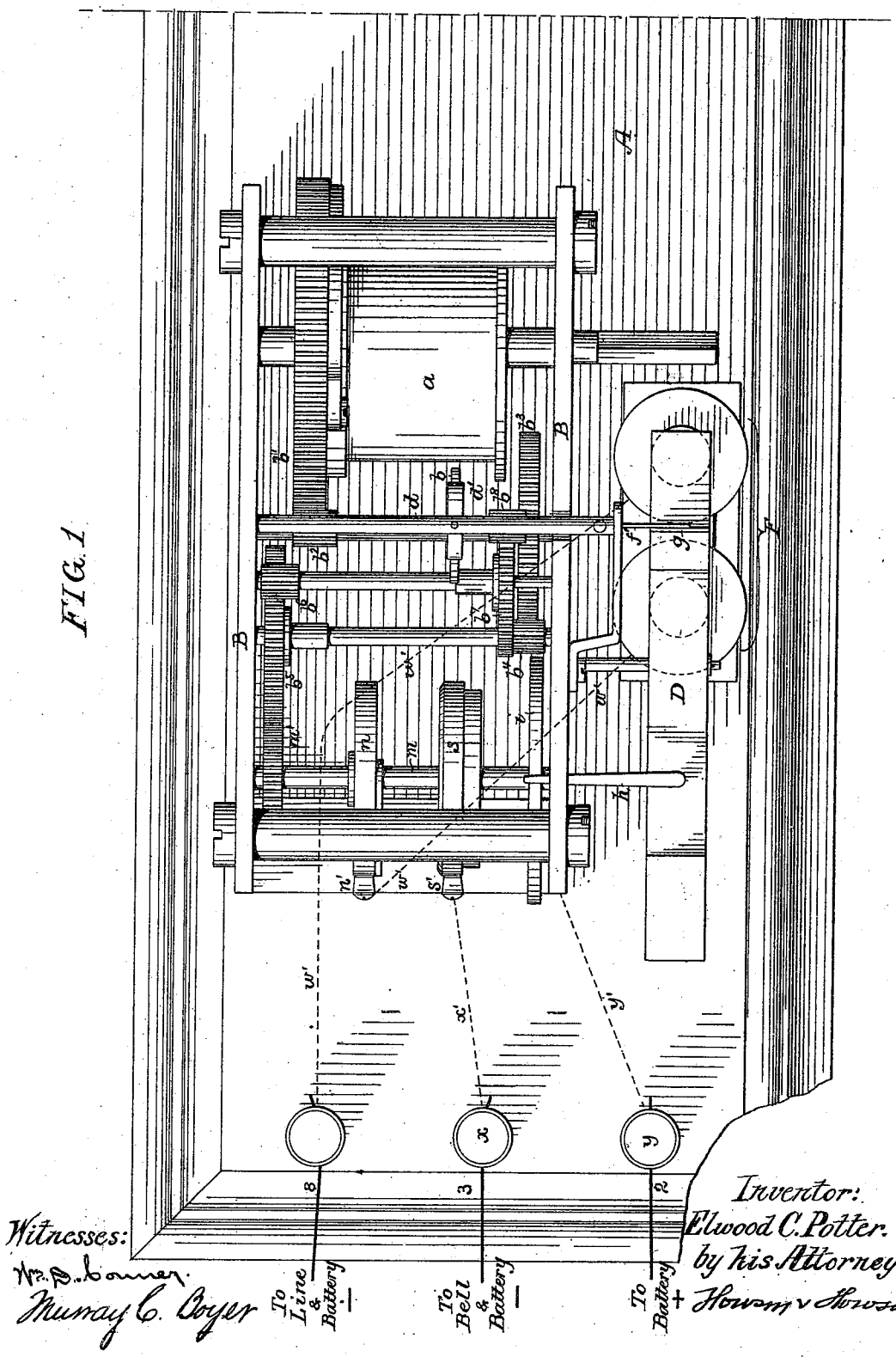
(No Model.) 3 Sheets—Sheet 1.

E. C. POTTER.

RAILROAD CROSSING ALARM OR SIGNAL.

No. 501,438. Patented July 11, 1893.

FIG. 1



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Howson & Howson

(No Model.) 3 Sheets—Sheet 2.

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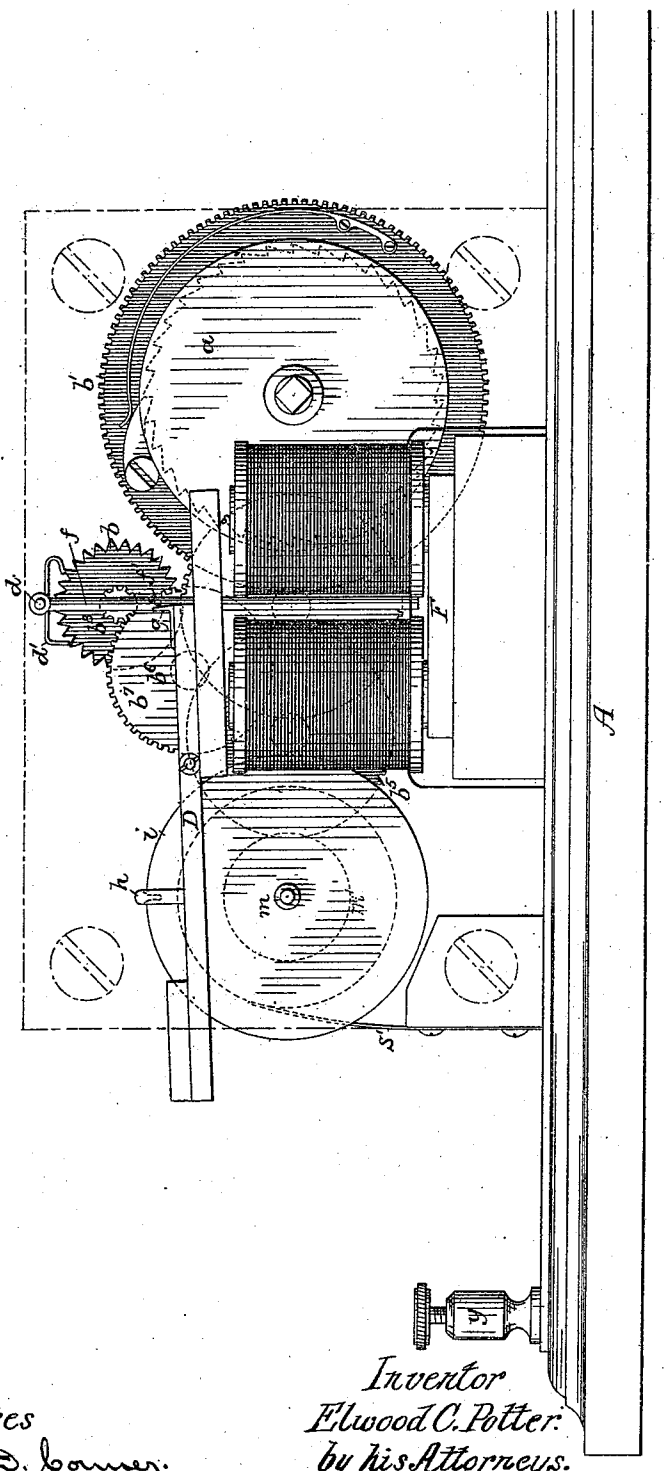
FIG. 2.



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(No Model.) 3 Sheets—Sheet 3.

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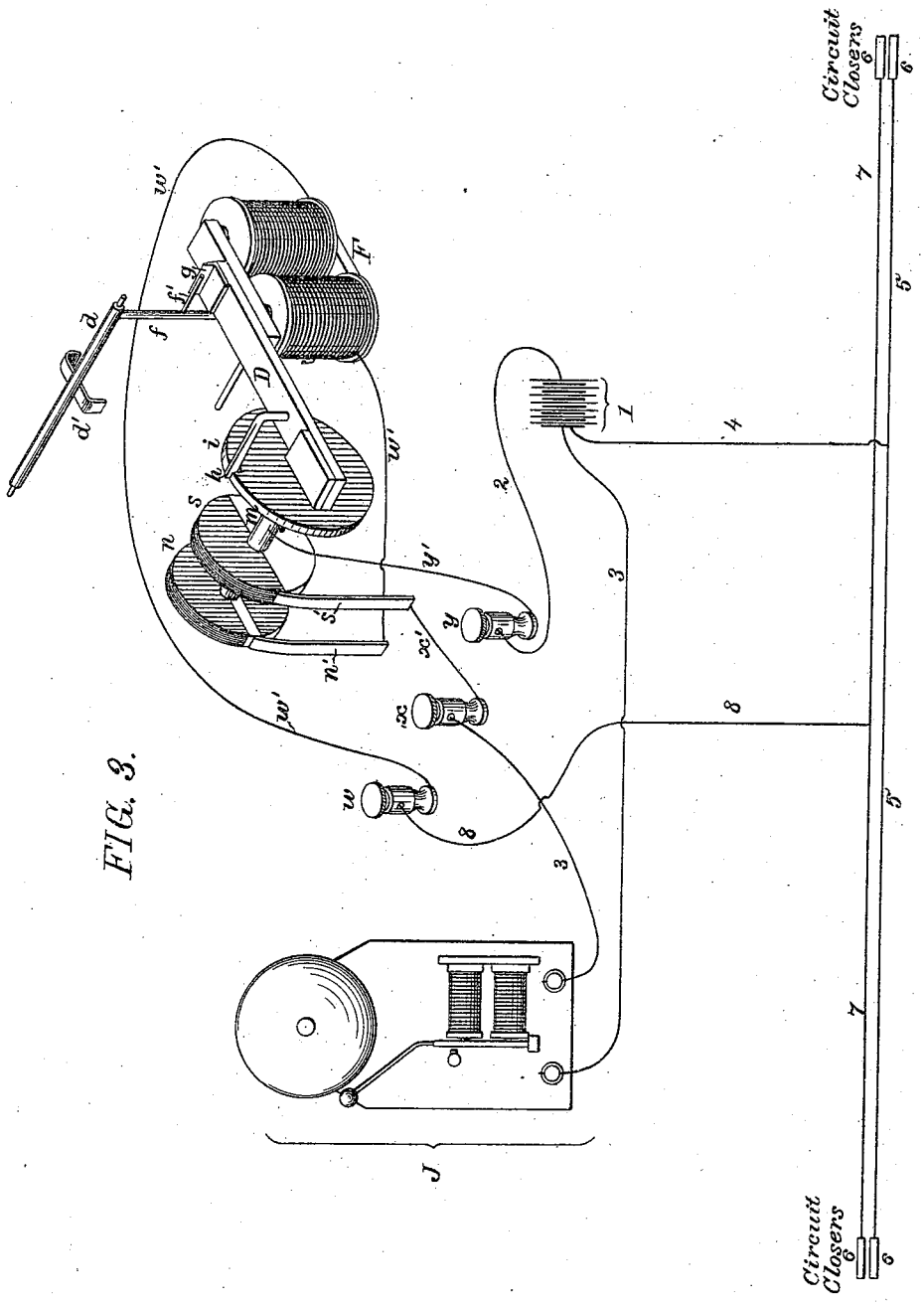

FIG. 3.

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UNITED STATES PATENT OFFICE.

ELWOOD C. POTTER, OF VINELAND, NEW JERSEY.

RAILROAD-CROSSING ALARM OR SIGNAL.

SPECIFICATION forming part of Letters Patent No. 501,438, dated July 11, 1893.

Application filed April 6, 1891. Serial No. 387,859. (No model.)

To all whom it may concern:

Be it known that I, ELWOOD C. POTTER, a citizen of the United States, and a resident of Vineland, Cumberland county, New Jersey, have invented certain Improvements in Railroad-Crossing Alarms or Signals, of which the following is a specification.

My invention relates to that class of alarms or signals for railway crossings, the operation of which is dependent upon the closing of an electric circuit by an approaching train, the object of my invention being to so construct such a device as to simplify the track circuit, to render the operation of the alarm, when once started, independent of said track circuit, and to provide for timing the period during which the alarm is sounded. These objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1, is a plan view of apparatus used in carrying out my invention. Fig. 2, is a front view of the same, with part of the frame work shown by dotted lines; and Fig. 3, is a perspective diagram illustrating the track and signal circuits, and such of the mechanism as is employed in direct connection therewith.

In Figs. 1 and 2, A represents a base or stand upon which is mounted a frame B provided with any appropriate form of escapement mechanism, that shown in the drawings comprising a barrel *a* to which power is applied by means of a spring or cord and weight as usual, the movement of this barrel being transmitted to the escapement wheel *b* through a train of gears *b'* to b^8 with their appropriate shafts.

The escapement rod *d* has an anchor *d'* engaging with the escapement wheel *b* and said rod is provided with a pendent arm *f* having a pin *f'* which is normally in engagement with a stop *g* on the pivoted armature D of an electro-magnet F, said armature also having a catch finger *h* for engagement with a notch in a disk *i* on a shaft *m* which has a spur wheel *m'* driven by the spur wheel b^5 of the escapement train. When the magnet F is excited, however, the armature D is attracted thereby and the stop *g* is withdrawn from engagement with the pin *f'*, while at the same time the finger *h* is withdrawn from the notch in the disk *i*. Movement of the escapement mechanism is thereby permitted, and the disk *i* is likewise moved so as to carry its notch from under the finger *h*. Hence the armature D is held in such position that its stop will not engage with the pin *f'* until the notch in the disk *i* has again been brought under the finger and the latter is allowed to enter the same, it being understood that the arm of the lever which carries the finger *h* is weighted or acted on by a suitable spring, so that when the magnet F is not excited, the finger will have a natural tendency to enter the notch in the disk *i* when the latter is brought in line with said finger.

On the disk M are two switch disks *n* and *s* upon which bear contact fingers *n'* and *s'* respectively, a portion of each switch disk being of conducting material (shown unshaded in Fig. 3) and the remaining portion of insulating material, (shown shaded in said figure.)

On the base A of the instrument are three binding posts *w*, *x* and *y*, and from the post *w* a wire *w'* leads through the magnet F and thence to the contact finger *n'*, and from the post *x* a wire *x'* leads to the finger *s'*, as shown in Fig. 3, and by dotted lines in Fig. 1, while from the post *y* a wire *y'* leads to the frame B and hence to the shaft *m* carrying the switch disks *n* and *s*, as shown by dotted lines in Fig. 1, the wire *y'* in Fig. 3, being shown as leading directly from the post *y* to the shaft *m*, owing to the omission of the frame B in said figure.

The track and signal circuits are diagrammatically illustrated in Fig. 3, in which the battery or other generator of electricity is represented at 1. One pole of the battery, say for instance the positive pole, is connected by a wire 2 to the binding post *y*, the negative pole of the battery being connected by a wire 3 to the binding post *x*, and in this line is interposed the electro-magnet of the bell J or other electro-magnetic alarm or signal device which is employed. The negative pole of the battery is also connected by a wire 4 to the wires 5, 5, leading to the circuit closers 6, 6, located on each side of the crossing at any desired distance therefrom, these circuit closers being of any of the usual forms adapted to be operated by the passing train, and the return wires 7, 7, being connected by a wire 8 to the binding post *w*.

When the apparatus is in its normal condition the finger n' is in contact with the conducting section of the switch disk n and the finger s' is in contact with the non-conducting section of the switch disk s, the bell or other signal device being therefore out of circuit, but the magnet F being in circuit with the track wires so that the magnet will be excited by the closing of either of the track devices 6 by a train approaching the crossing in either direction. As soon as the magnet is thus excited the armature lever is attracted thereby, the escapement mechanism is released, and the armature is held out of the retaining position by the disk i. As soon as the shaft m commences to turn, the track circuit is broken by the carrying of the conducting section of the disk n away from the contact finger n', and at the same time the bell circuit is closed by bringing the conducting section of the disk s into contact with the finger s', so that the ringing of the bell commences and continues as long as said finger is in contact with said conducting section of the disk, which may be for any desired fraction of a revolution, depending upon the desired time during which the alarm is to be given. When the shaft m has made a revolution and the notch of the disk i is again brought under the finger h on the armature lever, said finger enters the notch and the stop g of said armature lever, by contact with the pin f' of the escapement arm, stops the movement of said escapement until the track circuit is again closed and the armature lever again operated in the manner above set forth.

When it is not desired to cut out the track circuit during the time that the apparatus is in operation, the disk n and finger n' may be dispensed with, one terminal of the magnet F being in this case connected to the post w and the other to the post y, and in some cases the engagement of the finger h of the armature lever D with the notch in the disk i may be relied upon to arrest the operation of the escapement, which may, in such case, be either an anchor escapement of the character shown, or an escapement having a rotating fly or fan, or the finger may engage with a notch in the switch disk s if desired, said finger being insulated if necessary. The use of the vibrating or anchor escapement is, however, preferred, and it is also preferable to lock the escapement by the armature in the manner shown in the drawings, for by this means any strain upon the finger h which might have a tendency to prevent the proper operation of the armature lever is effectually overcome.

In my improved alarm or signaling device both the signal and track circuits are of the simplest character, and but two circuit closing devices are employed in connection with the track circuit, these being simply starting devices, as the stopping of the alarm is dependent upon the action of the mechanical devices set in motion on the closing of the track circuit, whereas the devices now in use for the purpose are of a much more expensive and complicated character, and are less effective in performing the desired work.

Having thus described my invention, I claim and desire to secure by Letters Patent—

The combination of the electro-magnetically-operated signal, track and signal circuits, circuit closers in the track circuit, an electro magnet also in the track circuit, the armature of said magnet, rotary switches in both the track and signal circuits, a notched disk, escapement mechanism for controlling the operation of said rotary switches and notched disk, and means whereby the armature is caused to lock the notched disk and escapement mechanism when said armature is in its normal position, but, after releasing said mechanism, is held out of locking position by the notched disk for a predetermined time, the track circuit switch being normally closed, and the signal circuit switch normally open, but these conditions being reversed as soon as the escapement mechanism is released, and being restored just before the escapement mechanism is stopped, substantially as specified.

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

ELWOOD C. POTTER.

Witnesses:
EUGENE ELTERICH,
HARRY SMITH.