

3 Sheets—Sheet 1.

No. 515,751.

Patented Mar. 6, 1894.

Edmund

Inventors
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Their Attorneys

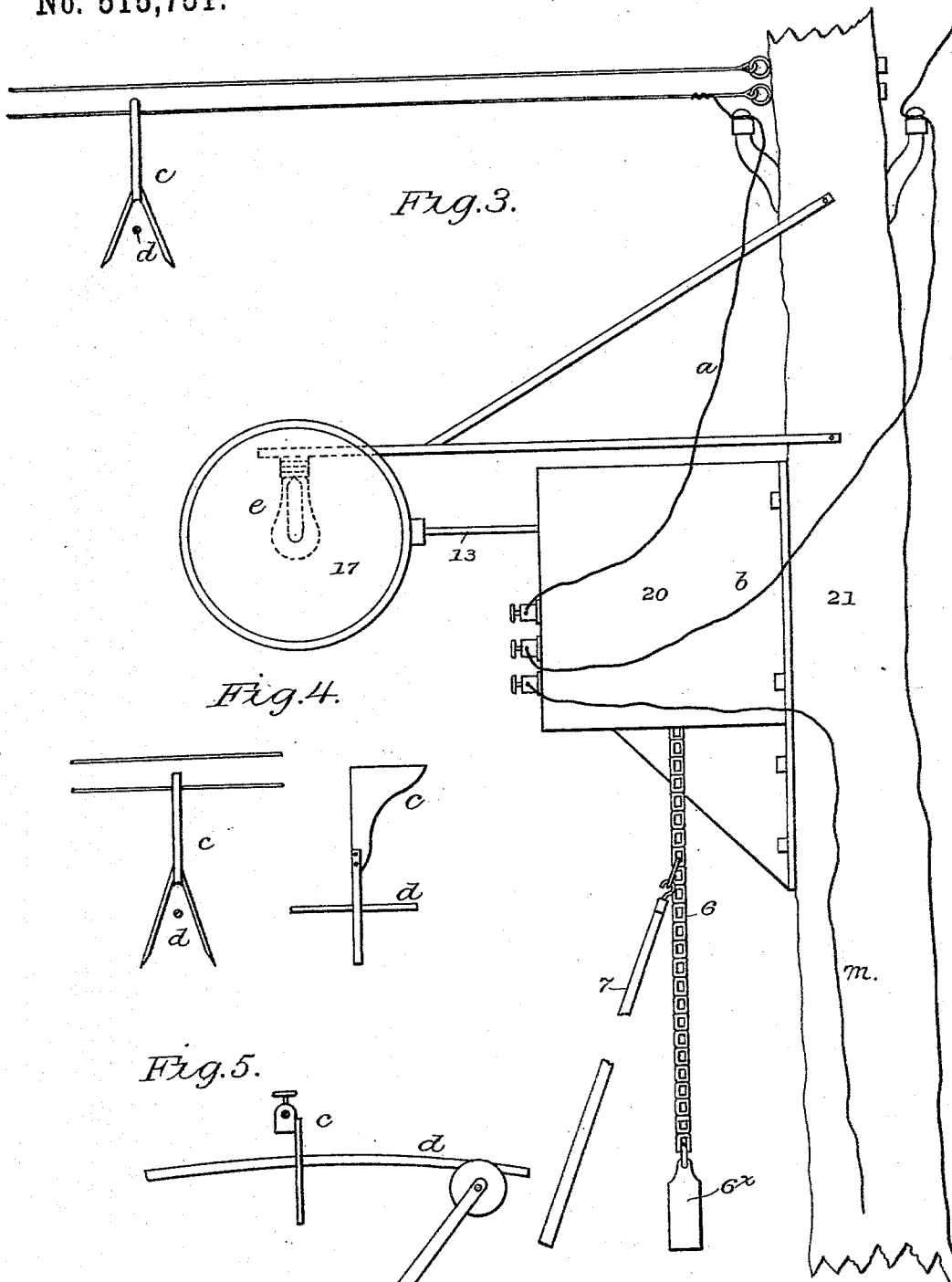
(No Model.)

3 Sheets—Sheet 2.

T. L. & N. W. DALTON.
ELECTRIC SWITCH SIGNAL.

No. 515,751.

Patented Mar. 6, 1894.



Witnesses
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(No Model.)

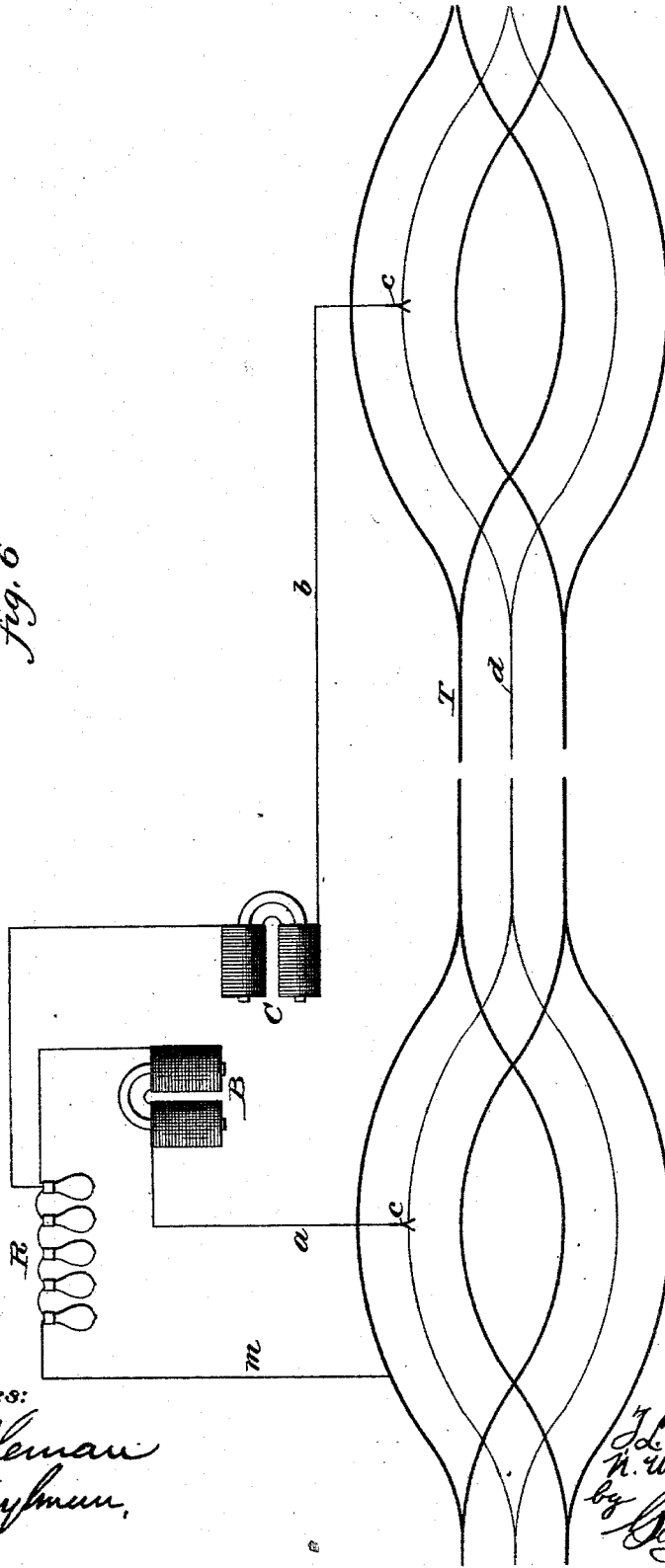
3 Sheets—Sheet 3.

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fig. 6



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UNITED STATES PATENT OFFICE.

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NEW YORK.

ELECTRIC SWITCH-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 515,751, dated March 6, 1894.

Application filed August 5, 1893. Serial No. 482,443. (No model.)

To all whom it may concern:

Be it known that we, THOMAS LLOYD DALTON and NELSON WAIT DALTON, citizens of the United States, residing at Sandy Hill, in the county of Washington and State of New York, have invented certain new and useful Improvements in Electric Switch-Signals; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has relation to improvements in means for operating and displaying signals used at switches, turnouts, side-tracks, and similar places or points on railroads, especially electric street railways, and it may be used as a station indicator, such means being associated with, and controlled by, electrical devices, as hereinafter specified.

The invention is hereinafter fully described, and particularly pointed out in the claims; the same is fully and clearly illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of the mechanism showing the signal in horizontal position also showing the endless chain as having the lower portion broken off. Fig. 2 is a plan view. Fig. 3 is a view showing the device mounted in operative position, and a pull rod in connection with the endless chain, shown in side elevation. Fig. 4 shows contact pieces; Fig. 5 illustrates the position of a trolley pushing up the wire against the contact-piece, to close the circuit of the signal mechanism and Fig. 6 is a diagrammatic view showing the arrangement of the circuits.

A designates a suitable frame or support, adapted to carry the mechanism, being shown as consisting of vertical supports 1, 2 and horizontal bars 3, the frame being in duplicate and formed or provided with bearings carrying the journals of the respective gearings and signal-disk, as indicated in the drawings, and more specifically described, as follows:—In the horizontal bars 3 are formed bearings, in which is mounted a shaft 4 on which is loosely mounted a sprocket-wheel 5 carrying an endless chain 6, by which the wheel may be rotated by any appliance adapted to the purpose, as by a hand implement 7, provided with a hook to engage in the

links of the chain, as shown in Fig. 3 of the drawings. On the shaft of the sprocket-wheel 5, a gear wheel 8 is fixed, meshing with a pinion 9 on a shaft 10, which shaft 10 carries a gear wheel 11, meshing with a pinion 12 on shaft or journal 13, in bearing 14, in standards 15 substantially as shown in the drawings. On the shaft 13 is fixed a disk 16 formed with oppositely arranged steps, pawls, or notches 16^x as seen in Fig. 1 of the drawings. On an extension of the shaft 13 is also mounted the signal 17 arranged or fixed parallel with the notches 16^x as shown. The notches 16^x in the disk 16 are engaged by the pawl-armatures 18, 19, contacting with the magnets B, C, in an electric circuit as shown in Fig. 1, of the drawings. The armatures 18, 19 are arranged in such position that one of them will engage a notch at every quarter-turn of the disk. The mechanism is concealed in a proper case or box 20 mounted on a suitable support 21 with the signal 17, extending therefrom and exposed to view.

On the endless chain 6 may be attached a weight 6^x, the force of which when the pawl-armatures are released, moves the mechanism until the next engagement of one of the pawl-armatures. This weight 6 is a substitute power for the hand-pull 7. On the shaft of the sprocket-wheel 5, is a ratchet 22, engaged by a pawl 23, arranged to hold the sprocket wheel against reverse motion.

The electrical device used in association with the mechanism, consists of the magnets B, C, and pawl armatures 18, 19, the magnets having circuit connection by wires *a*, *b*, to contact pieces *c*, mounted adjacent to the main circuit or trolley wire *d*, from which one of the magnets is energized on the contact being made between the trolley wire and the contact-piece as indicated in Fig. 6, of the drawings. The contact pieces *c* are formed with a lower forked portion which extends below the conducting wires, so that either by vibration, or elevation, the circuit which controls the signal will be actuated.

In Fig. 3 of the drawings an electric lamp *e*, is shown suspended behind the signal, to show the position of the same; the signal being turned with the edge at right angles to the lamp will leave the naked white-light to

indicate safety; and the signal being turned in front of the lamp, will of course display the color signal indicating the proper purport, a ground wire *m*, is shown to complete a circuit.

The operation of the machine is as follows:— When it is desired to operate the signal, the trolley wire is pushed up by the trolley into contact with the contact-piece, as seen in the drawings thus energizing the magnets of the signal, and withdrawing the pawl-armature from engagement with the disk, which being effected the force of weight at once acts to turn the train of gearings, which movement continues until the quarter-turn of the disk is made, when one of the pawl-armatures engages the next notch in the disk, and stops the movement of the mechanism until the next action of the armature. This operation in case the weight is not used as the power, may be accomplished by the hand-implement. 7. The current used in operating the magnets and pawls is taken from the main current, circuit, and is reduced by a resistance coil, or by lamps *R* in series concealed in the casing containing the mechanism.

In Fig. 6 is illustrated the circuits, and reference being thereto had, it will appear, that to set the signal to the stop, or danger position, the current enters wire *b*, on contact with the trolley wire thence by wire *b* through magnet *C* and resistance *R* to track *T* through

wire *m*. And to set the signal at safety position the current proceeds, on contact, through wire *a*, magnet *B*, resistance *R* and wire *m* to track *T*.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination of a train of gearing, a sprocket-wheel on the shaft of one of the gears, a chain to turn the sprocket-wheel and operate the train of gearing, a rotating disk having oppositely arranged radial notches therein, a signal on an extension of the disk shaft, pivotally mounted pawl-armatures to engage the notches in the disk, magnets to operate the pawl-armatures, and an electric circuit to energize the magnets, substantially as and for the purpose specified.

2. The combination of the signal circuit and the trolley-circuit, of a forked contact piece between the said circuits and the trolley-contact one of the circuits lying in the crotch of the fork, whereby the trolley wire is moved in contact with the signal wire and the signal operated, substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

THOMAS LLOYD DALTON.

NELSON WAIT DALTON.

Witnesses:

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