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PATENTED JULY 31, 1906.

J. W. DARRAH.
ELECTRIC SIGNALING APPARATUS.
APPLICATION FILED MAY 9, 1905.

2 SHEETS—SHEET 1.

Fig. 4

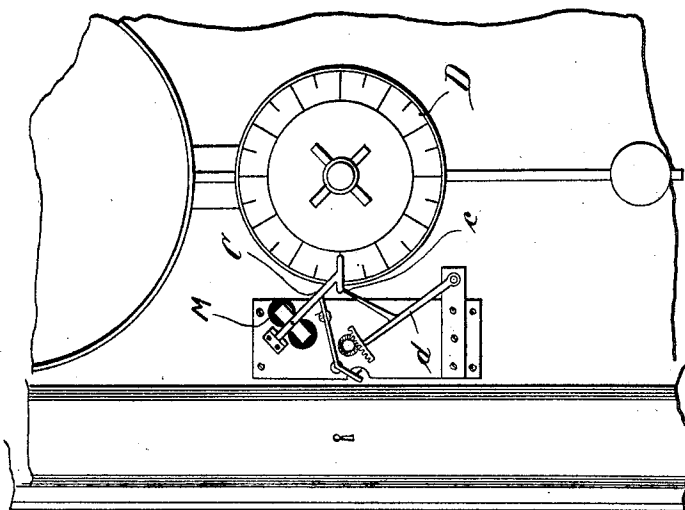
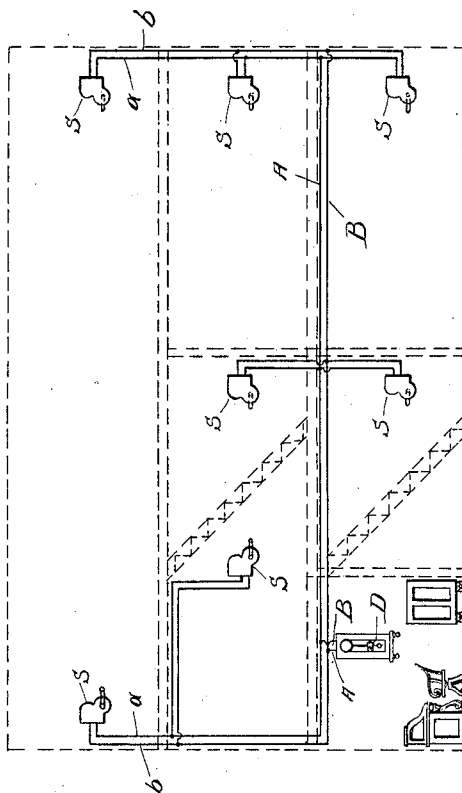


Fig. 1



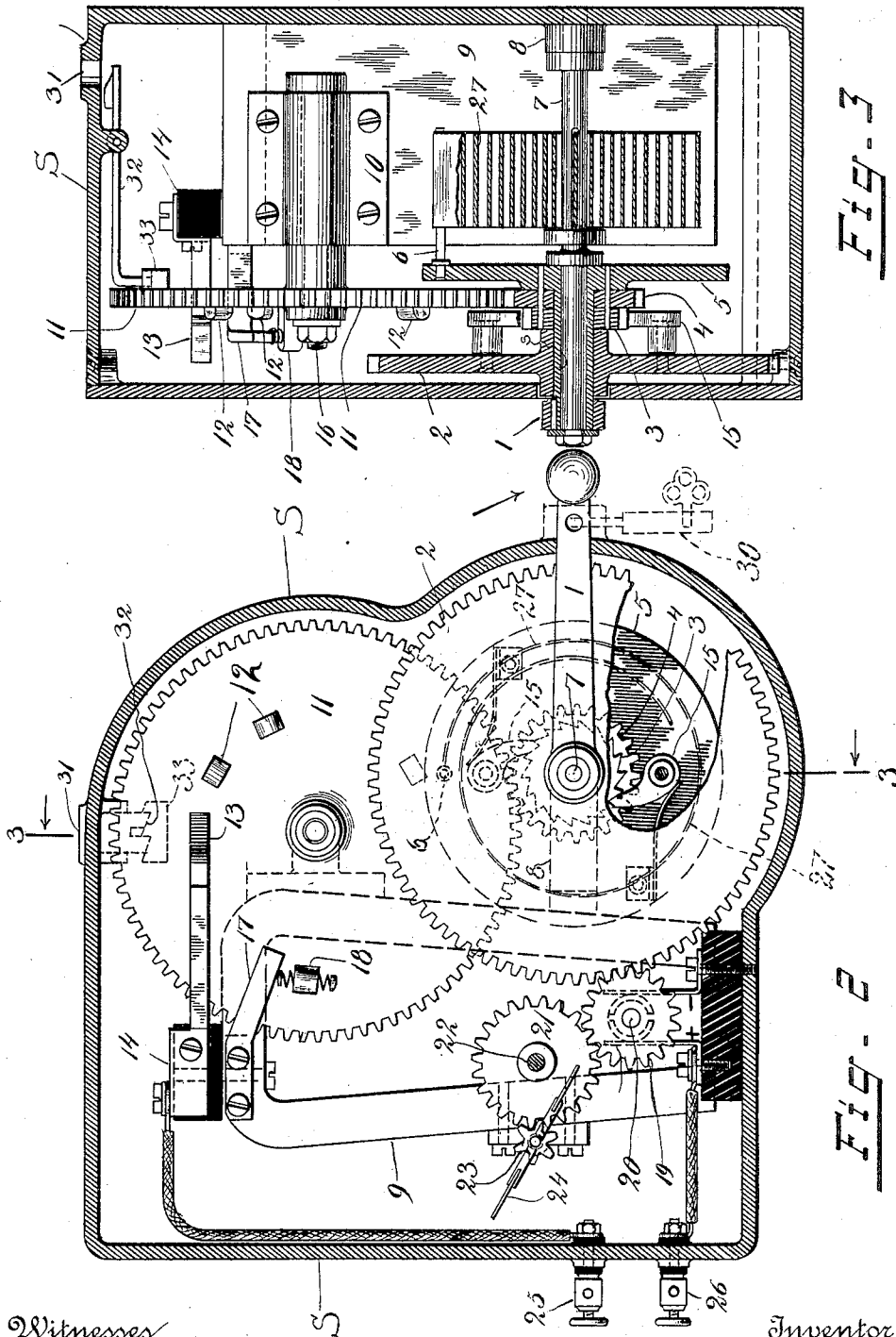
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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ELECTRIC SIGNALING APPARATUS.

No. 827,685.

Specification of Letters Patent.

Patented July , 1906.

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To all whom it may concern:

Be it known that I, JOHN W. DARRAH, a citizen of the United States, residing at New York city, New York, have invented certain new and useful Improvements in Electric Signaling Apparatus, of which the following is a clear, full, and exact description.

This invention has for its object to provide a signaling system, such as a watchman's clock system, in which the wiring connections may be arranged in parallel from a number of signal-stations all controlling a magnetic electric recording device at the receiving-station to cause said device to record from what one of the signaling-stations a given signal is sent, and this without any current normally being upon the line and without the use of a generator or battery at the receiving-station. I accomplish this purpose by locating at each signaling-station a generator, shown herein as an ordinary magneto, a motor for operating the same, and a current-regulating switch operated to give a predetermined signal upon the operation of a motor. The switch and generator are actuated from the same motor at the same time. I prefer to use a spring-motor which normally is under no operative tension and to cause the operator immediately before sending in a signal to manually tension the motor without operating the generator, preferably using the tensioning movement for setting the switch. Thus I secure a motor which normally is without potential energy for its operation, and hence no accidental operation of the same can be effected.

I provide a let-off mechanism for the signaling device which may take the form of an ordinary regulating-fan and which I preferably gear to the shaft of the magneto, which may be connected to the motor by a ratchet. This preferred construction enables me to tension the motor and set the regulating-switch without operating the magneto or fan and without generating any current while setting said switch.

The switch may be any type of current-regulating switch. I prefer to use one which is disk-like and formed with a number of switch-points on its surface and adapted to send interrupted signals. Its periphery is formed with gear-teeth, which mesh with a pinion operated from the motor. I prefer, no matter how many times the motor-handle is revolved either in setting or in operating, to have the switch-disk make but one revolu-

tion. This enables me to readily locate a positioning-stop for the switch to determine its position before and after each signal is sent. Suitable locking means may be provided to prevent any one but an authorized person from manipulating the device.

Although I have shown and described my device in this specification as operating a permanent record, I do not wish to limit myself thereto, as any receiving device known in the art whether it preserves a record or not may be used. Neither do I wish to limit myself to the watchman's clock system, a direct-current generator, as graphically shown on the drawings, nor to the precise construction of signaling device as shown in the drawings, as I realize that many changes may be made without departing from the scope and spirit of my invention as set forth in the claim.

In the drawings, Figure 1 is a diagrammatic view of a system upon which my device is adapted to be operated. Fig. 2 is a frontal elevation, with the box-cover broken away, of my simple form of signal device. Fig. 3 is a section on line 3 3 of Fig. 2, and Fig. 4 is a face view of a well-known signal-receiving device and clock-operated recording-disk with which my device is adapted to be used.

In Fig. 1 each signal-box S is connected in parallel by a pair of wires *a* and *b* with a pair of trunk-conductors A and B, which connect directly with a magnet M (see Fig. 4) adjacent to a clock-operated recording-disk D. This magnet has an armature C and a radially-moving pin *c*, mounted on an arm *d*, also operated by clockwork to move slowly across the face of the paper and to return to its initial position upon any operation of the magnet and to penetrate the paper in a direction at right angles to its plane of radial travel in answer to each oscillation of the armature.

The foregoing general description is that of the Howard watchman-clock recording device and is all that is necessary for a complete understanding of the receiving-station which may be used with my invention. While I have shown this particular known form of recording device in this application, I do not wish to be limited to it, as any form of recording-receiver may be used to record the regulated current from my improved signaling device.

As shown in Figs. 2 and 3, a magneto 9, having an armature-shaft 20, is mounted on the floor of a signal-box S. A pinion 19 on

the shaft 20 gears with a pinion 21 on a shaft 22, which in turn gears with a pinion 23, carrying a fan let-off device or brake. The gear 20 may also mesh with a pinion 2, loosely mounted on a sleeve 5, forming a bushing for the plate 5, rotating freely on a stay-rod 7. An ordinary spiral spring 27 is made fast to the stay-rod 7 at one end and to a stud 6 of the plate 5 at the other end. A pinion 4 and a ratchet 3 is secured to turn with the bushing, and so, also, is the operating-handle 1. Pawls 15 serve to connect the pinion 2 and the ratchet 3. The stay-rod 7 may be secured in supports 8 8, attached to the pole-piece of the magneto. So, also, may be secured a bearing 10 for a shaft 16, carrying the current-regulating disk-switch 11, meshing with the pinion 4. This disk 11 may be formed with a number of projecting surfaces 12 to act as commutators for sending a previously-selected series of electric impulses through the circuit formed by the wires *a b*, trunk-conductors A and B, and receiving-magnet M. Current may be taken off these projections by wiping contact of a brush 13, shown as mounted upon insulation secured to the magneto. Binding-posts 25 and 26 may be connected, one with the post 14 of the brush 13 and one with one of the armature-terminals of the magneto, whose other terminal may be in electrical contact through the rest of the apparatus to the shaft of the disk 11, though any other means of conducting current to said disk may be employed. A disk-positioning stop 17 may be secured to the magneto with its end located in the path of cushion-spring stops 18 on the disk. The casing and operating-handle may be normally locked against movement by a padlock 30, as shown in dotted lines, Fig. 2, or the casing may be provided with a keyhole-opening 31, tumblers 32, adapted to lock into ratchet-like recesses 33 upon the disk. As shown, this is a very simple locking device. It will be obvious, however, that any combination of tumblers and recesses therefor which may be desired may be used.

In operation the watchman inserts a key into the keyhole to raise the tumblers and then rotates the handle 1 in the direction of the arrow of Fig. 2. He may remove the key immediately that the recesses have passed the tumblers or leave the key in place until the signal has been sent. The handle 1

is rotated as many times as possible—that is, until stop 18 is caused to abut against the upper side of the stop 17. The disk is rotated through the gear 4 on the bushing. While the handle is thus rotated the spring is tensioned and the pawls 15 idly glide over the ratchet without actuating the magneto or fan. Hence no current will be generated while the mechanism is being wound up and set and no electric impulse produced upon the passage of the points 12 past the brush. When the operator has wound the spring and turned the disk to its limit, he lets go the handle and leaves the instrument. The following operation then takes place: The ratchet-wheel and pawls now couple the pinion 2 with the revolving bushing and rotate the magneto-armature and fan at a moderate speed, creating a potential between the brush 13 and disk 11. As each contact 12 strikes the brush a current will be momentarily sent through the line and magnet M. In the box shown herein these interrupted momentary currents will be three with a space between the first two, graphically representing — — — for box 12. Combinations of such contacts will be placed on each box of the system.

What I claim as my invention is—

A signaling device comprising a magneto, a motor, normally without potential for operation, connected thereto, a permanently-located limiting-stop means providing two limiting-stopping positions for the motor's revolution, one stop so located as to be effective when the motor is in a wound position and is possessed of potential energy, and the other effective when the motor is substantially unwound and incapable of exerting power, a current-regulating switch geared to said motor, and manually-actuated means for tensioning said motor and moving it from its normal potentially-inoperative position, into its operative potential position, said motor being free to return to its potentially-inoperative position at all times, save during the manual control of said tensioning means.

Signed at New York city, New York, this 3d day of May, 1905.

JOHN W. DARRAH.

Witnesses:

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