(No Model.)

2 Sheets—Sheet 1.

W. SCOTT.

RAILWAY TIME SIGNAL.

No. 482,699. Patented Sept. 13, 1892.

Fig. 2.

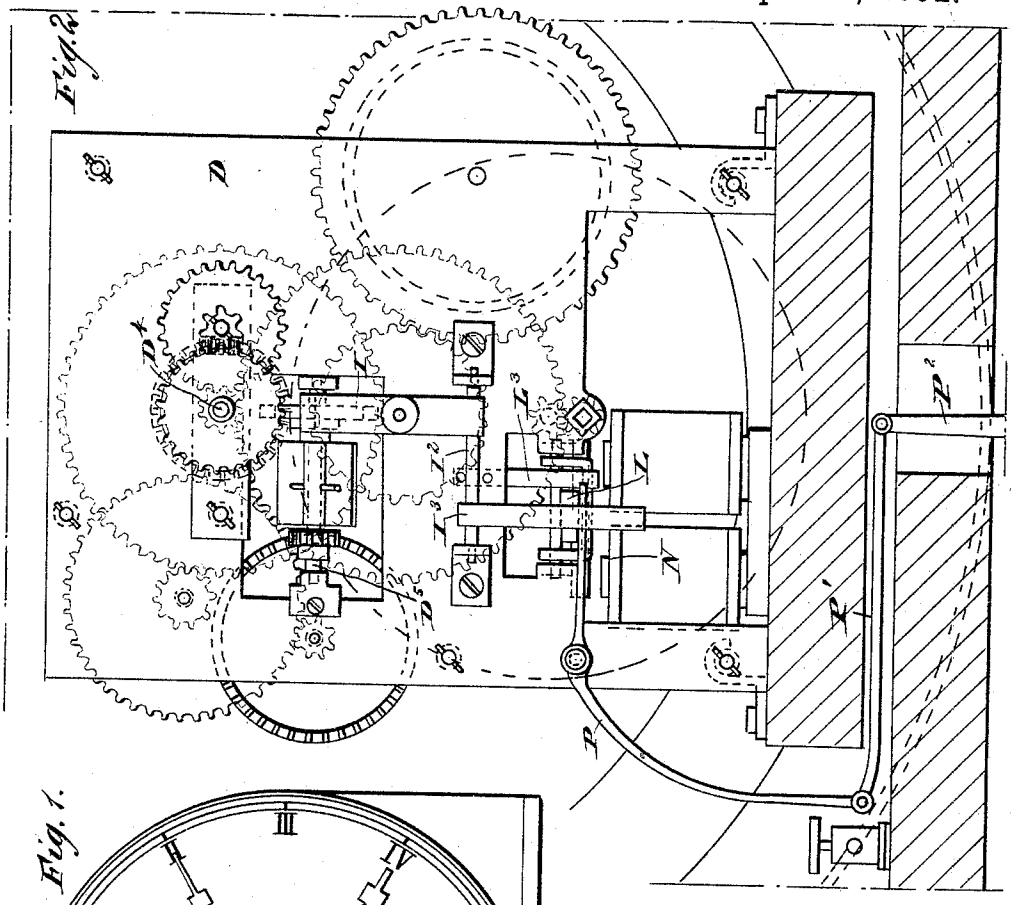
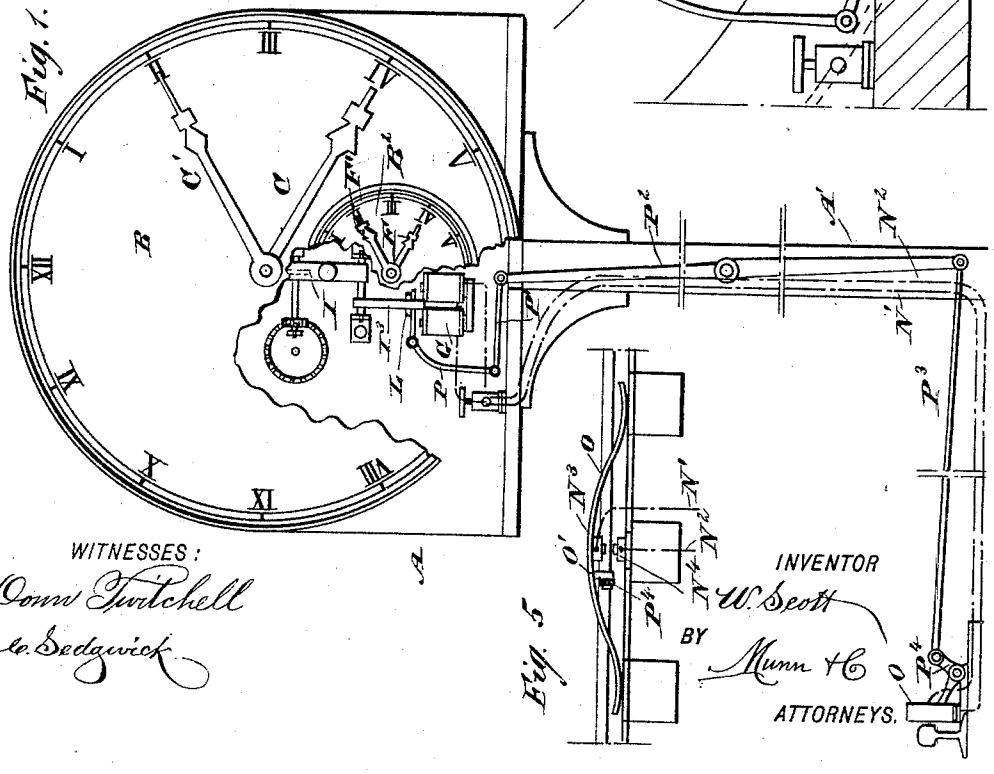


Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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RAILWAY TIME SIGNAL.

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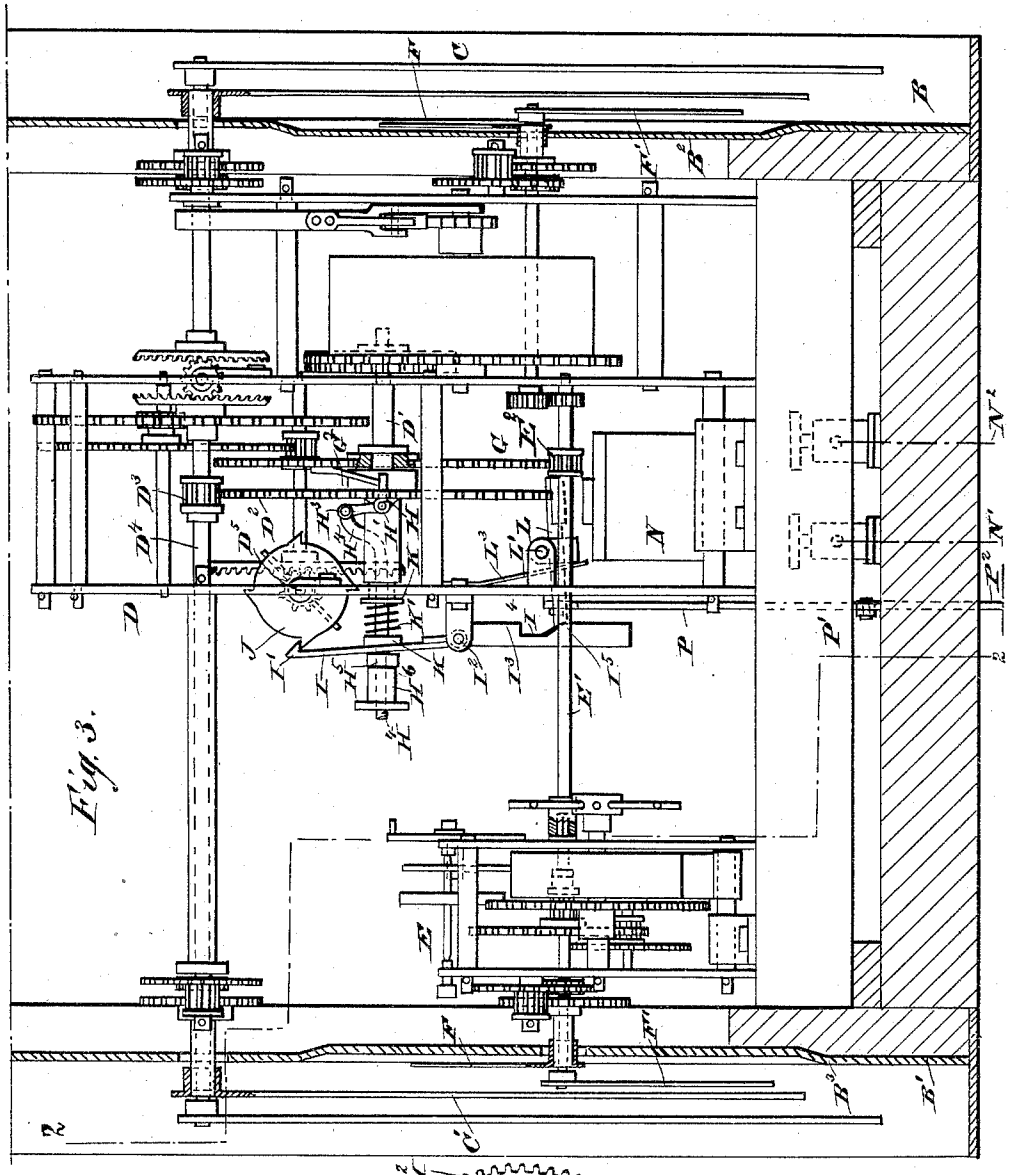

Fig. 3.

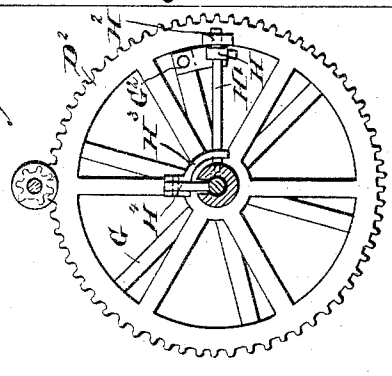

Fig. 4.

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UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF HOT SPRINGS, SOUTH DAKOTA.

RAILWAY TIME-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 482,699, dated September 13, 1892.

Application filed May 13, 1892. Serial No. 432,872. (No model.)

To all whom it may concern:

Be it known that I, WALTER SCOTT, of Hot Springs, in the county of Fall River and State of South Dakota, have invented a new and Improved Railway Time-Signal, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved railway time-signal which is simple and durable in construction, very effective and automatic in operation, and arranged to positively and accurately record the time when a train passes the track on which the device is applied.

The invention consists of a time-clock provided with a stopping mechanism for an auxiliary clock adapted to be released by an electro-magnet releasing mechanism of especial construction.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of the improvement as applied and with parts broken out. Fig. 2 is an enlarged sectional rear elevation of the improvement on the line 2 2 of Fig. 3. Fig. 3 is a transverse section of the same. Fig. 4 is a face view of the connection between the two blocks, and Fig. 5 is a side elevation of a spring-plate arranged alongside the track for making the electric contact.

The improved railway time-signal is provided with a suitably-constructed casing A, supported on a post A′, arranged alongside the track, as is plainly indicated in Fig. 1. The ends of the casing A are provided with the dials B and B′, on which indicate the hour and minute hands C C′, respectively, actuated by an auxiliary spring-actuated clock mechanism D, arranged within the casing A. Within the casing A is also located a second clock mechanism E, actuating two sets of minute and hour hands F and F′, somewhat smaller in size than the sets of minute and hour hands C C′ and indicating on the smaller dials B^2 and B^3, formed within the dials B and B′, respectively, as will be readily understood by reference to Figs. 1 and 3.

On the minute-shaft E′ of the clock mechanism E is secured a pinion E^2, in mesh with a gear-wheel G, mounted to rotate loosely on a shaft D′, forming part of the auxiliary clock mechanism D and carrying a gear-wheel D^2, in mesh with a pinion D^3, secured on the minute-shaft D^4 of the said auxiliary clock mechanism D.

On the inner face of the loose gear-wheel G is formed a spring-arm G^2, on which is adapted to abut one end of an arm H, secured on a shaft H′, mounted to turn in suitable bearings on one face of the gear-wheel D^2, previously mentioned, the said shaft extending radially from the hub of the wheel D^2, in which one end of the shaft has its bearing, the outer end of the shaft having its bearing in a box H^2, attached to the rim of the said wheel D^2. (See Fig. 4.)

Near the inner end of the shaft H′ is secured an arm H^3, extending approximately at right angles to the arm H and pivotally connected with a rod H^4, fitted to slide transversely in the hub of the gear-wheel D^2. The outer end of the rod H^4 is formed with a screw-thread, on which screws a nut H^5, adapted to be locked in place by a jam-nut H^6.

On the face of the nut H^5 rests a lever I, extending vertically and formed at its upper end with a hook I′, adapted to engage a tooth on a stop-wheel J, secured on the shaft D^5 of the wind-wheel of the auxiliary clock mechanism D.

On the lever I, opposite the nut H^5, presses a collar K, on which rests one end of a spring K′, coiled on the rod H^4 and resting at its other end on a fixed part of the frame of the auxiliary clock mechanism D. The spring K′ presses on the collar K, so as to hold the lever I in contact with the nut H^5. The lever I has its pivot I^2 mounted in bearings attached to the framework of the auxiliary clock mechanism D, and from the said pivot extends downward an arm I^3, formed at its inner edge with a notch I^4, the bottom of which is inclined, as at I^5, and is adapted to engage the outer end of the armature-lever L of electro-magnets N, located within the casing A. The armature-lever L is pivoted at L′ in the frame

of the auxiliary clock mechanism D, and is held off the cores of the electro-magnets by a spring L^3. (Shown in Figs. 2 and 3.)

The electro-magnets N are connected by the usual wires N′ and N^2 with contact-points N^3 and N^4, respectively, of which the contact-point N^4 is located on one of the ties of the railroad-track, while the other contact-point is formed on the under side of a spring-plate O, arranged alongside one of the track-rails and adapted to be engaged by the flange of the passing car-wheel, so that when this takes place the spring-plate O is pressed downward and the contact-points N^3 and N^4 are moved in contact with each other to establish an electric circuit in the magnets N.

The armature-lever L is loosely engaged at its under side and near the outer end by one end of a bell-crank lever P, pivoted on the framework of the auxiliary clock mechanism D, the said bell-crank lever being pivotally connected by a link P′ with a lever P^2, pivoted on the post A′. The lower end of the lever P^2 is connected by a link P^3 with a bell-crank lever P^4, pivotally connected with a lug O′, formed on the under side of the spring-plate O, at one side of the contact-point N^3, as will be readily understood by reference to Fig. 5. Now when the car-wheel passes over the spring-plate O and depresses the same to establish a circuit, as above described, then at the same time the bell-crank lever P^4 is actuated by the said plate O moving downward. The movement of the bell-crank lever P^4 causes a pull on the link P^3, which imparts a swinging motion to the lever P^2, and the latter by being connected with the bell-crank lever P causes a raising of the armature soon after the contact has been made, as before described. Thus when the electric circuit is closed the armature-lever L is attracted, but only for an instant, as then the plate O causes the lever P to swing, as before described, to return the armature-lever to its former normal position, in which it is finally held by the spring L^3. Now as soon as the armature is attracted by the closing of the circuit the free end of the said lever travels up the incline I^5 in the bottom of the notch I^4 of the arm I^3 of the lever I, whereby the arm I^3 is free to swing inward as soon as the armature-lever travels into the enlarged part of the notch I^4. As soon as the arm I^3 is thus unlocked an unlocking of the lever I takes place, the latter being forced outward out of engagement by its hook I′ with the wheel J, caused by the pressure of the spring K′ on the washer K, resting on the inner side of the said lever I. As soon as the wheel J is released by the lever I the auxiliary clock mechanism D is unlocked and is now actuated by its spring in the usual manner, so that a rotary motion is imparted to the wheel D^2 by the pinion D^3 on the minute-shaft D^4. The wheel D^2 rotates until the arm H, carried by the said wheel, comes in contact with the spring-arm G′ on the wheel G, and as soon as the said arm strikes the spring-arm G′ the said lever is turned slightly, thus causing a turning of the shaft H′ and an inward movement of the arm H^3, held on the said shaft H′. The inward movement of the arm H^3 causes a pull inward on the rod H^4, and as the latter is connected with the outer surface of the lever I by means of the nut H^5 the said lever is again swung inward to engage with its hook I′ the wheel J, and the latter is thus again locked and further rotation of the auxiliary clock mechanism is prevented. Now it will be seen that the continuously-going clockwork E has advanced the wheel J to a position corresponding to the hour of the day indicated by the sets of hour and minute hands F F′. Now when the auxiliary clockwork mechanism is actuated, as before described, and the wheel D is actuated its hands C and C′ indicate on the dials B and B′, respectively, until the auxiliary clock mechanism D is stopped at the time the lever H strikes the arm G′. When this takes place, the minute and hour hands C and C′ of the auxiliary clock mechanism assume a position corresponding to that of the minute and hour hands F F′, indicating the time of day. Thus it will be seen that when a train passes the plate O and depresses the same, as before described, then the sets of minute and hour hands C are actuated until they come to a stop, indicating the exact time of the day as given by the hands F F′ of the regular clock mechanism E. It will further be seen that the hour and minute hands C C′ remain in this position, as further movement of the auxiliary clock mechanism D ceases, as before described, as soon as the lever H strikes the spring-arm G′. The regular clock mechanism E continues in its movement—that is, the wheel G is rotated so that the arm G′ moves away from the lever H and when a second train passes and actuates the plate O then the auxiliary mechanism is again released, as above described, and causes a rotation of the wheel D^2 until the lever H again strikes the arm G′, and the above-described operation is then repeated. The hour and minute hands C C′ are then moved from their former position again to a position on the dials B B′ corresponding to the position of the sets of hands F F′ on the dials B^2 and B^3.

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

1. In a railway time-signal, the combination, with a time-clock indicating the time of the day, of an auxiliary clock mechanism, an electro-magnetic releasing mechanism for the said auxiliary clock mechanism, and a stop mechanism, substantially as described, controlled from said time-clock and arranged to stop the auxiliary clock mechanism, the said stop mechanism comprising a lever fulcrumed on a wheel of the auxiliary clock mechanism and adapted to abut on an arm on one of the said wheels of the time-clock, a rod connected

with the said lever, and a stop-lever connected with the said rod and adapted to engage a stop-wheel on the wind-wheel shaft of the said auxiliary clock mechanism, substantially as shown and described.

2. In a railway time-signal, a stopping mechanism comprising an arm held on a revoluble gear-wheel, a wheel mounted to turn and carrying a lever adapted to abut on the said arm, a rod connected with the said lever and fitted to slide in the hub of the said second wheel, and a stop-lever connected with the said rod, substantially as shown and described.

3. In a railway time-signal, a stopping mechanism comprising an arm held on a revoluble gear-wheel, a wheel mounted to turn and carrying a lever adapted to abut on the said arm, a rod connected with the said lever and fitted to slide in the hub of the said second wheel, a stop-lever connected with the said rod, and a spring pressing on the said stop-lever, substantially as shown and described.

4. In a railway time-signal, a stopping mechanism comprising an arm held on a revoluble gear-wheel, a wheel mounted to turn and carrying a lever adapted to abut on the said arm, a rod connected with the said lever and fitted to slide in the hub of the said second wheel, a stop-lever connected with the said rod, a spring pressing on the said stop-lever, and an armature-lever controlled by electro-magnets and having its free end extending into a notch in the said stop-lever, substantially as shown and described.

5. In a railway time-signal, the combination, with an electro-magnet, of a releasing device for the armature-lever of the said electro-magnet and comprising a plate adapted to be actuated by the wheels of the passing train, a lever engaging the said armature-lever, and intermediate mechanism for connecting the said second lever to impart a swinging motion to the latter when the said plate is pressed, substantially as shown and described.

WALTER SCOTT.

Witnesses:
W. L. JUDKINS,
R. M. CONNOR.