

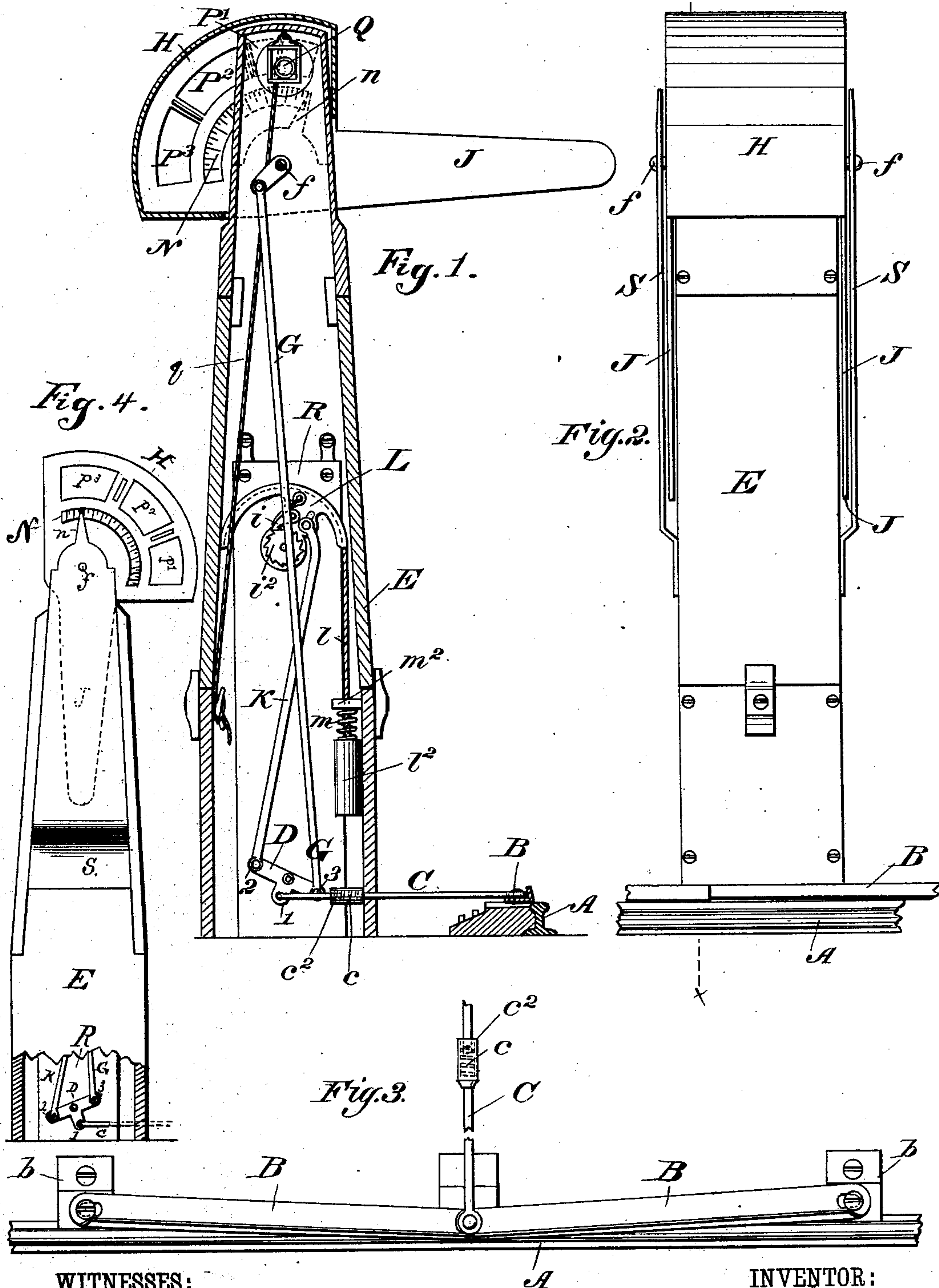
(No Model.)

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Railway Time Signal.

No. 237,136.

Patented Feb. 1, 1881.



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# UNITED STATES PATENT OFFICE.

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## RAILWAY TIME-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 237,136, dated February 1, 1881.

Application filed April 21, 1880. (No model.)

*To all whom it may concern:*

Be it known that we, ORRY MORTIMER SHEPARD and WILLIAM AUSTIN KNIGHT, of Evansville, in the county of Vanderburg and State of Indiana, have invented a new and useful Improvement in Railway Time-Signals, of which the following is a specification.

Our invention relates to means for automatically adjusting block-signals by the wheels of a passing train.

The invention consists in certain novel details of construction, arrangement, and combination of devices operated by the wheels of a passing train, whereby signals for both day and night are displayed and retained in sight for certain periods of time and then gradually changed to different positions, as herein-after particularly described.

The accompanying drawings illustrate the manner of carrying out our invention.

Figure 1 is a vertical sectional view, taken on line  $x x$  of Fig. 2, of an apparatus embodying our improvements. Fig. 2 is a side elevation looking from the track, showing the day-signal down in its normal position. Fig. 3 is a detail view. Fig. 4 is a side elevation, part in section, showing the night-signal and time-scale, the day-signal being down in its normal position and concealed from view.

Similar letters of reference indicate corresponding parts.

A represents one of the rails of a railway-track.

B B are two horizontal bars, having their outer ends slotted to allow the necessary extension thereof on the screws securing them to the posts  $b b$ , arranged on the outside of the track but close to the rail A, and their inner ends pivoted to each other and overlapping the rail A, as shown in Fig. 3. To these connected inner ends is attached one end of a connecting-rod, C, consisting of two pieces, with their contiguous ends surrounded by a spring,  $c$ , inclosed in a sleeve,  $c^2$ , for the purpose of preventing too great a shock to the mechanism by the sudden action of the wheels of the train, as hereinafter described. The inner end of the rod C is attached to one arm of a three-armed lever, D, pivoted in the interior of the hollow signal-post E, and working in a vertical plane.

To the third arm of the lever D is attached the lower end of a connecting-rod, G, the upper end of which is attached to a crank-arm on a rock-shaft,  $f$ , which carries a hood, H, and signal-arm J.

To the second arm of the lever D is attached the lower end of a connecting-rod, K, the upper end of which is attached to a pawl,  $i$ , carried by a pivoted arc-shaped bar, L. The connection of the rod K with the pawl  $i$  is made by a bolt passing through a slot in the arc-shaped bar L, so that the point of connection may be adjusted in order to regulate the length of stroke. It is obvious that the same result may be obtained by providing one end of the said rod K with two or more perforations, in order that it may be shortened or lengthened by adjusting the bolt to the next perforation. In fact, any suitable construction may be used providing means by which the said rod may be regulated in its effect on the pawl  $i$ . The pawl  $i$  engages with a ratchet-wheel,  $i^2$ , which connects with a clock mechanism of suitable description working in the interior of a casing, R. The curved bar L has on its upper surface a groove, in which rests a rope,  $l$ , having its upper end attached to said bar, and carrying a weight,  $l^2$ , at its lower end. The rope  $l$  passes through an abutment,  $m^2$ , between which and the top of the weight is a spring,  $m$ , the object of which is to prevent too great a shock to the mechanism, as before described in regard to the spring  $c$ , as well as serve to operate the clock mechanism through the medium of the pawl  $i$  and ratchet  $i^2$ , which latter is arranged on the protruding end of the main shaft of said clock mechanism.

The hood H and arm J, carried by the rock-shaft  $f$ , are arranged to oscillate in a vertical plane. The hood is provided with three plates of glass arranged in an arc of a circle drawn from the center of oscillation, and colored or otherwise distinguished, so as to indicate different signals—as, for example, red for “danger,” green or blue for “caution,” and white or clear for “safety.” The hood is also provided with an illuminated scale, N, graduated to indicate minutes, and having a stationary indicator,  $n$ , in front of it.

Q is a lantern attached to one end of a rope,



q, passing over a pulley, and having its other end secured within easy reach of an attendant, by which means the lantern may be easily raised and lowered.

5 The operation is as follows: The wheels of the passing train, on reaching the bars B B, press them toward the signal-post, and through the rod C move the first arm of the lever D in the same direction, so as to raise its second arm and  
10 lower its third arm. The rod G pulls downward on the crank-arm of the rock-shaft f, so as to place the hood H and arm J in the position shown in Fig. 1. This position of the arm J is the day-signal for "danger," and this posi-  
15 tion of the hood brings the red glass P before the lantern Q as the night-signal for "danger." The same motion of the lever D causes the rod K to push upward on the bar L, and through the pawl i and ratchet i<sup>2</sup> set the clock  
20 mechanism in motion. As the weight l<sup>2</sup> descends it restores the parts to their former positions. This descent and this restoration are gradual, and are regulated by the clock mechanism, and the parts are so arranged with re-  
25 lation to each other and to said mechanism that the pointer n indicates on the scale N the number of minutes occupied in such descent and restoration. By this means the number of  
30 minutes elapsing between the time of passing of one train and the time at which the next train reaches the signal-post is readily ascertained by the officers of said next train, provided the parts have not yet reached the point at which the safety-signal is displayed. When the arm  
35 J reaches a position midway between a horizontal and a vertical one, such position is the day-signal for "caution," and at the same time the green or blue glass plate P<sup>2</sup> is brought in front of the lantern as the night-signal for  
40 "caution." When the arm J descends still farther, and reaches a vertical or its normal position, as shown in Figs. 2 and 4, it is the day-signal for "safety," and the white or clear glass P<sup>3</sup> is brought in front of the lantern as the  
45 night-signal for "safety." In this last position the arm J may be concealed by a screen, S.

If desired, the apparatus above described

may be provided with duplicates of the arm J, scale N, indicator n, and glass signal-plates P P<sup>2</sup> P<sup>3</sup>, one set being arranged to be seen 50 from one direction and the other set to be seen from the opposite direction.

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

1. In an automatic railway-signal apparatus, the combination of the pivoted horizontal bars B B, arranged to partially overlap a rail of the track, the connecting-rod C, provided with the spring c, the lever D, connecting- 60 rod G, rock-shaft f, oscillating hood H, and arm J, with the rod K, curved bar L, cord l, weight l<sup>2</sup>, spring m, and abutment m<sup>2</sup>, all arranged, constructed, and operating substantially as shown and described. 65

2. The oscillating hood H, provided with the transparent signal plates P P<sup>2</sup> P<sup>3</sup>, arranged in an arc of a circle drawn from the center of oscillation, in combination with a lantern or other light in the interior of said hood, for 70 displaying the night-signals, substantially as herein described.

3. The combination, with the bars B B, rod C, and lever D, of the connecting-rod K, curved bar L, cord l, weight l<sup>2</sup>, spring m, and abut- 75 ment m<sup>2</sup>, for restoring the parts to their first positions, substantially as herein described.

4. The combination, with the bar L and weight l<sup>2</sup>, of the pawl i, ratchet-wheel i<sup>2</sup>, and a clock mechanism for regulating the descent 80 of the weight and for measuring time, substantially as herein described.

5. In an automatic railway-signal, an illuminated scale, N, arranged in an arc of a circle drawn from the center of oscillation of the hood 85 H and pointer n, in combination with the bars B B, rod C, lever D, connecting-rod K, curved bar L, cord l, weight l<sup>2</sup>, spring m, and abutment m<sup>2</sup>, as and for the purpose specified.

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