(No Model.)

A. C. GORDON.

RAILWAY TIME SIGNAL.

No. 507,492. Patented Oct. 24, 1893.

FIG. 1.

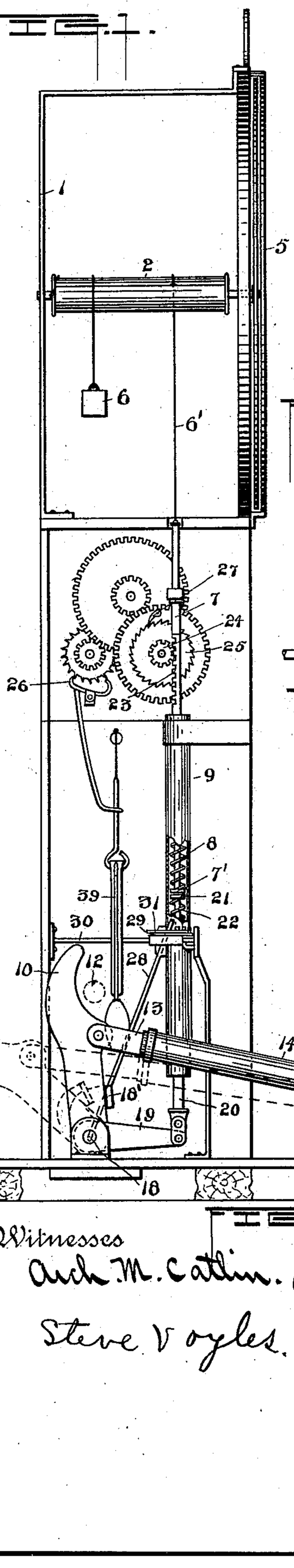

FIG. 2.

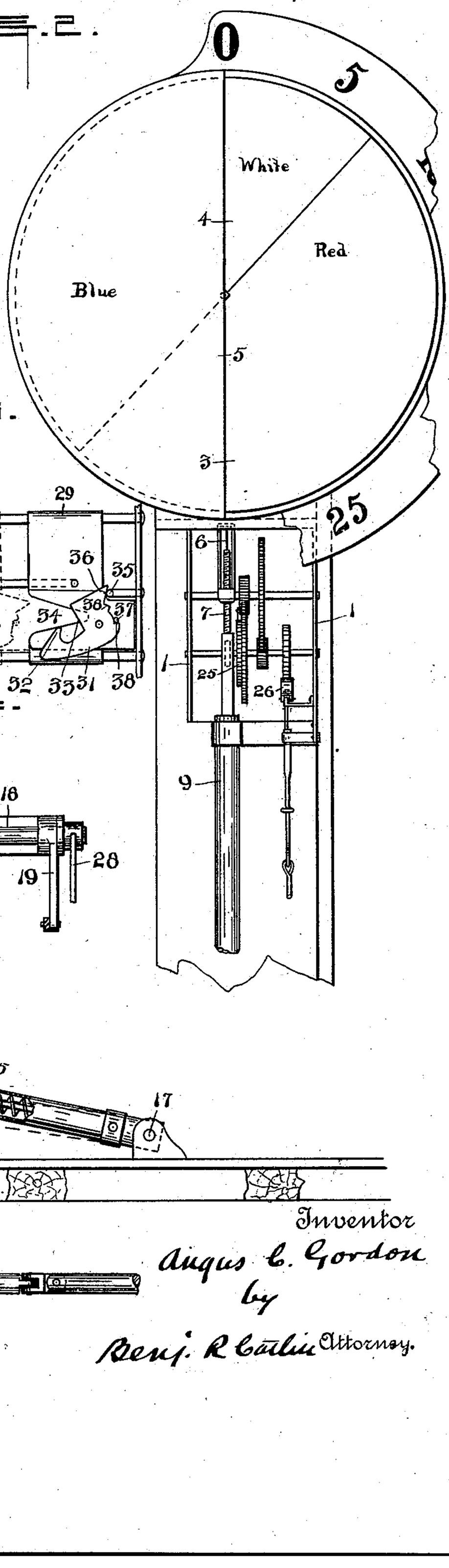

FIG. 3.

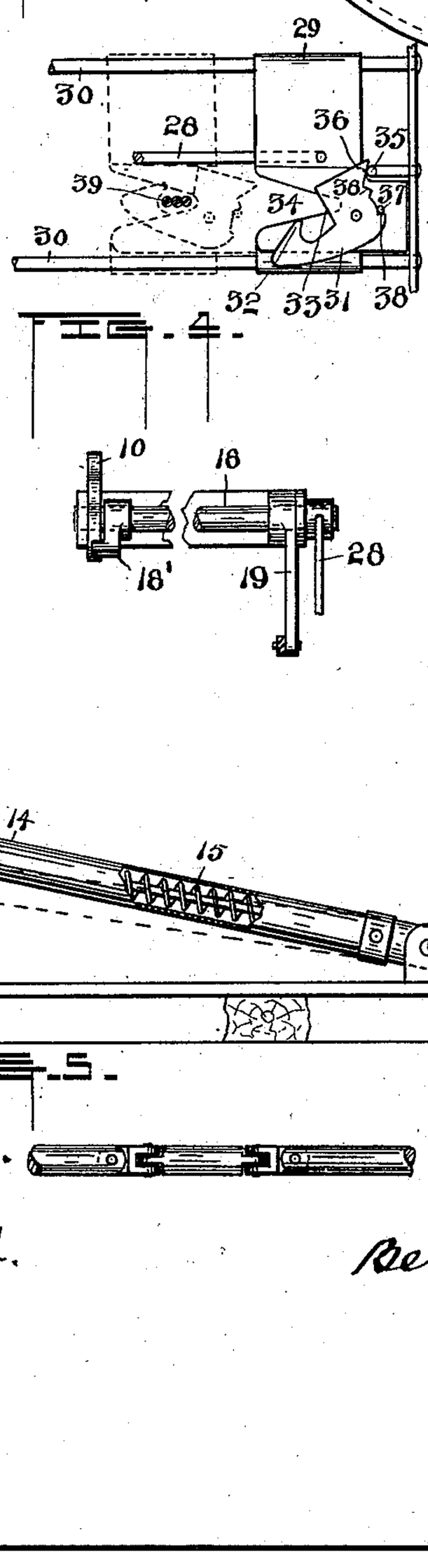

FIG. 4.

FIG. 5.

Witnesses
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UNITED STATES PATENT OFFICE.

ANGUS C. GORDON, OF ROCHESTER, NEW YORK.

RAILWAY TIME-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 507,492, dated October 24, 1893.

Application filed December 3, 1892. Serial No. 453,970. (No model.)

To all whom it may concern:

Be it known that I, ANGUS C. GORDON, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Railway-Signals; and I 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

The invention relates to railway train-operated signals and has for its object to provide a clock starting device which can be made to automatically embrace the pendulum and subsequently release it in manner to start its vibrations and it has for its further object to obviate the evils of a too rigid connection between the clock and the mechanism that is directly operated by the train and to insure certainty and clearness in the indications of the signal; and it consists in the constructions hereinafter described and particularly pointed out.

In the accompanying drawings Figure 1 is a side elevation of the apparatus a part of its inclosing case being omitted and portions of the devices shown in section. Fig. 2 is a partial front elevation. Figs. 3, 4 and 5 are plans of details.

Numeral 1 denotes a case for the clock work and connected devices. In the upper part of the case is journaled a roller 2 on the axis of which is secured a circular disk one half 3 of which is colored preferably red, and the other half 4 white.

5 is a semi-circular shield or curtain of blue color behind which one half of the disk is concealed. Around the circular part of the case next the uncovered half of the revolving disk are numerals arranged substantially as shown to indicate each the twelfth part of a circle, and smaller subdivisions of time may be marked if desired.

6 denotes a weight to turn the roller and move the disk back to its initial position and display its red portion whenever the cord or chain 6′ is slackened to sufficiently relieve said roller from the influence of the rod 7 and spring 8. Said spring is situated between the head 7′ of the rod and the top of the inclosing cylinder 9, the arrangement being such that when the rod is pushed upwardly the spring 8 is compressed and the roller 2 relieved from its action and from the weight of the rod. This result is effected by the mechanism next to be described.

10 denotes a lever having a fulcrum near a track rail and situated in the path of a pin, friction roller or other part 12 fixed to a car or engine. To this lever is pivotally connected a piston rod 13 made movable in the cylinder 14, pivoted to a stud 17 secured on a tie or cross bar. Between the piston head and the upper end of the cylinder surrounding the rod is a spring 15 adapted to be put under tension by moving the rod and lever to the position indicated by broken lines which latter operation is effected by the impact of a part of a train, as of the pin 12.

18 denotes a rock shaft upon which the lever 10 is pivoted. This shaft may be provided with a plurality of transverse joints as indicated in Fig. 5 to render it flexible to avoid the injurious effect upon the operation of the combination of devices which might be occasioned by unequal settling of foundations or by the effect of the passage of a heavy train. At the opposite end of said shaft is an arm 19 pivotally connected to the foot of a rod 20 which is movably supported in the cylinder 9 and has a head 21. Between this head and the foot of the cylinder is a spring 22 stronger than spring 8 but weaker than spring 15 and normally expanded and put under tension by the latter by means of its action upon lever 10, rock shaft 18 having fixed crank arm 18′, arm 19 and rod 20, and when so compressed it and its rod 20 are held away from spring 8 and rod 7. The rock shaft 18 has a radial arm provided with a lateral projection 18′ parallel with the shaft and normally pressed against the rear edge of lever 10 by the force of spring 15 in such manner as to co-operate with the force of the train communicated through pin 12. The lever 10 which is loosely connected to shaft 18 to turn thereon is adapted to be moved by the train farther than said projection 18′ can follow, and away from it, said projection or arm 18′ being fast on shaft 18 and the movement of

the atter limited by that of arm 19 fixed on the same shaft and loosely connected to the rod 20. After pin 12 has passed over said lever the spring 15 retracts it and brings it against said arm 18′ thereby rocking the shaft and compressing spring 22.

The above described action which moves lever 10 and overcomes the tension of spring 15 leaves spring 22 free to expand and lift rod 20 and arm 19 whereby said latter spring cooperates with the train to move the lever through the medium of the rock shaft and its arm 18′ which latter bears loosely against lever 10 as before stated. The expansion of the spring 22 which lifts rod 20, forces its head against the head of rod 7 and lifts it and compresses spring 8. The rod 7 has a rack 23 whose teeth engage the teeth of a pinion 24 and revolves it and also the ratchet wheel 25 to which the pinion is made fast. The rack which ascends freely by turning this pinion and gear is retarded and made to drive a clock mechanism including the escapement 26 by means of the driving pawl 27 pivoted to one of the clock wheels, the power for this action being supplied by spring 8 put under tension by the passage of a train. The spring 15 is normally under tension and pulls the loose arm 10 against the crank arm 18′ thereby moving arm 19 and rod 20 and compressing spring 22 and relieving spring 8 from the upward pressure of said spring 22. The expansion of spring 8 when thus relieved operates and is retarded by the clock work whereby the turning of the roller 2 and the movement of the indicator disk are regulated to indicate time. The passage of a train relieves arms 18′ and 19 and rod 20 from spring 15 whereby spring 22 is free both to raise arm 19 and push up rods 20 and 7 and put the clock spring 8 under tension, simultaneously relieving the roller 2 so that the indicator disk may be returned by the weight 6, to its initial position in readiness to be moved forward by the spring 8 controlled by the time movements.

To the rock shaft 18 is rigidly secured a radial arm 28 preferably a spring the outer end of which is loosely connected with a plate 29 supported to slide on bars 30 one on each side of the path of the clock pendulum.

31 denotes a latch pivoted to plate 29 and provided with a hook 32 and a shoulder 33 and arranged over an opening 34 in the edge of the latch supporting plate. The construction and arrangement is substantially as indicated and such that when the plate and latch are moved from the position shown in full lines to that shown in dotted lines and the shoulder of the latch is brought against the pendulum the latch is swung on its pivot so as to cause the hook to embrace the pendulum. This movement is caused by the spring 22 whenever it is relieved from spring 15 by a passing train, the former spring being normally compressed by the latter and when relieved from said spring it lifts arm 19 and rocks shaft 18 thereby moving the arm 28 and plate 29. The plate, latch and pendulum are carried to the position of said plate and latch shown in full lines (see Fig. 3) by the retractile action of spring 15, the latch being swung on its pivot and opened to release the pendulum by the action of pin 35 upon the inclined projection 36, the pendulum being thereby relieved and allowed to swing and start the clock. A stop pin 37 is arranged to suitably bear against projections 38 on the latch to suitably limit its movement.

As shown in Fig. 3 the plate and latch are in position corresponding to the seizing of the pendulum and are represented in dotted lines the bars 39 of the pendulum being indicated in full lines. The plate and latch are represented at the right in full lines in the position they occupy to release the pendulum and start the clock.

The white part of the revolving disk is concealed behind the shield 5 when spring 8 is first put under tension and rod 10 is in the position shown in full lines in Fig. 1 immediately after the passage of a train, the clock being then put in motion by the starter as described. The clock thereupon moves the white portion of the disk into view and the time which has elapsed since the passage of a train can be estimated by the extent of said portion which has become exposed. For greater certainty figures are arranged in the exterior of the case and the line between the red and white serves as a pointer. Such a combination of colors and figures insures great clearness in the indications.

I am aware that a hook rigidly fixed to and carried by a pivoted lever has been arranged and connected by means of a rod and lever to a spring to be operated by a passing train with the intent to engage the hook with a pendulum and hold the same preparatory to releasing it to start a clock and such devices are not of my invention. My improvement is characterized by the turning of a pivoted hook about the pendulum rod by contact therewith. The hook being normally turned back on its pivot and open presents a much wider mouth to the pendulum than one fixed on the end of a rod or lever as heretofore. And further it is adapted to be swung laterally entirely out of the path of the pendulum instead of being obliged to outrun it in said path.

Having thus described my invention, what I claim is—

1. In a railway signal a clock movement having a pendulum in combination with a hook pivoted on a movable support to turn in a plane transverse to the plane of the pendulum and normally held open across said path and devices for moving the hook support and carrying the hook against the pendulum said hook being pivoted at one side of the path of the pendulum whereby it is turned on its pivot and closed about said pendulum by contact therewith, substantially as set forth.

2. In a railway signal a clock movement having a pendulum in combination with a movable pivoted hook adapted to embrace the pendulum when in motion, mechanism for moving the hook and a fixed stop situated in the path of the hook to turn it on its pivot to release the pendulum, substantially as set forth.

3. In a railway signal a movable device arranged in the path of a train and fixed on a flexible shaft, said shaft being mediately connected with the signal whereby the latter is protected against the effect of accidental transverse movement of the opposite end of said shaft caused by the passing train, substantially as set forth.

4. In a railway signal a clock movement, a movable device arranged in the path of a train and fixed on a flexible rocking shaft mediately connected with the clock spring to compress the same, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ANGUS C. GORDON.

Witnesses:
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