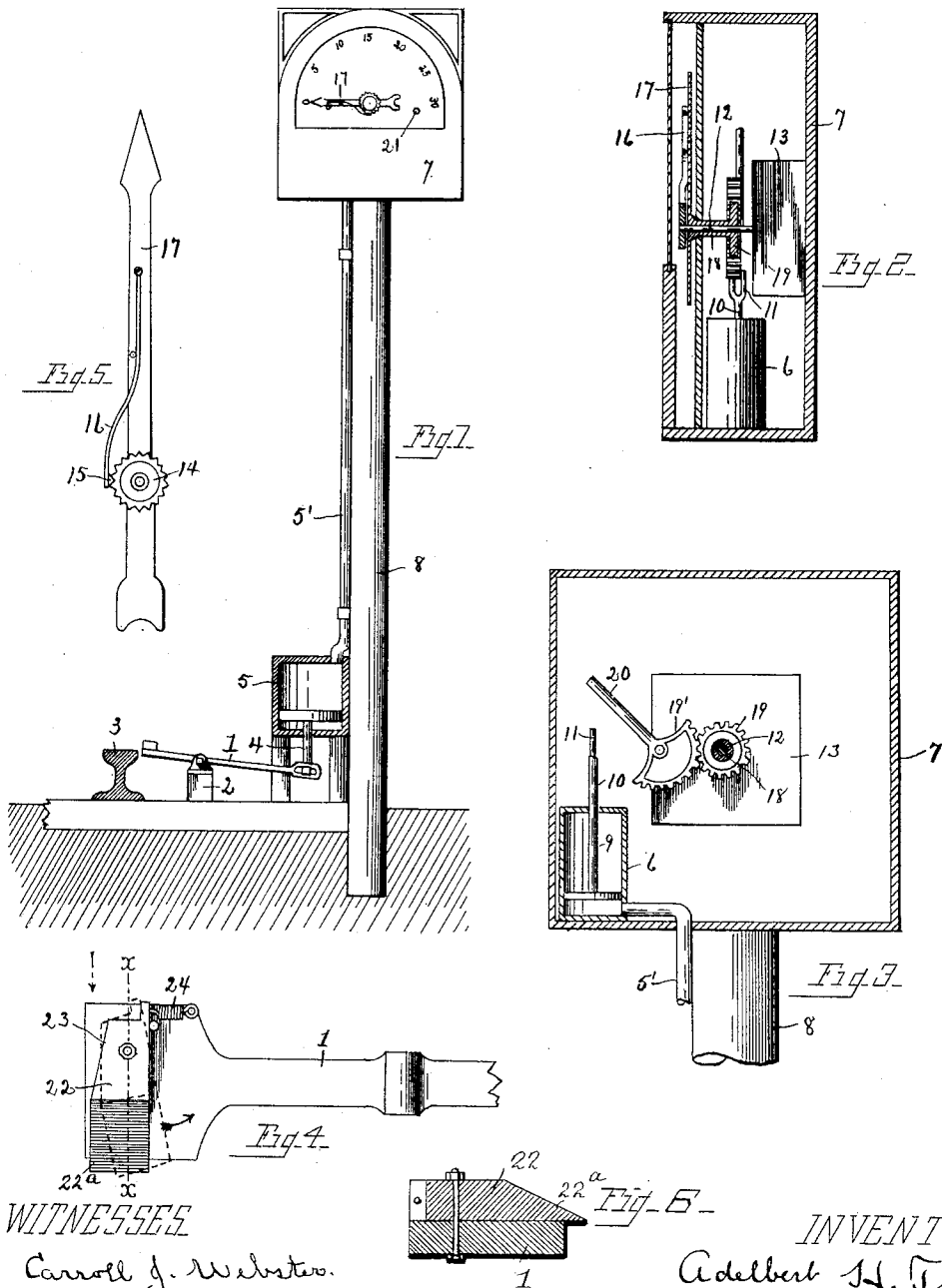


(No Model.)

A. H. THORP.
RAILWAY TIME SIGNAL.

No. 481,723.

Patented Aug. 30, 1892.



WITNESSES

Carroll J. Webster.
Grace C. Lhancy.

INVENTOR
Adelbert H. Thorp
By
William Webster
Atty.

UNITED STATES PATENT OFFICE.

ADELBERT H. THORP, OF TOLEDO, OHIO.

RAILWAY TIME-SIGNAL.

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To all whom it may concern:

Be it known that I, ADELBERT H. THORP, of Toledo, county of Lucas, and State of Ohio, have invented certain new and useful Improvements in a Railway Time-Signal for Indicating the Movement of Trains; and I do hereby declare that the following is a full, clear, and exact description of the invention, which 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 part of this specification.

My invention relates to a railway time-signal for indicating the movement of trains, and has for its object to provide a simple, correct, and automatically-operated indicator for indicating the interim elapsing between the passage of trains at the given point.

A further object is to provide a mechanism for this purpose that shall preclude the possibility of mistake by reason of carelessness and that shall be inexpensive of construction.

The invention, in a broad sense, comprehends a time-signal operated by a passing train which actuates an indicator registering a minimum period of time, which mechanically indicates the period of time that may elapse between the passage of the same and the arrival of a preceding train, with means for adapting the same for use upon a single track.

It is well known that a great majority of the accidents occur in the movement of trains by reason of the carelessness or incompetency of operators intrusted with the running of trains. It becomes necessary in view of this fact that there shall be mechanical means employed for this purpose that shall correctly indicate the distance or time existing between trains moving in the same direction. In order to accomplish this result, there must be a minimum period indicated by the first train and mechanism for indicating a maximum time between the first and succeeding train, which second train must change the indication heretofore existing and indicate a new and minimum period, this relation and operation to exist and succeed, respectively, at the passage of each train. It is also necessary that there should be a provision for allowing the passage of a train in an opposite direction

without affecting the indicator. I have accomplished these results by the mechanism hereinafter described.

In the drawings, Figure 1 is a front elevation of an indicator constructed in accordance with my invention, the air-compressor being shown in section to disclose the interior thereof. Fig. 2 is an edge or side view, in vertical section, of the indicating mechanism. Fig. 3 is a longitudinal vertical sectional view of the same with the front casing and dial removed to disclose the interior mechanism. Fig. 4 is a detail view of the actuating-lever, showing a pivoted spring-actuated bearing-plate for contacting with the wheel-tread in order to operate the indicator by the passage of a train in one direction and allow the lever to remain intact upon the passage of a train in a reverse direction. Fig. 5 is a top plan view of the pointer with the ratchet and spring-pawl attached. Fig. 6 is a sectional view of the actuating-lever and bearing-plate, taken on the line *xx* of Fig. 4.

1 designates a lever fulcrumed upon a pedestal 2, the outer end of the lever extending in close proximity to the rail 3, the opposite end being connected with a piston 4, fitting tightly within a cylinder 5, from which there extends a vertical pipe 5', which enters a cylinder 6, sustained in a casing 7, mounted upon a pole 8. Cylinder 6 has fitting tightly therein a piston 9, having a stem 10, forked at its upper end, as at 11, for a purpose hereinafter described.

12 designates a shaft actuated by a clock-gearing located within a casing 13, secured within casing 7. The clock mechanism being of the ordinary character, preferably requiring winding but once in eight days, need not be illustrated or described.

Upon the outer end of shaft 12 there is rigidly secured a ratchet-wheel 14, the teeth of which are of V shape in order to allow the correspondingly-shaped tooth 15 of a spring-pawl 16, secured upon a pointer 17, to ride over the ratchet-teeth when necessary. Pointer 17 is either formed integral with or rigidly secured upon a hollow shaft 18, journaled upon shaft 12 and having a pinion 19 either integral or fixedly secured thereon.

19' designates a segment of gear journaled in the casing 7 to intermesh with the pinion

19, the said gear being formed with an arm 20, which extends therefrom a sufficient distance to normally rest in the fork 11 of the piston-stem 10.

5 In operation, a train approaching the signal, as the first wheel contacts with the outer end of lever 1 and depresses the same the inner end is raised accordingly, thereby raising piston 4 and forcing air through pipe 5
10 into cylinder 6 and raises piston 9, thereby through the medium of arm 20 and segmental gear 19' revolving pinion 19 and pointer 17 until it reaches the numeral "1" or "0," the spring-pawl riding over the ratchet-wheel
15 during this operation. As soon as the train has passed lever 1 the pointer moves to indicate the proper time by reason of the clock mechanism with which it is connected, and if no train should pass within thirty minutes
20 the pointer moves to the numerals "30," when it contacts with a stud 21 and remains stationary, the clock, however, still being in operation, thereby causing the spring-pawl to ride over the ratchet-wheel 14. The engineer
25 of the next succeeding train upon approaching the signal observes the location of the pointer and discovers that a period of at least thirty minutes has elapsed since the passage of the last train, and in passing over lever 1
30 resets the pointer to "1" or "0," when the pointer commences to indicate the time, as has been described, and should the next succeeding train be but two, three, or less minutes behind the train last passed this information is at once conveyed to the engineer
35 by his observing the number of minutes indicated by the pointer upon the dial. It will be seen that the signal is absolutely correct and that each succeeding train is notified of the time that has elapsed since the passage
40 of the preceding train.

It will be evident that I may have a single lever, as described, when each train moves in the same direction, as in the case of a double-track railway; but where there is but a single track I have provided a pivoted bearing-plate 22, whereby when a train is moving in the direction of the portion 22* parallel with the track (see Fig. 4) it will depress the lever
50 1, while with a train approaching the opposite way the wheel will first contact with the inclined edge 23 of the plate and move the plate to one side in the direction of the arrow, thereby allowing the train to pass without
55 affecting the signal, the spring 24 causing the bearing-plate 22 to return to its normal position in the path of travel of a train moving in the opposite direction.

The clock mechanism may be wound every
60 eight days by an operative or connected to be run electrically.

It will be readily understood that by my invention I may locate the dial remote from the place where the lever is pivoted by simply extending the pipe therefrom, thereby enabling me to locate the lever at the station within sight of the official in charge and have the signal some distance therefrom, as around a curve or where the station is hidden from view.

What I claim is—

1. In a railway time-signal, two connected air-compressors, one of which has connection with the pivoted lever adapted to operate the same when actuated by a moving train, a clock mechanism, a shaft actuated thereby, having a ratchet-wheel, a pointer having a spring-pawl engaging with the ratchet-wheel, a pinion upon the pointer-shaft, and a gear operated by one compressor to revolve the shaft and return the pointer to its starting-point.

2. In a time-signal, a pointer for indicating time, and mechanism connected therewith and with a lever having one end contiguous to the railway-track, said lever having a spring-actuated bearing-plate adapted to contact with the wheels of a passing train when moving in one direction and yield to the pressure of the wheel when contacted with by a train passing in an opposite direction.

3. In a railway time-signal, an air-compressor, a pivoted lever, one end of which is contiguous to the railway-track, the opposite end engaging the piston of the air-compressor, a clock mechanism having a ratchet-wheel on the outer end of the clock-shaft, a pointer having a shaft journaled on the clock-shaft, a spring-pressed bearing on the pointer bearing on the ratchet-wheel, and a gear-wheel on the opposite end of the pointer-shaft meshing with a segmental gear operated by the piston of an air-compressor, said air-compressors being connected by an air-conduit, substantially as described.

4. In a railway time-signal, an air-compressor or actuated by a passing train, another air-compressor and an air-conduit between the two, said air-compressor having an upwardly-extending bifurcated piston-rod, a clock mechanism, a pointer moved thereby, having on its shaft a segmental gear, and a gear-wheel meshing therewith, having an integral arm adapted to rest in the bifurcated portion of the piston-rod and be actuated thereby.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

ADELBERT H. THORP.

Witnesses:

WILLIAM WEBSTER,
CARROLL J. WEBSTER.