

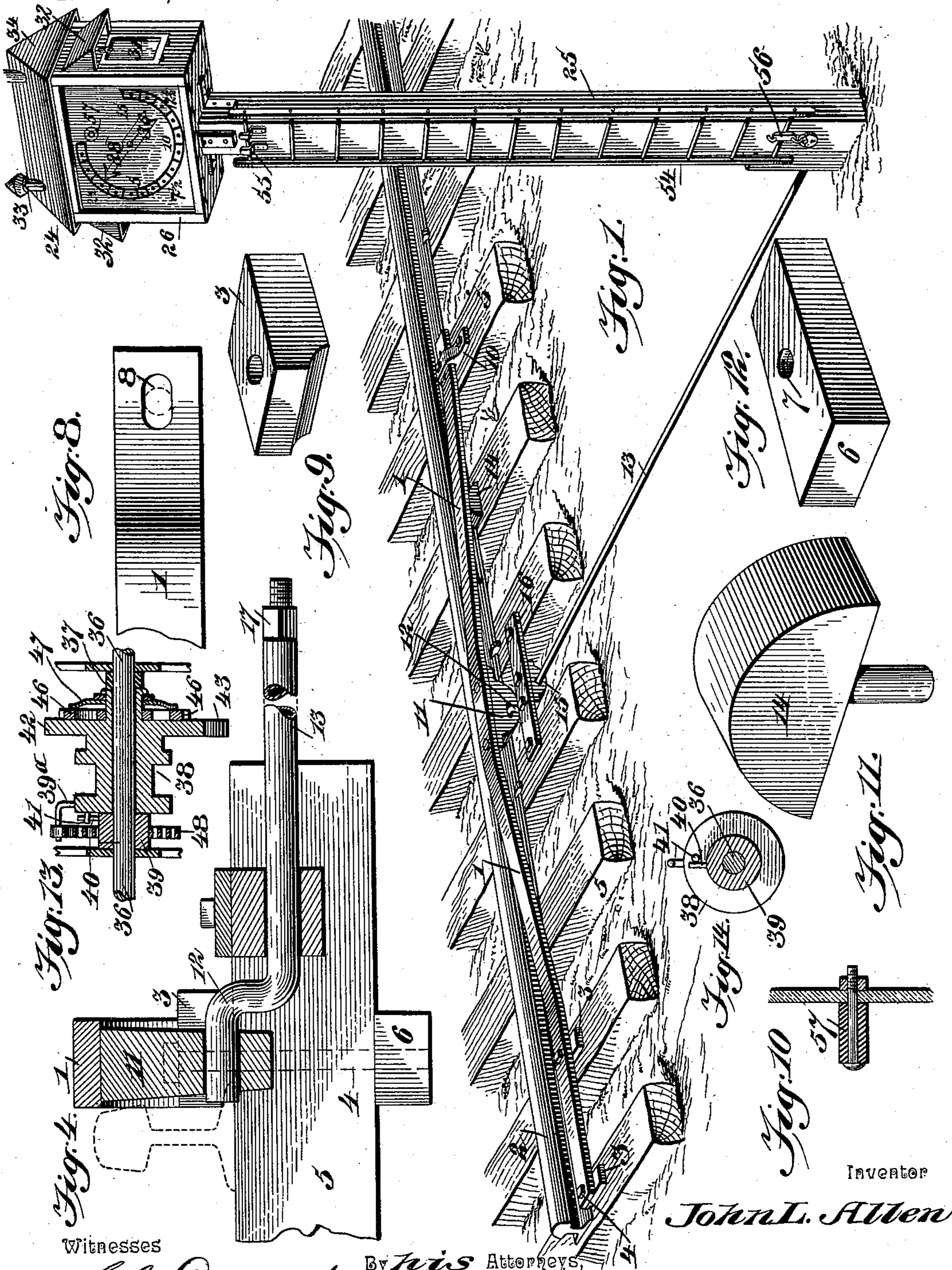
(No Model.)

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J. L. ALLEN.
RAILWAY TIME SIGNAL.

No. 592,072.

Patented Oct. 19, 1897.



Witnesses

H. G. Dieterich
V. B. Hillyard.

By *his* Attorneys,

CA Snow & Co.

Inventor

John L. Allen

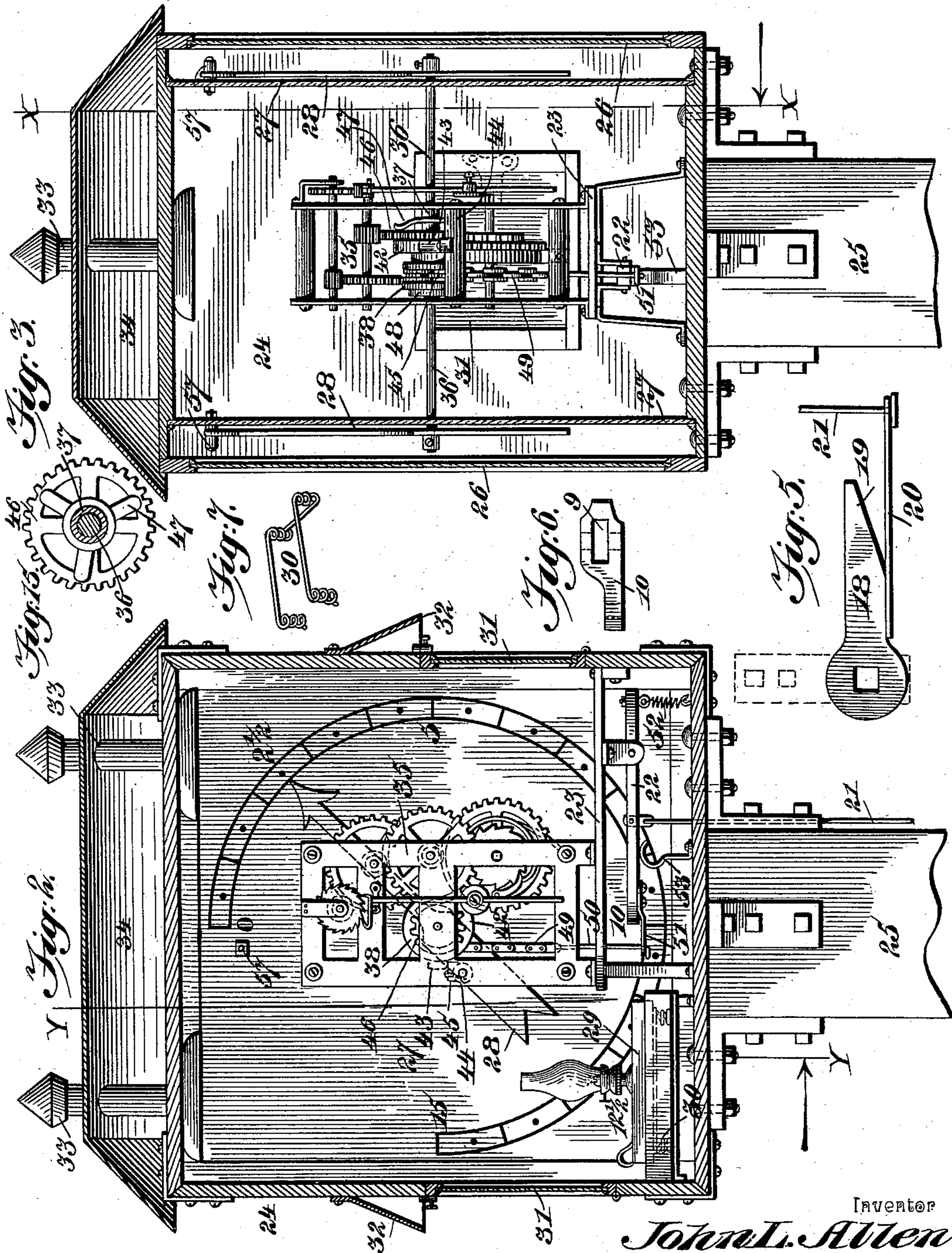
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UNITED STATES PATENT OFFICE.

JOHN LEONARD ALLEN, OF LORETTO, KENTUCKY.

RAILWAY TIME-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 592,072, dated October 19, 1897.

Application filed October 14, 1896. Serial No. 608,868. (No model.)

To all whom it may concern:

Be it known that I, JOHN LEONARD ALLEN, a citizen of the United States, residing at Loretto, in the county of Marion and State of Kentucky, have invented a new and useful Railroad-Signal, of which the following is a specification.

This invention relates to railroad-signals which are operated automatically by a passing train, so as to indicate to a following train the time elapsing between the passage of the preceding train and that following, provided the interval of time does not exceed that for which the mechanism is set, thereby apprising the engineers of trains running at short intervals apart of the time elapsing between the approach of a train and the passage of a train by a given station or point.

For a full understanding of the merits and advantages of the invention reference is to be had to the accompanying drawings and the following description.

The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and to a full disclosure of the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is a detail perspective view showing the invention in operative relation. Fig. 2 is a section on the line X X of Fig. 3, looking in the direction of the arrow. Fig. 3 is a section on the line Y Y of Fig. 2, looking to the right as designated by the arrow. Fig. 4 is a detail section of the track-bar, showing the shaft for transmitting motion from the track-bar to the indicating mechanism and the mountings for the said shaft. Fig. 5 is a detail view of the arm which is fitted to the end of the shaft remote from the track. Figs. 6 to 15, inclusive, are detail views of parts which will be described more fully herein-after.

Corresponding and like parts are referred to in the following description and indicated in the several views of the accompanying drawings by the same reference-characters.

The signal is located adjacent to the track at a desired point and is operated automatically by means of a passing train, so as to

set the registering mechanism at the starting-point, whereby a following train may be informed as to the time elapsing between its approach and the passage of a train by the station or place where the signal is located. For convenience and to insure a positive operation of the signal a track-bar 1 is placed alongside a rail 2 of the track and is sprung upward midway of its ends, so as to be depressed by the tread-surface of the wheels of a passing train. This track-bar is elastic and yields vertically when subjected to pressure from above, and when said pressure is removed the track-bar automatically returns to a normal position to again be operated by the next train. This track-bar is securely fastened at one end, and blocks 3 are interposed between it and the ties, bolts 4 passing through the track-bar, blocks 3, ties 5, and entering a block 6, buried in the road-bed beneath the ties and having a threaded opening 7 to receive the threaded end of a bolt 4.

The opposite end of the track-bar 1 has a longitudinal slot 8 and operates in an opening 9 of a bearing-block 10, secured to a tie 5, a bolt or fastening passing through the bearing-block 10 and slot 8 serving to retain the parts in proper relation. The slot 8 admits of the track-bar moving longitudinally when depressed and again returning to a normal position. A block 11 is secured to the under side of the track-bar at a middle point and has a slot to receive a crank 12, formed on one end of the shaft 13, which is employed for transmitting motion from the track-bar to the registering or indicating mechanism. A buffer 14 is applied to a tie 5 and comes beneath the track-bar 1 and is intended to stiffen the latter and cause it to return more quickly to a normal position when relieved of the weight of the train-wheel pressing thereon. The shaft 13 is tubular and is journaled in a bearing 15, secured to a plate 16, spiked or otherwise fastened to adjacent ties. The crank 12 is formed at the inner end of the shaft, and the latter has an angular portion 17 at its outer end, to which is fitted an arm 18, having a beveled end 19, to afford clearance to a spring 20, which is secured at one end to the arm 18, and has its outer end apertured for the passage therethrough of a rod 21, having a cross-head at its lower end,

and which rod is suitably connected with a lever 22, fulcrumed between its ends to a bracket pendent from a plate 23, located within a casing 24, inclosing the registering or indicating mechanism. The purpose of the spring 20 is to relieve the rod 21 of the sudden jar incident to the quick movement of the track-bar when the latter is rapidly depressed by the passing of a train-wheel thereover.

A post, tower, or other suitable support 25 is located close to the track and supports the casing 24, in which is housed the operating mechanism. The sides of the casing facing in the direction of the length of the track are closed by glass panels 26, and a short distance from these panels are located transparent dials 27, which in conjunction with hands 28 indicate to a following train the time elapsing since the passage of the train ahead by the station or place where the signal is located.

Experience has shown that ten minutes between trains is ample to avoid rear-end collisions under ordinary conditions, and fifteen minutes is amply sufficient for all purposes. Hence the dials are provided with characters corresponding to an interval of fifteen minutes, the characters being arranged in three-fourths of a circle, so as to obviate confusion in locating the hands. The characters are imprinted upon the dials in such a manner as to obstruct the passage of light, thereby enabling them to be readily read from an approaching train, it being understood that the dials, characters, and hands will be of sufficient size to enable them to be readily seen at a safe distance from the signal. The glass dials and panels enable the light coming from any direction to illuminate the signal, so that the position of the hands can be easily read no matter at what angle the rays of light may strike the dials or signal. Moreover, the signal can be lighted at night by means of a lamp 29, which is located within the housing and at a point intermediate of the dials, thereby illuminating each of the dials, so that the signal may be read from a train approaching the station from either direction. This lamp 29 is supported upon springs 30, by means of which vibration due to the passage of a train is taken up and the jar prevented from being transmitted to the lamp. These springs 30 may be of any suitable formation, and as shown in Fig. 7 are constructed of a length of spring-wire bent into substantially a rectangular form and having spring-coils at the angles of four corners. The interior of the casing is accessible by means of doors 31 at the sides disposed at right angles to the length of the track, and hoods 32 are located above the doors, so as to shed water and prevent the entrance of the same into the casing. Ventilators 33 of ordinary construction are located at the top of the casing for the escape of the heated air occasioned by the burning of the lamp. The

casing is surmounted by a peaked cap 34 of sheet metal and which serves to shed rain, snow, and sleet.

The movement 35, located within the housing or casing, may be of any reliable manufacture and is of ordinary construction, with the exception of the parts mounted upon the arbor 36, carrying the hands 28. The arbor 36 extends beyond the plates or frame of the time-movement and passes through the dials 27 and has the hands 28 applied to the extremities thereof, and upon this shaft between the side plates of the frame are mounted a sleeve 37, a drum 38, and a collar 39, the latter having a stop 40 extending across the path of and engaging with a corresponding stop 41, provided on the adjacent end of the drum 38. The drum 38 is loosely mounted upon the arbor 36 and has an extension bearing a disk 42, formed with an extension 43, which serves to limit the movement of the drum in each direction, said extension engaging with a cross-bar 44 of the frame. A buffer 45 is secured to the upper side of the cross-bar 44 for the extension 43 to engage with when the drum is suddenly operated by a passing train to cause the hands to return to a starting position, and this buffer diminishes the force of the blow incident to the impact of the extension 43 with the cross-bar 44. A gear-wheel 46 is mounted upon a tubular extension of the drum 38 and forms a part of the train of gearing constituting the time-movement, and this gear-wheel is held in frictional engagement with the drum by the ordinary spring-plate 47 commonly employed in the construction of timepieces. A spring 48 is mounted upon the collar 39 and has one end secured thereto, and its opposite end has connection with the drum 38 by means of a wire 39^a, and the purpose of this spring is to return the hands to a starting position and cause them to follow the drum without being injured in any manner, as would be the case if they were rigidly attached to the drum and moved suddenly therewith. A chain or flexible connection 49 has connection with the drum 38 and is wound thereon, and its lower end is supplied with a wire 50, which passes loosely through a plate 51, secured to the inner end of the lever 22, and the lower end of this wire 50 is bent so as to be engaged by the plate 51 when the lever 22 is actuated by means of a train passing over the track-bar. The upper end portion of the flexible connection 49 is normally wound upon the drum 38, and when the inner end of the lever 22 is depressed the flexible connection is unwound from the drum and the latter turned until its stop or extension 43 engages with the buffer 45. This action winds the spring 48 and subjects it to tension, and the spring regaining itself turns the arbor and moves the hands to a starting-point upon the dial. The lever 22 is counterbalanced by means of a spring 52, the latter sustaining the weight of the connections between the lever 22 and the arm 18,

thereby relieving the movement of the weight of these parts. A spring-standard 53 is secured to the bottom of the casing and limits the downward movement of the inner end of the lever 22.

The time-movement is wound by hand in the ordinary way well understood in winding timepieces, and must be wound as often as necessary in order to insure a proper and accurate working of the signal. The hands normally stand at the end of the indicating-characters upon the dial, this position being determined by the engagement of the extension 43 with the under side of the cross-bar 44.

On a train approaching the station the wheels will pass over the track-bar and depress the latter and rock the shaft 13, and by means of the arm 18 and intermediate connections will turn the drum 38 and through the spring 48 move the hands to a starting-point on the dials. The movement will now be in condition to operate and the hands will be gradually advanced over the dial, consuming a predetermined interval of time in traveling from the starting-point to the end of the indicating-characters, which in the present instance is fifteen minutes, and when the hands reach the end of the three-quarter circle they will be brought to a standstill by reason of the stop 40 engaging with the stop 41, the drum being limited by engagement of the extension 43 with the lower side of the cross-bar 44. When the drum 38 is suddenly turned by means of the passing train in the manner set forth, it will subject the spring 48 to tension and the latter regaining itself will more gradually move the hands to a starting-point no matter what position the said hands may occupy with respect to the dial. When the drum is released, it is returned to a normal position by the clock-movement, and when the stop 43 engages with the under side of the bar 44 the movement will come to a stop and the hands will stand at fifteen minutes or the limit of their travel. The arbor and hands are moved forward by means of the stops 40 and 41, which are always in engagement except during the small interval of time intervening between the movement of the drum and the following of the arbor and hands. The frictional engagement between the gear-wheel 46 and the drum is sufficient to move the latter when the lever 22 is released. The sole purpose of the signal is to indicate the time between trains passing in the same direction over the same track provided the interval of time is not greater than fifteen minutes or the time for which the registering mechanism is adjusted.

The casing is accessible by means of a light ladder 54, and when the latter is not in use it is suspended alongside the post 25 from keepers 55 and is secured at its lower end by a hasp-lock 56, the key of which is in the keeping of the station-master or person authorized to take charge of the signal.

In order to prevent the hands from passing

by the starting-point when the registering mechanism is set, a stop 57 is secured to each dial, and consists of a pin having mounted thereon a rubber sleeve, against which the ends of the hands strike when returning to an initial position when a train is passing the station.

Having thus described the invention, what is claimed as new is—

1. In a time-registering mechanism for railroad-trains, the combination of a dial, a time-movement bearing a hand to coöperate with the dial, a counterbalanced lever, actuating mechanism for operating the counterbalanced lever by means of a passing train, and a connection having an end portion wound upon a drum of the time-movement and having its opposite end portion passing loosely through an opening in a part of the counterbalanced lever and having a lateral extension, whereby a downward movement of the counterbalanced lever will unwind the connection from the time-movement and reset the hand and the said lever is adapted to return to a normal position without affecting the said connection, substantially as set forth.

2. In a time-indicating mechanism for railroad-trains, the combination of a dial, a time-movement provided with a hand to coöperate with the dial, a counterbalanced lever, a connection having an end portion wound upon a drum of the time-movement and having its opposite end portion loosely connected with the counterbalanced lever, a shaft mounted so as to be rocked in its bearings by a passing train, a spring projecting laterally from and having connection with the said shaft, and a connection between the said spring and the counterbalanced lever, substantially as shown for the purpose specified.

3. In a registering mechanism for railroad-trains, the combination of a track-bar, a shaft having a crank at its inner end actuated by means of the track-bar, an arm secured to the outer end of the shaft and having its outer end beveled, a spring secured to the lower side of the arm, and a connection for transmitting movement from the free end of the said spring to the indicating mechanism, substantially as set forth.

4. In a time-indicating mechanism for railroad-trains, the combination of an arbor forming a part of the time-movement, a drum loosely mounted upon the arbor and having an extension bearing a disk formed with a stop, a collar secured to the said arbor, co-operating stops between the drum and collar, a spring mounted upon the said collar and having connection at one end therewith, and having its opposite end in connection with a part applied to the drum, a gear-wheel in mesh with the train of gearing of the movement and loosely mounted upon an extension of the drum and engaging frictionally with the disk thereof, a spring-plate supported by a portion of the drum and exerting a pressure against the said gear-wheel to hold it in fric-

tional engagement with the disk, and actuating mechanism operated by means of a passing train for turning the drum upon the arbor and increasing the tension of the spring
5 interposed between the aforesaid collar and drum, substantially in the manner set forth for the purpose described.

5. In a registering mechanism for railroad-trains, the combination of an arbor bearing
10 a hand to cooperate with a dial and forming part of a time-movement, a drum loosely mounted upon the arbor, a spring connecting the drum with the said arbor for causing the arbor to follow the drum after the latter has
15 been actuated, cooperating stops between the arbor and drum, a disk forming a part of the

drum and having an extension to engage with a portion of the frame and limit the movement of the drum in each direction, a gear-wheel in mesh with the train of gearing and
20 concentrically mounted with respect to the arbor and in frictional engagement with the drum, and a flexible connection having connection with the drum and wound thereon, substantially as and for the purpose set forth. 25

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN LEONARD ALLEN.

Witnesses:

W. H. LYON,

O. T. MATTINGLY.