(No Model.)

W. A. TURNER.

STREET OR STATION INDICATOR.

No. 486,514. Patented Nov. 22, 1892.

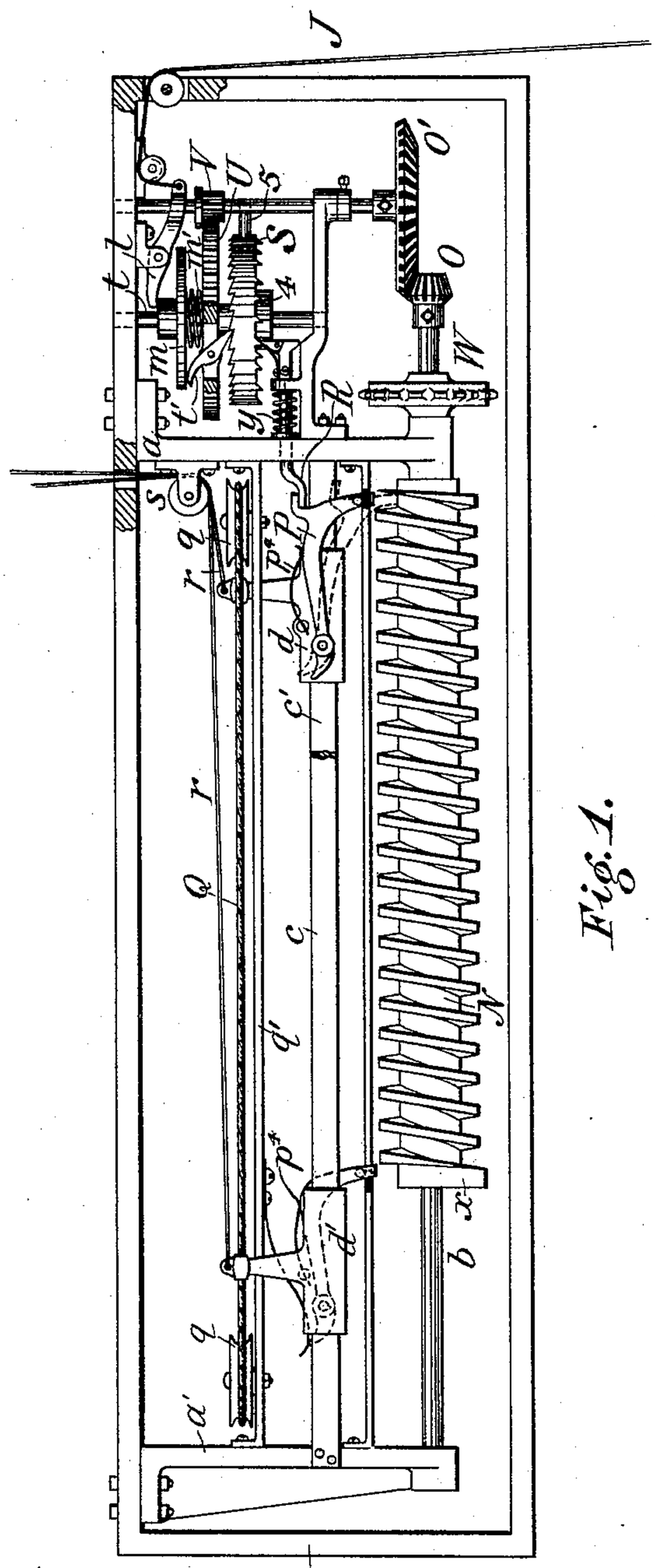

Fig. 1.

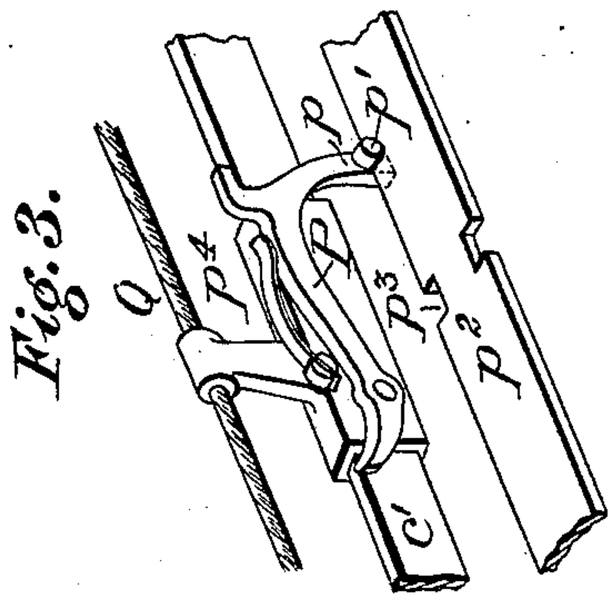

Fig. 3.

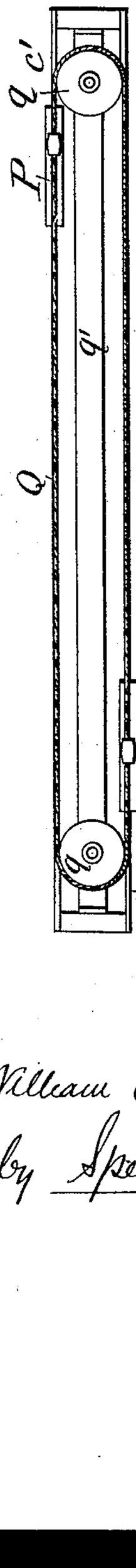

Fig. 2.

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UNITED STATES PATENT OFFICE.

WILLIAM A. TURNER, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO THE AMERICAN INDICATOR COMPANY, OF SAME PLACE.

STREET OR STATION INDICATOR.

SPECIFICATION forming part of Letters Patent No. 486,514, dated November 22, 1892.

Application filed December 16, 1889. Renewed April 25, 1892. Serial No. 430,463. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. TURNER, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Street or Station Indicators; and I do hereby declare that the following is a full, clear, and exact description of the said invention.

This invention relates to street or station indicators and the mechanism for operating them. It, however, refers more particularly to that class known as "continuously-operating indicators," in which the indicating mechanism is set in motion at the beginning of a trip and is thereafter continuously operated from the car-axle through mechanism intermediate between said axle and the indicator itself.

In an application for Letters Patent, filed by me May 16, 1889, under the Serial No. 311,087, I described a method of operating continuous indicators and showed several forms of apparatus for carrying out that method. I also set forth certain disadvantages in continuous indicators as before used, which rendered them inaccurate, and described means for correcting and obviating them.

The present application relates to one of the forms of apparatus described in the application referred to.

The object of the present invention is to make an indicator which will be correct upon the average run of a car, sometimes gaining and sometimes losing, but without any disadvantageous results, and to provide means for returning the operating mechanism to its original position at the end of a trip.

As the present invention relates only to the mechanism intermediate between the car-wheels and the indicator for operating the latter, I have shown in the accompanying drawings only so much of a car and only such connections from the operating mechanism as are necessary to give a clear idea of the operation of the entire device.

In the drawings, Figure 1 represents a front elevation of the lower part of a car below the platform and floor and of the entire mechanism for operating the indicator. Fig. 2 is a plan view of the pulleys and cord and of the slides connected to the indicator. Fig. 3 is a perspective view of one of such slides and its guides and of the latch pivoted to said slide.

A represents a framework forming part of or depending from the floor or bottom of the car in advance of one of the axles.

a a' are hawsers bolted to the frame and having at their lower ends bearings for the transverse shaft *b*. Upon this shaft is secured the worm or screw N, which rotates, together with the shaft, by means of mechanism to be hereinafter described. Above this worm and secured to the hawsers *a a'* are two guides *c c'* for the slides *d d'*, Figs. 2 and 3, to travel upon in opposite directions, such slides being connected together by a cord Q, which passes over two pulleys *q q*, journaled upon a ledge *q'* above the guides *c c'*. Both guides are connected to the indicator by cords *r r*, which pass over pulleys *s* on the frame and extend up through the floor of the car. Motion is thus communicated to the indicator by the passage of the slides along the guideways, and the movement of the slides is caused by the screw N. To each of said slides is pivoted a latch P P', each of which has a downwardly-projecting end *p* and a roller or other stop *p'*. This stop bears upon a strip p^2, which extends between and is secured to the hangers *a a'*. Slots p^3 in this strip near each end permit the stop to pass through and the end *p* of the latch to engage with the screw, as shown in dotted lines in Fig. 1. When in engagement, the rotation of the screw will cause the latch P and slide *d*, for example, to traverse the guide and to operate the indicator. At the same time the latch *d'* and its slide, out of engagement with the screw, but connected with the other slide by the cord Q, will be traveling in the opposite direction. The screw is provided at one end with a cam *x* for throwing the latch up through the slot and out of engagement with the screw. Springs p^4 tend, however, to throw the latch down and insure its engagement with the screw when the slots p^3 permit such engagement. It will be understood from the fore-

going description that the latches P P′ engage alternately with the screw and traverse its length once for each indication. In Fig. 1, for instance, the latch P, as dotted in, is in engagement with the screw and ready to start. When it has completed its course and has been lifted out of engagement by the cam, it will have exchanged places with the latch P′, which will in turn have engaged with the screw, and by traversing the latter will return the latch P to its original position in readiness for a new indication.

I shall now describe the mechanism by which the latch P is caused to engage intermittently with the screw, as well as the means for operating said screw and for returning the parts to their proper position at the end of a trip. It should be stated in advance, however, that the device is arranged to indicate approximately at the middle of a block, and hence a slight gain or loss caused by retarding of the wheels, slipping on the track, &c., is a matter of no consequence. The shaft *b* and its screw receive continuous motion from the car-axle by means of a sprocket-wheel W and its chain. This movement of the shaft is communicated to the intermediate mechanism by means of miter-gears O O′ and spur-gears U V. The gear-wheel U is mounted upon a vertical shaft *t*, which carries a loose ratchet-wheel T, the latter being locked to the shaft by a double-ended pawl *t′*, which is pivoted in the wheel U and engages with teeth upon the upper edge of wheel T. The lower edge of wheel T is also provided with teeth S. These teeth are arranged at unequal distances apart, according to the distances between the approximate points at which the indications are to take place. These teeth operate to release the latch P and permit it to come into engagement with the screw through a sliding retaining-bolt R, Fig. 1, which works through the hanger *a* and is provided with a cross-head, which is struck successively by the teeth S, causing the bolt to slide against the pressure of its spring *y*. The end of this retaining-bolt opposite its cross-head engages with a projection on the latch P, and thus prevents the latch from engaging with the screw until the bolt is withdrawn. An indication is thus made and at the proper interval whenever the bolt R is withdrawn. At the end of a trip it is necessary to return the wheel T to its initial point in order to start the indications anew. This is accomplished by a spiral spring 4, one end of which is connected to the shaft *t* and the other to wheel T. By the ordinary movement of the wheel T this spring is gradually wound up, but is prevented from acting by the pawl *t′*. At the end of the trip an obstruction in the roadway causes a pull to be given a cord J. This cord is connected by a pivoted lever *l*, one end of which bears upon a disk *m*, which is free to slide upon the shaft *t* and is separated from the gear-wheel U by a pressure-spring *m′*. When the cord is pulled, the disk is forced down upon the free end of the pawl *t′*, casing said pawl to release the wheel T, which is immediately thrown backward by the spring 4 until a stop 5 on the wheel strikes and arrests it at the proper point. The obstruction passed, the pressure-spring *m′* throws up the disk and permits the pawl to drop into engagement with the ratchet again.

The operation of the entire device will perhaps have been sufficiently understood from the foregoing description. To summarize it briefly, however, it will be seen that the rotation of the screw and shaft, gearing, vertical counter-shaft, and toothed wheel is continuous while the car is in motion. The teeth on the wheel are intermittently spaced according to the lengths of blocks on the line, so that indications will be made approximately in the middle of each block. This gives a margin for loss or gain on the trip far more than practical use can ever require. At each indicating-point one of the latches is permitted to engage with the screw and to travel its length and be returned while the indication is completed and while the next tooth in the wheel is being moved to the proper point for engagement with the latch-retaining bolt. At the end of the trip, no matter what the loss or gain may have been, the toothed wheel is automatically returned to position for commencing the new series of indications.

I do not in this application attempt to show any particular form of indicator or any particular kind of obstruction for resetting the toothed wheel. The present apparatus is applicable to many devices for those purposes, among them those described in my application, Serial No. 311,087, previously alluded to.

Having fully described my invention, I claim—

1. A continuously-operated street or station indicator comprising an indicating device, mechanism driven continuously by the motion of the car-axle for operating the same, a series of teeth included in said mechanism for causing said indicating device to operate at predetermined points throughout a trip, and means, substantially as described, for automatically returning said series of teeth to their original position at the end of each trip, substantially as and for the purposes set forth.

2. A continuously-operated street or station indicator comprising an indicating device, mechanism driven continuously by the motion of the car-axle for operating the same, a series of teeth spaced to cause said indicating device to operate at predetermined points throughout a trip, and a spring for returning said series of teeth to their original position at the end of a trip, substantially as set forth.

3. A continuously-operated street or station indicator comprising an indicating device, mechanism driven continuously by the

motion of the car-axle for operating the same, a wheel having a series of teeth spaced to cause said indicating device to operate at predetermined points throughout a trip, a spring connected to said wheel and tending to reverse its movement, a ratchet and pawl for operating said wheel against the pressure of the spring, and a lever for disengaging said pawl and permitting said spring to return the wheel to its original position, substantially as set forth.

In testimony whereof I have hereunto affixed my signature in presence of two witnesses.

WILLIAM A. TURNER.

Witnesses:
S. W. SEELY,
GEO. T. KNOX.