(No Model.) 2 Sheets—Sheet 1.

W. J. SMITH.

STATION INDICATOR.

No. 420,974. Patented Feb. 11, 1890.

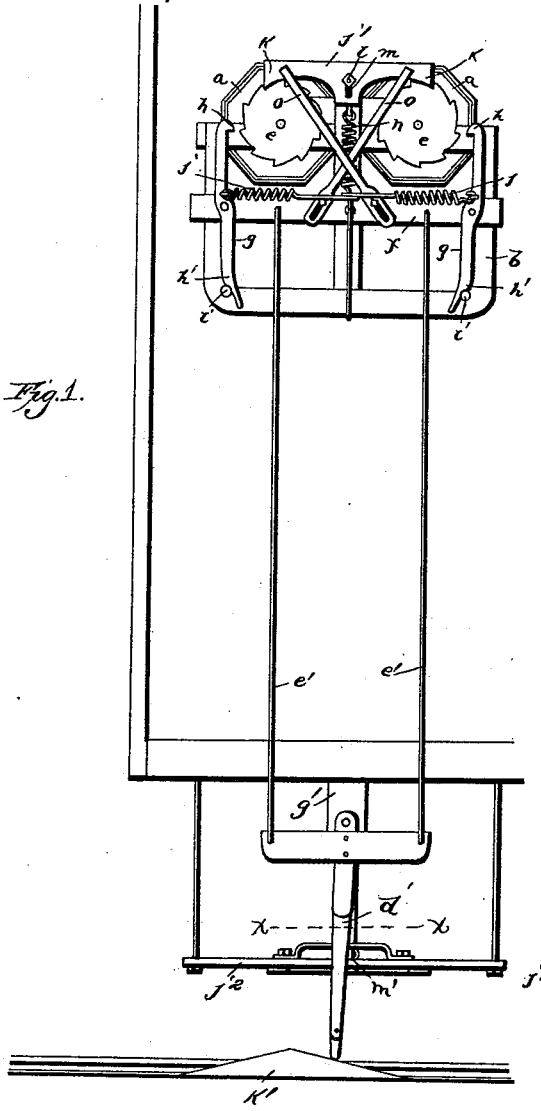


Fig. 1.

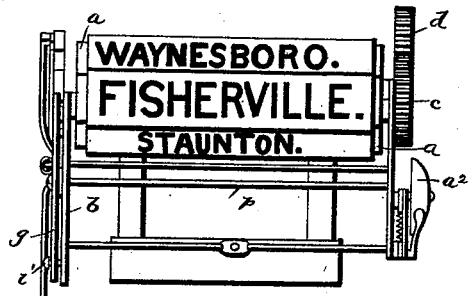


Fig. 2.

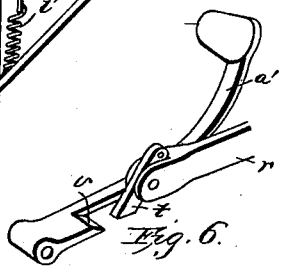


Fig. 6.

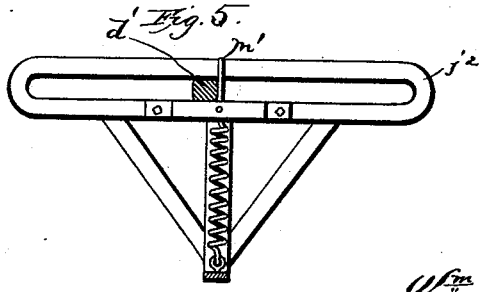


Fig. 5.

Witnesses:
John Enders Jr.
H. E. Peck.

Inventor
Wm. J. Smith
Per O. E. Duff
Attorney.

N. PETERS. Photo-Lithographer. Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

W. J. SMITH.

STATION INDICATOR.

No. 420,974. Patented Feb. 11, 1890.

Fig. 3.

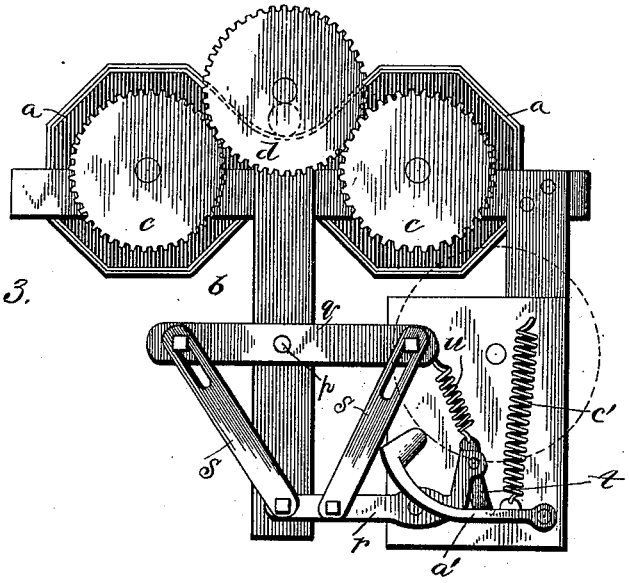
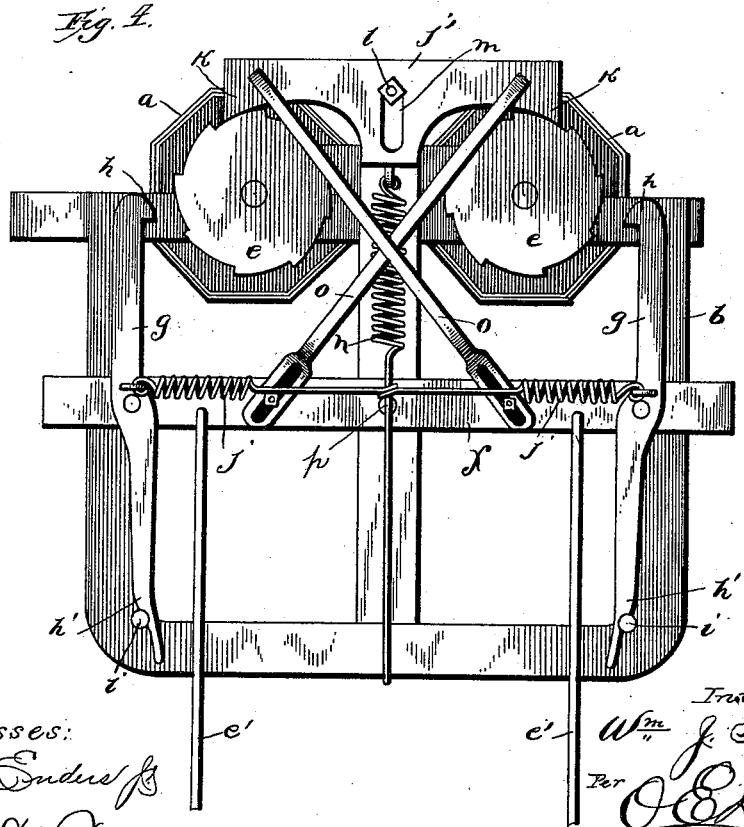


Fig. 4.



Witnesses:
John Enders Jr.
H. E. Peck.

Inventor.
Wm. J. Smith
Per O. E. Duffy
Attorney.

N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM JAMES SMITH, OF CHARLOTTESVILLE, VIRGINIA, ASSIGNOR TO WILLIAM H. WADDELL, OF LEXINGTON, VIRGINIA.

STATION-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 420,974, dated February 11, 1890.

Application filed May 1, 1889. Serial No. 309,190. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM JAMES SMITH, of Charlottesville, in the county of Albemarle and State of Virginia, have invented certain new and useful Improvements in Station-Indicators; 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 letters of reference marked thereon, which form a part of this specification.

My invention relates to an improvement in station-indicators, and more particularly to an improvement upon the construction shown in the patent granted November 13, 1883, No. 288,518, to William H. Waddell.

The objects of the invention are to provide an improved station-indicator, sure and reliable in action, adapted to be conspicuously placed in a car and automatically operated to display the name of each station before it is reached; to provide a simple, cheap, and durable means for operating the device; also, to provide an improved means for simultaneously sounding an alarm as the name of a station is changed, and also to provide an improved lock to prevent accidental turning or excess of rotation of the rollers carrying the fabric upon which the names of the stations are inscribed. These objects are accomplished by my invention; and it consists in certain novel features of construction and combinations of parts more fully described hereinafter, and particularly pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is an end elevation with the casing removed, showing the trip extending through and below the bottom of the car to engage an incline on the track. Fig. 2 is a front elevation of the device with the outer casing removed. Fig. 3 is an enlarged end elevation, casing being removed. Fig. 4 is a similar view of the opposite end of the device, the pawls and arm or plate carrying the same being shown in their normal positions. Fig. 5 is a cross-section, looking down, taken in plane of *x x*, Fig. 1. Fig. 6 is a detail perspective view of the bell-clapper and the releasing-pawl of the same.

In the drawings, the reference-letter *a* indicates a pair of parallel horizontal rollers of any suitable shape, preferably, although not not necessarily, octagonal in cross-section. At their ends these rollers are journaled in the frame *b* of the device, and a length of cloth or other suitable material is secured to the rollers at its opposite ends and wound upon the same, so that when the rollers are rotated in one direction the cloth will unwind from one roller and wind on the other, and vice versa, and upon this cloth the names of the stations on the route are inscribed in consecutive order. At one end of the frame each roller is provided with a gear-wheel *c*, each meshing with an idler *d*, so that the two rollers will rotate together and in the same direction. At their opposite ends the rollers are provided with ratchet-wheels *e e*, rigidly secured thereto, and preferably having their teeth inclined in opposite direction and upwardly at their outer edges, as shown. A horizontal bar or plate *f* is pivoted at or near its center to the frame beneath said ratchet-wheels to swing in a vertical plane. The opposite free ends of this pivoted bar are provided with upright pawls *g g*, pivoted within their length thereto to swing in a vertical plane, their upper ends extending upwardly and each provided with a tooth or finger *h* to engage the teeth of their respective ratchet-wheels *e*. The lower ends of the pawls extend down and are curved or cam-shaped on their outer edges, as shown at *h' h'*, which edges bear against stops or pins *i i*, carried by the frame, and the pawls are held yieldingly bearing against said stops and their upper ends to the limit of their movement toward the ratchet-wheels by one or more springs *j*, secured to said pawls above the pivoted points thereof. Thus it will be seen that when one end of the bar carrying the pawls is drawn down the pawl at that end is drawn down and thrown from engagement with its ratchet-wheel by its stop *i* and curved edge, while the pawl at the opposite end of the bar is carried up and its upper end drawn in by the spring, (this being al-

lowed by the shape of the edge of the pawl bearing against its stop *i*,) so that when the bar is again restored to its normal horizontal position this pawl thus thrown up will engage its ratchet-wheel and rotate the same one or more notches, as the case may be.

The rotation of the rollers is prevented, except when operated by the pivoted bar and pawls carried by the same, by means of an escapement or lock, consisting in the present instance of a vertically-rocking plate or block *j'*, located above, extending between, and normally bearing upon the upper edges of the ratchet-wheels, and provided with downwardly-extending teeth or projections *k* at its ends to engage the teeth of the ratchet-wheels and prevent rotation of the same when in the position shown in Fig. 4, these teeth or projections being located such a distance apart that when in their normal position they can engage a tooth on each wheel. This lock is secured to the frame by a bolt or pin *l* extending through a vertical slot *m* in the lock, thus allowing the lock to be rocked or moved vertically from either end as a center, and it is yieldingly held in engagement with the ratchet-wheels by a coiled spring *n*, secured to frame and lock. This lock is automatically operated to allow rotation of the rollers by means of a pair of links *o o*, each loosely pivoted to the lock on opposite sides of its center and extending diagonally to an opposite end of the pivoted bar carrying the ratchet-wheel-operating pawls, to which bar they are secured by means of pins extending through longitudinal slots in the ends of the links. It will thus be seen that when one end of the pawl-carrying bar is raised the link connecting that end and the opposite end of the lock is forced upwardly, thereby lifting that end of the lock from the teeth upon the opposite end as a fulcrum, and as the ratchet-wheels rotate the lower end of the lock will slide over the teeth of the wheel in which it rests, and when the pawl-carrying bar is returned to its normal position the lock is restored to its normal position by its spring. The slots in the ends of the links prevent the lock being held drawn down on the wheel when one end of said bar is down, the pin merely passing to the opposite end of the slot in that link.

The pawl carrying and operating bar is mounted at its center on one end of a shaft *p*, Fig. 2, extending the length of the frame beneath the rollers, and at its opposite end provided with a cross-bar *q*. A lever *r* is pivoted within its length to the frame, parallel with the cross-bar *q*, and one free end of this lever is connected with opposite ends of the cross-piece by links *s s*, which are secured to the cross-bar by pins extending through slots in the ends of the links, so that whichever way the cross-bar is rocked the free end of the lever is forced down, and this end of the lever is provided with a pivoted pawl *t*, to the upper end of which a spring *u* is secured to yieldingly hold the pawl rigid and return the lever to its normal position. The lower end of the pawl is beveled to engage a beveled shoulder *v* on the clapper *a'*, which is pivoted at one end and provided with a knob at its end to engage and sound a gong a^2. This free end is adapted to be forced down by the pawl *t*, and when forced down a certain distance the beveled end of the pawl will slip off of the beveled shoulder *v*, and spring *c'*, secured to the same, will cause the clapper to fly up and sound the gong. It will thus be seen that when the pawl-carrying bar is rocked to release the lock and rotate the roller the shaft *p* is rocked, and hence the alarm is sounded.

The indicator is automatically operated by a trip *d'*, pivoted at its upper end to a bracket *g'*, located beneath the car and provided with a cross-piece at its upper end, the opposite ends of which are connected with the opposite ends of the pawl carrying and operating bar by rods *e' e'*. The trip extends downwardly and is provided with a pivoted extension or finger on its lower end, having a spring to yieldingly hold it, forming a straight continuation of the trip. The upper end of this trip is rigidly mounted on one end of a short horizontal shaft *f'*, journaled in said bracket *g'*, and the inner end of the shaft is provided with a downwardly-extending arm, the lower end of which is attached to the upper end of a stiff vertical coiled spring *l'*, at its lower end secured to an arm *h'*, extending downwardly from said bracket and yieldingly holding the trip in a vertical position. The lower end of this arm *h'* is provided with a horizontal elongated yoke j^2, through which the trip extends and wherein it swings.

A double-inclined projection *k'* is located on the track near every station, and as the train approaches the station the finger on the lower end of the trip engages the incline, thereby swinging the trip to the end of the yoke, which stops it and causes the finger to slide over the incline, and the spring *l'* returns the trip to its normal position, thereby operating the indicator and alarm and displaying the name of the next station. It will thus be seen that this indicator will display, automatically and in consecutive order before arriving thereat, the name of the next station at which the train will stop, continuing to do so the entire trip, and will, when returning over the same route, indicate and disclose, correctly and in reverse and consecutive order, the names of the stations.

The horizontal yoke j^2 is provided with a spring-tongue *m'*, extending centrally across and dividing the same into two divisions, through one of which the trip extends when the train is going in one direction and through the other when going in the opposite direction. This tongue consists of a metal finger pivoted at one end and extending across the opening of the yoke, and provided with a spring to yieldingly hold it in this position and allow it to be swung laterally.

It is evident that various changes and

modifications might be made in the form and arrangement of the parts described without departing from the spirit and scope of my invention; hence I do not wish to confine myself to the precise construction herein set forth.

What I claim is—

1. A station-indicator comprising rollers carrying the band provided with the names of the stations and connected by gearing, ratchet-wheels on the rollers, pawls to engage the ratchet-wheels and rotate the rollers, mechanism to operate the pawls, and a swinging lock engaging and extending between said ratchet-wheels, said lock being connected with the operating mechanism whereby the ratchet-wheels are released when the pawls are operated to rotate the same, substantially as described.

2. A station-indicator comprising the combination of the rollers carrying a band, ratchet-wheels upon the ends of the same, a pivoted rocking bar below said ratchet-wheels, pawls carried by the same to engage and rotate said wheels, and a lock or escapement for said wheels connected with and operated by said bar, for the purpose set forth.

3. In a station-indicator, the combination of the band-rollers, adjacent ratchet-wheels on the ends of the same, a lock for said adjacent pair of ratchet-wheels, consisting of a vertically-movable block or plate located above and provided with teeth or projections bearing upon said wheels, and means to operate said rollers and lock, substantially as described.

4. In a station-indicator, the combination of a pair of rollers, adjacent ratchet-wheels on the corresponding ends of the same by which the rollers are actuated, an escapement for said wheels, consisting of a rocking plate above extending between and engaging the teeth of said pair of wheels, and provided with a central vertical slot through which the securing-pin extends, a spring yieldingly holding the plate in engagement with the wheels, and means to operate said rollers and lock, substantially as described.

5. A station-indicator comprising rollers carrying a band, ratchet-wheels to rotate the same, a rocking bar having pawls to rotate the ratchet-wheels, a vertically-movable rocking plate located above and provided with projections bearing upon and engaging the teeth of said wheels to lock the same, a spring to hold the plate in engagement with the wheels, and links connecting the ends of the plate with the diagonally-opposite ends of said bar, substantially as described.

6. In a station-indicator, the combination of the rollers carrying a band and connected by gearing to rotate in the same direction, ratchet-wheels on the rollers, a rocking bar, spring-pawls carried by said bar to engage and rotate said wheels, a trip adapted to engage and be swung by a projection on the track and provided with a cross-piece, and rods connecting the ends of said cross-piece and rocking bar, substantially as described.

7. In a station-indicator, a rock-shaft carrying means to actuate the indicating device, a rocking cross-piece carried by said shaft, and mechanism to rock the shaft, in combination with a lever pivoted within its length, links connecting each end of said cross-piece and one free end of the lever, a gong, a spring-clapper for the same, and a pawl carried by the opposite free end of the lever to force the clapper from the bell and then release the same, substantially as described.

8. In a station-indicator, the rollers carrying the band, a gong provided with a spring-clapper, a rock-shaft beneath the rollers having a cross-piece connected with and adapted to operate said clapper, a rocking bar on the opposite end of the shaft connected with and adapted to rotate the rollers, and means to rock said shaft, substantially as described.

9. The combination, with an indicator, of a trip to actuate the same, consisting of a horizontal shaft journaled in a bracket secured to the under side of a car, a bar rigidly secured to said shaft and extending down to engage and to be rocked by a projection on the track, a lateral arm rigidly secured to the opposite end of the shaft, and a stiff vertical spring secured to said arm and to an extended arm of said bracket, substantially as described.

10. The combination, with a station-indicator and an arm extending downwardly from the bottom of the car and provided with a horizontal elongated yoke, of a trip to actuate said indicator, consisting of a spring rocking bar extending downwardly from the bottom of the car through said yoke and adapted to engage and be rocked by a projection on the track, and a spring-tongue extending centrally across said yoke and pivoted to swing laterally, as and for the purpose set forth.

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

WM. JAS. SMITH.

Witnesses:
SAML. B. WOODS,
R. P. VALENTINE.