

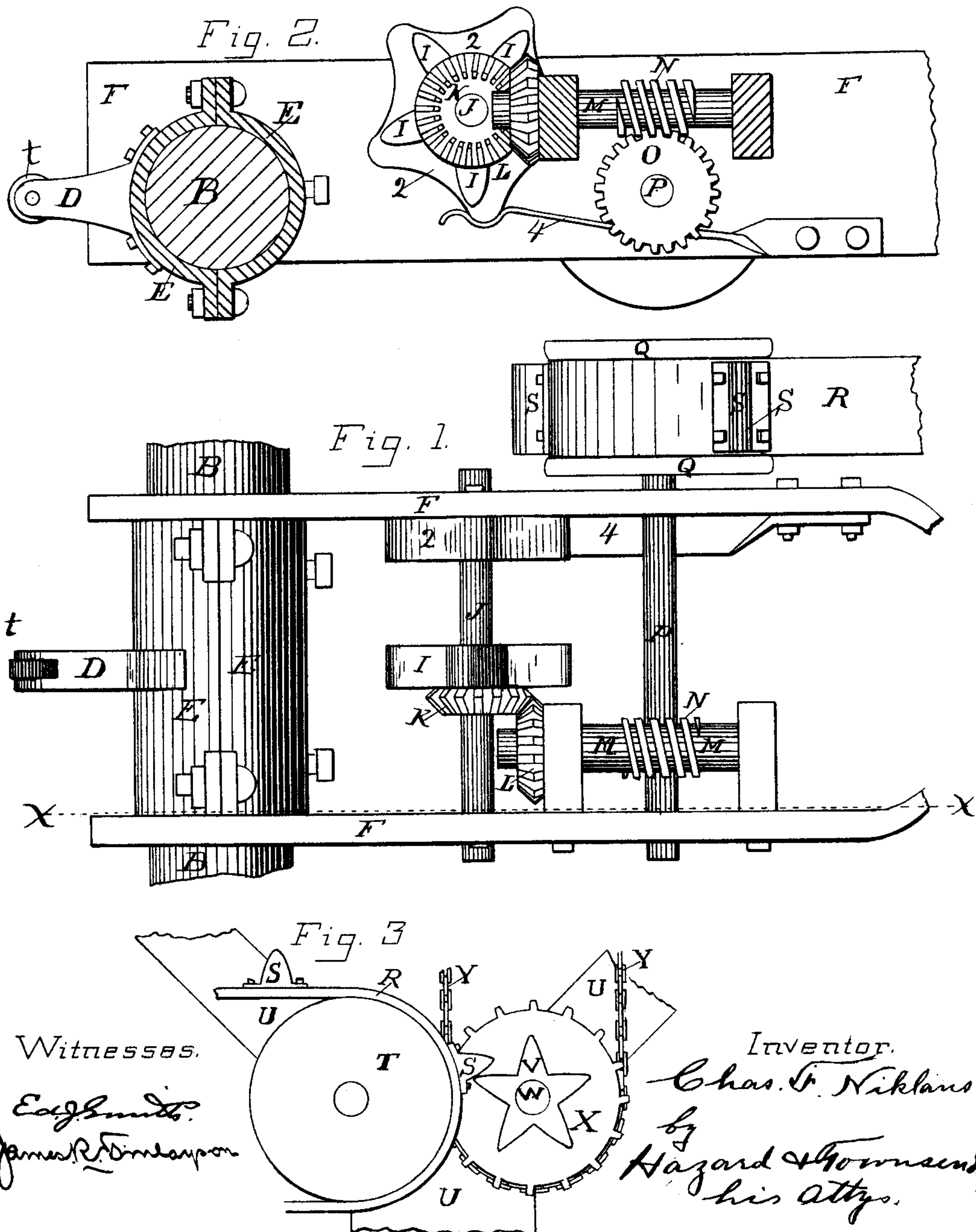
(No Model.)

3 Sheets—Sheet 1.

C. F. NIKLAUS.  
STREET OR STATION INDICATOR.

No. 388,709.

Patented Aug. 28, 1888.



(No Model.)

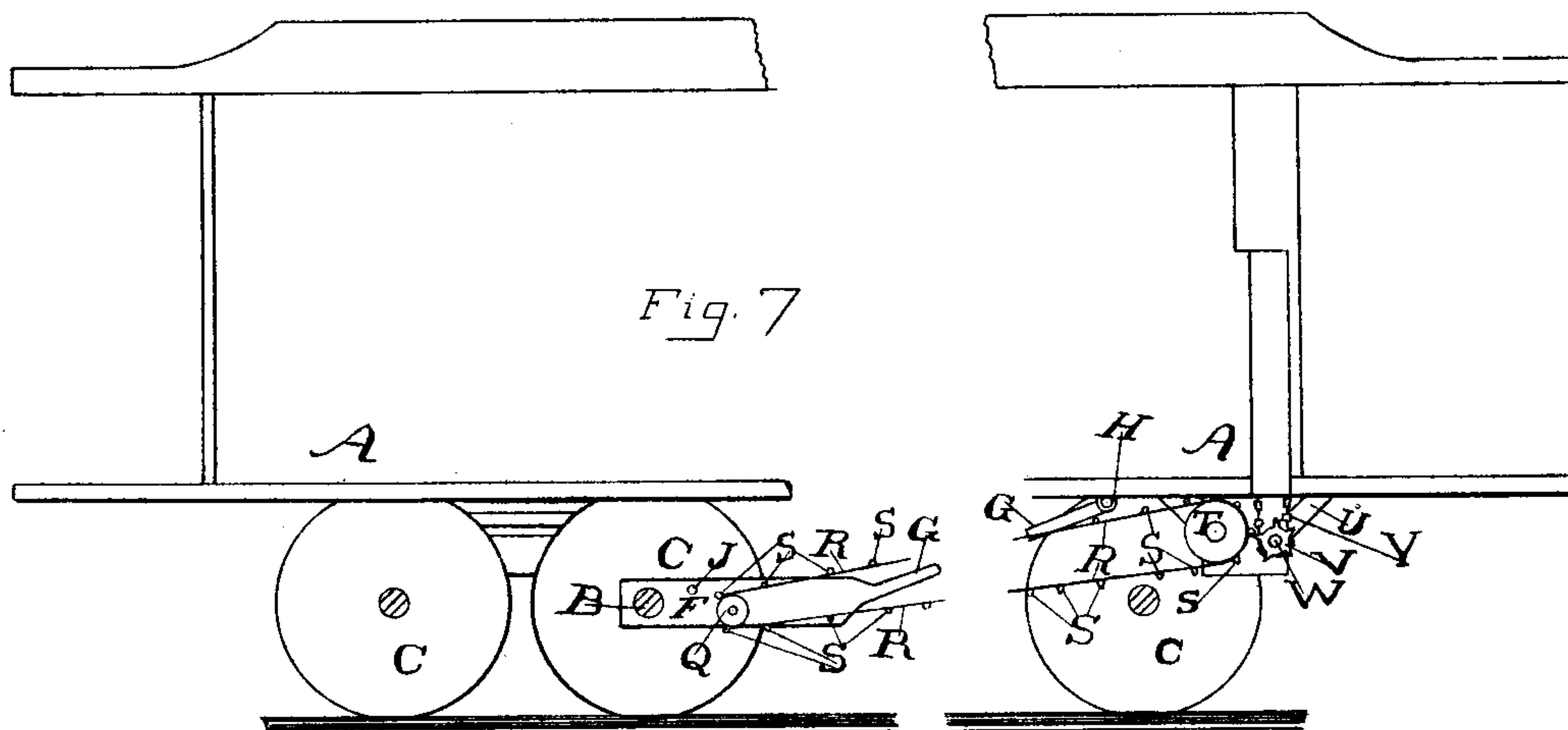
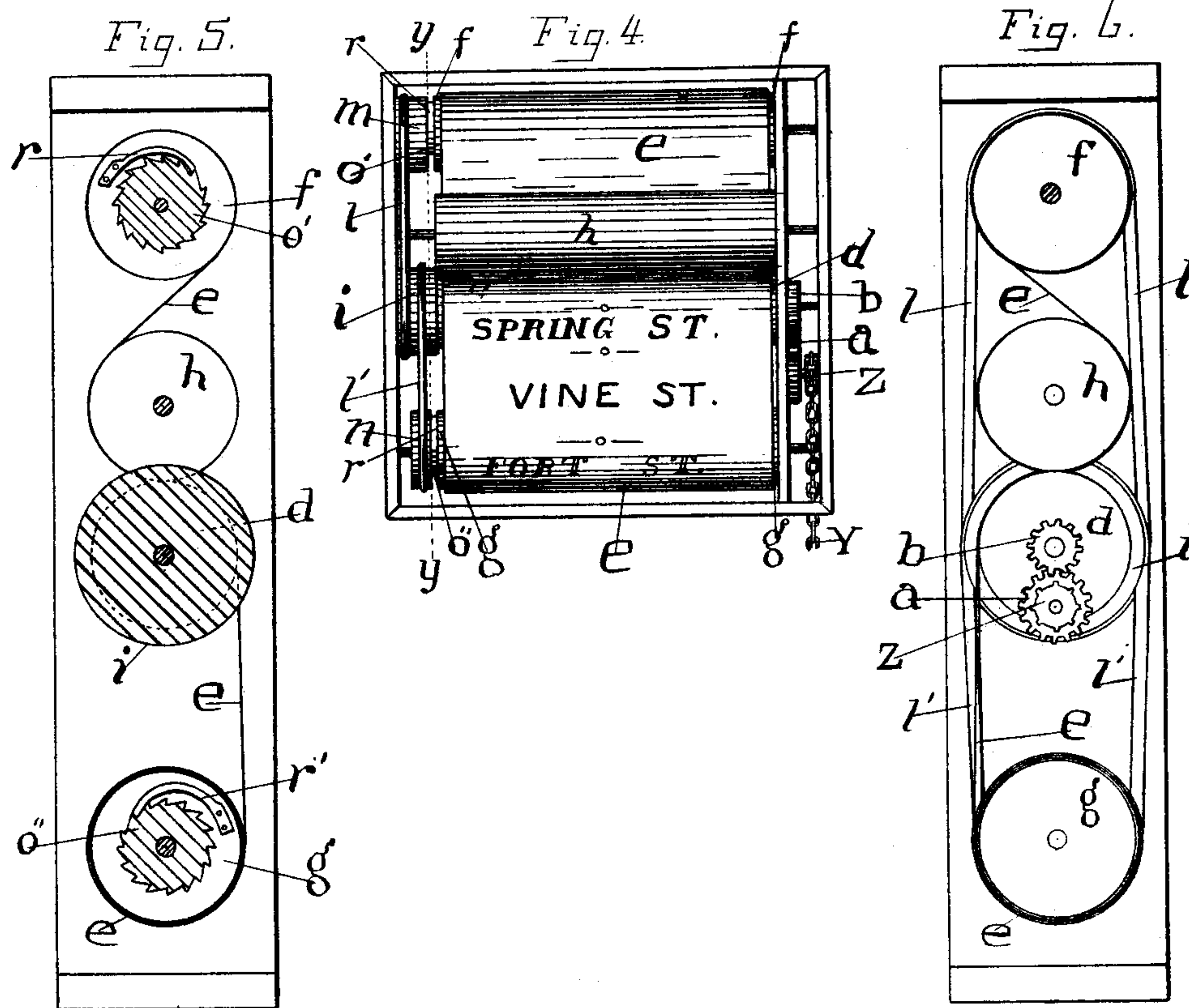
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No. 388,709.

Patented Aug. 28, 1888.



Witnesses.

*Edg. Smith.*  
*James R. Thompson.*

Inventor.

*Chas. F. Niklaus.*  
*by Hazard & Townsend,*  
*his attys.*

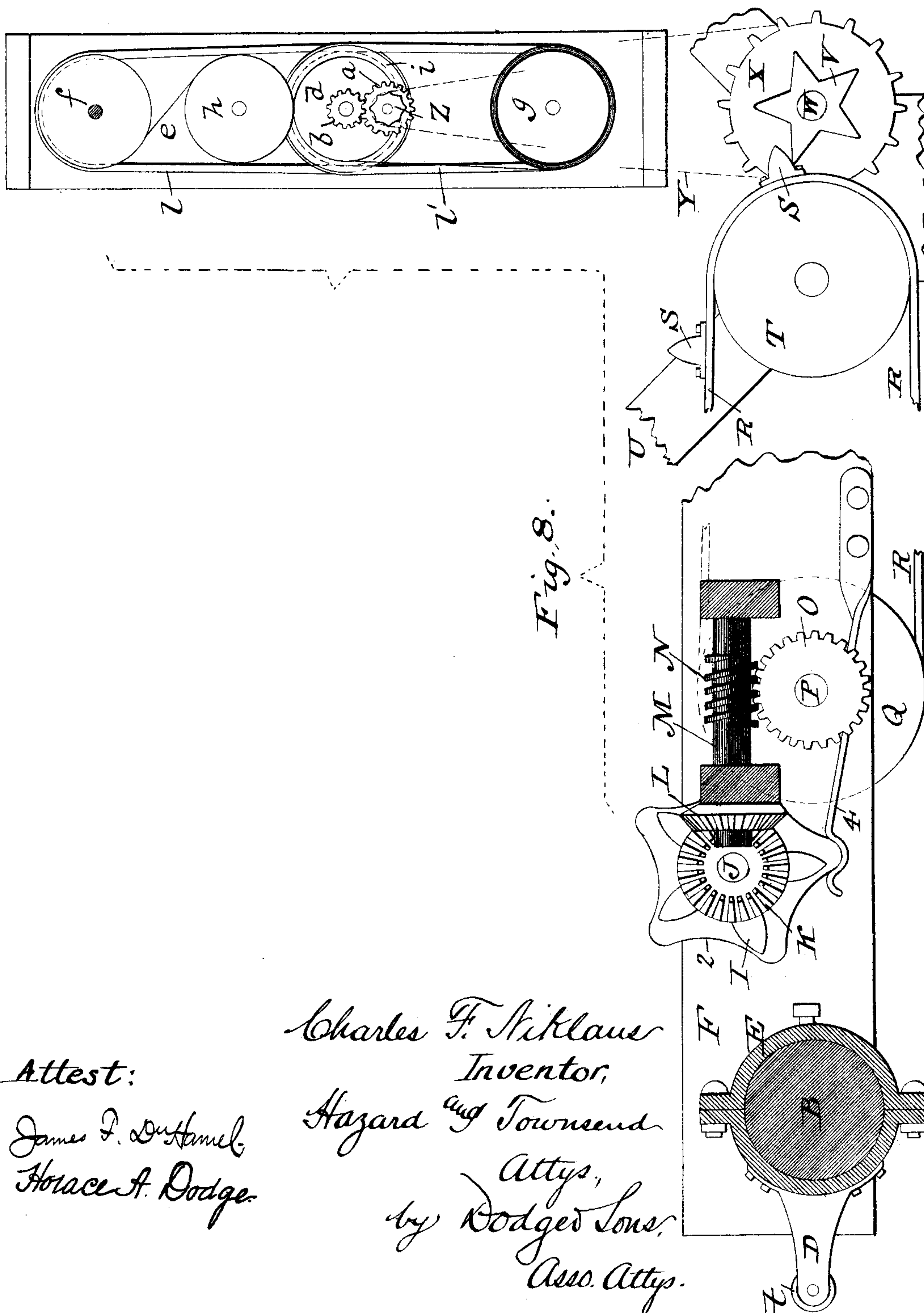
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*Attest:*

*James F. Duffin,*  
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*Asso. Attys.*



# UNITED STATES PATENT OFFICE.

CHARLES F. NIKLAUS, OF LOS ANGELES, CALIFORNIA.

## STREET OR STATION INDICATOR.

SPECIFICATION forming part of Letters Patent No. 338,709, dated August 28, 1888.

Application filed October 6, 1887. Serial No. 251,594. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES F. NIKLAUS, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles, State of California, have invented a new and useful Improvement in Street or Station Indicators for Cars, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to that class of devices known as "station-indicators;" and it consists in a novel construction of the same, as hereinafter set forth and claimed.

In the drawings, Figure 1 is a plan view of that part of the driving mechanism which is mounted upon the axle. Fig. 2 is a section of the same on line *x x*. Fig. 3 is a detail view of that part of the driving mechanism which is attached to the car. Fig. 4 is a front view of the indicator-ribbon, the rollers upon which it is mounted, and the means whereby the rollers are made to hold the ribbon taut. Fig. 5 is an enlarged section on line *y y*, Fig. 4. Fig. 6 is a view of the ends of the rollers, and illustrates the manner in which the belts are arranged. The cogs and sprocket-wheel which operate the driving-roller are also shown. Fig. 7 illustrates the manner in which the device is mounted upon the car. The middle of the car is broken away to allow the ends to be shown in the same view. Fig. 8 is an enlarged view of the parts assembled.

A indicates a car, B one of the axles, and C the wheels, the axle being provided with a rigid arm, D, which will preferably be formed upon a collar, E, as shown in the drawings, the collar being secured to the axle by means of bolts and set-screws. A bar, F, is journaled upon the axle on each side of the arm D, and the two bars are united to one end of a connecting-rod, G, the other end of which is secured to the bottom of the car, as shown at H. The two bars F F form a frame or bracket for the mechanism which the arm D propels to operate the indicator.

I is a star-wheel rigidly mounted upon the shaft J, which is journaled into the frame F F.

K is a beveled gear-wheel secured to the shaft J and meshing with the beveled gear-wheel L, which is mounted upon the shaft M, which is provided with the worm or screw-

thread N, which meshes with the cog O, which is secured to the shaft P, upon which is mounted the pulley Q.

The star-wheel I is mounted at such a distance from the axle that the end of the arm D will strike upon one point of the star each time the axle B is rotated, thus partially revolving the star each time the axle is rotated. It is obvious that the rotation of the axle B will thus be made to slowly rotate the pulley Q, and thus drive the belt R, upon which are secured studs S. The belt R passes around a pulley, T, which is secured to the bottom of the car by a bracket, U, which it is journaled in. A star-wheel, V, is mounted on a shaft, W, which is journaled in the bracket U and bears the sprocket-wheel X, rigidly mounted thereon. The star-wheel V is mounted so close to the pulley T that when the belt R is driven round the studs S thereon will strike upon the points of the star-wheel and rotate it, thus rotating the sprocket-wheel X and driving the chain Y, which drives the sprocket-wheel Z, which drives the cog *a*, which meshes with the cog *b*, which drives the driving-roller *d*.

The ends of the indicator-ribbon *e* are secured to the take-up rollers *f* and *g*.

*h* is a tension-roller, which presses the ribbon firmly upon the driving-roller, so that when the driving-roller rotates the ribbon will be moved along by the friction.

A band-wheel, *i*, is fixed upon the end of the driving-roller and connected by bands *l l'* with band-wheels *m n*, journaled on the axles of the take-up rollers. The band-wheels *m* and *n* are smaller than the band-wheel *i* on the driving-roller, so that one revolution of the driving-roller will cause each of the pulleys *m n* to make more than one revolution unless the bands slip. The pulleys or band-wheels *m* and *n* are provided with ratchet-wheels *o'* and *o''*, and the take-up rollers are provided with *r r'*. When the driving-roller *d* is revolved, its band-wheel *j* revolves in the same direction and drives the bands *l l'*, which in turn drive the band-wheels *m* and *n*, rotating them in directions opposite to each other.

The ratchets which connect the band-wheels *m* and *n* with their respective rollers are arranged, as shown in Fig. 5, to rotate the roller



while being driven in the direction in which the roller must rotate to wind the ribbon thereon. When the band-wheel *m* or *n* is rotated in the opposite direction, the ratchet allows the band-wheel to turn without rotating its roller.

The shafts upon which the two take-up rollers are mounted are journaled to run with considerable friction, and the band-wheels *m* and *n* are so mounted as to revolve easily upon the roller-shafts. By this arrangement, it will be observed the band-wheels *m* and *n* will not operate to rotate the take-up rollers except when the wheels are revolved to wind the ribbon—that is to say, when the ratchet and wheel *r o'* or *r' o''* engage to turn the roller *f* or *g*, respectively. For example, when the driving-roller *d* is rotated to move the ribbon downward, the large band-wheel *i* will drive the band *l'* so rapidly that the smaller band-wheel, *n*, will cause the take-up roller *f* to revolve more rapidly than the driving-roller *d*, thus drawing the ribbon taut.

The band-wheel *m* is rotated at the same rate of speed as the wheel *n*, but does not revolve the roller *f*, for the reason that the ratchet-spring *r* does not engage with the notches in the ratchet-wheel *o'* except when the wheel is rotated in the other direction to wind the ribbon on the roller. The friction on the shaft of the roller where they are journaled in the frame prevents the roller from rotating except as the ribbon is unwound from it.

The operation of the rollers, ratchets, and band-wheels is substantially the same when the ribbon is driven in the opposite direction.

When the indicator is to be placed upon a car, the distances between the several streets are measured and calculation is made to determine the number of revolutions of the wheels of the car to pass from one street to another along the desired route. From this a calculation is made to determine how far apart the studs *S* must be placed in order that a stud shall be made to pass along and strike upon a point of the star-wheel *V*, and thus partially rotate the wheel *V* each time a street is passed. The distances between the several studs correspond relatively with each other to the distances between the several streets.

When the indicator is placed upon a car, it is set to indicate the street at which the car is to be started, and the belt *R* is so placed that the distance between the several studs will correspond relatively to the distances between the several streets along the route, beginning at the point where the car starts. The movement of the car in either direction revolves the axles *B*, and the arm *D* strikes upon one of the points of the star-wheel at each revolution, thus revolving the star *I* and driving the belt *R* with its studs *S*, which operate to drive the star *V*, which drives the sprocket-wheel *X*, which drives the chain *Y*, and thereby operates the rollers and the ribbon. Each time the distance between two streets or stations is passed one of the studs *S* will strike upon and turn the star-wheel *V*, thus turning

the rollers and exposing a new portion thereof. The ribbon is provided at regular intervals with the names of the several streets in regular rotation, so that the intermittent movement of the ribbon will successively expose the names of the several streets.

In order to prevent the star-wheel *I* from being moved too far by the stroke of the arm *D*, I provide a brake consisting of the star-wheel *2* and the spring *4*. The star-wheel *2* is mounted upon the axles *J*, and the pressure of the spring *4* prevents the star from revolving except while the arm is pressing upon one of the points of the star *I*. *t* is a friction-wheel on the end of the rigid arm *D*.

In order to preserve a proper tension of the toothed belt *R* and sprocket-chain *Y* notwithstanding the springing of the car, I mount the bracket *F* upon the axle at the end of the car opposite that end of the car in which the indicator is located, and I lead the connecting-rod upward and hinge it to the bottom of the car near the point where the band wheel *X* is mounted. It will be found that by means of this arrangement the springing of the car will not noticeably affect the tension of the toothed belt *R* or chain *Y*.

The gearing which transmits the motion from the star-wheel *I* to the belt *R* may be varied without altering the principle of my machine, the object of such gearing being simply to time the revolutions of the wheel *Q*.

The gearing between the star wheel *V* and the driving-roller *d* can also be varied without altering the principle of my invention.

Now, having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a station-indicator, the combination, with a car and its indicator proper, of an endless studded belt mounted upon the car and connected by intermediate mechanism with the apron of the indicator, and an arm mounted upon the car-axle to actuate the studded belt and impart an intermittent motion thereto.

2. In a station-indicator, the combination, with a car and its indicator, of a star-wheel, *V*, a band communicating motion from the star-wheel *V* to the indicator, a second star-wheel, *I*, mounted upon the car, a connection between the two star-wheels, and an arm mounted upon an axle of the car and adapted to strike the star-wheel *I* at each revolution.

3. In a station-indicator, the combination, with a car and its indicator, of a star-wheel, *V*, a band communicating motion from the wheel *V* to the indicator, a second star-wheel, *I*, mounted upon the car, an arm carried by the car-axle and adapted to strike the wheel *I*, a belt, *R*, provided with spurs *S* to actuate the star-wheel, and gearing for transmitting motion from the star-wheel *I* to the belt *R*.

4. In combination with a car and its indicator, an arm, *D*, carried by the car-axle, a star-wheel, *I*, located in the path of the arm, a second star-wheel, *V*, also journaled in the car, a belt, *R*, provided with spurs *S* and ar-



5 ranged to actuate the wheel V, a band, Y, communicating motion from the star-wheel to the indicator, and a spring, 4, adapted and arranged to prevent the accidental operation of the indicator.

10 5. In combination with a car and its indicator, the arm D, secured to the car-axle, a shaft, J, journaled in the frame-work and provided with star-wheel I and bevel-gear K, a shaft, M, also journaled in the frame and provided with worm N and gear L, a shaft, P, arranged parallel with shaft J and provided with gear O and band-wheel Q, a frame, U, provided with band-wheel T and shaft W, 15 star-wheel V and sprocket-wheel X, mounted upon the shaft, a belt, R, provided with spurs S and passing about the wheels Q T, and a chain or band, Y, passing about the sprocket-wheel X and about the wheel of the indicator 20 proper.

6. In an indicator, the combination, with a casing, of the rollers *f g*, journaled therein and connected with their shafts by reversely-acting pawls and ratchets, an apron, *e*, secured 25 at opposite ends to the rollers *f g*, and mechanism for imparting motion to the apron.

7. In combination with the casing, the rollers *f g*, journaled therein, an intermediate roller, D, an apron, *e*, secured at its ends to 30 the rollers *f g* and passing over the face of roller *d*, belts *l* and *l'*, passing, respectively, about the rollers *f, g*, and *d*, all substantially as shown, and mechanism for imparting motion to the apron.

35 8. In combination with a casing, the rollers *f g*, journaled therein and provided with ratchets *o o'*, an intermediate roller, *d*, provided with pulley *i*, an apron, *e*, connected at opposite ends with the rollers *f g*, pulleys *m* and

40 *n*, mounted loosely upon the shafts of the rollers *f g* and provided with pawls *r r'* to engage the ratchets *o o'*, belts *l l'*, passing about the pulleys *m, n*, and *i*, all substantially as shown, and mechanism for imparting motion to the apron.

45 9. In combination with a casing, rollers *f g*, journaled therein, an apron, *e*, secured at its ends to the rollers, a roller, *d*, interposed between the rollers *f g*, a roller, *h*, arranged parallel with roller *d* and adapted to press the 50 apron upon the latter, and mechanism for imparting motion to the apron.

10. In combination with a suitable frame-work or casing, rollers *f g*, journaled therein and provided with pawls *r r'*, apron *e*, secured 55 to the rollers *f g*, pulleys *m* and *n*, mounted upon the roller-shafts and provided with ratchets *o o'*, intermediate rollers, *d* and *h*, the former provided with pulley *i*, belts *l l'*, connecting the pulleys *m* and *n* with the pulley *i*, 60 a gear-wheel, *b*, secured to the shaft of roller *d*, and a gear-wheel, *a*, and sprocket-wheel Z, mounted in the casing, all substantially such as shown.

11. In combination with a car and its indicator proper, a bracket or frame, F, journaled 65 upon one of the car-axles, a rod, G, pivoted at one end to the car and connected at its other end to the bracket or frame F, and mechanism for actuating the indicator-apron, mounted 70 partly upon the bracket or frame F, whereby the car-trucks are permitted to rise and fall independently of the car-body without affecting the operation of the indicator.

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Witnesses:

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