

No. 607,098.

Patented July 12, 1898.

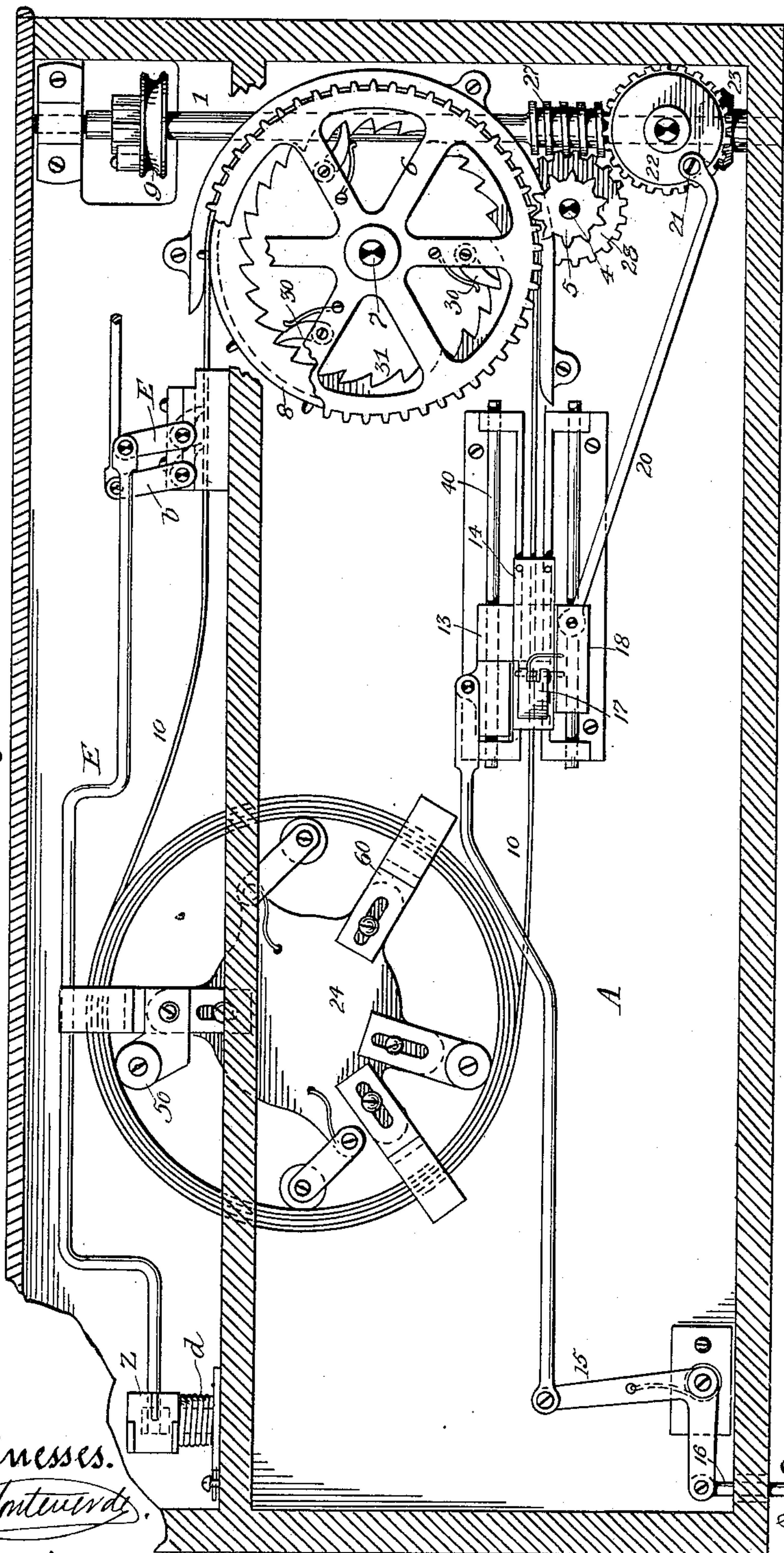
H. C. TURNER.
STATION INDICATOR.

(Application filed Jan. 2, 1894.)

(No Model.)

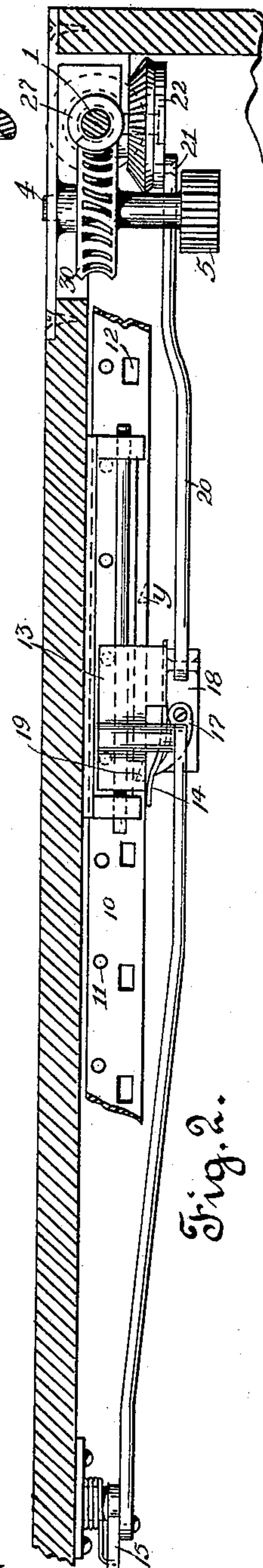
2 Sheets—Sheet 1.

Fig. 1.



Witnesses.
H. C. Turner
M. R. Bryan

Fig. 2.



Inventor.
H. C. Turner
by Spear & Seely
Attorneys

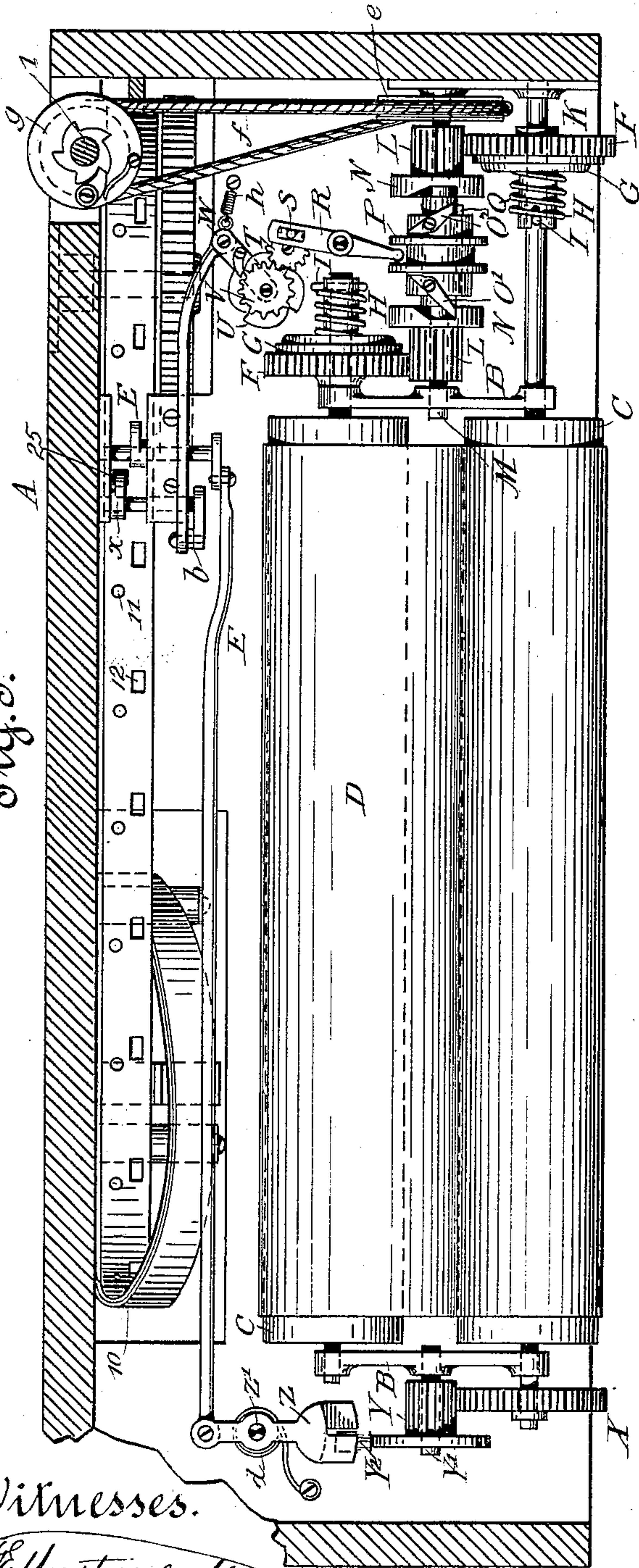
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Fig. 3.



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J. H. Fortenberry

M. R. Bryan

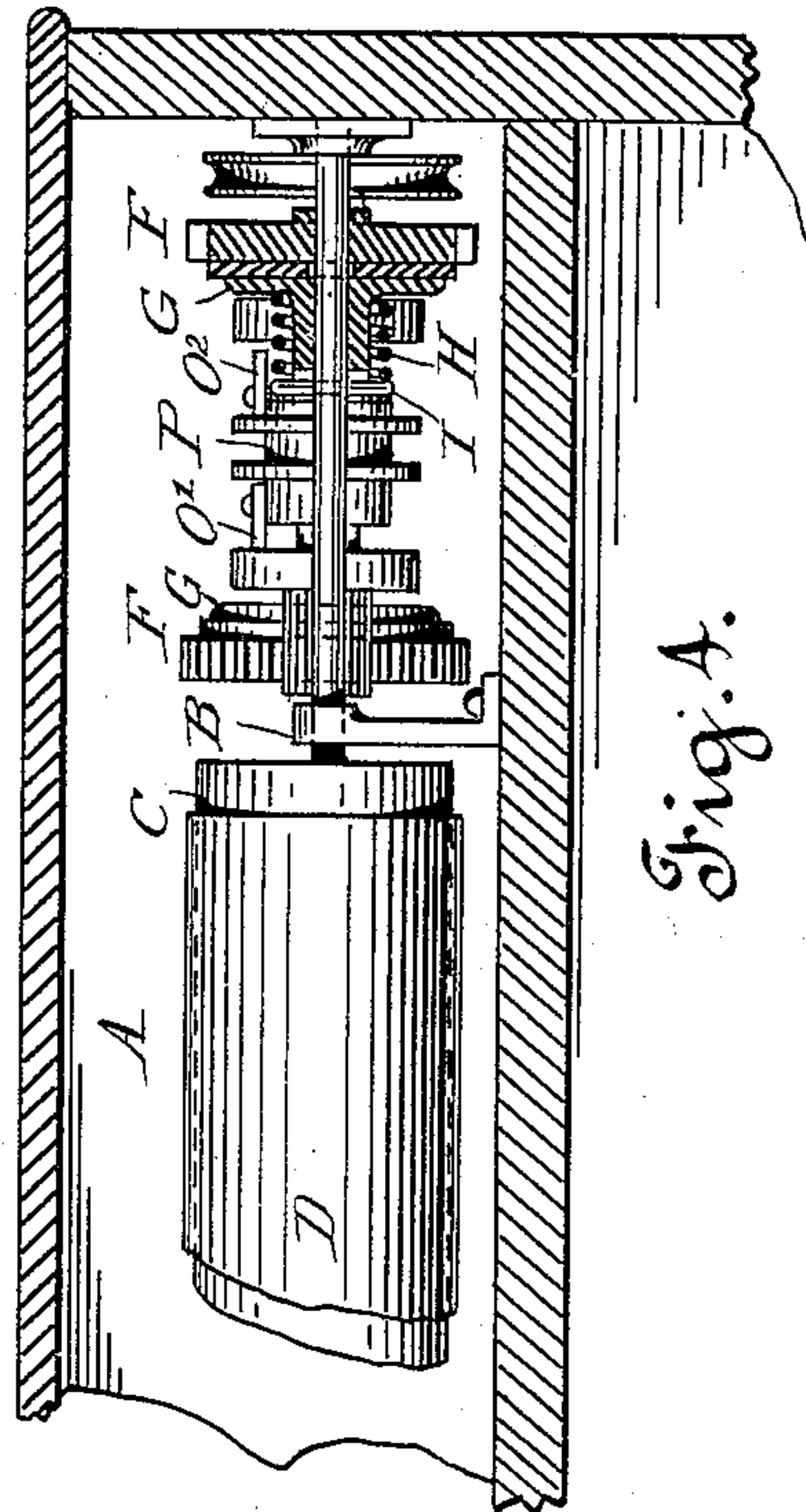


Fig. 4.

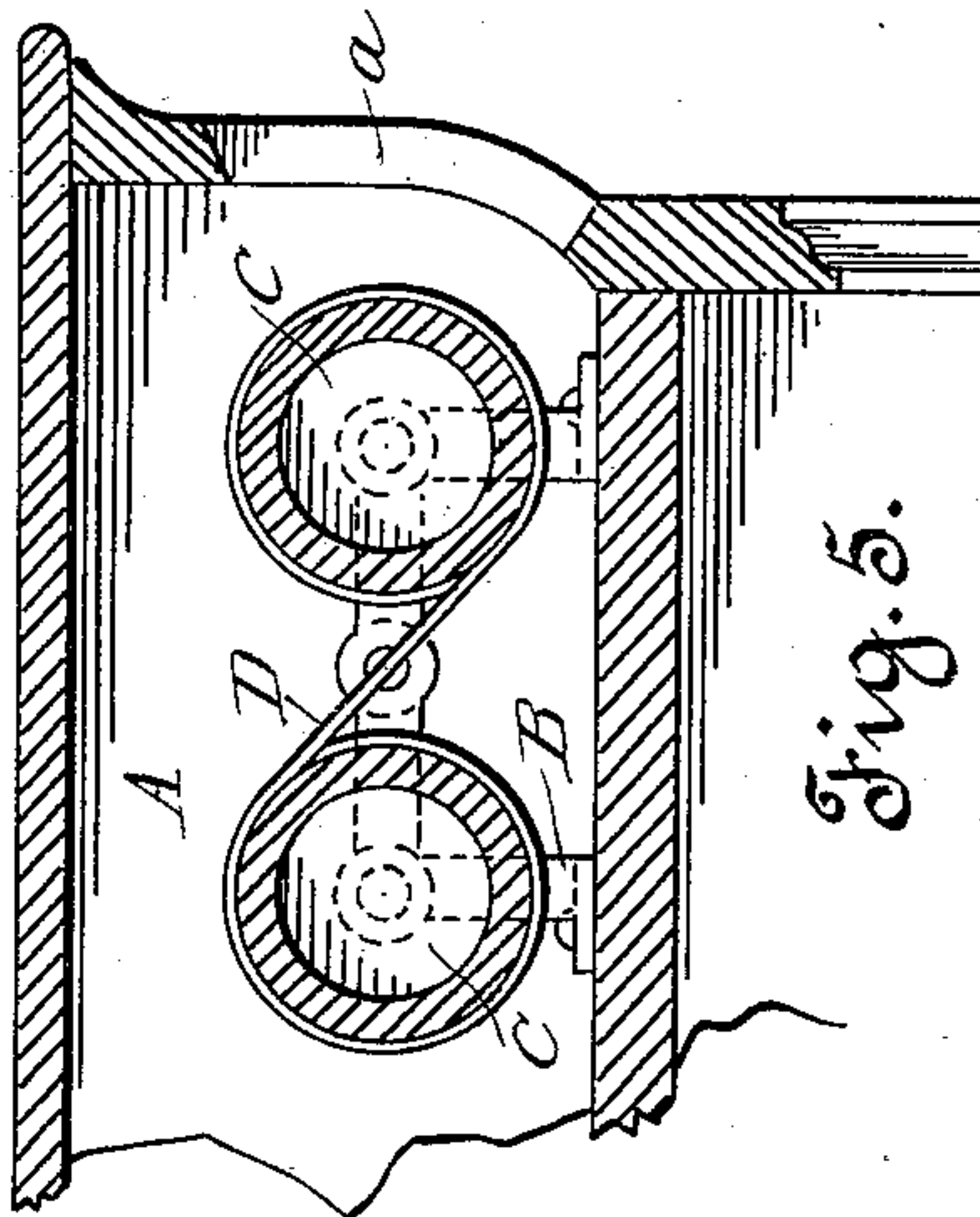
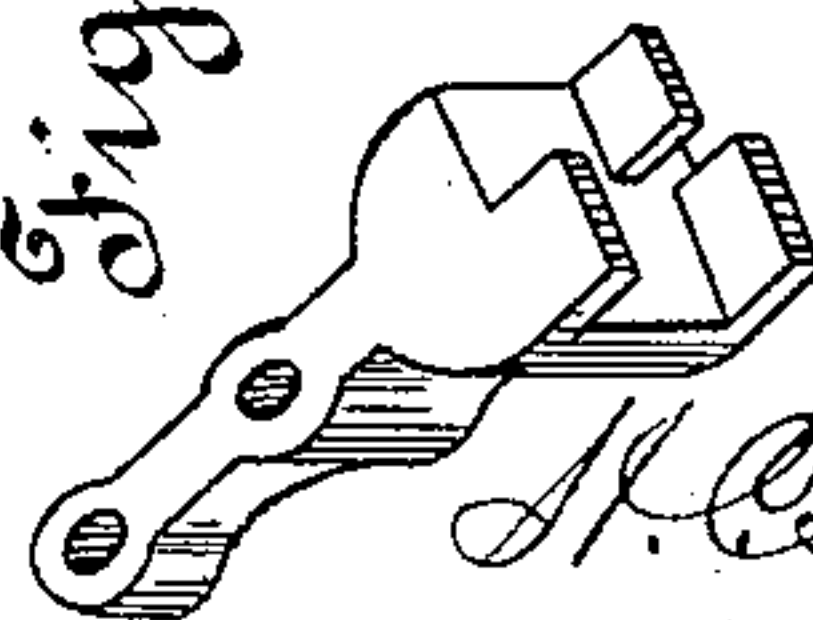


Fig. 5.

Fig. 6.



Inventor.

H. C. Turner

by Spear & Seely
Attorneys

UNITED STATES PATENT OFFICE.

HERBERT C. TURNER, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO THE
AMERICAN INDICATOR COMPANY, OF SAME PLACE.

STATION-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 607,098, dated July 12, 1898.

Application filed January 2, 1894. Serial No. 495,348. (No model.)

To all whom it may concern:

Be it known that I, HERBERT C. 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 Apparatus for Automatically Actuating Station-Indicators; and I do hereby declare that the following is a full, clear, and exact description thereof.

10 My invention relates to street and station indicators; and its object is to provide a means for correctly actuating indicators by the revolution of a car-axle which shall be compact—i. e., allow of many streets on long lines of road to be indicated without the impractical cumbrousness of a long indicating-chain or a large indicating-disk—and simple in construction and, above all, which can be placed in the indicator-box instead of in the base of the car.

20 This device is especially fitted for cars that turn around at each end of route and in which case the revolution of the axle is practically always in the same direction, but can be used on cars wherein the revolution of the axle is reversed on the return trip by the use of suitable gearing situated under the car and connecting the axle with the actuating-rod, ratchets and pawls being provided to keep the revolution of the actuating-rod always in the same direction, while the axle revolves in either direction. The mechanism to produce this result is well known and often used by mechanics.

35 The actuating mechanism in this indicator is so constructed that if the car-wheels lose motion by applied brakes, wet track, or other cause the steel ribbon which controls the indications is automatically moved at each curve in the roadway by the upward thrust of a correcting-rod, caused by mechanism connecting it with the car-truck, thus producing an upward lift of the rod as the car-truck swivels in rounding the curve and so automatically moving the ribbon to the correct position which it would have occupied had no loss occurred. The correcting mechanism may also be actuated by a lever under the car, so placed as to engage with tripping-

50 blocks placed on the roadway at suitable in-

tervals, which preferably are about one mile apart.

In the drawings, Figure 1 is a vertical longitudinal section of the box or case which contains all the indicating mechanism with the indicating-rollers and belt removed. Fig. 2 is a central horizontal longitudinal section of Fig. 1, showing a part of the mechanism in plan view. Fig. 3 is a plan view of the indicating-rollers and belt and their connections with the controller and the driving shaft or rod. Fig. 4 shows in elevation and partial section a part of one of the rollers and the means for driving it in opposite directions. Fig. 5 is a cross-section through the two rollers. Fig. 6 is a separate view of the pivoted latch for stopping the rollers.

Similar letters and numerals of reference indicate corresponding parts in all the figures.

The letter A indicates a box or case of wood or other suitable material, in which are secured standards B, Fig. 3, forming bearings for the shafts of two rollers C, carrying the curtain D. The face of this curtain is marked with the names of the streets, stations, or other places to be indicated, and the case A is provided with a sight-opening a, Fig. 5, through which said names are exposed to view in succession as the curtain is wound on and off either of the rollers.

For the purpose of producing the required motions of the curtain-roller C each of the roller-shafts is provided with a loose cog-wheel F and a sliding friction-disk G, which is pressed against F by the spring H and is prevented from revolving on the roller-shaft by the pin I, which passes through the roller-shaft and engages with a slot J in the end of the friction-disk G. The loose cog-wheels are prevented from moving away from the friction-disks by the fixed collars K.

The loose cog-wheels F gear with and receive motion from the small loose pinions L, which are loosely journaled on the shaft M and bear on their inside faces disks N, which are provided with notches to engage with corresponding pawls O' O², fulcrumed on the shifting slide P.

The shifting slide P is loose on the shaft M, so that it may be moved to and fro to allow

of the engagement with the small pinions of either of the pawls O' O^2 , and is made to revolve with the shaft M by a keyway on its inner surface, which engages with the key Q on the enlarged portion of the shaft M.

The shifting slide P is moved into and out of connection with either of the pinions L by the lever R, one end of which engages with the groove in P, the other end being slotted to permit of the movement of the crank-pin S on the small pinion T. The pinion T is revolved one-half around at each quarter-revolution of the four-toothed ratchet U, to which is fastened the cog-wheel V, gearing with pinion T.

The ratchet-disk U is moved by the swinging arm W, on which is a spring-actuated pawl to engage with the ratchet-disk U, the arm W being connected to the bell-crank-reversing lever b . When the horizontal arm x of this lever falls through a slot 25, Fig. 1, in the street-actuating ribbon through the tension of the spring h , the pawl on the arm W engages with the ratchet-disk U and as the movement of the street-actuating ribbon raises the lever out of the slot rotates the disk, thereby revolving the pinion T one-half revolution and shifting one of the pawls O' O^2 out of connection and the other into connection with its corresponding disk N, and thus reverses the direction of the winding of the curtain D. Two rectangular shifting holes 25 are punched in the street-actuating ribbon, one corresponding with either end of the road.

On the left end of the front roller C is fastened a cog-wheel X, which gears with the loose pinion Y, loosely journaled on a stud Y' , fastened in the bearing B. Fastened to the outer end of the pinion Y is a disk bearing on its periphery a point Y^2 , which engages with and is released by the swinging latch Z.

The latch Z has three lips that engage with and control movement of point Y^2 and are designated by the signs 1', 2', and 3'. (See Fig. 6.) The latch Z is fulcrumed at Z' , and through the movement given it by the spring d when the bell-crank lever E enters a street-actuating hole in the actuating-ribbon releases the pinion Y, which is revolved one revolution by the loose cog-wheel F and friction-disk G. The point Y^2 then comes against the upper side of the latch-lip 1', Fig. 6, and as the bell-crank lever E rises out of the hole in the street-ribbon the lip 1' swings away from under the point Y^2 , and it then bears against the upper side of lip 2, which prevents further movement of the street-curtain D till the next street-hole passes under the lever E. Lip 3' on latch Z takes the place of lip 2' when the movement of the curtain is reversed on the return trip of the car.

The relation of the gears X and Y are as one to three, so one revolution of the pinion Y allows the roller C to be revolved one-third of its circumference, which is the necessary distance to bring into view a street-name. Fast-

tened to the right end of the shaft M is a pulley e , which, through its connection by a cross-belt f with the pulley g on the actuating-shaft 1, gives rotary motion to the shaft M.

I will now describe the device that actuates the movement of the street-curtain D at the proper time and place as the car passes over the route.

1 is the actuating-rod or driving-shaft, which receives rotary motion from the car-axle through suitable mechanism under the car-body.

27 is a worm fastened to the actuating-rod, which engages with the worm-gear 28, which is loosely journaled on the stud 4 and bears on the outer end of its hub the small pinion 5.

On the upper end of the actuating-rod 1 is the pulley g , which gives motion to the shaft M through a cross-belt f .

The pinion 5 gears with and gives motion to the gear 6, which is loosely journaled on a pin 7 and bears on some of its spokes spring-actuated pawls 30, that engage with the internal ratchet 31 on the front face of the sprocket-wheel 8, which also revolves loosely on 7.

The sprocket-wheel 8 engages with and gives a very slow motion to an endless steel ribbon 10, which has equally-spaced holes 11 near one of its edges, which engage with the sprocket-wheel 8. It also contains the two rectangular holes 25 before mentioned, which engage with the bell-crank b , so placed as to shift the direction of movement of the curtain or belt at either terminus of a route.

Near the opposite edges of the ribbon are punched rectangular holes 12 to engage with the bell-crank lever E. They are so spaced as to correspond with the distances between the streets, stations, or other points to be indicated.

As the ribbon 10 runs in the same direction all the time, it is necessary that it contain a number of street-holes equal to the number of streets to be indicated on the full round trip of the car.

After leaving the sprocket-wheel the ribbon passes to the connecting mechanism shown in Fig. 1, of which 13 is a slide guided by a rod 40 and having on its outer face a flat spring 14, which bears against the edge of the ribbon. The slide and spring are moved back—i. e., to the right—by the bell-crank 15 when the car rounds a curve, the swiveling movement of the truck lifting the rod 16.

When the spring 14 is moved back, it allows the spring-actuated pawl 17 on another and continually-moving slide 18 to engage with a notch 19, cut in the edge of the ribbon, which notch is cut to correspond to a curve in the roadway and will occupy a position opposite to that of the extreme movement of the pawl 17, as shown in drawings, Fig. 2, if the car has not lost motion. If it has lost motion, the notch will be a little to the right of that position—for instance, as

dotted at *y*, Fig. 2—and as the slide 13 is pushed back through the movement of the truck on the curve it will allow the pawl 17 to engage with the notch *y*, and at the forward movement of the slide toward the left end of the box the ribbon will be moved up to the point it should have occupied had no lost motion occurred.

The street-actuating ribbon is moved ahead by the pawls and ratchet on gear 6 and sprocket 8 and is carried ahead by the same when corrected.

The slides 13 and 18 have a movement that equals the travel of the street-actuating ribbon in two or three blocks, so is capable of taking up that amount of lost motion, which experience has shown to be more than enough to keep the street-actuating ribbon practically correct. The slide 18 is moved by the arm 20, which is connected to the crank-pin 21 on the bevel-gear 22, which gear is geared with the actuating-rod 1 by the bevel-gear 23.

The greater part of the street-actuating ribbon is held in a coil by the guide-plate 24, which is fastened to the back of the box and provided with rollers 50 and cleats 60 to hold the ribbon in place while it runs onto and off the coil, winding on the outside of coil at bottom and running off on the inside and back of the main coil at the top of coil, as shown in Fig. 3.

The bell-crank lever *E* connects with the latch *Z*, successively engages the rectangular street-holes in the ribbon by the pressure of the spring *d* on latch, and thereby releases the point *Y*², allowing the street-curtain to show the name of the next street the car will cross. The point of the lever *E* is then raised out of the street-hole by the forward movement of the steel ribbon and remains in position to engage with the next street-hole.

Having described my invention, I claim—

1. In combination with a continuously-rotating driving-rod in gear with a car-wheel, a station-indicator driven thereby by slip-gearing, a traveling perforated ribbon driven positively by said rod, and a lever actuated by said ribbon for alternately holding and releasing the station-indicator to give it an intermittent movement, substantially as set forth.

2. In combination with a station-indicator driven by a continuously-moving shaft through gearing partly frictional, a latch for alternately holding and releasing the indicator, a lever connected to said latch, and an endless traveling ribbon having a series of perforations for actuating said lever and latch

at prescribed intervals, substantially as set forth.

3. In a station-indicator the combination with the driving-rod geared to a car-axle, of rollers carrying an indicating belt or curtain, gearing partly frictional between said rod and said rollers, a loosely-mounted sprocket-wheel, an endless perforated controlling-ribbon thereon, a gear connected to the driving-rod and having pawls for operating the sprocket-wheel, and a latch and lever for alternately holding and releasing the indicator and operated by said ribbon, substantially as set forth.

4. In combination a station-indicator, an actuating-rod geared to a car-axle, a controlling-ribbon for intermittently releasing the indicator to permit it to be driven and loosely geared to the actuating-rod, and a correcting device operated by the actuating-rod for moving said ribbon independently of its driving-gearing, substantially as set forth.

5. In combination with the perforated and notched ribbon and the actuating-rod for driving it, the slides 13 and 18, the pawl 17, the guard-spring 14, and connections from the respective slides to a swinging car-truck and to said actuating-rod, substantially as set forth.

6. In combination with the indicator-rollers and the reversibly-movable shaft *M*, the sliding clutch *P*, the shifting lever *R*, the controlling-ribbon having terminal holes 25, the bell-crank lever *b*, and gearing between said bell-crank and shifting lever, substantially as and for the purposes set forth.

7. In a station-indicator and in combination with the endless controlling-ribbon a support for said ribbon consisting of a center plate having adjustable guide-arms and yielding rollers to receive the coil of ribbon, substantially as set forth.

8. The combination with the perforated endless controlling-ribbon having correcting-notches in its edges, of the loose sprocket and ratchet wheel 8, the gear 6 provided with pivoted pawls, gearing for positively driving said gear 6, and a sliding correcting-pawl for moving said ribbon and sprocket independently of its driving gear-wheel, substantially as set forth.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 9th day of December, 1893.

HERBERT C. TURNER.

Witnesses:

L. W. SEELY,
EDW. COOPER.