(No Model.) 2 Sheets—Sheet 1.

M. BYRNE.

STATION INDICATOR.

No. 420,989. Patented Feb. 11, 1890.

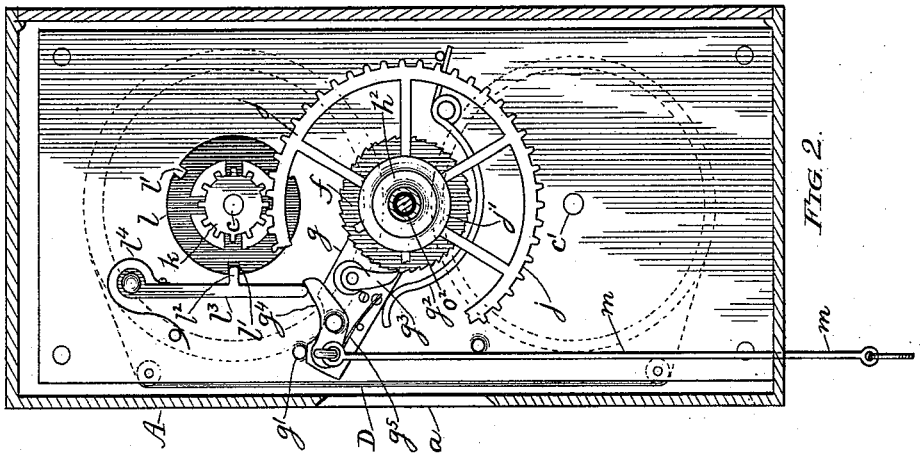

FIG. 2.

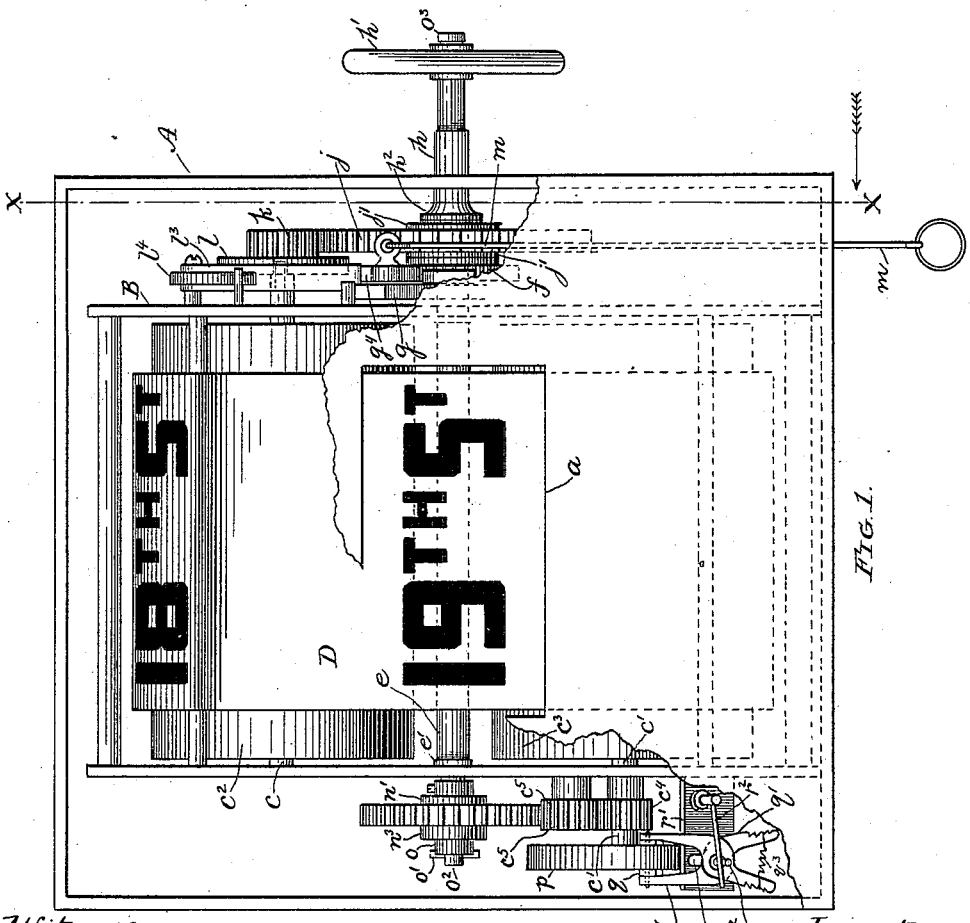

FIG. 1.

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Inventor:
Michael Byrne
By Sidley & Fletcher
his Attys.

(No Model.) 2 Sheets—Sheet 2.

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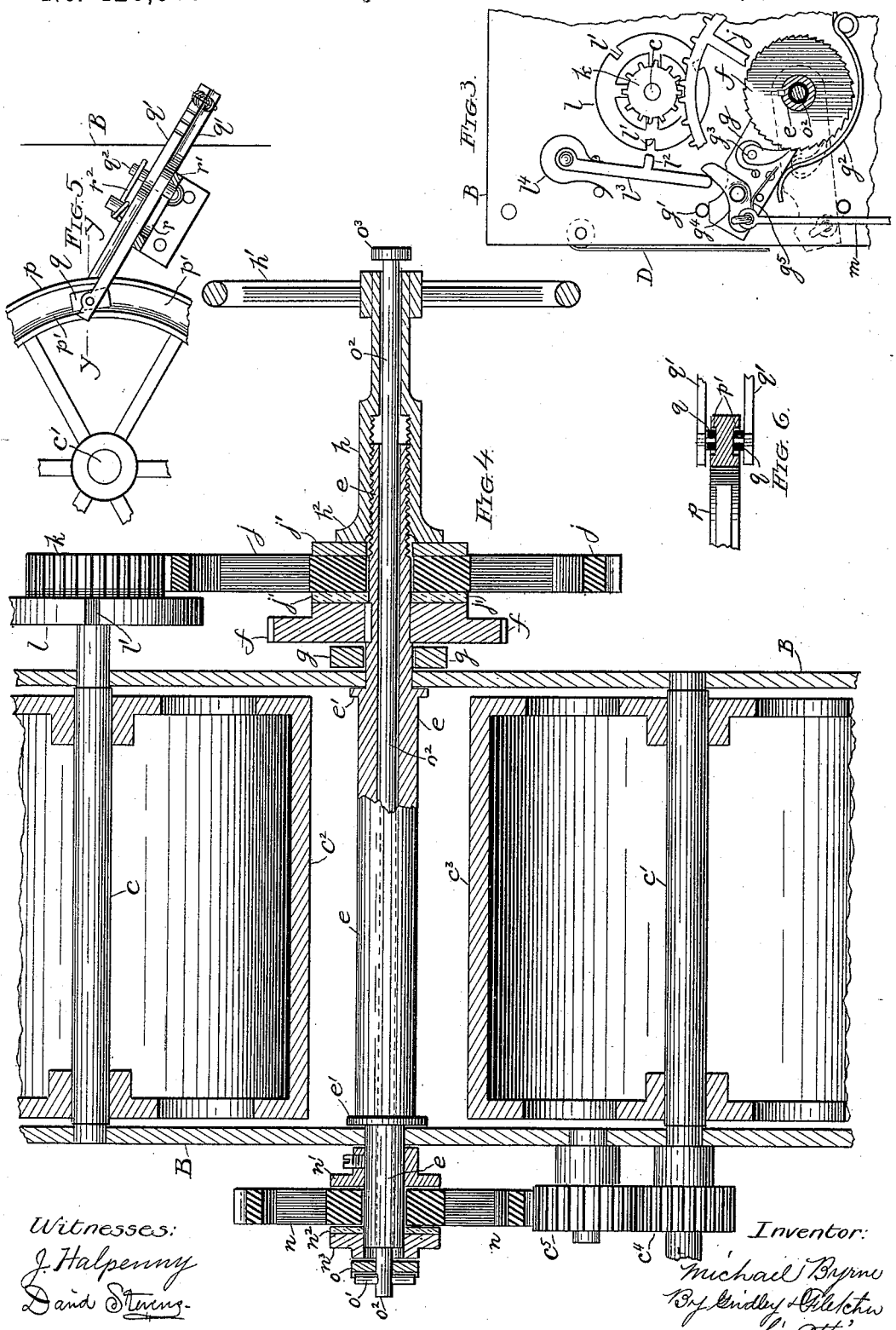

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UNITED STATES PATENT OFFICE.

MICHAEL BYRNE, OF CHICAGO, ILLINOIS.

STATION-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 420,989, dated February 11, 1890.

Application filed June 13, 1889. Serial No. 314,103. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL BYRNE, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Station-Indicators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a front view of my improved station-indicator, in which a portion of the case is removed to show the interior construction. Fig. 2 is a vertical sectional view of the same, taken upon the line x x, Fig. 1, viewed in the direction of the arrow there shown. Fig. 3 is a detail view of a portion of the end, showing the operating-lever and coacting parts in a partially abnormal position. Fig. 4 is a central vertical longitudinal sectional view of said device. Fig. 5 is a detail view of a portion of the opposite end from that shown in Fig. 3, showing the clamping device for regulating the tension of the web, and Fig. 6 is a sectional view thereof, taken upon the line y y, Fig. 5.

Like letters of reference in the different figures indicate like parts.

The object of my invention is to provide a simple, cheap, and satisfactory means for indicating to passengers upon street or railway cars the names or numerals of the streets or stations upon the route traversed; and the novelty of my invention consists in the means provided for governing the length of movement of the web, for reversing said movement, and for maintaining it under proper tension, which ends, respectively, I accomplish in the manner hereinafter more particularly described and claimed.

Referring to the drawings, A represents the case of my improved station-indicator, within which is placed a frame B. Mounted upon shafts c c', having suitable bearings in the frame, are drums c^2 c^3, to which, respectively, are attached the opposite ends of a web D, Figs. 1, 2, and 3, upon which is indicated at regular distances from each other the numbers or names of the streets or stations, which are arranged to be displayed through a slot a, Figs. 1 and 2, in the case. Midway between the drums c^2 c^3 is loosely mounted a hollow shaft e, having shoulders e' e', to prevent an endwise movement, the ends of said shafts projecting from the frame, as shown. Upon one of the projecting ends of said shaft, near to the frame, is keyed or otherwise rigidly secured a ratchet-wheel f, between which and the frame is loosely mounted a lever g, for the purpose hereinafter stated, which is held in a normal position against a stop g' by means of a spring g^2. The lever g is provided with a spring-actuated pawl g^3, adapted to engage with the ratchet-wheel f. Upon the extreme end of the shaft is formed a left-handed screw, upon which is placed a screw-sleeve h, having a hand-wheel h', by which it may be operated. Upon the sleeve h is formed a shoulder h^2, between which and the ratchet-wheel is loosely mounted upon the shaft e a gear-wheel j, preferably provided with washers j' j', of leather or other analogous material. By means of the screw-threaded sleeve h a pressure may be placed upon said washers, so as to cause the gear j to revolve with the shaft at will and act as a driving-wheel, for the purpose hereinafter stated. The gear j engages directly with a gear k upon the end of the shaft c, so that when the sleeve h is tightened the drum c^2 may be directly revolved thereby. Upon the shaft c is also mounted a governing-wheel l, having notches l' formed in the periphery, with which the tooth l^2 of a detent l^3 is adapted to engage, said detent being held in engagement with the wheel by means of a spring l^4. A short lever or dog g^4 is pivotally attached at or near the outer end of the lever g, to which is loosely secured a rod m for the purpose of actuating said lever. Upon pulling the rod the dog g^4, which is held in a normal position, as shown in Fig. 2, by means of a spring g^5, is tilted (see Fig. 3) into engagement with the detent l^3, so as to disengage the latter from the notch l'. In the meantime the wheel j, assuming it to be clamped by the sleeve h, is revolved by the lever g and the ratchet f, thus rotating the wheel l, so that when the detent is released it cannot act until the next succeeding notch l' is brought into position. Thus it will be seen that by alternately pulling and releasing the rod m the drum c^2 may be revolved step by step, and corresponding lengths of the web

wound thereon, each movement being sufficient to display the successive names before the opening.

Having described the means for actuating the web in one direction I will now specify the manner in which the same may be reversed. Upon the opposite end of the shaft *e* from that upon which the driving-wheel *j* is mounted is a secondary driving-wheel *n*, which is intended to operate only when the other is not in use. The gear-wheel *n* is placed loosely upon the shaft adjacent to a collar *n'*, attached rigidly to said shaft by means of a set-screw or otherwise. Upon the opposite side of the wheel is placed a leather washer n^2, a loose collar n^3 in operative connection with a metal washer *o*, secured by a pin *o'* to a rod or shaft o^2 inclosed within the hollow shaft *e*, and having a head o^3 formed upon its opposite end. The shaft o^2 is long enough to protrude from the end of the sleeve *h*, (see Fig. 4) when the latter is tightened to clamp the wheel *j*, so that at such time the wheel *n* is loose upon the shaft. By reversing the hand-wheel *h'* the gear *j* is loosened and becomes an idler, while the end of the sleeve *h*, pressing against the knob o^3, clamps the collar n^3 against the gear *n* and causes it to revolve with the shaft *e*. A pinion c^4, Figs. 1 and 4, is rigidly attached to the shaft *c'* and engages with an idle-pinion c^5, mounted upon a bearing between the shafts *c' c*^{3}, and which in turn engages with the gear *n*. Rigidly attached to the outer end of the shaft *c'* is a friction-wheel *p*, Figs. 1, 5, and 6, which is preferably provided with annular grooves *p' p'* upon its sides near the periphery, into which are loosely fitted shoes *q q*, having rubber or other frictional surfaces, said shoes being pivotally attached to the arms *q' q'* of tongs, said arms being pivotally secured to each other by means of a rivet q^2, which projects loosely through the slot *r* upon a plate *r'*, which is attached to the frame. An adjusting-spring q^3 serves to compress the tongs and to impede the movement of the wheel *p*, while a spring r^2 normally serves to draw the tongs back and hold the rivet at the lower or outer end of the slot *r*.

To reverse the direction of movement of the web from that which would be indicated by the position of the parts as shown, the sleeve *h* is unscrewed until the wheel *j* is loosened and the end of the sleeve is brought into firm contact with the knob o^3, thereby clamping the wheel *n* firmly between the contiguous disks and causing it to act as the driver, by which, through the gears c^4 c^5, the drum c^3 may be revolved when the lever *g* is operated. The web D serves to revolve the drum c^2 in unison therewith until stopped by the detent. When upon reversal the drum c^2 becomes the motive power through said web to actuate its fellow, the tendency of the drum c^3 to revolve too fast, and thus produce a slack in the web, is obviated by the tension-wheel *p*, which, as the shaft is revolved, draws the clamp to the upward limit of the notch *r*, and when the lever *g* is released the recoil of the spring r^2 reverses the movement of the wheel sufficiently to take up the slack in the web.

In practice it is obvious that the sleeve *h* should be set so as to clamp one or the other of the wheels *j* or *n*, according as it is desired to have the web move in one or the other directions. For example, if the parts are adjusted as in Fig. 4, in which the wheel *j* is shown as being clamped, the web would then be drawn upwardly, displaying the numbers or names at the opening *a*, as shown in Fig. 1. In operating said device it is only necessary for the operator to pull the rod or cord *m* at each station or to indicate the next succeeding station. The advantages of such a device are too obvious to require comment.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a station-indicator, the combination, with winding-drums provided with a web bearing the names of the stations, of a notched wheel and detent for limiting the movement of one of said drums, an intermediate hollow shaft having a normally loose pinion thereon for engaging with a pinion upon the shaft of one of said drums, a normally loose gear upon the opposite end of said shaft in operative connection with a gear upon the shaft of said secondary drum, a lever, pawl, ratchet, and dog in operative connection with said shaft and detent, and means, as specified, for alternately tightening one and loosening the other of the gears upon the respective ends of said shaft, whereby the web may be given a step-by-step movement and may be reversed at will, substantially as shown and described.

2. The combination, with the drums and web of a station-indicator, of a hollow intermediate shaft having loose gears at its respective ends, one connected with one and the other with the other of said drums, a screw-sleeve upon one end of said shaft, adjusted to clamp one of said gears, a rod connecting said sleeve through said hollow shaft with the gear upon the opposite end, whereby the turning of said sleeve in one direction may clamp one of said gears to its shaft and loosen the second, while the reversal of said movement may clamp said second gear and loosen the first, substantially as specified.

3. The combination, with the drums and web of a station-indicator, of the hollow shaft *e*, gears *j n*, one in operative connection with a gear upon one and the other with a gear upon the other of said drums, sleeve *h*, rod o^2, and a lever and ratchet for rotating said shaft, and a wheel and detent in operative connection therewith, whereby a step-by-step movement may be imparted to the web, substantially as shown and described.

4. In a station-indicator, the combination, with two drums and a web, of a regulator con-

sisting of a notched wheel and detent upon the shaft of one of said drums, a tension device upon the shaft of the other, intermediate hollow shaft *e*, gears *j n*, one in operative connection with one and the other with the other of said drum-shafts, screw-sleeve *h*, shaft o^2, and a lever-and-ratchet mechanism in connection with the shaft *e*, pivoted dog g^4, and a rod or cord for actuating the same, substantially as shown and described.

5. In a station-indicator, the combination, with a regulator attached to one of the drum-shafts for imparting a step-by-step movement thereto, of a lever and gears for actuating said drums, a friction-wheel attached to the secondary drum-shaft, clamping-tongs in frictional contact therewith, and a recoil-spring for withdrawing said tongs upon the release of the actuating-lever, whereby the slack in the web may be taken up with each movement, substantially as shown and described.

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, this 5th day of June, 1889.

MICHAEL BYRNE.

Witnesses:
D. H. FLETCHER,
J. HALPENNY.