

Francis F. Warner and James W. Benham

Imp^t in Station Indicators.

No. 121,476.

Patented Dec. 5, 1871.

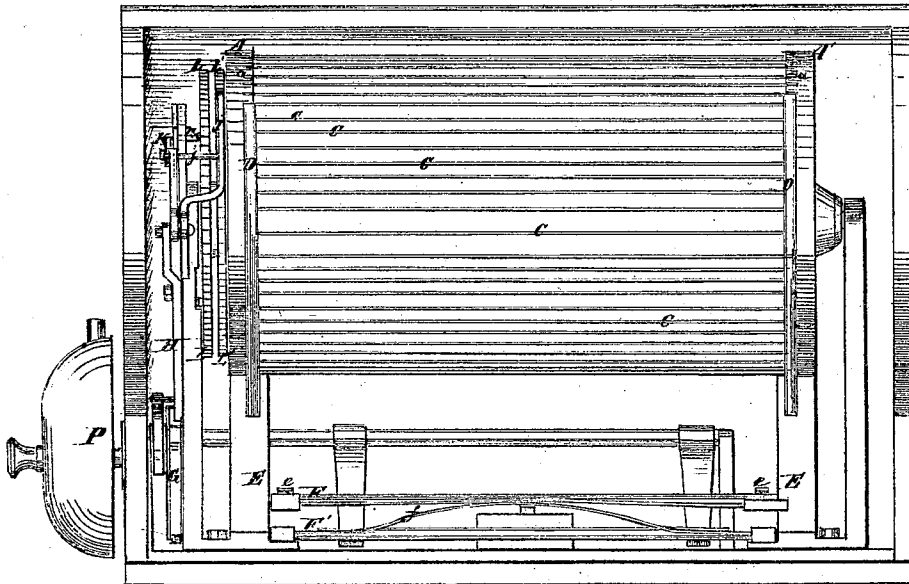


Fig. 1.

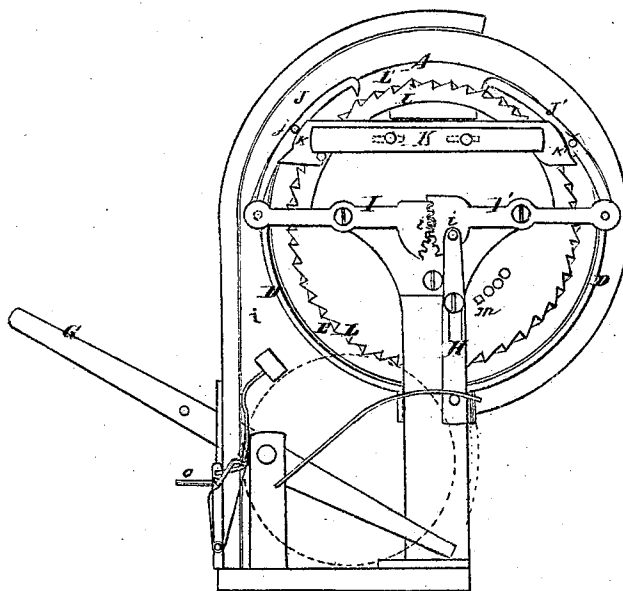


Fig. 2.

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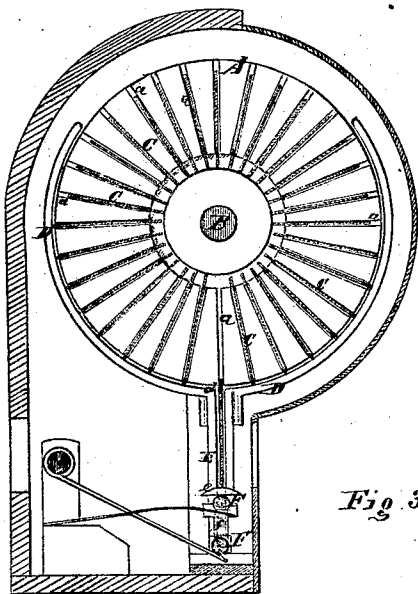


Fig. 3.

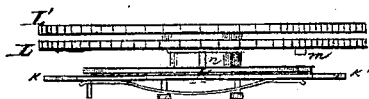


Fig. 4.

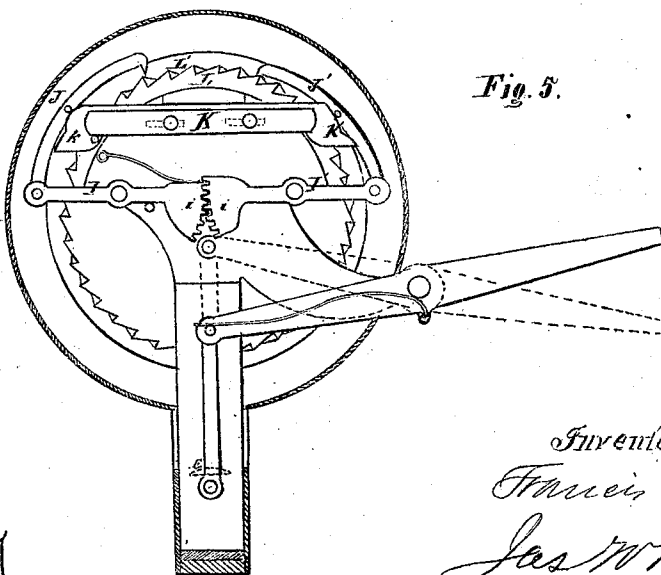


Fig. 5.

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UNITED STATES PATENT OFFICE

FRANCIS F. WARNER AND JAMES W. BENHAM, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN STATION-INDICATORS.

Specification forming part of Letters Patent No. 121,476, dated December 5, 1871.

To all whom it may concern:

Be it known that we, FRANCIS F. WARNER and JAMES W. BENHAM, of Chicago, in the county of Cook and State of Illinois, have invented certain Improvements in Station-Indicators; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, which, together with the letters and figures marked thereon, form part of this specification, and in which—

Figure 1 is a side elevation of a station-indicator made in accordance with our invention. Fig. 2 is an end view of the same, the exterior casing of the end shown being removed. Fig. 3 is a central vertical section from front to rear of Fig. 1. Fig. 4 is a top or plan view of the ratchets and automatic reversing device, shown detached; and Fig. 5 is an end view of a modification in the construction and arrangement of the operating lever.

Like letters of reference made use of in the several figures indicate like parts.

This invention relates to a mechanism for exhibiting in regular and predetermined order the names of stations upon a railway, or of cross-streets upon city horse-railways. Being placed in a conspicuous place within the car in view of the passengers, and operated by the driver or brakeman at each successive station, said mechanism serves to notify the passengers of the whereabouts of the train or car; and our invention consists of a peculiar construction and arrangement of parts in a mechanism to accomplish the result above mentioned, as will presently more at length appear.

To enable those skilled in the art to make and use our invention, we will proceed to describe the same with particularity, making reference in so doing to the aforesaid drawing.

A A' are two circular metallic disks, attached rigidly to the shaft B. The inner faces of these disks are cut with a series of radial slots, *a*, extending from the periphery to near the center, as clearly shown at Fig. 3 of the drawing. C are cards or plates bearing the names of the stations or cross-streets. These cards or plates are of a length so that they may be placed within the slots *a*, one end resting at each disk. A guard, D, surrounds the disks in such a manner that the plates cannot slip out of the grooves by their

weight. Said guards do not, however, entirely surround the disks, a space being left at the top for the insertion of the plates, and a slot being cut through said guards at the point *d*, so that when a plate arrives exactly over this slot it will pass down by its own weight into the grooves of the standards E and rest upon the curved supports or riders *e*, attached to each end of the horizontal sliding bar F. By a mechanism hereinafter described the two disks, carrying the plates, are caused to revolve so as to bring each plate in succession over the slot *d*, and when the said plate has fallen into the grooves of the standards E it is returned by an upward movement of the sliding bar F, the curved riders *e* allowing the plate to slide past the slot *d* in the further revolution of the disks, and also allowing the succeeding plate to slide into position upon the said riders and immediately above the slot *d*. The lowering of the bar F now allows the succeeding plate to drop into the grooves, where it is exhibited to the view of the passengers, and so on.

The mechanism employed to accomplish this motion is as follows: G is the operating lever, having a fixed fulcrum, and having the inner end arranged to lift against the vertical sliding bar H, which is pivoted to one of the levers I I', the inner ends of which are constructed with segmental cogged surfaces *i i*, so that when the vertical bar H is moved upward the outer ends of the levers I I' are drawn downward. Two pawls, J J', are attached, one to each of the levers I I', and a horizontal sliding bar, K, having cams *k k'* at each end, is so arranged that a lateral movement of said bar carries one pawl into gear and the other out by means of pins *j j* attached to said pawls and resting upon said cams. These cams are so constructed that when one pawl is allowed to engage and operate its ratchet-wheel, the other is caused to act as a stop-catch by dropping at the right moment into its ratchet-wheel. L L' are two ratchet-wheels carried upon the same shaft as the disks A A', being rigidly attached thereto. The teeth of these ratchets are made to incline in opposite directions; and by sliding the bar K and changing the position of the cams *k k'* the pawls J J' are reversed, one being lifted away from its ratchet, and the other brought to engage its ratchet. Immediately beneath the sliding bar F, above described, is a

second similar bar, F' , and interposed between these two bars is a spring, f . The lower bar F' is connected directly to the operating lever G , so that when motion is given to the lever G the bar F' , carrying with it the bar F on the plate resting thereon, is brought up until the plate is entirely within its radial slot, which occurs without any compression of the spring f . At this moment the inner end of the operating-lever engages the lower extremity of the vertical sliding bar H , which operates one of the pawls and turns the ratchet engaged, together with the disks A A' and plates, the distance of one ratchet-tooth, which is just far enough to present the succeeding plate at the groove d and the release of the operating lever, which resumes its normal position by means of a retracting spring, allows the plate bearing the name of a street to drop into view through the groove d . This operation of the pawls and ratchets is reversed automatically by means of a peg, m , carried upon the surface of the outer ratchet-wheel. This peg engages a peg, n , attached to the sliding bar, and moves it far enough to reverse the pawls, when the motion of the disks and plates proceeds in the opposite direction until the peg is again reached. This reversing takes place at the end of the route, so that the names of the streets or stations are always presented in their proper succession. The case containing the above apparatus is cut away in front and in rear of the plates, or rather of the place at which the plates appear, and said plates are marked upon both sides so as to be visible to the operator as well as to the passenger. A bell, P , is attached to the apparatus, and its hammer is caused to strike by engaging a pin, o , upon the lever G , so that at each change of the plates and presentation of the name of a station or street the change is announced to the passenger by the sound of the bell. In practice we find it expedient to cut the ends of the plates C upon a curve or convex, and we find the most practical curve to be that produced by a radius of half the length of the plate. This construction prevents the said plates from catching or wedging in the grooves when they do not come squarely down.

The grooved circular disks A A' admit of the inner edges of the cards coming together, the ribs between the grooves not extending so near the center of the disks as the cards, and the cards falling against a circular flange, as shown in Fig. 3, near the center of the disks. This enables us to carry more cards than could be carried if they were placed between arms radiating from a central shaft; and the fact of the cards falling down to exhibit the name of the station obviates the necessity of grasping a single card when in place beside the other cards; and also, by having the cards drop upon a vertically-moving piece which lifts them into place without grasping their ends,

we are able to put the largest possible number of cards in a machine of a given size, because when the inner edges of the cards come in contact there could be no more cards used in a machine without increasing its size. Furthermore by simply using disks of this kind the revolving part of the machine is made light and cheap. The riders e being placed beneath the cards on a vertically-moving bar, F , supported on a spring obviates the necessity of grasping the cards; they simply fall of their own gravity, and are raised back to place by raising the support upon which they fall, and by the use of the spring beneath the bar F . The levers that raise the bar are allowed to move sufficiently after the card is in position to cause the card-holder to revolve the width of one card, bringing the next card upon the rider, e . This bar has a positive movement and is not liable to bind, and the card is carried up in a horizontal position to its place. Our machine also reverses automatically, and can be set by changing the pin m so that it will reverse at any desired point, and, by using two pins, m , it may be set so as to reverse without making an entire revolution; and, also, by having two ratchet wheels, L and L' , with the pawls J J' , one pawl acts as a stop while the other revolves the card-carrier, and vice versa when the machine is reversed. This is obviously much better than a friction-spring, because it makes a positive and sure stop.

Having fully described the construction and operation of our invention, what we claim, and desire to secure by Letters Patent, is—

1. The disks A A' , provided with inner radial grooves and circular flange for supporting the inner edge of the cards, the ribs between the grooves not extending to the flange, in combination with the plates C , and the guard D arranged with its slot for the cards to pass through beneath the disks, substantially as and for the purposes specified.

2. The riders e , the vertically-vibrating bar F supported upon a spring, in combination with operating levers, and arranged beneath the disks so that the cards will simply rest upon them, all substantially as and for the purposes described.

3. The combination of the pawls J J' , the sliding bar K , and cams k k' , when so constructed and arranged that when one pawl serves to turn the card-holder the other pawl serves as a stop, as and for the purposes set forth.

4. The adjustable stop m , in combination with the sliding bar K , cams k k' , pawls J J' , for the purpose of automatically reversing the motion of the machine at any desired point, substantially as described.

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(121)