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Witnesses.
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IMPROVEMENT IN TURNSTILE-REGISTERS.

Specification forming part of Letters Patent No. **218,857**, dated August 26, 1879; application filed October 12, 1877.

To all whom it may concern:

Be it known that I, BENJAMIN F. CARD, of the city of Brooklyn, county of Kings and State of New York, have invented a new and useful Improvement in Turnstiles; and that the following specification, taken in connection with the drawings forming a part thereof, furnishes a full, clear, and exact description of my said invention, sufficient to enable those skilled in the art to which it pertains to make and operate the same.

There are many situations and occasions in which it is desirable to record the number of people passing any given point, both as a matter of statistics and as a precaution to guard against dishonesty in persons receiving fares or moneys from said passers.

It will be seen that a turnstile which can be placed at a ferry-entrance, or depot-gate, or doorway of halls of entertainment, or fair-grounds, which shall correctly register the number of people passing through the gate or entrance and transmit said information to any central station that may be desired, will contribute materially to the saving in calculations, and, in many instances, of money.

Numerous attempts have been made heretofore to make self-registering turnstiles. Most of them have consisted of four-arm turnstiles, each arm standing at right angles to its neighbor, and adjusted in a passage-way, so that each person passing through would turn it one-quarter of a revolution. But in all turnstiles heretofore invented there have been objectionable features, which have prevented their coming into use as a reliable sort of indicator.

It is impracticable to construct a turnstile with only four arms, because in almost every case with such a construction two persons can pass through the passage-way at once with only a quarter-revolution of the turnstile.

To render a turnstile reliable and valuable on all occasions several things should be observed: First, its construction should be such that the largest number of persons can pass through it successively in as short a time as possible; secondly, it should be so constructed as to render it impracticable for more than one person to be between any two of its adjacent arms during a portion of its revolution; thirdly, it is advisable to construct it so that

it shall be capable of revolution in one direction only; fourthly, it should be constructed with such combinations or appliances that upon the passage of each individual through the same it will register a mark upon a dial or its equivalent.

In the drawings illustrating my invention, Figure 1 shows a plan view of the turnstile and its accessories. Fig. 2 is a side view of the same, and Fig. 3 is a plan of the portion of the stile which operates the registering apparatus.

I is the turnstile, which I construct with six arms, B B, it being found that in arms forming radii of a circle whose length is about the ordinary space occupied by the width of a man's body the number which will allow between each two arms substantially the space occupied by the body of a single adult is six. The ends of these arms should be concaved on both sides by making the extremity of the arm wider than the body, and the accuracy and the perfect operation of the stile will be subserved by having the sides of the alley which leads up to the turnstile curved in lines which shall be substantially a continuation of the curves on the arms.

The arms of this turnstile I are attached to a spindle, A, held in an upright position in sockets, so as to easily revolve. I combine with this spindle (preferably by placing it on the same at the upper part thereof) a hexagonal plate, D, so set that its angles will be in substantially a vertical line midway between the arms. Alongside of this plate D is a flat spring, E, or its equivalent, so arranged that when the turnstile is being moved a sixth of a revolution one of the angles of the plate D will travel along, bending the spring E, and when the stile has completed the sixth part of its revolution one of the straight sides of the plate D will be pressed against the spring E. This spring operates to bring the arms B of the stile to the proper points, so that the opening between them may be always opposite the mouths T¹ T² of the guideways C C'.

To diminish the friction made by the spring E on the plate D, I insert friction-wheels *ff* at each of the angles of the same.

G is a ratchet-wheel, combined with the

spindle A, which, in connection with the spring *h*, or its equivalent, operates to prevent the turnstile from being turned in a reverse direction.

C and C' are guideways leading up to and away from the turnstile respectively. These guideways should be so constructed in relation to the turnstile that the side thereof adjoining the turnstile should be in two parts, P¹ P², leaving an opening between them of substantially the distance between the extremity of one arm and the extremity of the next arm but one. This side P¹ P² should be so located with respect to the turnstile that the extremity of the arms B as they revolve shall reach a point in a line drawn across the opening; or, in other words, the side of the guideway toward the turnstile should be in a line which, if continued right across, would be substantially a tangent to the circle of the revolution of the arms. The other side of the guideway R R should be continuous, and at a point midway between the sides P¹ and P² should be made to approach the outer line of the circle of the revolution of the arms B, as shown at S.

This turnstile I connect with any suitable registering apparatus, (a preferable one being an electrical register, substantially as described by me in Letters Patent granted to me June 26, 1877, No. 192,361,) the revolution of the plate D serving to open and close the circuit as the corners or flat sides respectively are operated upon by the spring E.

It will be seen that by this construction of turnstile the passer, as he advances through the guideway C, has merely to take one step

sidewise, or to slightly turn in his direction, and then, after having advanced one or two steps, a single step to the other side will bring him into the passage-way C', after having caused the stile D to turn one-sixth of a revolution.

The dimensions and the shape of the approaches T¹ of the passage-way C will permit but one person to enter between the arms B¹ and B², and the moment a person moves forward, so as to allow another person to pass through the opening T¹, the arm B² moves forward, and prevents the next individual's advance until the opening between B² and B³ is presented opposite the space T¹.

The slats *g g'*, projecting alternately from the spindle A under each of its arms B and from the points P¹ and P² in the passage-way, prevent persons from passing under the stile without turning it, and at the same time permit complete revolution of the stile.

Having thus described my invention, I do not broadly claim a registering-turnstile, nor do I claim all the details of the same; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

In a turnstile, the combination of the arms B, enlarged and curved at their outer extremities to admit but one person at a time, with the straight continuous guideways C C', terminating in curved mouths P¹ P², separated by the divider S, substantially as described, and for the purpose set forth.

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Witnesses:

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