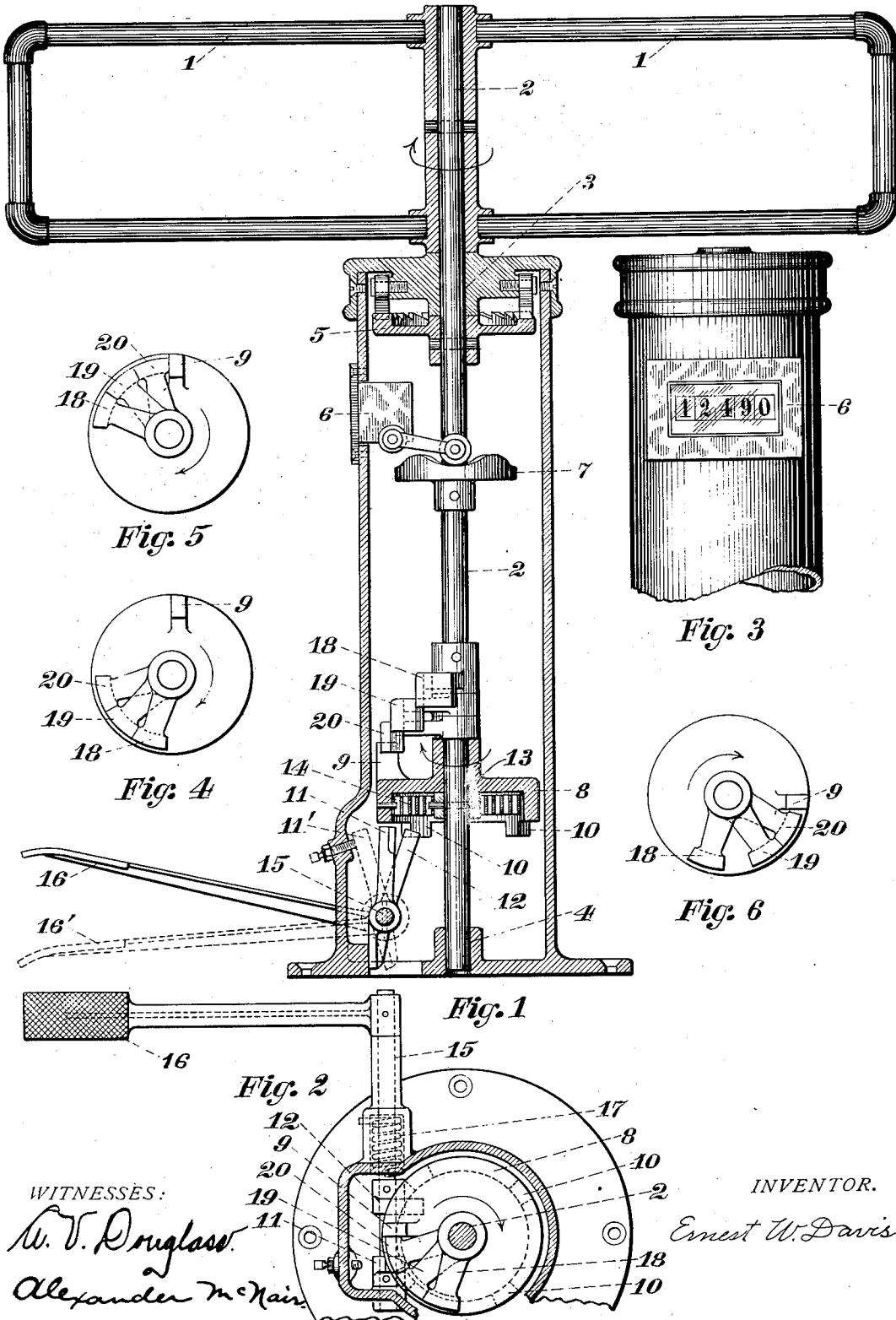


E. W. DAVIS.
 SELF CHECKING, REGISTERING TURNSTILE.
 APPLICATION FILED JAN. 7, 1911.

1,007,927.

Patented Nov. 7, 1911.



WITNESSES:

W. T. Douglass.
Alexander McHain.

INVENTOR.

Ernest W. Davis.

UNITED STATES PATENT OFFICE.

ERNEST W. DAVIS, OF CHICAGO, ILLINOIS.

SELF-CHECKING REGISTERING-TURNSTILE.

1,007,927.

Specification of Letters Patent.

Patented Nov. 7, 1911.

Application filed January 7, 1911. Serial No. 601,412.

To all whom it may concern:

Be it known that I, ERNEST W. DAVIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Self-Checking Registering-Turnstile.

My invention relates to a turnstile which automatically checks the number of passing persons with the amount of cash received by the agent or operator.

The ordinary registering turnstile accurately registers in proportion to the number of rotations imparted thereto, but fails to cooperate with the receipt of fares or tickets. It has been found in practice that an ordinary registering turnstile, when used for registering paid admissions, if unwatched, will invariably register more than the amount of cash received. This may be explained in part by the following reasons: Inattention of agents and forgetfulness of passengers, or a crowded line in which passengers are pushed along before having time to procure their change, will result in registering the turnstile without consequent receipt of cash by the agent. Also, small boys frequently crouch down so as to be unobserved while passing the agent and then register the turnstile. Also, hurried passengers frequently revolve the turnstile so rapidly that the momentum will cause two or more fares to be registered.

The above named conditions necessitate careful watching on the part of the agent, who usually finds it necessary to hold his hand in the orbit of the revolving segments in order to keep check of the number of persons passing. The result is that a single agent can handle only about one-half as many passengers as one who is not thus hampered.

As turnstiles are often very desirable, except for the above-named objections, it is the purpose of this invention to overcome these objections and to provide a turnstile which will automatically check the number of persons passing through. This is accomplished by providing a variable, adjustable, limiting means which will permit a predetermined number of people to pass after which the turnstile will be automatically locked. In order that the agent, or operator may have the free use of both hands for the purpose of making change, the said limiting means is preferably adjusted or set by means of a pedal, which upon being de-

pressed a given number of times will allow a corresponding number of persons to pass through the turnstile. Thus if five depressions are given to the pedal, the turnstile will be free to revolve until five persons have passed through, after which it will be locked until the pedal is again depressed.

In order that the several details described hereinafter, may be more readily understood, reference is made to the accompanying drawing, which shows the preferred embodiment of my invention and in which—

Figure 1 is a sectional elevation. Fig. 2 is a sectional plan view. Fig. 3 is an elevation of that part of the turnstile which shows the register. Figs. 4, 5, and 6 are motion diagrams illustrating the movements of the stops and intermediate stops described hereinafter.

An ordinary turnstile is provided having four arms or segments, two of which are shown at 1, 1, (Fig. 1.) These arms are rigidly secured to a vertical shaft 2, which is provided with bearings at 3 and 4. The turnstile as here illustrated is designed to rotate in the direction of the arrow indicated thereon, and in order to prevent reverse rotation, a ratchet wheel 5, is provided. A suitable counting mechanism 6, is operated by a cam 7, which rotates with the shaft 2.

An escapement wheel 8, is provided with a stop 9, and is further provided with four teeth or lugs 10, 10, which engage with the escapement dogs 11, and 12, in the manner of an ordinary escapement. The escapement wheel 8, is free to rotate on the shaft 2, and rests on a collar 13, which is rigidly secured to the shaft 2. A spiral spring 14, is secured to said collar 13, and is anchored to the escapement wheel 8. This spring constantly tends to rotate the escapement wheel 8, in the direction indicated by the arrow, but the rotation is checked by the escapement dogs 11 and 12.

The escapement dogs 11, and 12, are fastened on a horizontal shaft 15, on which is also fastened a pedal 16, and a helical spring 17, (Fig. 2). The helical spring 17, is wound preferably with slight open spaces between adjacent coils so as to allow slight longitudinal compression for the purpose of cushioning the impact of the escapement-wheel teeth 10, 10, which strike against the dogs 11 and 12.

The torsion of the helical spring 17, holds

the dogs 11, and 12, and the pedal 16, in their normal positions as indicated by the full lines (Fig. 1) but when the pedal is depressed, the pedal and dogs occupy the position indicated by the dotted lines. Each depression and release of the pedal 16, allows a quarter revolution of the escapement wheel 8.

A stop 18, is rigidly fastened to the shaft 2, and engages with an intermediate stop 19, which is free to rotate on the shaft 2, and which in turn engages with a duplicate stop 20, also free to rotate on the shaft 2. The second intermediate stop 20, engages with the stop 9, on the escapement wheel 8. The object of providing the intermediate stops 19, and 20, is to permit a greater amount of rotation of the escapement wheel 8. Thus, if the stop 18, engaged directly with the stop 9, the escapement wheel could not make a complete revolution relative to the stop 18, and it would therefore be impossible to set the turnstile for more than four persons to pass.

To illustrate the action of the stops and intermediate stops more clearly suppose that the stops and escapement wheel were in the position shown in Fig. 2, and that the pedal 16, were depressed once and then released. The stop 9 would then move to the position indicated in Fig. 4. The turnstile is thus set for one person to pass, but after being rotated 90 degrees, the stops and intermediate stops will have taken the position indicated in Fig. 5, in which position the turnstile is locked. Or, if the stops and escapement wheel were in the position shown in Fig. 2, and the pedal 16, were depressed ten times, the stop 9 would make two and a half revolutions and would carry the intermediate stops to the positions shown in Fig. 6. Upon the passage of ten persons through the turnstile with consequent movement of two and a half rotations, the stops and escapement wheel will again have the relative position shown in Fig. 5.

In operation, the spiral spring 14, can never become unwound, as the winding motion due to movement of the turnstile exactly

compensates the unwinding motion due to the rotation of the escapement wheel 8. Obviously the constant tendency of the spiral spring 14, to rotate the shaft 2, in a direction opposite to that in which it is free to rotate, will tend to overcome the momentum of the revolving segments.

I am aware that registering turnstiles were in use many years prior to my invention, also that stop motions of various kinds have been disclosed heretofore, but I am not aware that the combination of a turnstile and an advanceable stop has ever been used or described.

I claim:

1. In combination, a rotatable turnstile; a stop, movable with said turnstile; and an advanceable stop capable of limiting the rotation of said turnstile by engagement with said first named stop and capable of being variably advanced in the direction followed by said first named stop.

2. In combination, a rotatable turnstile; means for limiting the rotation of said turnstile; a depressible pedal; and means whereby a given number of depressions of said pedal, adjusts said limiting means so that a corresponding number of persons may pass through said turnstile before said limiting means becomes operative.

3. In combination a rotatable turnstile; an escapement wheel provided with a stop, said stop being capable of limiting the rotation of said turnstile; means tending to advance said escapement wheel; escapement dogs engaging with said escapement wheel, and means for operating said dogs.

4. In combination a rotatable turnstile; an advanceable stop capable of variably limiting the rotation of said turnstile; and a plurality of interengageable stops, one of which engages with said advanceable stop.

In testimony whereof, I have hereunto affixed my signature this 28th day of December, 1910.

ERNEST W. DAVIS.

Witnesses:

A. C. DAVIS,
W. H. TRAVER.