(No Model.)

E. L. GILES.

SWITCH FOR STORE SERVICE APPARATUS.

No. 332,339. Patented Dec. 15, 1885.

Fig. 1.

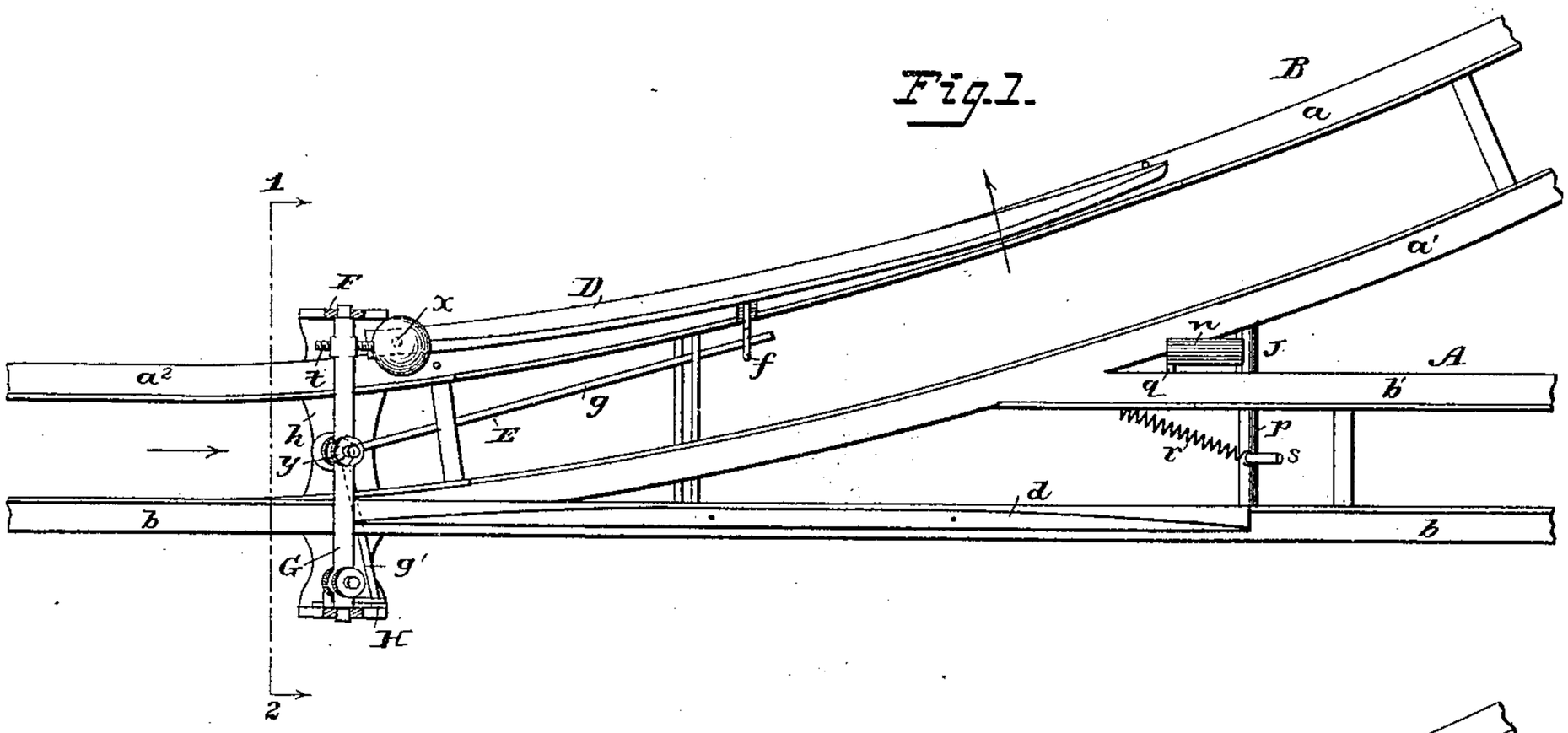


Fig. 2.

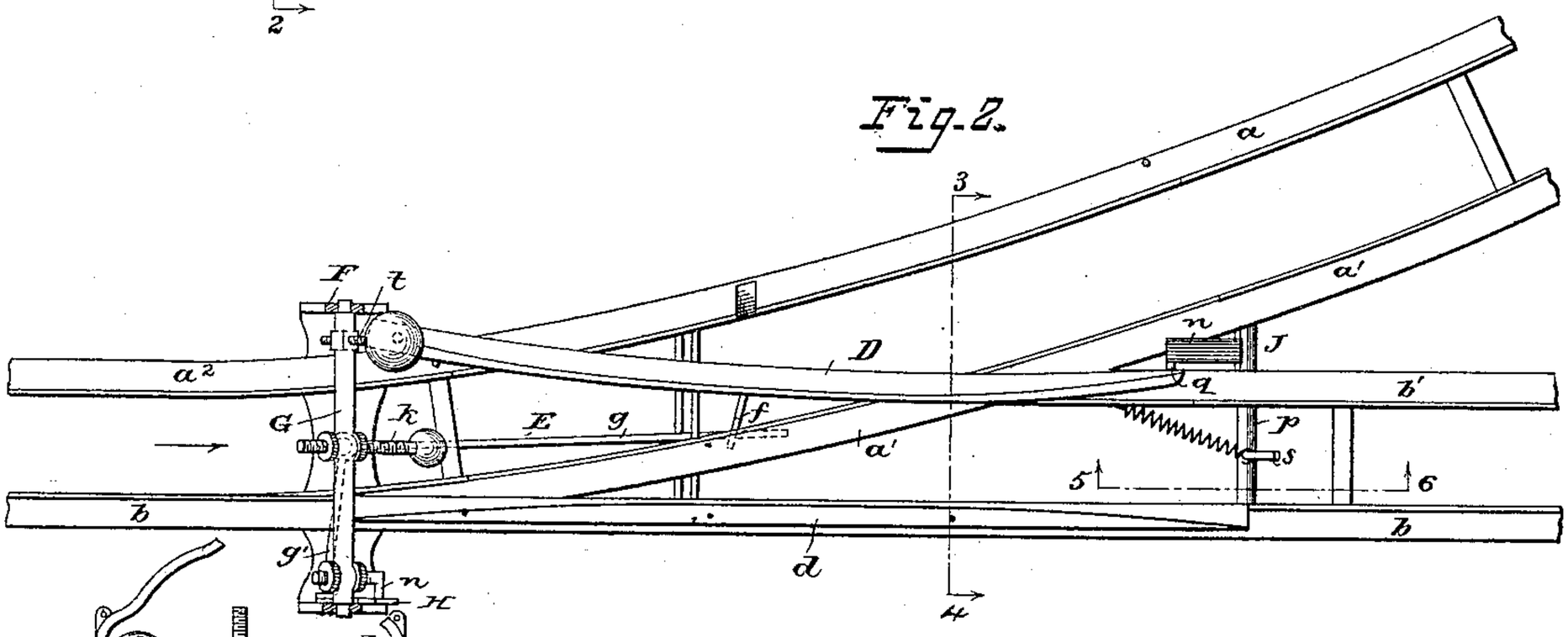


Fig. 3.

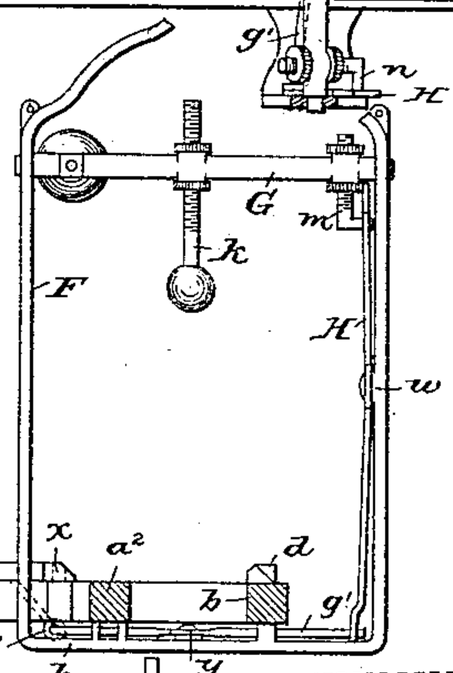


Fig. 4.

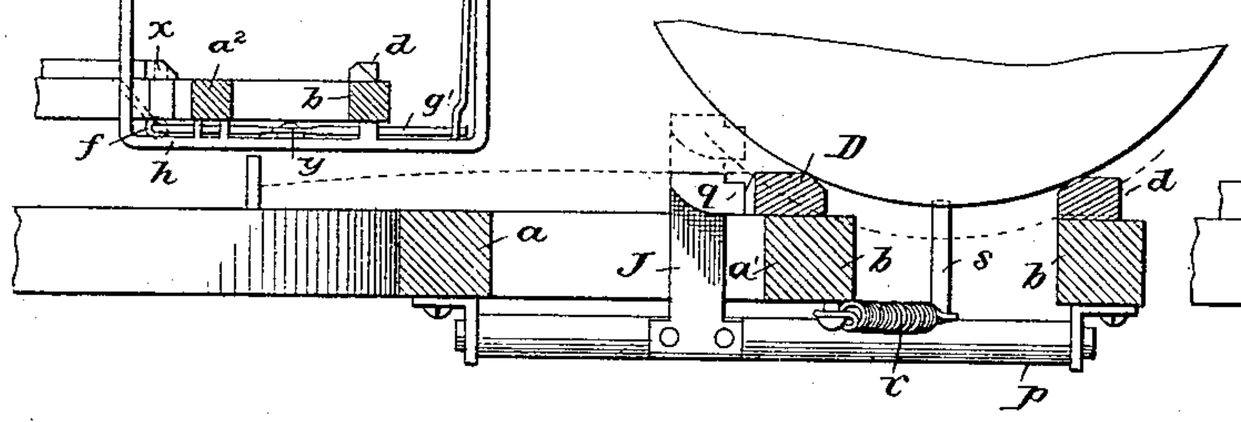
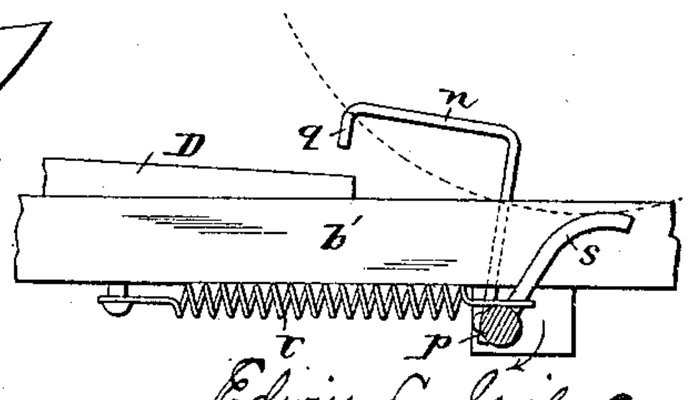


Fig. 5.



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UNITED STATES PATENT OFFICE.

EDWIN L. GILES, OF LOWELL, MASSACHUSETTS.

SWITCH FOR STORE-SERVICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 332,339, dated December 15, 1885.

Application filed May 18, 1885. Serial No. 165,874. (No model.)

To all whom it may concern:

Be it known that I, EDWIN L. GILES, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Switches for Store-Service Apparatus, of which the following is a specification.

My invention relates to that class of store-service apparatus in which the ways consist of parallel ways; and my invention consists of a switch device whereby the spherical carriers may be transferred from an unbroken main-way to the branch way, as fully set forth hereinafter.

In the accompanying drawings, Figures 1 and 2 are plan views showing the junction of a store-service way with my improved switch device. Fig. 3 is a cross-section on the line 1 2, Fig. 1. Fig. 4 is an enlarged cross-section on the line 3 4, Fig. 2. Fig. 5 is a longitudinal section on the line 5 6, Fig. 2.

A B represent diverging tracks of a store-service apparatus, one of which—for instance, the track B—is the main track, the other being the branch track, these terms, however, being used relatively, as the track, which is practically the main track, is the one leading to the counter or station where the greatest number of sales are made. Upon the tracks travel the usual spherical hollow carriers or balls, which are of different sizes, and are automatically directed to the different tracks, according to the stations to which they belong.

Heretofore the switches employed for directing the carriers from one track to another have been so constructed as to render it necessary to interrupt the continuity of the tracks at the point of intersection, so that the balls in moving rapidly are jolted, are retarded, and sometimes thrown from the track.

In order to prevent the retarding or displacement of the carriers, I use a continuous main track, or make that track contiuous upon which there is the greatest travel, and I merge the inner rail of the other track with the inner rail of the main track in the manner illustrated in the drawings, in which the track B has two continuous rails, a a', and the inner rail, b', of the track A merges with the inner rail, a', of the track B, so that the track A terminates at and is closed by the rail a'.

In order to conduct to the track A such of the carriers as must pass to stations on the said track, I make use of a movable switch-rail, D, which may be brought into position above the rail a' and in line with the rail b' and the outer rail, a^2, of the main track, the said switch-rail being of such a height as to lift a carrier traveling thereon over the rail a'; and to prevent the carrier from being tilted and thrown over the rail b, I elevate the height of the latter opposite the switch-rail, either by increasing its thickness or by placing thereon a bridge-rail, d, the ends of which incline downward until they coincide with the tread of the rail b. When the switch-rail D is brought into line with the rails b' a^2, and practically parallel to the rail d, it extends across the rail a', and carriers moving in the direction of the arrow, Fig. 2, will be lifted from the faces of the rails b a^2, and will travel over the bridge-rails D d above the rail a', and finally pass onto the rails b b' of the track A. When the rail D is carried away from the rail a', so as to leave the track B unobstructed, carriers passing in the direction of the arrow, Fig. 1, will travel without interruption upon the continuous track B, and if the rail D is thrown to a position above the rail a, as shown in Fig. 1, it will serve as a guard and tend to prevent the carriers from being thrown to the inside of the curve over the rail a.

The rail D may be carried into position in various ways and by different appliances. I have illustrated in the drawings a bridge-rail, D, pivoted at x, and connected by a link, f, with one arm, g, of a bell-crank lever, E, pivoted at y to a cross-bar, h, beneath the track, and vibrated by means of a swinging arm, k, connected to the lever and arranged in position to be struck by such of the carriers as are required to operate the switch.

Any suitable connection may be used between the arm k and the lever E. In the drawings I have shown an arrangement in common use in this class of devices, and consisting of a yoke, F, forming part of the cross-bar h, and supporting a rock-shaft, G, from which the arm k depends, and provided with an arm, m, that engages with the upper end of a lever, H, pivoted at w to one side of the yoke, and engaging at its lower end with the short arm g' of the lever E. If the ball, pass-

ing in the direction of the arrow, Fig. 1, strikes the arm *k* and carries it to the position shown in Fig. 2, it causes the vibration of the lever E, and the rail D is carried into line with the rail *b'*, as shown in Fig. 2, in which position it is secured by a suitable catch or detent, J. As shown, the said detent consists of a crank-arm, *n*, secured to a shaft, *p*, turning in bearings below the rails and provided with a beveled end, *q*, beneath which the end of the rail passes as it is moved into line with the rail *b'*, the arm *n* then being thrown down to prevent the return of the rail D by the action of a spring, *r*, connected to one of the rails and to an arm, *s*, projecting from the shaft *p* upward between the rails *b b'*. The arm *s* is so arranged that it will be struck by the carrier as the latter passes onto the rails *b b'*, whereby the shaft *p* is turned in the direction of its arrow, Fig. 5, and the arm *n* of the detent is lifted to the position shown in Fig. 5, and in dotted lines, Fig. 4, when the rail D is released.

In order to cause the rail D to assume the position shown in Fig. 1 after it is released by the detent, the shaft G is provided with a weighted arm, *t*, which tends to carry it to the position shown in Figs. 1 and 3, and thereby swing the rail D in the direction of its arrow, Fig. 1; but it will be evident that a spring will serve to effect the same result. It will also be evident that the detent J may be constructed in any suitable manner, so as to catch and retain the rail D until the position of the detent is changed by the action of the carrier.

By means of the switch or bridge rail and automatic devices for adjusting it I am enabled to direct the carriers, according to their size, either to an unbroken main track or across the outer rail of the latter onto the rails of the other track, and each carrier that passes to the branch track not only sets the switch-bridge rail automatically in position to carry it to the said branch track, but also is the means of restoring the switch-rail to its place, so that the following carriers adapted to the main track may pass without obstruction thereto.

My improvements may be employed in connection with horizontal or inclined tracks.

It will be seen that the switch-rail, instead of being pivoted so that its point is toward the approaching carriers, is pivoted at the highest or opposite end, and is therefore less liable to be displaced as a carrier passes onto the same.

It will be apparent that this mode of pivoting the rail may be adopted with tracks arranged and communicating in the ordinary manner or with horizontal tracks.

While I have shown certain appliances for moving and securing the switch-rail, I have done so merely for illustration, and do not confine myself to these appliances; but

I claim—

1. The combination, in a store-service apparatus, of a main track having continuous rails, a branch track, and an adjustable switch-rail connected to be thrown into line with the inner rail of the branch track across the outer rail of the main track, and to constitute a bearing for the carriers over and above the outer rail of the main track, substantially as set forth.

2. The combination, with the continuous main track, branch track, and movable switch-bridge rail, of a branch-track rail elevated at that portion opposite the switch-rail, substantially as and for the purpose described.

3. The combination of the continuous main track, branch track, movable bridge-rail, arm arranged to be operated by graduated carriers and connected to the movable rail, detent constructed to hold the rail in position in line with the branch rail, and arm arranged to be struck by the carrier after it passes from the switch-rail to operate the detent, substantially as described.

4. The combination, with the continuous main track, branch track, and movable bridge-switch rail, of the arm *k*, arranged to be struck by graduated carriers and connected to operate the switch-rail, and detent J, constructed to lock the switch-rail and to be operated by the carriers passing to the branch track, substantially as set forth.

5. The combination, with the main and branch tracks, of a switch-rail pivoted at the end which is opposite the point of junction of the tracks, substantially as described.

6. The combination of the unbroken main track, branch track, and switch-rail pivoted at the end opposite the point of junction of the tracks, substantially as described.

7. The combination of the inclined main track, branch track, and switch-rail pivoted at its highest end, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWIN L. GILES.

Witnesses:

AUGUSTIN T. DAVIS,

GEORGE W. COBURN.