

No. 683,920.

Patented Oct. 8, 1901.

G. M. ERVIN.
RAILWAY SWITCH.

(Application filed Feb. 12, 1901.)

(No Model.)

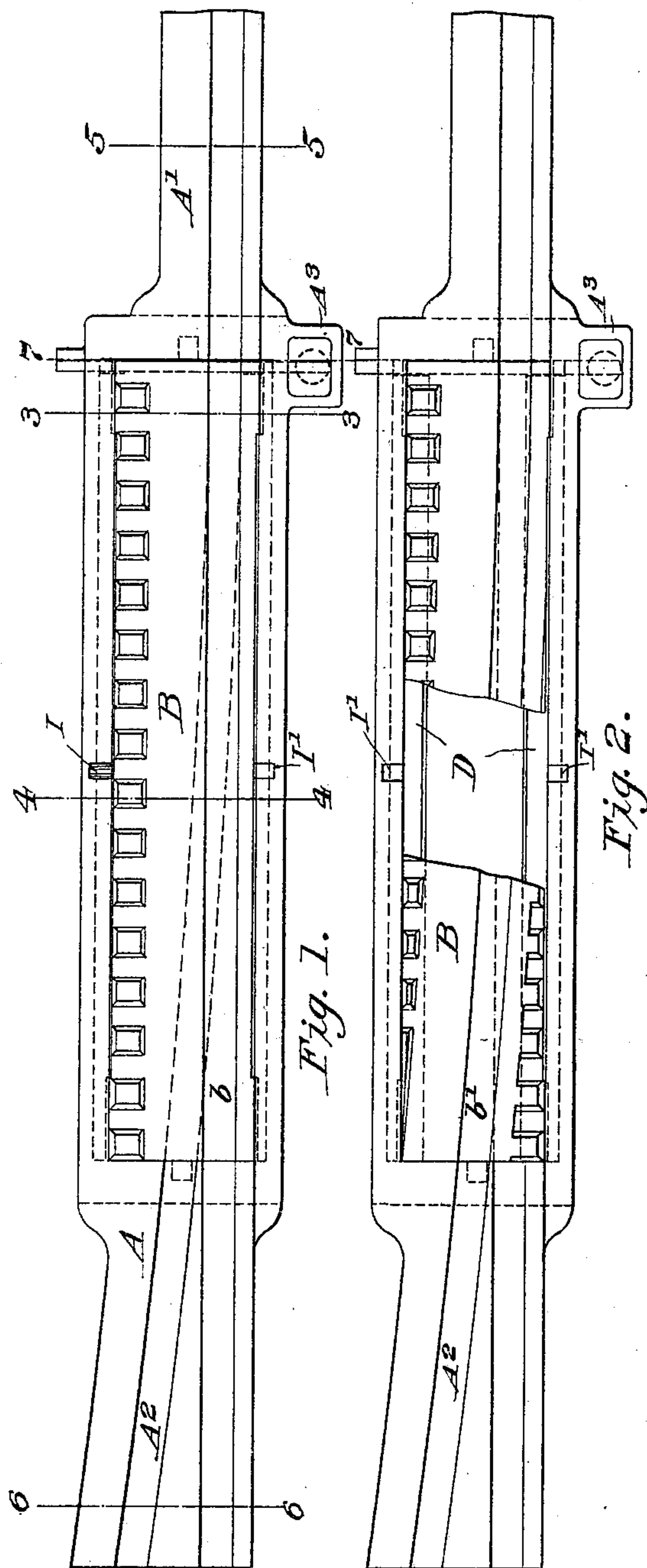


Fig. 1.

Fig. 2.

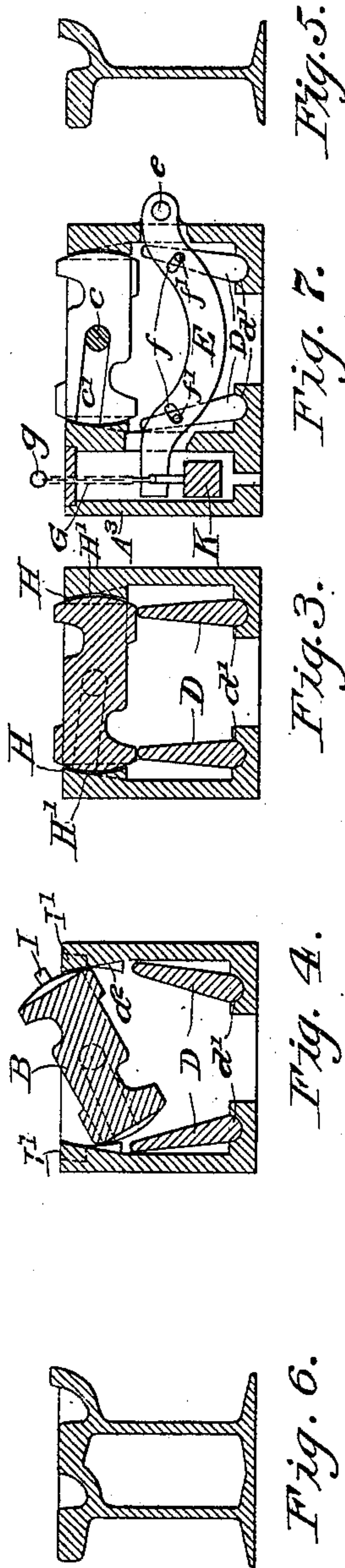


Fig. 3.

Fig. 4.

Fig. 6.

Fig. 7.

Fig. 5.

WITNESSES:

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RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 683,920, dated October 8, 1901.

Application filed February 12, 1901. Serial No. 47,025. (No model.)

To all whom it may concern:

Be it known that I, GEORGE M. ERVIN, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and useful Improvement in Railway-Switches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention has relation to certain new and useful improvements in railway-switches, and is designed to provide a switch which will afford a continuous and unbroken bearing for the car-wheels for both the main and branch tracks and which will carry a car over it with no more jar or thrust of the car than would be caused by a similar position of an ordinary track; also, to provide a simple, durable, and practicable form of rotary switch in which all strain and thrust are entirely removed from the switch-pivots, which act merely as centers of movement.

Other minor objects of my invention will hereinafter appear.

I attain the foregoing objects by the novel construction and combination of parts hereinafter fully described, and pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of a switch embodying my invention set for the main track; Fig. 2, a similar view set for the branch track, a portion of the movable switch-piece being broken away to show the supports therefor; Fig. 3, a section on the line 3 3 of Fig. 1; Fig. 4, a section on the line 4 4 of Fig. 1, showing the switch-piece being moved from one position to the other; Figs. 5 and 6, sections on the lines 5 5 and 6 6, respectively, of Fig. 1; and Fig. 7, a section on the line 7 7 of Fig. 1.

The letter A designates the foundation structure of the switch, which is preferably an integral casting having a central box-like portion with an extension A' at one end, corresponding in section (see Fig. 5) to the section of the abutting main-track rail to which it is to be joined, and at the opposite end an extension A², having a cross-section (see Fig. 6) similar to the cross-section of the combined

abutting main-track and branch-track rails to which it is to be joined.

B designates the rotary-switch piece, which consists of a solid plate of metal having formed in one of its surfaces a longitudinal wheel-groove *b* in line with and forming a continuation of the wheel-groove in the extension A', which in turn forms a continuation of the corresponding groove of the main-track rail, as shown in Fig. 1. The opposite face has a curved wheel-groove *b'*, which connects the main-track rail with the branch-track rail through the extensions A' A². This plate is fitted neatly into the open box-like portion of the structure A and is centered upon pins *c* of the foundation structure, which are engaged by open groove-bearings *c'* of the switch-piece in the manner clearly shown in Fig. 7. In order that said plate may fit as closely as possible in the structure A and at the same time be capable of a rotary movement therein through an arc of one hundred and eighty degrees, the upper portions of the interior walls of the box are formed with receding bevels *a*².

Inasmuch as it is extremely desirable to relieve the pins *c* of all strains and thrusts, which are likely to result not only in breakage, but in undue wear and looseness of the bearings for the switch-piece, an important feature of my invention is the provision of supports for said piece entirely independent of these pins. These supports consist of two edgewise-disposed plates D, placed in the bottom of the box underneath the switch-piece and of such height that when in vertical parallel position the switch-piece will rest squarely upon their upper edges. The lower edges of these plates are rounded and rest in concave bearings *d'*, formed on the bottom of the box, whereby the plates may be rocked away from each other sufficiently to move their upper edges out of the path of movement of the switch-piece. This is effected by means of a transverse lever E, pivoted at *e* in the wall of the box at one end portion thereof and provided with two oblique diverging slots *f*, which are engaged, respectively, by pins *f'* on the ends of the plates. It will be apparent that if the pins *f'* are at the

bottom of these slots and the lever be depressed the walls of the slots will act upon said pins to rock the plates from the position shown in Fig. 4 to the position shown in Fig. 3 and that if said plates are in the position shown in Fig. 3 and the free end of the lever be raised the plates will be moved to the position shown in Fig. 4—that is to say, their upper edges will move sufficiently outward toward the sides of the box to be entirely out of the path of the movement of the switch-piece. To receive the free end of this lever, the box is provided with an offset portion A³, as shown, and connected to the lever within said offset is a pull-rod G, which extends up through the closed top of the offset and is provided with a ring or eye g. To relieve the pins c of side thrusts which would otherwise occur as the car strikes the switch-piece, I provide the sides of the latter at its end portions with convex enlargements H and the sides of the box with corresponding concave bearings or abutments H'. By making a reasonably close fit between these enlargements and bearings, which can be readily done, the pins will be entirely relieved thereby from all side thrusts of the character referred to.

I is a stud or pin projecting on one edge of the switch-piece, which by its engagement with the bottom walls of recesses I' in the structure A acts as a stop to prevent the said piece from moving too far.

The end of the lever E is provided with a weight K, which will insure its being normally held depressed with the supports in proper position to carry the switch-piece. In lieu of a weight it is obvious that a spring may be employed.

The operation of the switch is as follows: Suppose that the switch be set for the main track, as shown in Fig. 1, and it is desired that an approaching car shall take the branch track. If there is no attendant stationed at the switch, the motorman runs his car up to the switch and pulls upon the rod G, thereby moving the supports to the position shown in Fig. 4. He then takes his bar and presses down upon the switch-piece sufficiently to rotate it into the position shown in Fig. 2. This can be done with very little effort, as the switch-piece is perfectly free on its bearings. It will not be necessary for the motorman to continue to pull on the rod after the switch-piece commences to turn, as its own engagement with said supports will keep them back out of the way, their upper edges being slightly beveled, as shown at h, to facilitate this action.

The bottom of the box may be left open, as shown in Figs. 5 and 6, to permit of the escape of water and dirt which collect in the box. If it becomes necessary to clean the box at any time, the switch-piece may be readily lifted out.

Inasmuch as the grooves and gage-lines in the switch-pieces may be made to accurately

register with those of the abutting track and as there is no substantial wear upon the pivots to prevent this register from being maintained, it will be seen that the switch provides a continuous wheel-bearing for both the main and branch tracks, the joints between the ends of the switch-piece and the extensions of the structure A amounting to no more than ordinary rail-joints.

I do not wish to limit myself to the particular arrangement of the supports nor to the means for operating the same which I have herein shown and described, as it is obvious that various means within the province of a mechanic may be devised for the purpose without departing from the spirit of my invention. It will also be obvious that various devices, either mechanical or electromagnetic, might be used in connection with my improved switch for operating the same instead of depending upon the operation of the motorman, as above described.

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

1. In a switch, the combination with a box-like foundation structure, of a rotary switch member journaled or pivoted in said structure and constructed to form in one position thereof a section of a main track, and in a second position thereof a section of a branch track, and means for supporting same plate independently of its journals or pivots.

2. In a switch, the combination with a box-like foundation structure, of a rotary switch member journaled or pivoted in said structure and constructed to form in one position thereof a section of a main track, and in a second position thereof a section of a branch track, and members underneath the said plate and supporting the same in both positions thereof, together with means for actuating said members to move them into and out of supporting position.

3. In a switch, the combination with a box-like foundation structure, of a rotary switch member journaled or pivoted in said structure, edgewise-disposed pivotal supporting plates underneath said switch-piece, and means for moving said plates into and out of supporting position.

4. In a switch, the combination with the foundation structure having a central box-like portion with end extensions adapted for connection to the main and branch track rails, of a rotary switch-piece journaled in box portion of said structure, edgewise-disposed supporting members underneath said plate and having pivotal bearings at their lower edges, and means for actuating said plates to move them on said bearings into and out of supporting position.

5. In a switch, the combination with a foundation structure, of a rotary switch-piece journaled therein, the edgewise-disposed supporting members for said plate, said members being pivotally seated in said structure,

the transverse lever having cam-slots engaging pins or projections on the ends of said members, and a pull-rod connected to the free end of said lever.

5 6. In a switch of the character described, the combination with a foundation structure having a box-like central portion, provided with longitudinally-projecting pins at its ends, of a reversible switch-plate having in
10 its ends open grooves which pivotally engage the said pins, said plate having at one side a track-surface adapted to form a section of a main track, and in the other side a track-
15 surface adapted to form a section of a branch track.

7. In a switch of the character described, the combination of a foundation structure, a

reversible switch-plate journaled therein, means for supporting said plate independently of its journals, and means for relieving said journals of side thrusts. 20

8. In a switch of the character described, the combination of a foundation structure, a reversible switch-piece journaled therein, supports for said plate independent of its
25 journals, stops for limiting the movement of said plate on its journals, and side bearings for relieving the journals from side thrusts.

In testimony whereof I have affixed my signature in presence of two witnesses.

GEORGE M. ERVIN.

Witnesses:

CORA G. COX,
H. W. SMITH.