(No Model.) 2 Sheets—Sheet 1.

W. P. DODSON.

RAILWAY SWITCH.

No. 287,810. Patented Nov. 6, 1883.

Fig. 1.

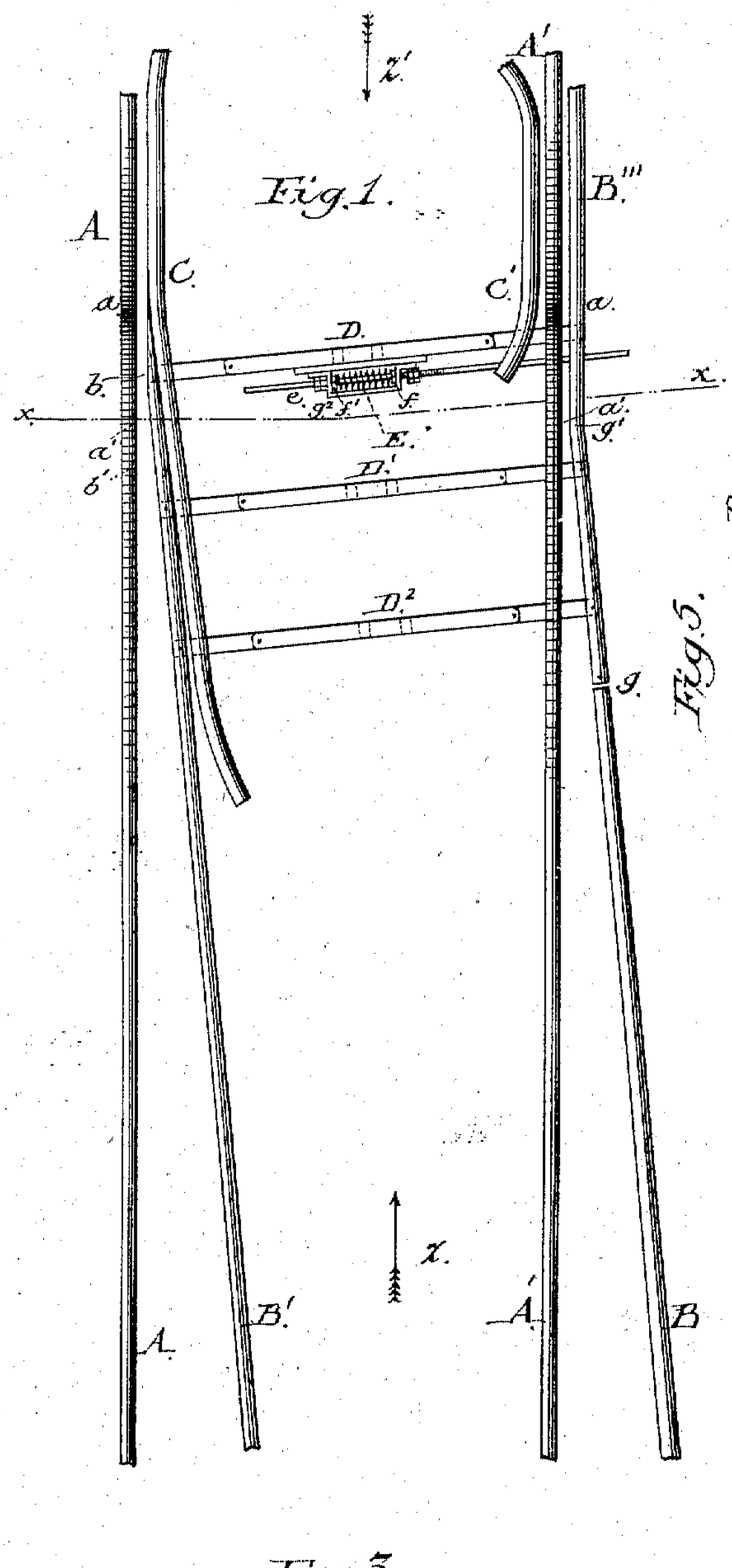


Fig. 2.

Fig. 5.

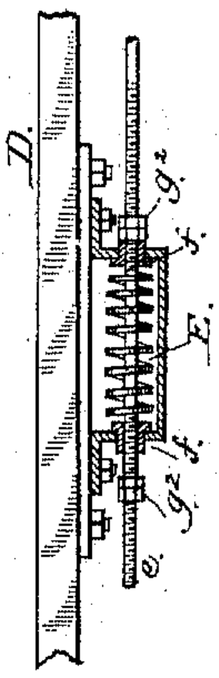
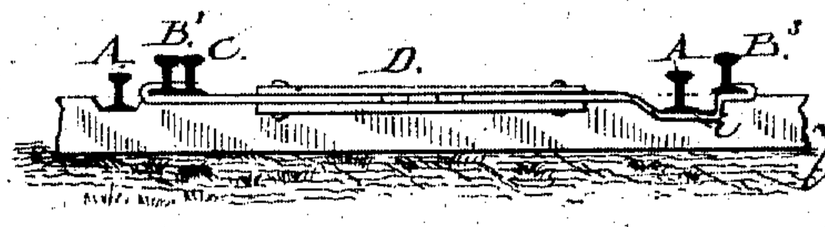


Fig. 3.



Attest;
I. N. Kaeb
C. E. Allen

Inventor;
W. P. Dodson
per Edw. N. Dennis.
Attys

(No Model.)

2 Sheets—Sheet 2.

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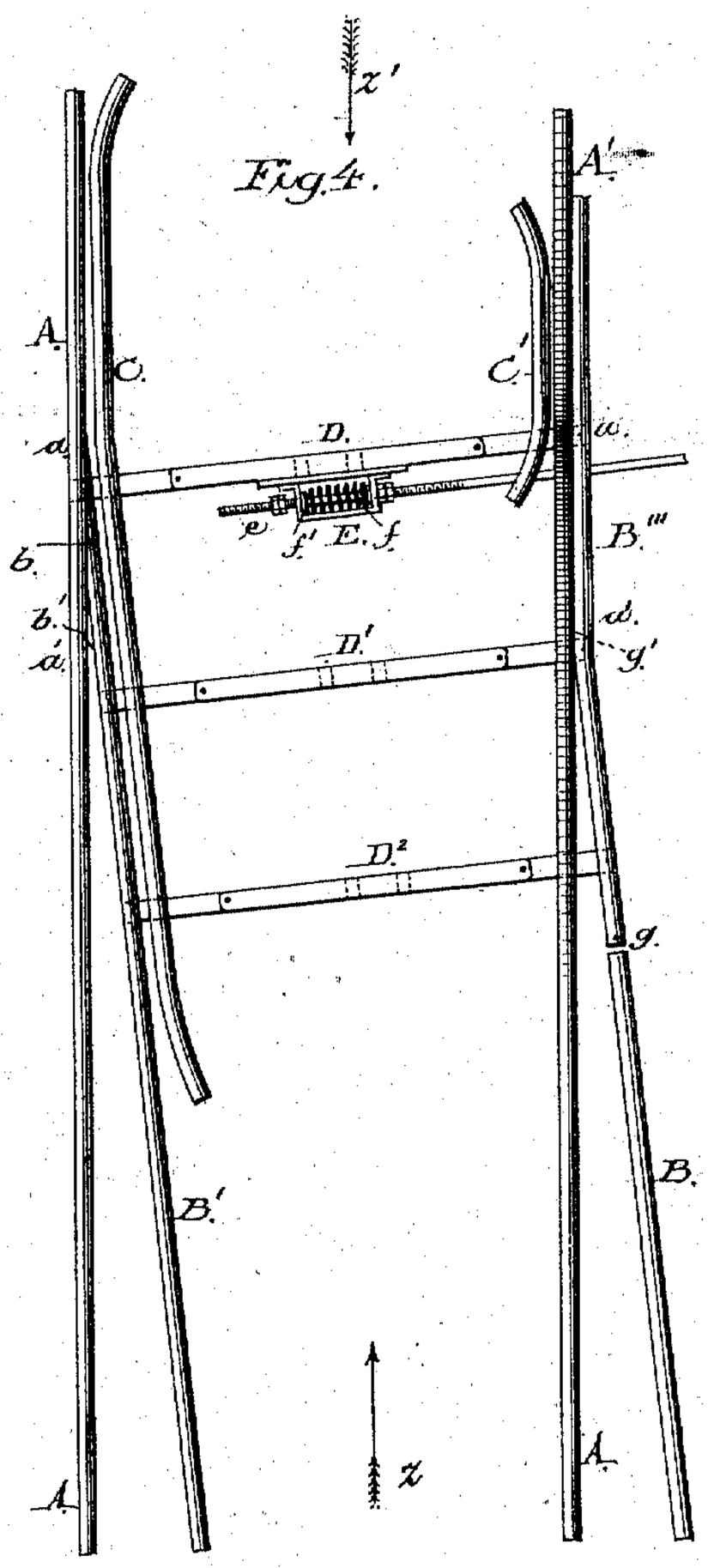

Fig. 4.

Attest;
I. N. Kaub
C. E. Allen

Inventor;
W. P. Dodson
Per Edw. W. Dennis
Atty.

UNITED STATES PATENT OFFICE.

WILSON P. DODSON, OF PHILADELPHIA, PENNSYLVANIA.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 287,810, dated November 6, 1883.

Application filed January 25, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILSON P. DODSON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Railroad-Switches; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in railroad-switches, by which trains of cars, in passing in either direction, whether upon the main track or siding, will be prevented from derailment under any and all circumstances arising from a misplaced switch.

It consists of a main track provided with a depression in one or both of its rails, combined with certain movable siding-rails, all arranged as will be hereinafter set forth and claimed.

In referring to the drawings, Figure 1 is a plan view, showing the main track and switch in normal position to allow a free and unobstructed passage on the main track from either direction. Fig. 2 is a side elevation of the main track. Fig. 3 is a transverse section of the same on line *x x* of Fig. 1. Fig. 4 is a plan of track, showing but one rail of the main track depressed. Fig. 5 is a plan to an enlarged scale, showing the spring device.

Similar reference-letters indicate like parts in all the figures.

The subject of my present application and claim was first presented in a prior application, (upon which Patent No. 257,299, patented May 2, 1882, was granted me,) but was withdrawn from said application to be embodied in the present one, that said patent might issue on the specific matters otherwise claimed therein.

Referring to the drawings, A A′ are rails of the main track, which are permanently fixed to sleepers in the usual manner.

B′ B‴ are the rails forming the switch.

C C′ are guard-rails located at suitable points, as shown, and permanently fixed to the road-bed, to serve as guides to prevent undue lateral movement of the cars as they are being shunted onto the siding from the main track and onto the latter from the former.

D D′ D″ are connecting-bars provided to unite the switch-rails and keep them relatively together.

E is a spring of spiral or other form placed over the switch bar or rod, to which the operating-lever is attached, which is limited in its expansion by flanged collars *f*, which in turn are limited by a yoke permanently fixed to the connecting-bar D. The said connecting-bar D being fixed to the parts of the siding B′ B‴, said parts are carried with it to one side or the other by opposite movements of the switch-lever. Nuts g^2 are adjusted on the rod *e* to admit of the play to the yoke on the said rod when, by force from the wheels of an approaching train, a lateral movement is given to switch-rails B′ B‴. The function of the spring E is to restore the rail B′ or B‴ to a locked position after yielding by the force of the wheels of a passing train. The rail B′ of the siding, being pointed at the end *b*, as shown, is adapted to fit snugly against the rail A when the switch is shifted to shunt a train from the main track onto the siding. The rail B is of ordinary form; but the section B‴ is deflected from point *g′* to form an elbow-curve at said point, which is practically opposite to the point *b* of the rail B′. This rail B‴ is pivoted at *g*, for a purpose hereinafter to be mentioned. The guard-rail C is made of a greater or less length, or in sections, as may in practice be found necessary for the performance of the well-known function of such appliances.

In Fig. 1 the rails A A′ of the main track are depressed a distance about equal to that between the points *a a′* to a depth sufficient, when taken in connection with the contiguous elbow siding-rail, to admit of the transit thereover of the flanges of the wheels of the cars, for a purpose hereinafter set forth. In Fig. 4, however, but one of the permanent rails A of the main track is shown depressed, and in all probability this variation only in any combination would be required in practice to give a satisfactory result. It is of course

to be understood that the siding and its connections have a plane in common with the common plane of the main-track rails, and that the plane of depression of said main-track rail or rails is consequently below that of the siding.

The operation of my switch I will explain as follows: We will suppose the train to be approaching in the direction of the arrow *z*, which we will call "up." The switch being in its normal position—*i. e.*, set for the main line—there will be nothing to prevent the movement of the train upon the main track in either direction. I now open the switch by means of the lever and cause the point *b* to fit snugly to the rail A, while at the same time the opposite rail, B‴, fits snugly to the rail A′ also of the main track, being drawn over by the connecting-bars D D′ D″. The switch being now set to the siding, we will suppose a train approaching which we desire to shunt from the main track. When the forward wheels of the engine or car reach the point *b*, the tread of said wheels will be immediately over the lowest points of the depression at *a a′*, while the flange of said wheels will at the same time impinge against the inner side of the pointed rail B′ at or near said point *b*, by means of which said wheels will be deflected upon the tread of said rail B′. The treads of the wheels upon the opposite side having meanwhile passed upon the tread or upper surface of the elbow-section B‴ at the commencement of the depression of the rail A′ of the main track, are thereby supported, and upon arriving at the elbow *g′* are deflected also upon the siding-rail in consequence of the flanges of said wheels having reached the point of greatest depression, so that the latter are thereby enabled to pass obliquely over the tread of said depressed rail A′ to engage with the tread of said siding-rail. If we now suppose the switch to have been left open, set to the siding, either through neglect or otherwise, nevertheless a train running on the main track in the direction of the arrow *z* will not be prevented from passing over the main track through liability to derailment, for as soon as the flanges of the forward wheels on the left reach the angle *b′* they will enter said angle wedge like and force said pointed rail laterally toward the right, and by means of the connecting-bars D D′ D″ the elbow siding-rail on the opposite side will be moved from its closely-fitting position to allow of the safe passage of the train, said lateral movement being facilitated at the same time by the impingement of the outer rim of the treads of the wheels on the opposite side against the edge of the contiguous elbow siding-rail in a similar wedge-like manner, after which the expansive force of the spring E returns said pointed rail B′ and the elbow-rail B‴ to the locked position, leaving the siding open, set as before the passage of the train. If we now close the switch set to the main line, with the pointed rail B′ snug to the fixed guard-rail C, the main track being now open, a train coming out of the siding will not be prevented from running freely onto the main track, for the reason that as said train moves in the direction of the arrow *z* the flanges of the forward wheels on the left will wedge themselves between the guard-rail C and the pointed rail B′ and force said pointed rail B′ against the main-track rail A, and thus open a way on the left, and at the same time draw, by means of the tie-bars, the elbow-rail within reach of the main track to give a safe passage onward. After said train from the siding has passed on, the force of the controlling-spring E will return the said pointed and elbow rails to again close the siding.

The permanent track-rails A A′, or either of them, are intended to be so inclined or depressed from some convenient point or points, reaching a vertical depth of deepest depression at the point *b*, or at a point about opposite said point, at the same time, so that the wheels of the train, in passing up and down the main track, will descend into and pass out of the depression between the limits of the same so gradually that the change of plane will scarcely be perceived by the passengers on the train. In placing the depressed rail or rails it will be necessary either to lower the road-bed or else groove or cut away the ties to receive said rails, the latter means, however, being preferred for economical or other reasons evident. As I have stated, the rails of the main track may be depressed by as gentle an inclination as may in practice be deemed best; but by increasing or diminishing the length of the inclined plane it will be necessary, also, to increase or diminish the length of the elbow siding-rail B‴ of the siding to a corresponding extent, so that when the train is coming in the direction of the arrow *z′* the tread of the wheels of the train will take onto said rail as soon as the beginning of the said depression is reached.

The connecting-bars D D′ D″ are to be secured in the usual manner to the switch-rail, and they may be constructed with some compensating arrangement, so as to adjust themselves without distortion to the changes necessitated by the movement of the switch laterally. In the application of these bars to fit under the depression of the main-track rail it will be necessary to bend them, as shown at *i*, Fig. 3, in order to have them move freely under the said depressed portions.

While in the construction of the different appliances of my switch I prefer to depress but the one rail of the main track, and that upon the side next to the siding, upon the score of economy and simplicity, in conjunction with absolute safety, yet I do not by any means confine myself to this construction, for the reason that it may be found best in practice to depress both rails of the main track for the convenience of the most rapidly-moving trains, in order to secure a more perfect stability of equilibrium of motion, thus preventing that swaying or lurching of the cars to one

side, as is shown in the case of trains when passing rapidly around a sharp curve, to the discomfort of travelers, as well as to the detriment of the running-gear of the trucks and the tracks from the unequal strain consequent upon the movement of the train in a plane laterally inclined.

I am aware that an outside elbow switch-rail in combination with a level main rail, and upwardly inclined from its end above the level of said main rail to carry the flanges of the wheels of a shunted train over the said main rail, is not new; but in such a case a rolling motion is given to the car by the reason of the said elevation of the switch-rail which forms the inner rail of the curve of the said switch. The rule observed in the construction of railway curves is to elevate the outer rail to resist the centrifugal force, which, in the passage of cars around a curve, tends to throw them over toward the outer side; but this elevation of the inner rail of the curve, where a switch starts from the main line, assists the centrifugal force to lurch the car over toward the opposite side. It has been attempted to prevent this by giving to the switch-point, which is used with the aforesaid upwardly-inclined elbow-rail, (and engages laterally with the inside of the opposite main rail,) also an upward inclination just back of the extreme point. My device avoids the difficulty by depressing the main-track rail adjacent to the elbow switch-rail to such a depth as, when taken in connection with said contiguous elbow switch-rail, will admit of the passage of the wheel-flanges thereover of a shunted train without liability of impingement of the same upon the concave surface of the said main-track rail.

What I claim as new, and desire to secure by Letters Patent, is—

The combination, in a switch, with the main-track rail having a depression, as described, of the elbow rail adjacent to the said depression in the main rail, and arranged in the common plane of the main and side tracks, and adapted to carry the flanges of the car-wheels over said main rail, as set forth.

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

WILSON P. DODSON.

Witnesses:

GEORGE HOUSE,

SAML. F. GILLIES.