E. H. ALLFREE & W. H. ENGLAND.

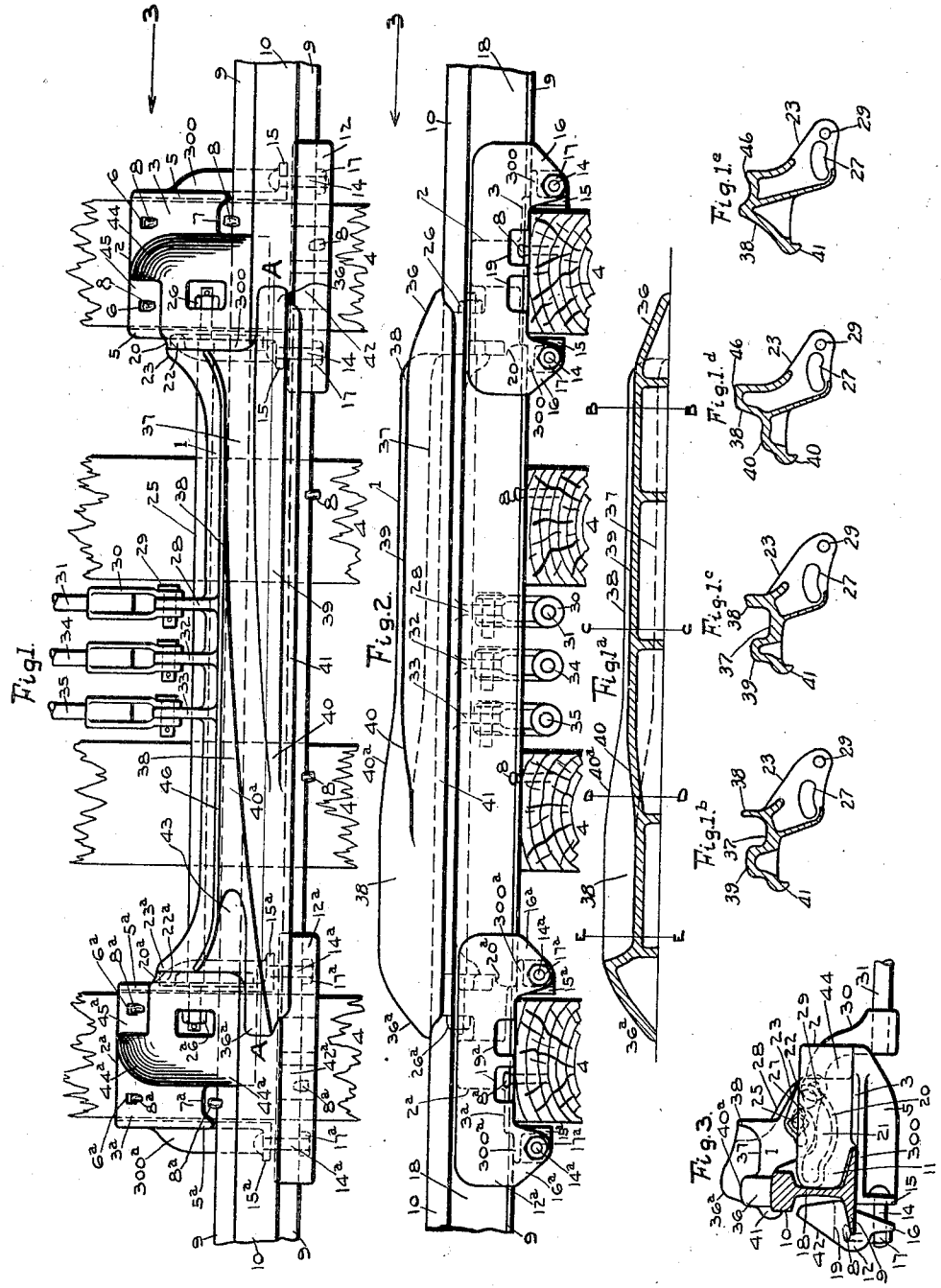
DERAILER.

APPLICATION FILED DEC. 1, 1911.

1,067,294.

Patented July 15, 1913.

4 SHEETS—SHEET 1.



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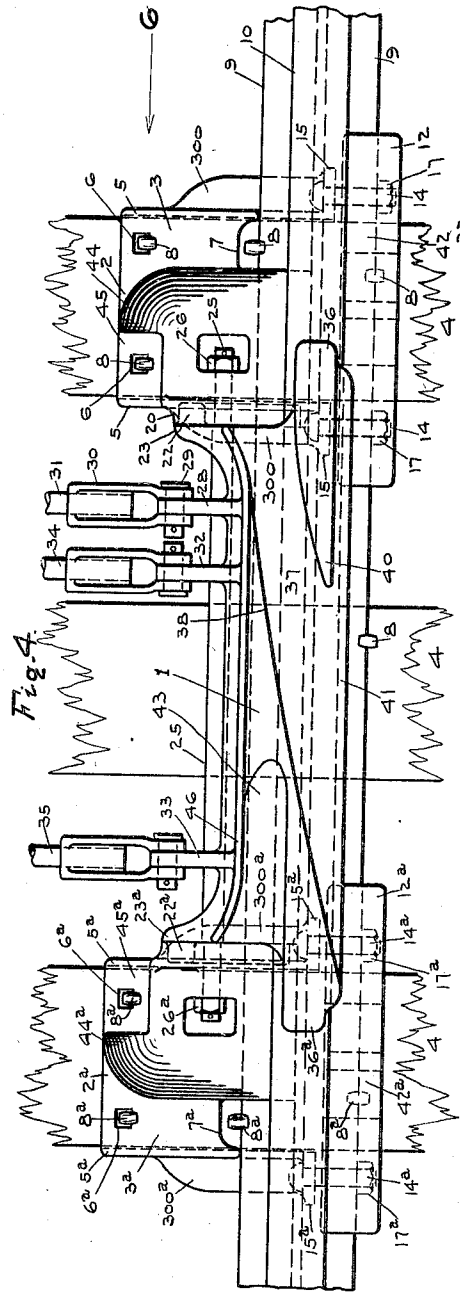


Fig. 4.

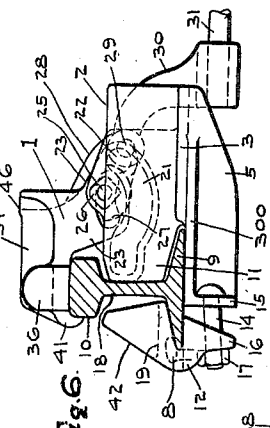


Fig. 6.

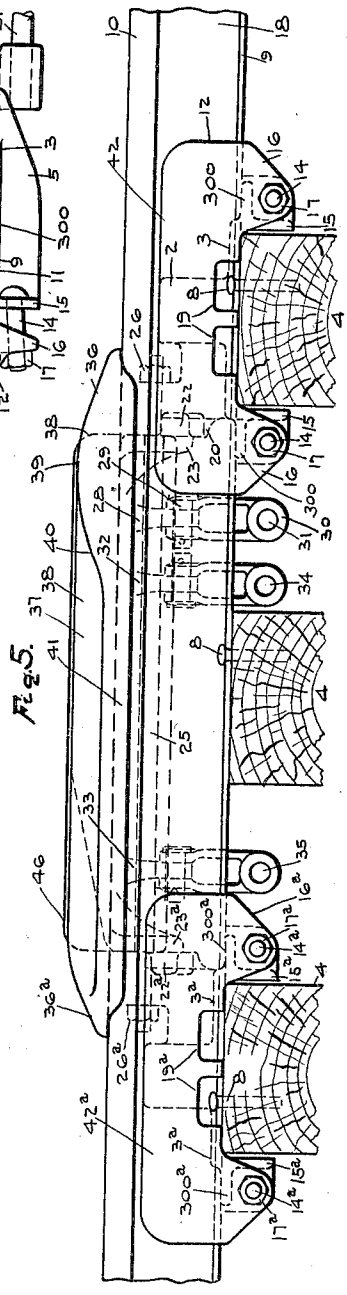


Fig. 5.

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4 SHEETS—SHEET 3.

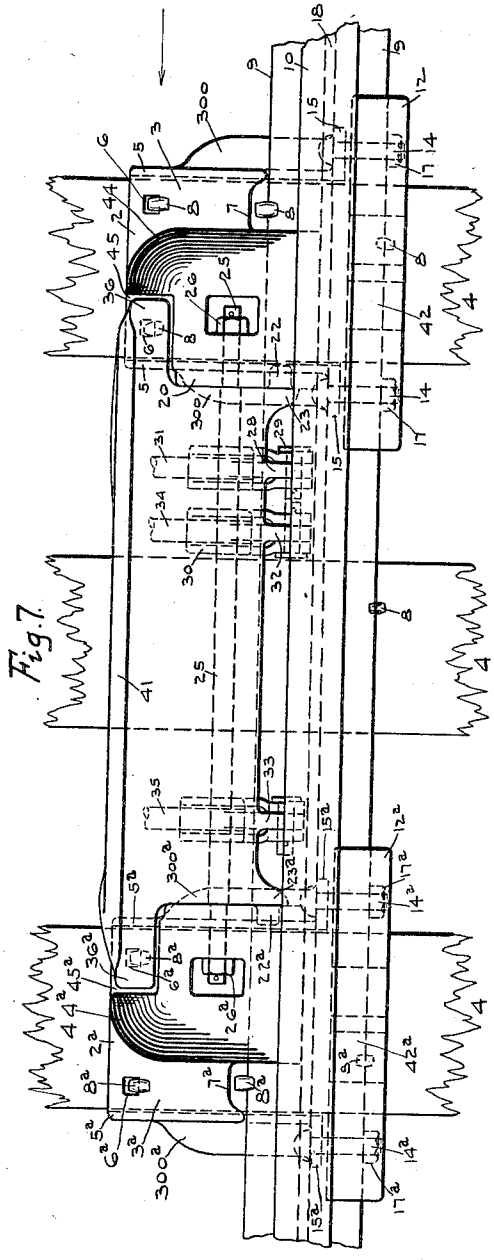


Fig. 7.

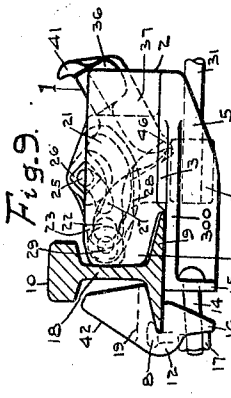


Fig. 9.

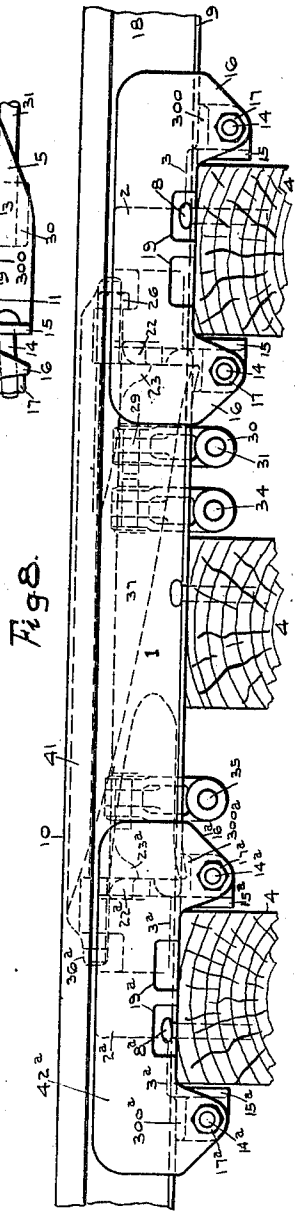


Fig. 8.

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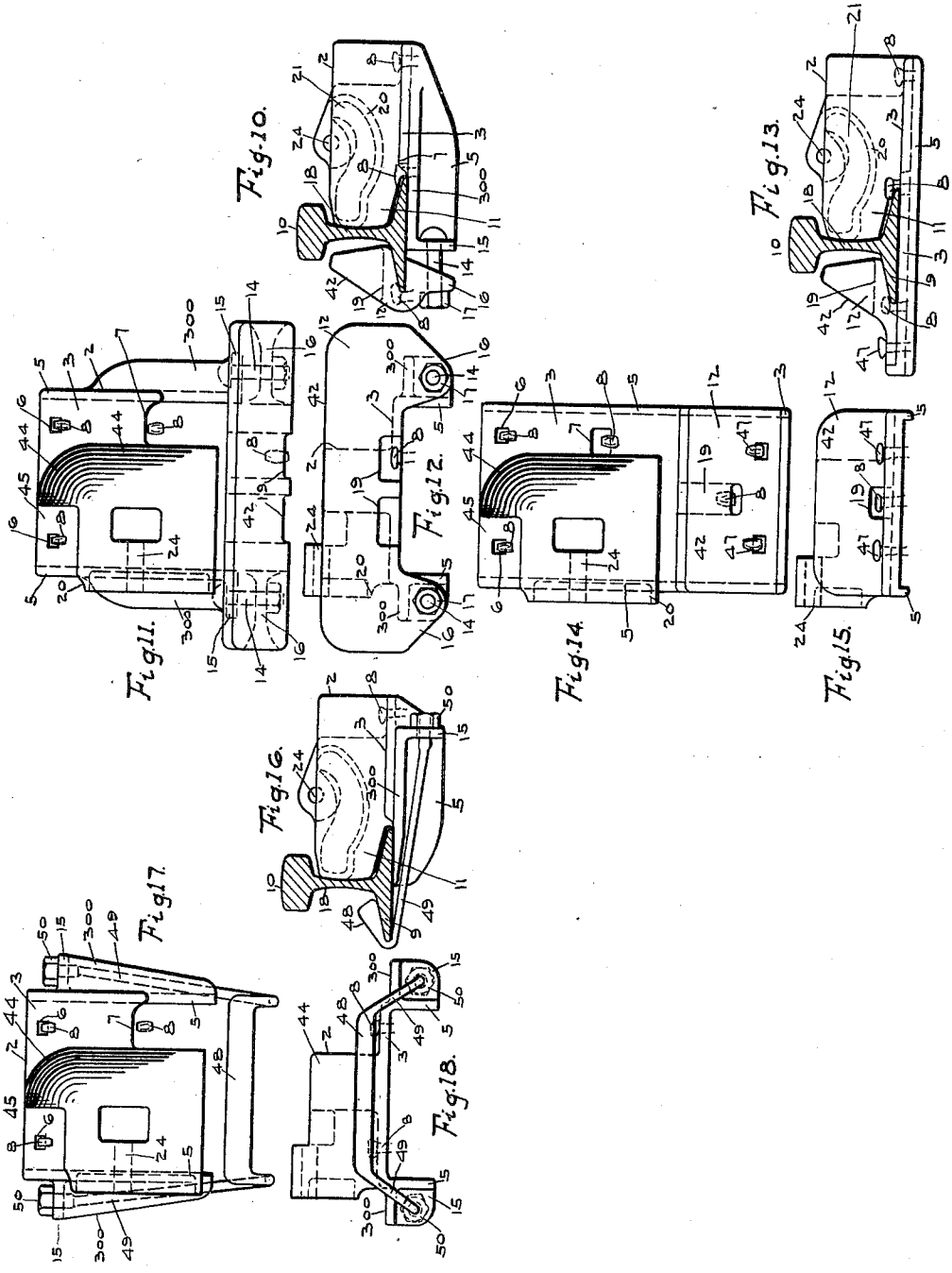
DERAILER.

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1,067,294.

Patented July 15, 1913.

4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

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DERAILER.

1,067,294. Specification of Letters Patent. Patented July 15, 1913.

Application filed December 1, 1911. Serial No. 663,312.

To all whom it may concern:

Be it known that we, EDWIN H. ALLFREE and WILLIAM H. ENGLAND, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Derailers, of which the following is a specification.

Derailers for derailing railway cars, their uses and purposes, and their general construction and mode of operation are well known to those skilled in the art, so that their fundamental characteristics need not be herein described.

The present invention relates to devices of this class, and more particularly to details in the construction, arrangement and assembling of the several parts.

The object of the invention, generally stated, is to provide a derailer of improved construction—improved with respect to its strength and durability and, withal, its simplicity and minimum liability to get out of working order; its cost of construction and maintenance; the wear and tear upon itself, the railway and the rolling stock incident to the performance of its function; the facility with which it may be applied to the track-rail of a railway either already laid or in course of being laid; the manner of assembling and connecting the ties, the track-rail and derailer, whereby they are securely held in fixed relation to each other and form integrant parts of a complete individual structure; the comparative absence of all obstructions or other features of such character that they are dangerous to pedestrians or are liable to produce damage by contact with displaced parts that may depend from passing cars or trains.

Other objects of the invention will appear hereinafter.

The invention consists in the features of novelty that are hereinafter described with reference to the accompanying drawings, which are made a part of this specification and in which;

Figures 1 and 2 are, respectively, a plan view and a side elevation of a derailer embodying the invention in its preferred form, the parts being shown in operative positions. Fig. 3 is a front-end elevation thereof viewed in the direction of the arrows 3, Figs. 1 and 2. Fig. 1^{A} is a vertical, longitudinal section of the derailing block on the line A—A, Fig. 1. Figs. 4 and 5 are, respectively, a plan view and a side elevation of a derailer of somewhat modified form embodying some features of the invention, the parts being shown in operative positions. Fig. 6 is a front elevation thereof viewed in the direction of the arrow 6, Fig. 4. Figs. 7, 8 and 9 are views corresponding with Figs. 4, 5 and 6, respectively, but with the parts in inoperative positions. Figs. 10, 11 and 12 are, respectively, a front elevation, a plan view and a side elevation of one of the brackets shown in the preceding figures. Figs. 13, 14 and 15 are views corresponding with Figs. 10, 11, and 12, respectively, of a bracket of modified form, embodying some features of the invention. Figs. 16, 17 and 18 are views corresponding with Figs. 13, 14 and 15, respectively, of a bracket of still another modified form. Figs. 1^{b}, 1^{c}, 1^{d} and 1^{e} are transverse sections of the derailing block on the lines B—B, C—C, D—D and E—E, respectively, Fig. 1^{a}.

The improved derailer which forms the subject of the present application is somewhat similar in its construction and mode of operation to the one shown in Letters Patent No. 887,299 which were granted to us May 12, 1908, and may be regarded as an improvement thereon. It has a derailing block, 1, at the opposite ends of which are parts, 2, and 2^{a}, respectively, which are of similar construction excepting that they have features that are in reverse, or rights and lefts, as it were. These parts 2 and 2^{a} are hereinafter called brackets, and constitute the means for supporting the derailing block. For the sake of brevity in this specification, only one of these brackets will be particularly referred to and described, excepting when it becomes necessary to refer to the other, and similar features of the two brackets are indicated by similar reference characters, excepting that the letter "a" is added as an exponent to the characters indicating the features of one of the brackets, for the sake of distinction.

Figs. 1 and 2 show the two brackets in their assembled relations to the other parts, while Figs. 10, 11 and 12 show one of the brackets separately. It is made of an integral casting cored out so as to reduce its several component parts to a uniform thickness, regard being had to its necessary strength and durability. It has a base plate,

3, adapted to rest upon the top of one of the ties, 4, and depending from the plate are flanges, 5, adapted to lie against the opposite sides of the tie, thereby straddling the tie and preventing lateral movement relatively thereto. The base plate is provided with openings for the passage of spikes, 6, whereby the bracket is secured to the tie and is cut away at 7, for the passage of one of the spikes, 8, by which the base flanges, 9, of the rail, 10, are secured to the ties in customary manner.

In addition to its being spiked to the tie, the bracket is secured to the track-rail by means of a clamp, one jaw, 11, of which is integral with the bracket and engages the top side of one of the base flanges of the track-rail, while the other jaw, 12, is formed separately from the bracket and engages the top side of the other base flange of the track-rail, the two jaws being forced or drawn toward each other by bolts, 14, which pass through perforated lugs, 15, depending from the plate, 3, and perforated lugs, 16, depending from the jaw, 12, nuts, 17, being turned onto the projecting ends of the bolts for drawing the two jaws toward each other. The engaging inclined face of the jaw, 11, and the base flange of the track-rail afford a firm connection, but if desired, in order to make the connection still more firm, the jaw, 11, which is integral with the bracket, 2, may extend upward and engage the vertical web, 18, of the rail-track.

In assembling the parts thus far described, after the track-rail is spiked to the ties, the base-plate, 3, is placed upon the top of the tie so as to straddle it, after which it is slid along on the tie until the clamping jaw, 11, engages the track-rail, the base-plate having depressed portions, 300, in the form of arms, which extend beneath and contact with the underside of the track-rail and are continued beyond the vertical plane of the web, 18, of the track-rail. The jaw, 12, is then slid onto the other base flange of the rail and the bolts, 17, tightened up to clamp the rail between the two jaws of the clamp. In order that the jaw, 12, may be thus put in place, it is provided on its under side with transverse notches, 19, which afford clearance for the heads of the spikes by which the track rail is secured to the tie.

Each of the brackets has upon the side which is presented toward the other bracket, a cam-shaped flange, 20, the outline of which is best shown by dotted lines in Fig. 10. The flange is continuous and shaped so that it has parallel portions resulting in a correspondingly-shaped way or passage, 21, for receiving a trunnion or projection, 22, carried by an arm, 23, at the end of the derailing block, 1. The bracket is also provided with a perforation, 24, through which passes the threaded end of a rod, 25, which receives a nut, 26, which rod performs the function of a tie-rod for connecting the two brackets, 2 and 2^a, and holding them at the proper distance apart, the brackets being further held at the proper distance apart by the track-rail to which they are clamped in the manner already described. The rod, 25, also performs the function of a support for the derailing block, and to this end the arm, 23, is provided with a curved slot or opening, 27, through which the rod passes. The object of the peculiarities of the features, 20, 21, 22, 24, 25 and 27, is to give the derailing block a bodily, tumbling motion as distinguished from a swinging motion about a single fixed center, as fully described in the patent aforesaid.

The derailing block may be moved by hand or by suitable connections with a switch-stand or tower, and in this latter instance it may be provided with an arm, 28, the end of which is joined, as at 29, to an arm, 30, carried by a rod, 31, leading off through suitable connections (not shown) to a switch-stand or tower. The derailing block is also provided with arms, 32 and 33, which actuate a signal and a locking device, respectively, (not shown) motion being transmitted from the arms, 32 and 33, to the signal and locking device, by any suitable connecting devices, portions of which are indicated by the numerals 34 and 35 respectively.

As shown in the drawings, the derailer is arranged to derail a car or train approaching it in the direction of the arrow 3, in Fig. 1, the brackets being located between the track-rails and secured to the left-hand rail, considered with respect to the direction of movement of the car. It is manifest, however, that it may be arranged to derail a car approaching it in the opposite direction by turning it end for end and securing it to the inside of the track-rail, which then becomes the left-hand rail considered with respect to the direction of movement. This is what may be called a left-hand derailer, because the car is always derailed toward the left, but all features of the invention are equally applicable to a right-hand derailer, the only difference between the two being that, considered laterally, their operating features are presented in opposite directions. In other words, they are "rights and lefts." What may be called the front end of the derailing block, being the end which is presented toward the approaching car, is provided with an inclined lifting tongue, 36, which, when the derailer is in operative position, lies upon the head of the track-rail and rises high enough to lift the flange of the wheel above and clear of the bottom of a flange-groove, 37, resulting from the lift-

ing tongue, 36, and a deflecting flange, 38. The lifting tongue is long as compared with lifting tongues heretofore used, and its side adjacent to the flange-groove, 37, is abrupt, (substantially vertical) and laterally deflected gradually toward its delivery end. The front portion of the deflecting flange is also quite abrupt, and the bottom of the adjacent portion of the flange-groove is substantially horizontal, while toward its delivery end the bottom of the groove rises, as it were, at one side and merges with the side of the adjacent portion of the deflecting flange in a curve of gradually increasing abruptness, so that at its delivery end the deflecting flange is warped after the manner of a plow-share. As a result of this warping of the deflecting flange, the wear of the wheel flanges is distributed, and the forming of grooves or channels is prevented.

It is well understood that although the car wheels are originally made standard, yet as a result of wear, the flanges of different wheels that have been in use for different periods of time, differ materially, and hence different wheel flanges will contact with the warped deflecting flange along different lines, thereby tending to equalize the wearing of the derailing block, as already suggested.

It will be understood that when the inclined front end of the lifting tongue, 36, has lifted the wheel flange above the bottom of the flange groove, 37, the horizontal top, 39, of the lifting tongue will form a track upon which the tread of the wheel runs during the process of laterally deflecting the wheel so as to move the wheel flange across the track-rail, and in order to lessen the shock when the wheel has reached the proper place for its delivery the rear end, 40, of the lifting tongue is sloped downward. When the tread of the wheel escapes from this sloping rear end of the lifting tongue, the entire weight will be transmitted through the wheel flange to the warped surface of the deflecting flange, and this surface having a downward slope as well as a lateral deflection, the wheel flange will slide downward upon it, eventually escaping over the lip, 41, which overhangs the head of the rail. When it escapes the flange moves vertically downward, and in order to lessen its impact with the jaw, 12, of the clamp, said jaw is provided with a sloping surface or skid, 42, which still further deflects the wheel outward relatively to the track-rail, and causes it to drop onto the ties, clear of the clamp and the base of the rail.

For permitting a car moving in the direction opposite that indicated by the arrow, 3, to pass the derailer without being derailed, the rear end of the derailing block is provided with a lifting tongue, 36^a, which is, in fact, a continuation of the deflecting flange, 38. This deflecting flange is provided at its delivery end, beyond the delivery end, 40, of the lifting tongue 36, with an upward extension which is sufficiently high to lift the wheel flange as it enters the short flange-groove 43, and prevent the wheel flange from coming into contact with the derailing block with an injurious impact. After the wheel flange leaves the groove 43, it will travel upon the top, 40^a, of the deflecting flange until it reaches the flange groove 37, and the tread of the wheel comes to a bearing on the top 39 of the lifting tongue 36. But the principal object in increasing the height of the deflecting flange at its delivery end, *i. e.*, beyond the delivery end of the lifting tongue, is to insure the deflecting of the wheels and their consequent derailment. It is commonly supposed that upon the coming of the wheel flange into contact with the deflecting flange, the course of the wheel is changed, as if the axle turned at its midlength about a king-pin, or the like, but such is not the case. The two wheels are shifted bodily, transversely to the track and longitudinally with respect to the axle, and this requires great resistance. This resistance is produced by the deflecting flange and the accidental climbing of the wheel flange up the side of the deflecting flange and on the top thereof is prevented by the upward extension or continuation of the deflecting flange. The side of the delivery end of the deflecting flange is curved or warped so that from its top it abruptly slopes downward and outward, as shown in Fig. 1^e, so that the tendency of the wheel flange will be to slip down this abruptly inclined face of the deflecting flange and off at the side of the derailing block. It is at this point of laterally shifting wheels that the greatest tendency of the wheel flange to remain on the derailing block occurs and it is in order to shift or deflect the wheel transversely that the delivery end of the deflecting flange is continued upward as described.

The brackets being located between the track-rails, it is manifest that they are within reach of displaced parts that may depend from passing cars, and it is important that this shall not result in damage or injury either to the derailer or to parts carried by the cars. It is also important that when in inoperative position the derailer be so constructed that it cannot injure pedestrians by having their feet caught thereon or in interstices or spaces therein. To these ends the forwardly presented surfaces of the bracket are rounded off, as shown at 44, and the bracket is provided with a recess, 45, for receiving the end of the lifting tongue, 36. The bracket therefore forms a shield which is adjacent to the end of the derailing block,

and conceals and protects it, when the derailing block is not in operative position, as shown in Fig. 9.

The form of the invention shown in Figs. 4 to 9 inclusive, is very similar to that shown in Figs. 1, 2 and 3, excepting that the derailing block is shorter, the deflecting flange does not have the warped surface already described, and the lifting tongue, 36ª, does not extend above the horizontal plane of the top of the portion, 39, of the lifting tongue, 36. In both forms, however, the derailing block is provided with a flange, 46, which is adapted to engage the wheel flange and prevent it from leaving the derailing block while passing over the part, 43, thereof.

In the form of bracket shown in Figs. 13, 14 and 15, the base-plate, 3, is continued completely under the base of the rail, and also completely under the jaw, 12, of the clamp, the jaw, 12, the construction shown in Figs. 13, 14 and 15 being in all respects like that shown in Figs. 1, 2 and 3, excepting that in Figs. 13, 14 and 15 the base plate, 3 is interposed between the rail and the tie, thereby forming a tie-plate. In this form of the invention the jaw, 12, is not forced toward the jaw, 11, by bolts, but instead thereof it is secured directly to the base-plate, 3, and to the tie, by spikes, 47, the base-flange of the rail being directly secured to the tie by spikes, 8, and the jaw, 12, being provided with grooves, 19, for accommodating the heads of the spikes as already described.

The bracket, 2, shown in Figs. 16, 17 and 18, is similar to that shown in Fig. 10, excepting that in place of locating the lugs, 15, at the outer edge of the base-plate, 3, they are located at the inner edge, and the clamping jaw corresponding in function to the jaw, 12, already described, consists of a rod of iron bent to form a hook-like portion, 48, which engages the outer base flange of the rail and branches, 49, which straddle the tie, pass through the lugs, 15, and receive nuts, 50, by which the hook-like portion or jaw, 48, is drawn toward the jaw, 11.

It will be observed that the derailing block, and especially those features of it which are instrumental in deflecting the car wheel laterally, is quite long as compared with derailing blocks as customarily made. This is an important advantage in that it very materially lessens the shock and jar upon the running gear and also upon the derailer itself. There is therefore a material functional result in making the derailer block long as compared with derailer blocks as heretofore constructed.

What we claim as new and desire to secure by Letters Patent is:

1. A derailer having a derailing block provided at the front end with a lifting tongue and a deflecting flange, resulting in a flange-groove between them, a lifting tongue at the rear end of the block, said lifting tongues being in the vertical plane of the track-rail, the lifting tongue at the rear end of the block extending to a higher level than the lifting tongue at the front end of the block, so as to lift the wheel flange above that portion of the rear end of the lifting tongue which is in line with the flange-groove and hold it elevated until it reaches said flange-groove, the front end of the lifting tongue at the rear end of the block being sloped downward so as to gradually lower the tread of the wheel into contact with the lifting tongue at the front end of the block, and a guard-flange within the vertical plane in which the wheel flange travels.

2. A derailer having, in combination, a derailing block, means for supporting it and means for operating it, said supporting means having a bracket the forwardly presented end of which slopes upwardly and rearwardly.

3. A derailer having, in combination, a derailing block, means for supporting it, and means for operating it, said supporting means having a hollow bracket the forwardly presented end of which slopes upwardly and rearwardly.

4. A derailer having, in combination, a derailing block having a forwardly projecting lifting tongue, means for operating the block and means for supporting it, said supporting means having a bracket provided with a recess adapted to receive the projecting end of the lifting tongue.

5. A derailer having, in combination, a derailing block having at its front end a lifting tongue and a trunnion, and means for supporting the derailing block, said supporting means having a bracket provided at its rear side with guides for said trunnion and provided also with a recess for receiving the projecting end of the lifting tongue.

6. A derailer having, in combination, a derailing block, means for supporting it, said supporting means having a bracket provided with a base plate adapted to rest upon a tie, said base plate having at its sides portions which extend downward on opposite sides of the tie and forward beneath the track rail and means for securing the bracket to the track rail, said means having a clamping jaw carried by the base plate and adapted to engage the track rail at one side, a movable jaw adapted to engage the track rail at the other side, and means for drawing said jaws together.

7. A derailer having, in combination, a derailing block, means for supporting it, said means having a bracket provided with a base plate adapted to rest upon a tie,

means for securing the base plate to the tie, and means for connecting the bracket to the track rail, said connecting means having a jaw carried by the base plate and adapted to engage one side of the track rail, portions projecting downward from the base plate and forward beneath the track rail, means for adjustably connecting the jaws, and means for directly securing the track rail to the tie independently of the bracket.

8. A derailer having, in combination, a derailing block, means for supporting it, said supporting means having a bracket to which one end of the derailing block is connected, said bracket having a base plate provided at its opposite edges with flanges projecting downward and beneath the track rail, and means for connecting the bracket with the track rail, said connecting means having a jaw carried by the base plate and adapted to engage one side of the track rail, a movable jaw adapted to engage the other side of the track rail, adjustable bolts connecting the movable jaw with the flanges aforesaid, and means for independently securing the track rail to the tie.

9. A derailer having, in combination, a derailing block, means for supporting it, said means having two brackets adapted to rest upon different ties and means for separately clamping each of said brackets to the track-rail, whereby the track-rail connects the brackets and holds them against movement relatively to each other.

10. A derailer having, in combination, a derailing block, means for supporting it, said means having two brackets adapted to rest upon different ties, means for securing the brackets to the ties, respectively, and means for connecting the brackets whereby they are held against movement relatively to each other, said connecting means having a tie rod extending from one bracket to the other.

11. A derailer having, in combination, a derailing block, means for supporting it, said supporting means having two brackets adapted to rest upon different ties, means for securing the brackets to the ties, means for independently clamping the brackets to the track-rail, whereby the track-rail holds the brackets against movement relatively to each other, and a tie rod extending from one bracket to the other whereby they are additionally held against relative movement.

12. A derailer having, in combination, a comparatively long derailing block provided with a lifting tongue and a comparatively long deflecting flange, resulting in a flange-groove between them and means for supporting said derailing block, said supporting means having two brackets adapted to rest upon different ties, means for separately securing said brackets to the ties, respectively, and means for connecting the brackets whereby they are held against movement relatively to each other.

13. A derailer having, in combination, a comparatively long derailing block provided with a lifting tongue and a comparatively long deflecting flange, resulting in a flange-groove between them and means for supporting said derailing block, said supporting means having two brackets adapted to rest upon different ties, means for separately securing the brackets to the ties, respectively, and means for connecting the brackets whereby they are held against movement relatively to each other, the delivery side of the derailing block having a lip which depends over the head of the rail and extends from bracket to bracket.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."