No. 725,316. PATENTED APR. 14, 1903.

E. C. CARTER.

DERAIL.

APPLICATION FILED JAN. 11, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

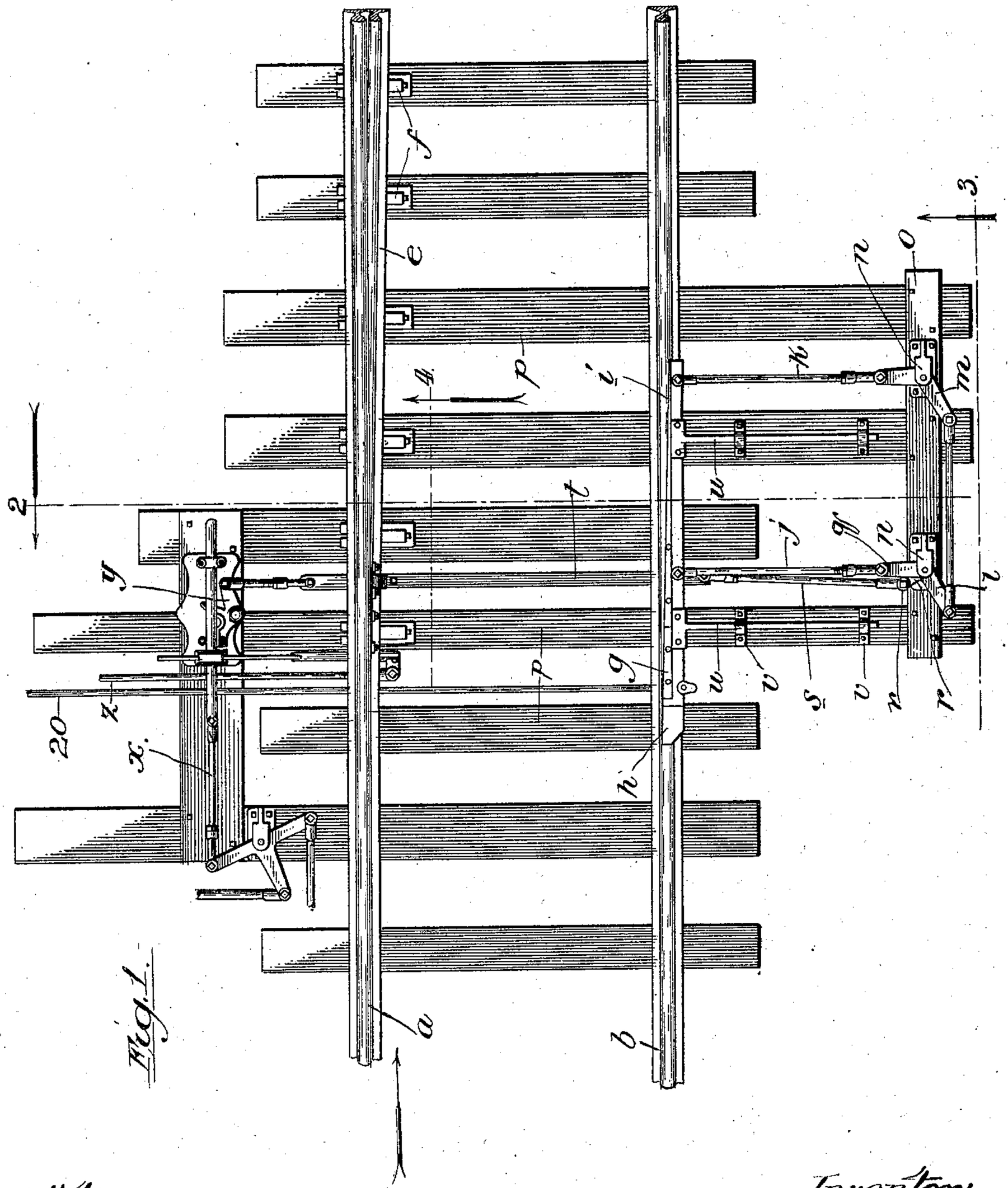


Fig. 1.

Witnesses:
Harold G. Barrett
Harry Irwin Prosser

Inventor:
Edward C. Carter
By Thomas B. Shepherd
Atty.

No. 725,316. PATENTED APR. 14, 1903.

E. C. CARTER.

DERAIL.

APPLICATION FILED JAN. 11, 1902.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.

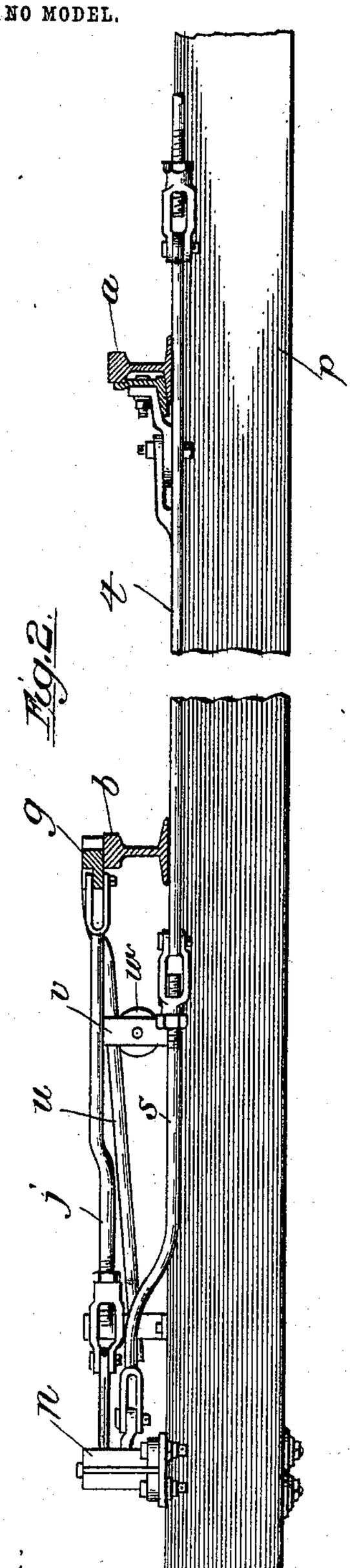


Fig. 3.

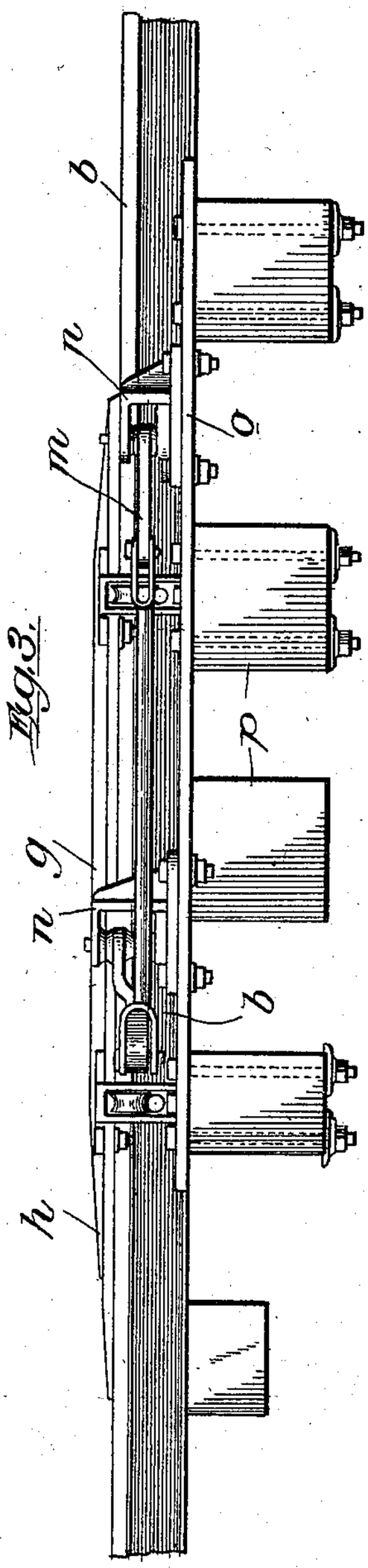
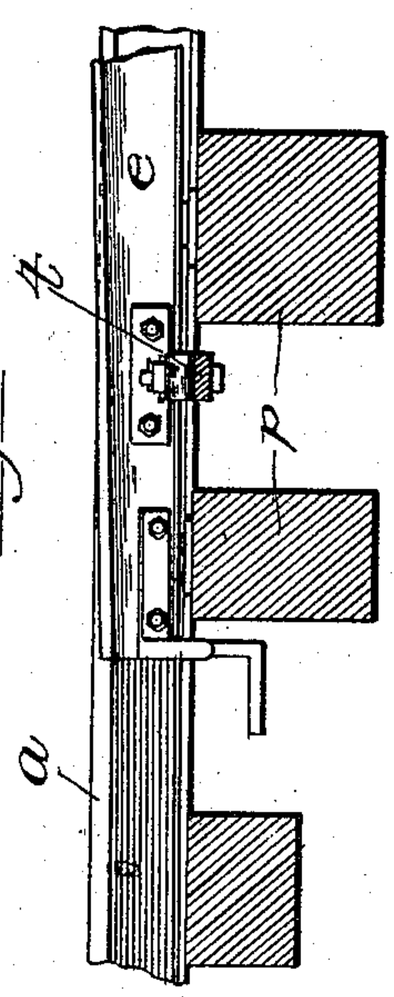


Fig. 4.



Witnesses:

Harold H. Barrett

Harry Irwin Bowser

Inventor:

Edward C. Carter:

By Thomas E. Sheridan,

Atty.

UNITED STATES PATENT OFFICE.

EDWARD C. CARTER, OF EVANSTON, ILLINOIS.

DERAIL.

SPECIFICATION forming part of Letters Patent No. 725,316, dated April 14, 1903.

Application filed January 11, 1902. Serial No. 89,320. (No model.)

To all whom it may concern:

Be it known that I, EDWARD C. CARTER, a citizen of the United States, residing at Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Derails, of which the following is a specification.

This invention relates to that class of mechanisms which is adapted to derail a train which overruns a signal indicating "stop," and especially to the construction and arrangement of the parts forming a perfect derail and leaving the main rails continuous and unbroken, all of which will be more fully hereinafter set forth.

The principal object of the invention is to provide a simple, economical, and efficient derail which will leave the main running-rails intact at all times.

A further object is to provide a continuous track with means by which a moving train may be derailed at a desired point without in any way interfering with the construction of the track, so that such track may be formed of the ordinary rail and subjected to the ordinary conditions.

Further objects of the invention will appear from an examination of the drawings and the following description and claims.

The invention consists principally in the combination, with an ordinary track, of a single switch-point arranged adjacent to the inside of one rail and adapted to be moved to and from the same, an inclined block on the other rail arranged to be moved to and from the top of such rail, and means for giving such parts their proper motion.

The invention consists, further, in the combination of a pair of ordinary track-rails, a single switch-point arranged on the inside of one rail and adapted to be moved to and from the same, an inclined block arranged on the other rail, the inner side of which is inclined outwardly and adapted to be moved to and from the top of such rail, and means for giving the parts their proper motions.

The invention consists, further, in the combination of a pair of ordinary track-rails, a single-point switch-rail arranged to be moved on the inside of one rail and adapted to be moved to and from the same, an inclined block on the other rail, the inclined surface of which is inclined outwardly and adapted to be moved to and from the top of such rail, means for giving the single split point a sliding movement, and crank-and-lever mechanism for giving the inclined block a parallel movement.

The invention consists, further and finally, in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a plan view of a railway-track fitted with the derailing devices constructed in accordance with these improvements; Fig. 2, an enlarged broken cross-sectional view taken on line 2 of Fig. 1 looking in the direction of the arrow; Fig. 3, a side elevation taken on line 3 of Fig. 1 looking in the direction of the arrow, and Fig. 4 a sectional detail elevation taken on line 4 of Fig. 1 looking in the direction of the arrow.

In the art to which this device relates it is well known that the derailing devices commonly used consist of a split point, which when in position to allow trains to pass over it become a part of the permanent way and which can have its point moved in toward the center of the track when it is intended to act as a derail, rendering the permanent way discontinuous on that side. There are several serious objections to this form of derail, the first and principal one being that it introduces into the permanent way an unspiked length of rail from ten to fifteen feet in length, fastened at the heel by the ordinary angle-bar joint-plates and held at the point by an auxiliary lock-rod and the connections through which it receives its movements. As this split point is made by bending and planing down a piece of rail from which the main track is made, it will be seen that the reduction in section due to the planing and the bending to make it fit against the main rail has very materially decreased its strength below that of the original rail, and as it has to be free to pivot on its heel it cannot be spiked to the sleepers every sixteen or eighteen inches, as is found necessary for the much stronger original rail. It will thus be seen that the ordinary form of derail instead of

being as strong as the track at other points is materially weaker and is objectionable for that reason.

The second serious objection to the ordinary derail is that as it forms a part of the permanent way it is subjected to longitudinal movements due to expansion and contraction of rails and to the creeping of rails, which is always more or less pronounced in track under heavy traffic. This movement deranges the adjustment of the point and is often so extreme that the point cannot be locked for the passage of trains till a readjustment of the connections has been made. The recurrence of this trouble tends to the loose adjustment of the parts and results in material imperfections of the gage of the track at such points.

The third objectionable feature of the ordinary derail is that it forms a part of the permanant way and is subject to all of the wear due to passage of all of the traffic over it, the same as over any other portion of the track, and has to be renewed oftener than other parts of the permanent way in order to be safe, thus being expensive in maintenance.

The principal object of this invention is to overcome each of the above objections and at the same time to be effective as a derail when needed. It overcomes the first objection, as it forms no part of the permanent way and can be applied and used in connection with the usually fully-spiked and uninterrupted main rails, leaving them intact for the passage of traffic at such times as it is proper that such traffic movements should be made. It overcomes the second objection, as it is not connected with the main rails, and therefore is not subject to their movements. Hence it can be adjusted more closely and will retain its adjustment indefinitely. It overcomes the third objection, as it is not subject to any wear whatever by the regular traffic and is used only by wheels that should be derailed to prevent a collision or other dangerous form of accident due to the disregard of a stop-signal.

It will be seen that by continuing the lifter-plate over and onto an adjoining rail spiked down to the sleepers outside of the main-track rail this device can be used as a switch to permit cars and trains to be moved from the main track to a siding or other connection as well as for a derail only.

In constructing a derailing device in accordance with these improvements and using it in connection with a pair of ordinary track-rails *a* and *b*, which go to form the ordinary railroad-tracks, I prefer to provide a split point *e* of the desired size and shape, as shown in the drawings, and arrange it on the inside of the rail *a* and upon a plurality of slide-plates *f*, so that it may be moved away from or toward the rail, as circumstances may require. It will be seen from this arrangement that a train running in the direction indicated by the arrow in Fig. 1 has the flange of its wheels to the right as it meets the point of the split point. It becomes essential, therefore, and, indeed, necessary, in order that the main running-rails may be continuous that the other wheels of the train should be raised or elevated, so that its flanges may pass over the head of the rail *b*. In order to accomplish this result, I make what I prefer to term a "lifter" plate or block *g* and arrange it on the top of the head of the rail, as shown particularly in the cross-section of Fig. 2. This lifter-plate, as shown in Fig. 3, has a gradually-rising incline *h* on its upper surface, so that the tread of the wheel is elevated, and consequently the flange. Its inner surface *i* is inclined outwardly from the inside of the rail, so that as the wheel is elevated it is likewise permitted to move transversely over the top or head of the ordinary track-rail and drop down on the outside thereof to derail the train. To throw or move this split point and inclined lifter into and out of position simultaneously and at the desired times, the lifter-plate is provided with a pair of connecting-rods *j* and *k*, pivotally secured thereto and to the pivoted cranks *l* and *m*, which are pivoted in crank-boxes *n*, fixed to a base-plate *o*, which in turn is secured to several of the sleepers *p*. The bell-crank lever *l* has three arms *l*, *q*, and *r* of the desired length, the lever-arm *r* being the shortest arm and connected with the split-point rail by means of a connecting-rod *s* and the bar *t*, such bar being suitably secured, as shown in Fig. 2, to the split-point rail. The lifter-plate is also provided with a pair of guiding-rods *u*, rigidly secured thereto and passed through brackets *v* upon antifriction-rollers *w*. It will be noticed that these guiding-rods (see Fig. 2) are arranged at an incline and bent near their ends, where they are attached to the lifter-plate, so that as they are moved backward they guide the lifter-plate for a short distance back in a plane coincident with the angle of such rods and until the bent portion of the rod strikes the brackets with their antifriction-rolls. Immediately on such curved portion striking the brackets the lifter-plate is moved downwardly into a plane below the head of the rail or outside the clearance-line of the track-wheels, thereby removing the lifter-plate from any possible danger-point of being struck by the wheels, all of which will be appreciated by those skilled in the art. For the purpose of primarily actuating these devices the bar *t* may be continued outside of the rail *a* and connected with a bell-crank lever *y* in any desired manner, so as to be actuated by the system of links and levers *x* from any desired station or point. It may also be provided with the usual bolt-locking devices by means of the rods *z* and 20, which, however, form no part or portion of this invention and are merely illustrated herein for the purpose of enabling those skilled in the art to practice the invention.

I claim—

1. In a derailing apparatus, the combination of a pair of ordinary track-rails, a single-point switch-rail arranged on the inside of one rail and adapted to be moved to and from the same, an inclined lifter-block on the other rail the inclined surface of which is inclined outwardly and adapted to be moved to and from the top of such rail, means for giving the single split point a sliding movement, and crank-and-lever mechanism for giving the inclined block a parallel movement, substantially as described.

2. In a derailing apparatus, the combination with a pair of ordinary rails forming a continuous track of a split rail arranged on the inside of one track-rail, an inclined lifter-block arranged on the top of the opposite rail, means for moving the inclined cam-block outwardly and downwardly and in a reverse manner, and means for moving the split rail away from and toward the opposite rail, substantially as described.

3. In a derailing apparatus, the combination of a pair of track-rails, a lifter-block inclined upwardly on its upper surface and outwardly on its inner side surface arranged on the top of one of the rails, a split-point rail arranged on the inside of the opposite rail, a pair of pivoted levers pivotally secured to a rigid base and having a plurality of arms pivotally connected with the inclined lifter-block, a pair of bent guide-rods rigidly secured to the lifter-block, supporting bracket mechanism for each of such guide-rods by which as the cam-block is moved backwardly it is also moved downwardly, mechanism connecting one of the multiple pivoted levers with the split-point rail by which both such parts—the split-point rail and the cam-block are moved backward and forward, substantially as described.

4. In a derailing apparatus, the combination with a pair of ordinary rails, of a lifter-block inclined upwardly and having its inner surface inclined outwardly and arranged on the top of one of the rails, a pivoted lever having two lever-arms pivotally connected with the inclined lifter-block, a second pivoted lever having three arms pivotally connected with the inclined lifter-block and with the first-named pivoted lever, a split-point rail arranged on the inside of the opposite track-rail, and bar and connecting-rod mechanism connected with the split-point rail and pivotally connected with the second multiple pivoted lever, whereby the split-point rail and the inclined block are moved backward and forward simultaneously, substantially as described.

5. In a derailing apparatus, the combination with a pair of ordinary rails, of a lifter-block inclined upwardly and having its inner surface inclined outwardly and arranged on the top of one of the rails, a pivoted lever having two lever-arms pivotally connected with the inclined lifter-block, a second pivoted lever having three arms pivotally connected with the inclined lifter-block and with the first-named pivoted lever, a split-point rail arranged on the inside of the opposite track-rail, bar and connecting-rod mechanism connected with the split-point rail and pivotally connected with the second multiple pivoted lever, whereby the split-point rail and the inclined lifter-block are moved backward and forward simultaneously, a pair of guide-rods rigidly secured to the inclined lifter-block arranged at an incline to the horizontal plane and bent adjacent to where they are secured to the inclined lifter-block, and a pair of guiding-brackets provided with antifriction-rollers for each guide-rod for moving such lifter-block outwardly and downwardly and in a reverse manner during the operations of the same, substantially as described.

EDWARD C. CARTER.

Witnesses:
THOMAS F. SHERIDAN,
HARRY IRWIN CROMER.