June 28, 1932. S. W. HAYES 1,864,539

SCOTCH BLOCK

Filed Oct. 18, 1930

Fig. 1,

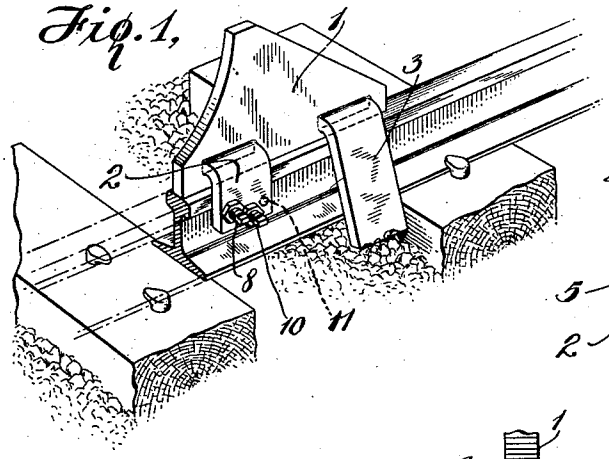
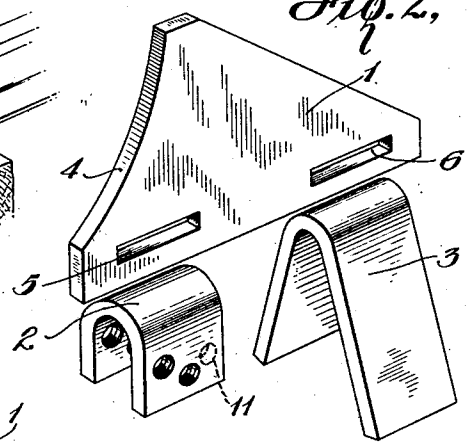


Fig. 2,



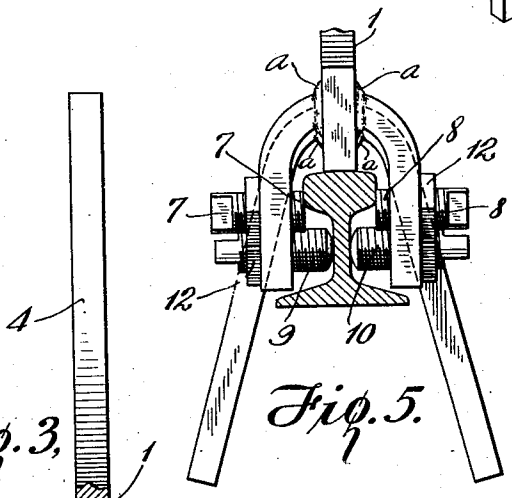


Fig. 5.

Fig. 3,

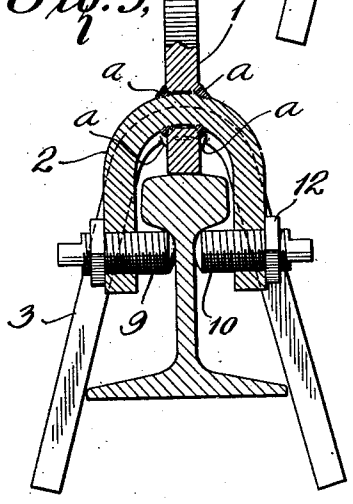
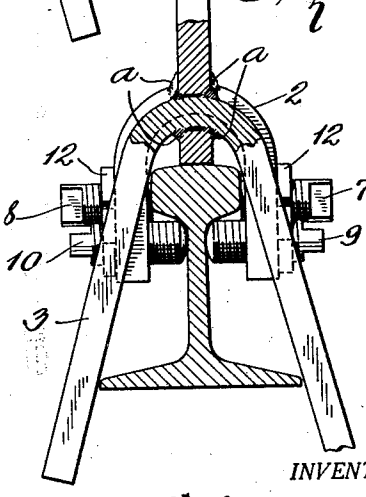


Fig. 4,



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UNITED STATES PATENT OFFICE

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SCOTCH BLOCK

Application filed October 18, 1930. Serial No. 489,524.

The invention is an improved and simplified scotch block or the like for use on railway tracks, and is primarily applicable to the type of scotch block disclosed in the Whilt Patent No. 1,369,910 and in which parts of the block extend below the base of the rail into the plane of the ties to insure dissipation of the shock of car wheel impact to the ties and/or ballast. The scotch block of this application also embodies certain aspects of the scotch block disclosed and claimed in the co-pending application of the present applicant filed August 8, 1929, Ser. No. 384,260, and which issued April 21, 1931 as Patent No. 1,801,917. It is furthermore of the type of car stop applicable to the rail without drilling it, thus avoiding rigidity, and as it is capable of sliding on the rail under severe shock and carries the stress of such shock to the tie and ballasts, it affords a springy, shock absorbing resistance or cushion eliminating or minimizing damage to the car or to itself.

Referring to the drawing: Fig. 1 is a perspective view of one of the scotch blocks in place on the rail;

Fig. 2 is a perspective on a larger scale showing the principal members of the scotch block ready for assembling;

Fig. 3 is a front sectional elevation in the vertical plane of the clamp screws showing the block applied to the heaviest rail for which it is adapted;

Fig. 4 is a rear elevation partly in section corresponding to Fig. 3; and

Fig. 5 is a front elevation, showing the block applied to a light rail.

In the preferred form of the block which is that illustrated there are but three main parts separately made and integrally united by welding. These are the block proper or car wheel abutment member 1 and the inverted U members 2 and 3, all most cheaply made from flat steel stock of appropriate weight. The abutment member 1 may be stamped from sheet steel, or cut out from a rolled sheet steel plate by oxy-acetylene flame, or otherwise given the desired contour. The front edge of this plate constitutes a car wheel receiving abutment 4. The other parts 2, 3, are formed by bending flat strips of steel into U-shape. They are then applied to the plate by passing them respectively through the slots 5, 6, with which the plate is provided near its ends. The U-shaped members are fitted to the plate in such manner that their free ends point downward. In this inverted position they are made integral with the block preferably by welding by gas or electricity, as indicated at *a*. They thus straddle the rail when the scotch block has been applied to it. The member 2 supports block centering and holding means and the member 3 transmits car wheel thrust to the tie and/or ballast. The block 1 extends up from the rail top a distance of $16\frac{1}{16}''$, or to substantially the height of the car wheel axis, so as to preclude overrunning of the block by the wheel. Its height thus produces or accentuates upward turning moment of the front end of the abutment and necessitates provision of means for resisting such moment. The block also has special need to be supported against lateral displacement as well as against jumping off the rail or skewing on initial car wheel impact. Furthermore, on such occasions as it is forced ahead of the wheel displacing the tie, its movement must be guided and kept straight by the rail as a guide, and its accidental removal from the rail must be prevented. These offices are performed by centering means associated with the member 2, in the form of opposed screws 7, 8, bearing with their flat ends against opposite sides of the rail head, and by the clamping screws 9, 10, also opposed and bearing on opposite sides of the rail web beneath, and in the largest rail, partly against the underside of the rail head. This clamps the block in upright position on the rail, and firmly against lateral movement, and with the largest rail, clamps the block down on the rail head, but clamping downward on the rail head has been found not to be necessary; a vertical play of an inch or so, such as indicated in Fig. 5 does no harm, and thus the single pair or web clamping bolts suffices for the several weights of rail, with which the device may be used. With any weight of rail within the range for which the scotch block is designed the clamping means is adapted to

co-operate with the head of the rail to limit upward movement of the block on car wheel impact. If initially in contact with the head of the rail, the clamping means limits the movement to almost if not literally zero. Although the block shown in Fig. 5 functions properly, additional screw holes for bolts 9, 10, so located as to insure contact of the screws with the underside of the head of a lighter rail may be provided, as indicated by dotted lines at 11. The screws may have lock nuts as shown at 12. There is no cramping action of the device under car wheel thrust, the effect of the screws being merely to hold the car wheel abutment 4 in its proper position on the rail permitting it to be moved endwise thereon when occasion requires. During such movement the rear or tie abutment faces of the rail straddling member 3 transmit the wheel thrust to the tie and ballast affording yielding resistance least injurious to the rolling stock. The scotch blocks, it will be understood, are customarily placed in pairs opposite each other in the track. The nature of the ballast of course determines the extent of the yielding or cushioning action, a tie moving more readily in light cinders and less in stone, but the movement need not be great; half an inch will absorb much shock.

The simplicity, cheapness and ease of installation of this scotch block will be evident. All its parts are, or may be, virtually stock, the three sheet or plate members being of say 1″ steel plate, and the screws being ordinary screws, say 1¼″. While the block as illustrated is preferred, it will be apparent that some of its features could be used to advantage in car stops of other types.

I claim:

1. A scotch block seating on the rail and having a car wheel abutment upstanding above the rail head to substantially the level of the car wheel axis and having downward extension below the base of the rail for contact with the roadbed, and at its forward end a group of screws seating some against the side of the rail head and some under the rail head.

2. A scotch block having a flat car wheel abutment plate seated edgewise on the rail head and upstanding therefrom to substantially the level of the car wheel axis, said block at each side of the rail having rigid downward extensions below the base of the rail for contact with the road bed, a U-shaped member applied to the front end of the abutment plate, and a group of screws in said member seating some against the side of the rail head and some under the rail head.

3. A scotch block mounted on the rail with freedom to slide thereon under excessively severe wheel impact and secured thereon by a group of opposed screws certain of which bear on the side of the rail head and certain of which bear under the rail head, the screws of said group being closely assembled and all at one end of the block.

4. A scotch block of the type adapted to be applied to the rail without drilling it having a metal car wheel abutment plate supported edgewise in the plane of the rail with its lower edge seating on the rail head, and having rigid extensions on opposite sides of the rail, and centering screws in said extensions adapted to seat on opposite sides of the rail head.

5. A scotch block of the type applicable to a rail without drilling it having a metal car wheel abutment plate seated edgewise on the rail head and supporting structure extended down from said abutment plate at each side of the rail head, screws carried by said supporting structure at each side of the rail and adapted for contact with the rail above its base and under the rail head at opposite sides of the rail for holding down the abutment plate and maintaining it upright on the rail under car wheel thrust.

6. A scotch block of the type adapted to be applied to the rail without drilling it and mounted on the rail with freedom to slide thereon under excessively severe car wheel impact, having a car wheel abutment upstanding above the rail head to substantially the level of the car wheel axis and having at the rear of the block rigid downward extensions below the base of the rail at each side of the rail for contact with the road bed, and means at its forward end extending under the head of the rail above the rail base and adapted to coact with the head of the rail to hold down that end of the block.

7. A scotch block of the type adapted to be applied to the rail without drilling it, an abutment plate seated edgewise on the rail head, and a separately made inverted U-shaped member fitted to said plate, and welded thereto, straddling the rail, and extending down at each side thereof below the base of the rail into the plane of the ties to deliver car wheel thrust to the tie and ballast.

8. A scotch block of the type adapted to be applied to the rail without drilling it having a metal abutment plate upstanding above the rail head to substantially the level of the car wheel axis and slotted near its base, a separately made, inverted U-shaped member mounted in the slot in symmetrical relation to the plate and welded to the plate, said member having means adapted to coact with the rail to hold down the block and to maintain the abutment plate upright on the rail during movement under car wheel thrust.

9. A scotch block having a metal car wheel abutment plate seated on the rail head and upstanding above the rail head substantially to the level of the car wheel axis and provided with recesses, and separately made inverted U-shaped members, having parts thereof lo-

cated in said respective recesses and welded to said abutment plate, both of said members straddling the rail and one of said members extending down below the base of the rail into the plane of the ties to transmit thrust of car wheel impact to the tie and ballast, and the other member having means independent of the car wheel to hold the abutment plate upright on the rail and prevent its turning over endwise during its movement along the rail on car wheel impact.

10. A scotch block of the type adapted to be applied to rails of different weights without drilling them mounted on the rail with freedom to slide thereon under excessively severe wheel impact, having a car wheel abutment in the plane of the rail, and extending down at each side of the rail into the plane of the ties and provided with non-cramping rail-clamping means for common application to rails of different weights extending under the respective rail heads for contact therewith on clamping, or on the occurrence of upward turning movement of the clamping means with the block under car wheel impact, according to the weight of the rail, to hold down the block and maintain it upright on the rail.

11. A scotch block of the type adapted to be applied to the rail wthout drilling it having a metal car wheel abutment plate seating on the rail head upstanding therefrom to substantially the level of the car wheel axis, and separately made rail straddling members secured thereto, one of said members rigidly extending into the plane of the ties for contact therewith or with the ballast to dissipate shock of car wheel impact, and the other of said members having means extending under the rail head and adapted for contact therewith to hold down the scotch block and to maintain it upright on the rail under car wheel impact.

12. A scotch block of the type adapted to be applied to the rail without drilling it having a metal car wheel abutment plate seating edgewise on the rail head, and separately made inverted U-shaped members integrally secured to said abutment plate, one of said members extending down below the base of the rail into the plane of the ties, and the other being provided with means for centering the abutment plate on the rail head and with means located to cooperate with the heads of rails of different weights to clamp the abutment plate to the several rails in upright position and to hold it down.

13. A scotch block having a metal car wheel abutment plate adapted to be set down on the head of the rail with its lower edge resting thereon, said abutment plate being provided with means independent of the car wheel for maintaining it upright on the rail and holding it down, and being slotted and having a separately made U-shaped member extending through said slot and downward at each side of the rail below the base of the rail into the plane of the ties to transmit car wheel thrust to the tie and/or ballast.

14. A scotch block having a metal car wheel abutment plate seating by its lower edge on the rail head, and separately made inverted U-shaped members integrally secured to said abutment plate, one of said members extending down below the base of the rail into the plane of the ties to deliver car wheel thrust to the tie and ballast, and the other carrying means for holding down the abutment plate and for maintaining it upright on the rail under car wheel impact.

15. A scotch block having a car wheel abutment plate, means independent of the car wheel for holding down said plate and maintaining it upright on the rail under car wheel impact, and an inverted U-shaped member passing through and integral with said plate, straddling the rail and extending down at each side thereof below the base of the rail into the plane of the ties to deliver car wheel thrust to the tie and ballast.

16. A scotch block of the type adapted to be applied to the rail without drilling it having a metal car wheel abutment plate seated both at front and rear on its lower edge on the rail head, a U-shaped member separately formed out of sheet metal and applied to the abutment plate over the rail with its legs extending rigidly down from the plate at each side to points below the rail base in the plane of the ties at each side of the rail and lying in planes extending generally in the direction of the length of the rail, and means carried by the plate for holding it to the rail and maintaining it upright thereon under car wheel impact.

17. A scotch block seating on the rail and having a car wheel abutment upstanding above the rail head to substantially the level of the car wheel axis and having rigid downward extension below the base of the rail at each side of the rail for contact with the roadbed, supporting structure extended down from said abutment plate at each side of the rail head, and screws carried by said supporting structure at each side of the rail and adapted for contact with the rail above its base and extending under the rail head at opposite sides of the rail for holding down the abutment plate and maintaining it upright in the plane of the rail under car wheel thrust.

18. A scotch block of the type adapted to be applied to the rail without drilling it and mounted on the rail with freedom to slide thereon under excessively severe car wheel impact, having a car wheel abutment upstanding above the rail head to substantially the level of the car wheel axis and having rigid downward extensions below the base of the rail at each side of the rail for contact with

the roadbed, and separately operable clamp members at each side of the rail head for coacting with the underside thereof.

19. A scotch block of the type adapted to be applied to the rail without drilling it and mounted on the rail with freedom to slide thereon under excessively severe car wheel impact, having a car wheel abutment upstanding above the rail head to substantially the level of the car wheel axis and having rigid downward extensions below the base of the rail at each side of the rail for contact with the roadbed, and means extending under the head of the rail above the rail base at each side of the rail head adapted to coact with the head of the rail to limit upward movement of the block on car wheel impact and to maintain it upright on the rail under car wheel thrust.

20. A scotch block of the type adapted to be applied to the rail without drilling it having a car wheel abutment supported by the rail in the plane of the rail and extended down rigidly at each side of the rail below the base of the rail into the plane of the ties by means welded to the car wheel abutment at opposite sides thereof, and means extending under the rail head for coaction therewith to clamp the block to the rail and maintain it in upright position.

In testimony whereof, I have signed this specification.

STANLEY W. HAYES.