Dec. 2, 1958 W. F. JICHA ET AL 2,862,579

WHEEL BLOCK WITH REMOVABLE TOOTHED FOOT

Filed May 6, 1955 2 Sheets-Sheet 1

Fig. 1.

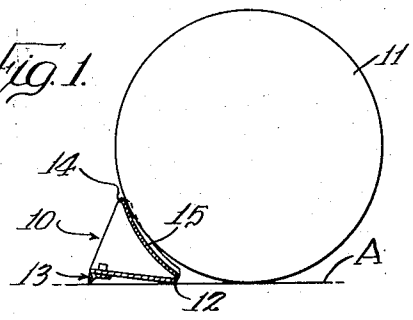


Fig. 2.

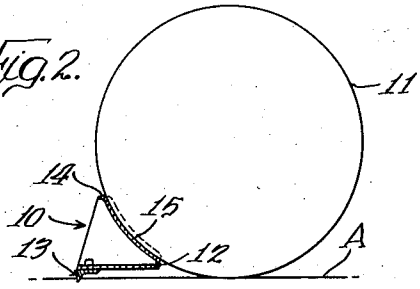


Fig. 3.

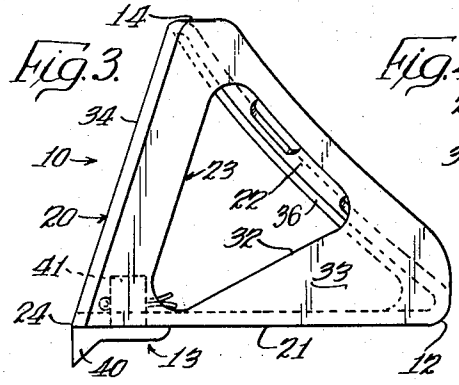


Fig. 4.

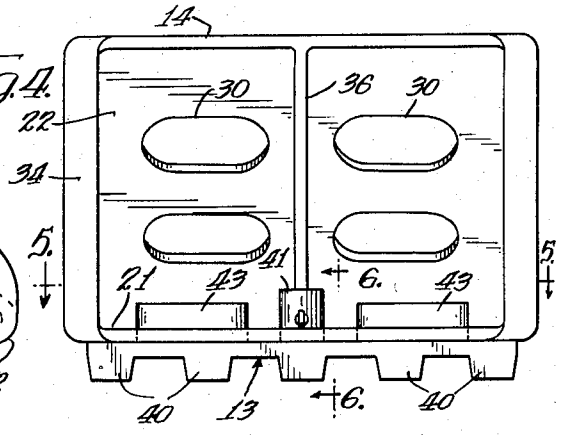


Fig. 5.

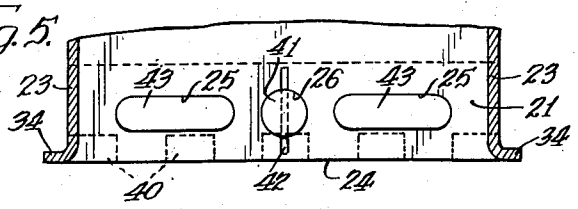


Fig. 6.

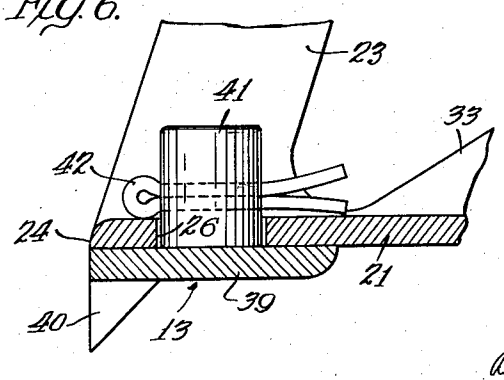
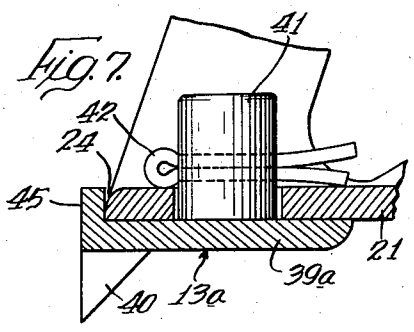


Fig. 7.



INVENTORS.
Walter F. Jicha
Marion C. Wilson
BY
Brown, Jackson, Boettcher & Dinner.
Attys.

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Fig. 8.

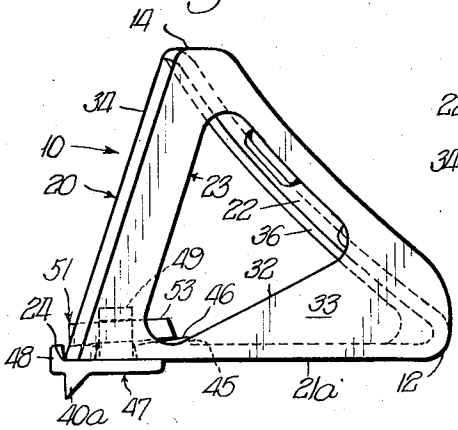


Fig. 9.

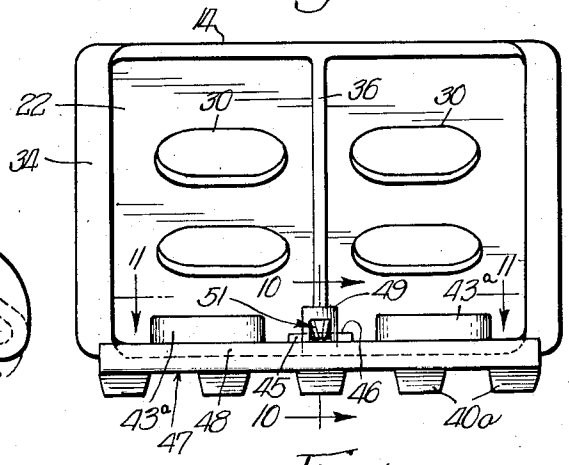


Fig. 10.

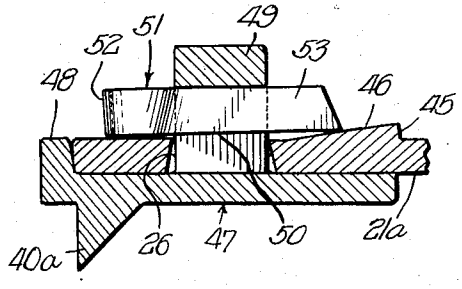
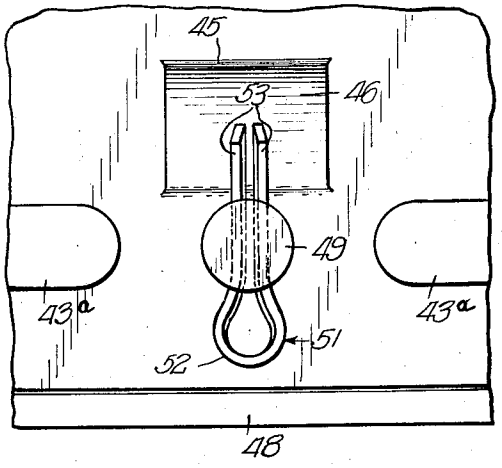


Fig. 11.



INVENTORS.
Walter F. Jicha,
BY Marion C. Wilson,
Brown, Jackson, Boettcher & Dienner.
attys.

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WHEEL BLOCK WITH REMOVABLE TOOTHED FOOT

Walter F. Jicha and Marion C. Wilson, Hammond, Ind., assignors to Calumet Steel Castings Corporation, Hammond, Ind., a corporation of Indiana

Application May 6, 1955, Serial No. 506,508

5 Claims. (Cl. 188—32)

This invention relates to wheel blocks and chock blocks for use with heavy automotive vehicles and trucks and more particularly to improvements therein, particularly directed to a wheel block assembly having a removable foot member bearing ground engaging teeth or calks.

The wheel block herein of subject embodies certain structural improvements as well as improved operational characteristics which go to provide a new and improved assembly especially adapted for use with large maintenance trucks and the like. Particularly outstanding among these improvements is the provision of a removable foot member to be used with a cast wedge or block; the foot being by its removable nature capable of separate heat treatment so that the same may be hardened to a greater extent than the large casting which comprises the wheel block proper. The foot portion is further distinguished by a plurality of depending calks or teeth which readily grip a road surface and the like. Because of the removable nature of the foot member, the block is readily adapted and arranged to be used on roadways having soft or pliable surfaces, as for example on asphalt or black-top highways, wherein it is desirable to eliminate the calks or teeth to prevent damage to the road surfaces. The wheel block in itself is formed in an improved manner to provide a pair of hand grips to readily assist the user in placing the same adjacent a wheel to be chocked blocked, by which means added safety and utility is experienced. Of additional importance is the design of a wheel engaging surface on the block itself which bears a curvature designed to intersect the road bed or that is to lie other than tangential thereto. Thus, when the block is engaged by a wheel the same is first contacted adjacent its upper corner or end whereafter the same is pivoted about its lower end to drive the calks or teeth securely into the road bed. This feature assures a positive gripping action.

Among the objects of this invention is the provision of a new and improved wheel block having a removable toothed foot.

Another object of the invention is to provide an improved wheel block structure having features of increased strength and resistance to shear and breakdown of its connection with a removable ground engaging foot member or gripping portion.

A further object of the invention is to provide an improved removable foot pad or portion for the wheel block to the end that the same may be detached when the block is to be used on highways constructed of asphalt or like soft surfacing material.

A still further object of the invention is to provide an improved wheel block having handle means formed integrally therewith to assist the user in placing the same behind a vehicle wheel thereby promoting personal safety of the operator.

The above and further objects and features of this invention will be recognized by those familiar with the art from the following detailed description of its concepts

as illustrated in a preferred embodiment thereof found in the accompanying drawings.

In the drawings:

Figure 1 is a diagrammatic representation of the improved wheel block of our invention, as the same is positioned for engagement by a wheel;

Figure 2 is a diagrammatic representation, similar to Figure 1, showing the functioning of our improved wheel block as the same is engaged by a wheel;

Figure 3 is a side elevational view of the improved wheel block of this invention;

Figure 4 is a rear end elevation of the wheel block illustrated in Figure 3;

Figure 5 is a partial cross sectional view looking downwardly substantially along the vantage line 5—5 of Figure 4;

Figure 6 is a partial cross sectional view at an enlarged scale, showing the mode of attaching the removable foot portion of our wheel block to the cast block itself;

Figure 7 is an enlarged cross sectional view, similar to Figure 6, illustrating a modified form of foot member for use with the wheel block casting;

Figure 8 is a side view of a second modified form of wheel block embodying our invention;

Figure 9 is a rear view of the block of Figure 8;

Figure 10 is a fragmentary sectional view, on an enlarged scale, taken substantially on line 10—10 of Figure 9; and

Figure 11 is a fragmentary plan view taken substantially on line 11—11 of Figure 9.

This application is a continuation-in-part of our copending application for Wheel Block With Removable Toothed Foot, Serial No. 436,288, filed June 14, 1954, now abandoned.

With reference to Figures 1 and 2 of the drawings, regard Figure 1 initially wherein the wheel block assembly of our invention, indicated generally by numeral **10**, is shown in position for engagement by a wheel represented diagrammatically by circle **11**. It will be recognized that the radius or curvature of the block assembly is such that the same does not lie tangentially to surface A of the road bed. In other words, when the block assembly is rested on a surface, such as a road bed A, the same lies tipped about its lower end **12** with the foot member **13** thereon resting on top of the road surface A. It will be understood that as wheel **11** contacts the block assembly **10**, initial engagement occurs only at the upper end or corner **14** of the block assembly because of the radius of curved face **15** thereon. Thereafter continued movement of wheel **11** toward the block assembly **10**, causes the latter to substantially pivot or rotate about its lower corner **12** to drive the foot portion and particularly the ground engaging calks thereon securely into the bed of the roadway (see Figure 2). Any further rolling movement of wheel **11** towards our improved wheel block assembly will cause the calks to increase their gripping action on the roadway and thus promote obstruction to movement of the wheel.

The block assembly **10** includes a cast metal chock block **20** having an inclined curved, wheel engaging front wall **22** plus a pair of rear arms **23, 23** related obliquely between the upper end **14** of front wall **22** and the rearward edge **24** of a bed plate or base wall **21**. Bed plate **21** is substantially planar and rectangular in plan profile. Such integrally merges with the front wall **22** at the lower corner **12** of the casting **20** and is provided with a pair of oblong openings **25, 25** and a centrally disposed circular opening **26** adjacent its rearward edge for connection with a removable foot member **13** (shown best in Figure 5 of the drawings). The exact details of construction and operation of the foot member **13** will be explained more fully hereinafter.

Front wall 22 is suitably concaved transversely to fit the general curvilinear contour on an automobile tire or the like and is also provided with four openings 30, 30 which are included therein to reduce the weight of the block. Further note that the front wall is additionally formed on an arc or radius, the center of which is located below the center of the wheel circle 11. This feature creates the tipping and gripping functioning outlined briefly by Figures 1 and 2 of the drawings and described previously.

The rear arm members 23, 23 slope in oblique fashion between the rear edge 24 of the base wall 21 and the upper end of front wall 22. It will be seen that arm members 23 each comprise one leg of a pair of triangular walls or webs located at the opposite ends of the cast block member 20; the same web being distinguished by a triangular shape hand opening 32 which serves to define the arm members 23 and additionally provides a reinforcing fillet wall portion 33 adjacent the lower front corner 12 of the block. The openings 32 also increase the grip of the tire on the block so that the tire tends to ride up on the block to a certain extent and the pressure is applied more effectively on the calks, as shown in Figure 2. Each arm member 23 is also provided with a transverse flange portion 34 at its extreme rearward edge which serves as a strengthening means. A rib member 36 is also formed centrally along the back face of front wall 22 for strengthening that wall (see Figure 4).

The block 20 of our invention may be generally described as a triangular-shaped hollow article having a sloping wheel engaging wall 22 which is concaved transversely to conform to or fit the curvature of an automobile tire and which is also inclined to the vertical and formed at a radius substantially identical or conforming to the radius of the automobile wheel, but having a center for its radius of formation located below the center of rotation for the wheel. The several wall portions are of course cast integrally as a unit from a suitable metal or alloy selected to provide adequate mechanical strength while giving the minimum weight to the article. The wedge or triangular shape of the block provides obvious utility in chocking a wheel against rolling movement and is especially useful with heavy trucks and the like. The provision of the two separate arm portions 23, 23 serve to give the user a pair of manually engageable handles or portions which may be gripped easily for handling purposes and which permit the safe insertion thereof against a wheel. Since there are two such handles, the user is afforded maximum versatility in placing the block either behind or in front of a wheel and from either side thereof. Preferably two such blocks are provided for each vehicle; the same being interchangeable for either right or left-hand wheels.

To add to the gripping function of our improved block assembly, we have devised the new and improved foot plate, indicated generally at 13. The foot member 13 preferably is a steel casting and comprises a substantially elongated metal bar 39 having a plurality of depending triangular-shaped calks or teeth 40, 40 spaced along its rearward edge. A simple dowel means 41 projects centrally upward of the plate 39 and in an opposite direction from the teeth 40 thereon. Dowel pin 41 is arranged for reception in opening 26 formed in the bed plate 21 of the block member 20; such dowel cooperating with a cotter pin means 42 for holding the foot plate in position beneath the rear edge of the wheel block. Additional means for locating the foot plate with respect to the wheel block and preventing its rotation with respect to the block casting, comprise two elongated raised boss portions 43, 43 spaced on opposite sides and in coplanar alignment with the central dowel member 41. Such boss portions 43, 43 are insertable in openings 25 of the bed plate 21, so that they extend therethrough when the foot plate is attached to the bed plate in the manner illustrated particularly in Figures 4 and 6 of the drawings.

It will be recognized that by providing the boss portions 43, 43 and the central dowel member 41, maximum resistance to shearing of the connection between the block casting and foot plate 13 is afforded, giving improved strength and ruggedness to the assembly. In previously known wheel block devices of the character employing any type of removable foot members, bolt or rivet members have been used to interconnect the same. Such connectors are not successful due to the shearing forces applied thereagainst by the wheel block tending to move relative to the foot plate which is anchored in the ground. The increased cross sectional areas provided by the expedient herein presented, gives improved resistance to such breakdown of a block assembly of this character and is thus thought to constitute an improved advancement in this art.

To even further increase resistance to shear and relative motion between the removable foot plate 13 and the block 20 of our invention, the modified foot plate 13*a* of Figure 7 is proposed; the same being substantially identical to our first described foot plate 13 with the exception of the additional provision of an upwardly extending lip portion 45 at the rearward edge of plate 39*a*. This lip portion is arranged to extend behind the lower rear extremity 24 of the cast block 20 to thus provide added support against which the block may work when loaded. The lip portion coupled with the boss members 43 and dowel pin 41 gives even greater resistance to disengagement of the block member from the removable foot member than that found in our first described form of the device.

Since the foot members 13 or 13*a*, as the case may be, are removable, they are conveniently heat-treated to provide improved hardness over the material of the wheel block 20. As a consequence, the calk portions of the foot plate may be hardened and heat-treated to give added wear resistance and ruggedness to this construction.

Having thus described the features of our improved safety wheel block, it is believed that its utility will be easily recognized. We have found that a block of this character has particular adaptability for use in maintenance trucks of the type employed by public utilities wherein storage space is relatively limited. The overall dimensions of the block, its lightness and the dual arm portions 23, 23 thereon permit its easy handling by operating personnel. The fact that there are a pair of arms 23, one on each side of the block, also makes it easier for the user to place the same behind the wheel of the truck in a safer manner since he does not have to reach as far under the truck as he would if only a single central handle were provided. The provision of the removable foot member is, of course, desirable since its removable nature adapts the wheel block for use with both hard and soft road surfaces, the latter especially since it is desirable in such circumstances to prevent tearing up of the road bed, as for example in black-top highways.

The removable nature of the foot member also permits special heat-treating thereof to give the same improved hardness and wearability over the casting of the large wheel block per se. Further, by having the lugs or calks of the foot member integral with the foot member, increased strength is provided. By forming the dowel member and the upwardly extending lug portions 43, 43 integral with the foot plate 39, the foot member automatically aligns itself when mounted on the bed plate 21. The simple cotter pin connection means provides extreme simplicity as a mode of connection although other types of connectors might be employed in the same circumstances with equal facility. The further provision of forming the curved front wall 22 on the wheel block so that its center of curvature is located below the center of the wheel with which it is to be employed, provides for the automatic setting operation for driving the calk members into the road bed by simply rolling the wheel against the wheel block.

The modified form of block in Figures 8 to 11, inclu-

sive, is the same as that shown in Figures 1 to 6, inclusive, except as to the foot member and the securing means therefor. Accordingly, in Figures 8 to 11, inclusive, the same reference numbers are used for the parts which are the same as in Figures 1 to 6, inclusive.

Referring now to Figures 8 to 11, inclusive, the bed plate **21***a* is provided, on its upper face, with a raised element or pad **45** of a width somewhat greater than the diameter of opening **26** and extending a substantial distance forwardly therefrom. The pad **45** increases in thickness toward its forward end and has a flat upper face **46** which is inclined upwardly and forwardly from opening **26**. The foot plate **47** is similar to foot plate **13***a* of Figure 7 and is provided, at its rearward edge, with an upwardly extending lip or flange **48** which abuts the rearward edge of bed plate **21***a*. Foot plate **47** is provided with upwardly extending bosses **43***a* corresponding to and fitting snugly through openings **25** in bed plate **21***a*, as previously described. The foot plate **47** is provided, at its rear edge, with spaced downwardly extending calks or teeth **40***a* and is further provided, at its midlength, with an upwardly projecting pin or stud **49** which extends through opening **26** and a material distance above bed plate **21***a*. The stud **49** is provided with a diametrical slot **50** extending a substantial distance above the upper face of bed plate **21***a*. The slot **50** receives the arms of a spring steel key **51** comprising an eye **52** and arms **53** connected together, at their outer ends, by eye **52**. The inner or forward portions of arms **53** of key **51** bear upon the upper face of pad **45** and the upper edges of arms **53** bears against the stud **49** at the upper end of slot **50**, arms **53** being of appropriate width to that end. After the foot plate **47** has been properly positioned on the block, with key **51** inserted through stud **49**, the key **51** is driven forwardly through stud **49** by striking it with a suitable tool. Key **51**, in cooperation with the inclined upper face **46** of pad **45** exerts a powerful wedging effect which forces foot plate **47** against bed plate **21***a* and clamps it tightly thereto. The foot plate **47** may readily be released for removal by removal of key **51**, conveniently effected by means of a suitable tool inserted into the eye **52** thereof.

It will be noted that in the several forms of our invention shown the lower forward portion of the block is well rounded to provide at **12** a nose of substantial radius. Also, the upper portion of the front wall **22** of the block is well rounded at **14**. It sometimes happens that a tire is driven completely over a block, which tilts part way over and the tire passes over the top edge of the block. In such cases, if the block has sharp edges the tire in passing over the block is cut or bruised to such an extent that it blows out. The block of our invention is free of sharp corners or edges, which eliminates risk of cutting or bruising of the tire and resultant blow out. The bed plate **21** or **21***a* of the block provides a bearing surface of substantial area capable of supporting heavy loads and which guards against the block cutting or sinking into a road way or other supporting surface to objectionable extent under load. Additionally, the bed plate, in cooperation with the top wall **22**, provides effective reinforcement for the block for restraining separation or spreading apart of the side walls thereof. The provision of the bed plate assures adequate mechanical strength of the block when the back thereof is left open as shown. By having the back of the block open, the members **23** may be effectively grasped by the hands to serve as handles for positioning the block or for withdrawing it from under a wheel. In some cases the block may not be accessible for grasping the members **23** by hand and access to the sides of the block may be obstructed. In such cases a suitable hooked rod or tool may be inserted through the open back of the block and engaged with the members **23** for withdrawing the block. Likewise, when conditions render it difficult to position the block by grasping the members **23** by hand, a suitable tool may be inserted through the open back of the block and engaged with members **23** for positioning the block. Also, the bosses and stud for positioning and securing the foot plate are readily accessible through the open back and, if they become stuck, may be tapped with a hammer or other suitable tool for releasing them. There are thus numerous practical advantages in having the back of the block open for the purposes stated.

The rounded nose **12** of the block facilitates rearward tilting thereof for forcing the calks or cleats into the supporting surface as above described. The bottom wall or bed plate is free of cleats or other downward projections so that by removing the foot plate the block is rendered well suited for support upon surfaces, such as black top for example, which should not be penetrated or torn up by cleats or like elements. Also, the provision of cleats on the bottom wall itself of the block would interfere with the rearward tilting of the block and penetration of the cleats **40** into the supporting surface. Such interference would be substantially increased by the provision of cleats at the forward bottom wall, with the likelihood that such cleats would be broken off in the rearward tilting of the block after the forward cleats had been forced into the supporting surface. Further, by providing cleats at the rear only of the block, when the foot plate is secured thereto, by raising the rear of the block sufficiently to release the cleats from the supporting surface, the block may readily be slid from beneath the vehicle wheel.

From all of the above it may be concluded that we have presented herewith a new and improved wheel block assembly having particular utility and usefulness especially in heavy industrial trucks and similar vehicles. The safety features which are inherent in its construction are believed to be outstanding and the versatility afforded by the removable foot plate adapts the assembly for both hard and soft surfaces. Also, the fact that the foot plate may be heat-treated easily to promote wearability is considered to be an outstanding advantage in this class of article.

Therefore, while we have herein shown and described the features and concepts of our invention as related to a preferred and two modified embodiments of its principles, and while we understand that numerous changes, modifications and substitutions of equivalents may be made therein, we nevertheless do not feel that such alterations will depart from the spirit and scope of our invention. As a consequence, we do not wish to be limited to the particular form and features of our invention as herein described and illustrated except as may appear in the following appended claims.

We claim:

1. In a wheel block having a body which includes sidewalls and wheel engageable front wall means connecting the sidewalls and curving upwardly, the improvement which comprises bottom wall means connecting said sidewalls adjacent their rearward portions, a removable foot plate adapted to seat against the underside of said bottom wall means and having downwardly extending frictional means for engaging with a supporting surface, means adapted to interconnect said foot plate and the block, said bottom wall means having a plurality of apertures, and said foot plate having a plurality of upwardly extending anti-shear means corresponding in shape to said apertures and adapted to fit therein, one of said anti-shear means extending upwardly a greater distance than the others and having a rotatable fit with its aperture whereby it may locate said foot plate relative to the bottom wall means and, by its rotatability in said aperture, permits the other anti-shear means to be more easily directed to their respective apertures for insertion therethrough.

2. In a wheel block having a body which includes sidewalls and wheel engageable front wall means connecting the sidewalls and curving upwardly, the improvement

which comprises bottom wall means connecting said sidewalls adjacent their rearward portions, a removable foot plate adapted to seat against the underside of said bottom wall means and having downwardly extending frictional means for engaging with a supporting surface, means adapted to interconnect said foot plate and the block, said bottom wall means having aperture means, said foot plate having upwardly extending anti-shear means fitting through said aperture means in the bottom wall means, and vertically extending flange means carried by said foot plate and adapted to engage the rear edge of said bottom wall means.

3. In a wheel block having a body which includes sidewalls and wheel engageable front wall means connecting the sidewalls and curving upwardly, the improvement which comprises bottom wall means connecting said sidewalls adjacent their rearward portions, a removable foot plate adapted to seat against the underside of said bottom wall means and having downwardly extending frictional means for engaging with a supporting surface, means adapted to interconnect said foot plate and the block, said bottom wall means having a plurality of apertures and said foot plate having a plurality of upwardly extending anti-shear means corresponding in shape to said apertures and adapted to fit therein, one of said anti-shear means extending upwardly a greater distance than the others and having a rotatable fit with its aperture whereby it may locate said foot plate relative to the bottom wall means and, by is rotatability in said aperture, permits the other anti-shear means to be more easily directed to their respective apertures for insertion therethrough, said one of said anti-shear means having a diametrical slot and said bottom wall means having an upwardly inclined surface adjacent to said slot, said interconnecting means comprising removable key means in said slot, said key means by its top edge engaging the top of said slot and by its bottom edge engaging against said upwardly inclined surface to cam said foot plate tightly against said bottom wall means.

4. In a wheel block having a body which includes side walls and wheel engageable front wall means connecting the sidewalls and curving upwardly, the improvement which comprises said front wall means having a curvature approximating the curvature of the wheel to be blocked, bottom wall means connecting said sidewalls adjacent their rearward portions, a removable foot plate

adapted to seat against the underside of said bottom wall means and having downwardly extending frictional means for engaging with a supporting surface, the downwardly extending frictional means extending vertically downwardly at the rear edge of the removable foot plate, and the downward extension of said frictional means and the length of said block from its front to said frictional means being such that, when the block rests on a flat supporting surface, said front wall's curvature is non-tangential relative to said surface and a wheel moving toward said block from the front will first contact the top of said front wall means, thereby forcing said downwardly extending frictional means into firm engagement with the supporting surface before the wheel comes to rest in contact with the remainder of said front wall means, and means adapted to interconnect said foot plate and the block, said bottom wall means having aperture means, and said foot plate having upwardly extending anti-shear means fitting through said aperture means in the bottom wall means.

5. The improvement of claim 4 wherein the back of the block is open to provide ready access to the means which is adapted to connect the foot plate and the block, and wherein said side walls have openings of substantial area providing, in conjunction with said back opening, upwardly and forwardly inclined handles at the rear of the block, which handles may be grasped from both the rear and sides thereof during placement or removal of the block.

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