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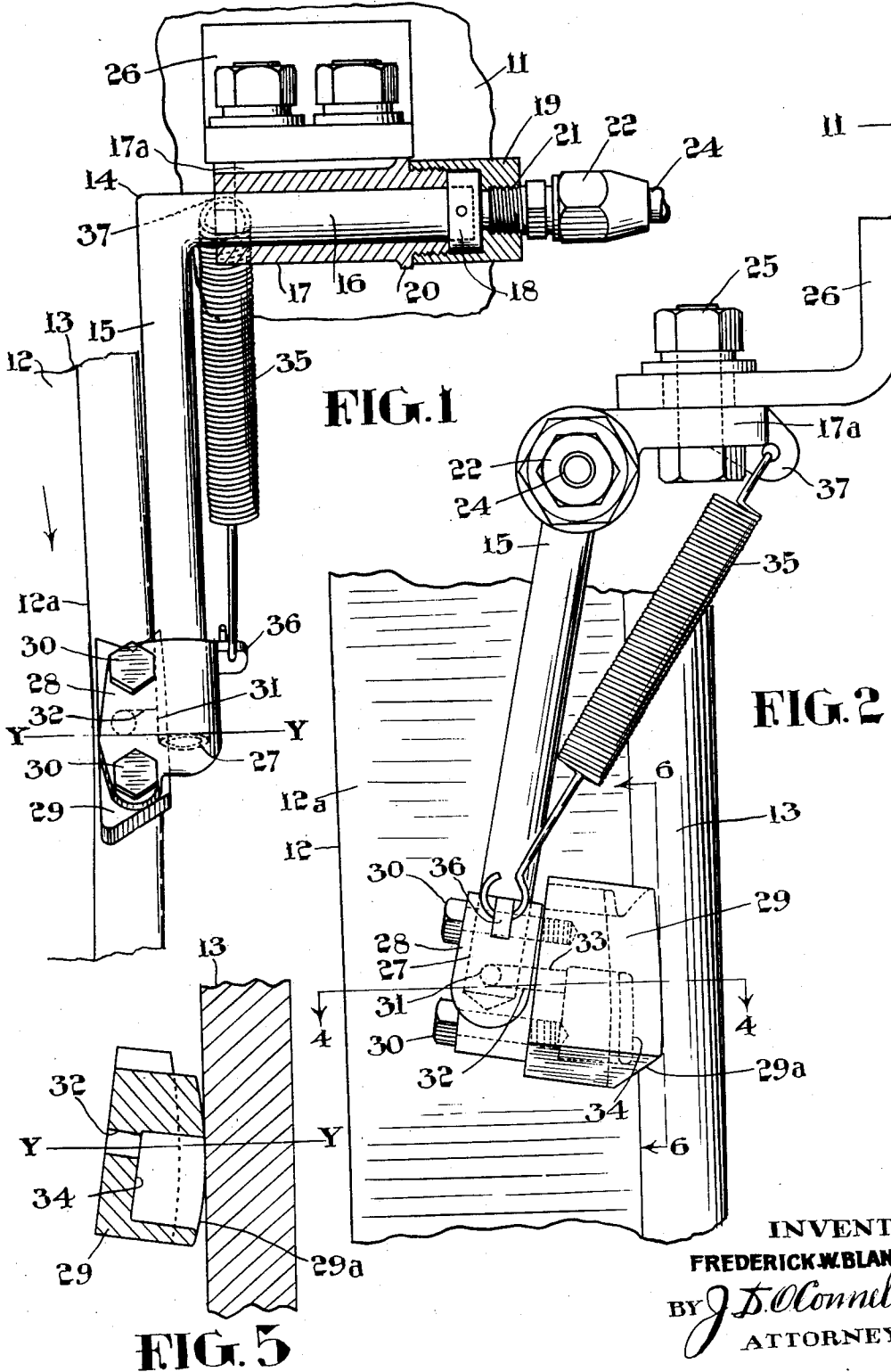
F. W. BLANCHARD

1,935,933

WHEEL FLANGE LUBRICATOR

Filed March 10, 1932

2 Sheets-Sheet 1



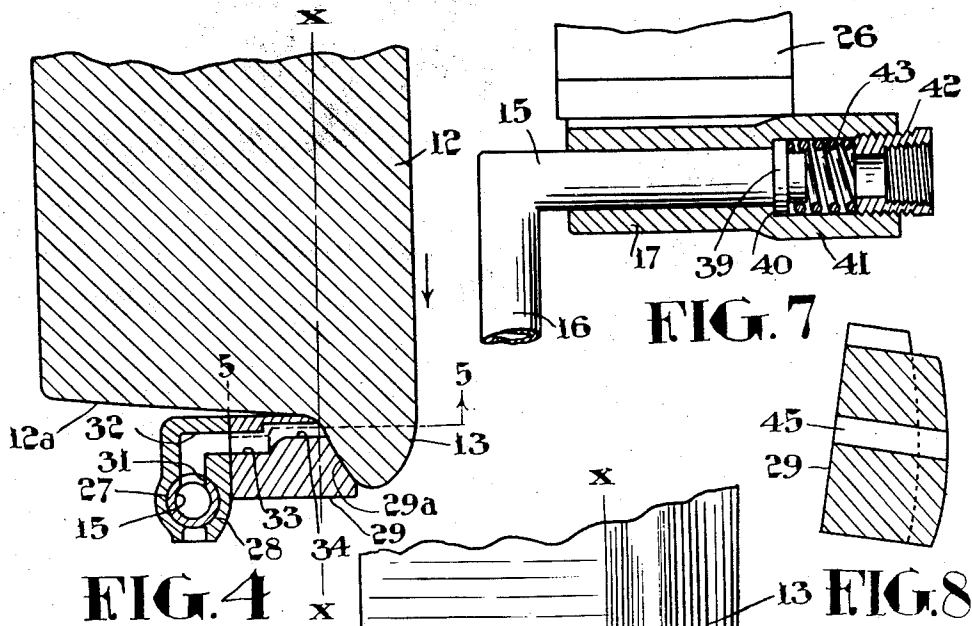
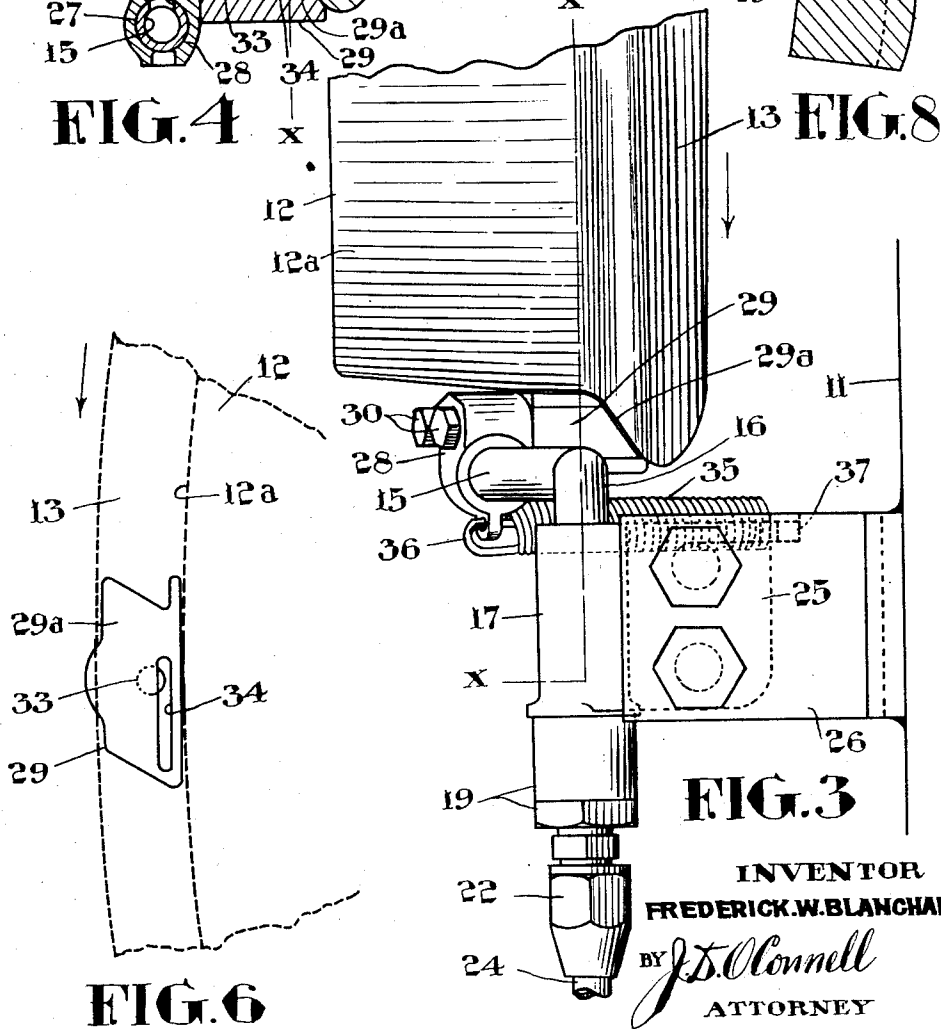
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2 Sheets-Sheet 2



INVENTOR
FREDERICK W. BLANCHARD
BY *J. D. O'Connell*
ATTORNEY

UNITED STATES PATENT OFFICE

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WHEEL FLANGE LUBRICATOR

Frederick W. Blanchard, Montreal, Quebec,
Canada

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9 Claims. (Cl. 184—3)

This invention relates to wheel flange lubricators and has for its object to provide an improved fitting through which the lubricant is pumped to the rail engaging surface of the flange.

5 This invention comprises a fitting including a flange-riding shoe pivotally suspended from the frame of a railway car or locomotive and provided with a port or passage through which an adequate amount of lubricant is applied to the wheel flange along the line of greatest wear which is usually close to the wheel tread. The position-
10 ing of the shoe with reference to the horizontal axis of the wheel is such that displacement of the shoe, due to relative movement between the wheel and the frame of the car or locomotive, is reduced to a minimum. The pivotal axis of the shoe is located in a predetermined vertical plane which passes through the radius between the flange and the tread of the wheel and is parallel
15 with the track rail, said shoe being thereby mounted to swing in a direction perpendicular to said plane and to maintain the flange-riding surface of the shoe in contact with the wheel flange during relative lateral and vertical motion between the
20 wheel and the car or locomotive frame, the said flange engaging surface of the shoe extending across the entire width of the rail engaging surface of the flange and being yieldingly held thereto.

30 Other features and advantages of the invention will be apparent from the following discussion of the appended drawings, wherein—

Fig. 1 is a view partly in side elevation and partly in section of a wheel flange lubricating fitting constructed in accordance with this invention. This view shows the fitting as it appears
35 when looking towards the rail engaging surface of the wheel flange.

Fig. 2 is a view taken at right angles to Fig. 1 and showing the appearance of the lubricating fitting when looking in the direction of the wheel tread.

Fig. 3 is a top plan view of the assembly appearing in Fig. 2.

45 Fig. 4 is a transverse sectional view taken along the line 4—4 of Fig. 2.

Fig. 5 is a sectional view taken along the line 5—5 of Fig. 4.

Fig. 6 is a view showing the flange engaging surface of the flange riding shoe, the locomotive wheel and its flange being indicated in dotted lines and the shoe supporting elements being omitted.

Fig. 7 is a fragmentary view partly in elevation and partly in vertical section of a slight
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modification with reference to the mounting of the fitting.

Fig. 8 is a sectional view of the flange-riding shoe showing a slight modification.

Referring more particularly to the drawings, 11 designates a portion of a railway car or locomotive frame and 12 one of the traction wheels equipped with the usual rail engaging flange 13.

The fitting comprising the present invention includes a hollow conduit 14 presenting a relatively long vertical arm 15 and a relatively short horizontal arm 16. The last mentioned arm is rotatably mounted in a horizontal bearing sleeve 17 and serves to support the arm 15 for free swinging movement about a pivotal axis located in a vertical plane X—X which is parallel with the track rail and passes through the radius between the flange and tread portions of the wheel. The free end of arm 16 is fitted with a thrust collar 18 confined between the adjacent end of sleeve 17 and a cap nut 19, the latter being threaded onto the sleeve until its inner end engages a stop shoulder 20 which is positioned to ensure adequate turning clearance for the collar 18. At its outer end the nut 19 is provided with a central threaded opening receiving the threaded inner end 21 of a spring load check valve fitting 22. The opposite end of the fitting 22 is connected, through pipe 24, to the pressure side of a lubricant supply pump (not shown). The bearing sleeve 17 may be supported in various ways but is herein shown as provided with an integral plate extension 17a secured by one or more bolts 25 to a bracket 26 carried by the car or locomotive frame 11.

The lower end of arm 15 is secured in a socket 27 formed in a shoe block 28. A renewable flange riding shoe 29 is secured to block 28 by bolts 30 so that the shoe may be readily replaced when unfit for further service. The grease or lubricant supplied to arm 15 escapes therefrom through a lateral opening 31 in line with a lateral port 32 formed in the block 28. From the port 32 the grease or lubricant is delivered to the rail engaging face of the wheel flange 13 through a port 33 and a slot 34 formed in the shoe 29. The slot 34 is relatively long and narrow and extends in the vertical direction of the flange engaging face 29a of the shoe.

Due to the pivotal mounting of the arm 15 the shoe 29 is suspended to swing in a direction perpendicular to the plane X—X and is free to travel to either side of said plane to maintain contact with the flange 13 during inward or outward axial movement of the wheel 12. In the present
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instance the shoe 29 is yieldingly held to the flange 13 by a spring 35 having one end anchored to a lug 36 in the shoe block 28 and the other end anchored to a lug 37 on the plate extension 17a of the bearing sleeve 17. It will be apparent, however, that various other spring arrangements may be resorted to for urging the arm 15 and the shoe 29 in the direction of the wheel flange.

The flange engaging face 29a of the shoe extends across the full width of the flange 13 and projects an equal distance above and below the horizontal wheel axis represented by the line Y—Y. This positioning of the shoe, in conjunction with its pivotal mounting has several advantages. The projection of the flange engaging face 29a above and below the axis Y—Y reduces to a minimum displacement of the shoe due to relative vertical movement between the frame 11 and the wheel 12. By making the width of the shoe face 29a coextensive with the width of the flange 13 it has been found that the distribution of the lubricant across the rail engaging surface of the flange is materially improved.

As the shoe swings inwardly and outwardly across the plane X—X the resulting tilting or rocking movement of the shoe on the flange 13 causes the wearing action of the flange to produce a slight longitudinal curvature of the flange engaging face 29a as shown in Fig. 5. This curvature provides clearance between the flange 13 and the ends of the flange engaging face 29a and facilitates the discharge of lubricant from the slot 34.

The shoe slot 34 is normally positioned to apply the narrow ribbon or film of lubricant to the flange 13 along the line of juncture with the wheel tread 12a since it is along this line that the flange is usually subjected to the greatest wear. Moreover, when the lubricant is applied close to the tread it is gradually distributed toward the periphery of the flange and ensures adequate lubrication of the entire rail engaging surface of the flange. I have also found it advantageous to position the slot 34 so that the greater portion of the slot is below the line Y—Y representing the horizontal axis of the wheel since, when the locomotive is moving forwardly, the greater portion of the opposing wheel flange is moving, as indicated by the arrow X, in a direction which facilitates the outflow of lubricant through the slot due to the drawing action of the moving flange surface. The block 28 and shoe 29 are also positioned so that the line of flow through the ports 32 and 33 and the slot 34 is downwardly inclined with reference to the line Y—Y, it having been found that this arrangement, together with the aforementioned positioning of the block 28 and slot 34 with reference to the line Y—Y tends to ensure an adequate supply of lubricant to that portion of the flange where the wear is greatest. The flange engaging face 29a of the shoe is shaped to conform to the transverse contour of the engaging flange surface 13a and this condition is maintained as the shoe is worn down in service due to the pressure of the spring.

In Fig. 7 I have shown a slight modification in the mounting of the arm 16 which permits the arm to have a slight movement in the sleeve bearing 17 as is sometimes necessary to proper positioning of the shoe 29. In this case the arm 15 carries a thrust collar 39 bearing against a shoulder 40 at the inner end of a spring housing 41 formed as an integral extension of the sleeve 17. A coupling nipple 42 is threaded into the outer end of the housing 41 and bears against

one end of a spring 43 having its other end bearing against the collar 39 and encircling the free end of the arm 15. The outer end of the nipple 42 is internally threaded to receive the valve fitting 22 appearing in the preceding figures.

In Fig. 8 I have illustrated a slight modification in the construction of the shoe 29. In this instance the slot 34 is replaced by a round hole or bore 45 forming a continuation of the port 33. Having thus described my invention, what I claim is:—

1. A wheel flange lubricator comprising a flange riding shoe positioned to engage a sector of the flange that extends equal distances above and below a horizontal plane passing through the axis of the wheel, said shoe being mounted to swing about a horizontal axis lying in a vertical plane passing through the wheel parallel with the wheel flange, said plane bisecting the wheel substantially at the juncture of the flange and the tread surface of the wheel.

2. A wheel flange lubricator including a pendant arm mounted to swing about a horizontal axis located at the upper end of the arm and lying in a vertical plane passing through the wheel parallel with the wheel flange, a flange engaging shoe at the lower end of said arm presenting a flange engaging surface bearing against a sector of the flange that extends equal distances above and below the horizontal plane passing through the wheel axis, spring means arranged to yieldingly hold the shoe engaged with said flange and means for supplying lubricant to the flange through said shoe.

3. A wheel flange lubricator including a hollow pendant arm mounted to swing about a horizontal axis located at the upper end of the arm and lying in a vertical plane passing through the wheel parallel with the wheel flange, a flange engaging shoe at the lower end of said arm presenting a flange engaging surface bearing against a sector of the flange that projects equal distances above and below a horizontal plane passing through the axis of the wheel, said shoe having a lubricant passage therethrough communicating with the hollow interior of said arm and means for forcing lubricant through the hollow arm to and through the lubricant passage of the shoe.

4. A wheel flange lubricator including a hollow pendant arm mounted to swing about a horizontal axis located at the upper end of the arm and lying in a vertical plane passing through the wheel parallel with the wheel flange, a flange engaging shoe at the lower end of said arm, and spring means connected to said arm for yieldingly holding the shoe to the rail engaging face of the flange.

5. A wheel flange lubricator including a hollow pendant arm mounted to swing about a horizontal axis located at the upper end of the arm and lying in a vertical plane passing through the wheel parallel with the wheel flange, a flange engaging shoe at the lower end of said arm, said shoe having a lubricant passage extending therethrough and communicating with the hollow interior of said arm and means for forcing lubricant through said arm and shoe to the rail engaging surface of the flange.

6. A wheel flange lubricator comprising a horizontal bearing sleeve lying in a vertical plane passing through the wheel parallel with the wheel flange, an L-shaped conduit presenting a horizontal arm rotatably mounted in said sleeve and a vertical arm depending from one end of the horizontal arm, means for connecting the free

end of said horizontal arm to a lubricant supplying means, a shoe carried by the lower end of said vertical arm and positioned to contact with the wheel, said shoe having a passage for conducting lubricant from the conduit to said flange and means for yieldingly holding the shoe to said flange.

plane passing through the axis of the wheel so that displacement of the shoe due to relative vertical movement between the wheel and the frame of the car locomotive to which the wheel is attached is reduced to a minimum.

9. The combination with the frame and one of the traction wheels of a railway car or locomotive of a wheel flange lubricator comprising a bearing sleeve carried by the frame, a hollow L-shaped conduit presenting a relatively short horizontally disposed arm and a relatively long vertically disposed arm, said horizontal arm being mounted in the bearing sleeve to swing about a horizontal axis lying in a vertical plane passing through the wheel parallel with the wheel flange, a flange engaging shoe carried at the lower end of the vertical arm and presenting a flange engaging surface bearing against the inner side of the wheel flange and against a portion of the wheel tread immediately adjacent the base of the flange, said shoe being provided with a lubricant passage extending therethrough and having one end communicating with the hollow interior of the L-shaped conduit, the other end of said passage opening into the flange engaging face of the shoe, and resilient means connected with the vertical arm of the conduit for yieldingly holding the shoe against the inner side of the flange.

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7. The combination with the frame and one of the traction wheels of a railway car locomotive of a wheel flange lubricator including a flange riding shoe pivotally suspended from said frame to swing about a horizontal axis lying in a vertical plane passing through the wheel parallel with the wheel flange, said shoe being provided with a port or passage through which the lubricant is supplied to the rail engaging surface of the flange at a point close to the wheel tread, the flange engaging surface of said shoe extending the full width of the flange and projecting above and below a horizontal plane passing through the axis of the wheel, and means for supplying lubricant to the wheel flange through the port or passage formed in said shoe.

8. A wheel flange lubricator comprising a flange engaging shoe mounted to swing about a horizontal axis located a substantial distance above the shoe and lying in the vertical plane passing through the wheel parallel with the wheel flange, the engaging surfaces of the shoe and wheel flange projecting above and below a horizontal

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