Feb. 10, 1942. J. T. McGARRY 2,272,774

RAIL LUBRICATOR

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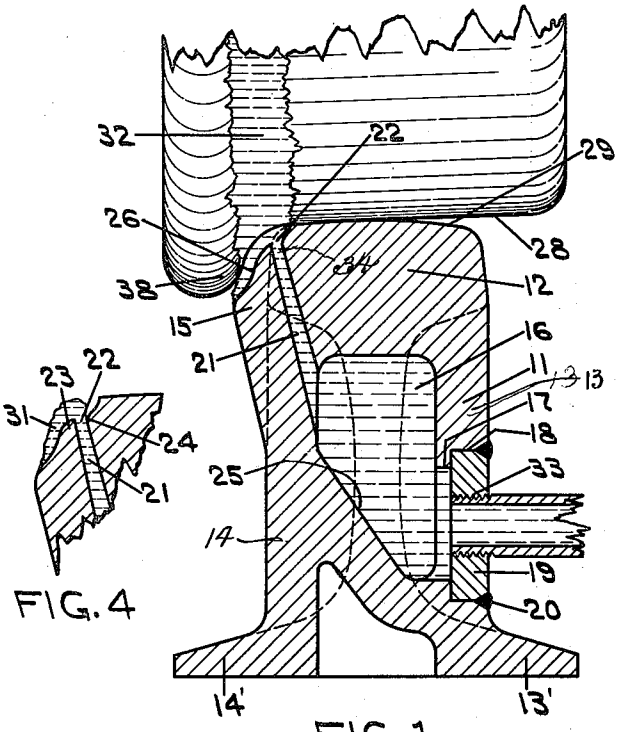


FIG. 1

FIG. 4

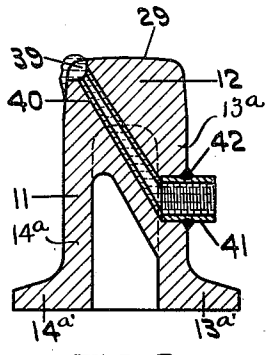


FIG. 3

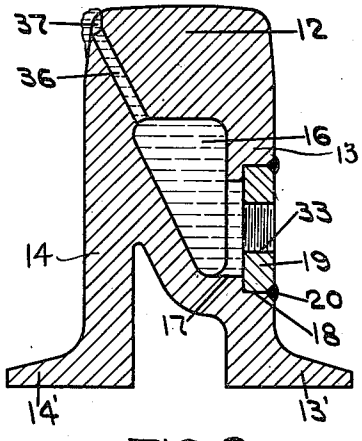


FIG. 2

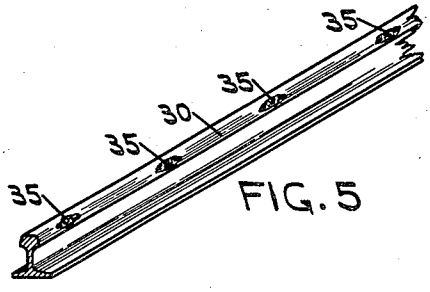


FIG. 5

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RAIL LUBRICATOR

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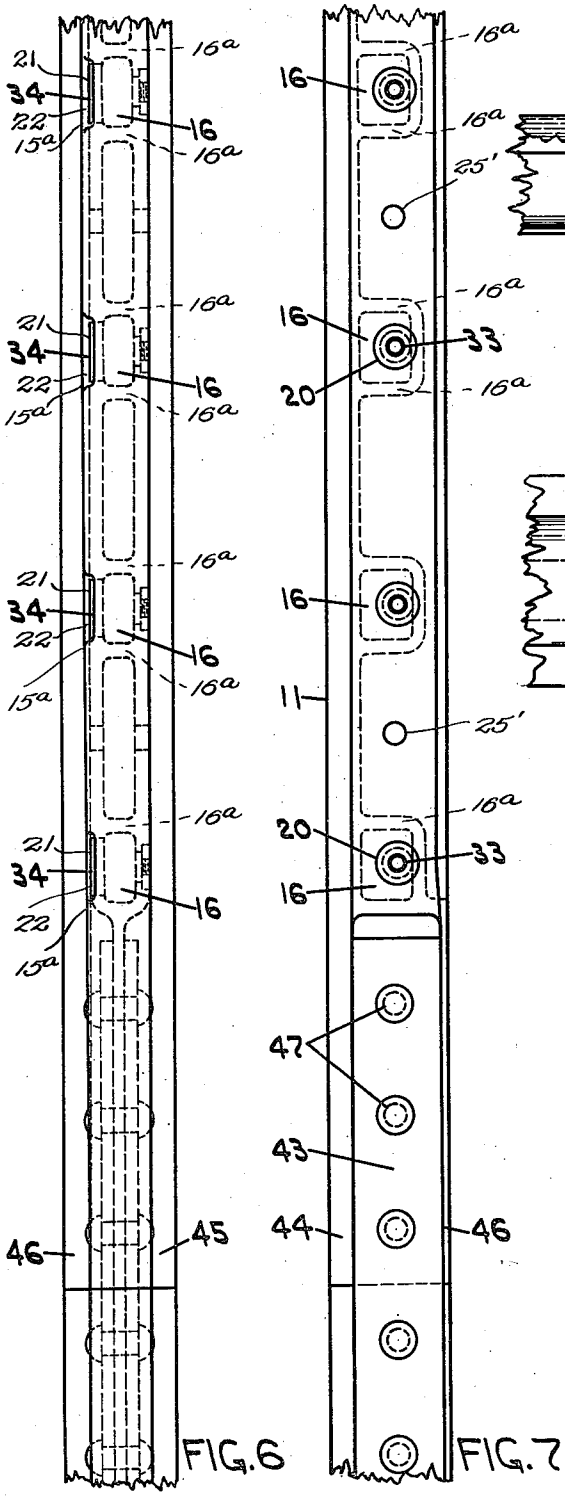


FIG. 6

FIG. 7

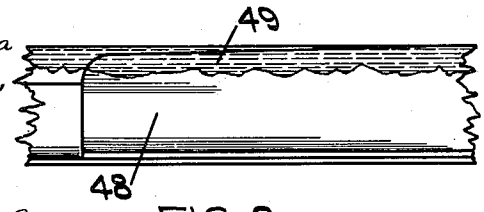


FIG. 8

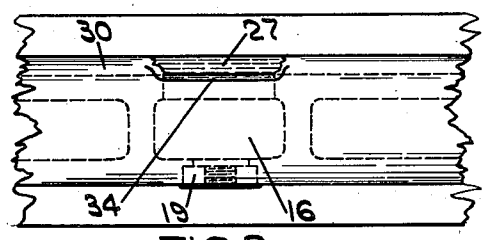


FIG. 9

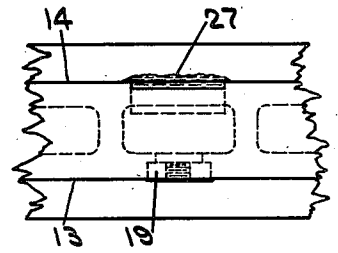


FIG. 10

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RAIL LUBRICATOR

John T. McGarry, Cincinnati, Ohio

Application January 27, 1939, Serial No. 253,172

4 Claims. (Cl. 184—3)

My invention relates to lubricators for wheel flanges and rails, and is an improvement over my invention as set forth in my co-pending application, Serial No. 209,287, filed May 21, 1938, including a rail with means whereby lubricant will be delivered to the edge of the rail which is contacted by the flanges of car wheels moving over said rail.

It is an object of my invention to provide means whereby lubricant will be delivered to the flange of a car wheel whence it may be transferred to the flange-throat contacting side of the rail head of the succeeding rail stretch. The resulting effective application of lubricant to the rail head fillet and the wheel flange and its throat, where the flange joins the wheel tread relieves a condition which has long been a source of trouble and difficulty. Friction of the flanges of wheels against the side face and fillet of the rail head at curves not only has required a great deal of power to carry cars around such curves, but also tends to rapidly wear out both the wheel-flange and the rail head, with the result that expensive replacements of both wheels and rails about curves have been required.

Many efforts have been made to provide means for effectively applying lubricant between rail head and the flange, but these efforts have not resulted in a satisfactory solution of the problem for the reason that lubricant applying means have been of such nature that they are rapidly destroyed by the pounding as the flanges of the car wheels move along the rails; and the lubricant-delivering ducts have quickly been deformed and plugged, so that their useful life is of very short duration.

It is an essential object of my invention, therefore, to provide means whereby the lubricant-delivering duct is protected by substantial masses of metal, together with simple and dependable means for delivering lubricant to the duct; the improvement preferably including a lubricant-reservoir as well as the duct within the body of the rail.

A difficulty heretofore has been that the lubricant has been delivered so as to pass frequently toward the wheel tread, and has had a tendency to spread over the rail top and wheel tread, which is objectionable because wasting lubricant and impairing the tractive effect of the driving wheels of locomotives or other motive apparatus. It is one of the objects of my invention to have a form of delivery of the lubricant such that it will adhere to the flange of a car wheel and not spread on to the wheel tread, thus effecting a most efficient lubrication of the fillet of the rail-head while preventing the movement of lubricant to the wheel tread and rail head top.

A further object of my invention is to provide a lubricant delivering duct protected as above mentioned, which is elongated along the length of the rail and relatively narrow transversely of the rail, so that there will be delivered first to the flange of the car wheel and then thereby to the fillet of the succeeding rail stretch elongated strips or blobs of lubricant.

It is a further object of my invention to provide an outlet or discharge duct which opens at a point adjacent the edge of the rail, and in which the side of the duct toward the wheel-flange as the cars move over it is lower than the other side, which has the effect of causing the lubricant as it passes out of the duct under pressure to fold over toward the wheel flange.

A further object of my invention is to provide a shouldered rail-head, the shoulder or ledge of the rail-head being positioned so as to serve as a means for retaining on its uppermost surface lubricant to be picked up or deposited on throat and flange of the wheels of cars moving over the rail and from them to go to the rail that is to be lubricated.

The full objects and advantages of my invention will appear in connection with the detailed description thereof, and its novel features will be particularly pointed out in the claims.

In the drawings, illustrating an application of my invention in some of its forms—

Fig. 1 is a transverse sectional view through a rail showing the manner in which the lubricant is delivered to the throat and flange of a car wheel, a portion of a wheel being shown in that connection. Fig. 2 is a view similar to Fig. 1 without any portion of the wheel showing a modified form of rail. Fig. 3 is a transverse sectional view showing still another modified form of the invention. Fig. 4 is a fragmentary view on a part of the lubricant-delivering duct and rail of Fig. 1 showing how the lubricant from the duct naturally follows a downward curve for contacting only the throat and flange of the car wheel. Fig. 5 is a perspective view of a portion of standard rail showing how the wheels that have passed over the lubricator rail will deposit elongated daubs of lubricant upon the side of the rail-head-fillet. Fig. 6 is a top plan view of a portion of a rail embodying my invention as shown in Fig. 1, showing cavities in the rail in dotted lines and elongated lubricant distributing mouths of the lubricant ducts, and showing the manner in which

the end of the rail is formed to be joined with a standard rail. Fig. 7 is a side view of the parts shown in Fig. 6. Fig. 8 is a side elevation view of the end of a switch point in position showing how the lubricant is applied to a switch point. Fig. 9 is an enlarged top plan view of a portion of the rail such as shown in Figs. 1, 6 and 7. Fig. 10 is a top plan view of a portion of a rail such as shown in Fig. 2.

As shown in the form of invention of Fig. 1, a rail 11 is formed of the cross section indicated in Fig. 1 wherein there is a rail head 12, webs 13 and 14 with flanged feet 13' and 14', respectively, and a side projection 15 formed integral with the rail head 12 and extending from the wheel flange side of the rail. Within the rail as cast is formed a cavity 16. This cavity in the form here shown is provided with an opening 17 and an external seat 18 which receives an internally-threaded member 19, which member is welded to the side of the rail all around as indicated at 20 in Figs. 1 and 7.

From the cavity 16 extends a duct 21, which, as shown in Figs. 1 and 4, has an opening up into a recess 22 formed in the fillet of the rail-head with a lower lip 23 which does not extend as far up as does the surface surrounding the opening indicated at its upper margin at 24, Fig. 4. As shown at its outlet end in Figs. 6, 9 and 10, the duct 21 is formed in heavy masses of the rail-head preferably by casting, and has relatively considerable length along the rail and small width transversely of the rail, so its opening is slot-like in character, and the lubricant, as hereinafter pointed out, will flow from the duct in the form of a wide and thin ribbon, the more defined in proportion as the lubricant is of a more viscous nature. This passes through the duct 21 leading up from cavity 16, the bottom 16b of which integrally joints the two webs 13 and 14, and discharges in the aforesaid ribbon form to fall over upon the surface of ledge 26 formed by the lowest bottom portion of recess 22, as clearly shown in Fig. 1 and indicated at 27 in Figs. 9 and 10. There is a fundamentally important reason for making the lip 23 terminate farther down than the surface 24 at the opposite side of the end of duct 21. If the lips are at substantially common points of elevation there will be a tendency for the ribbon of lubricant to push out in an upward direction which will tend to make it crawl out on the tread 28 of the car wheel and the face 29 of the rail-head, which is undesirable, since all of the lubricant should be distributed along the fillet of the rail head that is to be lubricated, at 30 in Fig. 5. With the less elevated lower lip 23, however, the ribbon of lubricant will turn and flow downwardly, as clearly indicated at 31 in Fig. 4, thus tending to keep the lubricant on the throat 32 and the flange 33 of the car wheel to be transferred therefrom to the fillet of the rail-head of a rail succeeding my lubricating rail, contacted by that throat and flange of the wheel.

The central aperture of filler block 19 is threaded at 33, as indicated in Figs. 1 and 2, and in this threaded portion 33 a conveyor conduit will be threaded which goes to a lubricant supply and pump, not shown, of usual construction. As indicated in Figs. 6 and 7, there are formed a multiplicity of lubricant distributing cavities 16 in the rail 11, and each of these is connected by a respective duct 21 with an elongated edge recess 22, as clearly shown in Figs. 6 and 9. When a wheel passes over the recesses 22 the throat and flange of the wheel will pick up successive strips of lubricant of a circumferential length equal to the width of the lubricant ribbon, and these strips will in turn be laid in successive daubs upon the fillet of the succeeding rail-head, as indicated at 35 in Fig. 5. These daub-strips of lubricant will ultimately spread along the fillet of the rail-head and along the throat 32 and inside of the wheel flange 38, with the result that the entire fillet of the rail-head of a curve or of a switch point to which the wheel passes from my lubricating rail will have a continuous coating lengthwise, with no appreciable spreading to the top of the rail and to the wheel tread. The same result is had with switch point 48, at 49, in Fig. 8.

Having the lubricant feed ducts 21 and their outlet slots 34 in the body of the metal of the rail member and the discharge of lubricant from these ducts 21 through their outlets 34 within the recesses 22 will be such that there will be no tendency to destroy either the slots or the feed ducts and the device will be one which can continuously operate over unlimited periods. The projection 15 in the form of the invention shown in Fig. 1 constitutes flange-guiding elements keeping the wheel flange away from the discharge orifices 34 of the ducts 21, and thus protects them from pounding as above mentioned, without reducing the normal width of the rail head in forming the recesses 22.

Another form of the invention differing only in one particular is shown in Fig. 2, wherein the rail-head 12 does not have a projection 15, and in which the elongated lubricant delivering openings 36 and recesses 37 are formed directly in the normal fillet of the rail-head and deliver the daubs of lubricant successively to the wheels and from the wheels to the fillet of the rail-head on the curve in much the same manner as is done by the form shown in Fig. 1.

In the form of the invention shown in Fig. 3, in conjunction with a lubricant-delivering depression 39 formed on the fillet of the rail-head, a metal tube 40 is cast in the rail-head at the time the rail-head is formed, in such manner as to make connection with an internally-threaded member 41 for receiving a lubricant supply conduit which is welded at 42 to the face of the rail member 11.

As is shown in Figs. 6 and 7, the rail section embodying my lubricator mechanism will be cast at its end with a central web 43, head 44, and base flanges 45 and 46, corresponding to the same parts of a standard rail section. Coupling bars of standard construction will fit against the sides of the web 43 in a customary manner, bolts extending through holes 47, securing the coupling bars to the lubricator rail section and to the standard rail section in the customary manner.

As herein shown in all examples, the duct 21, 36 or 40, as the case may be, extends up substantially more nearly parallel with the flange engaged side of the rail head member than with the top of said member; being confined inwardly of the track away from the middle vertical line of the wheel-supporting top of the head member for the full extent of the wheel-load-supporting depth of said head member. This leaves the much greater proportion of the mass of the head member intact adjacent to its top to effectively resist distortion tending to close the duct under the heavy load of traffic on the top of the rail head member. The much smaller proportion of the mass next to the flange engaged side of the

head member is adequate to resist the relatively light wheel-flange pressure laterally out against the inner side of the head member. Not only is this wheel-flange pressure relatively light, but it is not always present, as the wheel often travels with its flange away from the side of the rail head member.

The spaced upright webs, one of which is directly below the side part having ducts 21, 36 or 40, more than compensate for any weakening due to the ducts, or to recesses in the examples of Figs. 2 and 3, as well as for any lack of inherent strength of the metal if the rail is a casting, as compared with the metal in a standard rolled rail. The spaces between these webs and between cross walls 16a and over bottoms 25 afford the lubricant cavities 16; and these walls 16a and bottoms 25 tie the webs 13 and 14 together, thus very greatly adding to the reinforcement in the regions that would be weakened by the recesses and ducts. The webs are continued between these wall formations, preferably, as further added strengthening means. Where they discontinue past the last wall formation at each end part of the rail, leaving a single web 43 for connection to a standard rail, the angle bars as shown in Figs. 6 and 7, are sufficient reinforcement of my rail.

It will be understood that I am not limited to the continuation of the webs 13 and 14, or 13a and 14a, between cavity defining wall formations and that single webs like end webs 43 might occur in these regions. Holes 25' are formed in the web continuations, as herein shown, which serve for connection of any attachments required, such as operating means for a pump or pumps to force the lubricant to the rail.

In Fig. 3 the mass of metal joining the webs 13a and 14a acts as the reinforcement at each duct and recess, corresponding to the walls 16a and bottoms 25 of Figs. 1 and 2, 6 and 7, and 9 and 10, in this respect.

The extension of rail metal at 15, with gradual approaches, one of which is seen at 15a in Fig. 6, serves to guide the wheel away from its normal path close to the rails leading to my rail, and reinforce the rail where the recesses 22 are formed therein. The same result is had without reinforcement in Figs. 2 and 3, with recesses 37 and 39, respectively; in any example there being elements discontinuous for accommodation of the duct outlets and their accompanying shoulders or ledges 26 without injury thereto by the flanges, which glide past the recesses without any risk of the flanges climbing in them, as they are much shorter than the flange segment that is below the rail top. It will be understood that modifications other than those instanced herein may occur, and that while I have somewhat specifically set forth my invention, as is required, I am not limited to such precise disclosure, but

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

1. A lubricating rail comprising a head member and spaced supports for said member, integral therewith, one of said supports extending directly below the flange-guiding side part of the head member, said side part, over said one of said supports, having therewithin a duct leading from space between said spaced supports up to and having an outlet opening through the flange-engaged side part of the member, and means in lubricant-delivering relation to said duct.

2. A lubricating rail comprising a head member and spaced webs supporting said head member under respective side portions of said member, and comprising elements connecting the webs together below the head member, said webs and elements being so spaced and arranged as to define a cavity, said cavity having a lubricant entrance, and the rail having a lubricant duct leading from said cavity up through one of the side portions of the head member and out through the wheel-flange-guiding side of said head member.

3. A lubricating rail comprising an integral structure made up of a head member and a support for said member, said member having in its flange-guiding side part a lubricant-outlet opening, said support being directly under said side part, and said rail having a lubricant duct leading up to said opening within the body of said head member and support structure and extending substantially more nearly parallel with the flange-guiding side of said head member than it is with the top of said head member, and means within the body of said structure communicating with said duct for admitting lubricant to said duct.

4. A lubricating rail as set forth in claim 3, in which the lubricant-admitting means communicates with the duct in that part of the structure extending directly below the side part that has the outlet opening.

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