May 6, 1952 H. O. MURPHREE 2,595,692

AUTOMATIC FLANGE OILER FOR CAR WHEELS

Filed Nov. 14, 1947

3 Sheets-Sheet 1

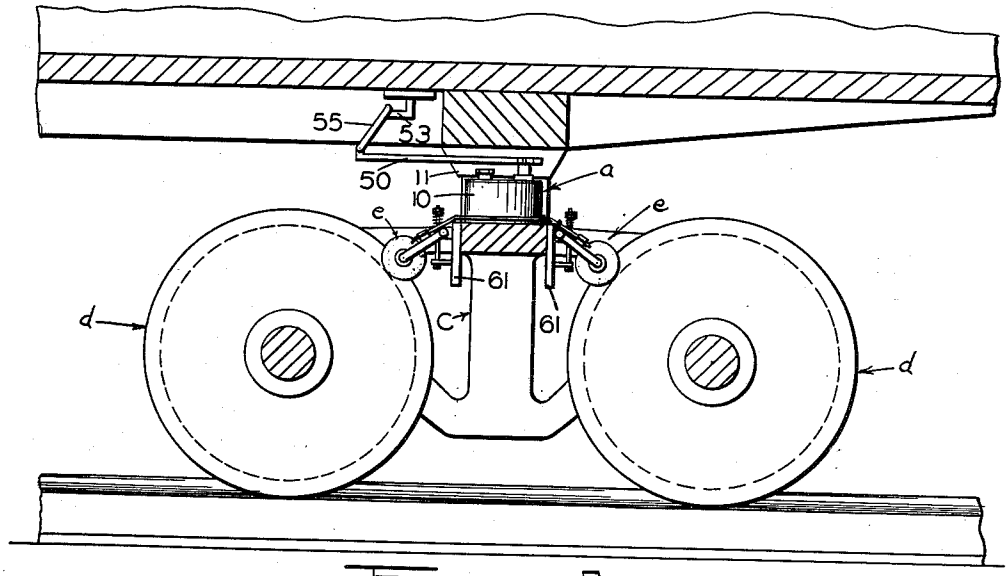


FIG 1.

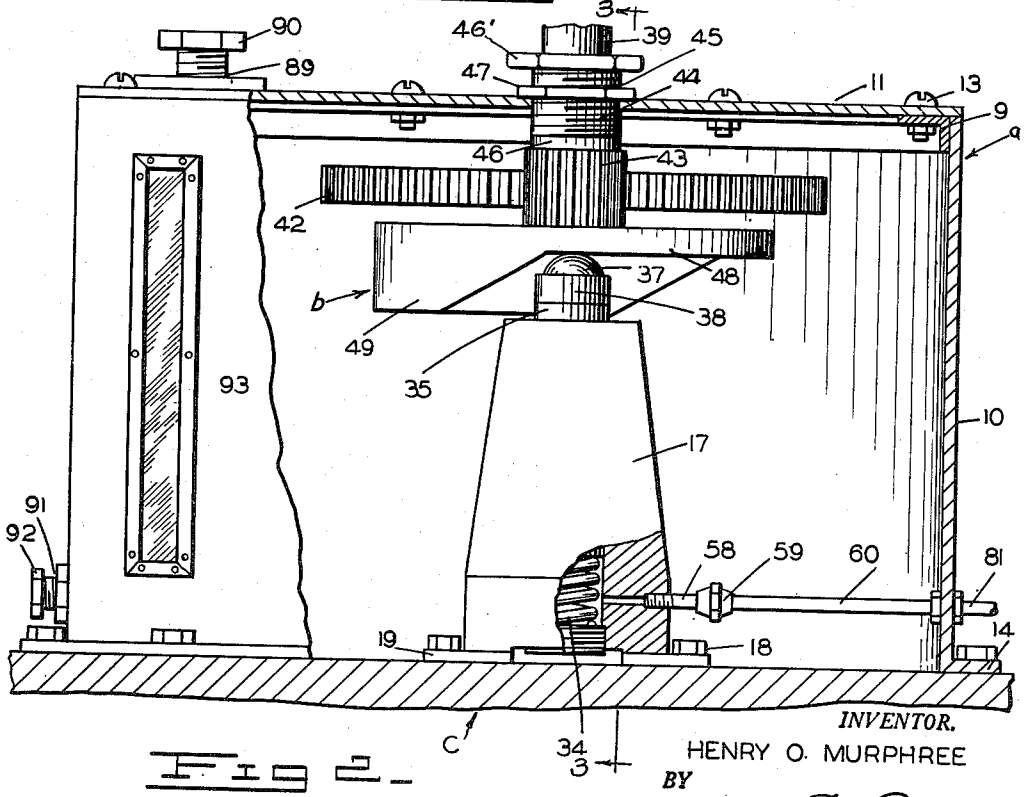


FIG 2.

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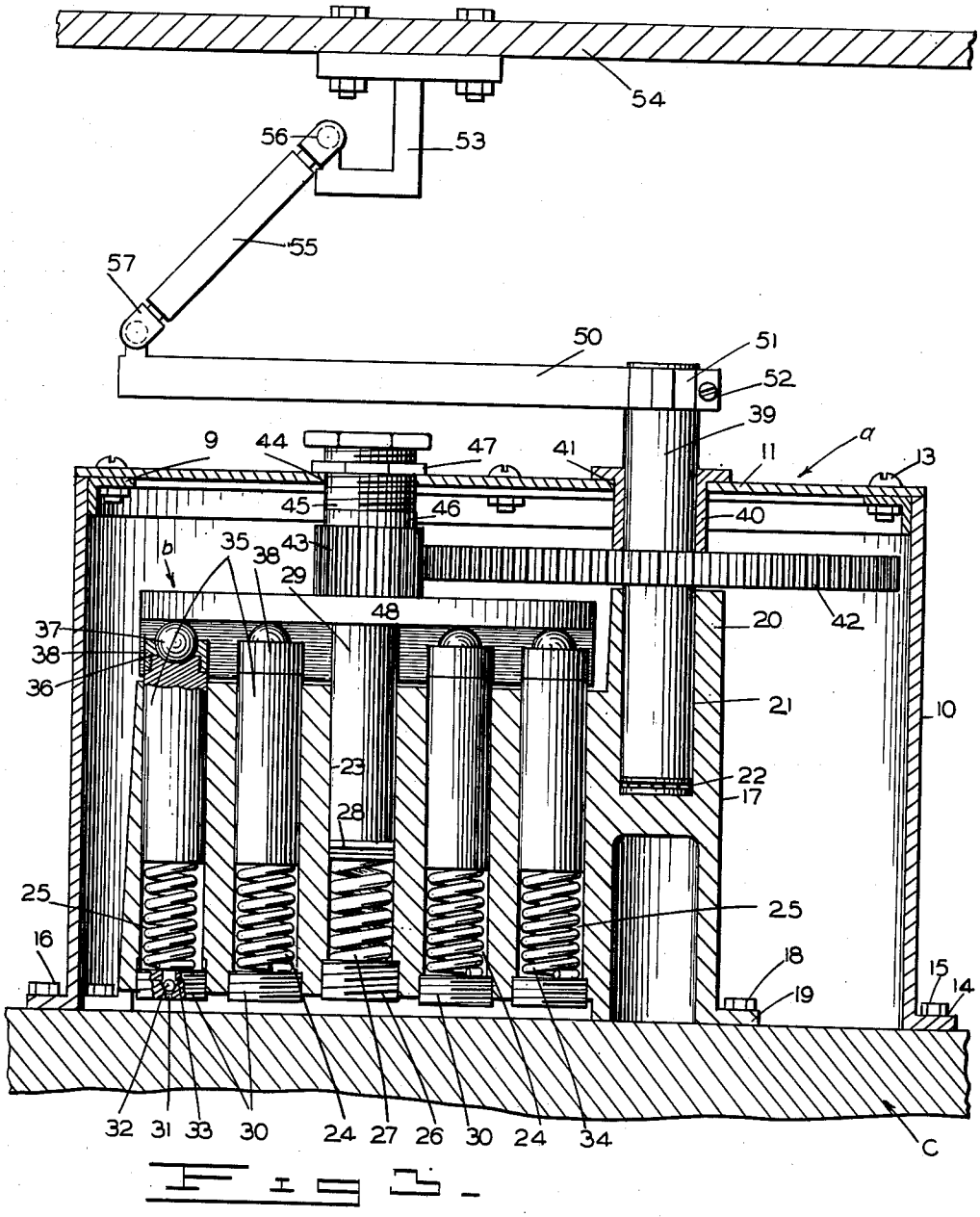


FIG. 1

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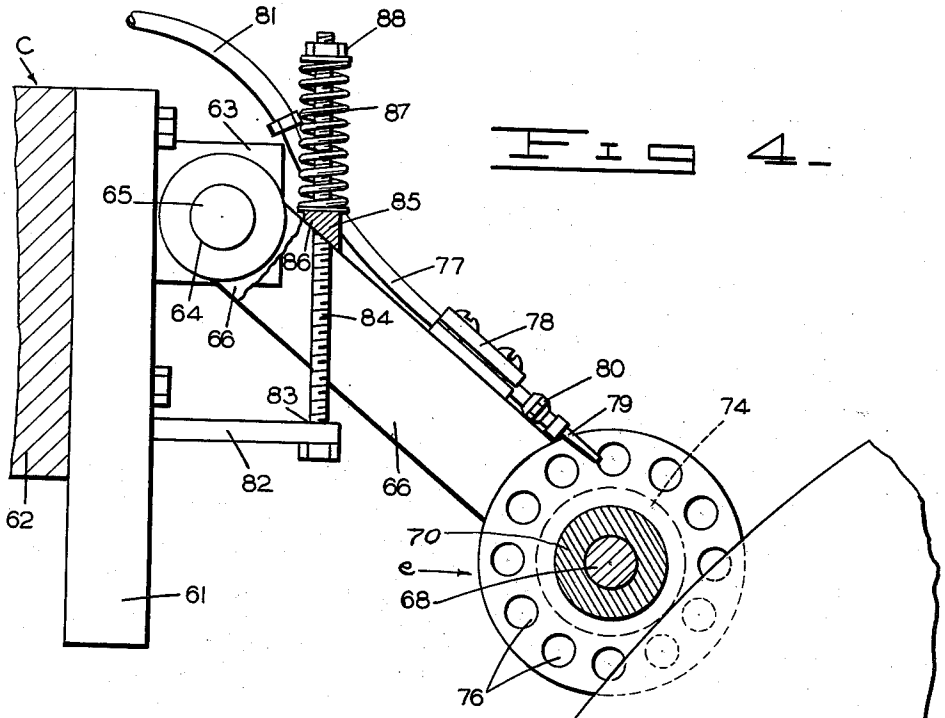


Fig 4.

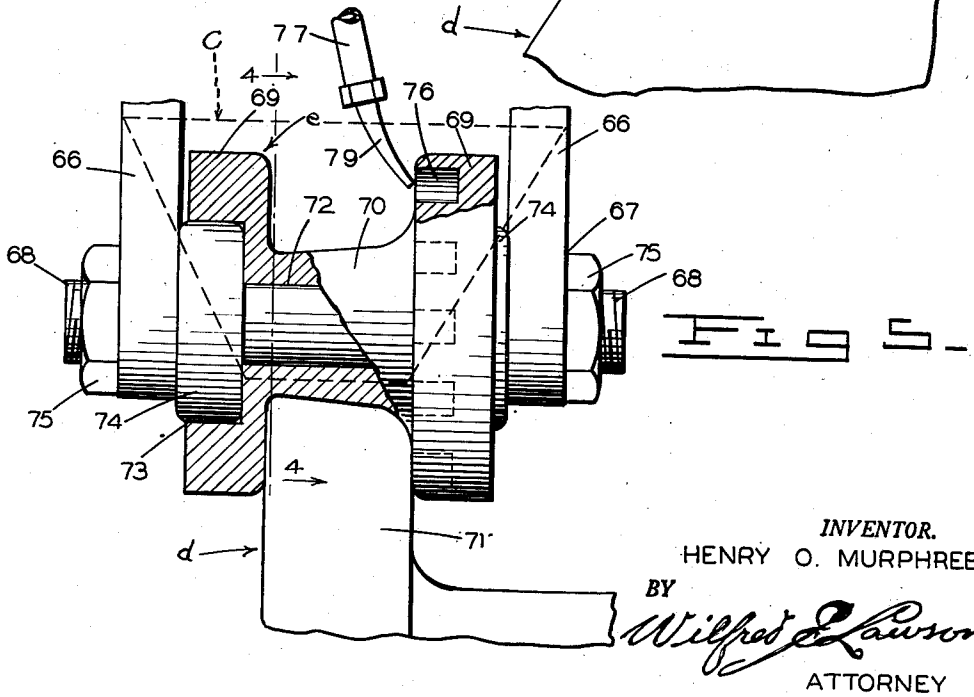


Fig 5.

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UNITED STATES PATENT OFFICE

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AUTOMATIC FLANGE OILER FOR CAR WHEELS

Henry O. Murphree, Heavener, Okla.; Dewey Murphree administratrix of said Henry O. Murphree, deceased

Application November 14, 1947, Serial No. 785,997

2 Claims. (Cl. 184—3)

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My invention relates to equipment for railroad rolling stock and more particularly for automatic oilers for flanges of wheels of diesel locomotives, passenger coaches and the like.

The object of my invention is to provide a flange oiler adapted to be operated by the oscillatory movement of a truck relative to a coach body or the like, resting on said truck while the coach passes through a curve of the track.

Another object of my invention is to provide a flange oiler of the character indicated above and equipped with two sets of pumps, each set comprising a cylinder and piston reciprocally arranged in the cylinder for each wheel on one side of the truck.

A further object of my invention is to provide a flange oiler of the character indicated above, in which only the pumps connected with the wheels rolling on the outer rail of a track curve are operated, while the coach passes the curve, and in which these pumps are automatically shut off as soon as the coach enters a straight stretch of track.

A still further object of my invention is to provide a flange oiler of the character indicated above equipped with means for adjusting the pump operating means, so that each pump piston executes a stroke of a predetermined length, and the pump, in consequence, delivers a predetermined amount of oil.

Still another object of my invention is to provide a flange oiler of the character indicated above equipped with a rotary oil distributor adapted to straddle the wheel flange to be oiled and urged by a spring into permanent contact with the circumferential surface of the wheel flange.

Other objects of my invention not specifically mentioned may appear in the following specification describing my invention with reference to the accompanying drawing illustrating a preferred embodiment of my invention.

It is, however, to be understood, that my invention is not to be limited or restricted to the exact construction and combination of parts described in the specification and shown in the drawing, but that such changes and modifications can be made, which fall within the scope of the claims appended hereto.

In the several figures of the drawing similar parts are designated by similar reference characters and

Figure 1 is a view in longitudinal section of a conventionally illustrated wheel truck of a railway car together with a portion of the overlying

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car body, showing the application of a flange oiler, constructed in accordance with the present invention.

Figure 2 is a view partly in vertical section and partly in elevation of the oil reservoir and the mechanism within the same.

Figure 3 is a vertical section taken substantially on the line 3—3 of Figure 2 and including, in elevation, the operative coupling between the oiler and the bottom of the car body.

Figure 4 is a view partly in elevation and partly in section of the wheel flange contacting element the section being thru the distributor approximately on the line 4—4 of Figure 5.

Figure 5 is a view partly in elevation and partly in section of the flange engaging wheel.

The flange oiler forming the subject matter of my invention comprises a substantially circular oil reservoir *a* consisting of a body portion 10 and a top cover plate 11 adapted to be secured to the body portion by means of a plurality of bolts 13 or the like extending through holes provided in the cover plate 11 and threadedly engaging a flange 9 formed on the top edge of the circumferential wall of the body portion 10 and extending inwardly therefrom at a right angle.

An outwardly extending circumferential flange 14 is formed at the lower edge of the body portion 10 and is provided with a plurality of holes 15 therein, permitting screws 16 to extend therethrough and to engage the truck *c*.

The numeral 17 designates an elongate pump block having a substantially rectangular vertical cross section and a substantially rectangular longitudinal vertical section, which block is secured to the bottom and inside of the body portion 10 by means of a plurality of screws 18 extending through holes provided in a surrounding flange 19 formed on and extending outwardly from the bottom corner of the pump block 17, so that the bottom of the pump block is supported at a distance above the bottom of the body portion 10, when the pump block is placed into working position in said body as shown in Figure 3.

Adjacent to one end of the pump block an upwardly extending bearing block 20 is formed and is provided with a downwardly extending blind bore 21, on the bottom of which a ball thrust bearing 22 or the like is mounted.

Centrally of the pump block part next to said blind bore, a bearing bore 23 extends downwardly through said block and at each side of said bearing bore 23 two cylinder bores 24 and 25 respectively extend downwardly through the block.

The lower end of the central bearing bore 23 opens through the bottom of the block and is tapped and a screw plug 26 is adapted to be screwed into the tapped end of the bearing bore to close the same.

A helical spring 27 is inserted in the bearing bore 23 and rests on the screw plug 26. On the upper end of the helical spring 27 a ball thrust bearing 28 or the like is arranged to support a cam shaft 29 extending upwardly through the bearing bore 23 into the oil reservoir *a*.

The lower end of each cylinder bore 24 and 25 opens through the bottom of the block and is tapped and a screw plug 30 is screwed into each of these tapped cylinder bore ends.

Each cylinder screw plug 30 is provided with a central hole 31, the lower end of which tapers downwardly to form a valve seat for a ball check valve 32 arranged in said hole.

In the upper end of each hole 31, a pair of diametrically inwardly extending prongs 33 may be provided permitting free play of the ball valve but preventing it from escaping from the hole in the cylinder screw plug.

On top of each of these cylinder screw plugs, a helical spring 34 is arranged urging a piston 35 upwardly, which is reciprocally mounted in the corresponding cylinder bore 24 or 25.

The top of the upper end of each piston 35 is provided with a semi-globular hollow 36 adapted to receive a hardened steel ball 37 therein.

The top end of each piston 35 is threaded and a retainer ring 38 is adapted to be screwed onto each piston to keep the corresponding bearing ball 37 in position while permitting rotary movement of said ball.

A drive shaft 39 is rotatably located in the blind bore 21, rests on the ball thrust bearing 22, and extends upwardly through a brass bushing 40 extending through and secured in a hole 41 provided in the cover plate 11 coaxially with the blind bore 21 in the pump block 17, so that the brass bushing 40 serves as bearing for the drive shaft 39.

A comparatively large spur gear 42 is rigidly mounted on the drive shaft 39 just above the top of the bearing block 20 of the pump block 17.

A pinion 43 is rigidly mounted on the cam shaft 29 and meshes with the spur gear 42.

The pinion 43 is considerably wider than the spur gear 42 for a purpose to be described hereinafter.

Underneath the pinion 43 a cam disk *b* is rigidly mounted on the cam shaft 29.

Coaxially with the bearing bore 23 a tapped hole 44 is provided in the top cover plate 11 and an outwardly threaded bearing bushing 45 engages said threaded hole and extends inwardly into the oil reservoir 19.

A ring ball thrust bearing 46 surrounds the cam shaft 29 and rests on the upper end surface of the pinion 43.

The upper end of the cam shaft 29 extends into the bearing bushing 45 and is rotatable therein.

The bearing bushing is provided on its upper end with a hexagonal head 46', and a jam nut 47 is mounted on said bearing bushing outside of the oil reservoir *a*.

The cam disk *b* has a thin flat portion 48 adapted to engage normally the bearing balls 37 of the pistons 35.

One portion 49 of the cam disk *b* is heavier or thicker than the main portion 48 and is adapted to engage the bearing balls 37 of the pistons

35 in the two cylinders 24 or in the cylinders 25 under conditions to be described later and to force these pistons downwardly in their cylinders.

On the uppermost end of the drive shaft 39, a crank arm 50 is secured by means of a corrugated clamp 51 formed on said crank arm and adapted to be operated by a clamp bolt 52.

A hook shaped bracket 53 is bolted onto the bottom of the coach body 54 and a connecting rod 55 is attached with one of its ends to said bracket by means of a ball joint 56, and with its other end by means of a second ball joint 57 to the free end of the crank arm 50.

Each cylinder 24 and 25 is equipped adjacent to its lower end with an outlet nipple 58. A ball check valve 59 is mounted on each nipple 58 permitting liquid to flow out of the cylinder under pressure eventually exerted by the cylinder but preventing such passage of liquid under normal conditions.

A pipe 60 is secured to each ball check valve 59 and leads through the circumferential wall of the oil reservoir.

Leakage of oil from the reservoir through the several openings in the reservoir is prevented by packing the pipes passing through said opening in any preferred conventional manner.

A clamp bracket 61 is adjustably secured to each side of the brake post 62 provided on the truck *c* for each wheel *d* in any conventional manner. A pair of bracket plates 63 is secured to each clamp bracket 61 adjacent to its upper end, and the plates of each pair are spaced from each other and are provided with coaxial holes 64. A bracket pin 65 is supported in these holes and extends between each pair of bracket plates, to which each pin is secured.

On each bracket pin a pair of distributor arms 66 is pivotally mounted, and in coaxial holes 67 provided in the distributor arms adjacent to their free ends a short shaft 68 is located.

An oil distributor *e* is shaped similar to a spool and is provided with two circular end flanges 69 and a body 70. The oil distributor is formed so that the flange 71 of the coach wheel *d* fits into the space between the two end flanges 69 of the distributor *e*, which is provided with a central bore 72 having a counterbore 73 on each of its ends.

The outer race of a ball bearing unit 74 is arranged in the counterbore 73 and is secured therein.

Through each bore 72 one of the shafts 68 extends and the inner races of the ball bearings 74 are secured to the said shafts 68, which are located as stated above, in the holes 67 in the free ends of the distributor arms 66.

Each shaft extends beyond the corresponding oil distributor arms 66 and the end of each shaft is threaded. Jam nuts 75 on these threaded ends engaging the corresponding distributor arm 66 prevent rotary movement of said shaft.

A plurality of distributing pockets 76 is provided in the inner face of the outer end flange 69 of each distributor *e*.

On each distributor arm 66 which is adjacent to the inner flange 69, an oil delivery pipe 77 is mounted by means of a nozzle clamp 78 of any preferred conventional construction.

On the outer end of each delivery pipe 77 a nozzle 79 is secured and between each nozzle and corresponding delivery pipe a ball check valve 80 is provided, adapted to close the outlet of said

pipe automatically unless pressure in the pipe opens the valve.

On the inner end of each delivery pipe **77** a hose **81** is attached, the other end of which connects with one of the pipes **60** leading from one of the cylinders **24** or **25**.

The end of the nozzle **79** is arranged at the inner side of the outer end flange **69** of one of the oil distributors *e*, in a position where oil ejected from the nozzle will enter the pockets **76** in the distributor and will oil the flange **71** of the coach wheel *d*.

To keep the distributor *e* in contact with the wheel *d* a guide bracket **82** extends from the clamp bracket **61** and is provided adjacent its free end with a vertical hole **83**, through which a bolt **84** or the like extends upwardly between each pair of distributor arms **66**.

A transverse block **85** is arranged across each pair of these arms **66** and is provided with a vertical hole **86** permitting the bolt **84** to extend therethrough. The upper portion of said bolt is surrounded by a helical spring **87** abutting with its lower end on the transverse block **85** and with its upper end on a nut **88** mounted adjustably on the upper end of the bolt **84**, so that the pressure of the helical spring **87** may be regulated by said nut.

The above description shows clearly that the automatic flange oiler according to my invention operates as follows:

The cover plate **11** is provided with a tapped hole **89**, through which oil may be introduced into the reservoir *a*. The hole **89** is normally closed by a screw plug **90**.

A drain opening **91** is provided in the circumferential wall **10** of the reservoir *a* adjacent the bottom thereof. This drain opening is tapped and is normally closed by a second screw plug **92**.

To observe the amount of oil contained in the reservoir a glass gage **93** of well known construction is provided on and communicates with the reservoir *a*.

As long as the truck *c* supporting the coach body **54** travels on a straight track, so that the coach body and the truck extend parallel to each other, all pistons **35** are arranged in raised position in the cylinder bores **24** and **25** under the upward pressure of the helical springs **34**, since the cam disk *b* is arranged so that the thin flat portion **48** is in engagement with the balls **37** on top of the pistons **35**.

When the truck *c* enters a curve of the track it is oscillated relative to the coach body **54**, rotating the spur gear **42** by means of the crank arm **50**. Since the pinion **43** is in mesh with the spur gear **42**, the cam shaft **29** is rotated and the cam disk *b* is rotated therewith forcing the pistons **35** on the outside of the track curve downwardly, expelling the oil in the corresponding cylinders through the pipes **60**, the hoses **81**, pipes **77** and the nozzles **79** on to the oil distributors *e*. The oil enters the pockets **76** in

said distributors which are rotated by means of friction by the coach wheels *d*, and is fed therefrom to and oils the flanges of said wheels.

As soon as the truck again enters a straight stretch of track, it is oscillated into a position parallel to the coach body, rotating the cam disk into position permitting the helical springs **34** to force the pistons upwardly in their cylinders, thereby sucking oil from the reservoir into the cylinders.

Having described my invention I claim as new and desire to secure by Letters Patent:

1. In an automatic oiler for the flanges of car wheels, a pair of parallel arms pivotally mounted above and forwardly of a wheel, a grooved distributing roller journalled between said arms and straddled over the flange of said wheel for rolling contact therewith, one of the flanges of said roller having a circular series of pockets opening toward the wheel flange, a tube extending along one of said arms having an end connected with an oil supply, clamp means for securing said tube to said arm, a nozzle at the free end of said tube and positioned to discharge oil into said pockets, and spring tensioned means having bearing on the upper sides of said arms to resiliently maintain said roller in contact with the flange of said wheel.

2. The invention as defined in claim 1, with a supporting bracket for said arms, an angled portion extending laterally from said bracket below the point of pivot of said arms, and the said spring tensioned means comprised in a bolt rising from said angled portion between said arms, a transverve block of triangular cross section slidably mounted on said bolt and bearing on the upper sides of said arms, a coil spring on said bolt and bearing against the upper side of said block, and a nut on the upper end of said bolt for adjusting the tension of said spring.

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