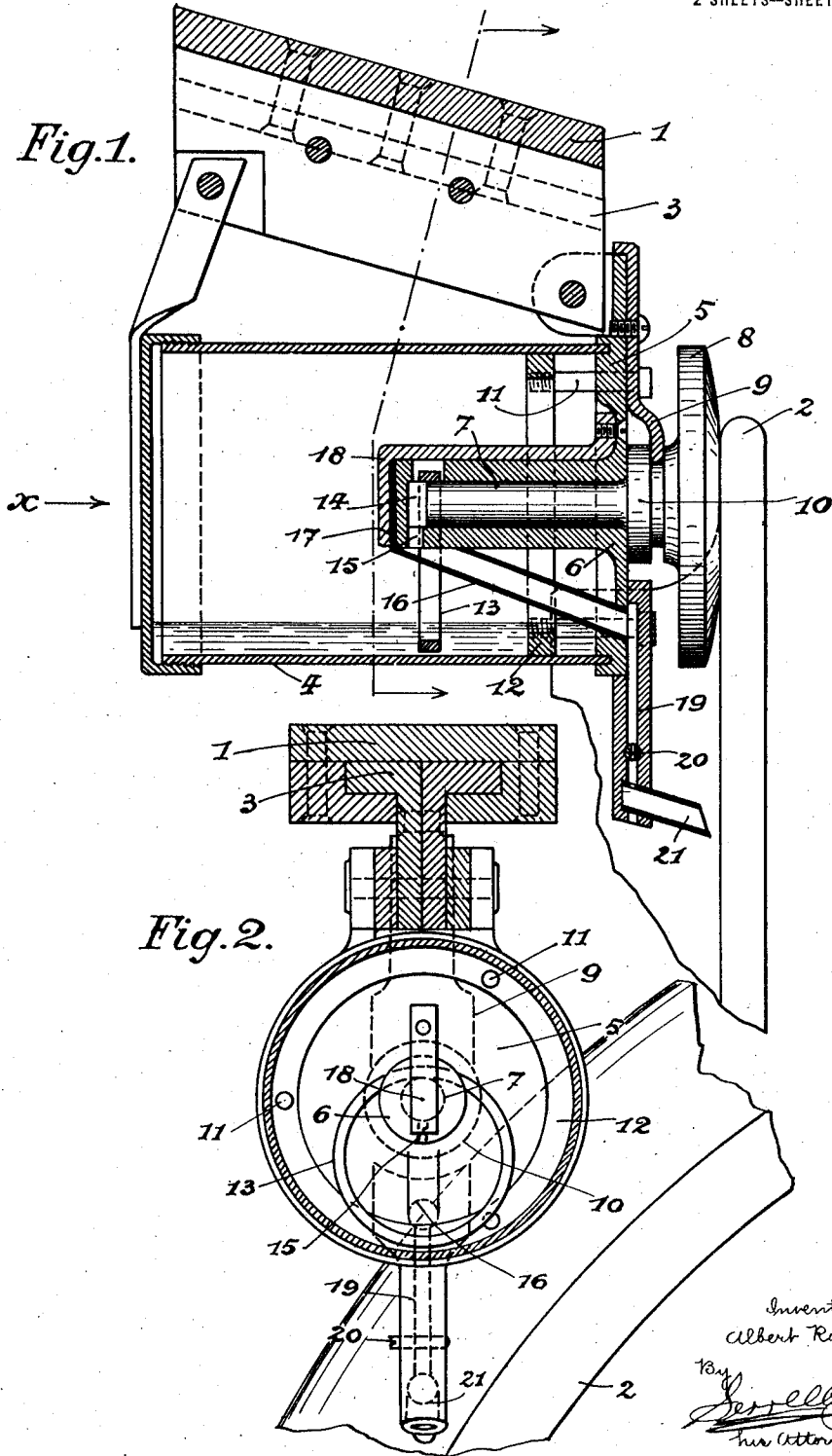


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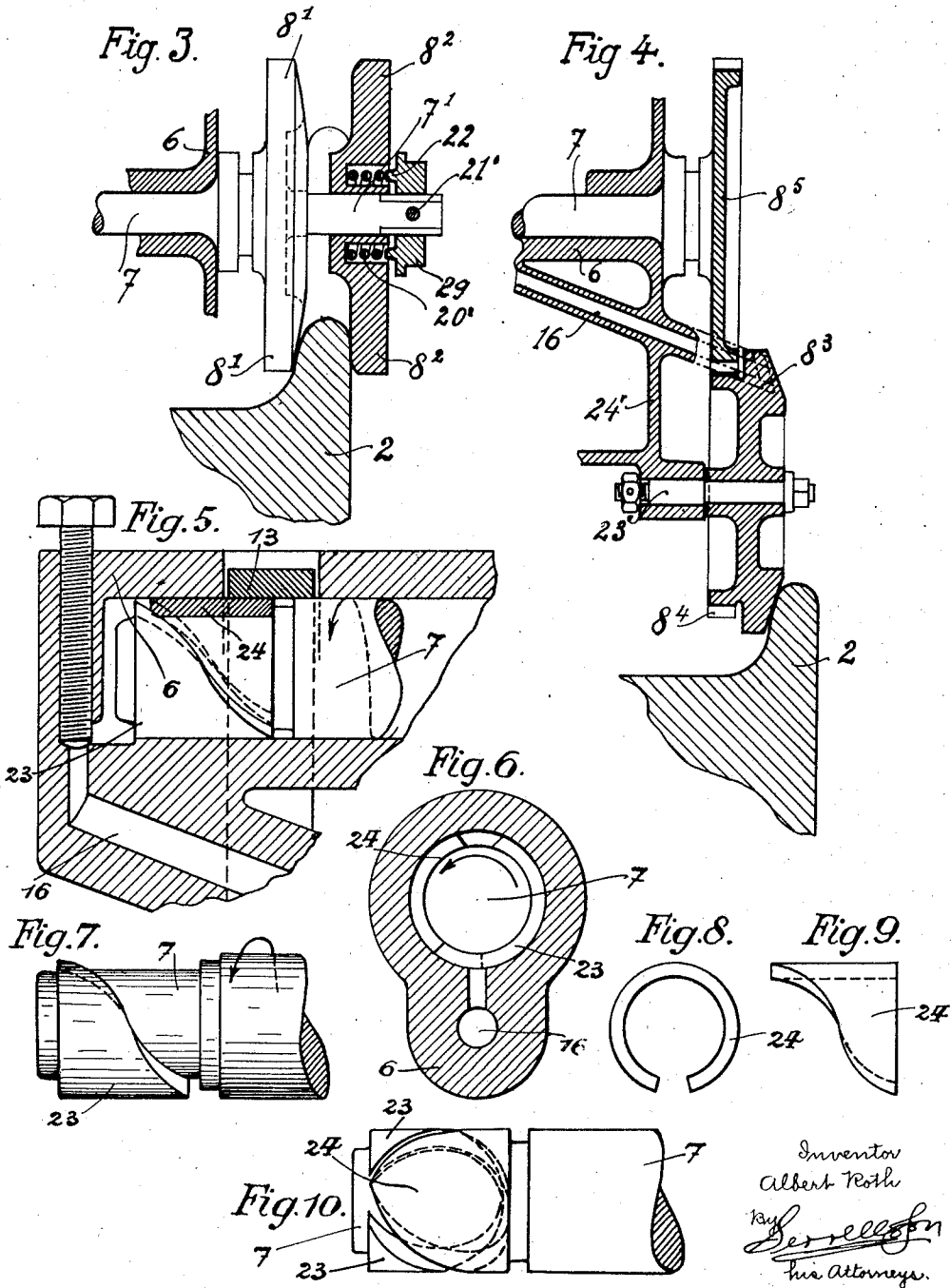
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UNITED STATES PATENT OFFICE.

ALBERT ROTH, OF CHERNEX S/MONTREUX, SWITZERLAND.

FLANGE-LUBRICATING DEVICE FOR WHEELS OF RAILROAD-CARS.

1,330,551.

Specification of Letters Patent. Patented Feb. 10, 1920.

Application filed January 2, 1919. Serial No. 269,372.

To all whom it may concern:

Be it known that I, ALBERT ROTH, engineer of the Swiss Railways, a citizen of Switzerland, residing at Chernex s/Montreux, in the Confederation of Switzerland, have invented certain new and useful Improvements in Flange-Lubricating Devices for Wheels of Railroad-Cars, of which the following is a specification.

In countries of mountainous character presenting particular difficulties to railroad service and railroad construction, it becomes necessary in the laying out of the lines to provide a great number of curves. While this may afford sometimes a great saving in constructive works, (tunnelling, embankments and bridges) such numerous and sharp curves cause many disturbances of the traffic, and increase the operating expenses sometimes to a considerable extent.

Perhaps the greatest disadvantage when laying out a line with many curves will be found in the increase of rail resistance resulting from the wedging of the locomotive and car-wheels, when passing the curves after turning off from their straight direction.

The rolling stock as well as the superstructure suffers greatly by this curve resistance. Not only the locomotives have to do more work, but certain parts, such as the flanges of the tires, and the heads of rails soon show wear, and require frequent repairs and replacement of parts.

It has been sought to remedy these difficulties by greasing the railheads laterally or by greasing the wheel flanges, and it is apparent, that by an effective greasing of said parts the resistances caused by friction will be greatly diminished. But on the other hand, it has been found in most cases practically impossible to lubricate the rails in an effective manner and the lubricating of the wheel flanges is the practical alternative. Many devices have been proposed to do this, but so far as I am aware, all such devices are unsatisfactory and in many respects defective.

The present invention relates to such flange lubricating devices for railroad car wheels, where the lubricant is automatically lifted and fed by a member operated by the movement of the car wheel into a lubricating groove delivering the lubricant to the flange of the wheel, so as to provide the

necessary lubricant only while the car is moving.

In the annexed drawing an embodiment of the invention is represented as an example.

Figure 1 is a longitudinal vertical section of a flange lubricating device partly in side elevation.

Fig. 2 a cross-section on line *a-a* of Fig. 1, seen in the direction of the arrow *a*.

Figs. 3 and 4 are modified forms of the oil-distributing roller.

Figs. 5 to 10 represent a device which may be applied to all working forms of the lubricating device, as given in the Figs. 1 to 4 for the purpose of exerting a pressure on the oil within the delivery pipe.

Fig. 5 is an axial section of the end of the bushing 6.

Fig. 6 a cross-section on line A-B in Fig. 5.

Fig. 7 is a side view of the end of axle 7.

Fig. 8 a side view of the helical sleeve member.

Fig. 9 an end view thereof, and

Fig. 10 a top view of the axle's end with the member put on.

A slide guide 1 built up of three pieces riveted together and carrying a slide 3 of T-shaped cross section is made rigidly fast to the underframe or some other part of the frame (not shown in the drawing) of a railroad car so as to point in an inclined position toward the wheel flange 2. A cylindrical box 4 containing the lubricant is suspended on said slide. The open end of said box adjacent the side of the wheel is shut by means of a cover 5 bolted tightly against the box by means of screws 11 retained within a ring 12 riveted on the inside of said box. An axle 7 journaled within a bushing 6 cast on the inside of cover 5 carries on one end which projects to the outside of the box an oil-distributing roller 8 made rigidly fast thereon and is retained within the bushing by an arm 9 bolted to the outside of cover 5 and reaching with its forked end into an annular groove of the hub 10 of roller 8. A free space 14 is left between the inner end of the axle 7 and the closed end of the bushing and an oiling ring 13 is suspended on the inner end of the axle. This oiling ring reaches to the bottom of the box and is kept in place in the bushing by an arm 18 secured to the inside of cover 5. A hole 15 provided in the bushing beneath the free space

14 and leads into an inclined pipe 16 arranged underneath said bushing and attached to the bottom end of the same by means of a circular member 17 soldered on thereto. The pipe 16 extends through the cover 5 and communicates with a passage in a vertical member 19 fixed to the outside of the cover and fitted with a regulating pin 20 and a pointed piece of pipe 21, the orifice of which is adjacent the wheel flange 2.

The operation of the device is as follows:

Owing to the weight of the sliding parts and to the inclined position of the same, the disk 8 will always bear against the flange 2 of the wheel and the frictional contact with the same will suffice to rotate it. The oiling ring 13 will participate in the revolving movement and by doing so will raise the oil from the bottom of the box up to the axle where it will be wiped off into the free space 14. From here the oil passes through a hole 15 into the pipe 16 and after having passed the regulating pin 20 will enter the delivery pipe 21. From here the oil will fall in drops upon the inner surface of the flange 2 and the oil distributing roller 8 traveling on the same surface will cause an even distribution of the oil over the whole flange, whereby the lubricant will also be transmitted to the rails.

In the drawing, the lubricating device is represented in a position adapted for greasing the outside of the flange 2. As a matter of course, the same device could also be employed for greasing the inside of the flange or the same result might be obtained by having one device for the outside greasing in which device the member 19 is branched off so as to also feed the inside, that is, both sides of the wheel flange. In this case also, two oil distributing rollers would have to be provided for and Fig. 3 shows an example of the embodiment of such an arrangement, 8¹ being the oil distributing roller for the outside flange and 8² a second oil distributing roller for the inside flange. This second roller is mounted loose on an extension 7¹ of the axle 7 between the roller 8¹ and a nut 29 fixed at the end of the extension 7¹ by means of a pin 21'. Said nut is provided with an annular projection 22 against which a spring 20' lodged inside of a recess in the roller 8² bears so as to press the roller 8² against the flange of wheel 2.

According to the arrangement illustrated in Fig. 4, the oil is not delivered directly on the flange 2, but indirectly by means of an intermediate roller 8³, the inclined pipe 16 delivering the oil to the periphery of the roller 8³. This roller acts at the same time as oil delivering and as oil distributing roller being taken along by frictional contact with the flange 2 and transmitting the rotation to the axle 7—by means of a toothed rim 8⁴ meshing with a spur wheel

8⁵ fast on axle 7. Roller 8³ is journaled on a pin 23' held rigidly fast within an arm 24' cast on the bushing 6.

In order to prevent the passage ways 16, 19 and 21 of the oil from getting clogged with dust or other impurities it will be convenient sometimes to force the oil through such passage ways, so as to maintain the tendency of the oil to flow outward and expel any body which might prevent its free delivery.

The device shown in Figs. 5 to 10 will work automatically and in the two directions of rotation of the wheel. It is simple and solid and never failing.

The end of the axle 7 carrying the oiling ring 13 is fitted with a head 23 provided with helical surfaces right and left, and inside of this head within a recess of the axle a sleeve member 24 is arranged on the axle and is provided likewise with helical surfaces corresponding to those of the head. This member partly embraces the shaft being sleeved thereon so as to remain easily slidable with a slight play in an axial direction.

When the axle turns the member 24 owing to its inertia and to its frictional contact with the bushing 6 will be left somewhat behind by the axle 7 until the helical surface of the member 24 bears against that of the head 23. Thereby a canal will be left open on the other side of the member shaped helically and by the continued revolving movement of the axle the oil deposited in the canal by the oiling ring will be acted upon by the helical canal as by a helical conveyor and will be delivered under a certain pressure into the passage ways 16, 19 and 21.

Owing to this device also a lubricant may be employed with the apparatus, which lubricant is not perfectly liquid such as for instance certain oils when exposed to a low temperature.

It will now be apparent that my improved flange lubricating device as hereinbefore described, works automatically, but only while the wheel to which it is applied is moving. Furthermore, that any oil, whether new or whether it has been used before, may be employed with this apparatus. Also that the apparatus is entirely inclosed so that there is no possibility of dust or dirt accumulating within the same to clog the mechanism and thus prevent its proper working. Because of these facts, the life of the apparatus is substantially unlimited.

I claim as my invention:

1. A wheel flange lubricating apparatus comprising a reservoir for a lubricant, a shaft extending into the said reservoir, a roller mounted on the shaft exteriorly of the reservoir and adapted to contact with a wheel to be lubricated, a device passing over and carried by the shaft within the reservoir

and extending approximately to the bottom of the reservoir so as to convey oil therefrom to the said shaft, and a conduit extending into the said reservoir and terminating below the shaft at the point where the said device passes over the same so as to receive oil carried by the said device and to convey the same from the reservoir to the wheel to be lubricated.

2. A wheel flange lubricating apparatus comprising a reservoir for a lubricant, a bearing mounted in a wall of the reservoir, a shaft journaled in the said bearing, a roller mounted on the shaft and adapted to contact with a wheel to be lubricated, there being a space for lubricant at the inner end of said bearing, a ring passing through openings provided therefor in the said bearing and being supported at the inner end of the said shaft, the said ring extending approximately to the bottom of the said reservoir so that when the shaft is turned, the ring will be revolved to convey the lubricant from the reservoir to the space in the said bearing, and devices for conveying the lubricant from the space in the bearing to the wheel to be lubricated.

3. A wheel flange lubricating apparatus comprising a reservoir for a lubricant, a bearing mounted in a wall of the reservoir, a shaft journaled in the said bearing, a roller mounted on the shaft and adapted to contact with a wheel to be lubricated, there being a space for lubricant at the inner end of said bearing, a ring passing through openings provided therefor in the said bearing and being supported at the inner end of the said shaft, the said ring extending approximately to the bottom of the said reservoir so that when the shaft is turned, the ring will be revolved to convey the lubricant from the reservoir to the space in the said bearing, there being an opening in the said bearing at the bottom of the said lubricant space therein, and a pipe providing communication from the lubricant space at the inner end of the bearing to the wheel to be lubricated so that the lubricant may flow from the said lubricant space to the said wheel.

4. A wheel flange lubricating apparatus comprising a reservoir, a roller adapted to contact with the flange of a wheel to be lubricated, means for suspending the reservoir and roller so that by gravity, the roller is maintained against the flange of the wheel to be lubricated, devices for conveying lubricant from the reservoir to the wheel, means for forcing the lubricant through the said devices, and means actuated only when the roller is in operation for supplying lubricant to the said wheel through the said devices.

5. A wheel flange lubricating apparatus comprising a reservoir for a lubricant, a roller journaled in a bearing in the walls of the said reservoir, devices for conveying a lubricant from the reservoir to the wheel to be lubricated, means for forcing the lubricant through the said devices, and means actuated only when the roller is in operation by contact with the said wheel for supplying lubricant to and through the said devices to the said wheel.

6. A wheel flange lubricating apparatus comprising a reservoir for a lubricant, a bearing mounted in a wall of the reservoir, a shaft journaled in the said bearing, a roller mounted on the shaft and adapted to contact with a wheel to be lubricated, there being a space for lubricant at the inner end of said bearing, a ring passing through openings provided therefor in the said bearing and being supported at the inner end of the said shaft, the said ring extending approximately to the bottom of the said reservoir so that when the shaft is turned, the ring will be revolved to convey the lubricant from the reservoir to the space in the said bearing, there being an opening in the said bearing at the bottom of the said lubricant space therein, a pipe providing communication from the lubricant space at the inner end of the bearing to the wheel to be lubricated so that the lubricant may flow from the lubricant space to the said wheel, and devices for forcing the lubricant through the said pipe.

7. A wheel flange lubricating apparatus comprising a reservoir for a lubricant, a bearing mounted in a wall of the reservoir, a shaft journaled in the said bearing, a roller mounted on the shaft and adapted to contact with a wheel to be lubricated, there being a space for lubricant at the inner end of said bearing, a ring passing through openings provided therefor in the said bearing and being supported at the inner end of the said shaft, the said ring extending approximately to the bottom of the said reservoir so that when the shaft is turned, the ring will be revolved to convey the lubricant from the reservoir to the space in the said bearing, devices for conveying the lubricant from the space in the bearing to the wheel to be lubricated, and means for suspending the said reservoir so that by the action of the gravity, the said roller is maintained in contact with the wheel to be lubricated.

In testimony whereof I have affixed my signature in presence of two witnesses.

ALBERT ROTH.

Witnesses:

A. RAMANGING,
Mr. SIEBENTHUL.