July 25, 1933. W. K. SCHAEFER 1,919,451

LUBRICATING DEVICE

Filed July 18, 1931 3 Sheets-Sheet 1

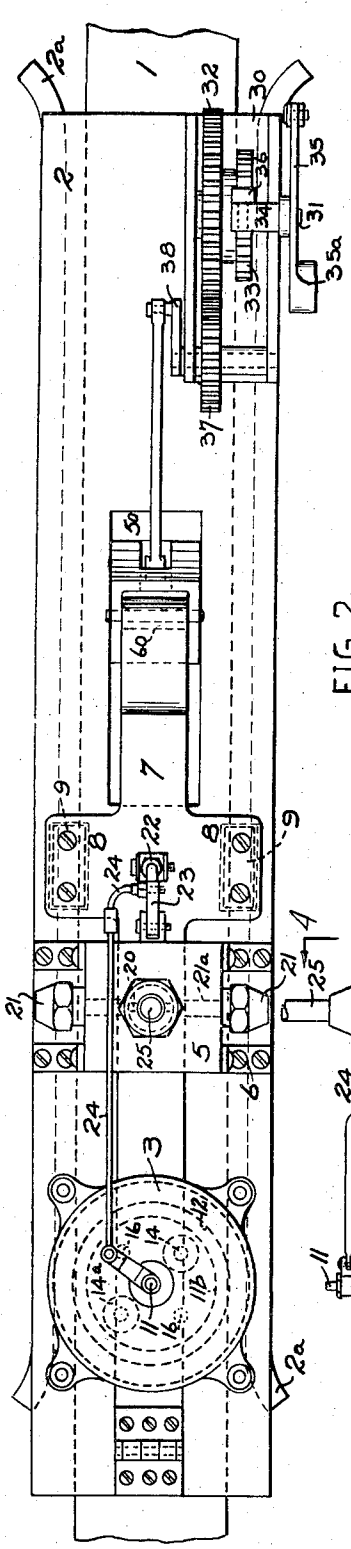


FIG. 2

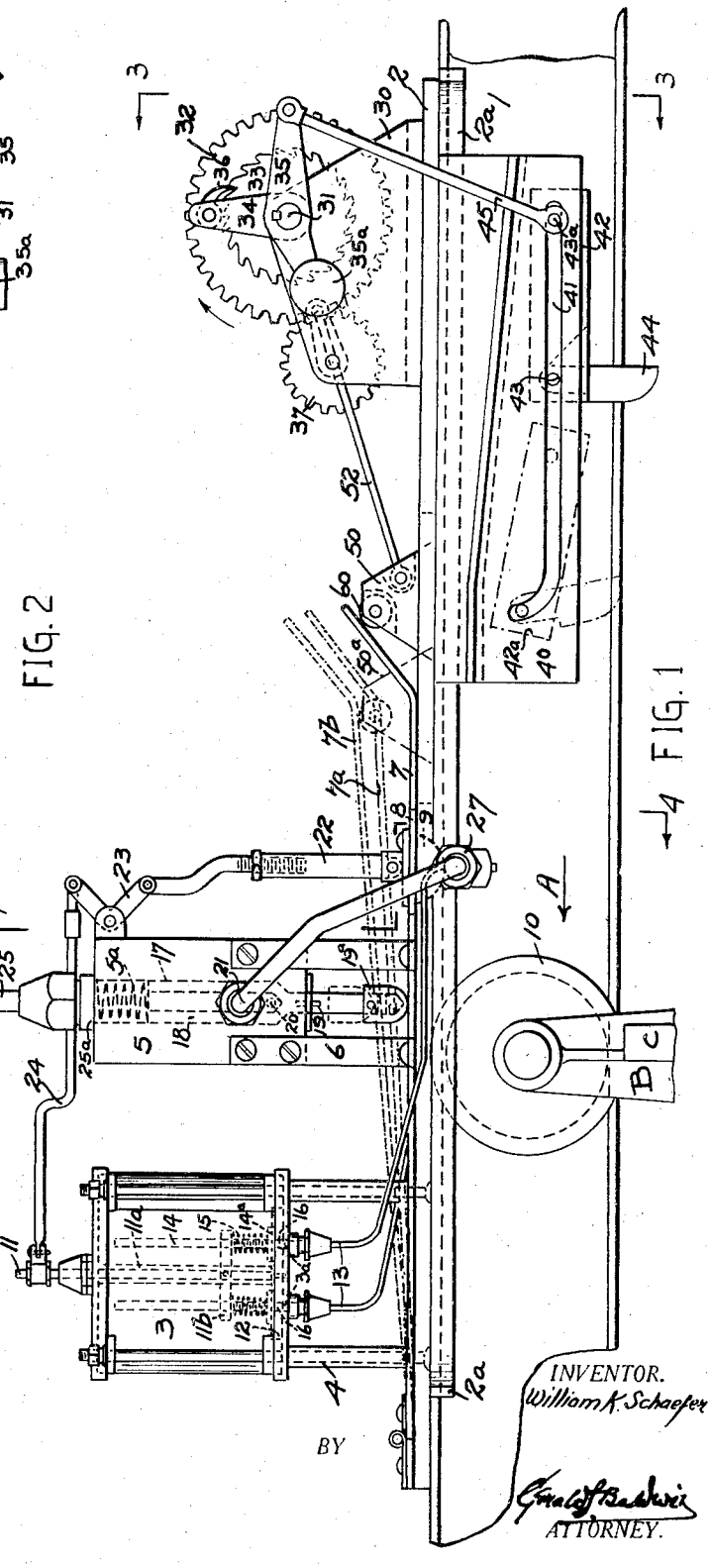


FIG. 1

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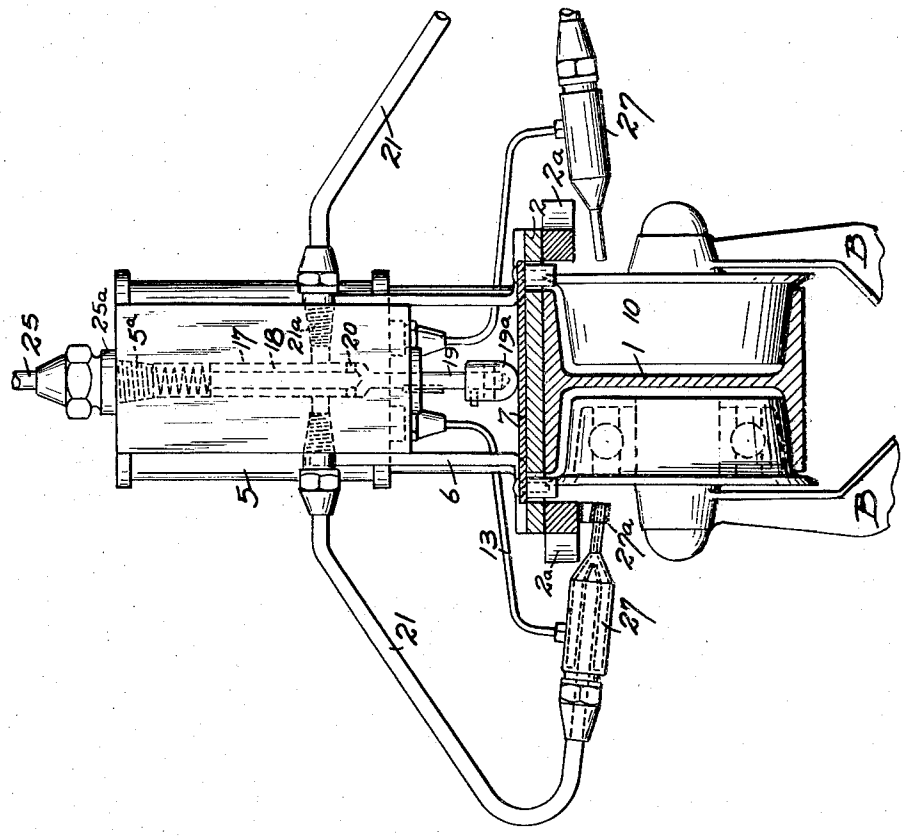


FIG. 4

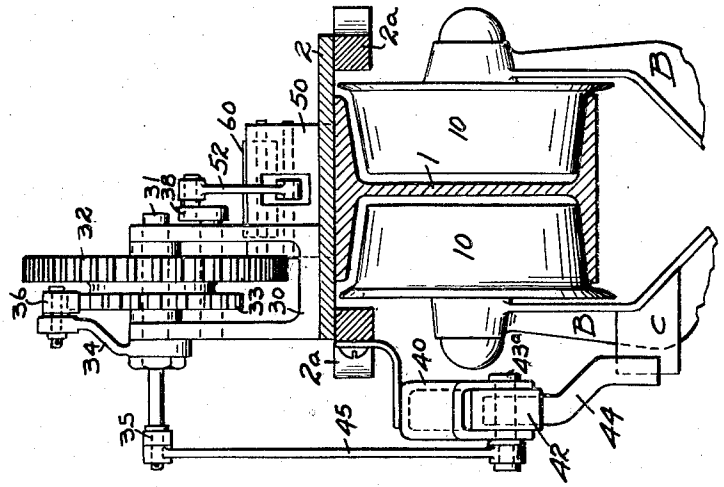


FIG. 3

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LUBRICATING DEVICE

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FIG. 5

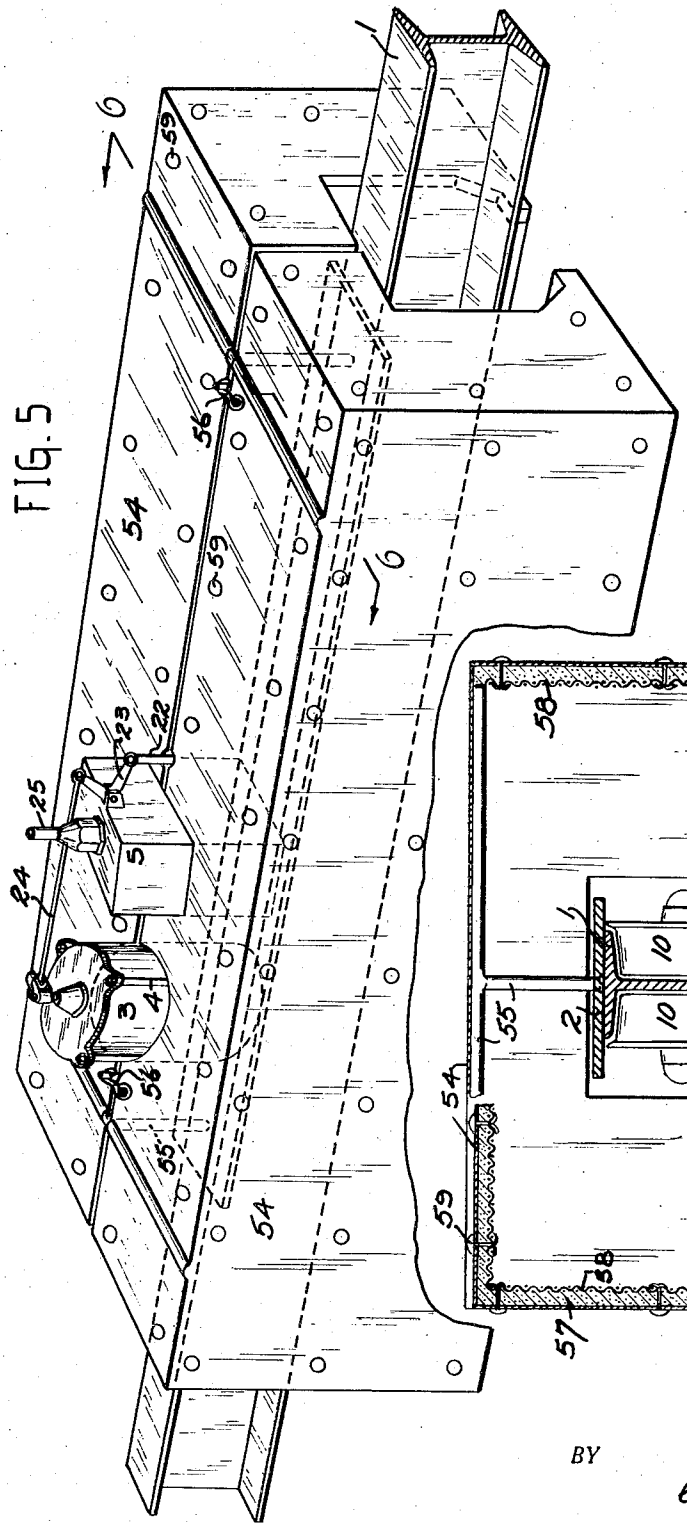


FIG. 6

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Patented July 25, 1933 1,919,451

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LUBRICATING DEVICE

Application filed July 18, 1931. Serial No. 551,781.

This invention relates to improvements in lubricating devices, and refers more particularly to lubricating devices for conveyor trucks.

It is an object of the invention to provide a lubricating device adapted to be secured on a monorail, and by which trucks may be automatically lubricated when passing.

Another object of the invention is to provide such a lubricating device with means for rendering its operation intermittent so that when desired the trucks may be lubricated each alternate time that they pass the device.

A further object of the invention is to provide such a lubricating device equipped with a housing by which oil and grease is prevented from falling onto articles dependingly carried by the monorail trucks as they pass beneath the device.

With these and other objects and advantages in view which will become apparent as the specification proceeds, the invention is hereinafter more fully described with the aid of the accompanying drawings, in which:

Figure 1 illustrates a side elevation of a portion of a monorail on which the lubricating device is mounted and without the housing above referred to.

Figure 2 is a plan view of Figure 1.

Figures 3 and 4 are sections on the lines 3—3 and 4—4 of Figure 1.

Figure 5 is a perspective view of the housing in position, and

Figure 6 is a section on the line 6—6 of Figure 5.

Referring to the drawings, 1 designates a monorail of I-beam section on which a base plate 2 is suitably secured. Adjacent one extremity of the plate 2 is an oil container 3 supported as by legs 4 so that its base is spaced above the plate 2. An air valve 5 is supported, as by legs 6, so that its underside is spaced above the top of the plate 2. Pivotally mounted at one extremity of the plate 2 so as to turn about a horizontal axis is a lever 7 having opposed lateral projections 8 intermediately of its length from which cams or trips are dependingly arranged. 10 denotes wheels of a monorail truck, travelling in the direction of the arrow A, by which the cams 9 are raised so that the lever 7 assumes the position indicated at 7*a*. On the lower margins of the base plate 2 guides 2*a* are secured the ends of which are outwardly flared. These guides hold the wheels 10 within a limited distance of the centre of the I-beam 1 when passing nozzles 27 hereinafter referred to, so that the latter cannot be struck by the wheels.

Rotatable in the oil container 3 is a vertical spindle 11 having a feed plate 12 secured thereto adjacent its lower extremity. A tube 11*a* encircles the spindle 11 for the greater portion of its length, and around the tube intermediately of its length a plate 11*b* is secured. Through the feed plate 12 apertures 16 are formed which are adapted to register with openings 3*a* provided in the base of the container 3 from which oil feed pipes 13 extend. Through the plate 11*b* apertures are formed for the passage of tubular guides 14 which terminate at their lower ends in guide plates 14*a*. Between the latter and the plate 11*b* springs 15 are arranged which hold the said guide plates on the feed plate 12. The guide plates 14*a* are positioned to cover the upper ends of the feed plate apertures 16 which latter are in registry with the openings 3*a*.

Vertically through the air valve 5 an aperture 17 is formed which is larger at its upper extremity. Vertically movable in this aperture, but held against rotary movement therein, is a tubular member 18 which terminates at its lower extremity in a stem 19; and on the underside of the latter is a shoe 19*a* which rests on the lever 7. Radially through the tubular member 18 adjacent its lower end opposed radial openings 20 are provided and extending from opposite sides of the valve 5 are air outlet pipes 21 with which the said openings 20 are adapted to register through openings 21*a* formed in the valve body.

On the upper face of the lever 7 a member 22 is pivotally mounted. A bell crank 23 is pivotally arranged on the air valve 5. One arm of this bell crank is pivoted to the mem-

ber 22 and to its other arm a rod 24 is secured. The latter is so connected to the oil container spindle 11 that movement of the bell crank about its axis turns the said spindle. Thus when one extremity of the lever 7 is raised by the wheels 10 of a monorail truck the spindle 11 is so turned that the feed plate apertures 16 are brought into registry with the feed pipes 13. At that time the lower extremity of the stem 19 is raised by the lever 7 so that the radial openings 20 register with the air outlet pipes 21. Then compressed air passes through an air inlet pipe 25 into the tubular member 18, and from the latter through the apertures 20, and the outlet pipes 21 which terminate in ejector nozzles 27. The latter are preferably supported as by a clip as shown at 27*a* dependingly secured to the guides 2*a*, though any other method of supporting the said nozzles may be utilized. Connected to each of the latter is also one of the feed pipes 13. Since the apertures 16 of the feed plate 12 are in registry with the feed pipes 13 when air passes through the ejectors 27 the suction then created draws oil, held in the apertures 16 by capillary attraction, to the nozzles 27 from which it is ejected by the air into the airstream. As soon as the cams 9 and the lever 7 drop, the air valve openings 20 no longer register with the air outlet pipes 21 so that no more air flows to the ejector nozzles 27, and the spindle 11 is turned so that the feed plate apertures 16 no longer register with the openings 3*a* but become so turned that they are clear of the guide plates 14*a* when they again fill with oil. Meanwhile escape of oil from the container 3 is prevented since the spring pressed plates 14*a* hold imperforate portions of the feed plate 12 down on the top of the openings 3*a*. A helical spring 5*a* extending between the underside of the air inlet pipe connection 25*a* and the top of the tubular member 18 insures the lever 7 dropping down again from its position 7*a* as soon as the wheels 10 have passed the cams or trips 9.

Mounted on the base plate 2 is a bracket 30 by which a shaft 31 is rotatably supported. Rotatable on the shaft 31 is a gear 32 having a sprocket wheel 33 secured to one face thereof. Fixed on the shaft 31 is an arm 34 and a lever 35, and carried by the former is a dog 36 by which the sprocket wheel 33 and gear 32 are adapted to be turned in one direction and 35*a* denotes a counterweight which, in the present instance, is integral with one extremity of the lever 35. A pinion 37 is rotatably supported by the bracket 30 and meshes with the gear 32, and 38 is a crank which is arranged to turn with the said pinion.

Dependingly supported from one side of the base plate 1 is a U-shaped guide 40 having opposed slots 41 extending longitudinally therethrough for the greater portion of its length. These slots are upwardly curved towards one extremity. A slide 42 is arranged between the adjacent sides of the guide 40, and has pins 43 and 43*a* projecting through it and through the opposed slots 41. The slide 42 is slotted intermediately of its length adjacent one extremity to receive a contact member 44 which is pivoted on the pin 43. Carried by a monorail truck B is a striker element C by which the slide 42 is moved to its position 42*a* when the said element engages the striker member 44. Then due to the upwardly curved form of the slots 41 the said element passes beneath the said member. Due to the pivotal mounting of the member 44 the latter is permitted to turn sufficiently for the striker element to pass beneath it if for any cause the direction of movement of the monorail truck B is reversed. One of the guides 2*a* by holding the adjacent wheels 10 substantially in alignment with the I-beam, insures the elements C making contact with the striker member 44. Pivotally connected to the lever 35 and to the pin 43*a* is a link 45 by which, during the movement of the slide 42, the arm 34 and dog 36 are turned in a clockwise direction. This movement turns the sprocket wheel 33 and gear 32 which in turn rotates the pinion 37 and its crank 38. In practice I prefer to turn the gear 32 through substantially 90° on each stroke, and thus turn the pinion 37 through substantially 180°. As soon as the striker element C passes beneath and disengages the member 44 the counterweight 35*a* returns the lever 35, arm 34 and slide 42 back to its initial position.

Slidable on the base plate 2 is a block 50 having a roller 60 mounted thereon to engage the underside of the outer extremity of the lever 7. When the block is in the position indicated at 50*a* the oil apertures 16 are moved out of registry from the oil container outlets 3*a*, and the radial air valve openings 20 are above the outlet connections 21 due to the raising of the lever 7 to its position 7*b*. The block 50 is connected to the crank 38 by a connecting rod 52.

In order to prevent oil and grease from my device falling onto the conveyor chain, indicated at D in Figure 6, or onto work carried thereby I prefer to provide a housing consisting of two opposed and substantially channel-shaped casings 54. The upper extremities of the latter terminate adjacent one another. The upper sides of these casings, which are spaced above the top of the plate 2 and are mounted on T-shaped stands 55 extending upwardly from the said plate, are held relative to one another as by hooks 56. Adjacent the inner sides of the casings 54 suitable absorbent material 57 is provided

which is held in place by wire netting 58. 59 denotes pins by which the latter is maintained in spaced relation to the casings 54. The undersides of the casings 54 are preferably positioned in alignment with the chain D and are made shorter than the upper sides to provide clearance for the said chain.

From the foregoing it is believed that the operation of the device will be readily understood; briefly it is as follows:

Each time the cams or trips 9 are raised by the passing of truck wheels 10 the stem 19 is raised so that the air openings 20 register with the outlets 21, so that air then passes to the ejector nozzles 27; simultaneously by movement of the lever 7 to its position 7*a* the spindle 11 is turned so that the apertures 16 in the feed plate 12 are brought into registry with the outlet pipes 13. Oil in the said apertures is then drawn into the nozzles by the suction created by the air and discharged therefrom against the bearings of the truck wheels 10 to be lubricated.

If it is desired that the bearings be only intermittently lubricated the lever 7 is raised automatically to its position 7*b* on each alternate revolution of the conveyor chain. This is accomplished by providing a striker element C on one monorail truck B which actuates a member 44 and moves a slide from its normal position 42 to its position 42*a*. This movement, through mechanism hereinbefore described, turns a pinion 37 through one-half a revolution and moves a block 50 back and forth between its normal position and its position 50*a*. Thus each alternate time the slide 42 is moved to its position 42*a* it causes the block 50 to assume its position 50*a* whereupon the lever 7 is raised to its inoperative position 7*b* by the roller 60. When the lever 7 is in its inoperative position 7*b* neither air nor oil can pass to the ejector nozzles 27 as hereinbefore stated.

Again it will be seen that when oil and air are discharged from the said nozzles the oil is in the form of spray, it is therefore necessary, to protect the work dependingly carried by the conveyor chain D from receiving part of the sprayed oil, to utilize the casings 54; and by lining the latter with absorbent material 57 held in position by wire netting 58 it is found that the desired result is accomplished. Moreover the absorbent material need only be changed at relatively infrequent intervals.

While in the foregoing the preferred embodiment of the invention has been described and shown, it is understood that the construction is susceptible to such alterations and modifications as fall within the scope of the appended claims.

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

1. A lubricating device consisting of an oil container having an apertured base, a plate rotatable on said base adapted to open and close the apertures in the latter, a rotatable spindle extending from said plate and through the end of the container remote from said base, an air valve, nozzles, outlet pipes connecting the base apertures with said nozzles, and other outlet pipes extending from the valve to said nozzles, in combination with trips adapted to be actuated by contact with passing trucks, and means for releasing air from said air valve and for rotating said spindle when the trips are actuated.

2. A lubricating device consisting of a base adapted to be mounted on a monorail, a lever pivoted on said base, trips fixed on said lever adapted to be actuated by wheels of trucks passing along said monorail, an oil container on said base, said container having an apertured underside, an apertured plate rotatable on said underside to open and close the apertures in the latter, a rotatable spindle extending from said plate and through the top of the container, an air valve on said base, nozzles, outlet pipes from said container underside and valve respectively to said nozzles, means for releasing air from said valve through said nozzles when the lever is actuated, and means for rotating the spindle to permit oil to leave said container and pass into said nozzles when said lever is actuated.

3. A lubricating device comprising the combination described in claim 2 wherein means adapted to be actuated by the passing trucks are provided for moving the lever to such position that it is not moved by said trucks.

4. An arrangement of the character described comprising a base adapted to be mounted on a monorail, a lever pivoted on said base adapted to be moved by the passing of conveyor trucks along said monorail, an air valve body supported by said base, a tubular member vertically movable in said valve body, an air inlet into said body and tubular member, said member having radial openings therethrough and said body having apertures therethrough, nozzles, outlet pipes connecting said apertures with said nozzles, means through which said tubular member is actuated by movement of said lever so that the radial openings in said member are brought into registry with said body apertures thereby permitting air to pass to said nozzles, and an oil container from which oil is drawn into and through said nozzles by the passing of air through the latter.

5. In an arrangement of the character described, the combination as described in claim 4, wherein a stem is formed integral with the tubular member, the stem resting on said lever and constituting the means

through which said member is actuated by said lever.

6. In an arrangement of the character described, the combination of a base adapted to be mounted on a monorail, a valve body on said base, a tubular member vertically movable in said body having radial openings therethrough, an air inlet formed in said body and registering with one end of said tubular member, said valve body having apertures formed therethrough, nozzles, pipes connecting said apertures with said nozzles, a lever pivoted on said base adapted to be moved about a horizontal axis by trucks passing along said monorail, a stem extending from the underside of said tubular member and resting on said lever so that when the latter is moved by said trucks said stem and member are raised thereby bringing said openings into registry with the body apertures so that air may pass to said nozzles, an oil container from which oil is drawn by the air as it flows through said nozzles, pipes connecting said container with said nozzles, and means for returning said tubular member to its normal position so that its openings no longer register with said body apertures as the lever is disengaged by the trucks.

7. A lubricating device comprising a base adapted to be mounted on a monorail, a lever pivoted on said base and moved by trucks passing along said monorail, an oil container on said base, a spindle rotatable in said container, means on said lever connected to said spindle for causing the latter to be reciprocated by movement of the former, a feed plate secured to said spindle, the base of said container having openings therethrough, said feed plate having apertures therethrough which are normally out of registry with said openings, said apertures being brought into registry with said openings by the movement of said spindle in one direction, means holding said feed plate against said openings, an air valve on said base, nozzles, outlet pipes connecting said air valve and said base openings with said nozzles, said lever being adapted to actuate said air valve so that air passes to said nozzles when said plate apertures are in registry with the base openings so that the air passing through the nozzles also draws oil from said apertures and discharges it through said nozzles.

8. In a lubricating device, the combination of a base adapted to be mounted on a monorail, a lever pivoted on said base adapted to be actuated by trucks passing along said monorail, an oil container on said base, an air valve on said base, nozzles, outlet pipes from said container and valve respectively to said nozzles, means when said lever is moved by trucks along the monorail to permit air and oil to pass from said valve and container and be discharged through said nozzles, a guide on said base, a slide adapted to be moved therealong by a striker element carried by a monorail truck, means when said slide is moved for raising or lowering the outer extremity of said lever, the latter when raised be so positioned that it cannot be moved by passing monorail trucks.

9. In a lubricating device, the combination of a base adapted to be mounted on a monorail, a guide on said base, a slide adapted to be moved along said guide by a striker element carried by trucks passing along said monorail, means for returning said slide to its initial position as soon as it is disengaged by said striker element, a block movable longitudinally on said base, means operated through the movement of said slide for moving said block in one direction or the other each time said slide is moved by said striker element, a lever pivoted on said base, an oil container on said base, means for discharging oil from said container actuated by the movement of said lever, said lever being actuated by contact with trucks passing along the monorail, said block being adapted to raise said lever so that it remains out of contact with passing trucks so that no oil can be discharged from the container until said block is again moved by movement of said slide.

10. In a lubricating device, the combination of a base mounted on a monorail, a shaft rotatably mounted on said base, a sprocket wheel on said shaft, a dog rotatable about the axis of said shaft adapted to turn said sprocket wheel, a guide on said base, a slide adapted to be moved along said guide by a striker element carried by trucks which travel along the monorail, means by which movement of said slide causes said dog to turn said sprocket, a block, means for moving said block in one direction or the other along said base each time said sprocket wheel is turned, a lever pivoted on said base and adapted to be moved by trucks passing along the monorail, an oil container, means for causing oil to be discharged from said container each time said lever is moved by passing trucks, and said block being adapted to move said lever so that it remains out of contact with passing trucks.

11. In a lubricating device, the combination of a base mounted on a monorail, a shaft rotatably mounted on said base, a sprocket wheel on said shaft, a dog rotatable about the axis of said shaft to engage said sprocket wheel, an arm on which said dog is carried, a guide on said base, a slide adapted to be moved longitudinally on said guide by striker elements on trucks which travel along the monorail, a lever on said shaft to which said arm is connected, a link connecting said lever and said slide through which the dog is moved around the axis of said shaft, a block, a connecting rod con-

nected to said block and moved by the rotation of said sprocket wheel, means by which slide is returned to its initial position as soon as it is disengaged by said striker element, an oil container on said base, a lever pivoted on said base, said latter lever being actuated by trucks passing along the monorail, means by which oil is caused to pass from the container each time the lever is actuated by said passing trucks, and said block being adapted to move said latter lever so that it is not contacted by passing trucks.

12. A lubricating device comprising an oil container having an apertured base, an apertured plate movable on said base to open and close the base apertures, a rotatable spindle extending through the top of the container to which said plate is secured, an air valve, nozzles, outlet pipes connecting the base apertures with the nozzles, other outlet pipes extending from the air valve to said nozzles, a monorail over which the container and air valve are mounted, trips adapted to be actuated by trucks passing along the monorails, and means for rotating the spindle and releasing air from the valves when the trips are actuated, in combination with a housing the sides of which extend along both sides of the monorail for a portion of its length, said housing sides having the nozzles between them and the monorail, wire netting spaced from the inner faces of the housing sides, and absorbent material between said sides and said netting.

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