Jan. 15, 1963 L. J. DUTTON ET AL 3,073,415

CONVEYOR LUBRICATING APPARATUS

Filed June 8, 1960 4 Sheets-Sheet 1

FIG. 1

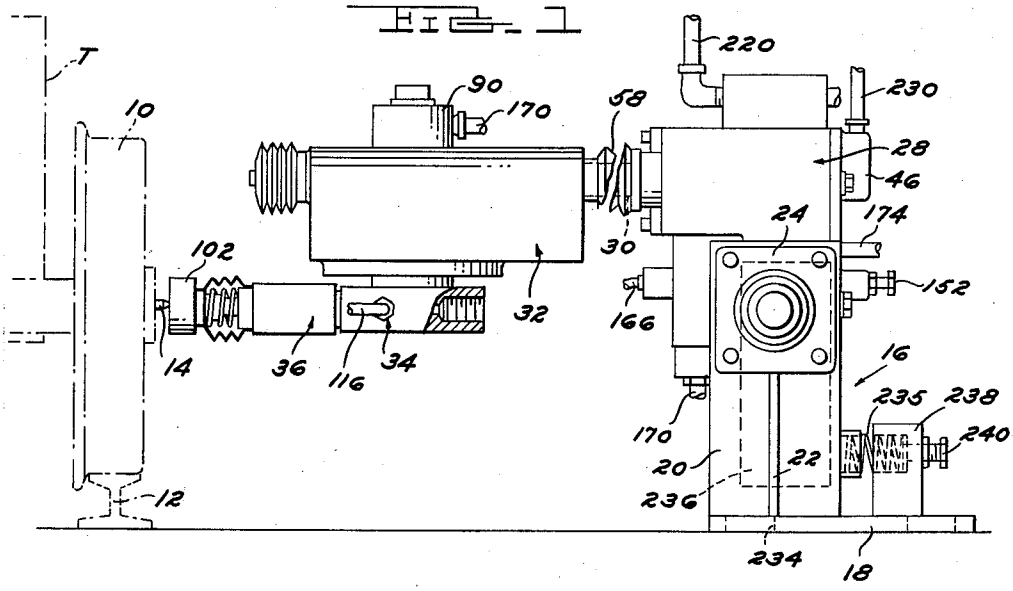
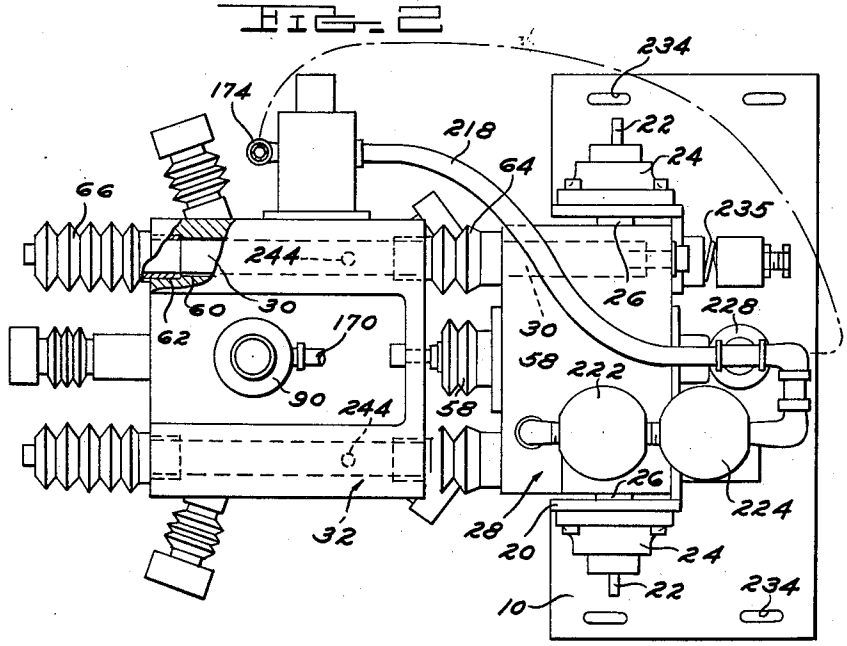


FIG. 2



INVENTORS
LEONARD J. DUTTON
JAMES E. OLSEN
BY

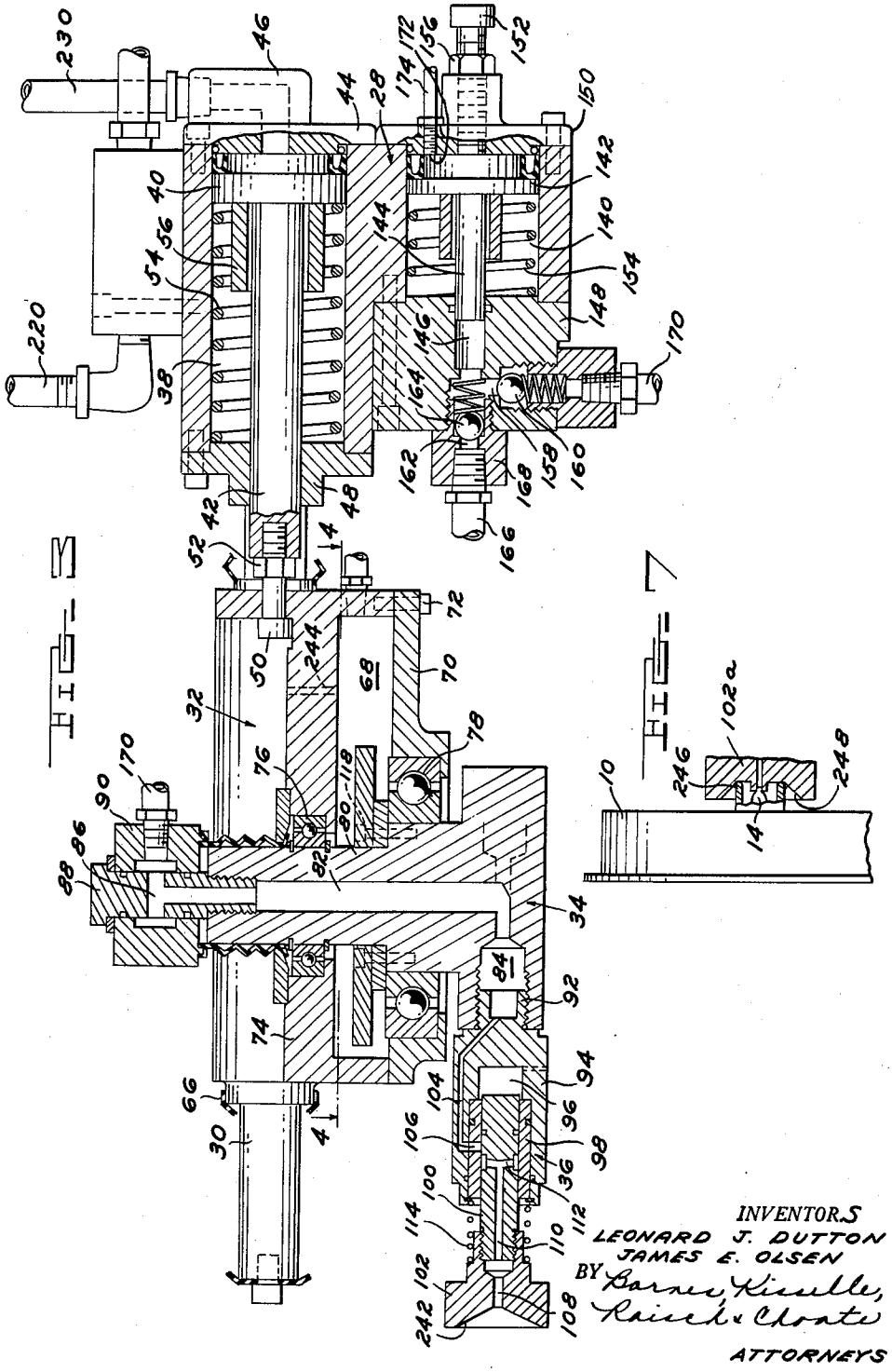
Barnes, Kisselle, Raisch & Choate
ATTORNEYS

Jan. 15, 1963 L. J. DUTTON ET AL 3,073,415

CONVEYOR LUBRICATING APPARATUS

Filed June 8, 1960

4 Sheets-Sheet 2



INVENTORS
LEONARD J. DUTTON
JAMES E. OLSEN
BY Barnes, Kisselle, Raisch & Choate
ATTORNEYS

Jan. 15, 1963 L. J. DUTTON ET AL 3,073,415

CONVEYOR LUBRICATING APPARATUS

Filed June 8, 1960 4 Sheets-Sheet 3

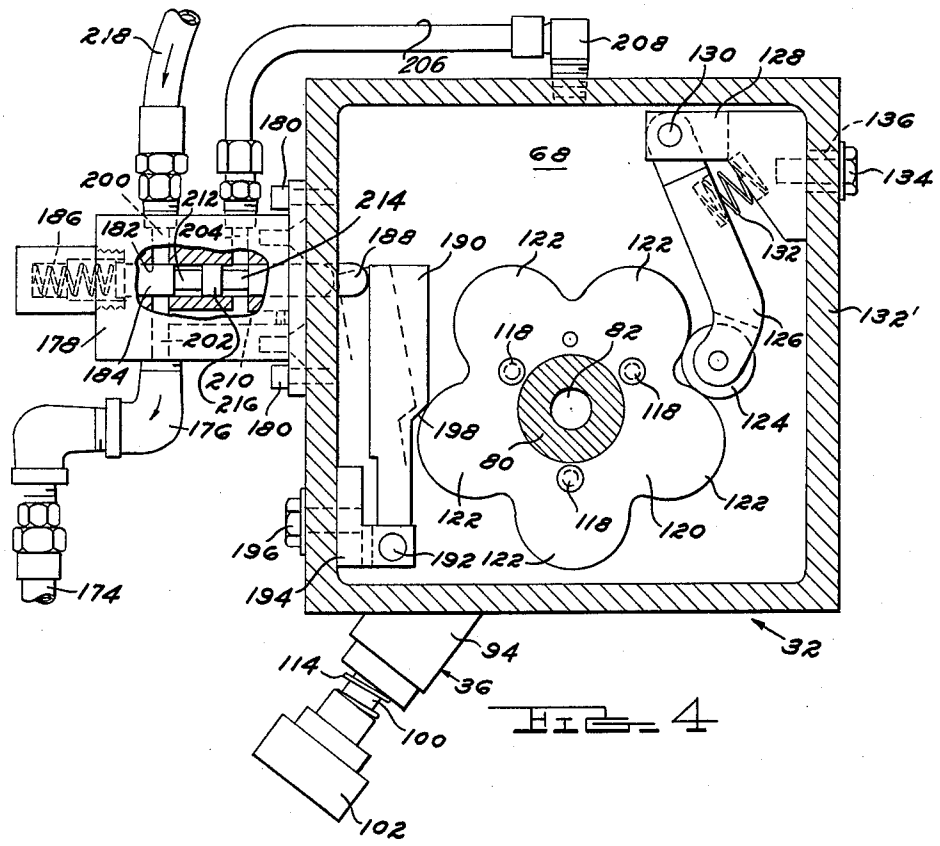


FIG. 4

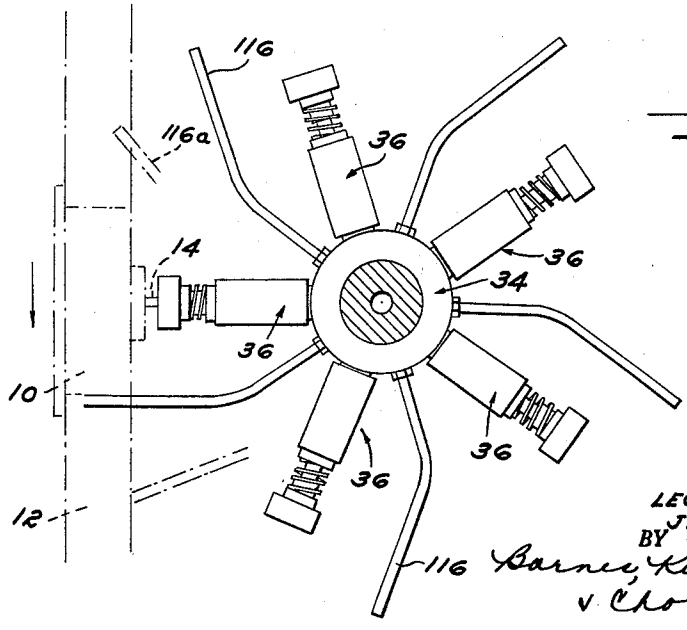


FIG. 5

INVENTORS
LEONARD J. DUTTON
JAMES E. OLSEN
BY
Barnes, Kisselle, Raisch
& Choate
ATTORNEYS

Jan. 15, 1963 L. J. DUTTON ET AL 3,073,415

CONVEYOR LUBRICATING APPARATUS

Filed June 8, 1960 4 Sheets-Sheet 4

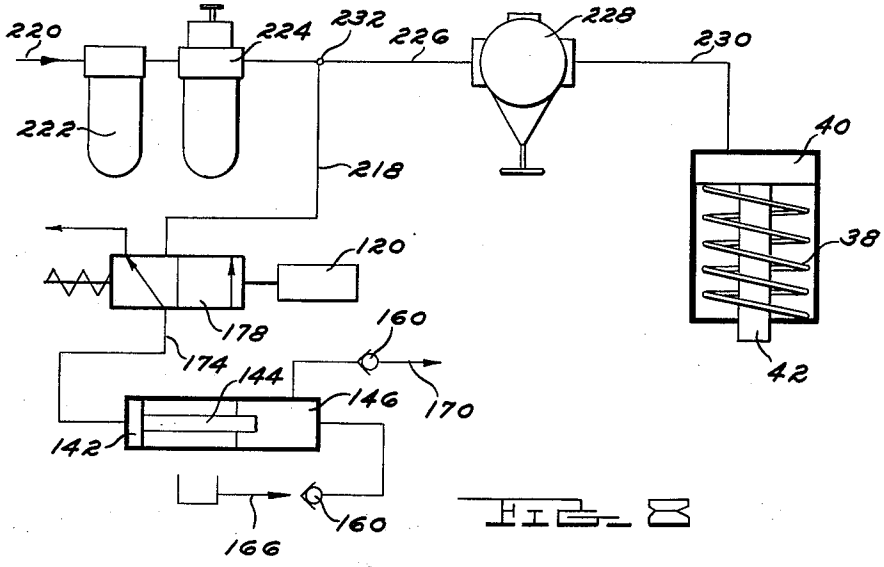


FIG. 8

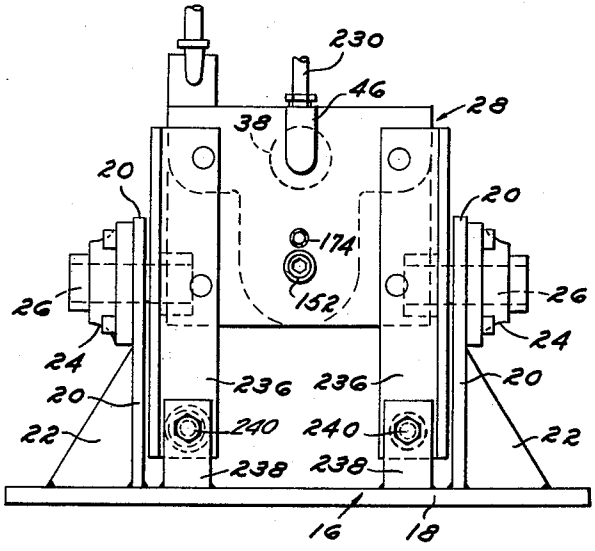


FIG. 5

INVENTORS
LEONARD J. DUTTON
JAMES E. OLSEN
BY
Barnes, Kisselle, Raisch & Choate
ATTORNEYS

United States Patent Office 3,073,415 Patented Jan. 15, 1963

3,073,415

CONVEYOR LUBRICATING APPARATUS

Leonard J. Dutton and James E. Olsen, Royal Oak, Mich., assignors to Olsen Manufacturing Company, Royal Oak, Mich., a corporation of Michigan

Filed June 8, 1960, Ser. No. 34,662
22 Claims. (Cl. 184—15)

This invention relates to an apparatus for lubricating conveyor devices and comprises an improvement over the lubricating device disclosed in Freiman United States Patent No. 2,684,733, dated July 27, 1954. In said patent, there is disclosed a lubricating device in the form of a support located adjacent the path of travel of the conveyor and provided with a rotatable head on which are arranged a plurality of radially extending nozzles. In the operative position of the lubricator head, as one of the wheels of the conveyor travels to a position adjacent the head, it is engaged by one of the nozzles so as to rotate the head and bring the nozzle into alignment with the lubricant fitting on the conveyor wheel and at a particular point in the travel of the wheel and the nozzle, a charge of lubricant is ejected from the nozzle into the lubricant fitting on the conveyor wheel.

While the device of said patent has filled a real need in the field of conveyor lubricators, there are some conveyor installations in which the patented lubricating device cannot be practically employed. For example, the patented device is impractical for lubricating the wheels of rail mounted trucks in steel mills. One of the reasons that the lubricating device of said patent is impractical with such an arrangement is that the successive wheels which travel past the lubricator may vary substantially in diameter (because of varying degrees of wear, for example) which means that all of the lubricating fittings will not be travelling in the same horizontal plane. Lubricant fittings on badly worn wheels will be at a lower level than those on relatively new wheels. Another problem in connection with steel mills is that there is always a lot of dust and dirt accumulating on everything and the lubricating device disclosed in said patent would become readily clogged up and inoperative if located in an atmosphere where there is a relatively large amount of dust and dirt.

It is an object of this invention to provide a lubricator which is so constructed as to compensate for substantial misalignment between the lubricant fitting on the conveyor and the lubricant ejecting nozzle on the lubricating device.

A further object of the invention resides in the provision of a means within the lubricating device for maintaining the working surfaces of the lubricating device free from dirt, dust and other foreign substances.

Other features and advantages of the lubricating apparatus of the present invention will become apparent from the following description and drawings in which:

FIG. 1 is a fragmentary side elevational view of the lubricating device of the present invention in the operative position.

FIG. 2 is a fragmentary top elevational view partly in section of the lubricating apparatus in the retracted position.

FIG. 3 is a fragmentary vertical sectional view of the lubricating device.

FIG. 4 is a horizontal sectional view taken along the line 4—4 in FIG. 3.

FIG. 5 is a fragmentary rear elevational view of the lubricating device.

FIG. 6 is a fragmentary horizontal sectional view of the lubricator head illustrating one form of means for indexing the head.

FIG. 7 illustrates a modified form of nozzle wherein the nozzles themselves provide the indexing mechanism.

FIG. 8 is a diagrammatic showing of the pneumatic system of the lubricating device.

In general, the lubricating device of the present invention comprises a pedestal mounted alongside the path of the conveyor on which a casing is journalled for pivotal movement. The lubricant head, provided with a plurality of radially extending nozzles, is journalled for rotary indexing movement on a member slidably mounted on a pair of guide rods fixed on the casing. The lubricant head is movable toward and away from the conveyor on the guide rods and is also pivotable on the pedestal about the pivot axis of the casing. Means are provided for rotatably engaging the nozzles successively with the lubricant fittings on the conveyor as they travel past the head. At a predetermined point in the rotational movement of the nozzles, a charge of lubricant is directed through the nozzles engaged with a fitting and into the fitting engaged therewith.

Referring to FIGS. 1 and 2, a lubricating device of the present invention is shown in conjunction with a truck T having flanged wheels 10 arranged to be guided on rails 12. Each wheel 10 is provided at the center thereof with a lubricant fitting 14 by means of which grease can be directed to the wheel bearings that require lubrication. The lubricating apparatus of the present invention comprises a pedestal 16 having a base plate 18 and a pair of upstanding brackets 20 reinforced by gusset plates 22. The upstanding brackets 20 have axially aligned bearing assemblies 24 mounted thereon. Within these bearing assemblies are journalled stub shafts 26 fixed on a casing 28 (FIGS. 2, 5). A pair of parallel spaced guide rods 30 are fixedly mounted on casing 28. Guide rods 30 are generally horizontally disposed and extend in a direction toward track 12 from pedestal 16. A housing 32 is slidably mounted on guide rods 30 and a lubricator head 34 is journalled on housing 32 for rotation about a generally vertical axis. Lubricator head 34 has a plurality of nozzle assemblies 36 mounted thereon and radiating from the pivot axis of head 34. In the arrangement shown, head 34 is provided with five nozzle assemblies 36. The pivot axis of bearings 24 lies in the plane of nozzle assemblies 36.

Within casing 28, there is formed a main cylinder 38 in which is arranged a piston 40 having a piston rod 42 projecting out one end of the cylinder. The head end of cylinder 38 is closed by a cover plate 44 provided with an air inlet fitting 46. The rod end of cylinder 38 is closed by an end cap 48 through which the piston rod 42 extends. The outer end of piston rod 42 is connected with housing 32 by means of a screw 50 and a jamb nut 52. A coil spring 54 within cylinder 38 surrounds piston rod 42 and has one end abutting against the end cap 48 and its other end against the face of piston 40. A stop member 56 on piston 40 limits the travel of piston rod 42 in a direction outwardly of the cylinder. A bellows type rubber boot 58 arranged between housing 32 and end plate 48 encloses the otherwise exposed portion of piston rod 42.

Housing 32 is provided with parallel through bores 60 which are counterbored at each end to receive bronze bearings 62. Housing 32 is slidably supported on the guide rods 30 by means of bearings 62. Collapsible rubber boots 64 and 66 enclose the otherwise exposed portions of guide rods 30 on opposite sides of housing 32. With this arrangement, when air under pressure is admitted to cylinder 38 through fitting 46, the piston 40 is caused to travel toward the rod end of cylinder 38 to a position wherein stop 56 abuts against end plate 48. When this occurs, housing 32 is shifted on guide rods 30 from the retracted position shown in FIG. 2 to the operative position shown in FIG. 1.

Referring now to FIG. 3, it will be noted that housing

32 comprises a casting formed with a chamber 68 closed by a bottom plate 70, which is attached to the housing casting by screws 72. The top wall 74 of housing 32 and the bottom plate 70 are apertured to receive bearings 76 and 78, respectively. These bearings journal an upright spindle portion 80 of head 34. Spindle 80 is provided with an axially extending lubricant passageway 82 which manifolds into five radially extending lubricant passageways 84 at its lower end. At its upper end, passageway 82 communicates with a passageway 86 in a stem 88 of a swivel fitting 90. Each passageway 84 comprises a radially extending bore in head 34 which is threaded as at 92 to receive a nozzle body 94. The radially outer end of each nozzle body 94 is provided with a blind stepped bore 96 in which is arranged a bearing sleeve 98. Within each bearing sleeve 98, there is slidably arranged a nozzle stem 100 on the outer end of which is threaded a nozzle head 102. Nozzle body 94 is provided with a passageway 104 which communicates at one end with the radial passageway 84. At its opposite end, each passageway 104 extends radially through the bearing sleeve 98 as at port 106. Each nozzle head 102 is provided with a centrally located aperture 108 which communicates with an axially extending passageway 110 in stem 100. Passageway 110 terminates in a plurality of radially extending passageways 112 which, when the stem 100 moves inwardly of sleeve 98, are adapted to register with the port 106 in sleeve 98. Each head 102 and its associated stem 100 are urged in a direction radially outwardly of nozzle body 94 by a coil spring 114.

Referring now to FIG. 6, it will be observed that a plurality of radially extending arms 116 are mounted on head 34, the arms 116 being located between the successive nozzle assemblies 36. Within chamber 68 of housing 32, there is fixedly secured on spindle 80 as by screws 118 a cam 120 having five lobes 122. The periphery of cam 120 is engaged by a roller 124 journalled on a lever 126 that is pivoted on a support block 128 as at 130. A spring 132 acting between support block 128 and lever 126 urges roller 124 radially against the periphery of cam 120. Support block 128 is mounted on the side wall 132 of housing 32 by means of a screw 134. The aperture 136 in wall 132 through which screw 134 extends is elongated horizontally so that the support block 128 may be adjusted laterally of cam 120. It will be appreciated that the normal at-rest positions of cam 120 is attained when the roller 124 engages the depressions between the successive lobes 122 of the cam as shown in FIG. 4. Thus, the at-rest position of the cam, and consequently, the head 34, can be adjusted by adjusting the support block 128 laterally of the cam.

The adjusted at-rest position of head 34 is determined such that in said position, one of the arms 116 has its extremity disposed as at 116*a* (FIG. 6) in the path of travel of the wheels 10 on the rails 12. With the head 34 thus normally positioned, when one of the wheels 10 approaches the lubricating device, it engages the end of the arm 16 to pivot the head 34 and thus rotatively position the nozzle head 102 into engagement with the lubricant fitting 14 on the wheel 10.

Referring now to FIG. 3, it will be observed that casing 28 is also formed with a booster cylinder 140 in which is slidably arranged a piston 142. A plunger 144 fixedly mounted on piston 142 is slidably arranged within a smaller cylinder 146 in a valve block 148 closing one end of cylinder 140. The other end of cylinder 140 is closed by a cover plate 150 on which is arranged an axially extending screw 152 which is adapted to be threaded into cylinder 140 to limit the travel of piston 142 under the influence of compression spring 154. A jam nut 156 is provided for positively locking screw 152 in its adjusted position. Cylinder 146 in valve block 148 communicates with a port 158 controlled by a ball check 160 and with a second port 162 controlled by a ball check 164. A conduit 166 extends from a source of lubricant to the fitting 168 on which port 162 is formed. A conduit 170 extends from the swivel fitting 90 at the upper end of spindle 80 to the fitting 172 on which port 158 is formed. With this arrangement, it will be appreciated that when piston 142 moves in a direction toward the right as shown in FIG. 3, ball check 160 closes port 158 and plunger 144 moving outwardly of cylinder 146 opens ball check 164 and draws into cylinder 146 a charge of lubricant through conduit 166. When piston 142 moves in a direction toward the left in cylinder 140, ball check 164 closes and ball check 160 opens to thereby feed the lubricant charge through conduit 170 to the head 34. The amount of the lubricant charge is controlled by adjusting screw 152.

The inlet port 172 of booster cylinder 140 is connected by a conduit 174 with an outlet fitting 176 of a three-way valve body 178 mounted at one side of housing 32 as by screws 180 (FIG. 4). Valve body 178 has a central bore 182 in which is slidably arranged a spool valve 184. One end of spool valve 184 is biased axially by a spring 186 so that its opposite end 188 within housing 32 engages an actuating lever 190 pivoted in housing 32 as at 192 on a bracket 194 mounted on housing 32 as by screw 196. Actuating lever 190 is formed with a shoulder 198 which engages against the periphery of the adjacent lobe 122 of cam 120 when the head 34 is in the at-rest position as shown in FIG. 4. Valve body 178 is provided with an inlet passageway 200 intersecting bore 182 and aligned with the outlet passageway 202 with which the outlet fitting 176 communicates. There is also provided an exhaust passageway 204 which intersects bore 184. A conduit 206 extends from exhaust passageway 204 on valve block 178 to a fitting 208 which communicates with the chamber 68 in housing 32. A bypass passageway 210 in valve block 178 is adapted to establish communication between outlet passageway 202 and exhaust passageway 204. Spool valve 184 is provided with radially reduced portions 212 and 214 separated by a land 216. The arrangement is such that in the at-rest position of head 34 as shown in FIG. 4, outlet passageway 202 communicates with exhaust passageway 204 through the reduced portion 214 of spool valve 184 and bypass passageway 204. However, when head 34 is rotated (counterclockwise as viewed in FIG. 4) as by engagement of one of the arms 116 with a wheel 10, actuating lever 190 is engaged by the next successive lobe 122 of cam 120 to shift spool valve 188 to the left as shown in FIG. 4 to thereby establish communication between inlet passageway 200 and outlet passageway 202 through the reduced portion 212 of the spool valve. An air inlet hose 218 is connected with the inlet passageway 200 in valve block 178.

Referring now to FIG. 8 wherein a diagrammatic showing of the pneumatic system is illustrated, a source of air under relatively high pressure is conducted through a line 220 to a filter 222. An air line lubricating device 224 is serially connected with filter 222. The outlet of lubricator 224 is connected by a conduit 226 with a pressure regulator 228. A conduit 230 connects the outlet of pressure regulator 228 with the inlet fitting 46 (FIG. 3) of the main cylinder 38. The inlet conduit 218 of valve body 178 connects into line 226 as at 232.

Initially, the lubricating device is mounted adjacent the rail 12 by securing the base plate 18 to a suitable supporting surface. Base plate 18 is provided with elongated apertures 234 for accommodating mounting screws and to permit the device to be adjusted toward and away from the rail 12. The device is initially positioned such that with the parts illustrated in the position they occupy in FIG. 1, namely, in the operative position of one nozzle assembly 36, the stop 56 associated with the main piston 40 is spaced slightly from the inner face of end cap 48. With this initial positioning of the device, if a subsequent wheel 10 travels past the lubricating device and the lubricating fitting 14 thereon is spaced slightly further from the lubricating device, the nozzle head 102 will be retracted sufficiently to establish communication between

the radial lubricant passageways 112 with the lubricant port 106 on sleeve 98. A further initial adjustment of the device is required with respect to the pivotal position of casing 28 about the pivotal axis of the bearings 24. It will be observed that compression springs 235 are arranged between vertically downward extensions 236 on casing 28 and a pair of blocks 238 fixedly mounted on base plate 18 of pedestal 16. Adjusting screws 240 are threaded into blocks 238 so as to engage the ends of springs 235. Thus, by advancing and retracting screws 240, the whole assembly can be tilted slightly upwardly or downwardly on pedestal 16 about the axis of bearings 26. The initial pivotal position of the assembly is adjusted such that the central longitudinal axis of the operative nozzle assembly 36 is horizontally aligned with the lubricant fitting 14 on the wheel 10. With this arrangement, if a successive wheel 10 having a diameter greater or lesser than the wheel for which the assembly was initially adjusted travels past the lubricator, the nozzle head 102 will engage the fitting 14 and pivot the whole assembly upwardly or downwardly to align the fitting 14 with the outlet aperture 108 of the nozzle head 102. It will be observed in this connection that the nozzle heads 102 are provided with an inwardly tapering concavity 242 at the outer face thereof for facilitating proper alignment and interengagement between the nozzle head 102 and the lubricant fitting 14. The remaining initial adjustment of the device has to do with the proper at-rest position of head 34 so as to insure that the arms 116 on head 34 will be engaged by successive wheels 10 at the proper position so as to result in interengagement of the nozzle heads 102 with the lubricant fittings 14 on the successive wheels. This is accomplished by adjusting block 128 in housing 32 laterally of cam 120.

After the above initial adjustments are made, regulator 228 is adjusted so as to obtain the desired pressure of air in the main cylinder 38. When the air is turned on, the pressure at the head end of cylinder 38 causes piston 40 to shift towards the rod end of the cylinder to a position wherein the end of stop 56 engages the inner face of end plate 48. Casing 32 is thus shifted to its operative position on guide rods 30 as illustrated in FIG. 1. Thereafter, when a truck on rails 12 approaches the lubricator, the wheel 10 of the truck engages one of the arms 116 to rotate head 34 and interengage the nozzle head 102 with the lubricant fitting 14 on the wheel. Cam 120 rotates with head 34; and thus, actuating lever 190 is engaged by the next successive lobe 122 to shift the spool valve 184 in a direction to the left as illustrated in FIG. 4 and thereby establish communication between the inlet line 218 and the outlet line 174 through the recessed portion 212 of the spool valve 184. Air under pressure is thus admitted to booster cylinder 140 which causes piston 142 to shift to the left as viewed in FIG. 3. Assuming that all the lubricant lines and including cylinder 146 are filled with lubricant, then as plunger 144 shifts to the left, it feeds a charge of lubricant through conduit 170 to the head 34. It will be appreciated, however, that as head 34 rotates, one of the nozzle heads 102 engages the lubricant fitting and progressively moves radially inwardly in cylinder 96 in nozzle body 94. The arrangement is such that when the radial passageways 112 on nozzle stem 100 register with the outlet port 106 on sleeve 98, the actuating lever 190 is engaged by the radially outermost part of one of the cam lobes 122 to establish full communication between the air inlet line 218 and the line 174 leading to the booster cylinder 140. Thus, a predetermined charge of lubricant, grease, for example, is shot into the lubricant fitting 14.

As the wheel 10 continues to move past the lubricator with the nozzle 102 engaged therewith, the head 34 continues to rotate and the roller 124 assists this rotation by rolling down between two successive lobes 122 on cam 120 to the next successive at-rest position of head 34. As this occurs, it will be noted that valve spool 184 shifts to the right as viewed in FIG. 4 under the influence of spring 186 until a point is reached wherein the recessed portion 214 establishes communication between conduit 174 and exhaust line 206. Thus, the air under pressure in booster cylinder 140 is evacuated from booster cylinder 140 under the influence of spring 154 and is admitted to chamber 68 in housing 32. A super-atmospheric pressure is thus established in chamber 68 and the air escapes through chamber 68 around the bearings 76, 78 and around the bronze bearings 62. Passageways 244 (FIG. 2) are provided in housing 32 to establish communication between the chamber 68 and the bores 60 through which the guide rods 30 extend. Thus, during each exhaust stroke of piston 42 in booster cylinder 140, air is caused to flow outwardly of chamber 68 through the slight clearance spaces between the interengaged surfaces of housing 32 on spindle 80 and guide rods 30. This intermittent air flow in a direction outwardly of chamber 68 positively insures against an accumulation of dirt or grime between these moving parts and within chamber 68. The various rubber boots illustrated permit this air to escape to atmosphere.

In FIG. 7, there is illustrated a nozzle head design which may be employed in the case of wheels 10 provided with lubricant fittings 14 which are surrounded by a protective sleeve 246. With this arrangement, the nozzle head 102*a* may have the concavity 248 shaped such as to directly engage with the sleeve 246 as the wheel 10 approaches the lubricator and thus eliminates the necessity of the radial arms 116.

We claim:

1. Apparatus for lubricating a conveyor moving along a predetermined path and provided with lubricant fittings comprising a support mounted adjacent the path of travel of the conveyor, a head mounted for rotation on said support, said head having a plurality of radially disposed lubricant nozzles thereon, means on said head engageable with the conveyor as the conveyor moves past the head for rotating the head such that a nozzle on the head rotates into engagement with a fitting on the conveyor, a lubricant conduit extending to said head and through the head to each nozzle, a cylinder, an air-operated piston in said cylinder, said cylinder having a bore portion communicating with said conduit, said piston having a plunger portion in said bore portion which, when the piston is shifted in said cylinder in response to air pressure on one side thereof, feeds a charge of lubricant through the conduit to said nozzles, means responsive to rotation of the head to apply pressurized air to one side of the piston and valve means on each nozzle responsive to engagement of the nozzle with the fitting on the conveyor for permitting lubricant to flow through the nozzle to the fitting.

2. Lubricating apparatus as called for in claim 1 wherein each nozzle comprises a radially fixed portion and a radially movable portion, said movable portion being moved radially inwardly of the head relative to said fixed portion as the nozzle engages the moving fitting, said valve means comprising lubricant passageways in said fixed and movable portions of the nozzle which are adapted to register when the movable portion moves radially inwardly relative to the fixed portion.

3. Lubricating apparatus as called for in claim 1 including means for limiting the stroke of said piston to thereby control the volume of said charge of lubricant.

4. Lubricating apparatus as called for in claim 1 including means for adjusting the stroke of said piston to thereby control the volume of said charge of lubricant.

5. Lubricating apparatus as called for in claim 1 wherein said head is mounted on said support for movement from a retracted position wherein the conveyor engaging means on the head is disposed out of the path of travel of the conveyor to an operative position wherein said

conveyor engaging means are disposed to be engaged by the conveyor.

6. Lubricating apparatus as called for in claim 5 including means for shifting said head from said retracted to said operative position comprising an air-operated piston and cylinder assembly.

7. Lubricating apparatus as called for in claim 6 including means for varying the pressure of the air admitted to said piston and cylinder assembly whereby to vary the force required to retract said head when the piston-cylinder assembly is operated to project the head to said operative position.

8. Apparatus for lubricating a conveyor moving along a predetermined path provided with lubricant fittings comprising a pedestal mounted adjacent the path of travel of the conveyor, a support pivotally mounted on the pedestal for pivotal movement in a plane generally transversely of the path of movement of the conveyor, a head mounted for rotation on said support, said head having a plurality of radially extending nozzles thereon lying in a plane generally aligned with the pivotal axis of the support, means on said head engageable with the conveyor as the conveyor travels past the head and adapted to rotate the head and engage one of the nozzles with a fitting on the conveyor, said pivotal mounting of the support enabling the nozzle to tilt into engagement with the fitting to compensate for misalignment of the nozzle and the fitting.

9. Lubricating apparatus as called for in claim 8 including means yieldably maintaining said support in a predetermined pivotal position on said pedestal.

10. Lubricating apparatus as called for in claim 8 including spring means acting between the pedestal and the support for yieldably retaining the support in a predetermined pivotal position on the pedestal.

11. Lubricating apparatus as called for in claim 8 including means yieldably retaining said support in a predetermined pivotal position on said pedestal and means for adjusting said predetermined position of the support on the pedestal.

12. Lubricating apparatus as called for in claim 8 wherein said support includes a portion spaced from said pivotal axis of the support, an adjusting screw on the pedestal, spring means operatively connecting said portion of the support with said adjusting screw whereby the support is normally retained in a predetermined adjustable position relative to said pedestal.

13. Apparatus for lubricating a conveyor moving along a predetermined path and provided with lubricant fittings comprising a pedestal mounted adjacent the path of travel of the conveyor, a support mounted on the pedestal for pivotal movement about an axis generally parallel to the path of travel of the conveyor, a head mounted on said support for pivotal movement about an axis generally perpendicular to the pivotal axis of the support, said head having a plurality of radially extending nozzles thereon, said nozzles each having a lubricant outlet thereon, means on said head engageable with the conveyor as it travels past the head for rotating the head and for rotatably positioning a nozzle on the head in engagement with a fitting on the conveyor moving past the head, said support being pivotable about the first mentioned pivot axis by interengagement of the nozzle with the fitting to accurately align the nozzle outlet with the fitting.

14. Lubricating apparatus as called for in claim 13 wherein said nozzles and the pivotal axis of the support lie generally in the same plane.

15. Lubricating apparatus as called for in claim 13 including yieldable biasing means for maintaining said head in a predetermined pivotal position relative to the pedestal and means for adjusting said biasing means for tilting the head and thereby varying said predetermined pivotal position thereof.

16. Apparatus for lubricating a conveyor moving along a predetermined path and provided with lubricant fittings comprising a support mounted adjacent the path of travel of the conveyor, said support having means thereon forming a guideway extending towards said path of travel, a head journalling member slidably mounted on said guideway, a head pivotally supported on said journalling member and having a plurality of radially arranged lubricant nozzles thereon, means for rotating the head to interengage the lubricant nozzles successively with the lubricant fittings as they travel past the head, said journalling member having a chamber therein communicating with the interengaged sliding surfaces of the head and guideway and the interengaging surfaces of the head and journalling member at the pivotal axis of the head, and means for introducing air under pressure to said chamber to create a super atmospheric pressure therein which escapes at least in part through said interengaged surfaces to thereby maintain said surfaces relatively free from dirt, dust and other unwanted particles.

17. In a lubricating apparatus for a conveyor moving along a predetermined path, the lubricating apparatus being of the type including a rotatable head provided with a plurality of radially extending nozzles engageable with the conveyor fittings as they travel past the head so as to progressively rotate the head, the improvement which comprises a support having a bore in which said head is journalled, a passageway in said support extending from an external port to said bore and means for directing air under super-atmospheric pressure through said passageway to cause a flow of air from said external port in a direction outwardly through said bore.

18. The combination set forth in claim 17 including a pedestal member having a pair of parallel guide rods thereon extending toward the path of travel of the conveyor, said support having a pair of through bores through which said guide rods extend, said support being slidably mounted on said pedestal by means of said guide rods, said passageway extending from said external port also communicating with said last two mentioned bores.

19. The combination set forth in claim 18 including a lubricant passageway extending to said nozzles, means for feeding a charge of lubricant through said conduit comprising an axially movable plunger, said plunger being movable in one direction to feed a charge of lubricant through the conduit by means of air pressure on one side thereof and being movable in the opposite direction by means of a spring, an air valve adapted to connect said one side of the movable plunger with a source of air under pressure, means responsive to rotation of said head for operating said air valve intermittently, said air valve having an exhaust port thereon establishing communication between said one side of the plunger and said external port on said head during periods of inoperation of said air valve.

20. Apparatus for lubricating a conveyor moving along a predetermined path provided with lubricant fittings comprising a pedestal mounted adjacent the path of travel of the conveyor, a support pivotally mounted on the pedestal for pivotal movement in a plane generally transversely of the path of movement of the conveyor, a head mounted for rotation on said support, said head having a radially extending nozzle thereon lying in a plane generally aligned with the pivotal axis of the support, means on said head engageable with the conveyor as the conveyor travels past the head and adapted to rotate the head and engage said nozzle with a fitting on the conveyor, said pivotal mounting of the support enabling the nozzle to tilt into engagement with the fitting to compensate for misalignment of the nozzle and the fitting.

21. Apparatus for lubricating a conveyor moving along a predetermined path and provided with lubricant fittings comprising a pedestal mounted adjacent the path of travel of the conveyor, a support mounted on the pedestal for pivotal movement about an axis generally parallel to the path of travel of the conveyor, a head mounted on said support for pivotal movement about an axis generally

prependicular to the pivotal axis of the support, said head having a radially extending nozzle thereon, said nozzle having a lubricant outlet thereon, means on said head engageable with the conveyor as it travels past the head for rotating the head and for rotatably positioning the nozzle on the head in engagement with a fitting on the conveyor moving past the head, said support being pivotable about the first mentioned pivot axis by interengagement of the nozzle with the fitting to accurately align the nozzle outlet with the fitting.

22. In a lubricating apparatus for a conveyor moving along a predetermined path, the lubricating apparatus being of the type including a rotatable head provided with a radially extending nozzle engageable with fittings on the conveyor as they travel past the head so as to

rotate the head, the improvement which comprises a support having a bore in which said head is journalled, a passageway in said support extending from an external port to said bore and means for directing air under super-atmospheric pressure through said passageway to cause a flow of air from said external port in a direction outwardly through said bore.

References Cited in the file of this patent

UNITED STATES PATENTS

2,502,659	Livingston	Apr. 4, 1950
2,684,733	Freiman	July 27, 1954
2,848,068	Abbott et al.	Aug. 19, 1958
2,893,515	Schweisthal	July 7, 1959