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LUBRICATING DEVICE FOR OVERHEAD CONVEYORS

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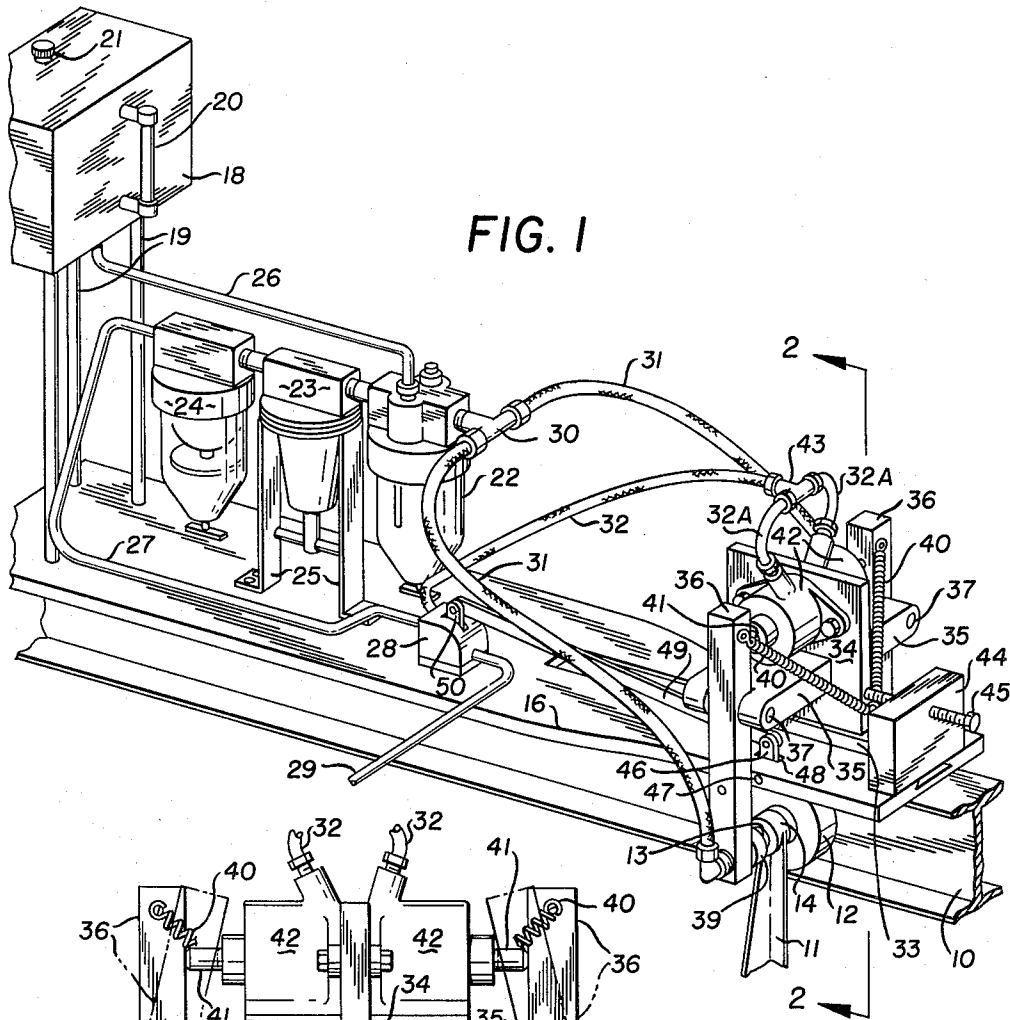


FIG. 1

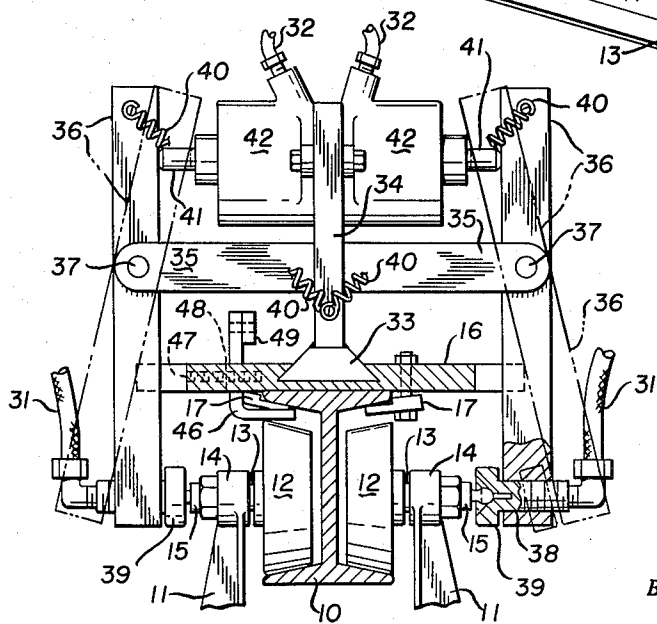


FIG. 2

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3,017,955
LUBRICATING DEVICE FOR OVERHEAD
CONVEYORS

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This invention relates to an overhead conveyor and more particularly to a lubricating device mounted on an overhead conveyor rail for individually lubricating conveyor wheels and axles that pass along the conveyor rail.

The principal object of the invention is the provision of a lubricating device for an overhead conveyor that is completely automatic in operation and will operate to lubricate wheels and axles of conveyor units without interfering with their travel.

A further object of the invention is the provision of a lubricating device for an overhead conveyor which lubricating device is of simple durable construction capable of operating for long periods of time without manual attention or adjustment.

A still further object of the invention is the provision of a lubricating device for an overhead conveyor that may be easily mounted on an overhead conveyor rail at any desired point therealong and which will operate to lubricate the conveyor wheels and axle structures moving on said conveyor rail.

Many devices have heretofore been proposed to lubricate overhead conveyors and more particularly the wheel and axle assemblies which ride the overhead rail of such conveyors. Such devices have generally comprised means for spraying a liquid lubricant in the general direction of the wheels and axles of the conveyor and these devices have generally required the presence of a housing and/or a drip pan to catch the lubricant that is not directed to the bearing surface of the conveyor. Such devices operate with only minor efficiency inasmuch as the actual lubrication of the bearing surfaces of the conveyor is left largely to chance. Such devices are often objectionable for the reason that the lubricant is sprayed on the conveyor wheels and arms and frequently drops therefrom onto the work piece being conveyed which makes necessary a subsequent cleaning of the device and sometimes a refinishing thereof. These several disadvantages in overhead conveyor lubrication devices are overcome by the present invention which accurately engages and lubricates fittings on the wheel and axle constructions of the conveyor on which it is installed so that the lubricant is delivered directly to the bearing surfaces and the conveyor itself is maintained in clean dry condition.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being the intention to cover all changes and modifications of the example of the invention herein chosen for purposes of the disclosure, which do not constitute departures from the spirit and scope of the invention.

The invention is illustrated in the accompanying drawing, wherein:

FIGURE 1 is a perspective view of a portion of an overhead conveyor rail showing a lubricating device mounted thereon.

FIGURE 2 is a vertical section on line 2-2 of FIGURE 1.

By referring to the drawings and FIGURES 1 and 2 in particular it will be seen that an overhead conveyor rail of the I beam type has been illustrated and is indi-

cated by the numeral 10. The conveyor rail 10 is secured to an overhead support in a building by suitable means (not shown) as will be understood by those skilled in the art, and article carrying devices including depending arms, 11, 11 and wheels 12, 12 are positioned in spaced relation on the rail 10 and are connected together by means (not shown) for movement along the rail 10 as will also be understood by those skilled in the art. The wheels 12, 12 are formed on axles 13, 13 which are journaled in bearings 14, 14 formed on the uppermost ends of the arms 11, 11. Lubricant fittings 15, 15 are attached to the bearings 14, 14 so that lubricant introduced into the fittings 15, 15 will reach the point of contact between the bearings 14, 14 and the axles 13, 13.

In order that lubricant may be delivered to the lubricant fittings 15, 15 a lubricating device is disclosed which includes a base 16 which is clamped to the uppermost part of the rail 10 by a plurality of clamps 17, 17. The upper surface of the base 16 carries two devices, the first of which, located at the left in FIGURE 1, comprises a structure for storing and delivering liquid lubricant. This structure includes a reservoir 18 mounted in elevated relation to the base 16 by vertical supports 19. A sighting gauge 20 is preferably mounted and in communication with the reservoir 18 and a normally capped filler opening 21 is provided so that the lubricant supply may be replenished.

An air and oil mixer 22 is mounted on and in communication with air pressure regulator 23. An air filter 24 is mounted on and in communication with the air regulator 23. The air pressure regulator 23 is supported on the base 16 by a pair of vertical support members 25, 25. A tube 26 provides communication between the reservoir 18 and the air and oil mixer 22 and a tube 27 provides an air passageway between the air filter 24 and an air valve 28 which is mounted on the base 16. An air supply line 29 extends from the air valve 28 to a source of compressed air. A T fitting 30 is mounted on and communicates with the delivery orifice of the air and oil mixer 22 and flexible hoses 31, 31 extend from the T fitting 30. Another flexible hose 32 extends from the air valve 28.

The base 16 has a dovetailed slot 33 formed therein in which a lubricant delivery device is adjustably mounted. The lubricant delivering device comprises a vertical body member 34 having a pair of oppositely disposed side-wardly extending bifurcated members 35, 35. A pair of vertically positioned arms 36, 36 are pivotally mounted inwardly of their ends on the members 35, 35 by pivots 37, 37 so that portions of the arms 36 extend above the bifurcated members 35 and portions of the arms 36 extend therebelow. The lowermost ends of the arms 36 have openings 38, 38 transversely therethrough and lubricant delivering fittings 39, 39 are positioned in said openings 38, 38 and thereby secured to the arms 36, 36.

The flexible hoses 31, 31 heretofore referred to communicate with the lubricant delivering fittings 39, 39 as may be best seen in the cross section comprising the lower righthand portion of FIGURE 2 of the drawings. It will be observed that the lubricant delivering fittings 39, 39 are adapted to register with the lubricating fittings 15, 15 heretofore described. Coil springs 40, 40 extending between the upper ends of the arms 36, 36 and the lower portion of the body member 34 will normally urge the arms 36, 36 into the positions shown in broken lines in FIGURE 2 wherein the lubricant delivering fittings 39, 39 are out of engagement with the lubricant fittings 15, 15.

Means for moving the uppermost ends of the arms 36, 36 outwardly with respect to the body member 34 are provided so that the arms 36, 36 may be moved into the position shown in solid lines in FIGURE 2 of the draw-

ings where the lubricant delivering fittings 39,39 are in engagement with the lubricant fittings 15,15. Said means comprises a pair of single acting air pistons having piston rods 41,41 mounted in a pair of oppositely disposed cylinders 42,42 which in turn are secured to the opposite sides of the uppermost portion of the vertical body member 34. The air pistons are so positioned that the rods 41,41 engage the inner sides of the arms 36,36.

By referring now to FIGURE 1 of the drawings, it will be seen that the flexible hose 32 which communicates with the air valve 28 also communicates with a T fitting 43 which permits extensions 32A, 32A to convey air pressure to the air cylinders 42,42.

A block 44 is attached to the right end of the base 16 as seen in FIGURE 1 and has an adjustment screw 45 positioned therethrough which acts as a limiting factor with respect to movement of the body member 34 longitudinally of the dovetailed groove 33 in the base 16. By adjusting the adjustment screw 45 the proper positioning of the arms 36 may be obtained with respect to a trigger action initiated by one of the wheels 12 of the conveyor as hereafter described so that operation of the air valve 28 responsive to such trigger action will move the arms 36,36 into the positions shown in solid lines in FIGURES 1 and 2 of the drawings and simultaneously direct oil through the filter 24, the pressure regulator 23, and the air and oil mixer 22 and thereby deliver a mixture of oil and air through the flexible tubes 31,31 to the lubricating delivering fittings 39,39 and hence to the bearings 14 as heretofore described. The trigger action which is responsible for actuating the lubricating device disclosed herein comprises a trigger 46 movably mounted by a pivot pin 47 in an opening 48 in the base 16. The upper end of the trigger 46 is pivotally connected to one end of an operating arm 49 which extends along the upper surface of the base and is pivotally secured to an operating lever 50 on the air valve 28.

It will thus be seen that when a conveyor unit including the arms 11,11 and the wheels 12,12 moves along the rail 10 and beneath the lubricating device, one of the wheels 12 will engage the inwardly turned end of the trigger 46 and move it in an arcuate path based on the pivot pin 47. This position is conveyed to the operating lever 50 of the air valve 28 to open the same and permit air to flow from the supply line 29 through the tube 27 to the filter 24, pressure regulator 23 and air oil mixer 22 as heretofore described and simultaneously air will flow from the air valve 28 through the flexible tube 32 to the air cylinders 42,42 which will cause them to move the piston rods 41,41 outwardly to engage the arms 36,36 and move their lower ends inwardly into engagement with the lubricating fittings 15 where the lubricant will be delivered. It will be seen that by adjusting the longitudinal position of the body member 34 relative to the described action of the trigger 46, the arms 36,36 will always move the lubricating delivering fittings 39,39 into registry with the lubricating fittings 15 instantaneously and simultaneously deliver the lubricant and that as the trigger member 46 is released from the wheels 12 the arms will swing outwardly again, all in such a short sequence operation that the conveyor unit including the arms 11,11 and wheels 12,12 does not slow down or stop in its normal travel.

It will thus be seen that the lubricating device for over-

head conveyors disclosed herein meets the several objects of the invention and having thus described my invention, what I claim is:

1. A lubricating device for an overhead conveyor having a rail and means including wheels moving therealong, and comprising a base member and devices for mounting said base member on said overhead rail, apparatus for supplying a mixture of air and oil mounted on said member and a fixed body member mounted on said base member, said body member having a pair of oppositely disposed outwardly extending bifurcated members, a pair of arms pivotally mounted one in each of said bifurcated members, spring means interconnecting said arms and said body member for normally urging the lower ends of said arms outwardly and away from said base member and air actuated means on said body member for moving the upper ends of said arms outwardly with respect to said body member, lubricant delivery fittings on the lower ends of said arms and flexible tubes connecting said lubricant delivering fittings with said apparatus supplying said air and oil mixture, a trigger member mounted on said base for engagement with said conveyor wheels, an air valve on said base controlling an air supply source in communication with said air and oil mixture delivering apparatus and with said air actuated means on said body member, said air valve being responsive in operation to said trigger.

2. The lubricating device for an overhead conveyor set forth in claim 1 and wherein said body member is mounted on said base for longitudinal adjustment relative thereto.

3. The lubricating device for an overhead conveyor set forth in claim 1 and wherein said air actuated means comprises a pair of oppositely disposed air piston and cylinder assemblies.

4. The lubricating device for an overhead conveyor set forth in claim 1 and wherein said spring means interconnect the upper ends of said arms with said body member.

5. A lubricating device for an overhead conveyor having a rail and devices including axles having wheels running on said rail, means to lubricate said axles and wheels comprising an air and oil mixer, an air supply source, a valve normally closing said air supply source, a stationary body member positioned above said rail, a pair of arms pivoted to said body member inwardly of their ends and positioned vertically alongside the opposite sides thereof, lubricant delivery fittings on the lower ends of said arms, springs interconnecting said arms and said body member for urging said arms and lubricant delivery fittings away from said rail and air piston and cylinders on said body member for moving said arms and said lubricating delivery fittings toward said rail, a trigger arm on said lubricating device positioned in the path of said wheels and linkage interconnecting said trigger arm and said valve, said trigger arm arranged to be moved by said wheels when in position adjacent said arms and lubricant delivery fittings.

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