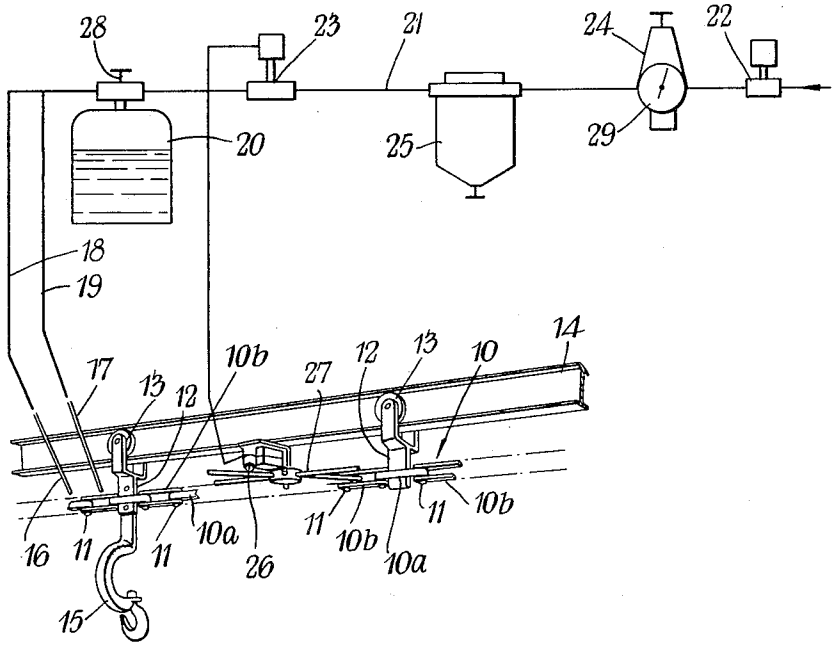
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LUBRICATION OF CONVEYOR CHAINS

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LUBRICATION OF CONVEYOR CHAINS

Arthur Thomas Charles Burrows, Stevenage, England, assignor to Geo. W. King Limited, Stevenage, England, a British company

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This invention is concerned with conveyor systems of the type incorporating an endless driven chain.

It is an object of the invention to provide for automatic lubrication of the aforesaid chain during operation of the conveyor.

According to the invention a lubricating system is provided which comprises a source of lubricant, one or more discharge tubes or the like communicating with said source and having their outlet or discharge ends directed toward the conveyor chain and means adapted to be actuated intermittently or periodically as a result of movement of said chain thereby to cause a discharge of lubricant from said source via the or each discharge tube or the like and on to the chain. Preferably the source of lubricant will comprise a device from which lubricant will be discharged on supply of a fluid pressure medium thereto, there being a valve adapted to control the supply of pressure medium to the device, actuating means for the valve and a member which is adapted to be operated as a result of movement of the chain to cause intermittent or periodic operation of said actuating means and hence intermittent or periodic supply of pressure medium to said device. If desired means may also be provided whereby in addition to discharge of lubricant in to the chain one or more jets of air or fluid may be projected periodically against the latter with a view to removing foreign matter which may have accumulated thereon.

In order that the said invention may be clearly understood and readily carried into effect reference will now be made to the accompanying diagrammatic drawing which illustrates one embodiment by way of example.

Referring to the drawing **10** generally denotes an endless chain which is driven in known manner from a power unit (not shown). The chain which is of known type is made up of a succession of substantially flat so-called inner and outer links **10***a*, **10***b* interconnected by means of connecting pins **11**. The chain is supported at spaced points along its length by means of depending clevis attachments **12** carried by trolleys **13** which run in a fixed overhead track **14**. All or certain of the clevis attachments **12** may have load carriers such as indicated at **15** attached thereto. A conveyor of the kind illustrated and above briefly described is generally well known and will not be further described herein.

For the purpose of lubricating the connecting pins **11** serving to interconnect the links of the chain there are provided at a selected point along the conveyor path two lubricant delivery tubes **16**, **17** which are so arranged that the outlet or discharge ends thereof will be directed towards the bearing faces of successive pairs of connecting pins **11** as the chain travels through the lubrication zone. In other words the outlet or discharge ends of the two tubes **16**, **17** will be spaced apart by an amount corresponding to the pitch of the connecting pins **11** or they may be otherwise so arranged that as the chain travels along, pins passing through the lubrication zone will pass through the line of discharge from said tubes. Lubricant is supplied to the tubes **16** and **17** via conduits **18**, **19** leading from a so-called mist lubricator **20** of known type, such lubricator being adapted to discharge oil on supply of air under pressure thereto. The mist lubricator **20** has connected thereto an air supply line **21** through

which air under pressure will be supplied from any convenient source (no shown). Located in the air line **21** are solenoid operated valves **22** and **23**, an air pressure regulator **24** and an air cleaner **25** of known type. The valve **22** is electrically connected to the drive unit of the conveyor so that when such unit is operative to drive the chain **10** the valve **22** will be opened to allow air to flow along the line **21**, such flow being cut off automatically by said valve on cessation of the drive to the chain **10**. The air pressure regulator **24** will allow for control of the air pressure supplied to the lubricator **20**. The solenoid operated valve **23** is adapted to be opened and closed intermittently so that the supply of lubricant from the lubricator **20** to the conduits **18**, **19** and tubes **16**, **17** will be intermittent and the operation of said valve is controlled by a micro switch **26**. The micro switch **26** is appropriately disposed in relation to a star wheel **27** which incorporates a plurality of radially directed arms and is rotatable about a substantially vertical axis. As will be seen from the drawing the star wheel **27** is so disposed that the arms thereof will engage or mesh with the chain **10**, i.e. successive arms will enter the spaces defined by successive outer links **10***b* so that when the chain is being driven said star wheel will be rotated thereby. The arrangement is such that on such rotation of the star wheel **27** the micro switch **26** will be contacted periodically by the arms of said wheel thereby to cause periodic opening of the valve **23** and periodic supply of air to the lubricator **20**.

It will be appreciated from the foregoing that with the conveyor operating and the valve **22** consequently opened to allow a supply of air through the line **21** the movement of the chain **10** and consequent rotation of the star wheel **27** will cause the micro switch **26** and valve **23** to be actuated periodically thereby to cause on each such actuation a burst or discharge of lubricant spray from the lubricator **20** and thence via the conduits **18**, **19** and tubes **16**, **17** on to the pins of the conveyor chain **10**.

The amount of oil discharged on each operation may be controlled by means of a valve **28** on the lubricator **20** and also by controlling the air pressure in the line **21** by means of the pressure regulator **24** which as indicated at **29** will conveniently incorporate a dial or gauge by means of which the magnitude of the air pressure may be determined. In one particular case it was found necessary to employ a pressure in the region of 40 lbs. per sq. in. and it was therefore, found advisable to incorporate a gauge reading up to a maximum of 80 lbs. per sq. in. The figures quoted above are however purely exemplary and they may well be varied to suit any particular installation or set of circumstances. The length of time during which the sprays operate may readily be controlled or adjusted as required by varying the time during which the micro switch **26** is operative by for example adjustment of the switch itself or by varying the diameter or dimensions of the arms of the star wheel **27**.

The oils used in the lubricator above described should be of medium viscosity but if light oils are suitable then their use would be advantageous since they will pass more easily through the lubricator.

As an accessory to the lubricator extra air jets may be provided, the operation of such jets being controlled by means of a separate solenoid valve which is however controlled by the same micro switch as that controlling the solenoid of the air switch associated with the lubricator. With such an arrangement the air jets may be directed at one or more selected points along the chain to blow off foreign matter which may have accumulated thereon.

It may be mentioned here that the electrical solenoids and micro switches or the like may well be replaced by appropriate air valves, switches or the like.

What is claimed is:

A lubricating system for an endless driven conveyor chain, said system comprising a mist lubricator adapted for containing a supply of lubricant therein, said chain being constituted by hollow links in endwise relation and pins connecting adjacent links, discharge orifices connected directly to said mist lubricator, said orifices being spaced apart a distance corresponding substantially to the spacing of adjacent pins of the chain, said orifices being located above the chain and adapted to apply lubricant in the form of a spray to the pins of the chain when the pins are in registry with the orifices, a source of a pressure medium, the lubricant normally being stored in said mist lubricator at a pressure substantially less than that of said medium, and means for connecting said source of pressure medium to said mist lubricator to cause discharge of lubricant therefrom to said orifices for lubrication of the pins when the same are in registry with said orifices, the last said means including first and second valves between said source of pressure medium and said mist lubricator, each valve being adapted for controlling flow of pressure fluid from said source to said mist lubricator, one of said valves being open when the drive means for the chain is operative, and means for controlling the other valve, the last said means including a wheel freely supported for rotation independently of said chain and adjacent the path of the chain, said wheel including a plurality of radially directed extensions, each extension being adapted for successively entering a hollow of a link as said chain is advanced whereby said chain drives said wheel, a switch coupled to said other valve for controlling the same, the switch being located in the path of said extensions so that said switch is actuated in response to contact with each extension whereby said switch is intermittently controlled in accordance with the position of the wheel and the chain, said switch causing opening of said other valve when actuated by an extension to cause pressure medium to be delivered to said mist lubricator to cause discharge of said lubricant in mist form through said orifices and onto a pair of pins of the chain.

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