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[54] **ENEER LATHE OILER**
15 Claims, 4 Drawing Figs.

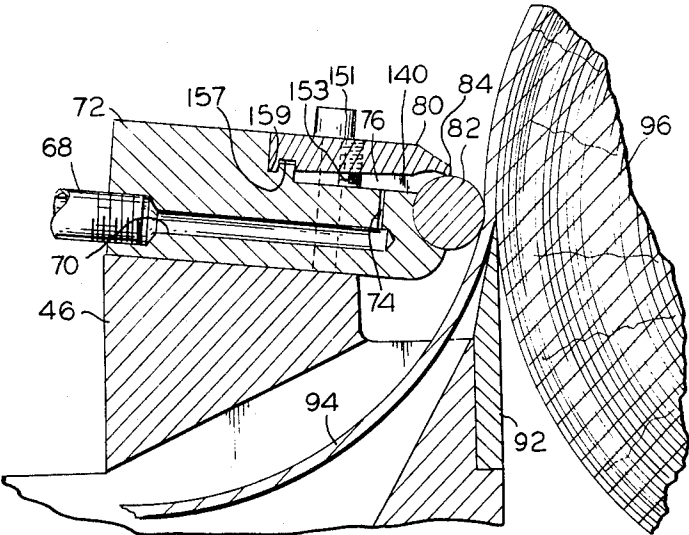
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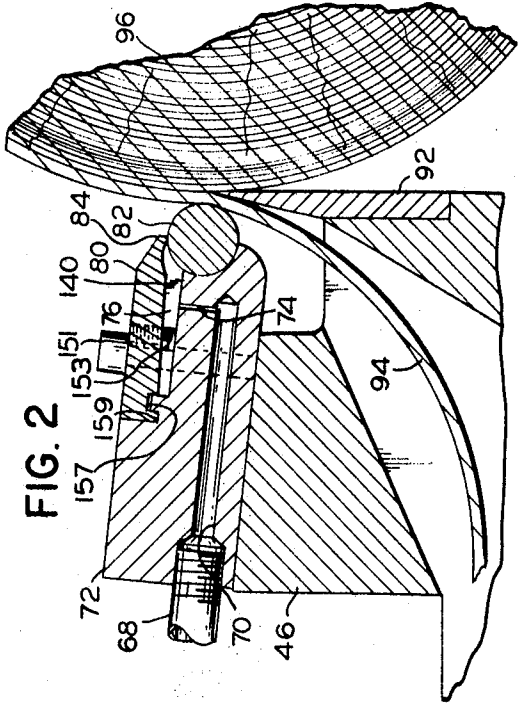
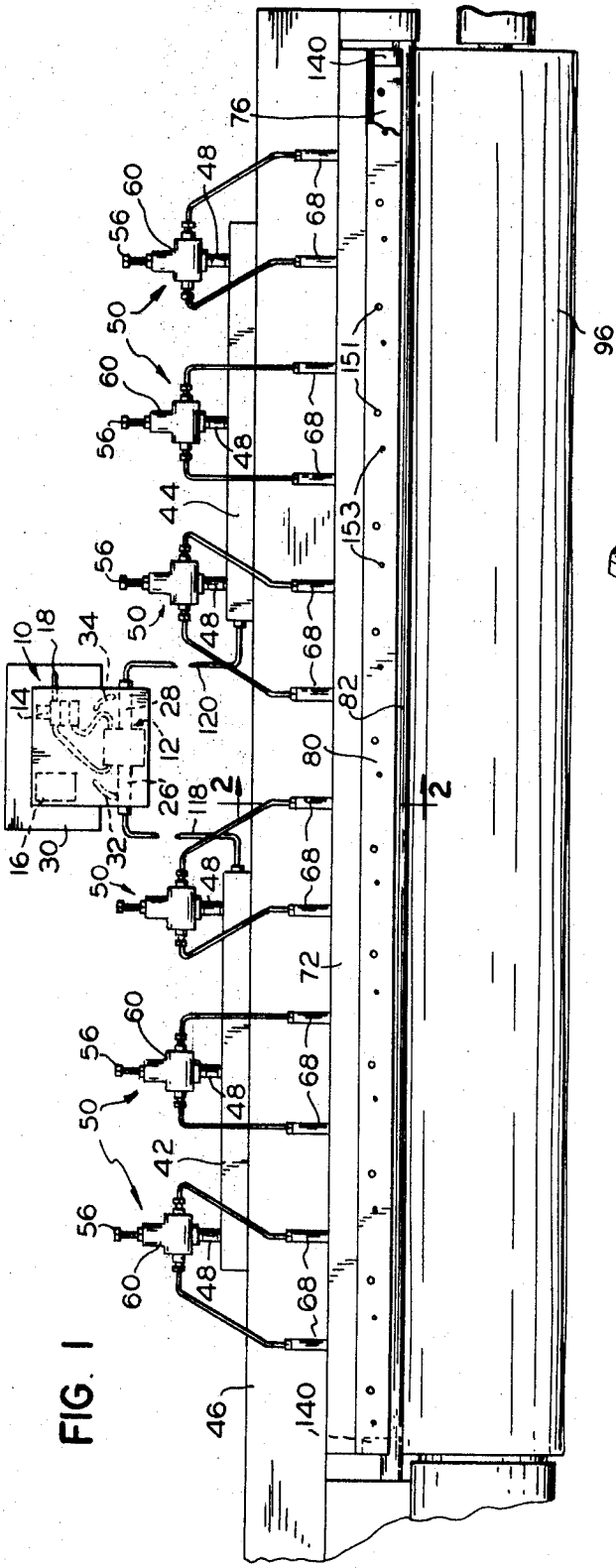
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F16n 7/36

[50] Field of Search **184/6 K, 1**
E, 6; 144/209, 213; 103/51, 47

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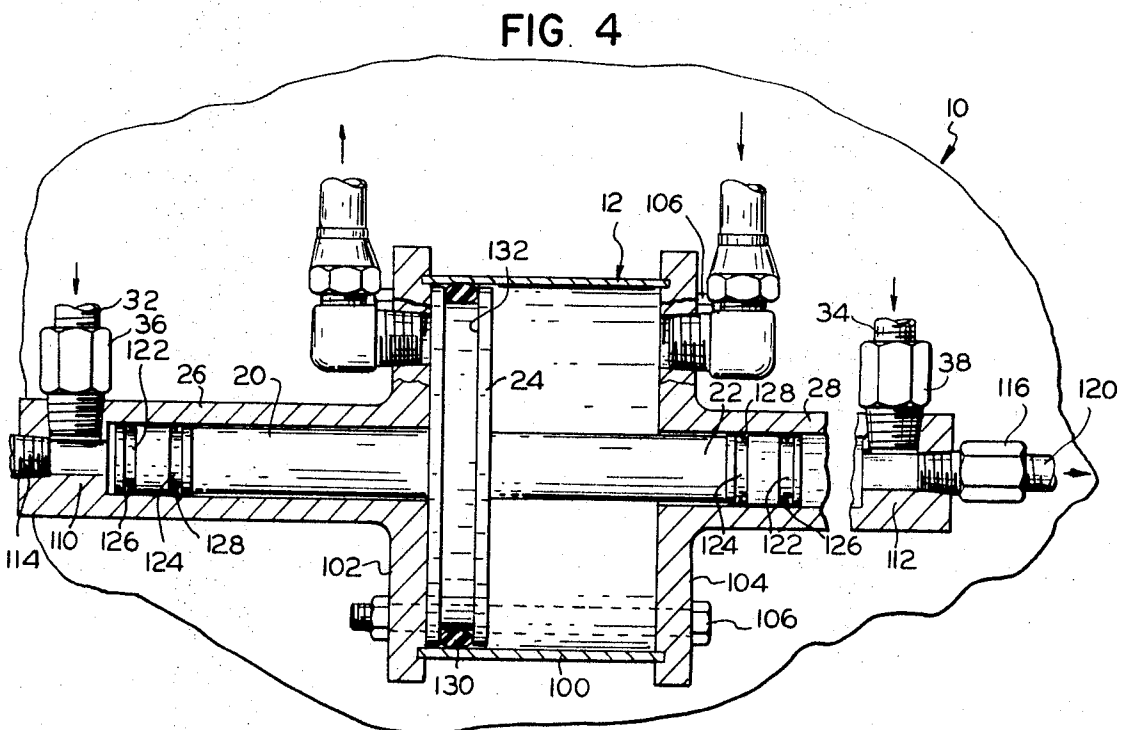
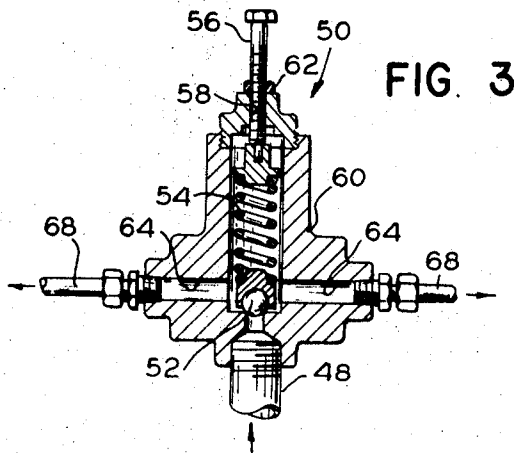
ABSTRACT: A double-acting pneumatic cylinder drives pistons of two oil pump cylinders to supply high pressure lubricant through injection manifolds and restrictive orifices and a roller bar chamber to a veneer lathe roller bar to lubricate and clean the roller bar under high pressure.





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VENEER LATHE OILER

DESCRIPTION

This invention relates to a veneer lathe oiler, and more particularly to a high pressure roller bar lubricating system.

An object of the invention is to provide a new and improved veneer lathe oiler.

Another object of the invention is to provide a high pressure roller bar lubricating system.

A further object of the invention is to provide a veneer lathe oiler which supplies high pressure oil to a roller bar to keep the roller bar free of pitch.

Another object of the invention is to provide an improved pneumatically driven hydraulic pump.

The invention provides a veneer lathe oiler in which a lubricating and cleaning oil is applied in high pressure pulses to a roller bar through a series of restrictive orifices spaced closely together along the roller bar. In a veneer lathe oiler forming a specific embodiment of the invention, a drive piston in a double-action pneumatic cylinder has a pump piston at each end which alternately pull oil into an enclosing pump cylinder and force oil out of the pump cylinder to a manifold connected by check valves to restricted orifices spaced closely together in a strongback, and the oil is forced through a distributing chamber in the strongback onto the roller bar with pulses of high pressure.

In the drawings:

FIG. 1 is a fragmentary, partially schematic top plan view of a veneer lathe and a veneer lathe oiler forming one embodiment of the invention;

FIG. 2 is an enlarged vertical sectional view taken along line 2-2 of FIG. 1;

FIG. 3 is an enlarged, horizontal sectional view of a portion of the veneer lathe oiler of FIG. 1; and

FIG. 4 is an enlarged, longitudinal sectional view of a pump of the veneer lathe oiler of FIG. 1.

Referring now in detail to the drawings, there is shown therein a veneer lathe oiler forming one embodiment of the invention. The oiler includes a pump unit 10 (FIG. 1) having a double-action pneumatic cylinder 12, which is operated alternately in opposite directions under the control of a solenoid operated valve 14, which is controlled by a timer 16. The valve 14 alternately connects to opposite ends of the cylinder 12 a line 18 from a source of air under a substantially constant, high pressure of preferably about 100 pounds per square inch. The timer preferably actuates the valve to supply air to one end and exhaust air from the other end of the cylinder 12 for 15 seconds, and then reverse this for 45 seconds, after which another identical one minute cycle is effected. Pump pistons 20 and 22 (FIG. 4) integral with opposite ends of a drive piston 24 in the pneumatic cylinder 12 reciprocate in cylinders 26 and 28, respectively, to alternately fill each cylinder 26 and 28 with lubricating oil from a reservoir 30 through supply lines 32 and 34 and check valves 36 and 38. The pistons 20 and 22 alternately force the oil out of the cylinders 26 and 28 to manifolds 42 and 44 bolted to a lathe head 46 of the veneer lathe. Each of the manifolds has three outlet pipes 48 supporting and connected to injection valves 50 which have ball checks 52 normally urged to closed positions closing the outlets of the pipes 48 by springs 54. The compression of each spring is adjustable by an adjustment screw 56 threaded through a tapped bore 58 in a valve housing 60. Locking nuts 62 hold the screws 56 in adjusted positions such as to require a high pressure to move the ball checks 52 from their closed positions, preferably a pressure of from 15 to 20 pounds per square inch being required to move each ball check from its closed position.

Each valve housing 60 has two, opposed outlet ports 64 which are connected by high pressure lines to fittings 68 screwed into tapped, blind bores 70 in a strongback 72 of the lathe. Small restrictive orifices or bores 74 lead from the bores 70 into a high pressure, distributing chamber 76. The orifices

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74 are spaced uniformly along the strongback and closely to each other, six of the orifices being spaced uniformly along one half of the strongback and six being spaced uniformly along the other half of the strongback. The orifices are also spaced quite closely to the juncture of a retainer 80 and a roller bar 82 of the lathe. A continuous lip 84 of the retainer 80 engages the roller bar and oil from the distributing passage moves under the lip in a thin film on the roller bar which is rotated in the direction of the arrow in FIG. 2. A veneer knife 92 slices a strip 94 of veneer from a peeler log 96 as the log is rotated by the lathe.

The cylinder 12 includes an aluminum tube 100 and ends 102 and 104 of manganese bronze secured together by tie rods 106 and integral with the cylinders 26 and 28, respectively. Tapped bushings 110 and 112 are brazed in end portions of the cylinders and check valves 114 and 116 are mounted therein and are connected by lines 118 and 120 to the manifolds 42 and 44. Each piston 20 and 22 has two closely spaced ring grooves 122 and 124 therein in which biased, tapered, elastomeric sealing rings 126 and 128 are positioned. A sealing ring 130 also is positioned in a groove 132 in the piston 24. Each inner ring 126 slopes toward the cylinder 12 and each outer ring 128 slopes away from the cylinder 12. Sealing pads 140 of sponge rubber or the like are positioned at the ends of the distributing chamber and act as plugs.

In operation, the timer 16 actuates the valve 14 to first drive the piston 24 (FIG. 4) in one direction, about 15 seconds being used in the stroke. This causes one of the pistons 20 and 22 to force oil out of its cylinder through the associated one of its check valves 36 and 38 to its associated manifold 42 or 44, through the associated ones of the injection valves 50, through the restrictive orifices 74 into the distributing chamber and between the lip 84 of the retainer 80 to lubricate the roller bar 82 and to clean off any pitch or gummy material on the retainer and portions of the strongback 72 adjacent the roller bar. The restrictive orifices act as nozzles and initially, after the chamber is filled, create high pressure zones of the oil adjacent thereto to force sheetlike streams of the oil between the adjacent halves of the lip and the roller bar to accentuate the cleaning.

During the above-described stroke of the piston 24, the other piston 20 or 22 draws oil from the reservoir 30 into its cylinder through its associated check valve 36 or 38. The air under pressure on the driving side of the piston 24 flows along the piston 20 or 22 acting as a pump and presses the annular lip of the sealing ring 126 tightly against the cylinder wall, the rod portion of the piston being relieved slightly to provide free flow of the air from the cylinder 12 along the piston to the sealing ring 126. The oil flows from the reservoir through the check valve 36 or 38 which is spaced close to the inner wall of its associated cylinder 26 or 28.

The end of the stroke of the piston 24 occurs when it engages the end of the pneumatic cylinder 26, at which point one of the cylinders 26 and 28 has had a predetermined volume of oil forced therefrom and the other cylinder has received the same quantity. Shortly after the end of the stroke, the timer 16 reverses the valve 14, which then reverses the drive of the piston 24 to supply a metered volume of the oil under high pressure in jets or streams into the other half of the distributing chamber. The high pressure of the jets creates local higher pressure zones along the lip to force the oil in a sheetlike stream between the lip of the retainer and the roller bar, the stream having a higher velocity along the adjacent half of the chamber 76. At the end of the stroke, a metered quantity of oil has been forced out of the chamber. This takes about 15 seconds. Meanwhile, the other cylinder 26 or 28 is being replenished with oil. There then is a dwell period of about 30 seconds after which the cycle of operation just described is repeated. During the dwell, the oil is kept in contact with the entire length of the roller bar to keep it lubricated, but the pressure is not great enough to force the sheetlike stream between the lip of the retainer and the roller bar. The lip bears against the roller bar 82 along its entire length. The volume of the dis-

tributing chamber is substantially less than that of the displacement of each of the pistons 20 and 22, which in one successful embodiment was 1 and 178 cubic inches. One oil which may be used as the lubricating and cleaning oil described above is a hydraulic oil "Rando-C" of Texaco. During each stroke of the piston 12, the pressure of the oil being forced through the restrictive orifices is about 3,000 p.s.i. Capscrews 151 secure the retainer 80 to the strongback, and adjustable spacer screws 153 screwed into tapped bores 155 in the retainer control the position of the lip 84 relative to the roller bar 82, the retainer and the strongback having interlocking, sealing ribbed and grooved portions 157 and 159 forming the pivot point of the retainer.

I claim:

1. In a method of lubricating a veneer lathe roller bar, forcing a lubricant against a roller bar with a high pressure, maintaining the lubricant in continuous contact with the roller bar, and periodically varying the pressure on the oil in contact with the roller bar from a predetermined pressure to second pressure many times greater than said predetermined pressure.
2. The method of claim 1 wherein said second pressure is at least about 3,000 p.s.i.
3. In a method of lubricating a veneer lathe roller bar, forcing a lubricant against a roller bar with a high pressure, maintaining the lubricant in a chamber and in continuous contact with the roller bar along the entire length of the roller bar, periodically varying the pressure of the lubricant from a predetermined pressure to a second pressure substantially higher than said predetermined pressure, and confining flow of the lubricant from said chamber between a retainer and the roller bar.
4. The method of claim 3 wherein said second pressure is at least in the order of 3,000 p.s.i.
5. The method of claim 3 including periodically introducing into the chamber lubricant under said second pressure through restricted orifices.
6. The method of claim 3 including alternately introducing the lubricant into the chamber at different areas spaced along the chamber.
7. The method of claim 5 including alternately introducing the lubricant into one-half of the chamber and the other half of the chamber.

8. In a veneer lathe lubricating system,

a roller bar,

chamber means for holding lubricant in contact with the roller bar,

injection means for introducing lubricant under pressure into the chamber means,

and continuously driven cycling means for periodically actuating the injection means to periodically vary the pressure in the chamber means.

9. The veneer lathe lubricating system of claim 8 wherein the chamber means comprises a strongback and a retainer having a lip extending along the roller bar and defining with the roller bar a linelike orifice substantially coextensive with the roller bar.

10. The veneer lathe lubricating system of claim 9 wherein the chamber means has a predetermined volume and the injection means includes a pressure source of supply for forcing lubricant under high pressure through the orifice.

11. The veneer lathe lubricating system of claim 8 wherein the injection means includes positive displacement pump means.

12. In a veneer lathe lubricating system,

a roller bar,

chamber means for holding lubricant in contact with the roller bar,

injection means for periodically introducing lubricant under pressure into the chamber means,

the injection means including positive displacement pump means operated periodically,

and a plurality of restrictive orifices spaced along the roller bar receiving lubricant from the injection means and discharging directly in the chamber means.

13. The veneer lathe lubricating system of claim 12 including check valve means positioned between the chamber means and the pump means.

14. The veneer lathe lubricating system of claim 12 wherein the pump means includes a central pneumatic cylinder, a pair of hydraulic cylinders at the ends of the pneumatic cylinder, a pneumatic piston reciprocable in the pneumatic cylinder and a pair of hydraulic pistons secured to the pneumatic piston and reciprocable in the hydraulic cylinders.

15. The veneer lathe lubricating system of claim 14 wherein the injection means includes a pair of parallel lines connecting the hydraulic cylinders to the chamber means.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,581,844 Dated June 1, 1971

Inventor(s) TERRY A. CARLTON

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 3, line 3, change "178" to --one and one-half--

Column 3, line 21, before "second" insert --a--

Signed and sealed this 21st day of September 1971.

(SEAL)

Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Acting Commissioner of Patents