March 24, 1931. G. M. CLASS 1,797,547

LUBRICATING DEVICE FOR THE WAYS OF LATHES

Filed Sept. 27, 1928 2 Sheets-Sheet 1

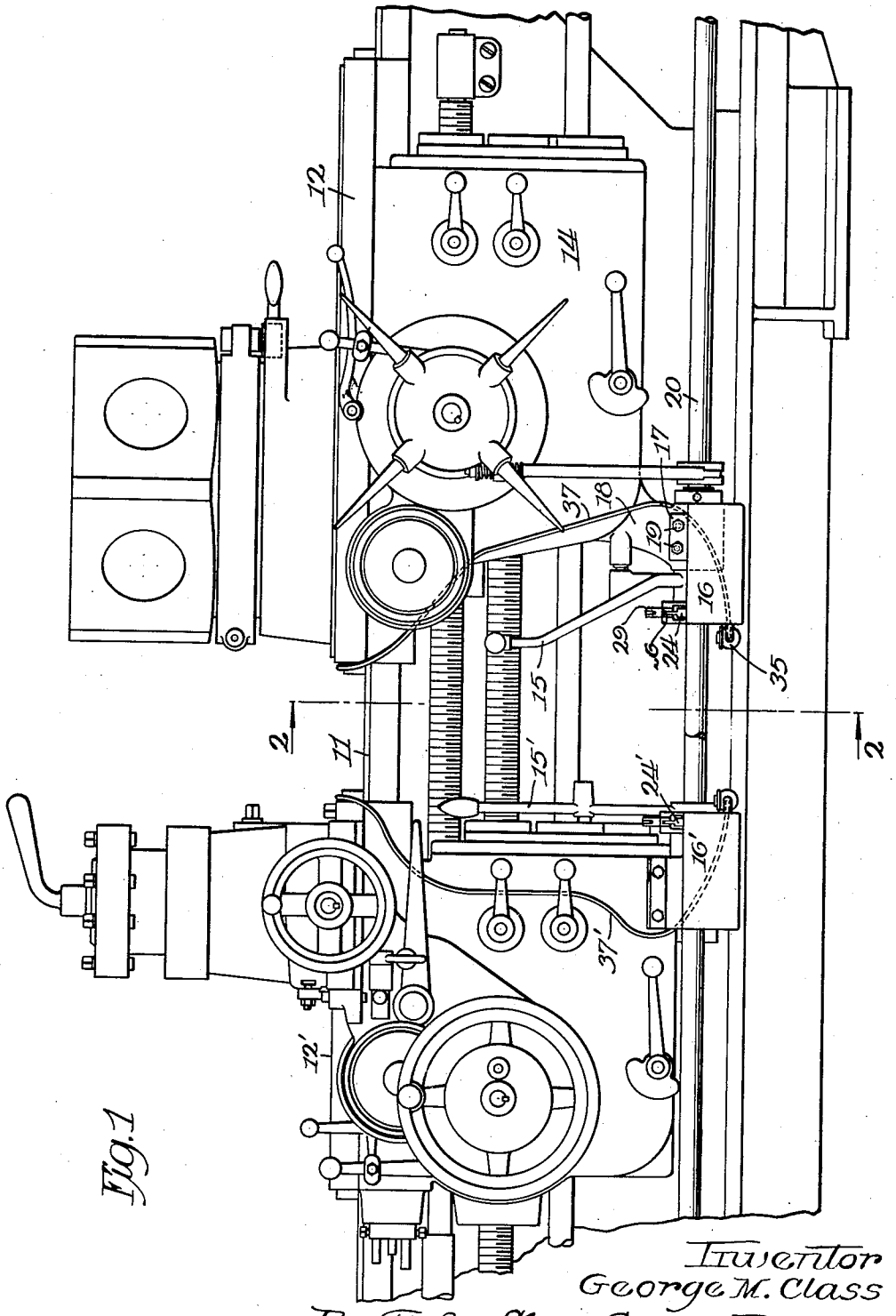


Fig. 1

Inventor
George M. Class
By Fisher, Clapp, Soans & Pond Attys.

March 24, 1931. G. M. CLASS 1,797,547

LUBRICATING DEVICE FOR THE WAYS OF LATHES

Filed Sept. 27, 1928 2 Sheets-Sheet 2

Fig. 2

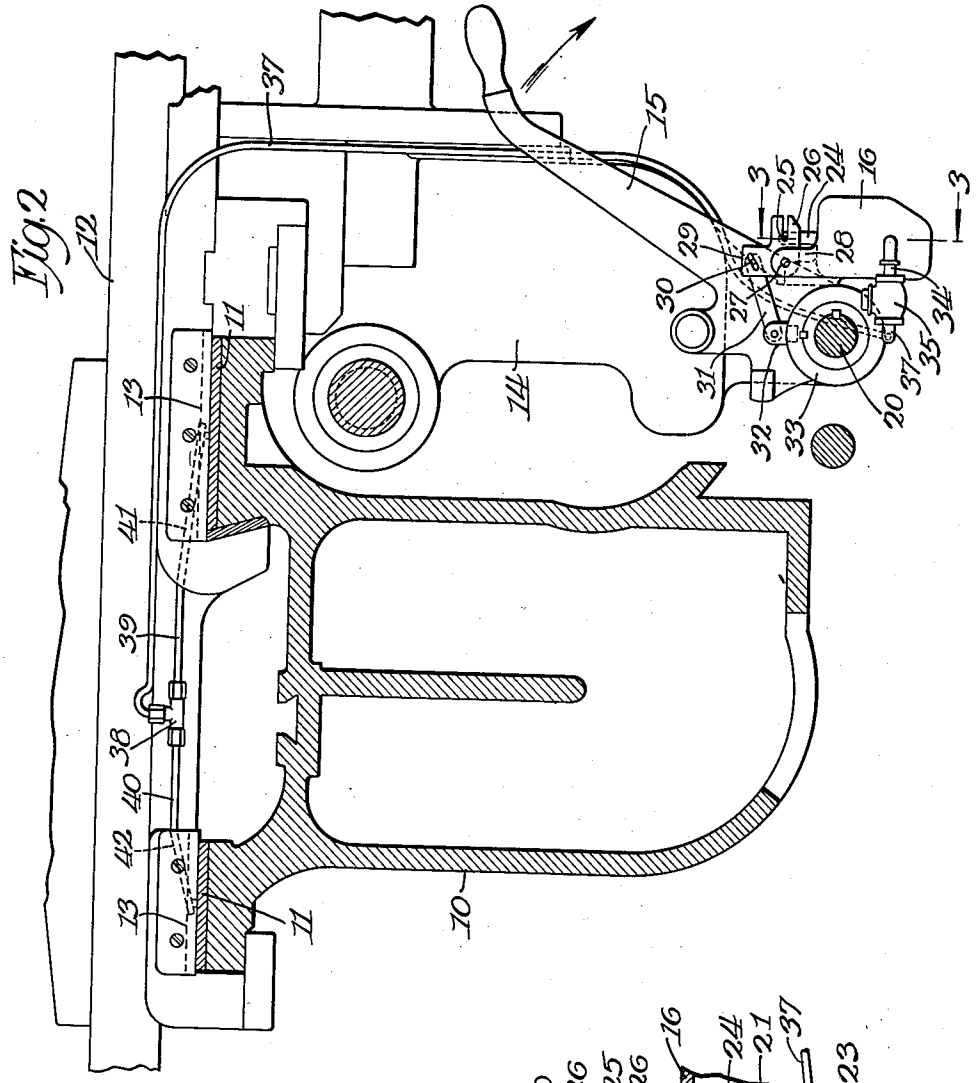


Fig. 4

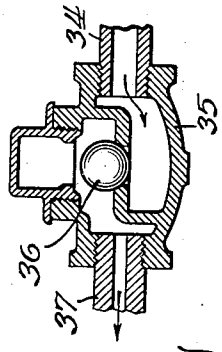
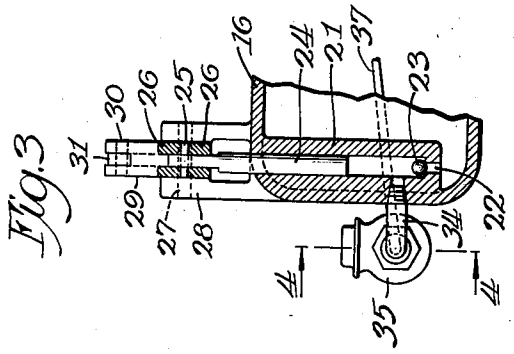


Fig. 3



Inventor:
George M. Class
By Fisher, Clapp, Souser & Pond, Attys.

Patented Mar. 24, 1931 1,797,547

UNITED STATES PATENT OFFICE

GEORGE M. CLASS, OF MADISON, WISCONSIN, ASSIGNOR TO GISHOLT MACHINE COMPANY, OF MADISON, WISCONSIN, A CORPORATION OF WISCONSIN

LUBRICATING DEVICE FOR THE WAYS OF LATHES

Application filed September 27, 1928. Serial No. 308,726.

This invention relates to means for lubricating the ways of lathes and similar machine tools on which the turret and cross-slide carriages travel. In present practice, so far as I am aware, the ways of the lathe are oiled at more or less irregular intervals by hand, so that they are not always well lubricated, and it is impossible to depend upon the lathe operator oiling the ways as frequently as it should be done. Among the objects of the invention are, to provide an improved lubricating device of the character mentioned which will be operated to force lubrication under pressure to the ways each time the hand lever which controls the operation of the carriage is actuated in a direction to either stop or start the travel of the carriage, so that the ways will receive a small amount of oil at least once during each to and fro travel of the carriage; to provide an oil pump the parts of which are very compactly mounted and arranged on the carriage or its apron and which will be positively operated each time the apron is moved; to provide an improved arrangement and mounting of the pump elements, preferably on the apron, which will permit of the easy and quick disassemblage of the pump for purposes of inspection or repair; and to provide a simple and effective connection which will transmit movement to the pump from the power mover lever through which the carriage is clutched or otherwise connected to its traverse mechanism.

Still other objects and attendant advantages of the invention will be apparent to persons familiar with this class of tools from the following detailed description, taken in connection with the accompanying drawings wherein I have illustrated a simple and practical embodiment of the invention as applied to both the tool post and turret aprons of a lathe, and in which—

Fig. 1 is a side elevation of a portion of a lathe having both a turret carriage and a tool post carriage slidably mounted on the ways thereof with my improved lubricating device applied to both carriages;

Fig. 2 is a vertical cross-section on the line 2—2 of Fig. 1, illustrating the application of the lubricating device to the turret carrriage and apron;

Fig. 3 is an enlarged vertical section through the pump and oil reservoir taken on the line 3—3 of Fig. 2;

Fig. 4 is a sectional detail through the discharge line of the pump showing a check-valve therein.

Referring to the drawings, 10 designates as an entirety the bed of a turret lathe, on the top of which are secured hardened steel plates 11 forming the longitudinal ways of the bed. 12 designates the turret carriage, in grooves in the under side of which are secured hardened steel saddles 13 riding on the ways 11. 14 designates as an entirety the usual apron that depends from the front edge of the carriage 12 and constitutes a support for the usual hand-operated controls of the lathe, including the usual power mover hand lever 15 by which the carriage 12 is clutched or otherwise connected to the carriage traverse mechanism.

16 designates an oil reservoir which is attached to the lower portion of the apron 14, in the instance shown by means of a flange 17 on the top of the reservoir secured to a downwardly extending bracket 18 of the apron as by screws or bolts 19. The bracket 18 also provides a bearing for a rock-shaft 20 on which the power mover lever 15 is mounted.

Referring to Fig. 3, cast integral with one end wall of the oil reservoir 16 is a pump cylinder 21 formed in its lower end with an intake duct 22 controlled by a ball check-valve 23. Slidable in the cylinder 21 is a plunger 24 extending upwardly through the top wall of the reservoir and connected at its upper end through a cross-pin 25 with a slotted arm 26 of a bell crank lever that is pivoted at 27 in a forked lug 28 on top of the oil reservoir. The upstanding arm 29 of the elbow lever has a similar pin and slot connection indicated at 30 to a link 31 that at its rear end is pivoted to a lug 32 fast on the hub 33 of the lever 15.

Communicating with the lower portion of the pump cylinder 21 slightly above the intake check-valve 23 is a delivery pipe 34 that

leads into a valve housing 35 (Fig. 4) containing an ordinary ball check-valve 36. From the opposite end of the valve housing 35 extends a pipe 37 that, as shown in Figs. 1 and 2, is led upwardly alongside the apron 14 and thence inwardly over the forward end of the turret carriage 12, where it communicates, through a T-coupling 38, with branch pipes 39 and 40 that communicates with ducts 41 and 42 respectively that open through the lower surfaces of the saddles 13 to the upper surfaces of the hardened steel ways 11.

From the foregoing it will be seen that when the power mover lever 15 is actuated by a downward and outward movement, as indicated by an arrow in Fig. 2, the pump plunger 24 will be forced downwardly and will deliver small jets of oil to the upper surfaces of the ways 11, this lubrication of the ways occurring simultaneously with the throwing in of the traverse movement of the turret carriage. When the movement is interrupted by the upward and inward swing of the lever 15, or by an automatic stop that rocks the shaft 20 in a direction to swing lever 15 upwardly and inwardly, the pump plunger is raised, sucking a new charge of oil from the reservoir into the pump cylinder.

In Fig. 1 I have indicated an identical lubricating device applied to the carriage 12′ of a tool post; 15′ designating the power mover lever controlling the operation of the tool post carriage, 16′ the oil reservoir, 24′ the pump plunger and 37′ the oil conduit leading to discharge ducts in the end of the carriage 12′. Of course the lubricating mechanism hereinabove described may be applied to either the turret carriage and apron or to the tool post carriage and apron, or to both, as desired.

The oil pump, of course, is not necessarily located within the oil tank or reservoir as herein shown, and, the oil reservoir is not necessarily mounted on and carried by the apron, but is preferably so mounted to avoid the necessity of a flexible and extensible feed line between the oil tank and the pump. It is manifest that the parts of the oiling system are located in convenient and readily accessible positions and the reservoir and pump may be readily detached when necessary for inspection or repair by the simple removal of the fastening screws 19 and the link connection to the lever. By the present invention the irregular and haphazard oiling of the lathe ways is avoided, a jet or spray of oil being delivered to the ways each time the carriage is started on its traverse movement without any thought on the part of the operator.

I claim—

1. In an oiling device for the ways of a lathe, the combination with a slide and slide apron, of an oil pump mounted on said apron, an oil container communicating with the intake side of said pump, an oil delivery conduit leading from the discharge side of said pump to points above the ways and movable bodily with said slide and apron, a lever controlling the traverse mechanism of said slide, and an operating connection from said lever to said pump.

2. In an oiling device for the ways of a lathe, the combination with a slide and slide apron, of an oil pump mounted on said apron, an oil container mounted on said apron and communicating with the intake side of said pump, an oil delivery conduit leading from the discharge side of said pump to points above the ways and movable bodily with said slide and apron, a lever controlling the traverse mechanism of said slide, and a connection from said lever to the plunger of said pump operative to effect a suction stroke of said plunger when the lever is swung in one direction and a discharge stroke of said plunger when the lever is swung in the opposite direction.

3. In an oiling device for the ways of a lathe, the combination with a slide and slide apron, of an oil container mounted on said apron, an oil pump mounted in said container and communicating on its intake side with the interior of the latter, an oil delivery conduit leading from the discharge side of said pump to points above the ways and movable bodily with said slide and apron, a lever controlling the traverse mechanism of said slide, and an operating connection from said lever to said pump.

4. In an oiling device for the ways of a lathe, the combination with a slide having a duct opening through the portions thereof which ride on the ways, and a slide apron, of an oil pump mounted on said apron, an oil container communicating with the intake side of said pump, a tube extending from the discharge side of said pump to said duct, a lever controlling the traverse mechanism of said slide, and an operating connection from said lever to said pump.

5. In an oiling device for the ways of a lathe, the combination with a slide and slide apron, of an oil pump mounted on said apron, an oil container communicating with the intake side of said pump, an oil delivery conduit leading from the discharge side of said pump to points above the ways and movable bodily with said slide and apron, a lever mounted on said apron and controlling the traverse mechanism of said slide, and a link and lever operating connection from said lever to the plunger of said pump.

GEORGE M. CLASS.