

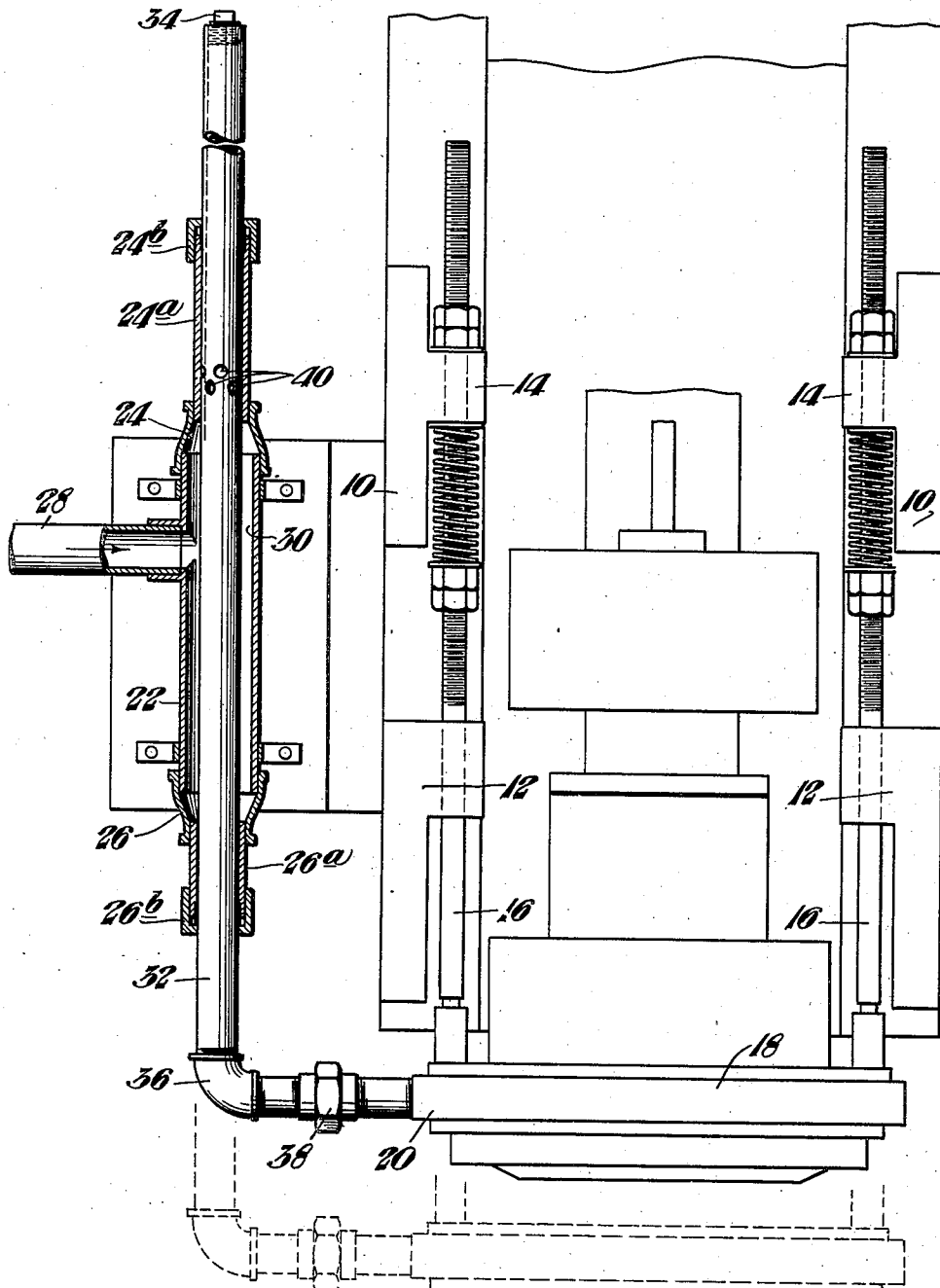
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OIL VALVE FOR CUTTING MACHINES

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OIL VALVE FOR CUTTING MACHINES

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2 Claims. (Cl. 10—106)

The present invention relates to improved means for supplying cutting oil to the tools carried by a conventional type of tool head which is guided in a suitable frame to and from working position, the supply normally being cut off when the tool is in non-working position and being made automatically available while the tools are working.

Heretofore, conventional arrangements for supplying cutting oil employed a rubber hose which formed a flexible connection between the fixed and moving parts of the machine. Such an arrangement in practice was found unsatisfactory due to the destructive action of oil on the rubber hose.

Further objections to conventional equipment are the provision of hand operated oil valves, which are inconvenient to use, and the tendency of the valve to become jammed by chips which are frequently carried by the oil stream even when a strainer is used in the line.

The present invention aims to overcome the above and other shortcomings of prior practice by the utilization of the combination of coacting instrumentalities herein illustrated, described and claimed.

The invention will be fully apparent from the following detailed disclosure when read in connection with the accompanying drawing, in which the single figure is a front elevation of a conventional type of tapping machine with my improved cutting oil supply means combined therewith.

Referring more particularly to the embodiment of the invention illustrated, 10 represents the frame of a conventional type of tapping machine provided with guides 12 and 14 which cooperate with rods 16—16 secured to a movable tool head 18 of conventional form. This tool head may be regarded as one carrying either turning tools or threading chasers, the invention being applicable to any type of tool head, the same preferably being provided with an annular portion 20 for conveying lubricant to the tools carried by the head.

Secured to the frame 10 of the machine, or to any other fixed support, I provide a valve comprising a central body 22 which, as illustrated, is in the form of a length of tubing which is connected respectively by fittings 24 and 26 with guide sleeves 24a and 26a, these fittings carrying respective packing glands 24b and 26b.

A cutting oil supply duct 28 provides means of communication between a suitable source of oil supply, not shown, and the interior annular

chamber 30 enclosed by the central tube of the valve body 22.

A hollow plunger 32 makes a working fit with the guide sleeves 24a and 26a. This plunger is closed at its upper end by a plug 34 and at its lower end is connected by an elbow 36 and a union 38 with the annular portion 20 of the tool head. The plunger in the embodiment of the invention illustrated is provided with a plurality of ports 40 which, when the tool head is in non-operative position, are closed by the guide sleeve 24a.

However, upon movement of the tool head from the non-operative position shown in full lines to the operative position shown in dotted lines, ports will be uncovered, thus permitting free flow of cutting oil through the supply pipe 28 to chamber 30 and thence through the ports 40 by way of the hollow plunger 32 into the tool head so as to bathe the tools with the cutting oil during the cutting operation. Upon completion of the cutting operation and withdrawal of the tool head to the position shown, the supply of oil will automatically be cut off, thus preventing waste.

The large annular space 30 surrounding the plunger provides a trap for small articles, such as chips and the like, which are commonly present in cutting oils. These chips collect in the lower portion of the valve body and inasmuch as the port openings 40 never move to the level of the chips, the same are effectively prevented from contaminating that part of the oil which is fed to the tools. After a long period of use, the parts can be readily cleaned by unscrewing the lower fitting 26 from the lower end of the tube 22, whereupon the chips can be flushed out.

From the foregoing it will be appreciated that the invention combines in one simple arrangement, a sediment trap, telescopic connection between the cutting oil supply and tool head and a fixed point shut-off. In practice, it has reduced delays experienced with arrangements heretofore in general use and has demonstrated the herein enumerated features of practical advantage thereover.

While I have described quite specifically the detailed features of the embodiment of the invention herein illustrated, it is to be understood that various substitutions, modifications and equivalents may be made without departure from the invention as defined in the appended claims.

I claim:

1. An apparatus of the character described comprising an upright frame, a tool head slidable

vertically thereof, said head having an annular portion for distributing lubricant to tools carried thereby, and means for controlling the flow of lubricant to said head in response to vertical movements thereof comprising a stationary up-right elongated hollow valve body having a lubricant inlet connected near the upper portion thereof, a hollow plunger of materially smaller diameter than the interior of said body, elongated guides secured to opposite ends of said body and making a snug sliding fit with said plunger, said plunger having a port normally closed by the upper one of said guides when the head is in non-operative position and adapted to be moved beyond the guide into the valve body only when the head moves to cutting position, to thus automatically establish communication between said lubricant inlet and the tool head.

2. An apparatus of the character described comprising a vertically guided tool head having

an annular portion for distributing lubricant to tools carried thereby, and means for controlling the flow of lubricant to said head in response to vertical movements thereof comprising a stationary hollow cylindrical valve casing having a lubricant inlet connected thereto at a zone above its medial portion, a hollow plunger of materially smaller diameter than the interior of said valve body, guide sleeves detachably engaging the ends of said guide body and making a snug sliding fit with said plunger, the plunger having a port normally closed by the upper one of said guide sleeves when the tool head is in its upper non-operative position and adapted to be moved beyond the guide sleeve into the valve body when the tool head moves to cutting position to thus automatically establish communication between the lubricant inlet and the tool head upon movement of the head to such cutting position.

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