June 7, 1955 G. B. MARSDEN 2,709,822

LUBRICATING MEANS FOR THREADING CUTTERS

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Fig. 1

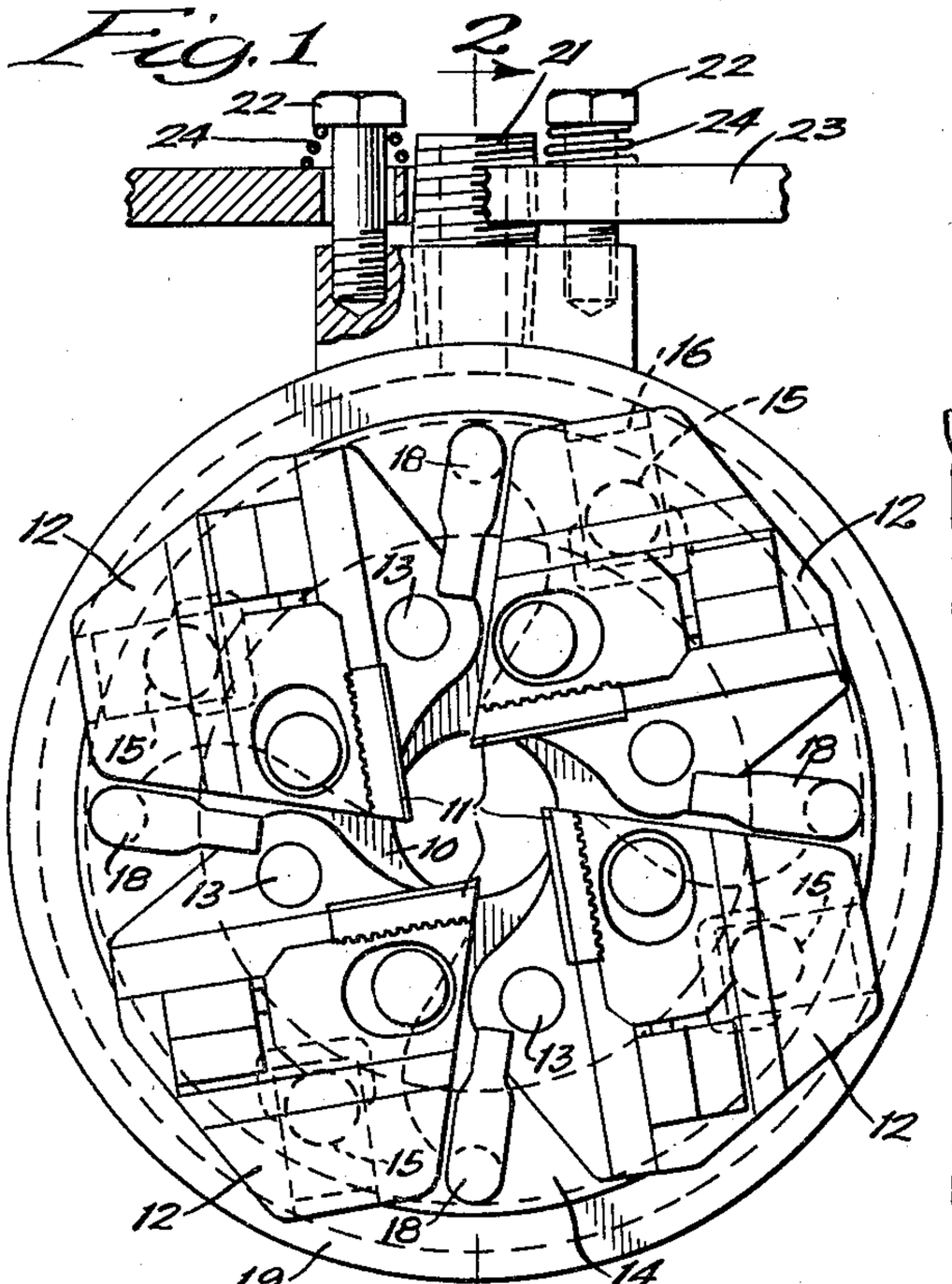



Fig. 2

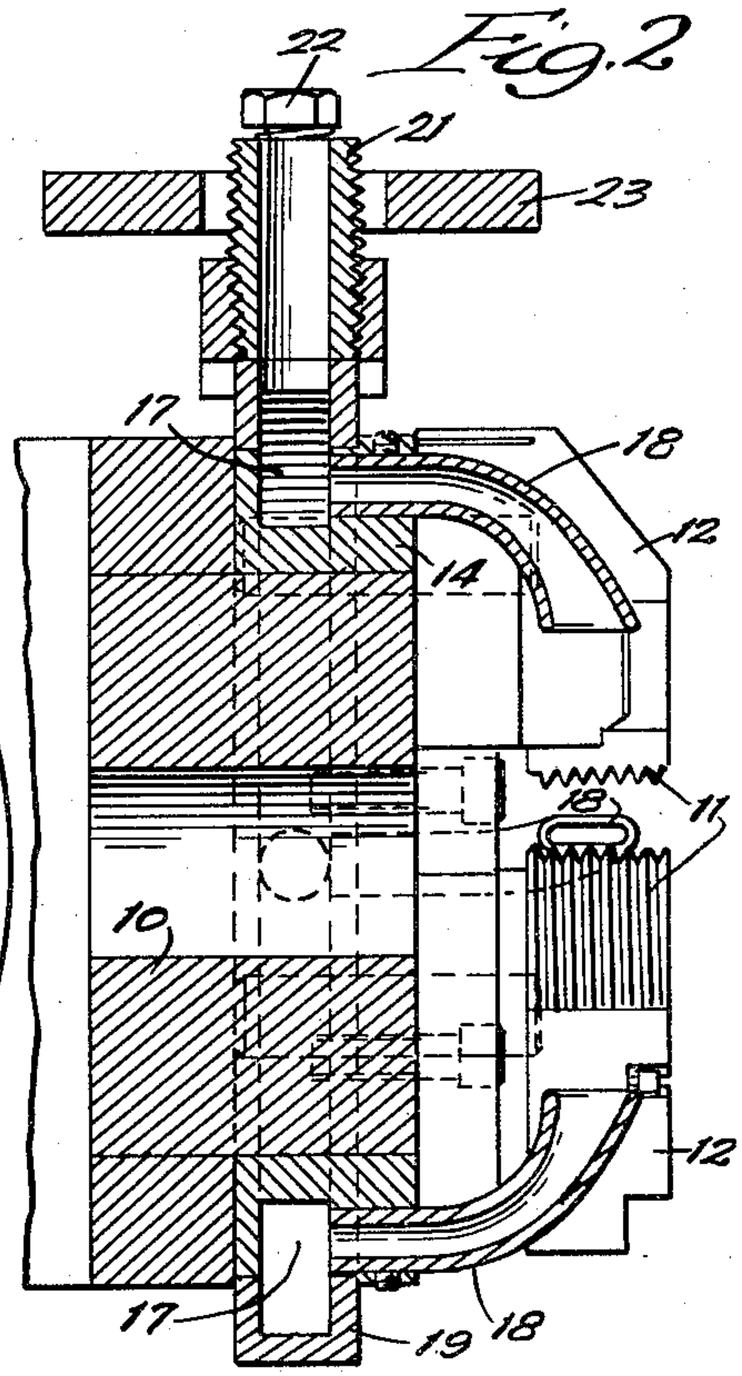



Fig. 3

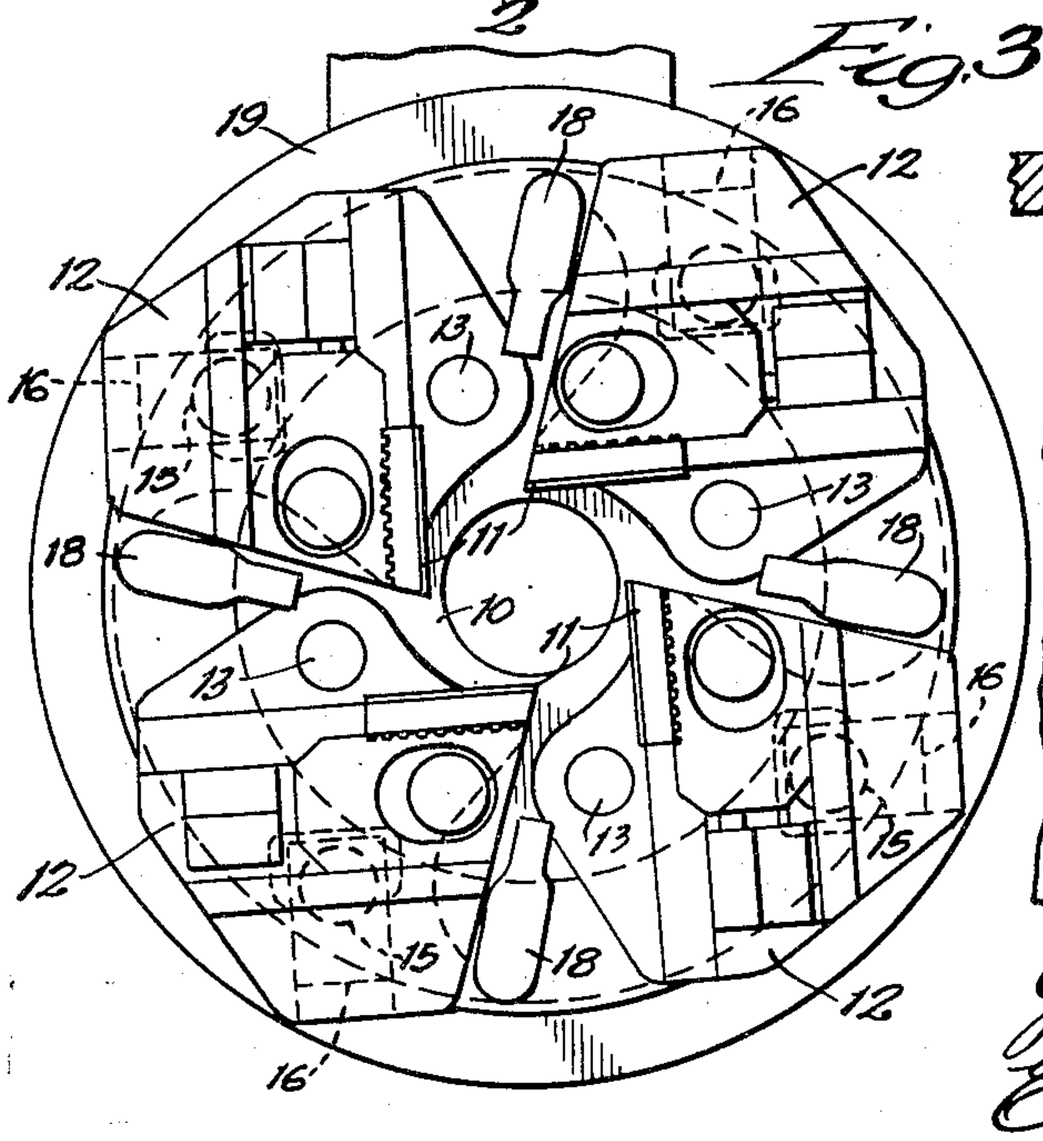
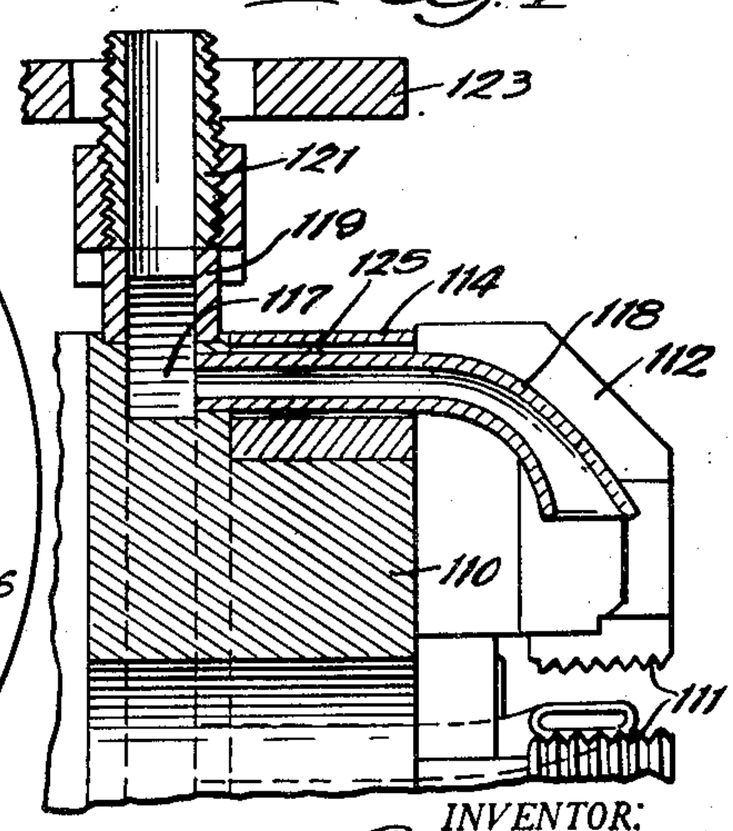



Fig. 4

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# LUBRICATING MEANS FOR THREADING CUTTERS

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4 Claims. (Cl. 10—106)

This invention relates to lubricating means for threading cutters, and more particularly to the lubrication of the chasers or cutters in rotary type threading heads.

It is extremely difficult to supply lubricants such as cutting oils to the chasers of rotary threading heads due to space limitation and the difficulty of directing lubricant to the cutting surfaces of the chasers.

It is impractical to direct lubricant into the chasers from a stationary nozzle outside of the head, as is commonly employed in cutting operations, due to interference with the work-holding chuck and to the difficulty of getting the lubricant into the cutting surfaces past the rotating parts of the head. Attempts have been made to supply lubricant axially through the head, and while this enables lubricant to be supplied to the cutters it interferes with the head design and weakens the parts.

It is one of the objects of the present invention to provide a threading cutter in which an adequate supply of lubricant is furnished directly to the cutting surfaces without interfering with the design or operation of the cutter.

Another object is to provide a threading cutter in which a conventional cutter construction is supplied, modified to provide a lubricant supply through the cutter head at the cutting surfaces. According to one feature of the invention, existing cutters can readily be altered to provide lubrication therefor.

Still another object is to provide a threading cutter in which one or more lubricant nozzles direct lubricant radially inward toward the chaser cutting edges, and are so arranged that they will not interfere with the construction and operation of the cutter parts. To this end the nozzles are carried by a rotating control ring on the cutter head, which is shiftable to move the cutter.

The above and other objects and advantages of the invention will be more readily apparent from the following description, in which:

Figure 1 is a front elevation with the parts in section of a threading cutter embodying the invention;

Figure 2 is a partial axial section on the line 2—2 of Figure 1;

Figure 3 is a view similar to Figure 1, showing the parts in released position; and

Figure 4 is a partial view similar to Figure 2 of an alternative construction.

The invention is illustrated as applied to a conventional commercial cutter head which includes a rotatable hub **10** driven by power means not shown for carrying threading chasers. As illustrated, four chasers **11** are employed and are carried by blocks **12** pivoted on the hub on pivots **13** lying relatively close to the hub axis. The hub is hollow as shown to receive a chamfering tool for chamfering the inner end of a pipe or nipple to be threaded.

The blocks **12** are adapted to be swung around their pivots **13** from an inner cutting position, as shown in Figure 1, to an outer released position, as shown in Figure 3. For this purpose a control ring **14** is rotatably



mounted on the hub and carries pins **15**, which are rotatable in blocks **16**, slidable in grooves in the inner faces of the blocks **12**. The ring **14** normally turns with the head, but is adapted to be turned relative to the head to swing the blocks **12** from their inner to their outer positions. Since the mechanism for accomplishing this result is purely conventional mechanism constituting a part of the conventional cutter head, it has not been illustrated here.

The control ring **14** is formed at a plurality of points in its circumferences corresponding in number to the number of blocks **12** employed with inwardly extending bores **17**. Lubricant nozzles **18** are secured to the ring **14** in communication with the bores **17** and terminate in inwardly extending, relatively narrow openings lying between adjacent blocks **12** and directed at the cutting edges of the chasers **11**. When lubricant is forced through the nozzles it will flow directly to the cutting edges of the chasers without interference from rotating parts of the threading head, and without interference in any way with the normal design or operation of the head. Since the nozzles are carried by the ring **14** they will shift with the ring as it is turned clockwise to open the head, and will thereby avoid any engagement with the blocks **12** as they swing about their pivots **13**. In this way the nozzles are properly positioned to deliver the lubricant to the desired point of use, and create no interference of any kind with operation of the cutter head.

To supply lubricant to the nozzles as an annular, inwardly-opening channel ring **19** is rotatably mounted around the control ring **14** in register with the recesses **17** therein. At one point in its circumference the channel ring **19** may carry a nipple **21** for connection to a flexible lubricant supply hose through which cutting oil can be pumped into the channel ring and through the nozzles. The channel ring is held against rotation by bolts **22** secured to the channel ring and extending loosely through openings in a fixed plate **23**. Springs **24** are carried by the bolts and engage the plate **23** so that the channel ring **19** can float to a limited extent to maintain proper engagement and alignment with the control ring **14**.

To convert an existing cutter head it is necessary only to cut down the periphery of the existing control ring **14** to provide a seat for the channel ring **19** and to drill the recesses **17** and install the nozzles **18** in communication therewith. When a channel ring **19** is then placed over the control ring and connected to a source of lubricant the conversion is completed. It has been found that when proper lubricant is supplied to the cutting surfaces of the chasers, as is accomplished by the present invention, the speed of the head can be increased by at least 10% thereby to increase the production of the machine without overheating or burning the work and without producing undue wear on the chasers.

Figure 4 illustrates an alternative manner of applying the lubricating nozzles to a chaser head, parts therein corresponding to like parts in Figures 1–3 being indicated by the same reference numerals plus one hundred. In this construction, the lubricant nozzles **118** are attached to a portion of the hub **110** rather than to the control ring **114**. As shown, a part of the hub immediately to the rear of the control ring is formed with an annular lubricant passage **117** and the nozzles **118** communicate with this passage and extend through elongated arcuate slots **125** formed in the control ring **114**. The nozzles, as in the construction of Figures 1–3, extend radially inward toward the cutters **111** in the same manner as in Figures 1–3.

The annular lubricant passage **117** is supplied with lubricant under pressure through a channel shaped control ring **119** supplied with lubricant through a nipple **121**

flexibly connected with a supply hose in the same manner as Figures 1–3.

As the head turns the channel ring 119 will slide over the hub and maintain a seal against its outer cylindrical surface. The nozzles will turn with the hub and will direct lubricant radially inward between blocks 112 directly against the cutting surface. The control ring 113 can turn without interfering with the nozzles through elongated slots through which the nozzles project and by positioning the nozzles in approximately the same position as shown in Figure 1, sufficient clearance is provided for the blocks to swing without interfering with the nozzles. This construction, therefore, functions in substantially the same manner as Figures 1–3 to provide the same desirable lubrication.

While one embodiment of the invention has been shown and described in detail, it will be understood that it is illustrative only and is not intended as a definition of the scope of the invention, reference being had for this purpose to the appended claims.

What is claimed is:

1. A threading cutter comprising a rotatable head, a plurality of blocks movably mounted on the head, cutters carried by the blocks to move between inner cutting positions and outer release positions, an annular control ring rotatably mounted on the head and connected to the blocks to move them, a plurality of lubricant nozzles carried by the control ring and extending radially inward between adjacent blocks, and a stationary channel ring fitting slidably over the control ring and communicating with the nozzles through passages in the control ring.

2. A threading cutter comprising a rotatable head, a plurality of blocks pivoted on the head on axes parallel to and adjacent to the axis of rotation of the head, cutters carried by the blocks at their inner edges, a control ring rotatably mounted on the head, interengaging parts on the control ring and blocks to swing the blocks about their pivots as the ring is turned on the head, the ring having lubricant passages therein, lubricant nozzles carried by the ring communicating with the passages and extending



radially inward between adjacent blocks, a channel ring fitting slidably over the control ring and communicating with the lubricant passages therein, and resilient mounting means holding the channel ring against rotation.

3. A threading cutter comprising a rotatable head, a plurality of spaced blocks movably mounted at one end of the head, cutters carried by the blocks at their inner surfaces, a control ring rotatably mounted on the head at said end thereof and connected to the blocks to move them, a nozzle rigidly secured to the head for rotation therewith and extending radially inward between adjacent blocks, the control ring having an elongated slot therein through which the nozzle extends, and means including a lubricating passage in the head to supply lubricant under pressure to the nozzle.

4. A threading cutter comprising a cylindrical rotatable head, a plurality of cutter blocks mounted at one end of the head and projecting axially beyond the head for movement from an inner cutting position to an outer releasing position, a control ring rotatably mounted on the head for moving said cutter blocks, cutters carried by the blocks, an outwardly open peripheral groove in the thread cutter, an annular channel shaped ring fitting slidably in the groove, means for restraining said ring against rotation, a lubricant supply connection to the ring, and a plurality of nozzle tubes secured at one end to the thread cutter in communication with the groove and projecting axially through said control ring and beyond said end of the head and turned radially inward between adjacent cutter blocks.


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