Oct. 7, 1924. 1,511,144

A. F. THORSTEN

OILING DEVICE FOR THREADING MACHINES

Filed May 17, 1922

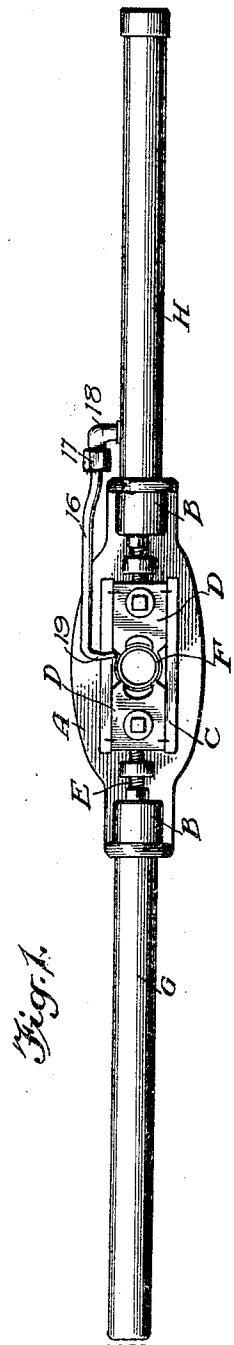

Fig. 1.

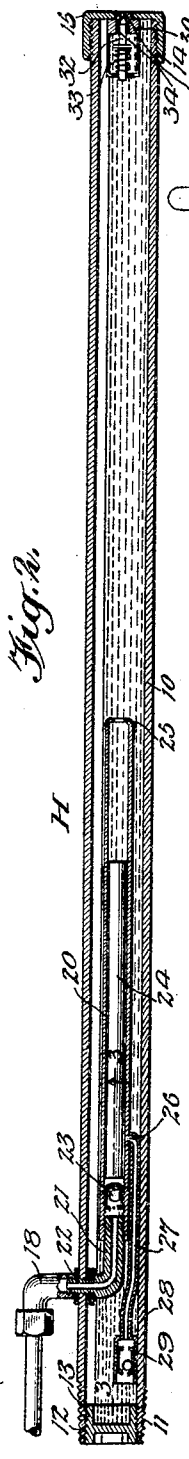

Fig. 2.

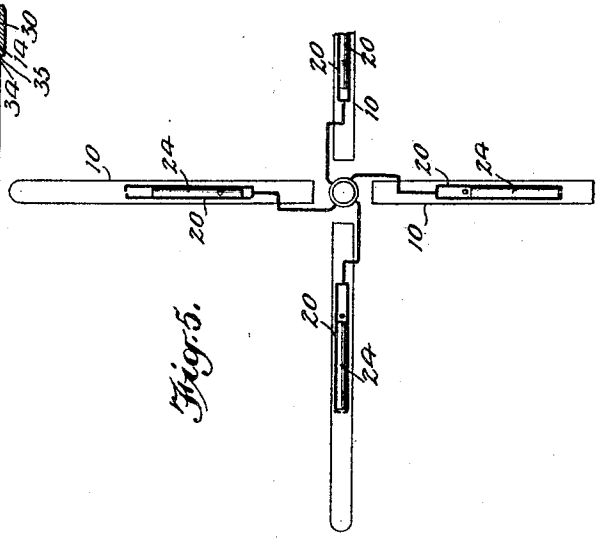

Fig. 5.

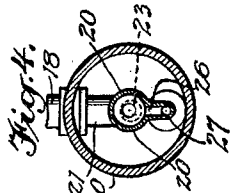

Fig. 4.

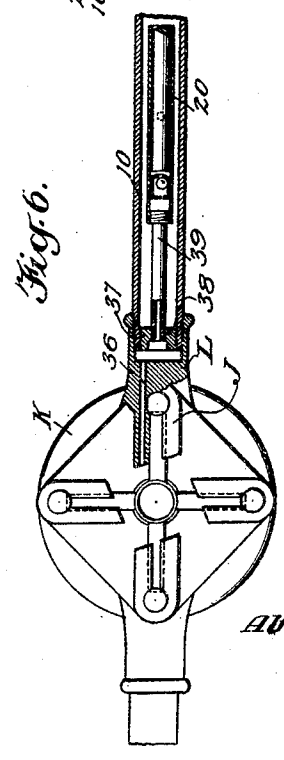

Fig. 6.

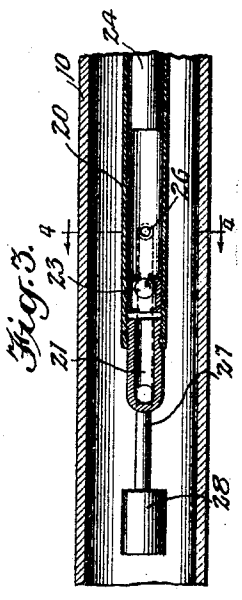

Fig. 3.

WITNESSES

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UNITED STATES PATENT OFFICE.

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OILING DEVICE FOR THREADING MACHINES.

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To all whom it may concern:

Be it known that I, ALFRED F. THORSTEN, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Oiling Device for Threading Machines, of which the following is a full, clear, and exact description.

This invention has relation to threading machines and has particular reference to an oiling attachment therefor for the purpose of lubricating the thread cutting elements at their point of contact with the work.

In thread cutting machines now commonly in use which are not equipped with self-oiling means, the dies and article being threaded are frequently burned or destroyed due to the failure of the operator to supply oil thereto by hand. It has also been noted that considerable loss of time is occasioned by the necessity of having to stop work to supply oil to the dies by hand.

To overcome the above recited disadvantages and objections, it is an object of the present invention to equip a thread cutting machine with a self-oiling attachment which automatically operates to supply oil to the article being threaded at a point adjacent the thread cutting elements or dies.

More specifically the invention contemplates in connection with a thread cutting machine, means carried thereby and operable upon revolution thereof for automatically feeding a predetermined quantity of lubricating oil upon the article being threaded at the point of engagement of the thread cutting elements therewith.

As a further object the invention contemplates in a self-oiling attachment of the character described and for the purpose set forth, a gravity actuated means for feeding lubricant from a source of supply to the work at the point of contact of the dies therewith whereby said dies will be automatically lubricated to prevent burning of the same.

The invention furthermore contemplates in a device of the character described means which will prevent feeding of the oil or lubricant when the threading machine is spun off or removed from the work.

As a still further object the invention contemplates an extremely simple and inexpensive device of the character described, which is thoroughly reliable and efficient in its purpose and which is strong and durable in its construction.

With the above recited and other objects in view, the invention resides in the novel construction set forth in the following specification, particularly pointed out in the appended claims and illustrated in the accompanying drawings, it being understood that the right is reserved to embodiments other than those actually illustrated herein to the full extent indicated by the general meaning of the terms in which the claims are expressed.

In the drawings—

Figure 1 is a front view of a thread cutting machine equipped with the oiling or lubricating attachment constructed in accordance with the invention.

Fig. 2 is a detail enlarged longitudinal sectional view through the attachment, removed from the machine.

Fig. 3 is a fragmentary enlarged horizontal sectional view taken approximately on the line 3—3 of Fig. 2.

Fig. 4 is a transverse sectional view taken approximately on the line 4—4 of Fig. 3.

Fig. 5 is a diagrammatic view illustrating the operation of the gravity actuated pump.

Fig. 6 is a front view of a modification, parts being broken away and shown in section to disclose the underlying structure.

Referring to the drawings by characters of reference, a thread cutting machine which may be of any approved construction is illustrated and the same comprises a stock A provided with diametrically opposed handle receiving bosses B and die guides and supports C. The dies designated at D are mounted in the supporting guides C for relative adjustment by the adjusting screws E. F designates a pipe or other element which is to be threaded and upon which the dies operate. As illustrated one of the handle receiving bosses B has threadedly mounted therein the usual form of manipulating handle G. In the opposite boss B and in lieu of the usual form of handle G, the attachment H, which constitutes the invention, is mounted.

The attachment H which constitutes a handle comprises a tubular member or pipe 10 which is provided with external and internal threads 11 and 12 at its inner end, the external threads being designed to

engage the boss B for connecting the member or pipe 10 to the die stock A. The internal threads 12 are adapted to coact and engage with the external threads of a plug 13 which closes the inner end of the tubular member or pipe 10. The opposite or outer end of the tubular member or pipe 10 is exteriorly threaded as at 14 to receive the internal threads of a closure cap 15 whereby said pipe or member 10 constitutes a closed receptacle or reservoir which is designed to contain a supply of oil or other lubricant which may be introduced thereto upon removal of either the cap 15 or the plug 13. The means for conveying the oil or lubricant from the container or reservoir 10 consists of a pipe section or tube 16 which is attached by means of a union 17 to an elbow 18. The free extremity of the tube or pipe 16 is provided with a terminal 19 which extends at an angle thereto and is disposed in juxtaposition to the dies and work at the point of contact of the dies therewith. The means for controlling and feeding the oil or lubricant to the elbow 18 and the conveyor pipe or tube 16 consists of a gravity actuated pump 20, arranged interiorly of the reservoir 10, the outlet end 21 of which is in the nature of an elbow, one arm of which is provided with a reduced threaded extremity 22 which extends through an opening in the reservoir adjacent its inner end and which is threadedly engaged in the elbow 18. The extremity of the opposite arm is threadedly engaged in the pump barrel at its inner end and a check valve 23 is arranged within said end in close proximity to the elbow 21. A weighted plunger 24 is mounted in said pump barrel and is designed for reciprocation between the check valve 23 and the flanged outer end 25. The check valve 23 is designed to seat upon outward movement of the plunger toward the flanged outer end 25 and open upon inward movement of the plunger toward the inner end of the pump barrel. An inlet opening 26 is formed in the pump barrel adjacent the check valve 23, said opening being slightly spaced inwardly from the check valve. The inlet opening 26 connects and communicates with an intake pipe 27 which extends from the inlet opening 26 inwardly toward the closure plug 13. The inner end of the intake pipe 27 is provided with an enlarged cup-shaped head 28 within which an inwardly opening check valve 29 is mounted. The peripheral edge of the cup-shaped head is arranged in close contact with the inner periphery of the tubular member or pipe constituting the reservoir in order to scoop up a supply of the oil or lubricant within the reservoir when the thread cutting machine is in operation.

In use and operation, the tubular member or pipe 10 serves in a like capacity with the handle G for manipulating the device. As the thread cutting machine is rotated the cup-shaped head 28 scoops up a predetermined supply of oil or lubricant which is drawn into the pump barrel under the suction created by the plunger 24 as the same gravitationally moves downward and outward toward the outer flanged end of the pump barrel. Continued rotation of the machine causes the plunger to move downwardly and inwardly toward the check valve 23, closing the check valve 29 and opening said check valve 23 to force the oil from the pump barrel through the elbow 21 and into the elbow 18 from whence it feeds through the pipe or conduit tube 16 and from the extremity 19 on to the work adjacent the point of contact of the dies D therewith. In Fig. 5 the tubular member or pipe 10 and the pump 20 and plunger 24 are illustrated in four positions during their cycle of rotation to clearly illustrate the mode of operation. In spinning off the machine from the work or pipe F, centrifugal force will tend to move and retain the pump plunger 24 at the outer end of the pump barrel or casing, thus preventing the feeding operation and consequent loss of the lubricant. In order to prevent the formation of vacuum within the reservoir 10 due to the removal of the lubricant, a relief valve 30 is carried by the closure cap 15, the same having a threaded perforated boss 31 which is threadedly engaged in an opening in the closure cap. A valve member 32 normally actuated by a spring 33 to effect its seating on the valve seat 34 serves to close the aperture 35 of the boss 31. When the internal pressure is reduced below atmospheric pressure, the valve member 32 will be moved inwardly away from the seat 34 to admit air to prevent the formation of vacuum.

In the modified adaptation illustrated in Fig. 6, the die supporting elements or guide J of the die stock K, which is formed as an integral member of the handle receiving boss L is provided with a conduit 36 and the closure plug 37 at the inner end of the reservoir handle 10 is provided with a threaded aperture 38. In this instance the elbows 21 and 18 and the conduit pipe or tube 16 are dispensed with and in lieu thereof a conduit pipe 39 is threaded in the inner end of the valve casing 20 and is threaded at its opposite end in the threaded aperture 38 of the plug whereby upon operation of the machine the plunger will force the lubricant through the conduit pipe 39, the bore of the handle receiving boss L, the conduit opening 36, and thence to the work at the point of contact of the die therewith. In the modified form it is understood that the oil-

ing device constitutes a permanent element of and is manufactured with the machine proper.

When not in use if the machine is set up with the inner end of the pump casing disposed downwardly, the plunger will cover the intake or inlet opening 26, thus preventing the siphoning or leakage of oil therefrom. If set up with the outer end of the pump casing disposed downwardly, the check valve 23 will be closed to prevent siphoning or leakage of the oil.

I claim:

1. The combination with a rotary thread cutting machine, of a self-feeding liquid lubricating means comprising a lubricant reservoir carried by the machine, and means arranged within the reservoir and disposed radially with respect to the center of rotation of the machine for drawing a predetermined quantity of the lubricant from the reservoir and for discharging a similar quantity at the point of contact of the dies with the work upon each revolution of the machine during the thread cutting operation, the said means consisting of a pump barrel in the reservoir, a discharge conduit leading from said pump barrel through the reservoir with its discharge end located at the point of contact of the dies with the work, an intake conduit in the pump barrel spaced radially outward from the point of communication of the discharge conduit, a gravity plunger axially movable in the pump barrel, a check valve in the discharge conduit operable to close upon outward movement of the plunger and operable to open upon inward movement of the plunger, a check valve in the intake conduit operable to open upon outward movement of the plunger and operable to close upon inward movement of the plunger, the said intake conduit having a cup-shaped scooping member at its entrance terminal with the open end disposed radially inward with respect to the center of rotation of the machine.

2. In combination, a rotary thread cutting machine and means for automatically lubricating the dies thereof at the point of contact with the work comprising a hollow manipulating handle constituting a lubricant reservoir and projecting radially from the die stock, a pump cylinder located within the handle having a valved inlet communicating with the reservoir and a valved outlet, a conduit leading from said outlet to the work at a point adjacent the contact of the dies therewith, a gravity actuated plunger within said pump cylinder, and a radially inwardly disposed scooping element carried by the inlet whereby upon each rotation of the machine in a direction to effect the cutting of the threads the gravity actuated plunger will respectively intake and discharge a predetermined quantity of the lubricant from the reservoir into the pump cylinder and from the pump cylinder through the conduit onto the work adjacent the dies.

3. In combination, a rotary thread cutting machine and means for automatically lubricating the dies thereof at the point of contact with the work comprising a hollow manipulating handle constituting a lubricant reservoir and projecting radially from the die stock, a pump cylinder located within the handle having a valved inlet communicating with the reservoir and a valved outlet, a conduit leading from said outlet to the work at a point adjacent the contact of the dies therewith, a gravity actuated plunger within said pump cylinder, and a radially inwardly disposed scooping element carried by the inlet whereby upon each rotation of the machine in a direction to effect the cutting of the threads the gravity actuated plunger will respectively intake and discharge a predetermined quantity of the lubricant from the reservoir into the pump cylinder and from the pump cylinder through the conduit onto the work adjacent the dies, and whereby upon rapid retrograde rotation of the machine to unthread the same from the work centrifugal force will throw the plunger outward and against inward movement to prevent feeding of the lubricant when removing the machine from the work.

4. In combination, a rotary thread cutting machine and means for automatically lubricating the dies thereof at the point of contact with the work comprising a hollow manipulating handle constituting a lubricant reservoir and projecting radially from the die stock, a pump cylinder located within the handle having a valved inlet communicating with the reservoir and a valved outlet, a conduit leading from said outlet to the work at a point adjacent the contact of the dies therewith, a gravity actuated plunger within said pump cylinder, and a radially inwardly disposed scooping element carried by the inlet whereby upon each rotation of the machine in a direction to effect the cutting of the threads the gravity actuated plunger will respectively intake and discharge a predetermined quantity of the lubricant from the reservoir into the pump cylinder and from the pump cylinder through the conduit onto the work adjacent the dies, and an inwardly opening check valve in said reservoir for the admission of air to prevent the formation of a vacuum therein upon removal of the lubricant therefrom.

ALFRED F. THORSTEN.