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UNITED STATES PATENT OFFICE.

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DIE-STOCK OILER.

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To all whom it may concern:

Be it known that I, MARTIN E. JOHNSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Die-Stock Oilers, of which the following is a specification.

This invention relates to die stock oilers and aims particularly to provide a simple and efficient device for supplying oil to the die in a hand-stock.

It is well known that the cutting of threads upon iron stock requires the application of oil quite frequently to the thread-cutting die, and when the oil is supplied to the die from an oil can considerable time is lost in applying the oil and considerable oil is usually wasted because the operator pours on more than is necessary at any one time and the surplus oil drips off from the stock and is wasted.

It is the object of my invention to provide the die-stock itself with oiling means whereby oil can be readily supplied to the die at intervals as required and in the desired quantity, without any appreciable loss of time or oil. To effect this result I employ a die-stock having a hollow handle in which a supply of oil is carried. A discharge nozzle is connected with the oil supply in the handle and is adapted to discharge the oil to the stock between the cutting teeth of the die. A valve is employed to prevent the constant running of the oil and the handle is equipped with feeding mechanism whereby the oil may be discharged in measured quantities through the nozzle.

Various objects and advantages of my invention will become apparent as it is better understood from the following description when taken in connection with the accompanying drawings, in which—

Figure 1 is a plan view of a die-stock embodying a preferred form of my invention. Fig. 2 is a longitudinal sectional view of the device disclosed in Fig. 1. Fig. 3 is an enlarged detail of the oil feeding mechanism with the plunger in retracted position. Fig. 4 is a partial view of the mechanism shown in Fig. 3, with the parts in the position which they assume immediately before the delivery of oil takes place. Fig. 5 is a view similar to Fig. 4 showing the parts in the position for delivering oil;

and, Fig. 6 is a sectional view on the line 6—6 of Fig. 3.

On the drawings, 7 indicates the body of a die-stock which is provided with a die-receiving depression or cavity adapted to receive a die 8 of usual construction which is maintained in position in the body by a cover 9 pivotally mounted at 10 and normally maintained in closed position over the die by a thumb-screw 11. The die 8 which is shown on the drawings, has the cutting teeth 12 projecting inwardly from the corners of the die. It is well known to those skilled in the art, however, that certain types of dies have the cutting teeth arranged to project inwardly from the sides of the die instead of from the corners. In order that this type of die may also be employed in connection with my invention, I have so formed the die-receiving recess that a die may be placed therein in a position diagonal to that of the die shown on the drawings. This construction of the die-receiving recess enables either type of die to be employed in connection with my invention, and permits the cutting teeth of either type to be disposed in the die-stock in the position shown in Fig. 1.

The body of the die is provided with the usual internally threaded bosses 12 which form sockets into which the handles 13 are screwed. As shown in the drawings, one at least, of the handles, is tubular in form to serve as a container for the oil which is to be supplied to the die. While I have shown on the drawings the oiling mechanism as applied to but one of the handles, it will be obvious that both of the handles may be provided with oilers if found desirable or expedient. Locking-nuts 14 are adapted to be screwed down against the ends of the bosses 12 to lock the handles in position in the sockets.

An oil cylinder 15 is provided at its inner end with a radial flange 16 which is adapted to fit into the threaded socket of the die body and is held in position therein by the inner end of the handle 13 which is threaded into the socket and clamps the flange between the end thereof and the bottom of the socket. Since the handle is adapted to be filled with oil it is usually desirable to position a packing ring 17 between the inner end of the handle and the flange 16 to insure a tight fit and prevent the escape of

the oil. The end wall 18 of the cylinder is disposed some little distance from the flange 16 and the socket formed outside the wall is internally threaded for the threaded insertion of a nipple 19 which projects through the wall of the body 7, as shown in Fig. 2. A delivery nozzle 20 is threaded into the outer end of the nipple 19 and has its outer end upturned at 21 and provided with lateral discharge openings 22 through which oil is discharged between the adjacent cutting teeth 12 of the die. The nozzle 20 is threaded for some distance along its length in order that it may be adjusted longitudinally in the nipple 19. This longitudinal adjustment is provided for the purpose of lengthening or shortening the nozzle to accommodate the same to dies of various sizes. It will be obvious that if a die adapted to thread a small pipe, is employed, the nozzle must necessarily be extended sufficiently to bring its upturned discharge end within the central opening of the die, and that if a die adapted to thread a large pipe, is employed, the nozzle must be retracted in order that the discharge end thereof may not engage the pipe which is being threaded. It will also be obvious that the object of providing a die recess of such shape that a die can be placed therein in more than one position, is to so position the cutting teeth of any make of die that the discharge nozzle will be located between them.

A hollow plunger 23 is adapted to be reciprocated in the cylinder 15 and is normally maintained in the retracted position shown in Fig. 3 by means of an expansion spring 24 positioned within the plunger resting at one end against a spider 25 which projects through the walls of the plunger and cylinder, as shown in Fig. 6. The inner end 26 of the plunger is perforated for the reception of the valve-stem 27 carrying at its inner end a valve 28 adapted to close the port in the end wall of the cylinder. An expansion spring 29 surrounding the stem within the plunger, is adapted to normally hold the valve against its seat and close the port in the end wall of the cylinder when the plunger is in the retracted position shown in Fig. 3. In this position of the parts oil enters the cylinder through openings 30 in the side walls thereof, but is prevented from entering the nipple and discharge nozzle by the valve 28 which is maintained in closed position by the spring 29, as heretofore described. The outer end of the plunger is provided with a recess or depression 31 adapted to receive the inner end of a rod 32 which is guided in the handle by a spider 33 and terminates at its outer end in a push-pin 34. The outer end of the handle is closed by a plug 35 screwed into the same and provided with a gland 36 surrounding the push-pin and packed to prevent the es-

cape of oil around the pin. The plug 35 may be unscrewed to permit the handle to be filled with oil when desired.

When the parts are assembled, as shown in the drawings, with a die in position in the stock body and the discharge nozzle adjusted longitudinally in proper relation to the die, depending upon the size of the stock to be threaded, and with a supply of oil in the handle the device is ready for use. The parts normally assume the position shown in Fig. 3 with the plunger 23 held in retracted position by the expansion spring 24 and the valve 18 held against its seat to prevent delivery of oil to the nozzle by the spring 29 engaging with the inner end of the plunger. Assuming now that it is desired to deliver a quantity of oil to the die, the operator will press inwardly upon the push-pin thereby forcing the plunger into the cylinder. When the plunger has been moved to the position shown in Fig. 4 with its inner end just past the openings 30 in the side walls of the cylinder, it will be evident that a quantity of oil will be trapped in the receptacle or cup formed by the lower portion of the cylinder beneath the plunger. In this position of the parts the valve 28 is still maintained in closed position over the port in the end wall of the cylinder by the expansion spring 29. Further inward movement of the plunger, however, will relieve the compression on the spring and permit the valve 28 to open. As the plunger continues to move inwardly, the oil trapped within the cylinder by the plunger will be forced through the port in the end of the cylinder into the nipple 19 and will be discharged through the delivery openings 22 of the nozzle. When the push-pin is released the spring 24 will immediately return the parts to normal position.

It will be evident from the foregoing description that no oil will be admitted to the discharge nozzle until the plunger has been depressed below the openings in the side wall of the cylinder, thus restricting the amount of oil which will be delivered through the nozzle at each operation of the plunger to the amount contained in the cylinder below the openings in its side walls. By depressing the plunger to the limit of its stroke at each operation, a measured quantity of oil will be delivered each time, and by varying the size of the cylinders in proportion to the size of the die-stock with which the device is to be employed, a quantity of oil will be delivered to the stock by each reciprocation of the plunger just sufficient to lubricate the die so that no surplus of oil will be present to run off and become wasted.

While one embodiment of the invention has been shown and described in detail, it will be obvious that various changes may be

resorted to within the scope of the invention without sacrificing any of the material advantages thereof, and that the invention may be applied to other forms of dies and stocks and would be equally as efficient and desirable in connection with an automatic thread cutting machine as with a hand die-stock such as has been illustrated.

What I desire to claim is:

1. The combination with a die-stock having a hollow handle and a die receiving body, of a delivery nozzle connected at one end with the hollow oil receiving handle and disposed in said body in position to deliver oil between the cutting teeth of a die, means for normally preventing the delivery of oil to the nozzle, an oil receptacle and means for discharging a measured quantity of oil comprising the contents of said receptacle through said nozzle to the die.

2. The combination with a die-stock having a hollow oil receiving handle and a die receiving body, of an oil cylinder adapted to retain a definite quantity of oil disposed within said handle, a nipple connected therewith, a nozzle attached at one end to said nipple and having its delivery end disposed between the teeth of a die in the stock body, means for normally preventing the escape of oil from said cylinder into the nozzle, and manual means for forcing the oil contained in the cylinder through the nozzle to the die.

3. The combination with a die-stock having a die receiving body and a hollow handle adapted to hold a quantity of oil, of a measuring cylinder held in position by the inner end of said handle, a nipple connected to the inner end of the cylinder, a valve adapted to normally close the opening between said cylinder and nipple, a nozzle adjustably connected with the outer end of said nipple and having its delivery end bent upwardly to discharge between the teeth of a die, and means for forcing a measured quantity of oil from the cylinder through said nipple and nozzle to the die for oiling the stock therein.

4. In a die-stock oiler, the combination of an oil measuring cylinder adapted to be disposed within a hollow die-stock handle, a delivery nozzle connected with said cylinder, a valve for normally preventing the escape of oil from said cylinder to the nozzle, a plunger adapted to be reciprocated in said cylinder, means for normally maintaining said plunger in retracted position to permit oil to enter the cylinder below the plunger,

and operating means projecting beyond the end of the die-stock handle for depressing the plunger in the cylinder to discharge a measured quantity of oil contained in the cylinder through said delivery nozzle.

5. In a die stock oiler, the combination of a hollow handle adapted to contain a supply of oil, an oil cylinder disposed therein and provided with a port at one end thereof, a discharge nozzle connected with the end of the oil cylinder adjacent the port, a plunger adapted to be reciprocated in said cylinder, means for normally maintaining said plunger in retracted position, a valve adapted to close the port at the end of the oil cylinder, a valve-stem connected therewith and extending through the bottom of said plunger, a spring interposed between said stem and plunger whereby the valve will be maintained in closed position when the plunger is in retracted position, and means for forcing the plunger into the cylinder to discharge oil through said port into the nozzle.

6. The combination with a die-stock comprising a body adapted to hold dies in a plurality of positions, a hollow handle threaded into a boss projecting from said body, an oil cylinder provided with a radial flange adapted to be engaged between the inner end of the handle and the bottom of the boss to maintain said cylinder in position in the handle, a nipple threaded into the lower end of the cylinder, a valve adapted to close a port between said cylinder and nipple, a nozzle secured to said nipple and having its outer end upturned, a plunger disposed within said cylinder, and means for forcing said plunger into the cylinder beyond an opening in the side wall thereof to discharge a measured quantity of oil through said nozzle between the cutting teeth of a die positioned in the stock.

7. In a die-stock oiler, the combination of a die holder, a hollow handle attached thereto, an oil measuring cylinder disposed within said handle adjacent the holder, a nozzle communicating with the interior of the cylinder, said nozzle being longitudinally adjustable whereby it may be accommodated to dies of various sizes, and means adapted to be reciprocated within said cylinder for discharging a measured quantity of oil from said cylinder through said nozzle.

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Witnesses:

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