No. 638,299. Patented Dec. 5, 1899.

W. L. TOBEY.

OPENING DIE HEAD FOR CUTTING THREADS ON BOLTS OR PIPES.

(Application filed Mar. 22, 1899.)

(No Model.) 2 Sheets—Sheet 1.

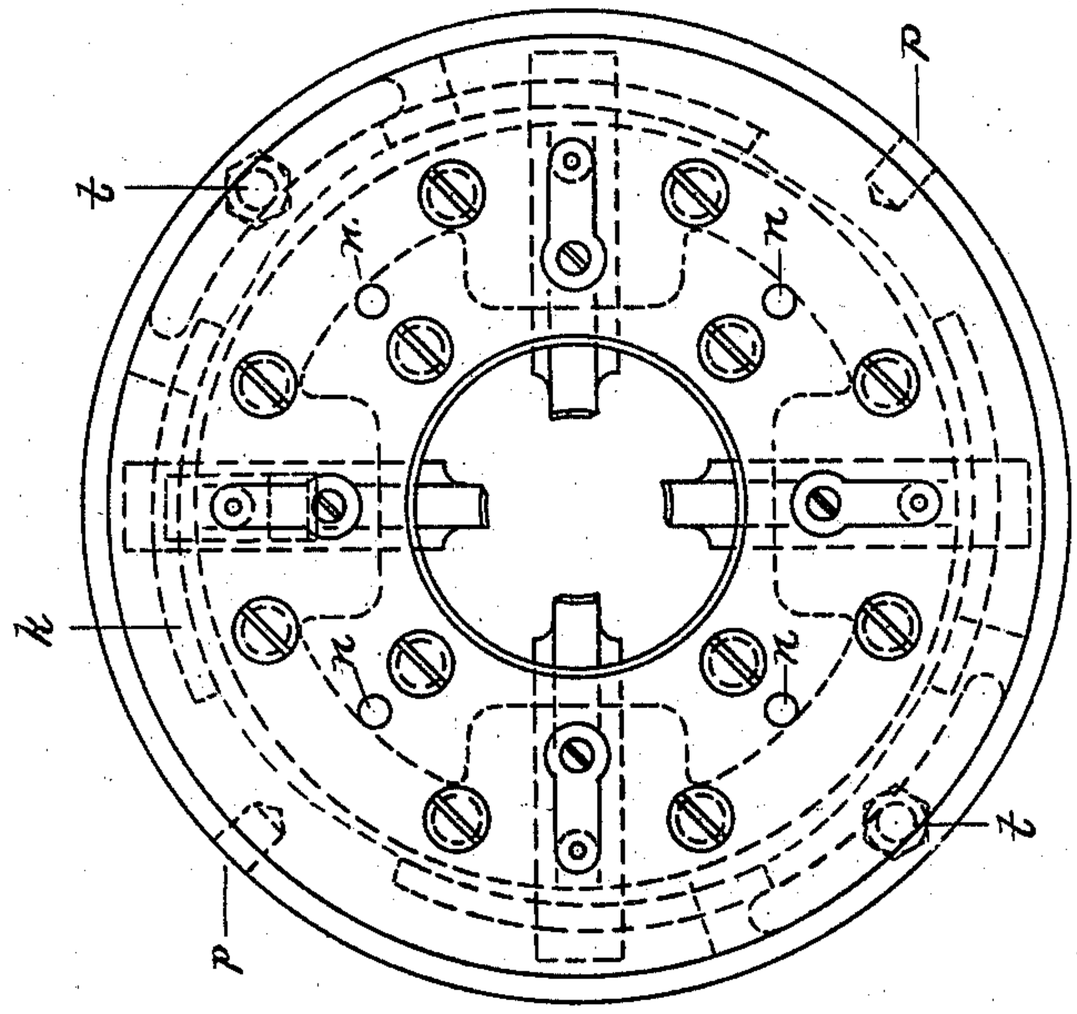

Fig. 2.

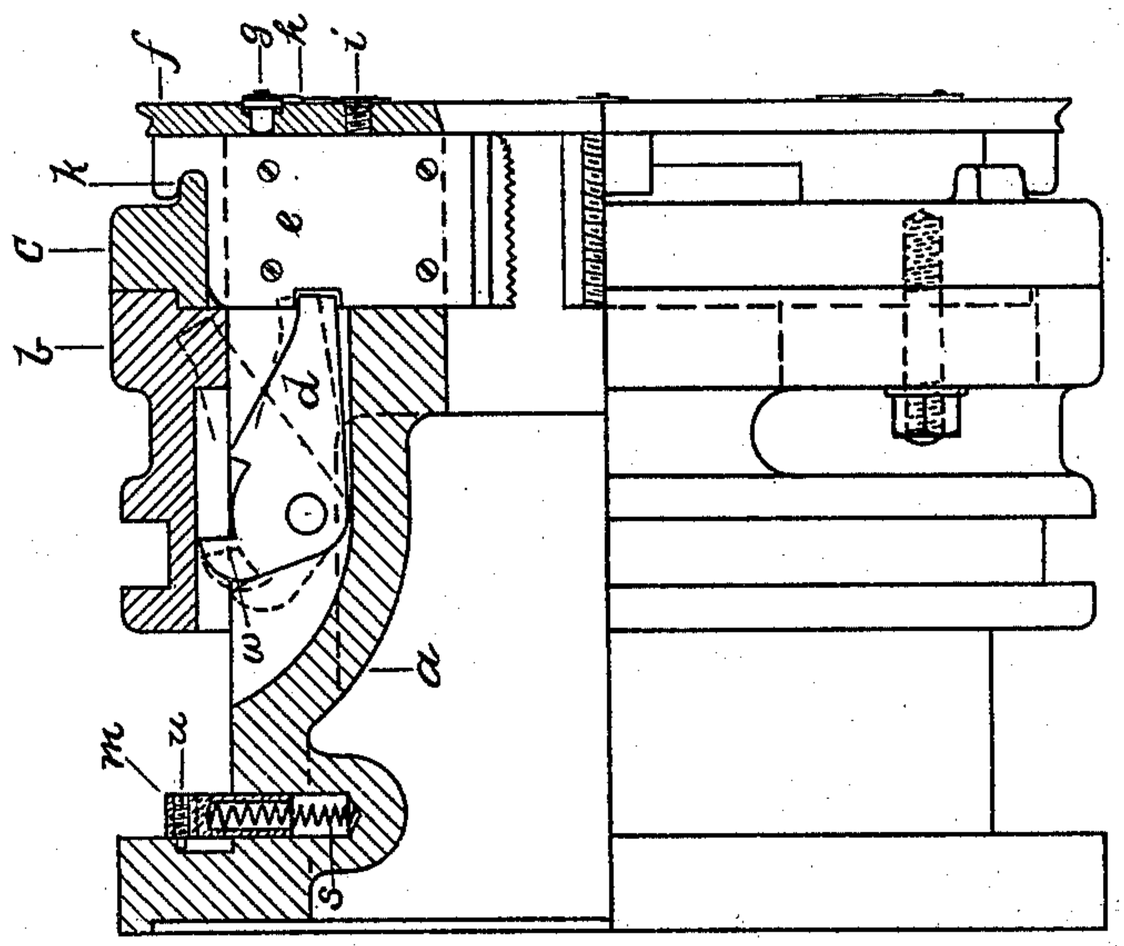

Fig. 1

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Fig. 3.

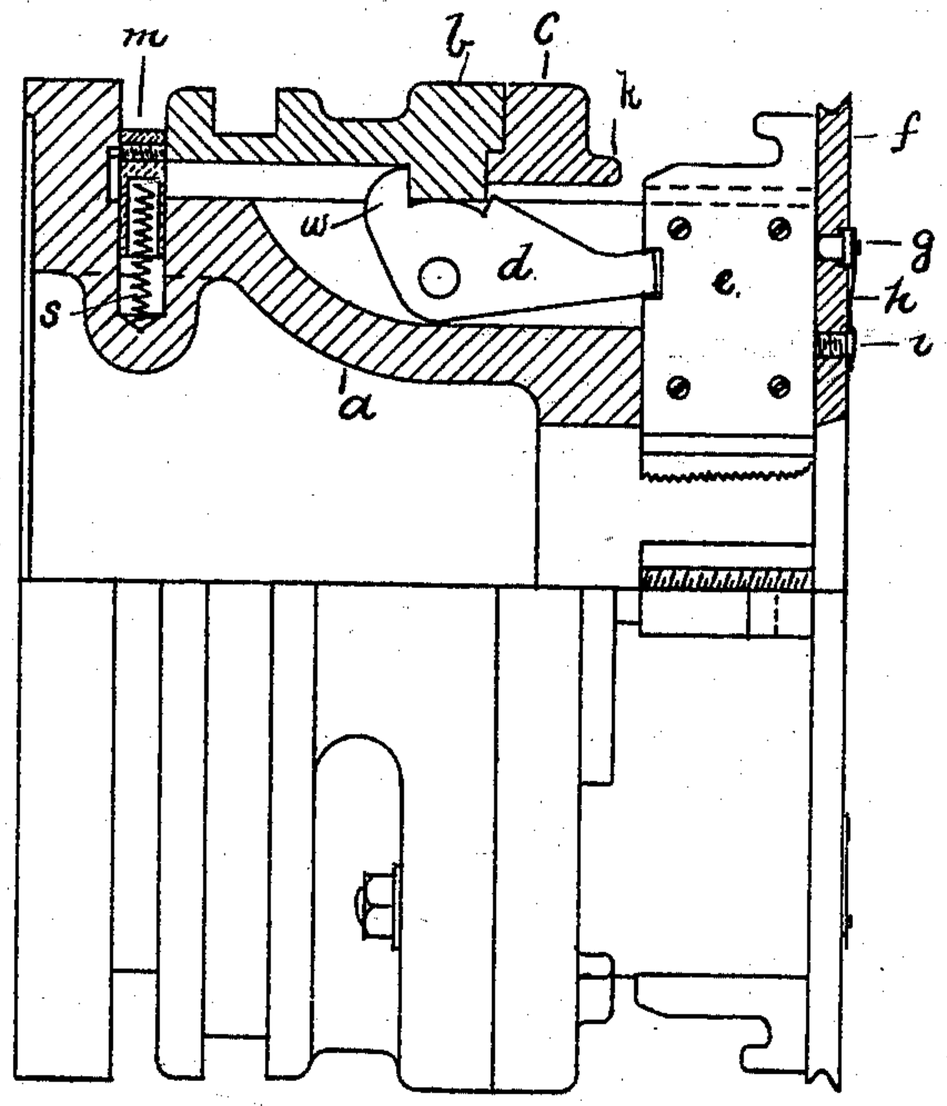
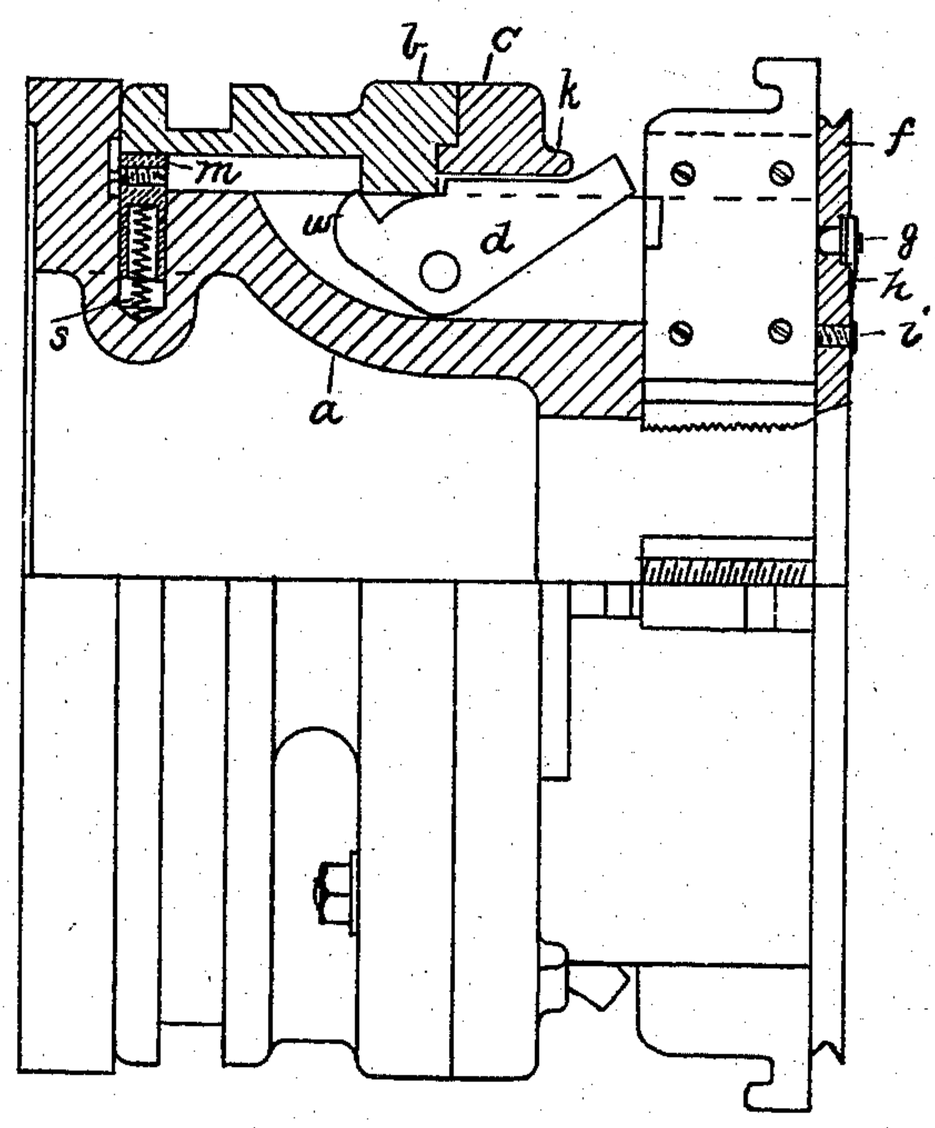


Fig. 4.



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OPENING DIE-HEAD FOR CUTTING THREADS ON BOLTS OR PIPES.

SPECIFICATION forming part of Letters Patent No. 638,299, dated December 5, 1899.

Application filed March 22, 1899. Serial No. 710,114. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. TOBEY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Opening Die-Heads for Cutting Threads on Bolts or Pipes, of which the following is a specification, in connection with the accompanying drawings.

Like letters on the drawings represent like parts.

This invention has for its object the production of an opening and adjustable die-head which will lock the dies solid when closed, admit of easy and universal adjustment when closed, open and close the dies easily without any tendency to wear the dies, guides, or adjustment when unlocked, hold the dies in place in any position of the head when disconnected for changing dies, admit of changing the dies without the use of a wrench, free the interior of the head from oil without throwing oil around except in one plane, and one that is short and compact, that will be simple, and that can be manufactured at a reasonable cost. I obtain this by the construction shown in the accompanying drawings, of which—

Figure 1 shows on the lower half an external side view and on the upper half a section of the die-head when closed, with the sliding hand-ring, the adjustable locking-ring, the dies, opening-lever, friction die-holder, oil-grooved face-plate edge, and spring-block limiting movement of ring longitudinally on the head. Fig. 2 shows an external end view with the dies, adjusting and locking cams, friction die-holders, and center chamber oil-drains. Fig. 3 shows the dies opened with the hand-ring *b* drawn back against the stop-block *m* and the locking-ring *c* back off of the dies *e*, allowing the lever *d* to move the dies out. Fig. 4 shows the stop-block *m* pushed down and the ring *b* moved back, so that the lever *d* is disengaged from the die *e*.

The construction is as follows: There is a central barrel *a*, having on the back end a suitable flange for bolting to a machine and with the other end slotted for the dies *e*. In line with the dies *e* is milled a slot to receive the opening-lever *d*. One end of the lever *d* engages in a slot in the back of the die *e*. The top of lever *d* has two projecting dogs, that by contact with the ring *b* reciprocate the lever *d* and open and close the die *e*. Around the barrel *a* there is a sliding hand-ring *b*, to which is secured the locking-ring *c* by two bolts *t*, clamping through the slots in the ring *b*. The locking-ring *c* has on its face the projecting lug *k*, engaging when closed a corresponding lug on the top of the die *e*. The locking-ring *c* has the two holes *p* in the outside for the insertion of a bar or spanner to turn the ring *c* when the nuts *t* are slackened. The locking-ring *c* carries internal cam-faces, by which the radial movement of the cutters may be adjusted.

The face-plate *f* is fastened to the barrel *a* by screws and carries over each die *e* the friction-stud *g*. The stud *g* is held in place against the die *e* by the spring *h* and the screw *i* through the spring *h*. Through the face-plate *f* to the central chamber are the holes *n*, which allow the escape of oil to the face of the face-plate *f*. Around the edge of the face-plate *f* is a grooved oil-flange, which prevents the oil running back on the head and being thrown around the whole length of the head, as follows; the waste oil after being applied to the cutting-dies flows out of the center chamber through the holes *n* to the front of the face-plate. Centrifugal force carries the oil to the outer sharp edge of the groove, where the oil is thrown off in one plane instead of along the whole length of the rings *b* and *c*. If the machine is at rest, the oil runs out the center hole *n*, and down the face of the plate, dropping off the lower edge. If for any reason the head is turned around, the groove prevents the oil running back on the rings by forming a channel, in which the oil will run to the lowest point and drop from there.

On the back part of the barrel *a* is the block *m*, which slides in a hole in the barrel *a* and is kept in place by the spring *s* and the screw *u* sliding in a slot in the flange of the barrel *a*.

The die *e* can be of the type known as the "plain die," "case-die," "cap-die," or preferably the "open case-die," as shown.

The operation of this head is as follows: When the die is closed, to open the rings *b* and *c* are drawn back toward the flange until the locking-lug *k* is clear of the die *e*, when the under side of ring *b* comes in contact with

the projecting dog *w* of the opening-lever *d*. Further movement of the ring *b* until in contact with the block *m* carries the lever *d* to the position shown in Fig. 3, when the die *e* is opened clear of the thread cut. If it is desired to change the dies *e*, the block *m* is pressed down, so that the ring *b* will pass over the block *m*, carrying the lever *d* to the extreme position, as shown in Fig. 4, when the lever *d* is disengaged from the die *e* and the die *e* can be withdrawn. In putting in the die *e* it is held in place for the proper engagement of the lever *d* by the friction-stud *g*. When all the dies are in place, the forward motion of the ring *b* pushes down the lever *d*, engaging the slots in the dies *e* and forcing down the dies *e* to the closed position. Continued forward movement of the ring *b* carries the locking-ring *c* over the top of the die *e* until the locking-lug *k* is engaged. The first forward movement of the ring *b* uncovers the block *m*, when the spring *s* forces up the block *m*, stopping the return movement of the ring *b* beyond that necessary to open the die *e*.

The locking-ring *c* does not necessarily cover the whole of the die *e*, but preferably the greater part, as shown, on account of the more solid holding of the dies.

I claim as my invention and desire to secure by Letters Patent—

1. The combination in an opening die-head of the movable dies, independent opening and closing levers operating directly on the dies, an independent locking-ring partially covering the dies when closed and locking directly and positively by engaging a lug on the dies with cam-ribs on the locking-ring, said locking or die ring having adjustment for varying the locking position of the dies.

2. The combination in an opening die-head of the movable dies, opening and closing levers, an adjustable die-ring having cam-ribs for varying the locking position of the dies and a spring friction device applied to the dies at right angles to the direction of adjustment of the dies, to hold the dies in any position substantially as described.

3. The combination in an opening die-head of the movable dies operating-levers, adjustable die-ring having cam-ribs for varying the locking position of the dies, and an actuating-ring with spring-stop limiting the movement of the actuating-ring when in position and which by pressure toward the center axis of the die-head allows further movement to the actuating-ring.

4. The combination in an opening die-head of the movable dies, actuating-ring, operating-levers, adjustable die-ring having cam-ribs for varying the locking position of the dies, a drain hole or holes from center chamber of head through face-plate and face-plate having an oil-groove in periphery substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

WILLIAM L. TOBEY.

Witnesses:
EDW. R. LEWIS,
T. L. TISDALE.