

(No Model.)

H. A. CUMFER.
REVOLVING DIE HEAD.

No. 494,415.

Patented Mar. 28, 1893.

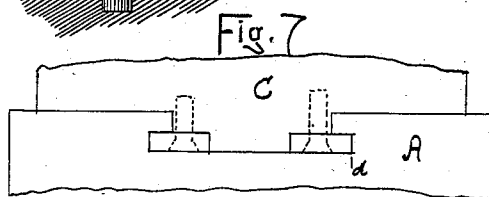
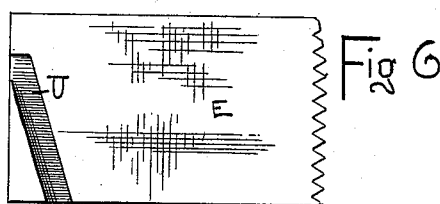
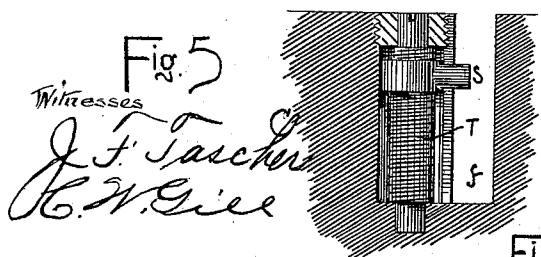
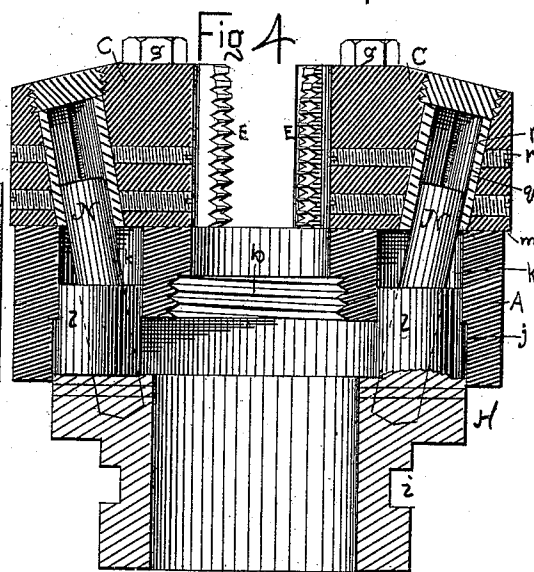
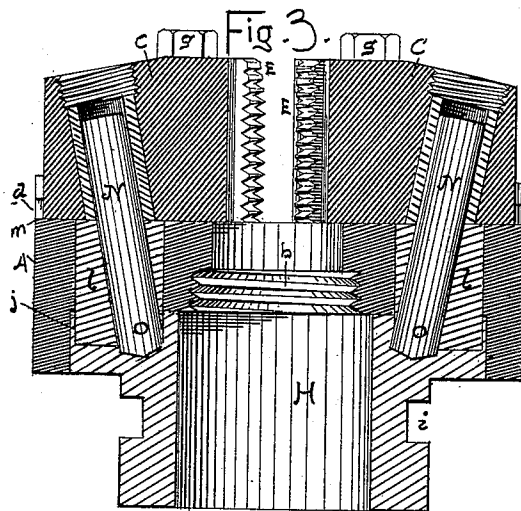
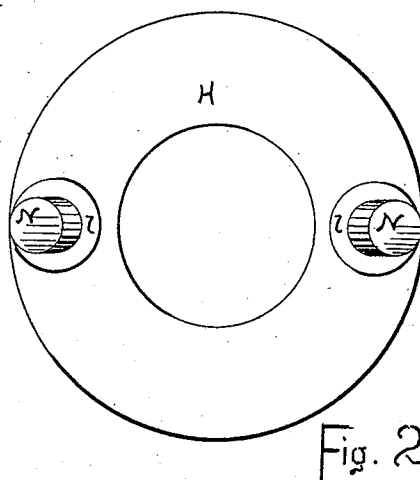
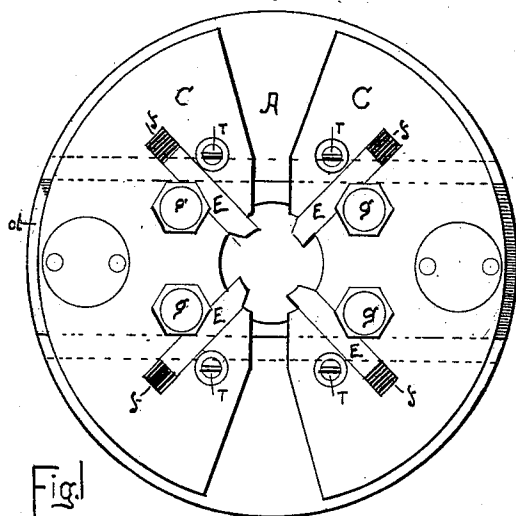


Fig. 5
Witnesses
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UNITED STATES PATENT OFFICE.

HARRY A. CUMFER, OF MISHAWAKA, INDIANA.

REVOLVING DIE-HEAD.

SPECIFICATION forming part of Letters Patent No. 494,415, dated March 28, 1893.

Application filed April 22, 1892. Serial No. 430,273. (No model.)

To all whom it may concern:

Be it known that I, HARRY A. CUMFER, of Mishawaka, in St. Joseph county, State of Indiana, have invented new and useful Improvements in Revolving Die-Heads for Cutting Screw-Threads on Bolts; and I do hereby declare that the following is a full and accurate description of the same, reference being had to the accompanying drawings, wherein—

Figure 1 is a face view of the head complete. Fig. 2 is a face view of the sliding collar detached. Fig. 3 is a central section with jaws closed. Fig. 4 is a similar section with jaws open. Fig. 5 is a longitudinal section of one jaw showing the die regulator in position. Fig. 6 is an elevation of one of the dies.

In all tools of this description the jaws and dies are capable of movement in a plane transverse to the axis of revolution, so that they may recede from said axis to liberate the bolt when the thread has been cut and be brought together again before the entrance of another blank. This movement of the jaws in a plane transverse to the axis, is produced by a sliding part moving in a line parallel with the axis, which part is commonly if not always a collar sliding on the mandrel of the machine.

The devices for translating the longitudinal movement into a transverse movement have been various, and many of them objectionable by reasons of complication, number of parts, lost motion from elasticity, or slight wear, &c.

My invention obviates these defects by the use of straight pins set into the sliding collar oblique to the axis and acting in corresponding oblique holes in the jaws, said pins being supported by portions of the collar which advance with said pins, and support the same on the plane of separation whereon the jaws move in a direction transverse to the axis. By this means, the strain upon the pins during action of the dies, is reduced to a shearing strain only, and the disturbing effect of elasticity is eliminated. Provision is also made for taking up lost motion from wear of the sliding surfaces and a differential device to regulate and adjust the dies, has also been provided.

A is the solid head with an interior screw b whereby it is screwed upon the end of the

mandrel of the machine, not shown in the drawings.

C. C. are the two jaws fitted to move on the face of said head in an undercut channel d. by which they are guided and held to the head.

E. E. are the screw threading dies located in radial slots f cut in said jaws, and G. G. are the ordinary clamping screws employed to hold said dies rigidly in place after adjustment.

H. is the sliding collar, fitted to slide on the mandrel of the machine, it revolves with the head and is provided with a shifter groove i, whereby it may be caused to slide on the mandrel while in revolution.

In addition to the cells which I prefer to make in the base of the head A to receive the collar bodily, as shown in Figs. 3 and 4, I provide other cells k. which penetrate entirely through the head A. and receive studs l. which may be integral with the collar H. or may be inserted or rigidly attached thereto. When the collar H. has advanced to its limit in the cell; the upper ends of the studs l. are exactly level with the plane of separation M. in which the jaws slide. The oblique pins N are rigidly set in the studs L and are carried with them in their movements forward and backward as the collar H slides on the mandrel. The obliquity of their position must be sufficient to produce the lateral movement required for the jaws during the longitudinal movement, which is possible or convenient for the collar H. It will be readily understood that the movement necessary for the jaws will vary with the size and depth of the thread cut, since the jaws must recede far enough to liberate the thread bolt and it may happen that there is a limit to the amount of motion for the collar, but no mechanic will find any difficulty in adjusting the pins N to the proper obliquity. The holes p in the jaws, which receive the pins N are preferably lined with steel tubes q, which may be removed and replaced with new ones when they become worn; and said tubes may be split as shown in Fig. 4 and provided with adjusting screws r by which they may be adjusted to take up lost motion from wear to a considerable degree. It will now be perceived that when the jaws and dies are in working position as shown in Figs. 1

and 3, the oblique pins N have rigid support up to the plane of separation *m*, and being closely inclosed within the guide tube *g* above that plane, said pins cannot bend under the strain due to the action of the dies; but the strain will be solely a shearing strain. Under these circumstances there cannot be any enlargement or irregularity of the screw by reason of a backward movement of the die under the cutting pressure, due to elasticity of the oblique pin.

Heretofore the die adjustment has been secured by a screw longitudinal as to the die, and it follows that delicate adjustment by the direct action of a screw, is difficult. I have therefore provided a differential adjustment by means of the pin S having a movement by means of the screw T, and acting in the oblique slot U in the side of the die E.

Having described my invention, I claim—

1. In a bolt threading machine the combination of a revolving head, jaws radially movable thereon and adapted to carry threading dies, oblique pins engaging said jaws, and a sliding part provided with portions adapted to advance to the plane of separation M between said jaws and head, the said pins be-

ing carried by said portions and being entirely surrounded and supported by said portions and jaws up to said plane of separation, substantially as described.

2. In a bolt threading machine the head A. provided with jaws C. and sliding collar H. provided with studs *l* adapted to advance to, and meet said jaws, on their plane of separation, the oblique holes *p*. passing through said studs into said jaws at their meeting faces. and the pins N adapted to be fastened in said collar and slide in said jaws substantially as shown: whereby the movement of said jaws will be produced by a movement of said collar and the strains upon said pins while the cutting dies are in action are wholly shearing strains.

3. In a bolt threading machine the sliding jaws C provided with slots *f*, the dies E provided with an oblique groove U, the pins S and operative screw T substantially as set forth to constitute a differential adjustment for said jaw.

H. A. CUMFER.

In presence of—

D. O. FONDA,
R. D. O. SMITH.