No. 639,232.

Patented Dec. 19, 1899.

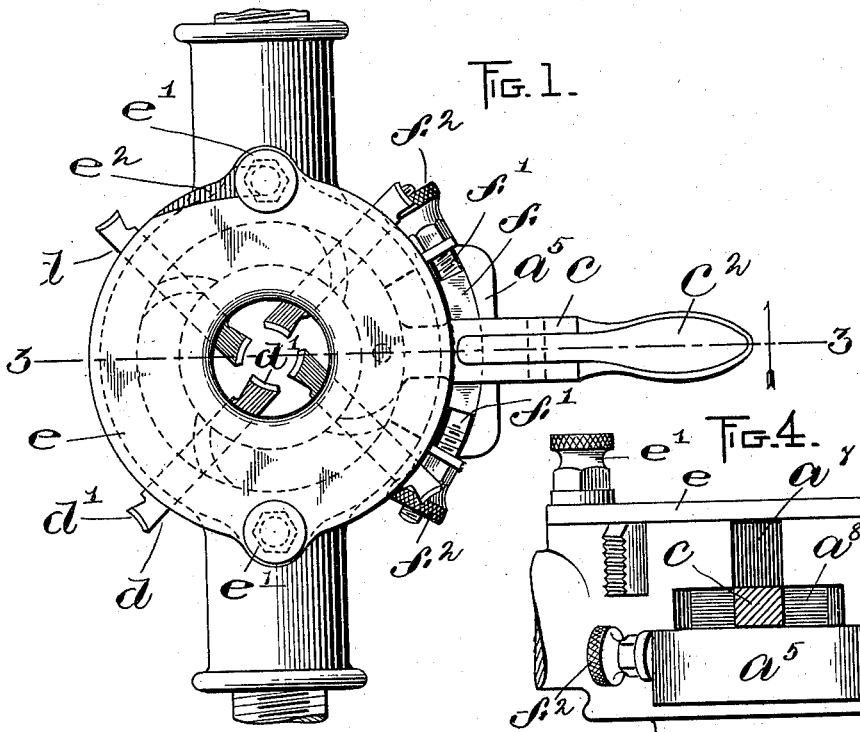
C. J. HARRINGTON.

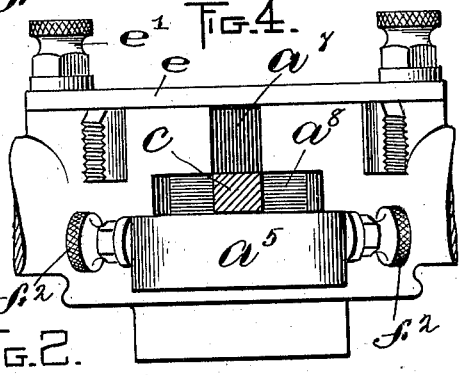
SCREW CUTTING DIE.

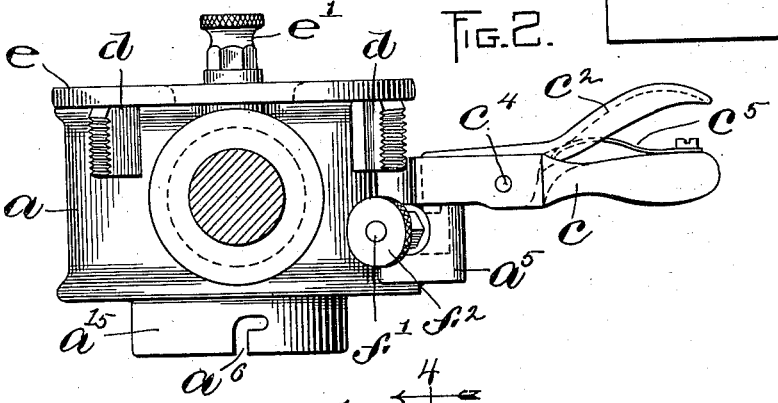
(Application filed Jan. 27, 1899.)

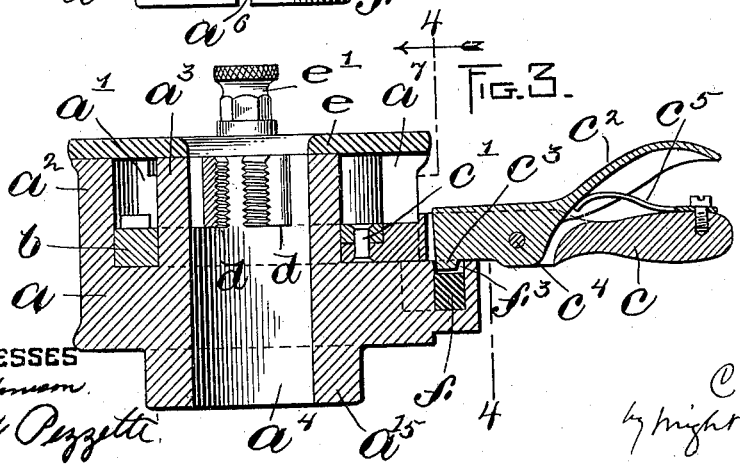
(No Model.)

2 Sheets—Sheet 1.









WITNESSES

A. D. Howson.

P. W. Pezzetti.

INVENTOR:

C. J. Harrington

by Wright Brown & Quinby

Attys

No. 639,232. Patented Dec. 19, 1899.

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SCREW CUTTING DIE.

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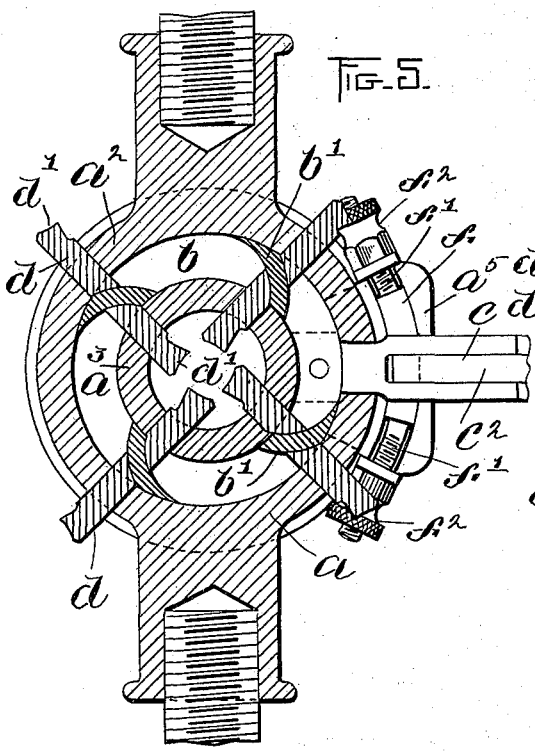
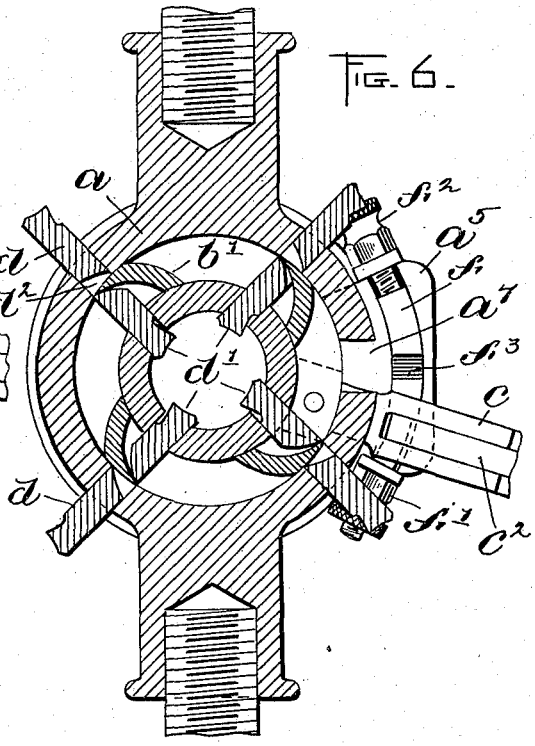
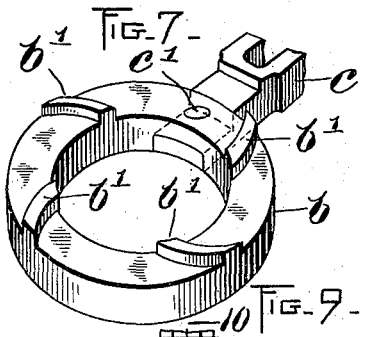
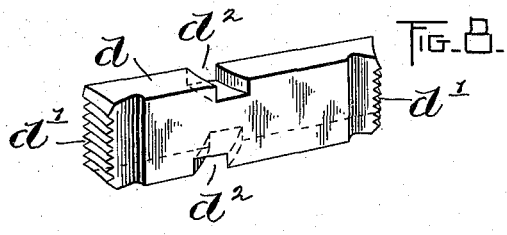
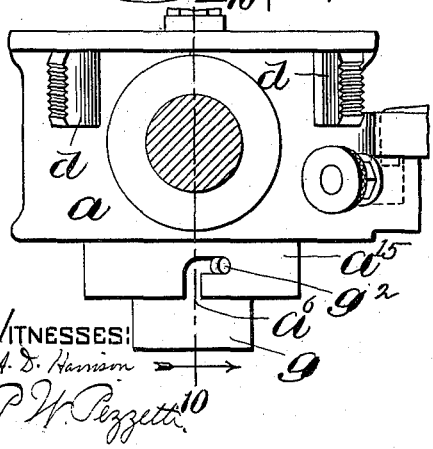
(No Model.) 2 Sheets—Sheet 2

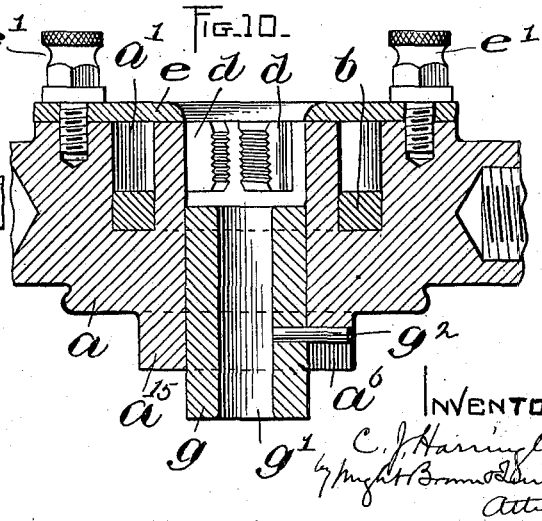












WITNESSES:
A. D. Harrison
P. W. Pezzetti

INVENTOR:
C. J. Harrington
by Wright Brown Quinby & Otte

UNITED STATES PATENT OFFICE.

CORNELIUS J. HARRINGTON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THOMAS HOEY, OF SAME PLACE.

SCREW-CUTTING DIE.

SPECIFICATION forming part of Letters Patent No. 639,232, dated December 19, 1899.

Application filed January 27, 1899. Serial No. 703,581. (No model.)

To all whom it may concern:

Be it known that I, CORNELIUS J. HARRINGTON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Screw-Cutting Dies, of which the following is a specification.

This invention has relation to dies for cutting screw-threads; and it has for its object to simplify the construction of such dies, reduce the number of parts and the cost of manufacture, and to provide for the ready removal and assembling of the parts of the die.

The invention also has for its object to provide an improved adjustable locking mechanism for locking the cam member in dies, wherein the cutters are movable inwardly and outwardly by the revolution of a cam member.

The invention consists in the improvements which I shall now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a front elevation of a screw-cutting die constructed in accordance with my invention. Fig. 2 represents an edge view thereof. Fig. 3 represents a section on line 3 3 of Fig. 1. Fig. 4 represents a view, partly in elevation and partly in section, on the line 4 4 of Fig. 3. Figs. 5 and 6 represent sections taken in a plane at right angles to the die-axis and showing two positions of the parts. Fig. 7 represents a detail perspective view of the cam member. Fig. 8 represents a detail perspective view of one of the cutters. Fig. 9 represents an edge elevation illustrating the use of a removable work-guiding sleeve. Fig. 10 represents a section on line 10 10, Fig. 9.

The same reference characters indicate the same parts in all the figures.

Referring to the drawings, *a* represents the die-body, provided with a central work-receiving aperture a^4, Fig. 3, and formed concentrically with said aperture with an annular groove a', having an annular outer wall a^2 and an annular inner wall a^3, the said walls being provided with semitangential guiding-slots for the cutters *d d*. At the bottom of the groove a' is mounted to slide or oscillate a ring *b*, provided on its face with inclined cam ribs or projections b' b'. The cutters *d* are provided with cutting-teeth d' at each end, so that either end of any of the cutters can be employed to operate on the work. Each cutter *d* is also provided on both its front and rear edges with a groove d^2, the grooves on the two edges being oppositely inclined and the one or the other engaging one of the inclined cams b', according as the one or the other cutting end of the cutter is directed inwardly in cutting position. Thus, viewing Fig. 8, the lower groove d^2 is utilized when the teeth d' at the left-hand end are employed as the cutting-teeth, and the upper groove d^2 is in engagement with the cam when the teeth d' at the right-hand end of the cutter are employed as the cutting-teeth. The grooves d^2 on the front and rear edges of the cutter, respectively, are located at different distances from the ends of the cutter to which they pertain, so as to project the inner end of the cutter a greater or less distance into the central aperture of the die. Therefore the space existing between the inner ends of the group of cutters may be made greater or less, and one set of cutters may be employed for different diameters of work.

When the work is of small diameter relatively to the central aperture a^4 in the die-body, a work-guiding sleeve *g* is inserted in said aperture, the said sleeve having an aperture to correspond to the size of the small work, so as to guide the die properly onto the work. The front of the die-body is formed with an annular projection a^{15}, provided with a bayonet-slot a^6, and the sleeve or bush *g* is provided with a pin g^2, which enters said slot and locks the sleeve to the die-body. By reason of this construction the sleeve may be readily applied to and removed from the die-body.

The outer wall a^2 of the annular groove a', in which the ring *b* oscillates, is formed with a longitudinal slot a^7, which opens into a segmental slot a^8 at right angles to it. *c* represents a handle attached to the cam-ring *b* by means of a rivet c' and occupying the segmental slot a^8. By operating the handle *c* the cam-ring *b* may be oscillated so as to project and retract the cutters *d*, the handle *c* in this operation moving back and forth in the slot a^8.

c^2 is a latch pivoted on a pin c^4 in a slot in

the handle c and having at its forward end a projection or tooth c^3, adapted to enter a notch f^3 in a sliding segmental keeper f. The latter slides in a segmental groove cut in a boss a^5, which projects from the die-body a, and its ends f' f' are screw-threaded, as shown, and engaged by thumb-nuts f^2 f^2. When the latter are loosened, the keeper f may be moved to and fro in its groove to any desired position and may then be locked by screwing the nuts f^2 up against the ends of the boss a^5. In this way the position of the keeper-notch f^3 may be varied. The latch c^2 coöperates with the keeper f to lock the handle c, and therefore the cam member b, so as to hold the cutters d d in their cutting position. Thus it will readily be seen that in operating the die the said handle c may be unlocked and the cutters thrown to their wide-open position, so as to allow the die to be positioned or removed from the work after the thread is cut, the sliding keeper and latch affording a very convenient and delicately-adjustable means for locking the cutters in cutting position. The under side of the latch c^2 is engaged by a spring c^5, attached to the handle c, said spring normally projecting the tooth c^3 on the latch in a direction to enter the keeper-notch f^3.

On the rear face of the die-body is mounted a retaining-plate e, which serves when in position to hold the cutters d and the cam member b in place in their guides. The plate e is secured to the die-body a by means of thumb-screws e' e', (see particularly Fig. 1,) the lower one of which preferably passes through an aperture in the plate e, while the upper thumb-screw occupies a slot e^2, cut tangentially in the plate, so that the said plate when the screws are slightly loosened may be swung aside on the lower screw as a pivot to expose the interior of the dies and permit the ready removal or insertion of cutters or the cam member. When the cutters are removed, the cam member b may be lifted bodily from its resting-place, together with the handle c and its latch, the shank of the said handle in this operation passing through the longitudinal slot a^7.

It will be seen that in my improved die I have reduced to a minimum the number of parts requisite to perform the operations of the die, have arranged the same compactly in such manner as to make them readily accessible, and have provided a convenient and accurate adjusting mechanism for locking the cutters in their closed position.

A die of the character described may be employed for threading pipes, bolts, and other articles and may be mounted in any suitable manner in a lathe or other machine or may be provided with arms, as indicated in the drawings, to adapt it for threading pipes.

Various modifications in the details of construction shown in the drawings may obviously be introduced without departing from the spirit of the invention, one modification, for example, being to form the cutter-guides radially in the die-body instead of tangentially, so as to adapt the die for cutting either right or left hand threads by merely changing the cutters.

I claim—

1. In a screw-cutting die, a die-body formed with an annular groove and with an opening in the outer wall of said groove, a cam-ring mounted to oscillate at the bottom of said groove and having a handle extending through the said opening and adapted to play from side to side thereof, a plate secured to the end of the die-body for retaining the cutters and cam-ring in place in said body, and a series of cutters held between said plate and the cam-ring and engaged with the latter, the cam-ring being removable through that end of the die-body to which the said plate is attached, and the said opening having a portion extending to said end of the die to permit the removal of the handle.

2. In a screw-cutting die, a die-body having a projecting boss formed with a segmental groove, a keeper mounted to slide in said groove and having screw-threaded ends extending longitudinally of the groove and projecting beyond its ends, two nuts engaged with the respective threaded ends of the keeper and abutting the ends of the boss, a series of cutters mounted in the die-body, a cam member for operating said cutters, and a latch on said cam member having provisions for engaging the keeper.

3. In a screw-cutting die, a die-body, a series of cutters mounted therein, a cam for operating said cutters, a plate independent of the cam for holding the cutters in place, and screw members having threaded stems projecting from said die-body at opposite sides of its center, and adapted to screw against the plate, said plate having a hole occupied by one of said stems and a tangential slot occupied by the other stem, said construction and arrangement permitting the plate to be swung aside from its normal position, on the first said stem as a pivot, to uncover the cutters.

4. In a screw-cutting die, a die-body, a cam member mounted to oscillate thereon and having inclined cams, and a series of cutters having cutting-teeth at both ends and each provided on its front and rear edges, respectively, with oppositely-inclined grooves, the one or the other of said grooves engaging a cam on the cam member, according as the one or the other cutting end of the cutter is operative.

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

CORNELIUS J. HARRINGTON.

Witnesses:
C. F. BROWN,
THOMAS HOEY.

Correction in Letters Patent No. 639,232.

It is hereby certified that Letters Patent No. 639,232, granted December 19, 1899, upon the application of Cornelius J. Harrington, of Boston, Massachusetts, for an improvement in "Screw-Cutting Dies," was erroneously issued to Thomas Hoey, as owner of the entire interest in said invention; that said Letters Patent should have been issued to the inventor, *Cornelius J. Harrington and Thomas Hoey, jointly*, said Thomas Hoey being the assignee of one-half interest only in said patent, as shown by the record of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 2d day of January A. D., 1900.

[SEAL.]

THOS. RYAN,
First Assistant Secretary of the Interior.

Countersigned:

C. H. DUELL,
Commissioner of Patents.