(No Model.) 2 Sheets—Sheet 1.

G. E. WITHERELL.

THREAD CUTTER.

No. 578,802. Patented Mar. 16, 1897.

Fig. 1.

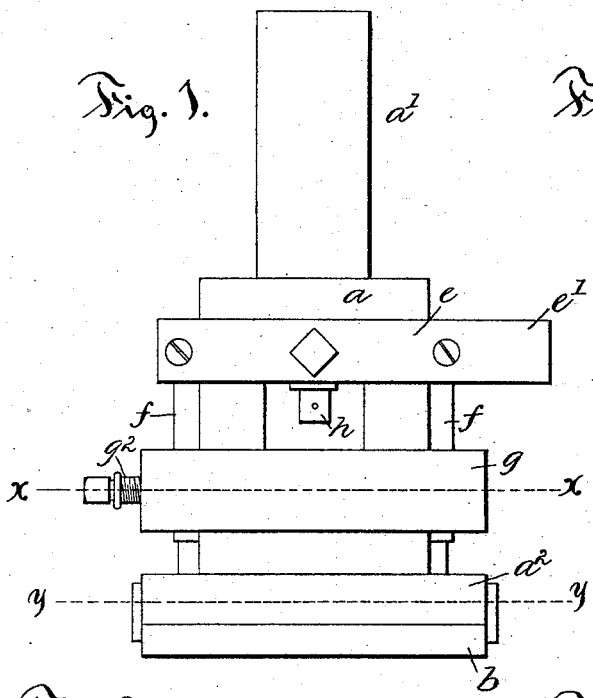


Fig. 2.

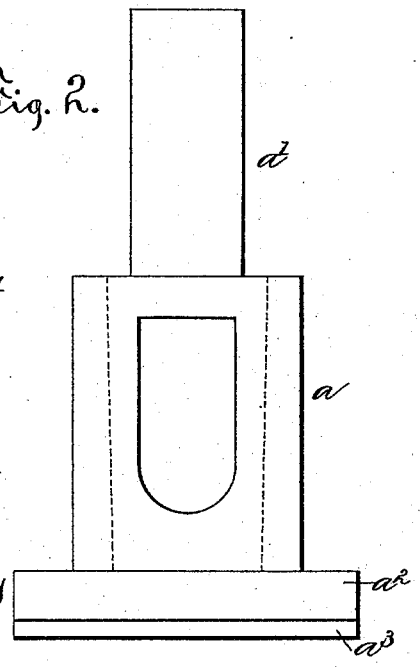


Fig. 3.

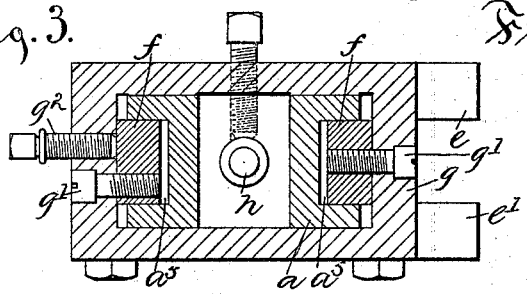
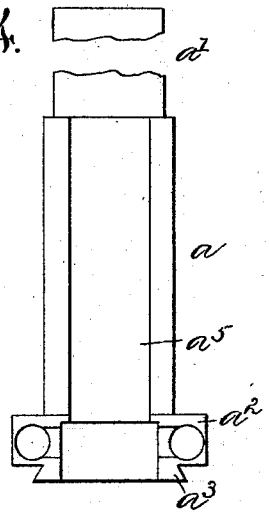


Fig. 4.



Witnesses.
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Attorney.

(No Model.) 2 Sheets—Sheet 2.

G. E. WITHERELL.

THREAD CUTTER.

No. 578,802. Patented Mar. 16, 1897.

Fig. 5.

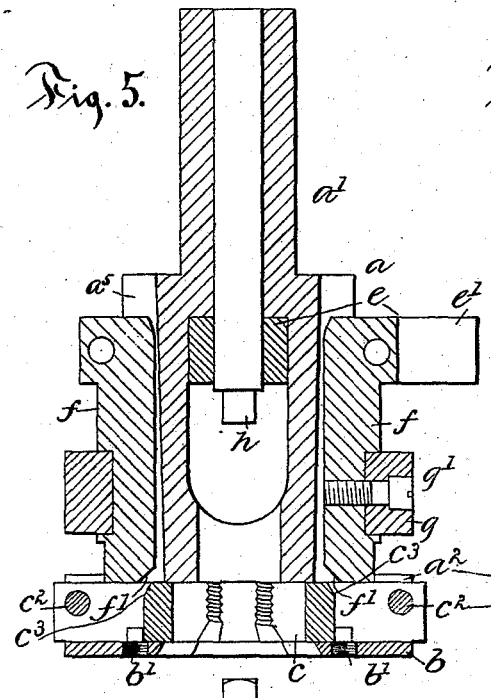


Fig. 6.

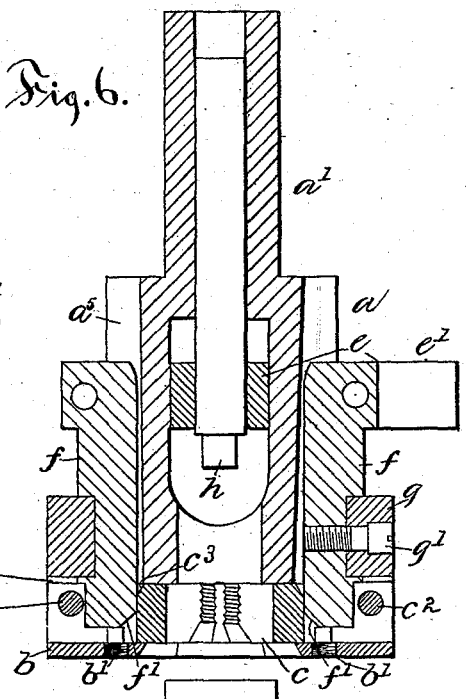


Fig. 7.

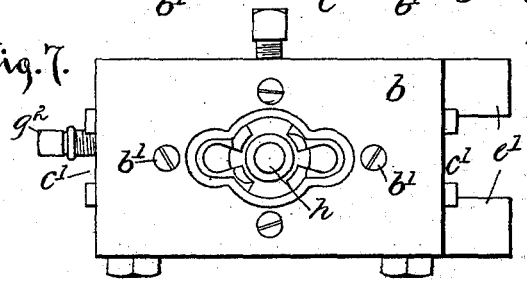


Fig. 9.

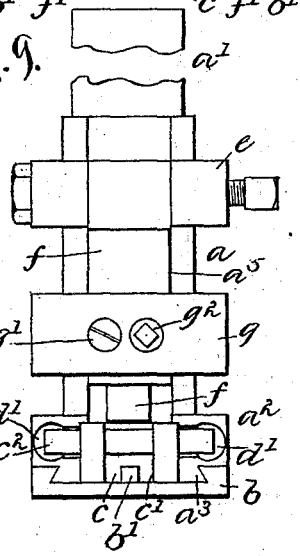
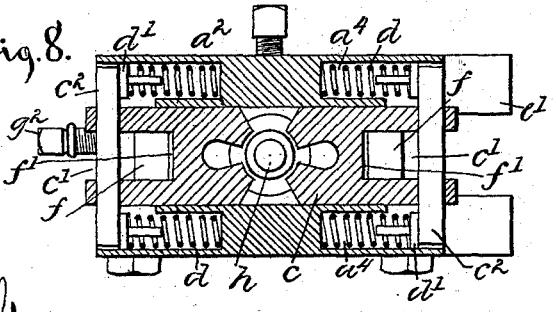


Fig. 8.



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by Chas. L. Burdett.
Attorney.

UNITED STATES PATENT OFFICE.

GEORGE E. WITHERELL, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE HARTFORD MACHINE SCREW COMPANY, OF SAME PLACE.

THREAD-CUTTER.

SPECIFICATION forming part of Letters Patent No. 578,802, dated March 16, 1897.

Application filed March 4, 1896. Serial No. 581,867. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. WITHERELL, a citizen of the United States, and a resident of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Thread-Cutters, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

The object of my invention is to provide a tool having the working parts made in sections movable toward and from the axis of the tool in lines at substantially right angles to said axis, and thus to enable the tool to be backed off from the work out of contact with the surfaces operated on.

To this end my invention consists in the details of the several parts making up the tool as a whole and in the combination of said parts as hereinafter described, and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a view in side elevation of my improved cutter. Fig. 2 is a view in side elevation of the body part of the tool. Fig. 3 is a detail bottom view in cross-section of the tool on line $x\ x$ of Fig. 1. Fig. 4 is a detail edge view of the body part of the tool. Fig. 5 is a detail view, in central vertical section, of the tool. Fig. 6 is a like view showing the parts in their closed position. Fig. 7 is a bottom view of the device. Fig. 8 is a detail bottom view in cross-section on the line $y\ y$ of Fig. 1. Fig. 9 is an edge view of my improved cutting device.

In the accompanying drawings the letter a denotes the body part of the device, having a shank a', by means of which it may be secured in a tool-head or like part of a lathe. A head a^2, in which is located a box for the thread-cutting tools, is located on one end of the body part, the under side of this head having a dovetailed projection a^3, to which is secured a cap b. Thread-cutting dies c are located in the box in the head a^2 of the body part, each of the dies having on its rear end a recess c'. Springs d are located in spring-chambers a^4 in the body part, these springs thrusting against the dies and forcing them normally apart. In the preferred form of the construction, as shown herein, pins c^2 extend through the dies from side to side, each of the pins bearing against the end of the springs or against a headed stud d', located therein.

A yoke e is secured to the body part in such manner as to have a lengthwise movement thereon and be held against movement in other directions. Bolts f are pivoted in this yoke on opposite sides of the body part, the bolts being partly located in grooves a^5, extending lengthwise of the body part. An adjusting-frame g is located on and surrounding the body part and is secured to each of the bolts by means of screws g'. An adjusting-screw g^2 is borne in the adjusting-frame with its inner end adapted to thrust against the bolt located on that side of the body part. By loosening the screw g', located adjacent to the adjusting-screw, and turning the adjusting-screw inward or outward the adjustment of both bolts in a plane transversely of the axis of the tool is permitted, the screw g' being turned to place when the desired adjustment is had.

The outer end of each bolt is provided with a tapered or cam surface f' for a short distance from the end on the face next to the die. The beveled or cam surfaces on the bolts engage the beveled surfaces c^3 on the dies. The beveled surfaces are so formed with regard to each other as to force the dies toward each other to the required degree, and when they have passed each other the bolts are thrust behind the dies, locking them against backward movement.

Stop-pins b' are located in the cap b to prevent the dies from being kicked out of the box by the thrust of the springs d.

A trip device h is adjustably secured to the yoke e with its end located in the path of movement of the work being operated upon. The piece of work upon which the thread is being cut is projected into the device until its end encounters the end of the trip device, when the latter is forced backward, carrying with it the yoke e and bolts f, which when the latter reach the limit of their play in this direction allow the dies c to be forced apart under the thrust of the springs d.

The operation of the device is as follows: The shank a' of the tool is secured in the tool-

head of a lathe or like part and the work to be operated upon in axial alinement therewith. The dies are properly adjusted by means of the adjusting-screw g^2, and then secured in this position by means of the screw g', located on that side of the adjusting-frame adjacent to the adjusting-screw. The device as a whole is then rotated and the device and the work to be operated upon brought together, when the dies c perform the operation of cutting a thread upon the work. When the work has reached the desired limit, determined by the adjustment of the trip device h, the latter is forced backward, carrying with it the yoke e, adjusting-frame g, and bolts f. The dies c are then forced apart under the thrust of the springs d, when the work and cutting-tool may be rapidly drawn apart. In this separation of the work and cutting device the projections e' on the yoke encounter a stop or like device located on the frame of the machine, which forces the yoke, bolts, and adjusting-frame toward the dies, closing the dies ready for another operation.

I am aware that it is not new to provide a tool in which the dies are so operated that the device as a whole may be rapidly withdrawn from the work after the thread has been cut by the separation of the dies, but in my improved device I have provided means whereby the dies have a movement in lines at right angles to the axis of the cutting device and one in which the action of the jaws upon the dies is direct and positive, and while at the same time there is positive connection between the parts, yet they are not secured to each other in any manner. By my improved means of engagement of the jaws with the dies the latter are locked in their innermost position when the bolts have been forced downward and interposed back of the dies.

By means of the single adjusting-screw located on one side of the device the dies may be easily and quickly adjusted with reference to the axial center of the tool, thus insuring the bringing together of the dies in such alinement. The adjusting-frame and the bolts are connected with sufficient play between the parts to enable the sectional tool held between the ends of the bolts to adjust itself crosswise of the axis of the tool to a slight degree, the tools, adjusting-frame, and lower ends of the bolts moving simultaneously to one side in this operation. If the blank or piece of work presented to the dies is slightly out of alinement with the axis of the tool, the dies held by the means described can move slightly to one side, so as to accommodate themselves to the position of the work.

The shape of the bolts is not material to my invention, it being only necessary that they shall be of such form as to enable them to be moved across the back of the dies and form an abutment to take the outward thrust of the latter.

My invention has been described herein in connection with a thread-cutting tool, the parts of the die being made in sections, but it is obvious that other forms of tools designed to work upon the surface of a piece of work (as, for instance, knurling-tools) may be similarly mounted and arranged without requiring the exercise of more than mechanical skill, and I contemplate the use of the features of construction described herein in connection with various kinds of tools which are capable of conjoint action on opposite faces of a piece of work.

I claim as my invention—

1. In combination with a body part, a yoke movable lengthwise of the body part, bolts pivoted to the yoke, a frame supported on the bolts and a sectional tool located in the path of movement of the bolts and having a movement in a plane at right angles to the axis of the body part, all substantially as described.

2. In combination with a body part, a yoke supported on and having a movement lengthwise of the body part, bolts pivoted to the yoke, sectional dies located in the path of movement of the bolts and having a movement transversely of the axis of the tool, and a trip device supported on and secured to the yoke and in the path of movement of the work operated on, all substantially as described.

3. In combination with a body part, a box located in a head in the body part, a yoke supported on and having a movement lengthwise of the body part, bolts pivoted to the yoke, dies located in the box in the body part and in the path of movement of the bolts, all substantially as described.

4. In combination with a body part, a box located in a head in the body part, a yoke supported on and having a movement lengthwise of the body part, bolts pivoted to the yoke, dies located in the box in the body part and in the path of movement of the bolts, and springs located in spring-chambers in the head and normally thrusting the dies apart, all substantially as described.

5. In combination with a body part, dies located therein, bolts located on opposite sides of the body part for operating the dies, means for moving the bolts lengthwise of the body part, and an adjusting-frame loosely secured to the bolts, all substantially as described.

6. In combination with a body part, bolts located on opposite sides of the body part, means for moving the bolts lengthwise of the body part, dies located in the body part in the path of movement of the bolts, an adjusting-frame loosely secured to the bolts, and an adjusting-screw borne in the adjusting-frame, all substantially as described.

7. In combination with a body part, a yoke borne on and movable lengthwise of the body part, bolts pivoted to the yoke, dies located in the body part in the path of movement of the bolts, and an adjusting-frame supported on said bolts to secure simultaneous lateral movements, all substantially as described.

8. In combination with a body part, a yoke borne on and movable lengthwise of the body

part, bolts pivoted in the yoke, dies located in the body part in the path of movement of the bolts, an adjusting-frame supported on the bolts, to secure simultaneous lateral movement, and an adjusting-screw located in the adjusting-frame appurtenant to one of said bolts, all substantially as described.

9. In combination with a body part, a yoke borne on and movable lengthwise of the body part, bolts pivoted to the yoke on opposite sides of the body part, a box located in the body part, dies located in the body part in said box and in the path of movement of the bolts, and a cap secured on a dovetailed projection from the body part and forming one of the walls of the box, all substantially as described.

10. In combination with a body part, pivoted bolts movable lengthwise of the body part, dies located in the path of movement of the bolts, cam-surfaces located on the dies and bolts in such relative arrangement as to allow the bolts to be thrust back of the dies, whereby they are locked against backward movement, all substantially as described.

11. In combination with a body part, a yoke borne on and movable lengthwise of the body part, bolts pivoted to the yoke, dies located in the body part in the path of movement of the bolts, and cam-surfaces located on the dies and bolts in such relative arrangement as to allow the bolts to be thrust back of the dies, whereby they are locked against backward movement, all substantially as described.

12. In combination with a body part, a yoke borne on and movable lengthwise of the body part, dies located in the body part, bolts pivoted to the yoke and adapted to move the dies inward and to lock them against backward movement.

13. In combination with a body part, bolts located on opposite sides of the body part, means for moving the bolts lengthwise of the body part, dies located in the body part and adapted to be operatively connected with the bolts, an adjusting-frame loosely mounted on the bolts, an adjusting-screw borne in the adjusting-frame, and a lock-screw also borne in the frame.

GEORGE E. WITHERELL.

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