

No. 818,020.

PATENTED APR. 17, 1906

J. ELDER.

THREAD CUTTING DIE AND PROCESS FOR MAKING THE SAME.

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Fig. 1.

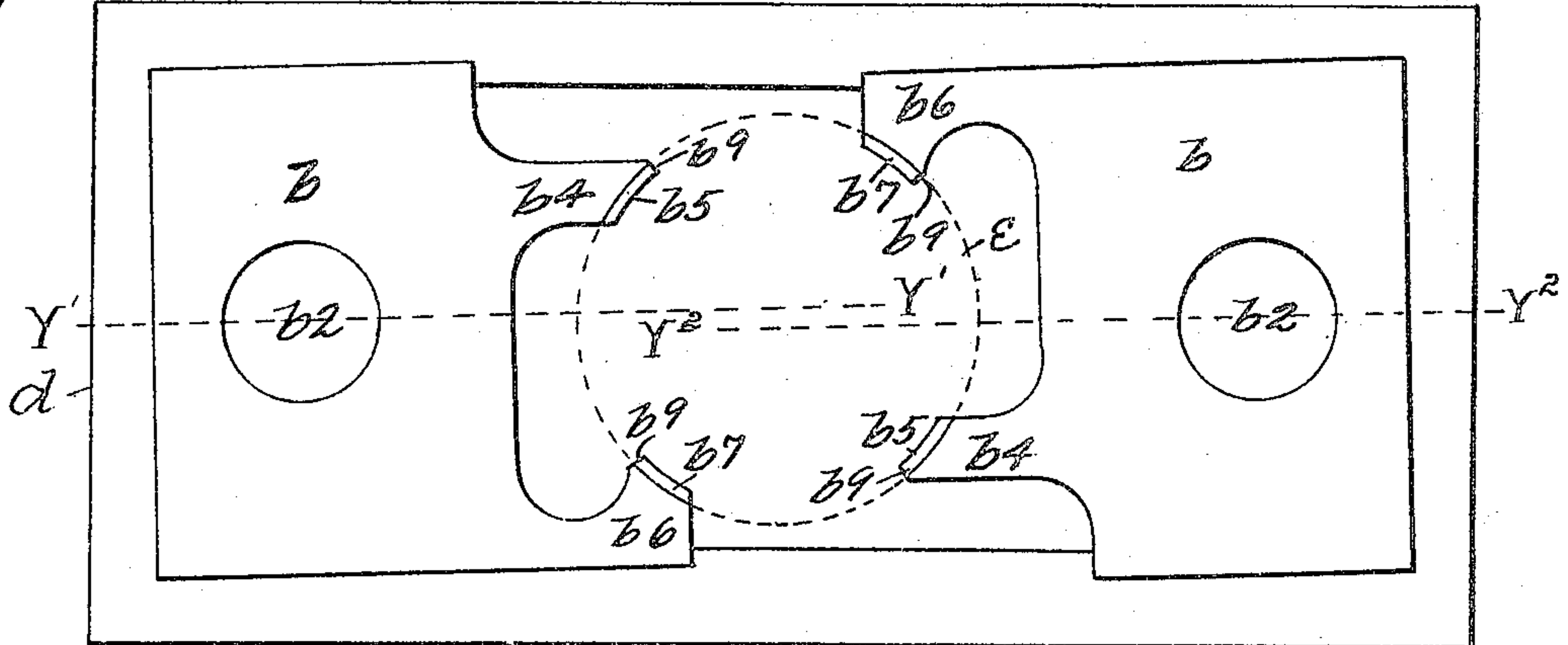


Fig. 2.

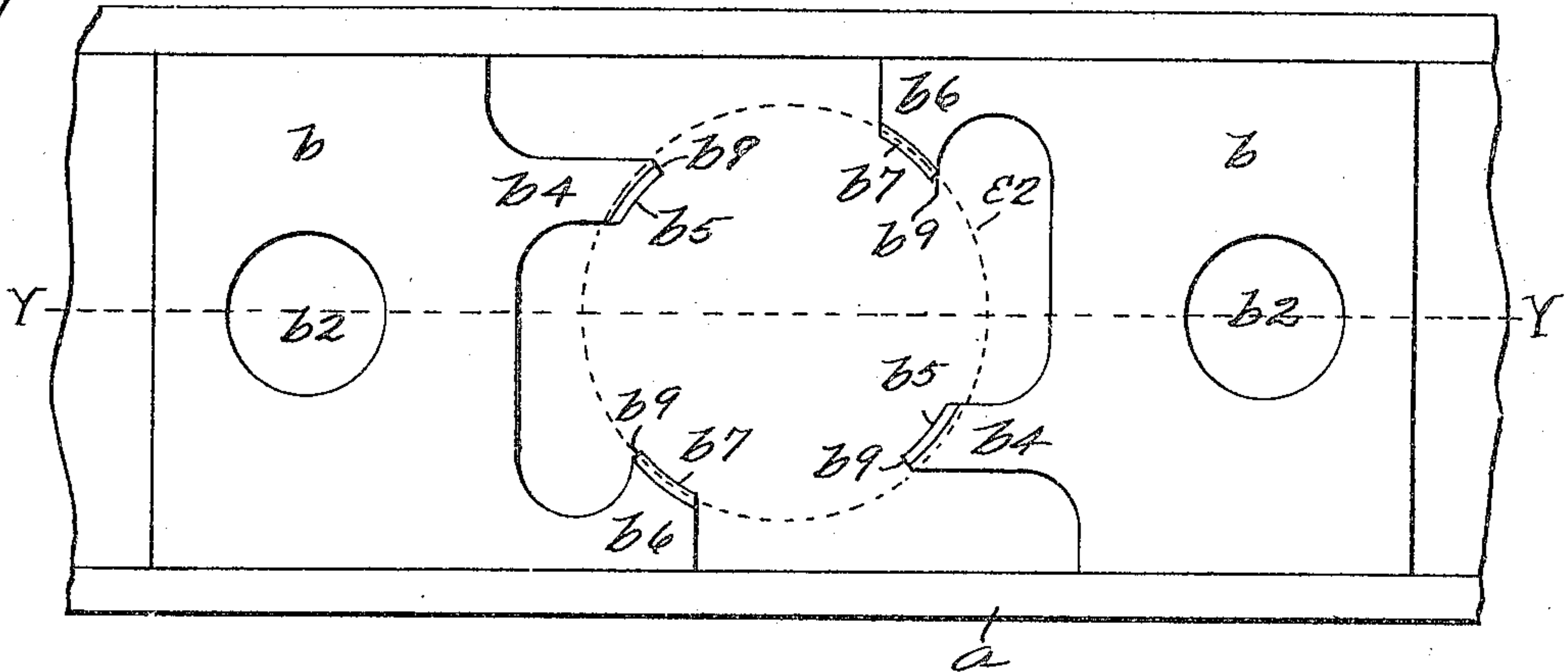
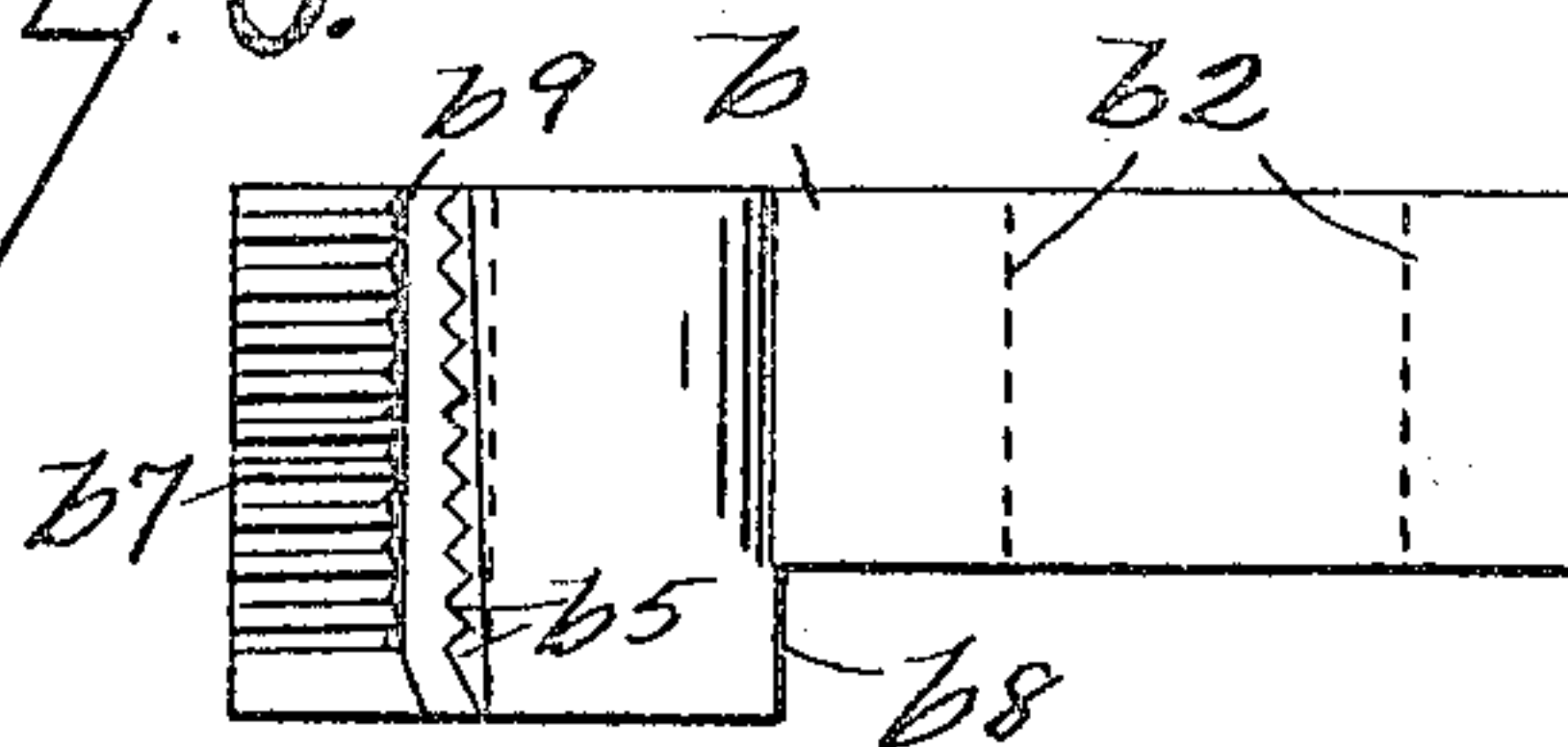


Fig. 3.



WITNESSES

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## THREAD-CUTTING DIE AND PROCESS FOR MAKING THE SAME.

No. 818,020.

Specification of Letters Patent.

Patented April 17, 1906.

Application filed October 21, 1902. Serial No. 128,103.

*To all whom it may concern:*

Be it known that I, JOHN ELDER, a citizen of the United States, residing at Corona, in the county of Queens and State of New York, have invented certain new and useful Improvements in Thread-Cutting Dies and Processes for Making the Same, of which the following is a specification such as will enable those skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide an improved device for threading pipes and which may also be employed for the purpose of reaming pipes or the ends thereof; and with this and other objects in view the invention consists in a device or tool of the class specified constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which—

Figure 1 is a plan view of a frame which I employ in the operation of cutting the threads on the dies of the thread-cutter and showing the dies in position therein; Fig. 2, a plan view showing the dies in position for use, and Fig. 3 a side view of one of said dies.

In the practice of my invention I provide a stock *a*, which is open centrally and provided at the top with parallel members or guides *a*<sup>2</sup>. The ends of the stock *a* are provided with tubular members *a*<sup>5</sup>, adapted to receive the screw-threaded ends *a*<sup>6</sup> of handle-pieces *a*<sup>7</sup>, by means of which a tool may be turned in the operation thereof, as hereinafter described. The central portion of the stock is open between the parallel members or guides *a*<sup>2</sup>, and formed at the opposite sides of said openings and between said parallel members *a*<sup>2</sup> are rectangular spaces or chambers *a*<sup>8</sup>, adapted to receive the dies *b*. The dies *b* are provided with central openings *b*<sup>2</sup>, through which are passed bolts *c*, the lower ends of which are screw-threaded, and said bolts are of less diameter than the openings *b*<sup>2</sup>. The stock *a* is also provided at the opposite ends of the members *a*<sup>2</sup> with keepers *c*<sup>2</sup>, through which are passed screws *c*<sup>3</sup>, by means of which the dies *b* may be adjusted. The dies *b* are exactly of the same shape and size, and said dies are shown in position for use in Fig. 2; but in Fig. 1 these dies are shown in a frame or holder *d*, in which they are placed for the

purpose of forming the thread-cutting teeth thereon, together with the thread-following teeth, with which they are provided.

The dies *b* are provided at their adjacent sides each with an inwardly-directed projection *b*<sup>4</sup>, having thread-cutting teeth *b*<sup>5</sup>, which are segmental in form, and said dies are also provided with inwardly-directed members *b*<sup>6</sup>, having thread-following teeth *b*<sup>7</sup>, which are also segmental in form. The thread-cutting teeth *b*<sup>5</sup> are formed on a circle of slightly less diameter than that on which the thread-following teeth *b*<sup>7</sup> are formed. In order to accomplish this result and to cut both sets of teeth at the same time, the dies *b* are placed in the position shown in Fig. 1.

In Fig. 2 the dies are shown with the median lines of the same in line with each other and in line with the center of the working circle, as indicated by dotted line *y y*. In Fig. 1 the median lines of the two dies are not in line with each other, that of the left-hand die *y' y'* extending above the center or axial line of the tap used in cutting the die and that of the die at the right hand, *y<sup>2</sup> y<sup>2</sup>*, extending below such axial line. The threads upon projections *b*<sup>4</sup> and *b*<sup>6</sup> are cut while the dies are in this position by the same tap in one operation. In Fig. 1 the dotted line *e* represents the circle on which the teeth are cut, while in Fig. 2 the dotted line *e*<sup>2</sup> represents the circle on which they will operate, said circles both being the same, but the thread-cutting teeth in Fig. 2 being shown as extending farther toward the center of the working circle than the following teeth. It will also be observed that the cutting edge of the cutting-teeth also extends farther inward toward the center of the working circle than any other portion of such teeth.

Each of the dies *b* is provided with a downwardly-directed portion *b*<sup>8</sup>, so as to provide greater spaces for the thread-cutting and thread-following teeth, and said thread-cutting and said thread-following teeth are both formed at a slight angle or inclination, as shown in Fig. 3, the diameter of these teeth being greater at the sides of the dies in which the pipe to be threaded is passed than at the opposite sides, or, in other words, greater at the bottom than at the top of the dies.

In the operation of forming the thread, as described, the thread-cutting teeth *b*<sup>5</sup> operate to form the thread, while the thread-following teeth *b*<sup>7</sup> follow the thread device formed and serve to clean and trim the same. It will be



observed by reference to Fig. 2 that the thread-cutting teeth  $b^5$  and followers  $b^7$  are cut out or off radially at the ends thereof, as shown at  $b^9$ , and in order to sharpen these teeth all that is necessary is to grind the ends thereof at  $b^9$ . The parallel guide members  $a^2$ , which hold the dies  $b$  in position, are preferably provided at the opposite ends with raised bearing portions  $f^2$ , the tops of which are flush with the dies  $b$ ; but the construction and formation of these members by which the dies  $b$  are held in place may be varied within considerable limits, the only object of this construction being to provide means whereby said dies will be held in place, as shown in Fig. 2.

When the dies  $b$  are in proper position and properly adjusted and the reamer also in position and similarly adjusted, it will be apparent that a pipe may be threaded and the end thereof reamed at the same time, and it will also be apparent that the pipe may be threaded without being reamed, thereby adjusting the tubular casing  $b^6$ , which carries the cutters, or by removing the reamer altogether, and will also be apparent that by properly adjusting the dies or securing the reamer in position a pipe may be reamed only.

The entire device is simple in construction and operation and perfectly adapted to accomplish the result for which it is intended and also comparatively inexpensive.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The process of making a thread-cutting implement which consists in setting the blank die at one angle to a given tangent of the circle of the die-cutting tap, then cutting

the teeth on a circle of the same diameter as the work to be cut and then setting said die in operative position in the stock at a different angle to the like tangent of the working circle of the die by tilting it on a point eccentric to the arc of its threads, substantially as and for the purpose set forth.

2. A screw-thread-cutting die having cutting-teeth and following teeth cut upon the same circle, the said cutting-teeth extending when the die is in operative position farther toward the center of the working circle than the following teeth, substantially as described.

3. A screw-thread-cutting die having cutting and following teeth cut upon the same circle, the cutting-teeth, when the die is in operative position extending farther toward the center of the working circle than the following teeth and the cutting edge of the said cutting-teeth extending farther toward the center of the working circle than the remainder of the said teeth, substantially as described.

4. A screw-thread-cutting die having a plurality of thread-cutting teeth and a following tooth for each thread-cutting tooth, all of said teeth being cut on the same circle, the said cutting-teeth, when in operative position, extending farther toward the center of the working circle than the following teeth, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 18th day of October, 1902.

JOHN ELDER.

Witnesses:

F. A. STEWART,  
C. E. MULREANY.