No. 804,777. PATENTED NOV. 14, 1905.

A. J. SMART.

SCREW CUTTING DIE.

APPLICATION FILED JUNE 6, 1904.

Fig. 1.

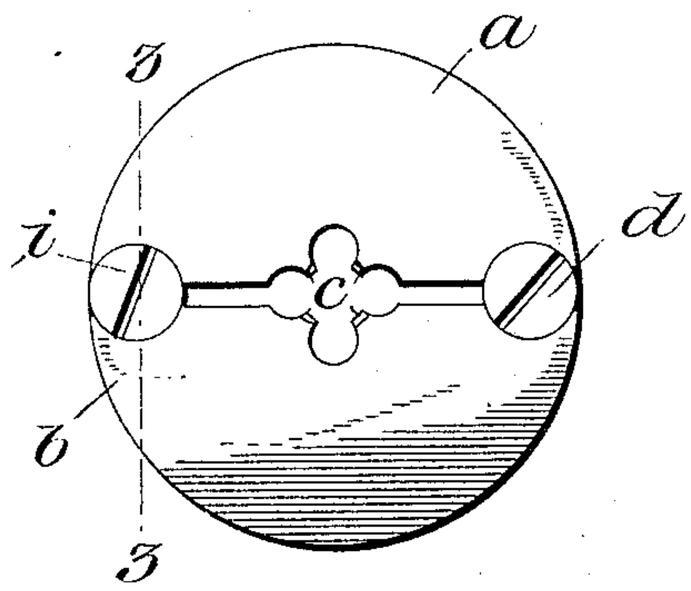


Fig. 2.

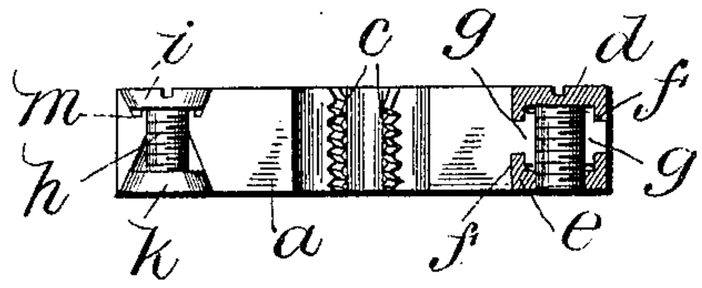


Fig. 3.

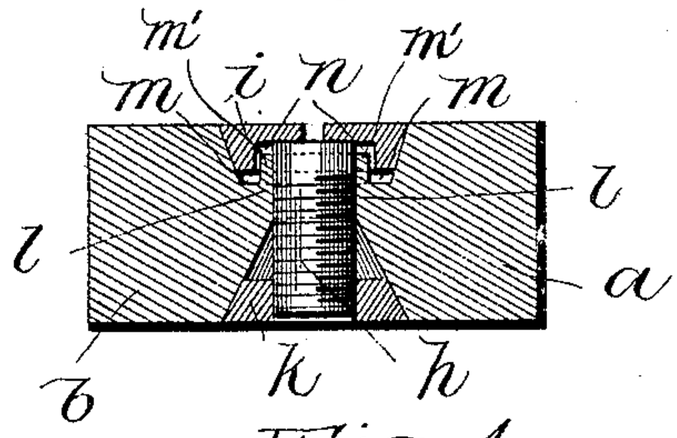
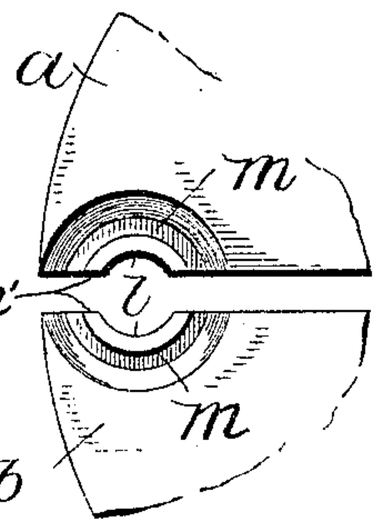


Fig. 4.



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UNITED STATES PATENT OFFICE.

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SCREW-CUTTING DIE.

No. 804,777. Specification of Letters Patent. Patented Nov. 14, 1905.

Application filed June 6, 1904. Serial No. 211,380.

To all whom it may concern:

Be it known that I, ALBERT J. SMART, a citizen of the United States, residing at Greenfield, in the county of Franklin and State of Massachusetts, have invented certain new and useful Improvements in Screw-Cutting Dies; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to screw-threading dies, more particularly to what are known as "divided" dies, which allow of adjustment to compensate for wear or to cut screws of different depths and sizes by means of a single die; and the objects of the present invention are to improve on the manner of adjusting the separate die parts whereby the danger and inconvenience attendant upon dropping out the adjusting means is avoided. The preferable adjusting means used is known as a "cone adjustment," which ordinarily does not engage with the die parts other than by mere friction, and therefore affords no means for checking the amount of opening beyond a certain point and for holding the cone or cones in place when the die is thus partially opened. The present improvements are designed to obviate both of these difficulties.

To the accomplishment of these objects and such others as may hereinafter appear the invention comprises the novel construction and combination of parts hereinafter described, and particularly pointed out in the appended claims, reference being had to the accompanying drawings, forming a part hereof, in which the same reference characters designate like parts throughout the several views, and in which—

Figure 1 is a plan view of the die. Fig. 2 is a sectional view through the adjusting and connecting means. Fig. 3 is an enlarged detail on line 3 3 of Fig. 1, showing the construction of the adjusting means; and Fig. 4 is an enlarged detail of the recesses in the die parts for checking the amount of opening therebetween.

Referring to the drawings, *a* and *b* represent the two halves of a divided die formed of suitable metal provided, as usual, on their inner faces with threads *c*, forming the screw-threading means. In the preferable form of the die a hinged connection is provided between one pair of meeting ends and means for adjusting the die parts about said hinged connection between the other pair of meeting ends.

It will be noted that both the hinge and the adjusting means are so formed as to be located substantially entirely within the material forming the die, thus doing away with the necessity of a "guide" or "collet," as heretofore generally in use, which is expensive and burdensome and of no practical value to the proper formation of the threads.

The novel hinged connection shown has been fully described and its advantages particularly pointed out in my copending application dated April 13, 1904, and serially numbered 203,002, and need not be described here further than to say it consists, essentially, of a cup-headed screw *d*, having, preferably, one head in the form of a nut *e* and one or both of said heads being cup-shaped and engaging with recesses *f*, formed in lugs *g* on the die parts.

The particular point of novelty herein resides in the formation of the adjusting means, which, by reference to Fig. 3, is seen to preferably consist of a screw-shank *h*, provided with a tapering head at each end, one being preferably an integral head *i* and the other an adjustable nut *k*. On the die parts *a* and *b* are formed lugs *l* between tapering recesses having recesses *m* in one side, whereby a wall or shoulder *m'* is formed at the edge of the lugs, and in the under face of tapering head *i* is a circular recess *n*, giving a cup-shaped formation to the head *i*, which adapts it to fit snugly behind shoulders *m'* and in engagement with the recesses *m* in lugs *l* when screwed up tight; but when in the position shown in Fig. 3, with the head of the screw flush with the surface of the die parts, the projecting portion on the adjusting means and the shoulders *m'* barely overlap sufficient to hold the die parts together.

By means of such a construction as above described the die parts are always held together at both ends, the adjusting-cones are prevented from slipping out and being lost when the die is removed from the die-stock, and ample adjustment of the die is secured, owing to the play between the parts.

The operation of the device is obvious, it being merely necessary to turn down head *i*

to adjust to cut a thread of larger diameter and to withdraw the same to adjust for wear, the die parts being forced either outwardly or inwardly about the hinged connection diametrically opposite.

It is readily seen that owing to the ability of the adjusting means to keep the die parts from falling apart when taken from the die-stock the particular form of hinged connection here illustrated may be done away with entirely, and the improved adjustable connection (shown at the left of Fig. 2 and in detail in Fig. 3) may be placed between each pair of meeting ends of the die parts, in which case either connection may be adjusted, using the other as a hinge, or both may be adjusted simultaneously.

The above arrangement of adjusting-cones obviously could not be used in a divided die formed complete in two parts, as herein shown, without danger of loss unless some means were devised to hold them in place, and this, together with the construction allowing sufficient play to give any desired or necessary adjustment, constitutes the gist of the present invention.

While the invention has been described with particular reference to the details of construction, it should be understood that it is not to be limited thereto, as many and various changes, alterations, and substitutions may be made therein and still fall within its scope and principle; but

What I do claim, and desire to secure by Letters Patent, is—

1. In a divided die for cutting screw-threads, a cone adjustment, and means on said die parts with which said cone is adapted to engage to check the amount of opening between said die parts, substantially as described.

2. In a divided die for cutting screw-threads, a taper-headed screw for adjusting the opening between the die parts, means on the screw to engage said die parts to check the amount of such opening, and a nut on said screw, substantially as described.

3. In a divided die for cutting screw-threads, adjusting means comprising a screw-shank provided with a tapering head at each end, one of said heads being cup-shaped, and means on the die parts with which said cup-shaped head is adapted to engage, substantially as described.

4. In a divided die for cutting screw-threads, adjusting means comprising a screw-shank provided with an integral and an adjustable tapering head, one of said heads being cup-shaped, and means on the die parts with which said cup-shaped head is adapted to engage, substantially as described.

5. In a divided die for cutting screw-threads, means for adjusting the die parts and checking the opening comprising a tapering cup-headed screw, recessed lugs on said die parts with which said head is adapted to engage, and a tapering nut on said screw, substantially as described.

6. In a divided die for cutting screw-threads, means for adjusting the die parts and checking the opening comprising recessed lugs on said die parts, a tapering cup-shaped member constructed to engage said recesses, and means for holding said cup-shaped member in such engagement, substantially as described.

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

ALBERT J. SMART.

Witnesses:

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