

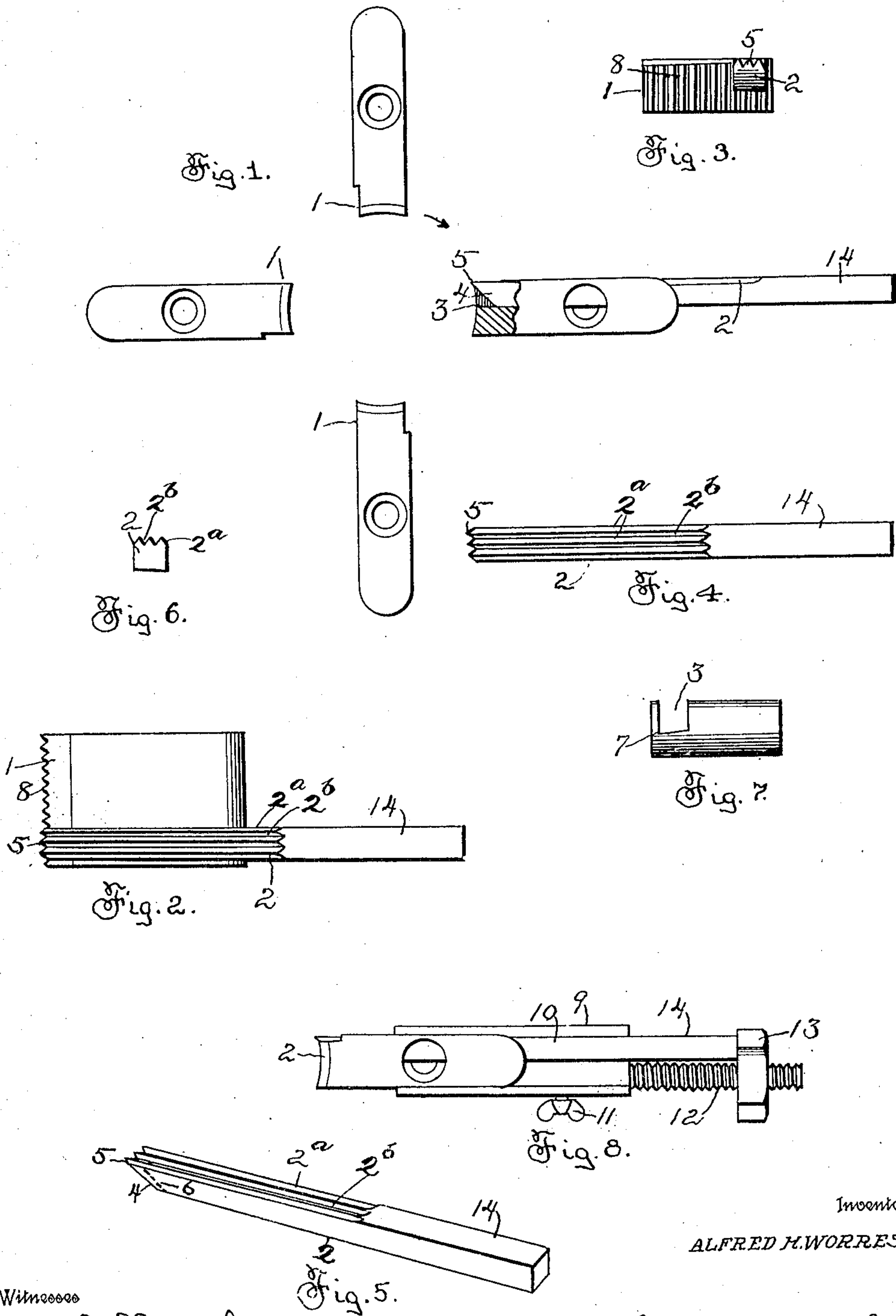
No. 871,251.

PATENTED NOV. 19, 1907.

A. H. WORREST.

DIE.

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# UNITED STATES PATENT OFFICE.

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No. 871,251.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, ALFRED H. WORREST, a citizen of the United States, residing at Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Dies, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to devices for cutting screw-threads on tubes, rods, and other cylindrical articles, and especially to channeled dies and chasers guided therein.

15 The chief objects of my invention are, to provide a chaser held in the best position for effecting such thread-cutting, easily sharpened till worn quite away and also easily replaced at will without disturbing the die or ordinary chaser: and also to combine the chaser with the channeled die which holds it, in such fashion that the chaser teeth do all the cutting and the leading threads of the die, which do not project so far as said teeth, follow in the grooves that the 25 latter cut and do the leading or feeding.

To these ends the invention consists in the combination and construction of parts hereinafter more particularly set forth and claimed.

30 In the accompanying drawing, which forms a part of this specification, Figure 1 is an end view of a set of guides or dies and a chaser embodying my invention; Fig. 2, a face view of a guide and chaser; Fig. 3, a view of the cutting edge of a guide and chaser; Fig. 4, a face view of a chaser, detached; Fig. 5, a perspective view of the chaser; Fig. 6, a view of the cutting end of the chaser; Fig. 7, an outer end view of a guide; and 40 Fig. 8, a view of the stock carrying the chaser.

Similar numerals indicate like parts throughout the several views.

Referring to the details of the drawing, 45 1 indicates what are the ordinary chasers or cutting dies, but which with this invention become simply guides, and which will, for the purposes of this specification, be so termed. The cutting threads of the ordinary chasers rapidly become worn and dull 50 and can only be re-sharpened by much expense and labor. The use of a special chaser, 2, in connection with the ordinary chaser as a guide, both greatly reduces the cost of sharpening the cutting edges of the die and lengthens the time it can be used

without becoming dull. One at least of the said guides 1 has a groove or channel 3 formed therein to receive the cutting chaser 2, the cutting face of which protrudes inwardly from said channel, presenting its teeth 5 to the work beyond the leading threads 8 of the face of said channeled guide and consequently nearer the center of the article operated on than the leading threads of any of the dies. The term working circle will be used herein to indicate a circle about such central point having a radius equal to the distance of said chaser teeth therefrom. The effect of such presentation of the chaser teeth nearer to the center of the work than are the faces of the guides or dies 1, is that the chaser teeth necessarily do all the work of cutting and thus spare the guides all the wear incidental thereto, while the leading threads of the guides follow in the thread grooves thus cut, doing the leading or guiding. These threads 8 of the guides have the usual screw-curve.

The bottom 7 of the groove 3 is sloped so as to set the points 5 of the chaser obliquely to the surface into which they are to cut. These points 5 are the ends of the longitudinal ridges 2<sup>a</sup>, formed on the longer side of the chaser; most conveniently by cutting alternate grooves 2<sup>b</sup> in proximity to them and between them, as shown in Figs. 2, 4, 5, and 6. The operating end of said chaser is beveled back at 4 from the teeth 5 to the opposite side of said chaser, as shown in Figs. 1 and 5, making the three ungrooved sides of said chaser shorter than the grooved and ridged side thereof, as above indicated. When the said teeth become worn, the chaser is removed and ground down on its beveled face, as indicated by a dotted line, Fig. 5. This operation may be repeated until the chaser is worn almost entirely away, it being replaced in position for use after each grinding without disturbing any of the guides or dies at any stage of this operation.

As shown in Fig. 1, the ridged side of the chaser is the one first reached by any point of the article operated on, the latter rotating from left to right as indicated by the arrow; and the ridges 2<sup>a</sup> are approximately, though not necessarily exactly, at right angles to the tangent of the working circle at the point of contact of the teeth 5 therewith. Thus making a broad angle with said tangent, they are in a position to act as plow-



points on the scale or superficial part of the tube or rod and all of said points will cut their helical grooves therein simultaneously and to great advantage, as is shown in practice.

A stock or holder 9 located behind the channel guide or die 1 is provided with a groove which receives the stem 14 of the chaser and with a thumb screw 11 which clamps the latter adjustably in place. A screw 12 extends outward from said stock and receives an adjustment nut 13, which bears on the end of stem 14 of said chaser. By these means the chaser is easily fed up to its work and so held; its removal being also facilitated.

All the guides or any less number may be provided with chasers; but one practically suffices. The chaser is milled straight and will cut either right or left. The guide prevents any trembling of the chaser and compels it to cut true threads.

I do not limit myself to any particular form of die, though one form is necessarily shown.

Having thus described my invention,

what I claim as new and desire to secure by Letters Patent is:—

1. In a device for cutting screw threads, a chaser having longitudinal ridges and a beveled operating end, and provided with means for holding said end to the working circle, with said ridges approximately at a right angle to the tangent at the cutting point, the outwardly projecting edges of said longitudinal ridges being opposed to the rotation of the stock being threaded for the purpose set forth.

2. In a device for cutting screw threads, a chaser in combination with a die which is provided with leading threads and channeled to serve as a guide for said chaser, the teeth of the operating end of the latter being arranged to project slightly beyond the said leading threads, which threads follow the thread-grooves cut by the teeth of said chaser, substantially as set forth.

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