

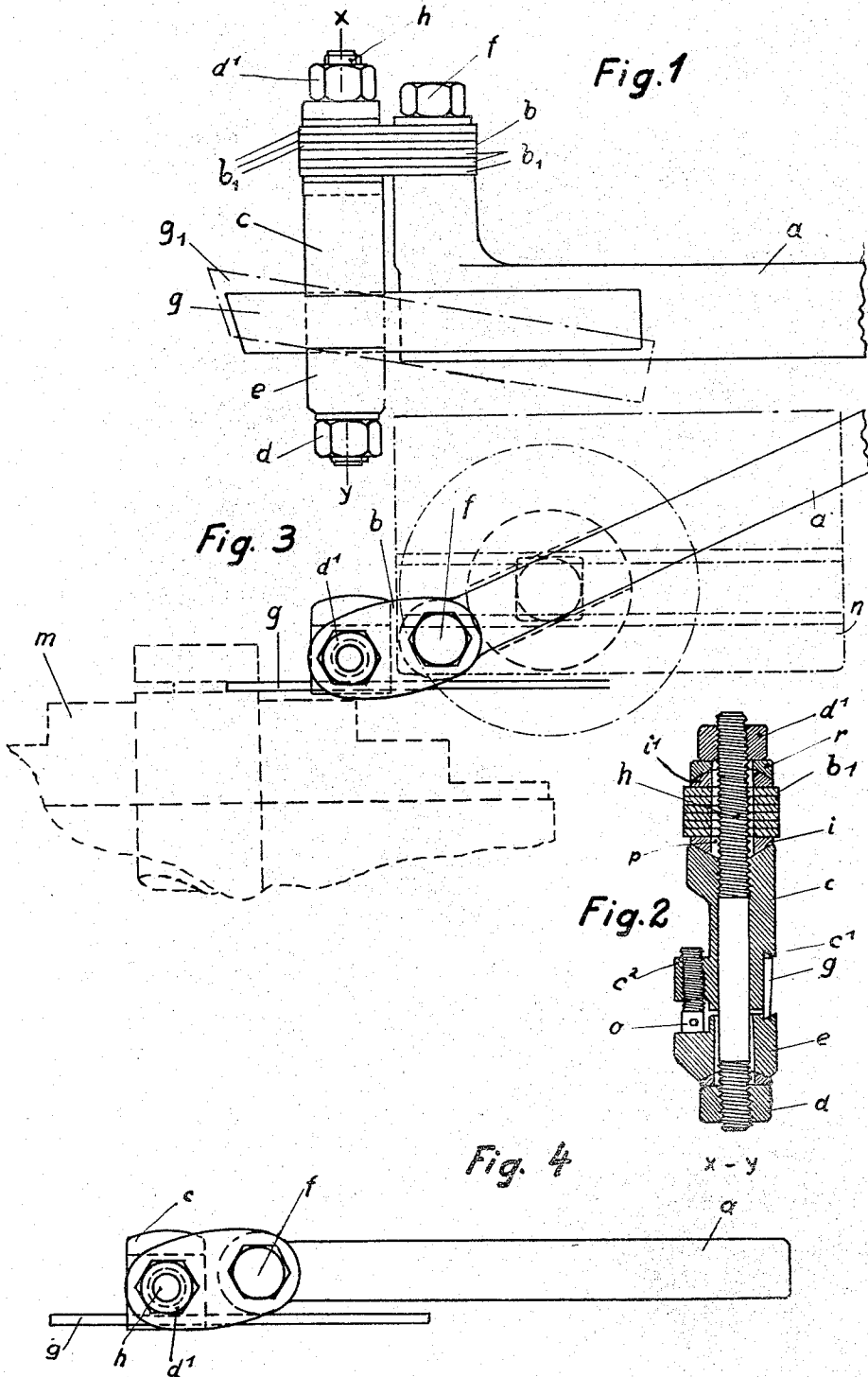
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ELASTIC HOLDER FOR CUTTING-OFF TOOLS AND THE LIKE

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## UNITED STATES PATENT OFFICE

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ELASTIC HOLDER FOR CUTTING-OFF  
TOOLS AND THE LIKE

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This invention relates to tool holders intended for use in connection with lathes and similar machine tools and pertaining to that type of such holders in which the tool can give way elastically if there should arise during the working of the work-piece a resistance of such a strength that the tool or the work-piece or both are exposed to the risk of being damaged or, may be, even broken. My present improved elastic tool holder is distinguished from the known ones, and excels them, by the new feature that the elastic member rendering the tool yielding is constituted by a plate spring, or by a plurality of superposed plate springs respectively, which can be replaced or exchanged and accommodated to the resistance which the tool must be normally able to stand. Furthermore, it is possible to give the tool an oblique position without affecting thereby the elastic yieldableness of the same in case of need.

My invention is illustrated diagrammatically and by way of example on the accompanying drawing on which Figure 1 is a side-view of a tool-holder designed according to this invention, the tool (*g*) being shown in two positions, the one in full lines, the other (*g*<sub>1</sub>) in dotted lines. Figure 2 is a vertical section in the plane *x—y* of Fig. 1, seen in the direction from the left to the right in Fig. 1. Figure 3 is a plan of the device, in connection with a lathe chuck (*m*) and a carrying member (*n*) for the device, which two parts (*m* and *n*) are merely indicated by dotted lines. And Figure 4 is a view similar to Fig. 3, but without said parts shown merely in dotted lines, the foot (*a*) of the device being assumed to be in another position with respect to Fig. 3.

On the drawing, *a* denotes the said foot or shank member which is attached to the carrying member *n* of a lathe and can be fixed thereon in various positions, as may be required in any given case. At one end of said foot is an upwardly directed extension *b*, to the top of which is attached a plurality of superposed plate springs *b*<sub>1</sub> securely held in place by a bolt *f*. I wish it, however, to be understood that instead of said plurality of springs, perhaps, under circumstances, only one spring will do, viz. if an accommodation to work-pieces presenting different resistances during the working is not necessary.

It is an important feature of the invention that the elastic member, viz. the spring or springs *b*<sub>1</sub>, is, or are, located comparatively far above the place where the tool (*g*) engages the work-piece, but is, or are, nevertheless located in close prox-

imity thereto in horizontal direction, as will become obvious from the following part of this specification.

It is also worth mentioning that the springs can be manufactured easily and at low costs, as they can be stamped out of spring sheet-steel of an appropriate thickness.

The downwardly directed member *c* is practically tubular and has at its lower end a lateral recess *c*<sub>1</sub> for the reception of the tool proper *g* which is a cutting-off tool in the example shown in Fig. 1, and opposite to said recess there is a lug *c*<sub>2</sub> in which an abutment screw *o* is located. Through the member *c* extends a spindle *h* which is threaded at both ends and is provided at its upper end with a nut *d*<sub>1</sub> and at its lower end with a nut *d*. Between this nut and the lower end face of the member *c* is an intermediate piece *e* which supports the tool *g* from below and serves also as an abutment for the screw *o*. The piece *e* is pressed against said screw and the tool *g* by said nut *d*.

The spindle *h* extends also through the free ends of the springs *b*<sub>1</sub> which are located between calottes *i* and *i*<sub>1</sub>. The bores of the calottes, as well as of the springs, have such a diameter that there is formed a tubular space *p* which permits a certain slight oblique position of the member *c* with the tool *g* relatively to the springs so that the tool can assume, for instance, such a position as that indicated in dotted lines in Fig. 1. Between the upper calotte *i* and the upper nut *d*<sub>1</sub> is a suitably shaped washer *r*.

It appears from Fig. 1, that the springs *b*<sub>1</sub> are located far above the working edge of the tool *g*, but that said edge is, nevertheless, located not far from the springs in horizontal direction. This arrangement is very suitable for the proper operation of the device as regards the prevention of damages to the tool or to the work-piece or to both, in that the tool is able to give way elastically without getting hooked fast at the work-piece. It is now possible to give the tool *g* or its equivalent an oblique position, for instance like the position *g*<sub>1</sub>, and in every position the tool can be used up in its entire length without a repeated welding, the only requirement being repeated grinding of the cutting edge.

I claim:

1. An elastic holder for cutting-off tools and the like, comprising, in combination, an upwardly directed member adapted to be attached to the tool holder of a lathe or the like, a downwardly directed member located adjacent to said first-mentioned member and being at its lower end

adapted to receive the tool proper, and a plate spring extending horizontally from the upwardly extending member to the downwardly extending one and being connected therewith, said down-

5 wardly directed member comprising a body portion so designed at its top face as to be adapted to receive there an inverted calotte, an upright calotte arranged above said first calotte, the adjacent end of the spring being perforated and  
10 located between said calottes, and means for holding all these members together.

2. An elastic holder for cutting-off tools and the like comprising, in combination, an upwardly directed member adapted to be attached to the  
15 tool holder of a lathe or the like, a downwardly directed member located adjacent thereto and comprising, in turn, a body portion so designed at its lower end as to be adapted to receive there the tool proper and so designed at its upper face as to  
20 be adapted to receive an inverted calotte, another calotte located above said first calotte remote therefrom, a horizontal spring extending from the top of the upwardly directed member to the top of the downwardly directed member and hav-  
25 ing at this end a bore and taking with this end between calottes, the flat faces of which contact with said spring, said calottes having bores corresponding with the bore of said spring, and a

spindle extending through the body of the downwardly directed member and through said bore and having a smaller diameter than the said bores.

3. A cutting off tool and the like, comprising a shank member for securing the tool to a lathe, 5 an upwardly extending member secured to the first-mentioned member, a downwardly extending member to which a cutting tool is adapted to be secured, and a plate spring secured to the upwardly and downwardly extending members to  
10 permit adjustment of the upwardly and downwardly extending members relative to each other around the axis of one of said extending members, said plate spring being removably secured  
15 and mounted on its members in order that it may be interchanged with a plate spring of a different desired strength.

4. A cutting off tool and the like according to claim 3, in which there are a plurality of plate  
20 springs mounted adjacent to each other.

5. A cutting off tool and the like according to claim 3, in which there are a plurality of plate  
springs mounted adjacent to each other and in  
which means are provided on each extending  
25 member to secure the springs to said extending members.

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