April 26, 1927. 1,625,836

A. G. TANGUAY

CUTTING TOOL

Filed Sept. 5, 1925

Fig. 1

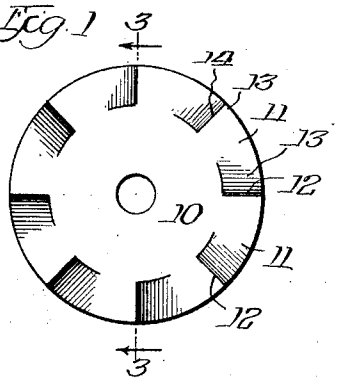


Fig. 2

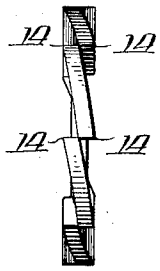


Fig. 3

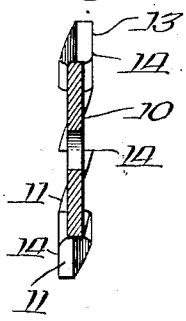


Fig. 4

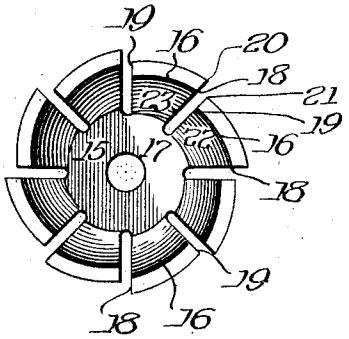


Fig. 5.

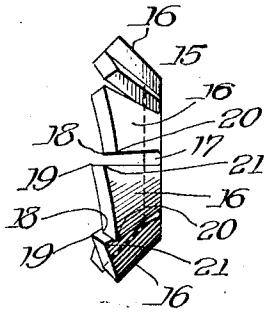


Fig. 6.

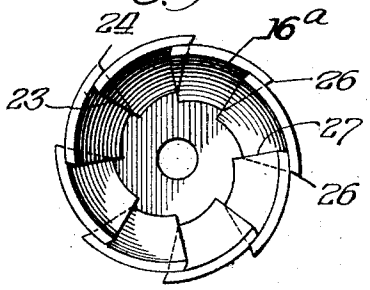
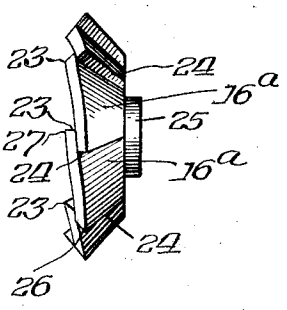


Fig 7



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Patented Apr. 26, 1927. 1,625,836

UNITED STATES PATENT OFFICE.

ARTHUR G. TANGUAY, OF CHICAGO, ILLINOIS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO BADGER TOOL & MFG. CO., A CORPORATION OF ILLINOIS.

CUTTING TOOL.

Application filed September 5, 1925. Serial No. 54,839.

The invention primarily relates to cutting devices, and particularly to devices of this character having oppositely disposed cutting elements whereby both sides of the device may be employed to accomplish a cut.

The invention has as an additional object the provision of a construction in which one cutting element will accomplish the cutting of differently disposed surfaces, such for example as a valve and its seat.

It is a further object to employ a plurality of cutting elements, each of which is capable of cutting differently disposed surfaces, and to arrange the cutting edges or faces of one element so that it occupies a different plane from another cutting edge of the same element, thereby to allow a portion of an adjacent similar element to be arranged in the same plane or alignment with a corresponding portion of the first mentioned element.

It is an additional object to arrange the portions of said elements having the cutting edges so that the ends of one of said portions overlap the ends of an adjacent similar portion, thereby to augment the strength of the cutting elements and prevent chattering during the cutting operation.

In addition to the above, it is a further object to produce a construction capable of being stamped from a sheet and formed to arrange the parts thereof to provide the various elements, whereby the above and other enumerated advantages may result.

The invention has these and other objects, all of which will be explained in detail and more readily understood when read in conjunction with the accompanying drawings which illustrate various embodiments of the invention, it being, therefore, obvious that other changes and modifications may be resorted to without departing from the spirit of the appended claims forming a part hereof.

In the drawings,

Figure 1 is a plan view of a cutter constructed in accordance with one form to which the invention is susceptible, and illustrates a construction employing oppositely facing cutters, whereby both sides of the device may be utilized for cutting a flat surface.

Figure 2 is a side elevation of the structure shown in Figure 1.

Figure 3 is a section taken on line 3—3 of Figure 1.

Figure 4 is a front view of another structure to which the invention is susceptible, and illustrates a form of the invention particularly adapted for use in grinding a valve or valve seat.

Figure 5 is a side elevation of the structure shown in Figure 4.

Figure 6 is a front view of a further construction which may be resorted to, and

Figure 7 is a side elevation of the structure shown in Figure 6.

In all of the structures illustrated, the invention is shown as being produced of a blank, shaped to provide the desired form. However, it is manifest that the structure may be produced in any other suitable or desired manner.

The structure illustrated in Figures 1–3 is comprised of a disc-shaped blank 10, which is formed to provide the annularly disposed radially extending portions 11—11, which are produced by severing the material of the blank inwardly of the periphery thereof a suitable distance, as indicated at 12—12, and pressing the opposite ends 13—13 of each of the portions 11 in opposite directions, which causes a part of the opposite ends of each portion to be extended beyond the plane of the opposite sides of the disc, which thereby produces the cutting edges 14—14. This structure provides a device which is capable of being applied to a relatively flat object to surface or cut the same.

The structure illustrated in Figures 4 and 5 is also formed of a disc-shaped blank 15 which is constructed to provide a plurality of separated members 16—16, each of which is bent laterally relatively of the center portion 17 thereof, and also bent transversely a suitable distance so as to arrange the opposite faces 18—19 of each member 16 so that one edge, such as 20, projects outwardly beyond the edge 21 of an adjacent member 16. The relative position of the face 19 of one of the members 16 and an edge 22 of the latter, which projects inwardly beyond the edge 23, and the fact that these members 16 are projected from one side of the portion 17, produces an arrangement whereby both a valve and its seat, or any other similarly shaped member, may be readily brought to the desired form.

The structure illustrated in Figures 6 and 7 substantially corresponds to that shown and described in connection with Figures 5

and 6, differing, however, in that in this form, one member, such as 16ª, is supported by an adjacent similarly constructed member, thereby to provide a more substantial device which eliminates chattering during the cutting operation.

To provide for the support of the several members 16ª, said members are formed so that the opposite edges 23 and 24 of each of said members is arranged respectively to project inwardly and outwardly thereby to provide oppositely extending cutters with said edges of each member 16ª respectively overlapping and being lapped by an adjacent member 16ª. The members 16ª are bent laterally with respect to the central portion 25 thereof, as shown in Figure 7, providing a truncated cone-shaped device composed of a plurality of annularly cutting edges 26—27 respectively located inwardly and exteriorly of the device, thereby providing a means whereby a structure such as a valve and its seat may be ground or shaped.

By arranging the longitudinal edges 23 and 24 so that one edge of one element 16ª is overlapped by an edge of an adjacent element 16ª, one edge of one of said elements is thereby supported by an edge of an adjacent element 16ª, producing a more rigid structure with the resultant advantage of the elimination of chattering during the cutting operation.

It is understood that the various structures illustrated may be formed of high speed or tool steel and may be either cast or punched from a suitably formed blank, and that the cutting edges 26 and 27 may be formed as shown, or may be caused to assume any other shape, depending upon the material to be cut or the shape of the surface to which the tool is to be applied.

Having thus described the invention, what I claim and desire to cover by Letters Patent is:

1. A cutting tool comprised of a member having a plurality of radially arranged elements, the longitudinally disposed edges of one of said elements being arranged at one side of the longitudinal adjacent edge of another element to thereby produce cutters of the opposite longitudinal edges of each element.

2. A cutting tool comprised of a member having a plurality of radially arranged converging elements, the longitudinally disposed edges of one of said elements being arranged at one side of the longitudinal adjacent edge of another element to thereby produce cutters of the opposite longitudinal edges of each element.

3. A cutting tool comprised of a member having a plurality of radially arranged elements, the longitudinally disposed edges of one of said elements being arranged at one side of and in engagement with the longitudinal adjacent edge of another element to thereby produce cutters of the opposite longitudinal edges of each element.

4. A cutting tool comprised of a member having a plurality of radially arranged elements, the longitudinally disposed edges of one of said elements being arranged at one side of and in overlapping relation to the longitudinal adjacent edge of another element to thereby produce cutters of the opposite longitudinal edges of each element.

5. A cutting tool comprised of a member having a plurality of radially arranged elements, the longitudinally disposed edges of one of said elements being arranged at one side of and in engaging overlapping relation to the longitudinal adjacent edge of another element to thereby produce cutters of the opposite longitudinal edges of each element.

6. A cutting tool comprised of a member having a plurality of radially disposed elements, the opposite edges of each element being offset with relation to each other and an adjacent edge of another element throughout the length thereof, to thereby produce cutting edges of the opposite longitudinal edges of each element.

7. A cutting tool comprised of a member having a plurality of elements, each of said elements being bent transversely of its length to arrange one edge of one of said elements at one side of the opposite edge of said element, thereby to provide cutters of the opposite edges of said elements.

8. A cutting tool comprised of a member having a plurality of elements disposed circumferentially of said member, each of said elements being arranged at an angle and being bent transversely of its length to locate one edge of one of said elements at one side of the opposite edge of said element, thereby to provide each element with inwardly and outwardly arranged cutters.

9. A cutting tool formed of a blank having radially extending separated elements, each of which is bent at an angle to a portion of the blank and bent transversely of its length to arrange one edge of each element in a different plane to that of the opposite edge to thereby provide cutters at each edge, one edge of one of said elements being arranged to overlap an edge of an adjacent element, said edges providing inwardly and outwardly arranged cutters.

10. A cutting tool comprised of a member having a plurality of radially laterally extending elements, each of which is bent transversely of its length to arrange one edge thereof in a relatively different plane to the opposite edge to provide cutters at each edge, one edge of one of said elements being arranged to overlap an edge of an adjacent element, thereby to provide inwardly and exteriorly arranged cutting elements.

11. A cutting tool comprised of a member

having a plurality of radially laterally extending elements, each of which is bent transversely of its length to arrange one edge thereof in a relatively different plane to the opposite edge, one edge of one of said elements being arranged to overlap and engage an edge of an adjacent element, thereby to provide inwardly and outwardly arranged cutting elements.

In witness whereof, I hereunto subscribe my name this 21st day of August A. D., 1925.

ARTHUR G. TANGUAY.