

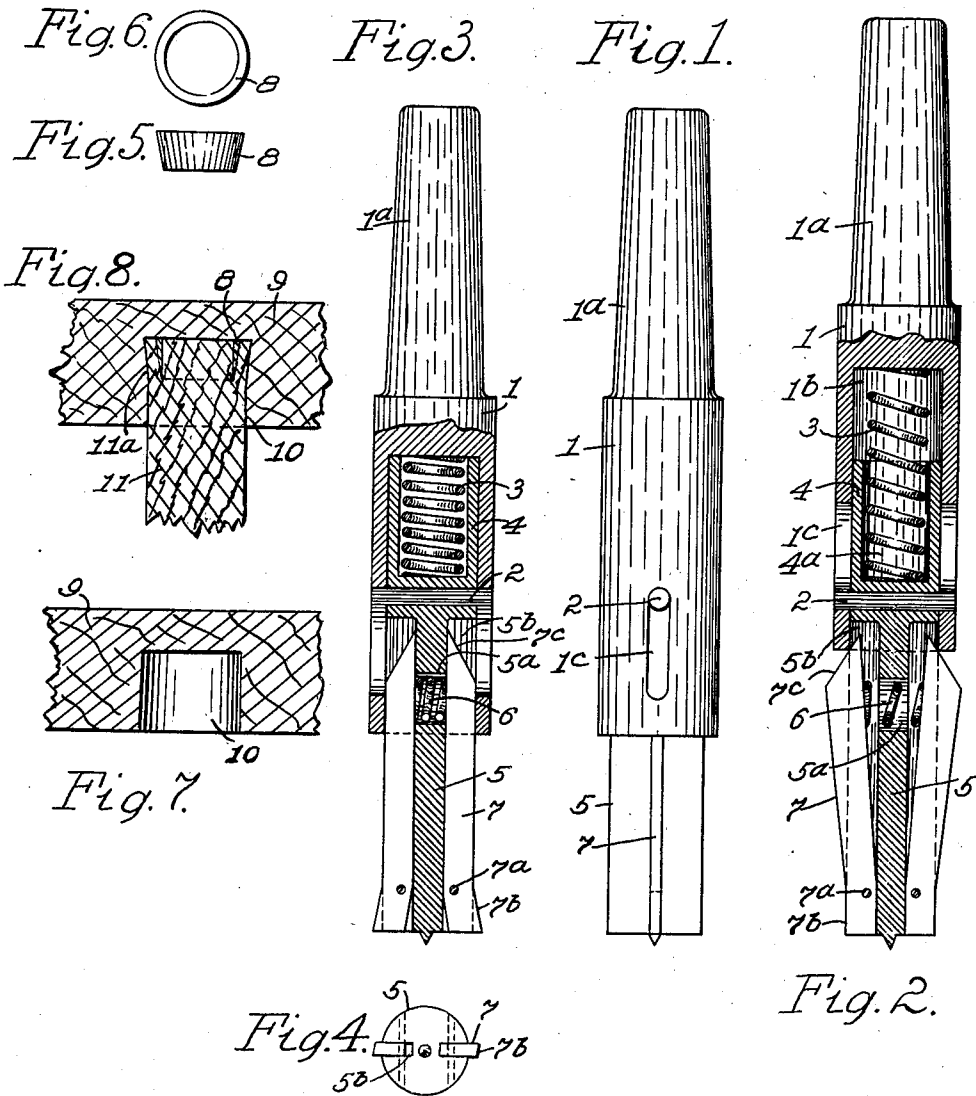
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EXPANDING CUTTER

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EXPANDING CUTTER

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2 Claims. (Cl. 145—124)

My invention pertains to means for the seating and interlocking of the termination of a wooden element endwise in and to another, and an object of said means is to provide a reamer or expanding cutter especially adapted to shape a hollowed seat in one element to receive an end of another element interlockingly in a firm joint.

Another object of my invention is to associate with the end of the received element a penetrating wedge device shaped appropriately to conically open and spread the termination of said element upon the removal of the expanding cutter when the reaming members thereof are retracted and when said reamers have produced a conic internal end hollow as a part of said seat, and when the received element is finally driven into the seat.

I have accomplished said objects by the mechanical device illustrated and described herein, and by the use of the said wedge device as assembled with and penetrating the received element when said element is driven into a socket preliminarily supplied in the receiving element and as modified in its internal contour as shaped terminally by outward expansion of the reamer bits to interlock the elements fixedly together.

The different means above mentioned are illustrated in the accompanying drawing, described severally, and defined by the claims.

Fig. 1 is a side elevation of the expanding cutter tool. Fig. 2 is a view of the tool as rotated one quarter revolution, with the upper part of the tool in elevation and the remainder of certain parts thereof in longitudinal central section, with the reaming cutters in side elevation and as outwardly projected when not in service. Fig. 3 is a similar view of the tool with its reaming cutters projected outwardly in the positions assumed when the tool is being employed in reaming a conical widening in the inner wall of a cylindrical socket preformed in a billet for end reception of a cross element to be interlockingly seated therein. Fig. 4 is a view of the lower end of the tool with extended cutters. Figs. 5 and 6 are respectively a side elevation and a top plan of the tubular conic wedge, and Figs. 7 and 8 are sections respectively of the socketed billet, and of an end expanded bar seated upon the wedge in the socket.

Referring initially to said Figs. 1 to 3, being representations of an expanding reamer tool of my invention, Fig. 1 shows in elevation a downwardly socketed member 1 having a conical shank 1a to be received into an operating device for

rotating it and not shown, and also displaying the depending part of a carrying body 4 with extensible cutters or bits. The specific construction shown in Fig. 2, comprises said stemmed socketed member 1—1a with hollow 1b and having transverse opposite longitudinal slots 1c. A downwardly cupped body 4 is slidably seated in the hollow 1b and its base part has seated therethrough a fixed cylindric pin 2 with projecting ends in said slots 1c. The lower body part 5 depending from the cupped part 1b is oppositely longitudinally channeled at 5b to seat therein a pair of cutter-bars 7 on pivots 7a to the body 5 at their sides, the upper end parts of the cutter-bars being outwardly beveled at 7c with their terminations extending a little into the upper parts of the channels 5b and to rockingly slidingly engage the abutting inner angle of the member 1. The lower ends of the cutter-bars are bent slightly outwardly below the pivots 7a and as shown in Fig. 4 have the outer lateral faces 7b beveled longitudinally with the cutting angles located in the direction of rotation of the tool. The web x of the body 5 between said cutter-bars is transversely orificed at 5a to seat therein and therethrough a short coiled compression spring 6 whose outer ends engage the inner faces of said cutter-bars. A longer coiled compression spring 3 is seated in the hollow 1b of the upper member 1 and also seated in the hollow of the lower cupped member 4 and end-engaged with both members terminally. As stated, when the tool is not in use, the springs are both expanded as shown in Fig. 2, Fig. 3 showing the relative positions of the springs when compressed as in use, and showing the cutter-bars 7 rocked to extend outwardly the cutter ends 7b for reaming purposes. When the tool is not in use, the springs 3 and 6 react to place the moving elements in the positions shown in Fig. 2.

Fig. 7 shows a fragmental section of a wooden member 9, as part of a chair leg having a closed end cylindrical socket 10 with a previously shaped contour.

Fig. 6 shows a plan of the wider end of a conical wedge with cylindric hollow as shown at 8, and Fig. 5 shows it in side elevation, the position of the wedge as illustrated being diminished downwardly, but during the operation of mounting the wedge centrally in the hollow socket 10 previously formed in the member 9 the wedge is located in the bottom of the socket when the body 9 is placed with its socket 10 opening up-

wardly with the narrower edge part of the wedge also upwardly.

The tool shown in Figs. 1 to 3, is used when secured in a socketed spindle or holder of a driving means and rotated, and introduced into the socket 10 presented upwardly or laterally as desired, and under pressure longitudinally, where this pressure upon the shank 1a and its depending chamber part 1b acts to slidably press upon the upper bevels 7c of the cutter-bars 7 to rock them and project outwardly the cutter faces 7b, and the latter excavate and conically shape the inner wall of the socket 10 to flare outwardly conically. When the tool is removed from the socket 10, which opens upwardly in practice, the conical wedge 8 is to be introduced thereinto to rest centrally upon the bottom of the socket, and then the rounded termination of a bar 11 may be introduced to rest upon the wedge at its smaller end also centrally and driven into the socket, causing the wedge to penetrate the end of the bar, forcing outwardly yielding end fibers of the bar into and to seat tightly and lockingly in the conical surrounding wall part 11a of the socket, to rigidly seat the bar 11 therein. It will be understood that modifications in details may be effected in the structures of the tool and their relative dimensions without departing from this invention, and also the conical wedge may be varied in length or outer conformation, as is desired in coaxially shaping the socket for the bar 11 lockingly.

I claim:

1. An expanding cutter of the character described, comprising in combination, a downwardly cupped tool holder, an upwardly cupped member having its upper part slidably and non-rotatably seated in said holder, means to limit the slidability of said member, the lower part of said member depending from the holder and having its depending part at opposite sides longitudinally channeled forming an intermediate web, cutter members pivoted intermediate their ends in said

channels with their lower ends bent outwardly and with the outer faces of said ends beveled into cutting edges, a compression spring engaged longitudinally between the cupped holder and said member, the web of said member being apertured transversely between the cutter members and a compression spring traversing said aperture to engage said cutter members, and said cutter members extending into the cup of the holder and having their outer upper faces beveled to ride upon the inner lower edge of the holder to move said cutting edges outwardly by the downward movement of the said holder.

2. An expanding cutter of the character described, comprising in combination, a downwardly cupped tool holder, an upwardly cupped member having its upper part slidably and non-rotatably seated in said holder, means to limit the slidability of said member, the lower part of said member depending from the holder and having said depending lower part oppositely longitudinally channeled, forming an intermediate web, the depending cupped wall of said holder having opposite longitudinal slots, the lower portion of said cupped member below its cup being transversely apertured and a pin seated therein and end-seated in said slots loosely, cutter members pivoted intermediate their ends in said channels with outwardly projecting cutters at their lower parts, and with the outer walls of their upper ends beveled inwardly and upwardly and seated in the lower cupped part of said holder to slidably and rockably engage it, a compression spring in the cupped part of the holder and the cupped part of said cupped member and engaged therewith, the web of said cupped member below the holder being transversely apertured, and a compression spring seated in and extending through the aperture with its terminations bearing upon the inner faces of the inner ends of the cutter members.

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