May 14, 1957 W. J. GREENLEAF 2,791,825

CUTTING TOOL HOLDER

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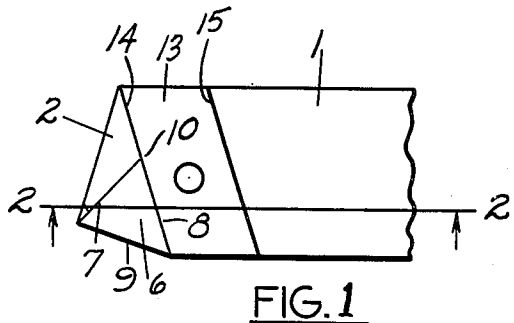


FIG. 1

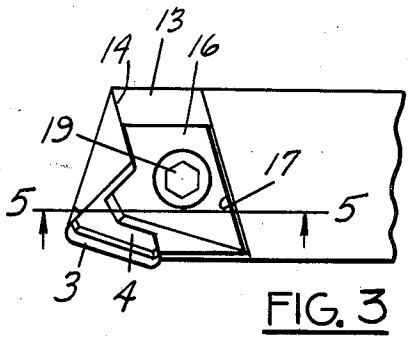


FIG. 3

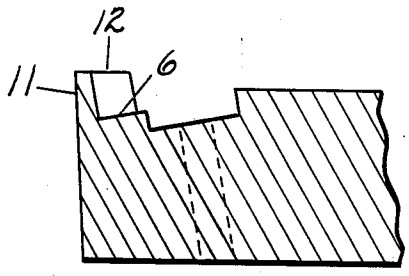


FIG. 2

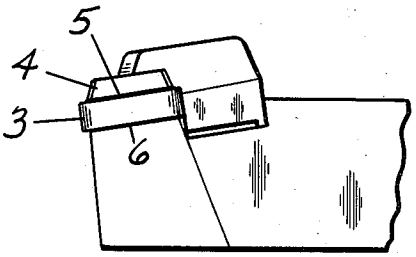


FIG. 4

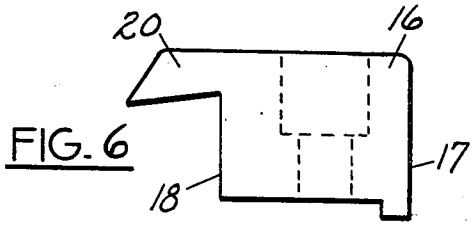


FIG. 6

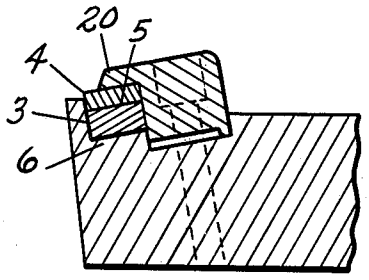


FIG. 5

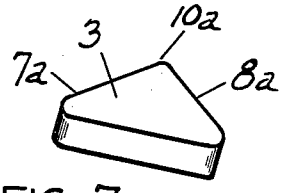


FIG. 7

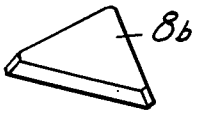


FIG. 8

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CUTTING TOOL HOLDER

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Application March 19, 1956, Serial No. 572,433

1 Claim. (Cl. 29—96)

This invention is a cutting tool using thin triangular carbide bits which are indexable by rotation and by turning end for end so as to bring six successive cutting edges into active or cutting position. If the position of the cutting edges changes with respect to the holder as the bit is indexed, compensating adjustment of the holder will be required. By this invention ,the holder locates the bit so the cutting edges do not change in position as the bit is indexed.

In the accompanying drawing, Fig. 1 is a top plan view of the holder with the bit and clamp removed; Fig. 2 is a section on line 2—2 of Fig. 1; Fig 3 is a top plan view of the holder with the bit and clamp in place; Fig. 4 is a side view; Fig. 5 is a section on line 5—5 of Fig. 3; Fig. 6 is a side view of the clamp; Fig. 7 is a perspective of the bit; and Fig. 8 is a perspective of a chip breaker which may be used with the bit.

In the drawing, there is shown a holder having a shank 1 and a head 2 for receiving a triangular bit 3 and if desired a triangular chip breaker 4 on the upper or top surface 5 of the bit. Both the bit and the chip breaker may be made of one of the cemented carbides. Because the bit 3 is extremely short or thin, is requires a perfectly flat hardened seat as the slightest irregularity will cause fracture. One way of obtaining such a seat is to harden the seat after machining and then to surface grind to a true flat surface. Such a seat is shown at 6. It will be noted that the seat 6 underlies and conforms to the shape of the bit 3 in that front and back sides 7 and 8 of the seat converge from one side 9 of the head toward a point 10. The bit 3, when resting on the seat 6, has similar front and back sides 7*a* and 8*a* convering toward a point 10*a*. The seat 6 is inclined as indicated in Fig. 2 so that the bit 3 resting thereon has the proper cutting clearance. At the front side 7 of the seat, there is an upstanding portion 11 on the head having a surface 12 at right angles to the seat engaging the front side 7*a* of the bit. At the back side 8 of the seat, there is machined a groove 13 having front and back sides 14 and 15 parallel to each other and also to the back side 8 of the seat. Fitting in the groove is a clamp 16 having a back side 17 parallel to and engaging the back side 15 of the groove and having a front side 18 parallel to the back side 17 and engaging the back side 8*a* of the bit 3. If the chip breaker 4 is used, the back side 18 of the clamp also engages the back side 8*b* of the chip breaker. Because the back side 15 of the groove is parallel to the back side 8*a* of the bit, sliding the clamp 16 along the groove does not in any way change the position of the bit. From one aspect, the back side 15 of the groove serves as a locating shoulder parallel to the back side 8*a* of the bit and to the surface 18 of the clamp. This means that any clearance around the hold-down screw 19 for the clamp which might permit shifting of the clamp along the groove 13 will have no effect at all upon the location of the bit.

This is particularly important in indexable bits where as the bit is turned to bring a new cutting edge into active or cutting position, it is desirable that the new cutting edge occupy the same position with respect to the cutting head as the old cutting edge so that no adjustment will have to be made in order to continue the cut. The clamp has an integral projection 20 extending out over the top of the chip breaker 4 and clamping the chip breaker and bit against the seat. The projection 20 might be made as a separate piece but a simpler construction is obtained by having the projection integral with the clamp so that the hold-down screw 21 for the clamp both secures the clamp to the head and holds the bit against the seat. In the particular construction shown, the projection 20 is far enough from the seat 6 to permit the use of a chip breaker 4 on top of the bit 3. If the chip breaker 4 were not used, the projection 20 would be closer to the seat 6 so that it would directly engage the top surface of the bit.

It will be noted that the holder is very easy to machine. The seat 6 and the side 12 on the upstanding portion 11 at the front of the head can be machined by a straight milling cut parallel to the side 12. This milling cut need in no way touch the shoulder 15. After the holder is hardened, any warping of the seat 6 can be removed by surface grinding and again straight passes of the grinding wheel parallel to the side 12 need not touch or affect the shoulder 15. Similarly, the milling of the groove 13 which forms the shoulder 15 can be by a straight cut which does not touch or otherwise affect the seat 6. It will be noted that at the side of the head opposite the bit, the groove 13 intersects the upstanding portion 11 at the front of the head along line 22. This is to the rear of the seat 6 and in no way affects the support of the bit. The machining operations on the clamp 16 are equally easy. The sides 17 and 18 of the clamp are parallel to each other.

What is claimed as new is:

In a cutting tool having a body for attachment to a machine tool and a head for carrying an indexable throw-away bit of triangular cross-section and of length less than any other dimension and with its longitudinal axis extending in the general direction of the downward component of the cutting thrust, said head having a flat seating surface adjacent the front and at one side of the head, a triangular bit resting on the seating surface with front and back sides of the bit converging toward the opposite side of the head and meeting at a point, said seat being inclined so the bit has the desired cutting clearance, an upstanding portion on the head at the front side of the seat having a surface at right angles to the seat engaging said front side of the bit, said head having an abrupt straight shoulder extending parallel to said back side of the bit and spaced rearwardly from said back side of the bit a distance sufficient to permit milling and surface grinding of the seat without touching the shoulder and to permit milling of the shoulder without touching the seat, a clamp having a projection extending out over the top of the bit to clamp the bit against the seat, said clamp having portions parallel to each other between and engaging the shoulder and the back side of the bit, the angle between the shoulder and said surface of the upstanding portion of the head being the same as the angle between said front and back sides of the bit whereby movement of the clamp along the shoulder does not change the position of the bit, and means fastening the clamp to the head.

No references cited.