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R. BREUNING

2,952,171

TYPE OF CUTTER-BAR

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FIG. 1.

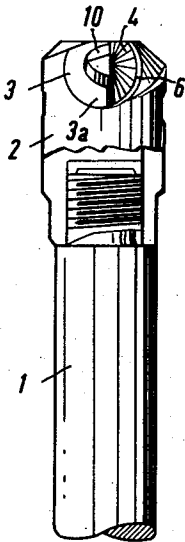


FIG. 2.

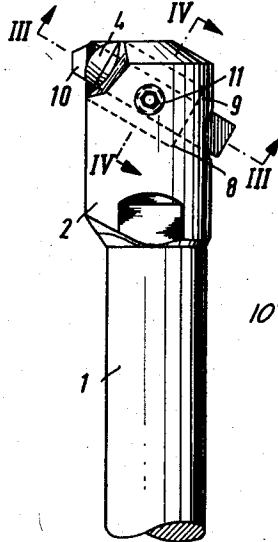


FIG. 3.

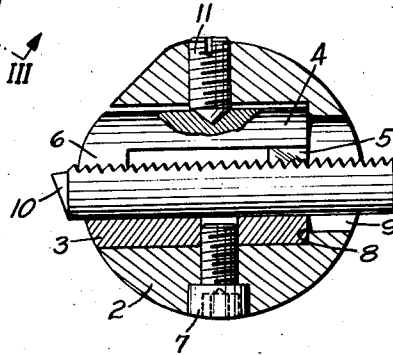
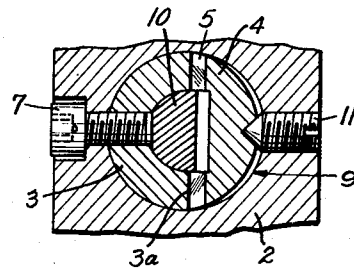


FIG. 4.



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1

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TYPE OF CUTTER-BAR

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2 Claims. (Cl. 77—58)

The present invention relates to an elongated cutter-bar or boring-bar or similar tool holder provided with an elongated turning-tool longitudinally adjustable transversely of the holder and secured in adjusted position by a releasable clamping element.

In cutter-bars of this type, the forward end of the bar, or the head-part secured to the forward end of the bar, receiving the turning-tool, are usually flattened down to such an extent that the superposed clamping or fastening element does not project beyond the cylindrical circumference of the cutter-bar. In addition to this, there is usually provided within the already flattened-down portion of the cutter-bar, or in the head-part, a bed-part in which the turning-tool is supported.

The result of this is a considerable reduction of the wall-thickness of the part housing the turning-tool, so that in case of excessive strain on the turning-tool considerable vibrations can not be avoided. Also it is impossible to substantially reduce the length of the cutting tool.

The object of the invention, therefore, is to provide a cutter-bar in which these disadvantages will not occur. And, according to the invention, this is achieved by the special arrangements of the bed and clamp positioned in a transverse bore through the bar and spaced to receive the turning tool between them with clamping engagement of the tool near one end of the bore, leaving the remainder of the tool supported by the bed, but the bit may be shortened substantially by regrinding for more economical use.

The cross-section of the bed-part, or of the turning-tool, may be of semi-circular, trapezoidal, or triangular shape preferably, however, the cross-section of the bed-part, or of the turning-tool, has the shape of a partial ellipsis provided with symmetrical flanks, whereby the turning-tool positioned in the bed-part is so dimensioned that it slightly projects from the bed-part. A cross-section like this has the advantage that permissible variations in measure, which are frequent in hard-metal turning-tools, can be made up for by the clamping element without the necessity of re-grinding of the turning-tool and without interference with the reliable seat of the turning-tool in the bed-part.

Additional features and advantages of the invention will be understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming a part of this specification and in which an embodiment of the invention has been shown by way of example. However, I wish to say that the invention is not confined to any strict conformity with the showing of the drawings but may be changed or modified, so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appending claims.

In the drawings in which like parts are referred to by the same reference numerals,

Fig. 1 is a side-view of a cutter-bar with a portion of the head-part removed;

2

Fig. 2 is a top-plan-view of the cutter-bar of Fig. 1; Fig. 3 is a sectional view on line III—III of Fig. 2; Fig. 4 is a sectional view on line IV—IV of Fig. 2.

In the embodiment illustrated in the drawings, the reference numeral 1 designates the cutter-bar. 2 is the head having a cross bore 9 of less diameter at the right hand end than the major portion of the bore which provides a shoulder 8 near one end and facing toward the head axis. Bed 3 is of semi-cylindrical cross section and at one end its edges 3a are provided with extensions 5. 4 is the clamp received in the bore opposite to bed 3 and seated against shoulder 8. At its right hand end its flat face rests upon extensions 5. At its left hand end the clamp has a projection 6 bearing against the upper face of the cutting tool or bit 10 which is seated against the inner face of bed 3. A stud 7 with a shouldered head seated in a socket in head 2 is threaded into bed 3 and seats the bed against the adjacent portion of bore 9. A set screw 11 threaded into head 2 has a pointed end seated in a recess in clamp 4 and thrusts the ends of the latter against extensions 5 and bit 10, respectively. The right hand end of bed 3 is seated against shoulder 8. The opposing faces of clamp element 6 and bit 10 are roughened or serrated transversely to prevent slippage.

The thickness of bit 10 is greater than the depth of the concavity in bed 3 so that the bit projects above the plane of the flat side edges of the bed (Fig. 4). The opposing faces of the bit and bed are arcuate but may be made triangular or trapezoidal. These interengaging faces permit tolerances in the dimensions of the parts without requiring a grinding fit and at the same time provide a secure seating of the bit against the bed.

Through loosening of the screw 11, the clamping element 4 is enabled to move within the bore away from the bit for the extent of the space between its rear face and the side of the bore, so that bit 10 can then without difficulty be withdrawn or re-inserted, for example for the purpose of re-grinding.

Beyond the clamp projection 6 bit 10 is engaged on one side by bed 3 but on the other side is free from contact with any clamp element and therefore not subjected to stresses except through projection 6. The bit may be sharpened repeatedly and throughout the major portion of its length until only so much remains as will suffice for engagement by clamp element 6.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A boring bar tool comprising a cylindrical head provided with a substantially cylindrical through passage of less width than the diameter of the head and extending diagonally through the head and open at its ends, there being a shoulder in said passage near one end of the passage and facing toward the head axis, an elongated rigid bed semicylindrical in cross section with an arcuate outer face seated against one side of said passage and with an elongated cavity of uniform cross section in its flattened inner face forming a cutter bit seat, the bed having an inner end seated against said shoulder and an outer end adjacent the periphery of the head, the sides of said recess including short upstanding, transversely extending lugs near said bed inner end, a shouldered set screw inserted through the head from the exterior thereof and threaded into the bed intermediate the ends of the bed and holding the bed securely in place in said passage, an elongated rigid clamping element, substantially semicylindrical in cross section with an arcuate outer face received in the side of said passage opposite to the bed and with its flattened inner face opposing the bed, one end of the clamping element flattened inner face being seated on said bed lugs and the other end of the element flattened face having a transversely extending off-

set toward the outer end of the bed, an elongated cutting bit seated in said bed cavity, said clamping element offset and said lugs being so proportioned that the offset only engages the outer end portion of the bit, said lugs being further proportioned to said recess as to accommodate a bit long enough to extend out beyond the ends of the bed, and a set screw threaded into the head intermediate the ends of the clamping element and forcing its end portions against the cutting bit and against the bed lugs respectively to grip the bit and hold it securely and stably against the bed.

2. A boring bar tool comprising a cylindrical head provided with a substantially cylindrical through passage of less width than the diameter of the head and extending diagonally through the head and open at its ends, there being a shoulder in said passage near one end of the passage and facing toward the head axis, an elongated rigid bed semicylindrical in cross section with an arcuate outer face seated against one side of said passages and with an elongated cavity of uniform cross section in its flattened inner face forming a cutter bit seat, the bed being wholly contained within the head and the sides of said recess including short upstanding, transversely extending lugs near said bed inner end, an elongated rigid clamping element, substantially semicylindrical in cross section with an arcuate outer face received in the side of said passage opposite to the bed and with its flattened inner face opposing the bed, one end of the clamping element flattened inner face being seated on said bed lugs and the other end of the element flattened face having a transversely extending offset toward the outer end of the bed, an elongated cutting bit seated in said bed cavity, said clamping element offset and said lugs being so proportioned that the offset only engages the outer end portion of the bit, said lugs being further propor-

tioned to said recess as to accommodate a bit long enough to extend out beyond the sides of the head, and a set screw threaded into the head intermediate the ends of the clamping element and forcing its end portions against the cutting bit and against the bed lugs respectively to grip the bit and hold it securely and stably against the bed.

References Cited in the file of this patent

UNITED STATES PATENTS

781,786	Phillips	Feb. 7, 1905
1,056,653	Fish	Mar. 18, 1913
1,104,980	Fry	July 28, 1914
1,242,707	Lovejoy	Oct. 9, 1917
1,256,359	Oberg	Feb. 12, 1918
1,319,950	Davey	Oct. 28, 1919
1,447,139	Lee	Feb. 27, 1923
1,487,259	Moglich	Mar. 18, 1924
2,160,369	Rikof	May 30, 1939
2,305,737	Richards	Dec. 22, 1942
2,308,151	Bogdel	Jan. 12, 1943
2,347,136	Speckert	Apr. 18, 1944
2,541,719	Proksa	Feb. 13, 1951

FOREIGN PATENTS

5,600	Great Britain	Mar. 17, 1894
375,757	Germany	May 18, 1923
549,862	Great Britain	Dec. 10, 1942
127,489	Australia	Apr. 16, 1948
257,171	Switzerland	Sept. 30, 1948
656,983	Great Britain	Sept. 5, 1951
304,458	Switzerland	Jan. 15, 1955
1,105,369	France	June 29, 1955
1,102,292	France	May 4, 1955