Feb. 25, 1930. A. T. GREEN 1,748,877

COMBINED GUIDE AND SUPPORTING BRACKET FOR VALVE BORING TOOLS

Filed May 1, 1928

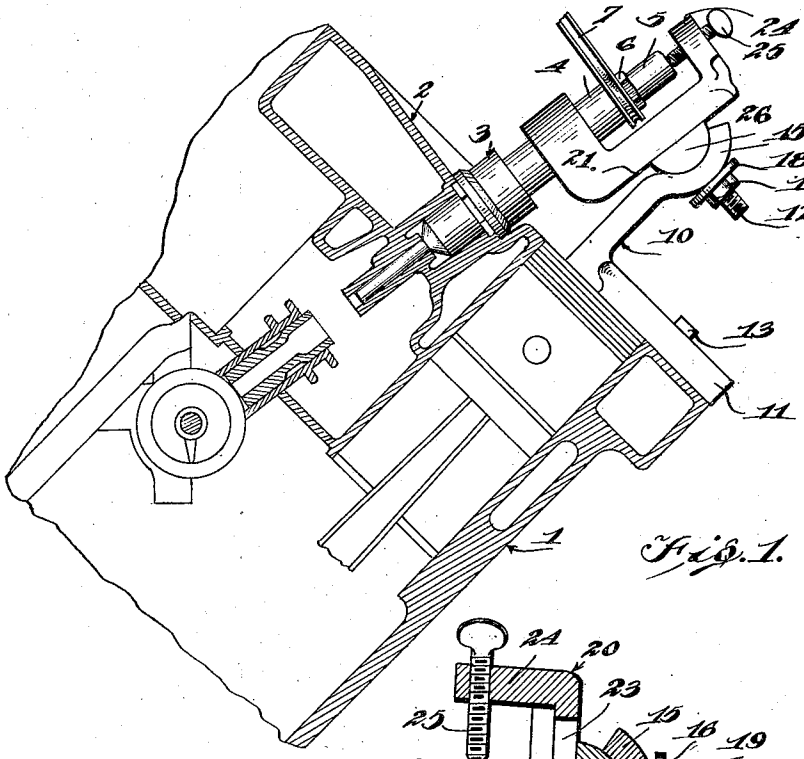


Fig. 1.

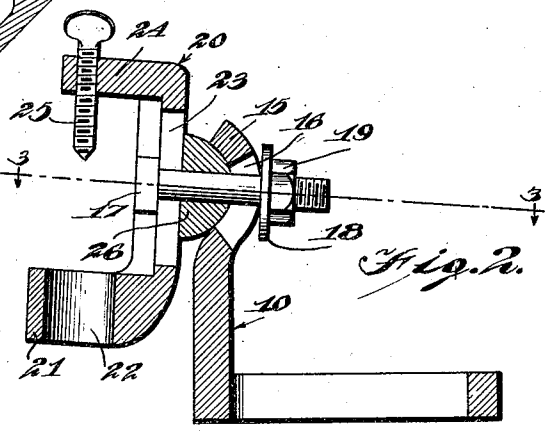


Fig. 2.

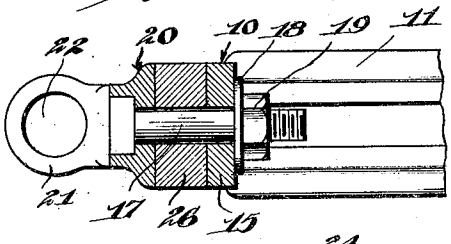


Fig. 3.

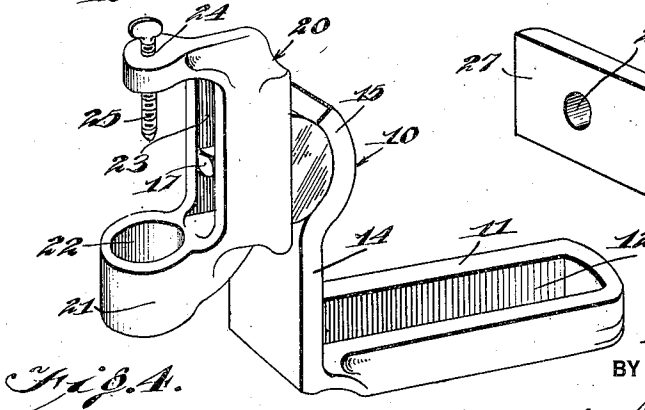


Fig. 4.

Fig. 5.

INVENTOR
A. T. GREEN,
BY
ATTORNEY

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UNITED STATES PATENT OFFICE

ANSEL T. GREEN, OF ABERDEEN, SOUTH DAKOTA

COMBINED GUIDE AND SUPPORTING BRACKET FOR VALVE-BORING TOOLS

Application filed May 1, 1928. Serial No. 274,285.

This invention relates to valve reseating and boring tools and more particularly to a combined guide and supporting bracket for such tools.

A primary object of the invention is to provide a simple and efficient device of this character for use in connection with boring tools such as those shown and described in my co-pending application filed December 20, 1926, Serial No. 155,961.

Another object is to provide a unique bracket of this character which is adjustable to accommodate jobs where the valves are not at a right angle to the face of the cylinder block.

Another object is to provide a device of this character which may be quickly applied and removed and which, when in use, will reliably support and guide the boring tool, thereby ensuring the proper boring of recess for valve seat or facing of the valve seat.

In carrying out these objects, the invention is susceptible of modification without departing from the spirit or sacrificing any of the advantages of the claimed invention; there being shown in the drawings for illustrative purposes a preferred and practical form, in which:

Figure 1 represents a side elevation of this improved guide bracket shown applied.

Fig. 2 is a vertical section of the bracket detached,

Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 2,

Fig. 4 is a perspective view of the bracket detached, and

Fig. 5 is a perspective view depicting an intermediate member employed in connection with the bracket and the tool holder.

In the embodiment illustrated, an engine cylinder 1 is shown having the usual block 2 with the head removed for the application of the facing or boring tool shown in general at 3. This tool 3 is, as above set forth constructed in accordance with my invention described and claimed in my copending application, and has an upstanding pilot stem 4 with a reduced extension 5 at the junction of which with the stem is formed an angular portion 6 for engagement by a ratchet wrench 7 to be used in the boring operation.

The combined guide bracket and support constituting this invention is shown in general at 10 and comprises an elongated base 11 having a longitudinally extending slot 12 through which is designed to be passed a bolt 13 for adjustably mounting the guide on the engine block. Rising from one end of this base 11 is a standard 14 provided at its upper end with a concavo-convex head 15 having a slot 16 extending longitudinally thereof to receive a bolt 17 which supports the tool carrying member 20 and adjustably mounts it on the bracket 10. This bolt extends through the slot 16 with its threaded portion projecting beyond the convex face of the head 15 and has mounted thereon a washer 18 and nut 19 whereby it may be tightened up and securely held in adjusted position in a manner presently to be described.

A semi-cylindrical block 26, preferably composed of polished steel, although obviously it may be constructed of other suitable metal, is designed to be inserted between the bracket or tool holding member 20 and the concave face of the head 15 of the member 10. This block 26 has a flat outer face 27 designed to lie flat against the rear face of the holder 20 and its curved face 28 is shaped to fit within the concave face of the head 15. An aperture 29 extends transversely through this block, preferably about midway the length thereof, and is designed for the passage therethrough of the bolt 17, which connects the member 20 with the head 15.

The tool holding member 20 is preferably made in the form of a substantially U-shaped bracket, the arm 21 of which extends laterally relatively to the standard 14 when the parts are in operative position, and has a bore 22 to receive the stem 4 of the tool, as is shown clearly in Fig. 1. The other arm 24 of the member 20 is located in a plane above the arm 21 and has a threaded aperture to receive a screw 25 which is preferably in the form of a thumb screw and is designed to operate through said arm and bear on the upper end of the tool 3 to exert pressure thereon. The aperture 22 of the arm 21 is of a size to

encircle the pilot stem 4 of the tool 3 as shown clearly in Fig. 1, and when the parts are assembled, as shown in said figure, the tool will be securely held against lateral movement relatively to the holder 20, pressure being exerted on the tool by the thumb screw 25 to maintain the tool in cutting relation with the piece to be bored or faced. The member 20 has a longitudinally extending slot 23 in the body portion thereof, as shown clearly in Fig. 2 for the passage therethrough of the bolt 17, the head of which overlies the outer face of said body at the slotted portion thereof and adjustably connects the member 20 relatively to the block 26.

The mounting of the tool holding member 20 on the standard 14 through the bolt 17 and the semi-cylindrical block 26 as well as the slots with the bolts extending therethrough and especially the slot in the base of the bracket provides for the adjustment of this member 20 both laterally, vertically, and outwardly and inwardly, providing a substantial swivelled connection between the members 20 and 14, so that it may be used in connection with valves which are not at a right angle to the cylinder block.

To apply the bracket, all that is necessary is to insert the bolt 13 through the slotted base 11, said bolt being entered in one of the threaded sockets which is ordinarily used in connection with the engine head securing bolts.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit and scope of the claimed invention.

I claim:—

1. A combined guide and supporting structure for valve seat boring and facing tools comprising a longitudinally slotted base having an upstanding arm at one end thereof provided with a concavo-convex head, said head being longitudinally slotted in the concavo-convex portion, a substantially U-shaped tool holding member having a relatively elongated bight portion, said bight portion having a longitudinally extended slot formed therein, a substantially semi-circular relatively elongated member having an opening extending radially therethrough, a bolt extended through a longitudinal slot in said bight portion, the opening in said semi-circular member, and the slot in said concavo-convex portion whereby a nut may be fitted thereon to clamp said tool holder to said upstanding arm with said semi-circular member disposed with the rounded portion thereof in said concavo-convex portion and the flat portion thereof in abutment with said bight portion.

2. A combined guide and supporting bracket for valve seat boring and facing tools comprising a longitudinal slotted base having an upstanding arm at one end thereof provided with a concavo-convex head having the concave portion thereof opening in a direction away from said base, said concavo-convex portion being longitudinally slotted, a substantially U-shaped member having a relatively elongated flat bight portion, said bight portion having a slot formed therein, one arm of said U-shaped member having a tool receiving bore formed therein, the other arm of said tool holding member having a threaded bore formed thereon in alignment with said tool receiving bore whereby a thumb screw may be mounted therein, a relatively elongated member of semi-circular cross section having an opening extending radially therethrough, a bolt member having the shank thereof extended through the slot in said bight portion, the opening in said semi-circular member, and the slot in said concavo-convex portion whereby the head thereof may be disposed in engagement with said bight portion while a nut may be fitted thereon on the portion thereof extended through said slot in said concavo-convex portion whereby said tool holding member may be clamped to said upstanding arm.

Signed at Aberdeen, in the county of Brown and State of South Dakota, this 16th day of April, A. D. 1928.

ANSEL T. GREEN.