April 30, 1935. T. D. ENETE 1,999,322

VALVE SEAT GRINDER

Filed Nov. 2, 1934 3 Sheets-Sheet 1

Fig. 1.

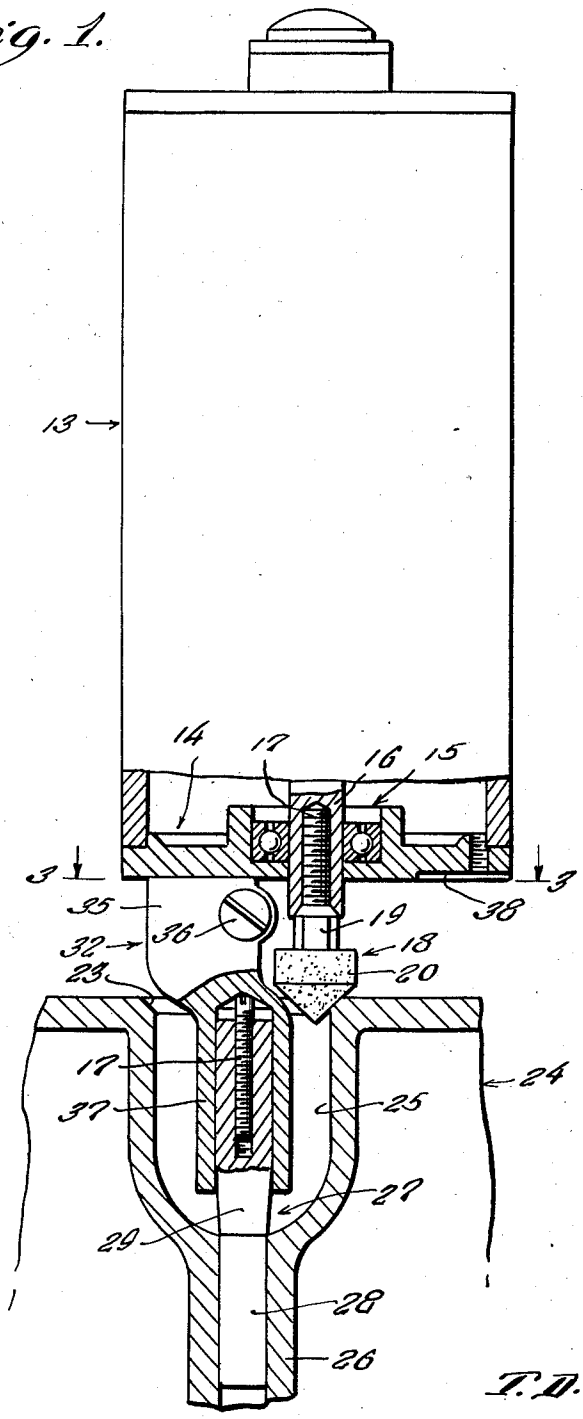


Fig. 11.

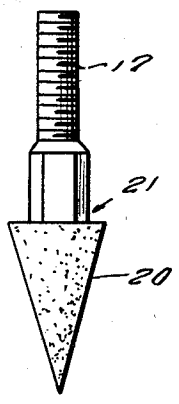
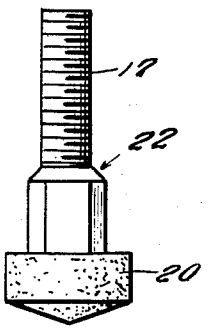


Fig. 12.



Inventor

T. D. Enete

By Clarence A. O'Brien

Attorney

April 30, 1935. T. D. ENETE 1,999,322

VALVE SEAT GRINDER

Filed Nov. 2, 1934 3 Sheets-Sheet 2

Fig. 2.

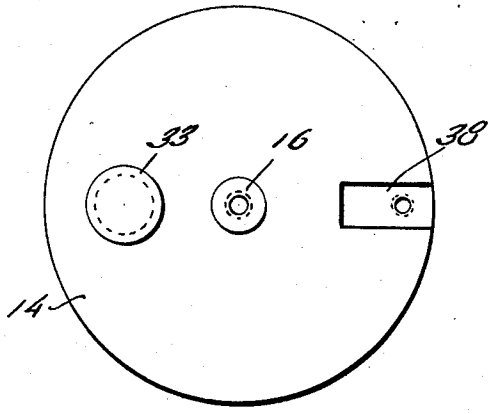


Fig. 4.

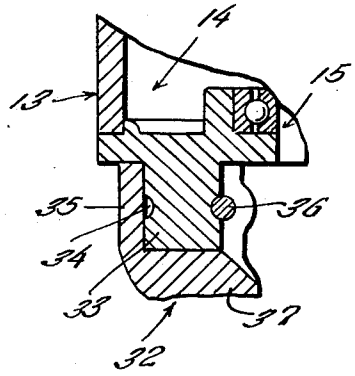


Fig. 3.

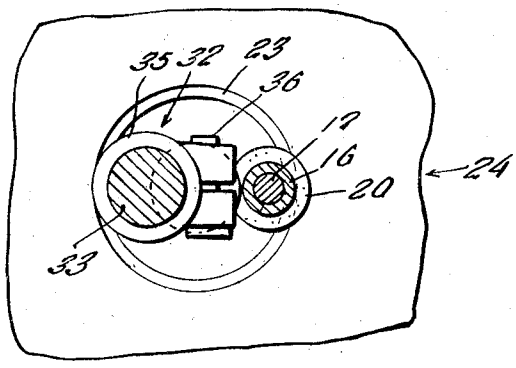
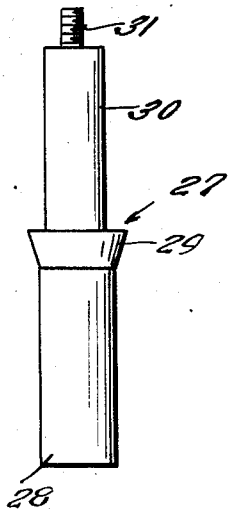


Fig. 5.



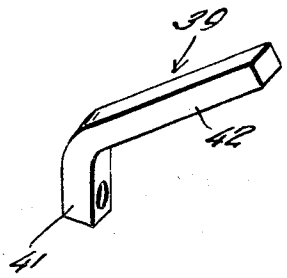


Fig. 6.

Inventor

T. D. Enete

By Clarence A. O'Brien

Attorney

April 30, 1935. T. D. ENETE 1,999,322

VALVE SEAT GRINDER

Filed Nov. 2, 1934 3 Sheets-Sheet 3

Fig. 7.

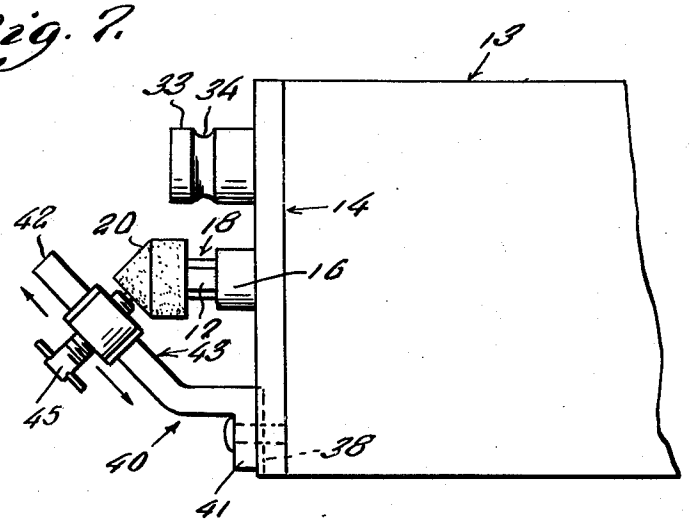


Fig. 8.

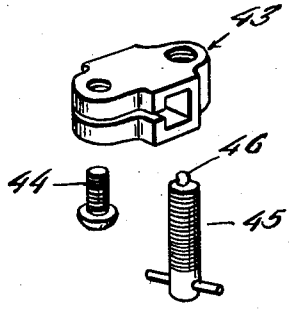


Fig. 9.

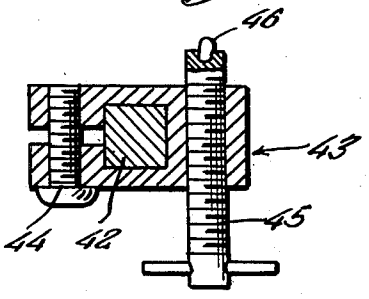
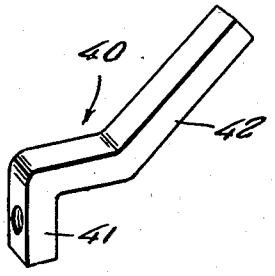


Fig. 10.



Inventor

T. D. Enete

By Clarence A. O'Brien

Attorney

Patented Apr. 30, 1935 1,999,322

UNITED STATES PATENT OFFICE

1,999,322

VALVE SEAT GRINDER

Truman D. Enete, Jonesville, La.

Application November 2, 1934, Serial No. 751,224

5 Claims. (Cl. 51—241)

This invention relates to an improved valve seat grinder and it has more particular reference to an electric motor driven type utilizing an abrading tool appropriately adapted to the particular surface to be worked on.

Briefly, the preferred embodiment of the invention includes an electric motor having a rotary abrading tool centrally arranged, and adjustable supporting means for said motor allowing the motor to be revolved bodily around a fixed axis so that the tool may travel in a circular path to provide the desired orbital motion and rotary grinding action and to thereby insure positive results.

Needless to say, I am sufficiently cognizant of similar prior art valve grinders to admit that an electrically driven grinder is not new. It follows, therefore, that it is my primary purpose and aim to generally improve upon known valve grinders of this particular type be they marketed or patented and to accomplish this through the instrumentality of a structure characterized by noteworthy improvements and refinements.

One structural feature and its accompanying advantage has to do with a turnable hollow spindle adjustably mounted on the base of the motor so as to permit it to be regulated with respect to the associated pintle means to allow the orbital path or movement of the rotary abrading tool to be regulated according to the diameter of the seat being ground.

A further feature has to do with the provision of a special tool rest or post which includes as one of its features an adjustable pintle pin for cooperation with the hollow spindle so as to allow the abrading tool and associated parts to be adjusted toward and from the valve seat so that it may be properly beveled as conditions require.

A further feature of the assemblage has to do with the provision of interchangeable abrading tools and an attaching and operating shaft therefor which provides the desired range of adjustment believed to be practical for the purposes desired within reasonable limits.

A further factor of an appreciable type is dependent upon the utilization of a special adapter fixture or bracket designed for detachable mounting on the base plate of the motor and provided with a truing or dressing implement for the purpose of conditioning the abradant element or stone.

Other features and advantages will become more readily apparent from the following description and drawings.

In the drawings:

Figure 1 is a view, partly in section, and partly in elevation showing the complete assembly with the parts constructed in accordance with the principles of the present invention and illustrating the manner in which it is used in conjunction with a motor block.

Figure 2 is a bottom plan view showing the features appearing on the base plate or disk of the motor casing.

Figure 3 is a horizontal sectional view through the lower portion of the structure illustrated in Figure 1, the section being taken on the plane of the line 3—3 of Figure 1.

Figure 4 is a fragmentary detail view showing the attaching lug provided for securing the special tool rest in place.

Figure 5 is a view of the tool rest supporting post which serves as a relatively stationary pintle and pivot means.

Figure 6 is a perspective view of an adapter bracket for an implement clamp.

Figure 7 is an elevational view showing the manner in which the adapter bracket and tool clamp are assembled to provide stone dressing and truing means.

Figure 8 is a detail perspective assembly view showing the clamp and truing device or implement.

Figure 9 is a detail sectional view of the adjustable clamp.

Figure 10 is a view similar to Figure 6 showing a slightly differently shaped adapter fixture or bracket for the clamp, this particular part being variable according to the type of abrading stone used.

Figures 11 and 12 are detail elevational views of different types of abrading tools.

Referring first to Figure 1, it will be observed that the numeral 13 designates a portable lightweight high-speed motor. This is of appropriate type so far as it relates to delivery and generation of current but preferably is in the form of a universal type motor. Since the motor is of no consequence, I merely call attention to those features which enter into the alleged novelty. Therefore, it will be observed that the base plate 14 which is of disk-like form is provided with a central bearing 15 to accommodate the motor shaft 16. The motor shaft extends through and beyond the central aperture in the base plate and is formed with a screw-threaded bore which serves as a socket to accommodate the screw-threaded shank 17 of the abrading tool 18. This tool includes a beveled portion 19 in

its shank to which the stone or abradant head 20 is attached. It is to be pointed out that the abrading tool will vary in shape and proportions according to the particular taper to be placed on the valve seat. For example, the types of tools shown in Figures 11 and 12 are frequently employed and these are merely distinguished, as a matter of convenience, by the numerals 21 and 22. Fundamentally, however, they are standardized and interchangeable with respect to the tool 18. Therefore, it will be observed that so far we have an electric motor with a shaft 16 constructed to accommodate the interchangeable tools 18, 21, and 22. In each instance the tool is centrally arranged with respect to the base plate 14 and it is adapted for cooperation with the beveled valve seat 23 in the motor block 24. The motor block shown is provided with the usual cavity or recess 25 and valve stem guide 26. Advantage of this feature 26 is taken so as to use it in the accommodation of a special supporting post unit denoted by the numeral 27 in Figure 5. This post unit may vary slightly and the one shown in Figure 5 is not exactly the same as the one shown in Figure 1. Fundamentally however, the post includes a cylindrical stem portion 28 which serves as a pilot and which fits into the guide and supports the post with the intermediate portion beveled as indicated at 29 and this provides a shoulder to prevent wobbling of the post when it is properly seated in the guide 26. The upper end portion 30 is formed with a central screw-threaded socket to accommodate a pintle pin 31 which is threaded into it. This pin serves as a pivot element and the adjacent portion 30 serves as a journal around which the special tool rest 32 turns. This tool rest is of special design.

In connection with the tool rest, I call attention first to Figure 4 wherein it will be observed that the numeral 33 designates a lug having an endless groove 34 formed in it. This lug is formed integral on the base plate 14 and located eccentrically with respect to the centralized grinding tool. The attaching neck 35 of the tool rest is constructed to accommodate this lug, or rather, fits on this lug and is clamped firmly in place by a tightening bolt or screw 36. The stem of this rides in the groove 34 allowing the entire part 32 as a unit to be turned for adjustment. The complemental portion of the tool rest 32 is in the nature of a sleeve or it might be said to be a socket. This portion 37 is longitudinally elongated and offset with respect to the axis of the lug 33. This sleeve serves as a bearing to receive the journal pin and the pintle 31 so that the parts 30, 31 and 37 function as a means for revolubly supporting the motor and its accessories on the post for grinding operation.

It is evident that with this eccentrically arranged tool rest unit 31 which is itself adjustable, it is possible to place the post unit 27 in the existing guide 26 and to then slip the sleeve 37 down over the journal 30 to provide an effective turning support for the motor 13. Consequently, the abrading tool 18 can be swung around in an orbital path so that as it turns on its own axis it may travel in said path to uniformly grind the seat 23 in an obvious manner. The sensitivity of the grinding action can be controlled by raising and lowering the pintle 31 which is in a sense an adjustable pivot. In other words, the pressure can be regulated and by resorting to experience plus trial and error, the user of the device can soon adjust it for expeditious and satisfactory grinding work.

In addition to the grinding means, it is to be observed that the base plate is provided with a keeper seat or groove 38 and this is adapted to accommodate the special adapter bracket of the type denoted by the numerals 39 and 40, in Figures 6 and 10, respectively. These brackets will vary according to the types of tools or stones employed. In each instance, however, the bracket includes a shank 41 whereby it is slipped into the seat 38 and fastened in place by a set screw or the like. In addition, it includes a shaft portion 42 of rectangular form which is adapted to accommodate the slidable clamp 43. This clamp is constructed to accommodate a retaining screw 44 and a special adjustable conditioning implement 45. This implement 45 is provided with a so-called diamond point 46 which can be properly adjusted in relation to the beveled surface of the grinding stone to resurface the stone or to otherwise dress and condition it for more satisfactory work. In other words, advantage is taken of the rotary stone feature to employ this adapter and dressing means in association therewith to add to the range of utility of the invention as a whole.

It is evident that novelty is predicated upon the centralized interchangeable abrading tool feature which is electrically driven, together with the pivot-equipped post and special tool rest associated therewith. The tool rest is an innovation in itself in that it is eccentrically mounted on the lug 33, and turnable around said lug so as to adjust the offset bearing sleeve and to thereby regulate the position of the stone and to change its orbital path according to the diameter of the valve seat being ground. All of these features have been carefully selected and mechanically coordinated to provide their proportionate share in developing a structure which, it is believed, transcends in importance and efficiency electrically driven valve grinders of similar types.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary.

Minor changes in shape, size, and rearrangement of details coming within the field of invention claimed may be resorted to in actual practice, if desired.

What is claimed is:

1. In a structure of the class described, a motor having a cover plate provided with an eccentrically arranged outstanding lug having an endless groove, a tool rest including a casting having a neck forming a socket for reception of said lug, said neck being provided with a clamping screw cooperable with said groove, said tool rest also including a longitudinally elongated laterally offset sleeve forming a bearing for the accommodation of a supporting post of the type described.

2. In a structure of the class described a motor having a cover plate provided with an eccentrically arranged outstanding lug, a tool-rest including a casting having a neck forming a socket for reception of said lug, coacting means between the lug and neck enabling said tool rest to be turned on its axis and retained in a predetermined set position with respect to the cover plate, said tool rest also including a longitudinally

elongated offset sleeve constituting a bearing, and a relatively stationary support including a post having adjustable means for reception in said bearing.

3. As a new article of manufacture, a component part of a valve grinding assemblage of the class described comprising a single casting having a neck forming a socket for reception of a complemental attaching lug, said neck being provided with a split portion carrying an adjusting and retaining screw and also including an elongated laterally offset sleeve forming a bearing for the accommodation of a supporting post of the type described.

4. A valve seat grinder assembly of the class described comprising an electric motor formed at its working end with a centralized motor driven abrading tool, and further provided at the same end with an eccentrically arranged stationary attaching lug, a tool rest having a portion rotatably and detachably clamped to said lug, said tool rest including a longitudinally offset elongated sleeve portion constituting a bearing, said bearing extending in approximate parallelism with said abrading tool and projecting beyond the tool, a supporting post including a stem portion designed to fit in an existing guide passage in a complemental motor block, the upper end portion of said post being fashioned to form a journal, said journal projecting into said bearing, and an extensible and retractible pintle carried by said journal and concentrically engageable with the inner end of said bearing for the purpose of adjusting the tool rest and abrading tool with respect to the surface being acted on.

5. In a structural assemblage of the class described, in combination, a supporting and turning post unit comprising a unitary body having its lower end fashioned to form a cylindrical stem serving as a pilot for reception in an existing guide passage in a conventional motor block, the intermediate portion of said body being tapered and the upper or remaining portion being fashioned to provide a cylindrical journal and being formed with a central screw threaded bore, a threaded end being adjustable in said bore, the upper end of said pin having the function of a pivot pintle, an electric motor provided with a centralized motor driven abrading tool, provided alongside of said tool and eccentrically thereto with a fixed attaching lug, a tool rest rotatably and detachably clamped on said lug and including a depending laterally offset longitudinally elongated sleeve portion projecting alongside of and downwardly beyond the abrading tool, the inner end of said sleeve being closed and permitting the sleeve to serve as a socket and bearing for reception of the journal and pintle pin, the pivot end of said pintle pin abutting the inner closed end of said socket.

TRUMAN D. KNETE.