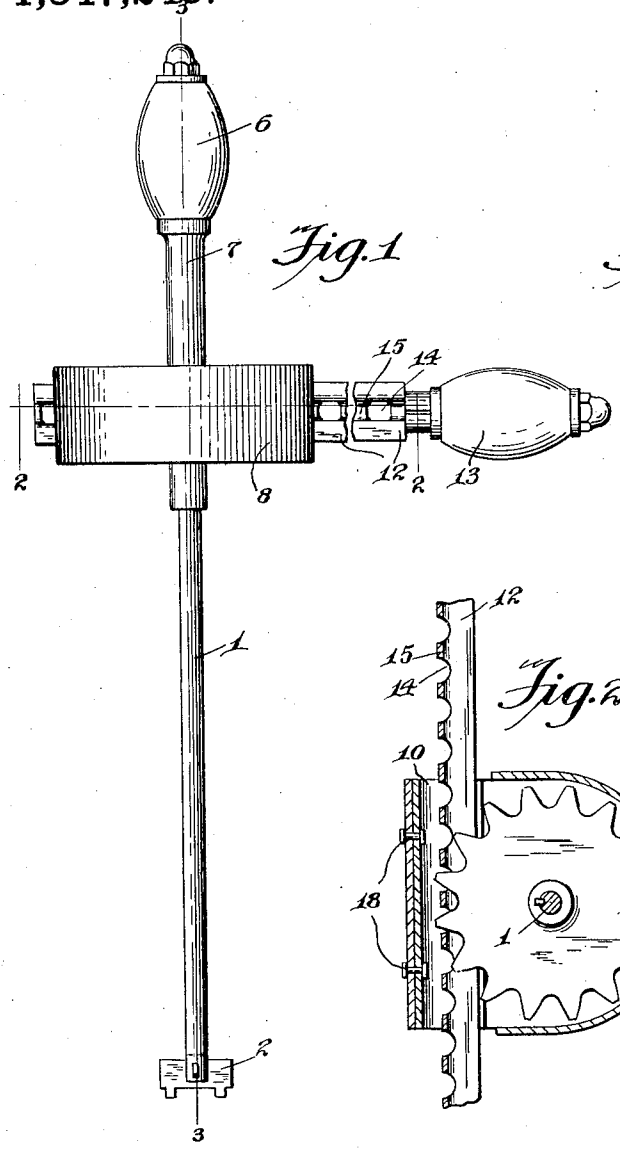
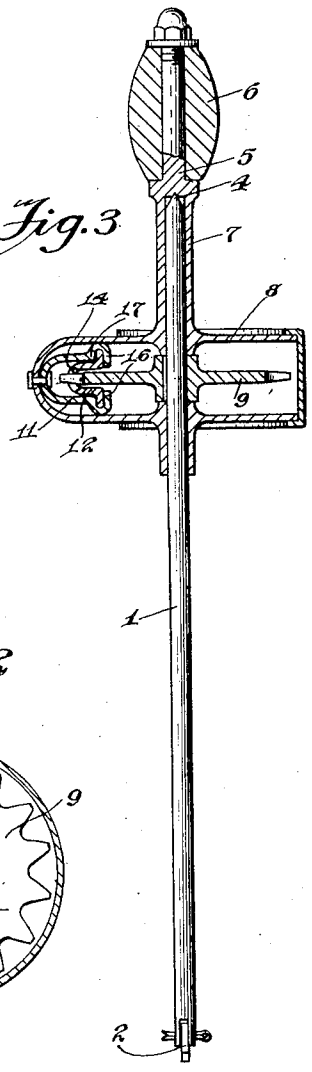
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VALVE GRINDING TOOL.

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1,347,243. Patented July 20, 1920.





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VALVE-GRINDING TOOL.

1,347,243. Specification of Letters Patent. Patented July 20, 1920.

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To all whom it may concern:

Be it known that I, EDSON L. BEARDSLEY, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Valve-Grinding Tools, of which the following is a specification.

This invention relates to valve grinding tools, and has particular reference to the type employed for use in grinding and removing carbon or similar deposit from the valve seats of internal combustion engines.

The object of the invention is to provide a tool of this character with simple and improved mechanism for transmitting rotary and oscillatory movement to the valve rotating stem of the tool, in order that the degree of rotation of said stem may be conveniently governed, and its consequent grinding action rendered adjustable to conform with the amount of grinding necessary in smoothly and perfectly finishing a valve seat.

A further object of the invention rests in improved means for effecting the rotation of a valve grinder stem, wherein the latter is provided with a fixed gear element situated to engage with a longitudinally disposed reciprocatory rack member, whereby upon being manually reciprocated said member will impart rotary and oscillatory movement to said valve stem, the movement of the latter being in direct proportion to the stroke movement of said member.

Still further objects of the invention reside in a tool of this character of simple substantial and economical construction, capable of being dismantled when not in use in order to occupy but a minimum of storage space, and of such proportion that the various elements thereof may be manually operated with but a minimum of exertion and labor.

With these and other objects in view as will appear as the description proceeds, the invention accordingly consists in the novel features of construction, combination of elements and arrangement of parts hereinafter fully described and having the scope thereof defined by the appended claim.

In the accompanying drawing, forming a part of this specification;

Figure 1 is a side elevation of the valve grinding tool comprising the preferred form of the invention.

Fig. 2 is a horizontal sectional view taken along the line 2—2 of Fig. 1.

Fig. 3 is a transverse vertical sectional view, the plane of which being disclosed by the line 3—3 of Fig. 1.

Similar characters of reference denote corresponding parts throughout the several views of the drawing.

Referring more particularly to Figs. 1 to 3 of the drawing, the preferred form of the invention consists of a rotatable valve stem 1, the latter having its lower end provided with a slot in which is removably positioned a valve engaging a rotating member 2. The latter is of usual construction, and is formed with the usual projections 3 disposed for engagement with openings, not shown, formed in the upper side of the valve, whereby the member 2 may be inserted into said openings so that upon the rotation of the stem the valve will be forced to revolve in unison therewith.

In this instance the stem is of rod formation, and the upper end thereof is provided with a point bearing 4, which bearing being situated within a similar bearing formed in a handle member 5. This member consists of a knobbed portion 6 from which depends a fixed tubular sleeve 7, the latter being disposed to surround and brace the upper end of the stem 1. Through the provision of the point bearing 4 it will be obvious that the stem 1 will be capable of revolving with the minimum amount of friction within the member 5, so that the manual rotation of said stem may be effected with ease and facility. In operation the knobbed portion 6 is gripped by the hand, so that the valve stem 1 will be maintained in operative engagement with the coöperating valve, this permits the sleeve 7 to remain substantially stationary and through the provision of the bearing 4 the stem 1 may be freely rotated irrespective of what manual pressure that may be placed upon the knobbed portion 6 in retaining the stem 1 in engagement with a valve.

Coming now to the essential feature of the invention, the sleeve 7 is provided with a casing 8 situated on a substantially horizontal plane with respect to the vertical axis of the stem 1, and in this casing there is ro-

tatably mounted a gear element 9 which is rigidly fastened, in this instance, to the stem 1. The casing is provided with a forwardly disposed open sided portion 10, in which is mounted a curved guide member 11, which guide member is shaped and proportioned to receive a reciprocatory longitudinal apertured bar 12. This bar is provided at one end with a fixed handle 13, whereby the bar may be conveniently grasped. The shank of the bar is preferably formed from stamped metal, to form a centrally disposed groove, in which spaced openings or apertures 14 are provided, said groove terminating in vertically disposed ribs 15, which are adapted to be slidably received within curved fingers 16 formed in the guide member 11. The apertured center portion of the bar being also received within a similarly shaped portion 17 formed in said guide member. Thus it will be seen that when the bar is inserted in the guide member 11 the same will be firmly maintained in such position as to be only capable of longitudinal reciprocation. Any desired means may be provided for securing the guide member 11 within the front portion 10 of the casing 8, and in the present instance rivets 18 are provided for effecting this result.

When the bar 12 occupies its operative position within the guide member 11 the same will be so located that the gear element 9 will extend into the centrally disposed groove formed therein, and the teeth of said gear element will be situated so as to mesh with the apertures 14 formed in said bar, whereby upon the reciprocation of the latter synchronous movement will be imparted to the valve stem. Thus it will be noted that the rotating or oscillatory movement of the stem 1 will be in direct proportion to the reciprocating stroke movement of the bar 12 so that the stem 1 will be capable of being rotated to such degrees as desired by the tool operator. This selection for rotary governing control of the stem 1 is highly desirable, as it enables the operator to grind a valve roughly by loading stroke movements or to grind the valve finely and smoothly by relatively short stroke movements the former being preferably used when a valve seat is being initially ground and the latter stroke employed for finishing and perfectly smoothing said valve seat.

Having thus described the invention what is claimed as being new and patentable is:

A valve grinder comprising a rotatable stem, a gear fixed to said stem adjacent to the upper end of the latter, a casing carried by said stem and capable of being maintained in a stationary position during the rotation of the stem, a guide member carried by said casing and including curved finger elements, a reciprocatory actuating device disposed within said guide member, said device being formed from stamped sheet metal and having vertically disposed ribs, the latter being situated so as to be received and guided by said fingers, and said actuating device being provided with a series of apertures disposed to mesh with said gear, whereby upon the operation of said device said gear and stem will be oscillated.

In testimony whereof I affix my signature.

EDSON L. BEARDSLEY.