June 22, 1937. W. E. JESSOP 2,084,959

VALVE GRINDER

Filed Nov. 17, 1934

Fig. 4. Fig. 2.

Fig. 3.

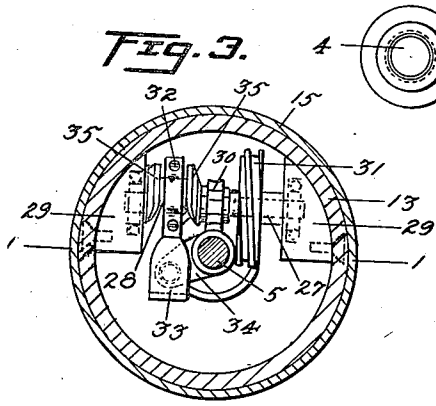
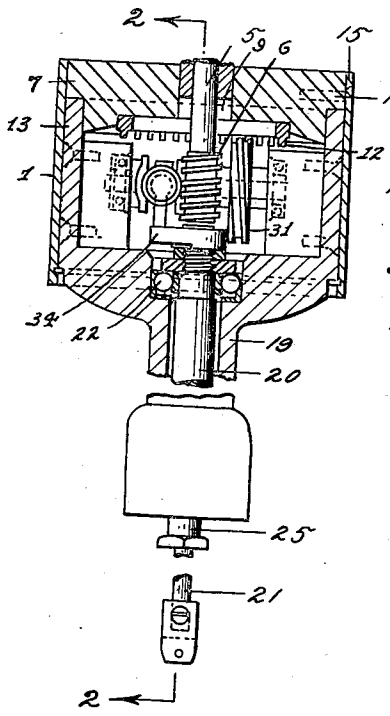
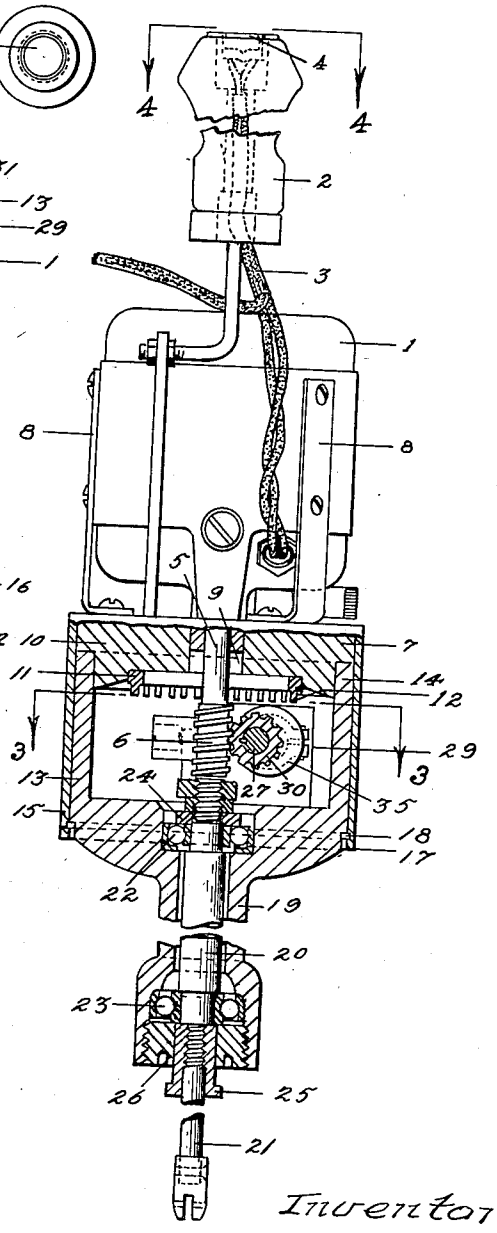


Fig. 1.





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VALVE GRINDER

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1 Claim. (Cl. 51—29)

The invention relates to improvements in valve grinders as described in the present specification and shown in the accompanying drawing that forms a part of the same.

The main object of the invention is to provide a simple tool of few parts which may be easily operated and which will impart an oscillatory and also a rotary movement to the valve which is necessary in the grinding of engine valves.

The invention consists in the novel features of construction, arrangements and combinations described in the present specification and more particularly pointed out in the claim for novelty following.

In the drawing Figure 1 is a side elevation partly in vertical section taken on substantially the line 1—1 of Figure 3, of the grinding tool disassembled from the motor, the spindle being foreshortened.

Figure 2 is a vertical sectional view taken on the line 2—2 of Figure 1, the motor being shown in side elevation incorporated therewith.

Figure 3 is a cross sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a cross sectional view taken on the line 4—4 of Figure 2.

Like numerals of reference indicate corresponding parts in the various figures.

Referring to the drawing 1 is the motor having at the upper end thereof a centrally disposed handle 2 through which extends the electric wiring 3 from the body of the motor to a depressible button switch 4 located in the outer end of said handle.

The operating shaft 5 of the motor 1 projects outwardly from the opposite, or lower end of the motor and such shaft is threaded, as at 6, towards the outer end thereof.

A casing head 7 is secured over the lower end of the motor 1 in longitudinal alignment therewith, preferably by means of straps 8 extending outwardly therefrom and secured to the sides of said motor, said head having a central opening 9 through which the shaft 5 loosely extends and being concaved as shown at 10. Positioned in the concaved under face of the head 7 and encircling the shaft 5 is a ring gear 11 the teeth 12 of which are preferably circular in cross section and extent outwardly parallel to the shaft 5.

A cylindrical gear housing or casing 13 is rotatably mounted on the outer end of the head 7, said head being reduced slightly as at 14 for the reception thereof, and is held in position by means of an encircling collar 15 secured at its top end to said head by means of screws or other fastening elements 16, said collar, or sleeve being provided with a washer 17 or being otherwise shaped to extend around a shoulder 8 with which the housing is provided to prevent the withdrawal of said housing therefrom in the assembled condition of the grinder. The housing 13 is reduced at its lower end and extends outwardly a considerable distance past the collar 15 in a cylindrical spindle housing 19. A spindle 20 is rotatable within the housing 19 and projects from each end thereof, the inner end thereof projecting a short distance into the interior of the housing 13 and the outer end thereof being adapted for the reception of a chuck 21 adapted to receive the valve engaging implement (the latter not being shown in the drawing as there are many known types of same and such implement does not constitute a feature of the present invention). The lower wall of the housing 13 and the outer end of the spindle housing 19 are provided with suitable bearings 22 and 23 respectively through which said spindle extends and said spindle is held in relation to said bearings by nuts 24 and 25 threading over said spindle. A suitable packing gland is inserted in the outer end of the housing 19 to prevent the escape of the lubricating substance from the interior.

27 is a shaft positioned transversely of the housing 13 to one side of the diametrical centre thereof and substantially midway of the depth of said housing, said shaft being offset at one end thereof to provide an eccentric portion 28 and being journalled at its ends in bearing blocks 29 rigidly secured within said housing. A pinion 30 is fixedly mounted centrally of said shaft in mesh with the motor shaft 5 by means of which the said shaft 27 is rotated. Also rigidly mounted on the shaft 27 is a worm gear 31 with which the teeth 12 of the gear 11 are adapted to mesh so that as the shaft 27 is rotated the housing 13 will be rotated slowly around the central shaft.

Loosely encircling the eccentric, or crank, portion 28 of the shaft 27 is a collar 32 having an arm 33 extending at right angles to said shaft past the motor shaft 5 and pivoted to the under side of said arm is a link 34 which is secured at its end to the top end of the spindle 20 so that on the rotation of said shaft 27 longitudinal oscillatory movement will be imparted to said arm and this movement will be translated to a rotary oscillatory movement of said spindle. The eccentric portion 28 is provided with bevelled side flanges 35 adapted to permit of the necessary

lateral movement of the collar 32 due to the movement of the link 34.

In the operation of this invention the motor is connected to the source of electric current and the tool placed in vertical position on the valve with the valve engaging tool in operative engagement with said valve. The button 4 is then depressed to close the electric circuit in said motor and rotate the shaft 5. As said shaft rotates it rotates the shaft 27 through the medium of the pinion 30 and said shaft 27 through the eccentric movement of the crank 28 causes rotary oscillation of the spindle 20. During the rotation of the shaft 27 the rotary movement of the enlarged worm gear through its engagement with the teeth 12 of the stationary gear 11 causes the whole housing to rotate slowly and thus rotate the valve slowly on its seat during the oscillatory movement of the said valve.

While the preferred embodiment of my invention has been herein shown and described it is of course to be understood that alterations in minor details of construction and arrangement of parts as comes within the scope of the claim for novelty following may be made.

What I claim is:—

In a valve grinder, the combination with a motor casing having a worm driving shaft extending therefrom, of a non-rotatable ring gear encircling said driving shaft, the teeth of said gear being circular in cross section and extending parallel with said shaft, a housing rotatable around said ring gear, a tool carrying spindle rotatably journaled in said housing in axial alignment with said driving shaft and spaced therefrom, a shaft mounted within said housing in transverse relation to said driving shaft and having a crank portion towards one end thereof, said shaft also having a worm wheel meshing with said driving shaft, an arm extending laterally from said tool carrying spindle, a rod loosely mounted at one end on the crank portion of said transverse shaft and having connection at its other end with the end of said arm from the tool carrying spindle, and a worm gear carried by said transverse shaft and in operative engagement with said non-rotatable ring gear.

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