

March 31, 1931.

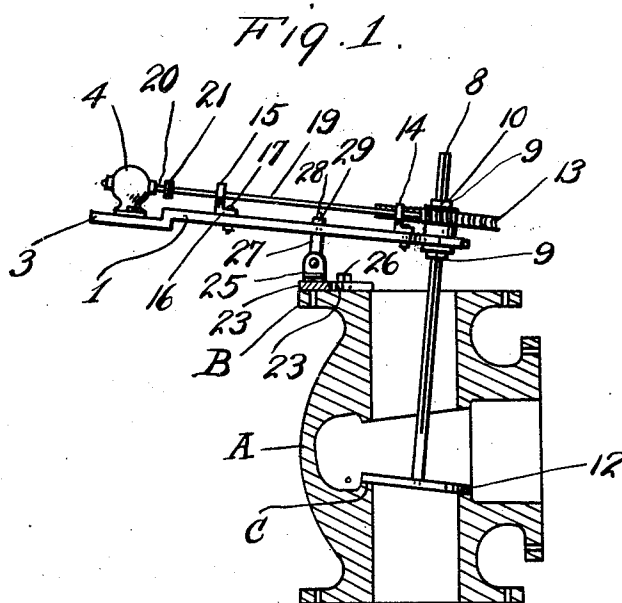
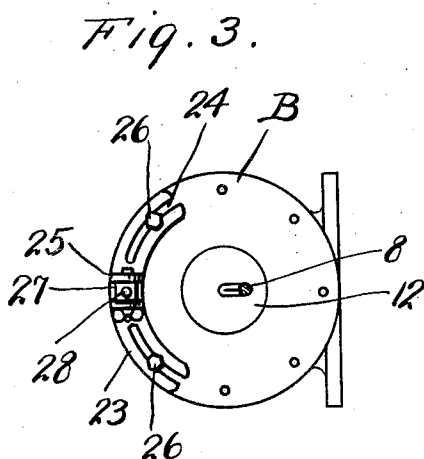
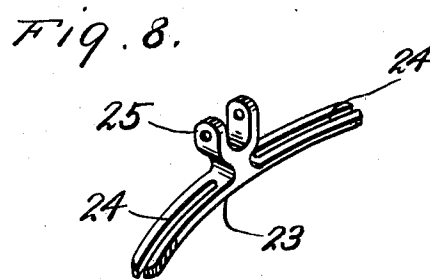
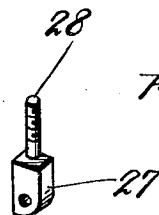
D. T. PENMAN

1,799,119

VALVE GRINDER

Filed Nov. 16, 1928

2 Sheets-Sheet 1



Inventor

David T. Penman

By *Clarence A. O'Brien*
Attorney

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2 Sheets-Sheet 2

Fig. 2.

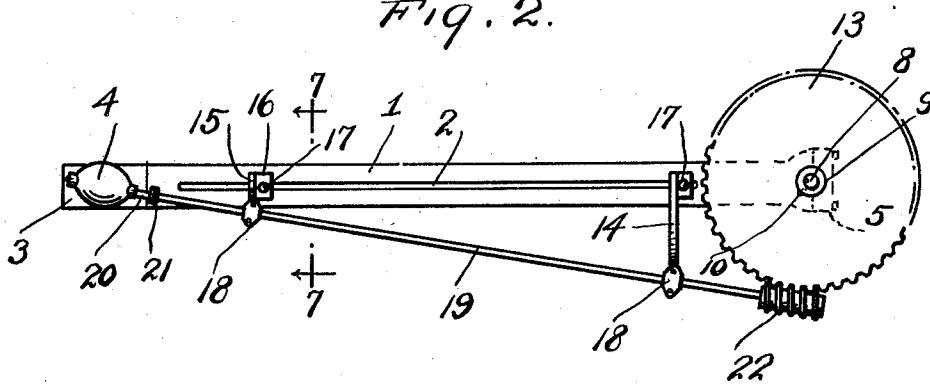


Fig. 5.

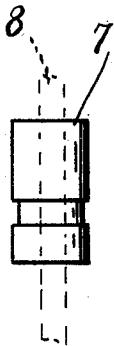


Fig. 7.

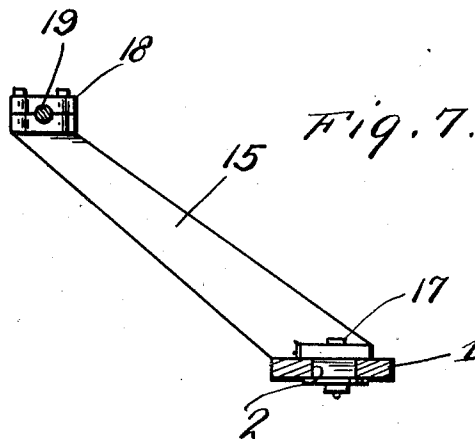


Fig. 4.

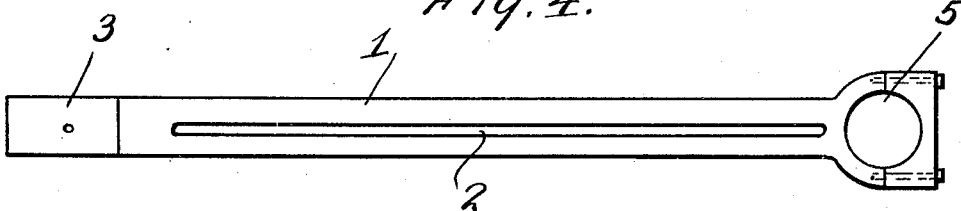
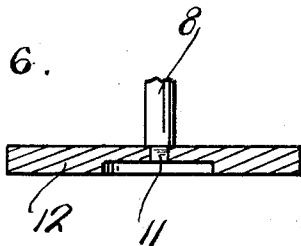


Fig. 6.



Inventor

David T. Penman

By *Clarence A. O'Brien*
Attorney

UNITED STATES PATENT OFFICE

DAVID T. PENMAN, OF COLLINGDALE, PENNSYLVANIA

VALVE GRINDER

Application filed November 16, 1928. Serial No. 319,878.

The present invention relates to improvements in valve grinders, and has reference more particularly to a device for grinding the seats of high pressure valves.

One of the important objects of the present invention is to provide a valve seat grinder wherein the same includes a supporting bracket for attachment to the flange on the top of the valve, a slotted arm being pivotally mounted on the bracket and said arm carries the valve seat grinding structure.

A further object is to provide a valve seat grinder that is electrically operated by a small motor mounted on the outer end of the slotted vertically swinging arm, the driven shaft that extends vertically through the inner end portion of the slotted arm being capable of vertical adjustment.

A further object is to provide a valve seat grinder of the above mentioned character wherein the supporting means for the drive shaft is adjustably associated with the slotted bar or arm so as to dispose the driving end of the shaft in operative engagement with the gear splined on the vertically disposed driven shaft regardless of the size of the gear.

A further object resides in the provision of a valve seat grinder of the above mentioned character which will at all times be positive and efficient in its operation, the same being further simple in construction, inexpensive, strong and durable and further well adapted to the purpose for which it is designed.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the accompanying drawings wherein like reference characters indicate corresponding parts throughout the same:

Figure 1 is a side elevation of the valve seat grinder embodying my invention showing the same in use.

Figure 2 is a top plan view of the valve seat grinder.

Figure 3 is a top plan view of the bracket that is detachably secured on the upper face of the valve body.

Figure 4 is a top plan view of the slotted

arm forming a salient part of the present invention.

Figure 5 is a detail view of the sleeve that is clamped in the inner end of the arm in a vertical manner.

Figure 6 is a detail showing the connection between the grinding head and the lower end of the driven shaft.

Figure 7 is a sectional view taken approximately on the line 7—7 of Figure 2 looking in the direction of the arrows.

Figure 8 is a detail perspective view of the bracket per se, and

Figure 9 is a detail perspective view of the connecting member provided between the bracket and the slotted arm.

In the drawings wherein for the purpose of illustration is shown the preferred embodiment of my invention, the numeral 1 designates an elongated flat arm or base that is formed with a longitudinally extending slot 2, the purpose of which will be presently apparent. The outer end portion of the arm 1 is offset to provide a mount 3 for a portable electric motor 4 of any conventional construction, and the motor may be secured on the offset mount 3 in any appropriate manner. A sectional clamping head 5 is arranged at the inner end of the slotted arm or base 1 within which is clamped the vertically disposed sleeve or bushing 6, an annular groove 7 being formed in the lower portion of said sleeve to prevent sliding movement of the sleeve or bushing with respect to the sectional clamping head.

Extending through the bore of the sleeve or bushing 7 is the substantially vertically disposed driven shaft 8, suitable collars 9 being disposed on the shaft 8 for disposition on opposite sides of the sleeve or bushing 6 and set screws 10 are associated with the collar for maintaining the vertical shaft in any adjusted position against vertical slidable movement.

The lower end of the driven shaft 8 is formed with a reduced squared projection 11 that fits within a similar shaped opening formed in the central portion of the grinding disc or plate 12 as shown in Figure 6 and also indicated in this particular figure the

bottom face of the grinding disk is cut out at its central portion. The grinding disk is detachably secured on the lower end of the driven shaft, and any suitable grinding compound may be applied to the bottom face of the grinding plate or disk.

Splined on the upper end portion of the driven shaft 8 is the relatively large worm wheel 13, the uppermost collar being disposed above the upper face of the worm wheel, while the bottom face of said worm wheel is located above the upper end of the sleeve or bushing 6 as shown in Figure 1.

The invention further comprehends the provision of a pair of obliquely disposed arms 14 and 15, respectively, the arm 14 being of greater length than the arm 15. Each of said last mentioned arms are formed at its lower end with a laterally disposed foot portion 16 for engagement with the upper face of the slotted base 1, and a bolt and nut connection denoted generally by the numeral 17 extends through the slot 2 and through the foot of each of the obliquely disposed arms for adjustably securing said arms with respect to the base 1. A sectional bearing 18 is arranged at the upper or outer end of each of the obliquely disposed arm members to accommodate the elongated drive shaft 19, said drive shaft being operatively connected at one end with the armature shaft 20 of the motor 4 by a universal coupling denoted generally by the numeral 21. A worm 22 is carried by the free end of the drive shaft for cooperation with the worm wheel 13 in the manner as clearly indicated in the drawings.

By sliding the obliquely disposed arms 14 and 15 along the base 1, the drive shaft 19 may be disposed at any predetermined angle so that the worm 22 can cooperate with worm wheels of different sizes, and whereby to effect the proper actuation of the driven shaft by the motor 4.

Also forming an important part of the present invention is the arcuate shaped bracket 23 that is formed with the longitudinally extending slots 24 that extend inwardly from the respective end of the brackets, and which slots terminate at the opposite sides of the vertically disposed yoke 25 formed on the top of the intermediate portion of the bracket 24 as more clearly disclosed in Figure 8.

This arcuate shaped bracket is adapted to be rigidly secured on the flanged upper face of a valve body A so that the outer edge of the bracket will lie flush with the outer edge of the flanged upper portion B of the valve body and suitable bolts or the like extend through the slots 24 and the flanged portion B to rigidly secure the bracket in position on the valve body. These securing bolts are indicated at 26 in Figure 3.

A block 27 is pivotally secured in the yoke 25 for vertical swinging movement and ex-

tending upwardly from the top of the block 27 is the threaded stem 28 that projects through the slot 2 formed in the base 1 and a nut 29 is threaded on the upper end of this stem for engagement with the upper face of the base whereby to attach the base member to the pivoted block, the bottom face of the base or arm 1 resting on the top of the block 27. As also clearly indicated in Figure 9 the forward lower corner portion of the block is rounded so as not to interfere with the vertical swinging movement of the block and the threaded stem associated therewith.

In Figure 1 there is disclosed the manner in which my improved valve seat grinder is mounted on a high pressure valve for grinding the flat seat that is provided with an inclined face that is to be ground. The pivotally mounted block 27 permits the base 1 to be swung so as to properly position the grinding disc or plate with respect to the valve seat C in order that said seat may be properly ground, and when the motor 4 is turned on, the driven shaft 8 will be rotated through the medium of the intermeshing gears in a manner readily obvious from the construction shown.

It will thus be seen from the foregoing description that I have provided a valve seat grinder that will save considerable time and labor in performing the grinding operation, and furthermore the valve seat will be properly ground so as to insure proper closing of the valve that cooperates with the ground seat.

The simplicity of my construction enables the parts to be readily and easily adjusted whenever necessary and furthermore the parts can be assembled or disassembled.

While I have shown the preferred embodiment of my invention it is to be understood that minor changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention and the scope of the appended claims.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a valve seat grinder, a bracket for attachment on the top of the valve body, an upstanding yoke arranged on said bracket, a member pivotally secured at its lower end in the yoke for vertical swinging movement, a substantially horizontally disposed base attached at its intermediate portion on the upper end of said member for swinging movement therewith, a vertically disposed driven shaft supported at one end of the base and adapted to extend downwardly into the valve body, a valve seat grinding member secured on the lower end of the driven shaft for rotation therewith, means arranged on the base for rotating the shaft and said grinding mem-

ber, said means comprising a motor mounted on the other end portion of the base, a drive shaft operatively connected at one end with the armature shaft of the motor and extending longitudinally of the base, bearings arranged for longitudinal adjustment on the base for the drive shaft, and gearing interconnecting the other end of the drive shaft with the adjacent end of the driven shaft.

2. In a valve seat grinder, a bracket for attachment on the top of the valve body, an upstanding yoke arranged on said bracket, a member pivotally secured at its lower end in the yoke for vertical swinging movement, a substantially horizontally disposed base attached at its intermediate portion on the upper end of said member for swinging movement therewith, a vertically disposed driven shaft supported at one end of the base and adapted to extend downwardly into the valve body, a valve seat grinding member secured on the lower end of the driven shaft for rotation therewith, means arranged on the base for rotating the shaft and said grinding member, said means comprising a motor mounted on the other end portion of the base, a drive shaft operatively connected at one end with the armature shaft of the motor and extending laterally of the base, supporting arms arranged for longitudinal adjustment on the base and connected for longitudinal adjustment to the drive shaft, and gearing interconnecting the other end of the drive shaft with the adjacent end of the driven shaft.

3. A valve seat grinder of the character described comprising a slotted base, supporting means for the base, a grinding shaft journaled for rotation in one portion of the base and extending therethrough, a gear removably fixed on the shaft, a motor mounted on the opposite end portion of the base, a drive shaft connected, at one end, to the motor for actuation thereby, the opposite end portion of the drive shaft being operatively connected to the gear, and means for rotatably supporting the drive shaft for lateral adjustment toward and from the grinding shaft, said means comprising a pair of arms mounted for longitudinal adjustment in the slot of the base and extending upwardly and laterally therefrom, and bearings on the free ends of the arms for the reception of the drive shaft.

In testimony whereof I affix my signature.
DAVID T. PENMAN.