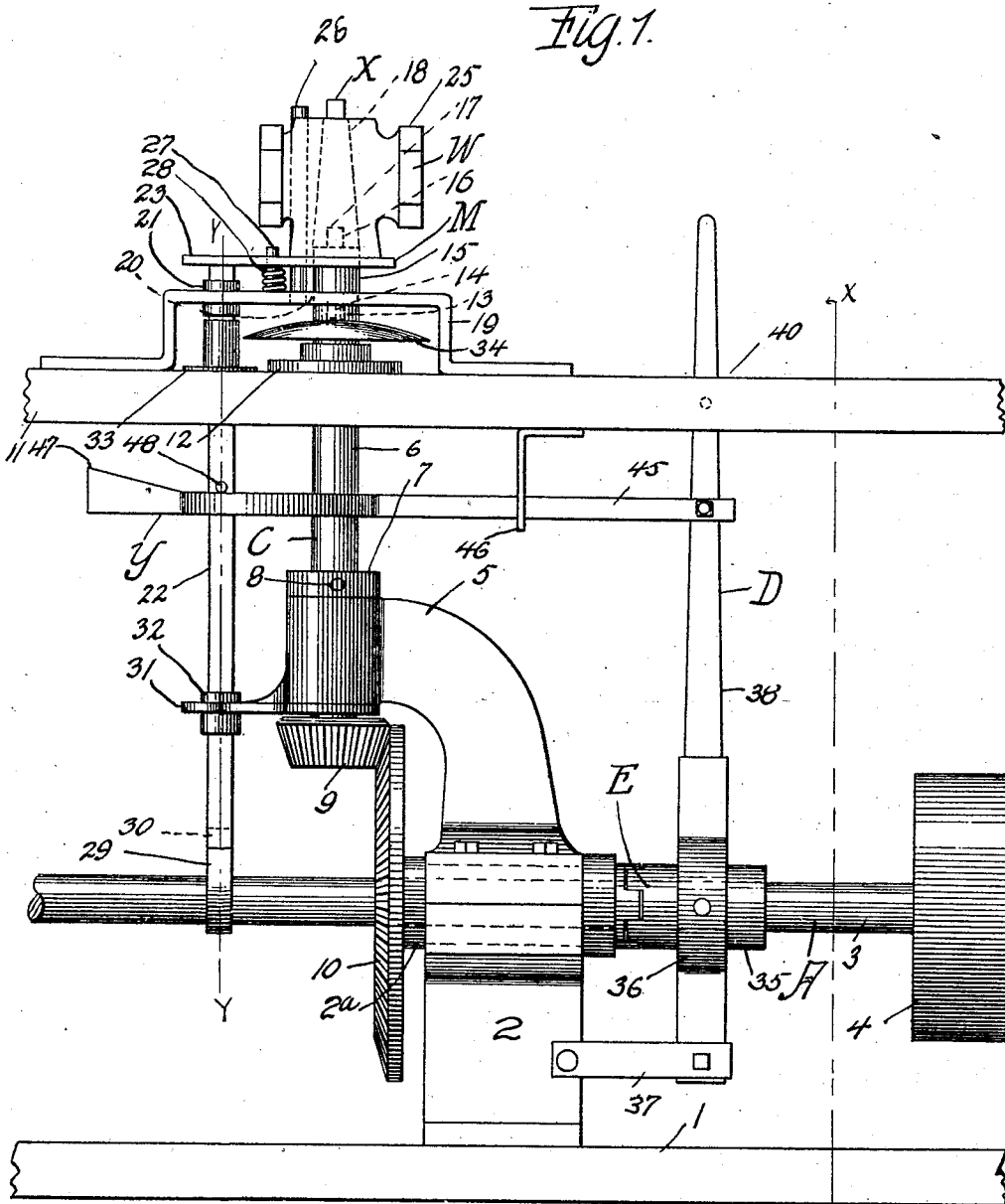


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VALVE SEAT GRINDING MACHINE.  
APPLICATION FILED AUG. 12, 1909.

944,845.

Patented Dec. 28, 1909.

3 SHEETS—SHEET 1.



Witnesses

*Samuel Payne*  
*R. H. Butler*

Inventor  
*JOHN D. BURNS.*

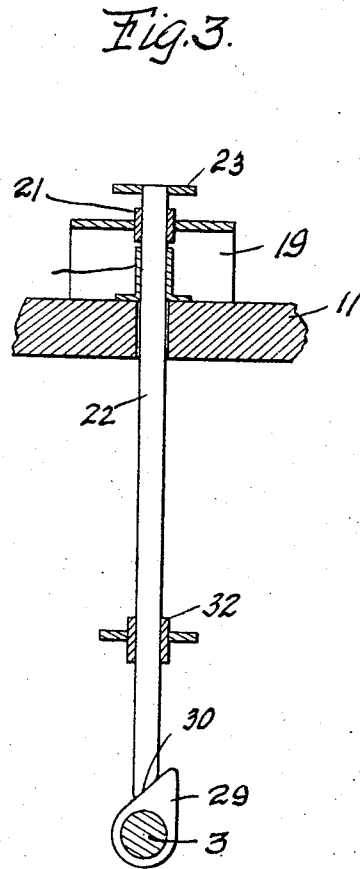
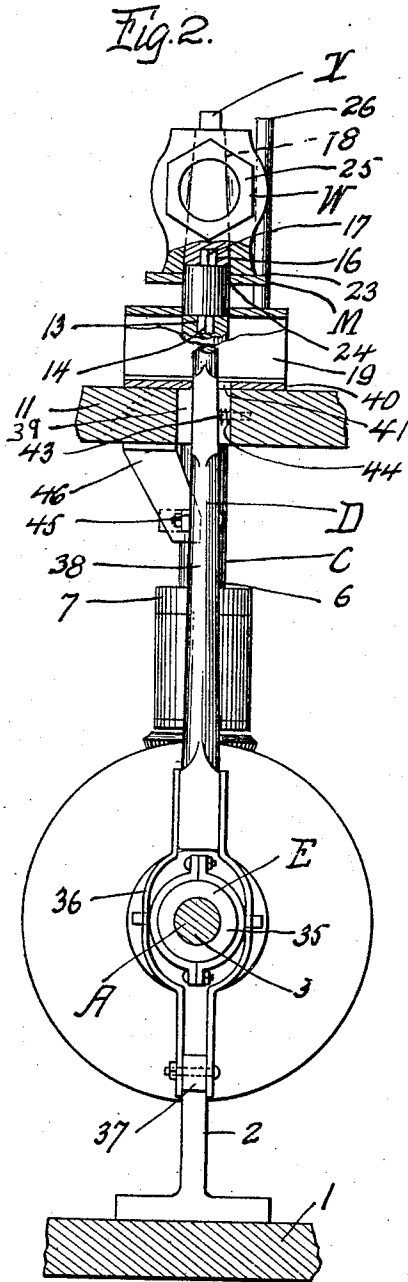
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 4.

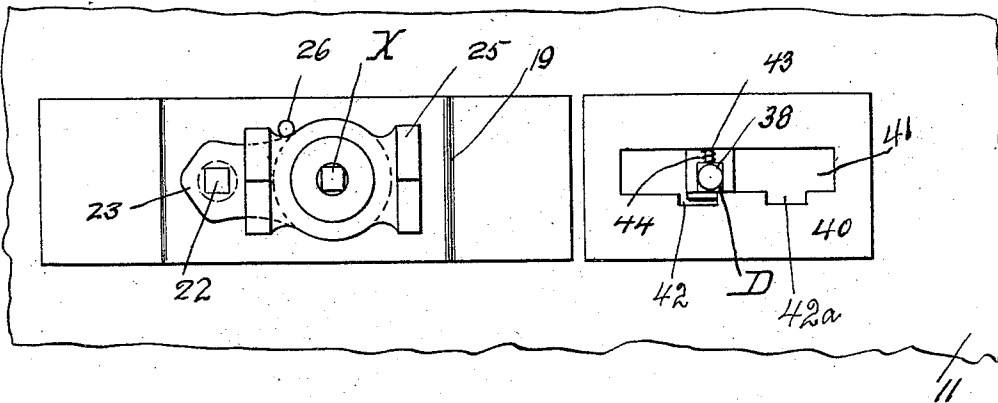


Fig. 5.

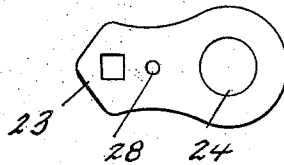
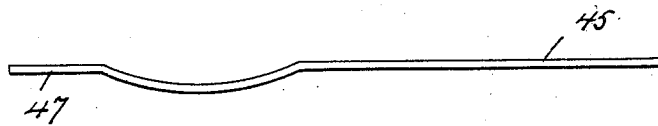


Fig. 6.



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# UNITED STATES PATENT OFFICE.

JOHN D. BURNS, OF PITTSBURG, PENNSYLVANIA.

## VALVE-SEAT-GRINDING MACHINE.

944,845.

Specification of Letters Patent. Patented Dec. 28, 1909.

Application filed August 12, 1909. Serial No. 512,482.

*To all whom it may concern:*

Be it known that I, JOHN D. BURNS, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Valve-Seat-Grinding Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to valve seat grinding machines, and the invention has for its primary object to provide a novel machine for rotating a valve plug within a valve body to grind said plug and body whereby the plug will perfectly seat in the valve body.

Another object of this invention is to provide a machine for grinding valve bodies wherein simple and effective means is employed for automatically raising the valve body to allow the grounds or compound removed from the valve body to escape, thereby facilitating the grinding operation.

A further object of this invention is to accomplish the above results by a strong and durable machine that can be easily operated and controlled.

These and such other objects as may hereinafter appear are attained by a machine of the above type that will be hereinafter described in detail and then claimed, and reference will now be had to the drawings forming a part of this specification, wherein there is illustrated a preferred embodiment of the invention, but it must be understood that the structural elements thereof can be varied or changed, as to the size, proportion and manner of assemblage without departing from the spirit of the invention.

In the drawings:—Figure 1 is an elevation of a machine constructed in accordance with my invention. Fig. 2 is a vertical sectional view taken on the line X—X of Fig. 1, showing parts broken away and partly in section. Fig. 3 is a similar view taken on the line Y—Y of Fig. 1, with the rod and cam shown in elevation. Fig. 4 is a plan of a machine with a bench broken away. Fig. 5 is a plan of a movable valve body platform, and Fig. 6 is a plan of a manually operated arm forming part of the machine.

In the drawings 1 denotes a floor or suitable support provided with a bearing 2 for a revoluble clutch sleeve 2<sup>a</sup>, and extending

through said clutch sleeve is a longitudinal shaft 3, said shaft having one end thereof provided with a pulley or gear wheel 4 whereby the shaft can be driven from a suitable source of energy, as an engine or motor. The shaft 3 can be prolonged whereby other machines similar to that herein shown can be operated from the same source of power.

5 denotes a bracket carried by the bearing 2 and in said bracket is journaled a vertical shaft 6, said shaft being supported in the bracket by a collar 7 secured to the shaft, as at 8 and bearing upon the upper end of said bracket. The lower end of the vertical shaft 6 is provided with a beveled gear wheel 9 adapted to mesh with a beveled gear wheel 10 carried by the end of the clutch sleeve 2<sup>a</sup>. The upper end of the shaft 6 extends through a bench or horizontal plate 11 and through a wearing plate 12 mounted upon said bench and has the extreme upper end thereof provided with a socket 13 for the depending pin 14 of a coupling piece 15. The upper end of the coupling piece is provided with a central pin 16 adapted to fit in the socket 17 of the large end of a valve plug 18. When larger or smaller valve plugs are to be connected to the shaft 6, a coupling piece having a larger or smaller pin 16 is used.

19 denotes a horizontal bracket mounted upon the bench 11, said bracket having an opening 20 to provide clearance for the coupling piece 15. The bracket 20 is also provided with an opening for a brass bushing 21 and extending upwardly through the bench 11 and the bushing 21 is a movable rod 22 having the upper end thereof provided with a platform 23, said platform having an opening 24 to provide clearance for the coupling piece 15. Upon the platform 23 is adapted to rest a valve body 25 in which the valve plug 18 is rotated to grind a seat therein. The valve body 25 is prevented from rotating by a post 26 carried by the horizontal bracket 19 and extending upwardly at one side of the platform 23. The horizontal bracket 19 is also provided with a small post 27 extending upwardly through an opening 28 provided therefor in the platform 23. The post 27 is encircled by a coil spring 28 having one end thereof connected to the platform 23, while the opposite end is connected to the horizontal bracket 19.

29 denotes an elevating cam mounted upon the shaft 3, said cam normally engaging the lower beveled end 30 of the rod 22. The elevating cam 29 is adapted to raise  
 5 the rod 22, platform 23 and valve body 25 once in every three rotations of the vertical shaft 6.

31 denotes an extension of the bracket 5 and this extension is provided with a brass  
 10 bushing 32 through which the rod 22 extends, said extension and bushing maintaining the rod 22 in perfect alinement.

33 denotes a sleeve mounted upon the bench 11 and surrounding the rod 22, to prevent the compound or grounds from the  
 15 valve body 25 entering the rod opening of the bench 11 and injuring said rod.

34 denotes a deflector plate shrunk upon the vertical shaft 6 above the wearing plate  
 20 12, this deflector plate preventing the compound or grounds of the valve body 25 cutting or interfering with the operation of the vertical shaft.

35 denotes a clutch member slidably keyed  
 25 upon the shaft 3 and adapted to rotate therewith, said member being also adapted to engage the end of the clutch sleeve 2<sup>a</sup> and cause said sleeve to rotate with the clutch member 35 and the shaft 3.

36 denotes a clutch yoke having the lower end thereof pivotally connected to an extension 37 of the bearing 2, while the upper end thereof is provided with a lever 38 extending through an opening 39 provided therefor in the bench 11. The opening 39 is covered by a lock plate 40 having a longitudinal slot 41 for the lever 38. One of the side walls of the slot 41 is notched, as at 42 and 42<sup>a</sup> and the lever within the slot 39 is provided with a pin 43 encircled by a spring 44, said spring bearing against the wall of the slot 39 to force the lever 38 into one of the notches 42 and 42<sup>a</sup> of the lock plate 40.  
 40

45 denotes a longitudinal arm pivotally connected to the lever 38, said arm extending through a depending bracket 46 carried by the bench 11 and having the outer end thereof provided with a cam surface 47 adapted to engage a pin or lug 48, carried  
 50 by the rod 22.

A machine constructed in accordance with my invention operates in the following manner:—With the lever 38 in the notch 42 of the lock plate 40, the clutch member 35 is retained out of engagement with the clutch sleeve 2<sup>a</sup>, consequently the shaft 3 can rotate without operating the machine. With the lever 38 in the notch 42<sup>a</sup>, the cam surface 47 of the arm 45 holds the rod 22 out of engagement with the cam 29 and the platform 23 in an elevated position. The valve plug and valve body can then be placed in position and upon moving the lever 38 from the notch 42 to the notch 42<sup>a</sup>, the clutch member  
 65 35 is moved into engagement with the clutch

sleeve 2<sup>a</sup>, and the rod 22 is released to engage the cam 29. The vertical shaft 6 will then be rotated and the valve plug 18 ground within the valve body 25. At every three rotations of the shaft 6, the rod 22  
 70 is actuated by the cam 29 to elevate the platform 23 and release the grounds from the valve body 25.

Having now described my invention what I claim as new, is:—

1. A machine of the type described, comprising a revoluble longitudinal shaft, a vertical shaft adapted to be driven by said longitudinal shaft, a coupling piece connected to said vertical shaft and adapted to  
 80 support a valve plug, a movable platform arranged at the upper end of said vertical shaft and adapted to support a valve body in which the valve plug is revolved, and means actuated by said longitudinal shaft  
 85 to raise said platform after a predetermined number of revolutions of the vertical shaft, substantially as described.

2. A machine of the type described, comprising a revoluble longitudinal shaft, a  
 90 vertical shaft adapted to be driven by said longitudinal shaft, a coupling piece carried by the upper end of said vertical shaft and adapted to support a valve plug, a movable platform arranged at the upper end of said  
 95 shaft and adapted to support a valve body in which the valve plug is adapted to revolve, means actuated by said longitudinal shaft for raising said movable platform after a predetermined number of revolutions  
 100 of the vertical shaft, and means in connection with said longitudinal shaft for controlling the operation of said vertical shaft.

3. A machine of the type described, comprising a revoluble longitudinal shaft, a  
 105 vertical shaft adapted to be driven by said longitudinal shaft, a coupling piece adapted to support a valve plug upon the upper end of said vertical shaft, a movable platform adapted to support a valve body in which  
 110 the plug is revolved, means actuated by said longitudinal shaft to raise said platform, and means in connection with said longitudinal shaft to simultaneously cause a cessation  
 115 in the operation of said vertical shaft and to raise said platform.

4. A machine of the type described, comprising a bench, a longitudinal shaft beneath said bench, a vertical shaft extending through said bench and adapted to be driven  
 120 by said longitudinal shaft, means for connecting a valve plug to the upper end of said vertical shaft, a rod extending upwardly through said bench, a platform carried by said rod and adapted to support a  
 125 valve body in which the valve plug is adapted to rotate, means carried by said longitudinal shaft for intermittently moving said rod and the platform carried thereby, and means in connection with said longitudinal  
 130

shaft for simultaneously controlling the operation of said vertical shaft and adapted to elevate said platform and cause a cessation in the operation of said vertical shaft.

- 5 5. A machine of the type described, comprising a bench, a longitudinal shaft beneath said bench, a vertical shaft extending through said bench and adapted to be driven by said longitudinal shaft, means 10 for connecting a valve plug to the upper end of said vertical shaft, a rod extending upwardly through said bench, a platform carried by said rod and adapted to support a valve body in which the valve plug is 15 adapted to rotate, means carried by said longitudinal shaft for intermittently moving said rod and the platform carried thereby, means in connection with said longitudinal shaft for simultaneously controlling the operation of said vertical shaft and 20 adapted to elevate said platform and cause a cessation in the operation of said vertical shaft, said means including a clutch, a lever for moving said clutch, and an arm connecting 25 ing with said lever and adapted to elevate said rod.

6. A machine of the type described, comprising a bench, a longitudinal shaft be-

neath said bench, a vertical shaft extending through said bench and adapted to be driven 30 by said longitudinal shaft, means for connecting a valve plug to the upper end of said vertical shaft, a rod extending upwardly through said bench, a platform carried by said rod and adapted to support a 35 valve body in which the valve plug is adapted to rotate, means carried by said longitudinal shaft for intermittently moving said rod and the platform carried thereby, means 40 in connection with said longitudinal shaft for simultaneously controlling the operation of said vertical shaft and adapted to elevate said platform and cause a cessation in the operation of said vertical shaft, said means 45 including a clutch, a lever for moving said clutch, an arm connecting with said lever and adapted to elevate said rod, and a lock plate carried by said bench and adapted to hold said lever in adjusted position.

In testimony whereof I affix my signature 50 in the presence of two witnesses.

JOHN D. BURNS.

Witnesses:

MAX H. SROLOVITZ,  
A. T. PAYNE.