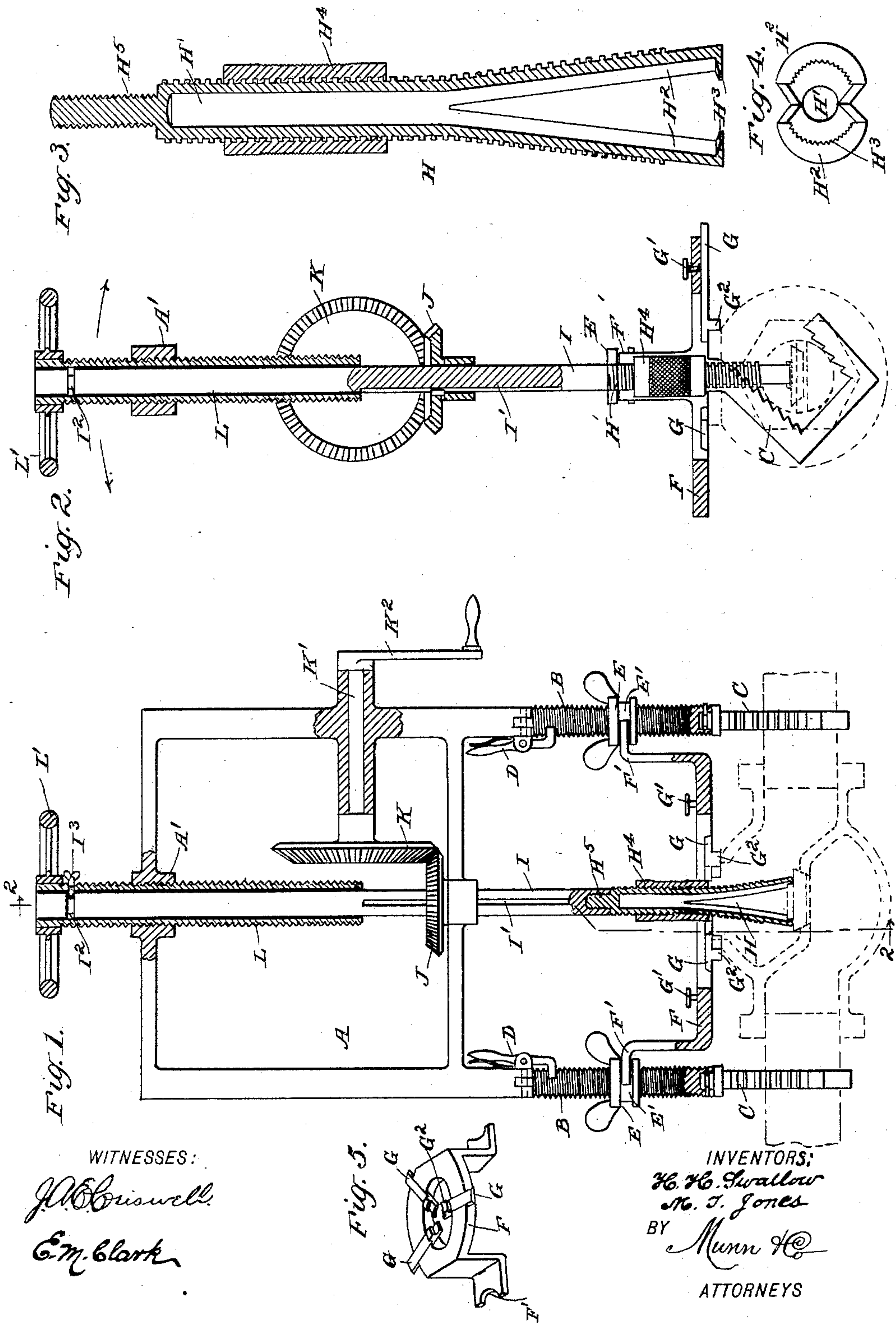


(No Model.)

H. H. SWALLOW & M. T. JONES.  
VALVE SEAT GRINDER.

No. 468,431.

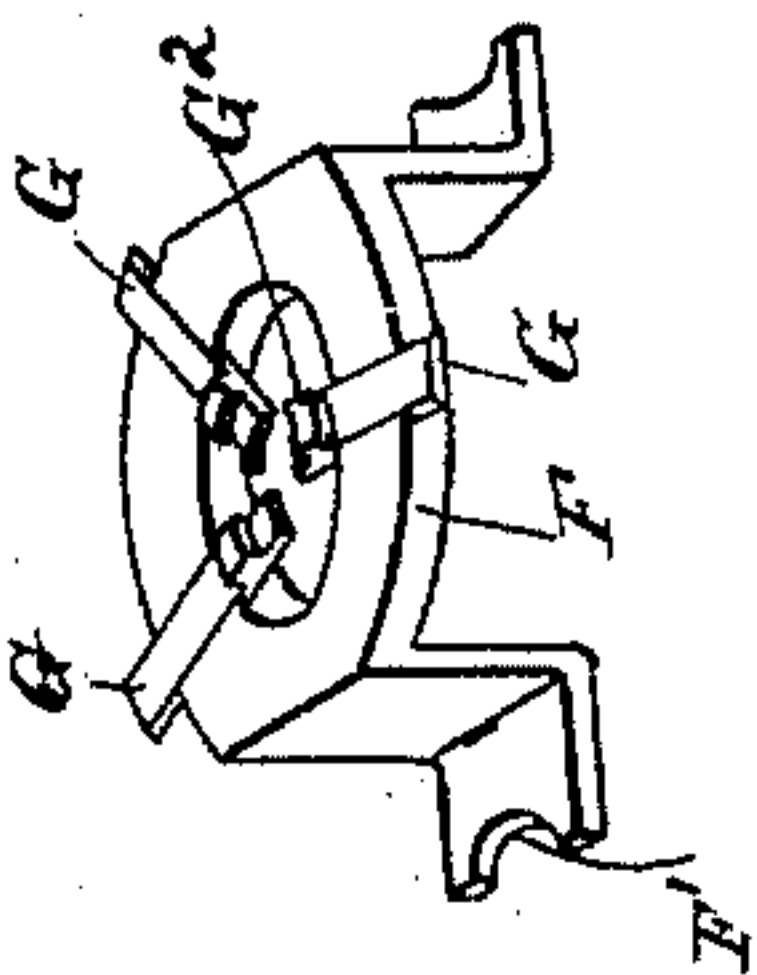
Patented Feb. 9, 1892.



WITNESSES:

J. A. Griswell.  
E. M. Clark

Fig. 3.



INVENTORS:

H. H. Swallow  
M. T. Jones  
BY Munn & Co  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

HIRAM H. SWALLOW AND MATHEW T. JONES, OF CARBONDALE, KANSAS.

## VALVE-SEAT GRINDER.

SPECIFICATION forming part of Letters Patent No. 468,431, dated February 9, 1892.

Application filed February 20, 1891. Serial No. 382,162. (No model.)

*To all whom it may concern:*

Be it known that we, HIRAM H. SWALLOW and MATHEW T. JONES, both of Carbondale, in the county of Osage and State of Kansas, have invented a new and Improved Valve-Grinder, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved valve-grinder which is simple and durable in construction, very effective in operation, designed to conveniently regrind worn-out seats on the valve, and adapted to be readily adjusted on the valve-body, at the same time insuring perfect alignment of the several parts of the valve.

The invention consists of a chuck adapted to support the valve and secured on a shaft mounted to turn and to slide and means for imparting a rotary and sliding motion to the said shaft.

The invention also consists of certain parts and details and combinations of the same, as will be hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement with parts in section. Fig. 2 is a transverse section of the same on the line 2 2 of Fig. 1. Fig. 3 is an enlarged sectional side elevation of the chuck. Fig. 4 is an inverted plan view of the same, and Fig. 5 is an inverted perspective view of the clamping-plate.

The improved valve-grinder is provided with a suitably-constructed frame A, provided at its lower ends with hinged legs B, each connected by a swivel with a U-shaped jaw C, provided with teeth at its inner edge to engage the pipes leading to the valve. The legs B are threaded, as is plainly shown in Fig. 1, and are hinged to the frame A and adapted to be locked in line with the said frame by a suitable spring-pressed locking-lever D, fulcrumed on the frame A.

On each of the threaded legs B screws a wing-nut E, provided with an annular groove E', loosely engaged by a segmental end F', formed on a clamping-plate F, adapted to rest on top of the valve-body, as is plainly illus-

trated in Fig. 1. The clamping-plate F is provided with a central aperture and supports at its under side, by means of dovetails, a series of radial arms G, fitted to slide and each provided on its under side with a lug or projection G<sup>2</sup>. Each of the said arms G is adapted to be locked in place by a suitable set-screw G', screwing in the top of the clamping-plate F. The lugs G<sup>2</sup> are adapted to abut against the annular neck of the valve-body, as is plainly indicated in Fig. 2, so that the clamping-plate is readily centered on the valve-body. By adjusting the wing-nuts E the clamping-plate F is raised or lowered, so as to bring the arms G in the proper position relative to the neck of the valve-body.

The valve-disk of the valve is adapted to be engaged by a chuck H, preferably made as illustrated in the drawings, being provided with the threaded part H', from the lower end of which extend the diverging arms or jaws H<sup>2</sup>, each provided on its lower edge with inwardly-extending segmental teeth H<sup>3</sup>, adapted to engage the shoulder of the valve, as is plainly illustrated in Fig. 1. On the threads of the part H' and the jaws H<sup>2</sup> is adapted to screw a sleeve or nut H<sup>4</sup>, which, when passing over the diverging jaws H<sup>2</sup>, causes the latter to swing inward toward each other, so as to firmly engage the teeth H<sup>3</sup> with the annular neck of the valve. The upper end of the jaw H is formed with a screw-threaded shank H<sup>5</sup>, screwing in the lower end of a shaft I, mounted to turn in a bearing in the main frame A and also fitted to slide vertically therein.

The shaft I is provided with a key-seat I', arranged longitudinally in the shaft and adapted to be engaged by a key held on a gear-wheel J, in mesh with the bevel gear-wheel K, secured on a shaft K', mounted to turn in the main frame A, and provided with a crank-arm K<sup>2</sup> for conveniently turning the said shaft K' so as to transmit a rotary motion by the gear-wheels K and J to the said shaft I. The latter is provided near its upper end with an annular groove I<sup>2</sup>, engaged by a set-screw I<sup>3</sup>, screwing in a threaded sleeve L, into which extends loosely the upper end of the shaft I. The threaded sleeve L screws in a nut A', formed in the frame A, and the extreme upper end of the said sleeve is provided with a hand-wheel L' for conveniently turning the said



sleeve, so as to screw it up and down in the nut A' of the frame A. By thus raising and lowering the sleeve L the shaft I is carried along, so that the operator is enabled to feed the valve into the seat or to move the shaft I upward in order to take the chuck H out of the valve-body.

The operation is as follows: The jaws C are hooked under the pipes of the valve, as is plainly shown in Fig. 1, the frame A being extended vertically. The operator then turns the wing-nuts E so as to move the clamping-plate F downward onto the top of the valve-body, the arms G being adjusted so as to engage with their shoulders G<sup>2</sup> the annular neck of the valve-body. The operator fastens the valve itself in the teeth H<sup>3</sup> of the jaws H<sup>2</sup> of the chuck H by screwing the sleeve or nut H<sup>4</sup> downward, as previously described. The operator then turns the hand-wheel L' so as to move the chuck H and the valve attached into the valve-body, so that the valve finally passes into the valve-seat. The operator then takes hold of the crank-arm K<sup>2</sup>, turns the latter so as to impart a rotary motion to the shaft I, and consequently to the valve, which thus grinds in the valve-seat. The operator also slowly turns the hand-wheel L' so as to feed the shaft I downward to cause the valve to grind its own seat. When the operator desires to examine the work, he turns the hand-wheel L' in the opposite direction, so as to remove the chuck H and the valve from the valve-body, and then by pressing the spring-pressed levers D the frame A may be folded to one side, so that the chuck swings away from the valve-body opening, and the operator is enabled to examine the seat.

It will be seen that the device is very simple and durable in construction, can be readily applied to the valve, and permits of examining the grinding of the seat at any time during the progress of the work. It will further be seen that the several parts are held in perfect alignment, so that the seat is ground in proper relation to the valve.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. In a valve-grinder, the combination, with a chuck having adjustable jaws to grasp and support the valve, of a shaft mounted to turn and to slide and carrying the said chuck, and gear and a feed-screw for imparting a rotary

and sliding motion, respectively, to the said shaft, substantially as set forth.

2. In a valve-grinder, the combination, with a frame and a clamping-plate held adjustably thereon, of a shaft mounted to turn and to slide in the said frame, a chuck held on the said shaft and adapted to carry the valve, and means, substantially as described, for imparting a rotary motion and a sliding motion to the said shaft, substantially as shown and described.

3. In a valve-grinder, the combination, with a frame, of threaded legs pivotally connected with the said frame, U-shaped jaws swiveled on the said legs, and a clamping-plate held adjustably on the said threaded legs, substantially as shown and described.

4. In a valve-grinder, the combination, with a frame, of threaded legs pivotally connected with the said frame, jaws swiveled on the said legs and adapted to engage the pipes of the valve, wing-nuts screwing on the said threaded legs, and a clamping-plate carried by the said wing-nuts and adapted to engage the valve-body, substantially as shown and described.

5. In a valve-grinder, the combination, with a frame, of threaded legs pivotally connected with the said frame, jaws swiveled on the said legs and adapted to engage the pipes of the valve, wing-nuts screwing on the said threaded legs, a clamping-plate carried by the said wing-nuts and adapted to engage the valve-body, and arms held to slide in the said plate and adapted to be secured thereon, substantially as shown and described.

6. In a valve-grinder, the combination, with a frame and means for attaching the same to a valve, of a sleeve screwing in the said frame, a shaft loosely carried by the said sleeve, a chuck secured on the said shaft and adapted to carry the valve, and means, substantially as described, for imparting a rotary motion to the said shaft, as set forth.

7. In a valve-grinder, a chuck provided with a threaded shank, diverging jaws extending from the said shank and each provided with teeth, and a sleeve screwing on the said threaded shank and jaws, substantially as shown and described.

HIRAM H. SWALLOW.  
MATHEW T. JONES.

Witnesses:

P. W. ROBISON,  
CHAS. S. BRIGGS.