

J. H. CHEWNING.
VALVE GRINDER.
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1,283,467.

Patented Nov. 5, 1918.

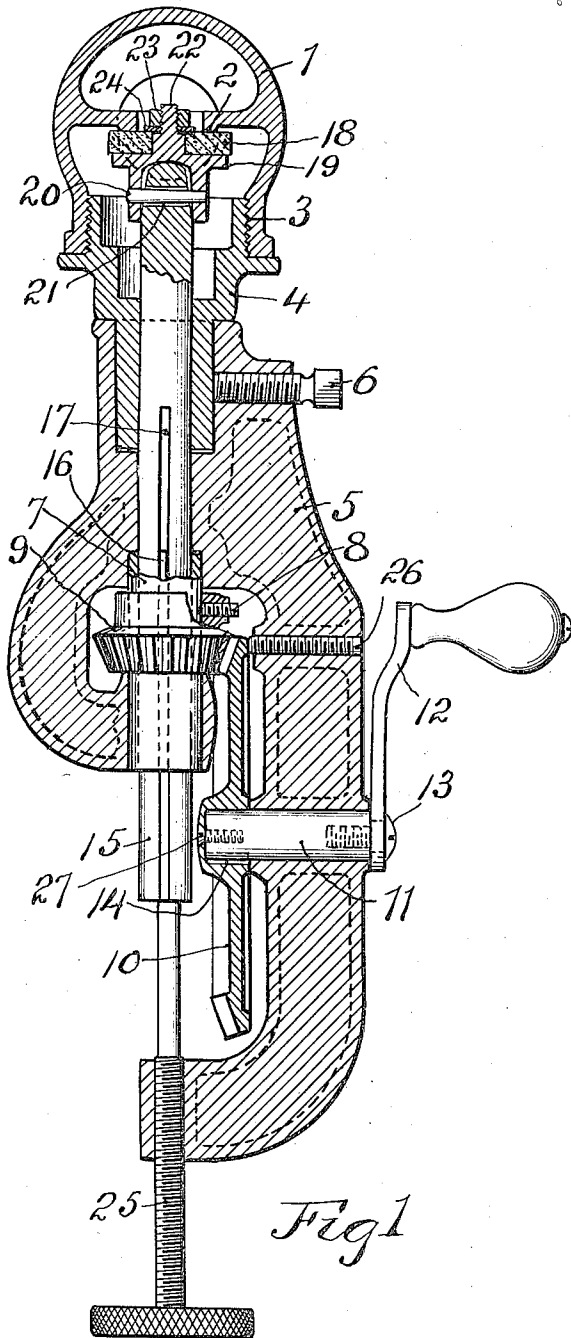


Fig 1

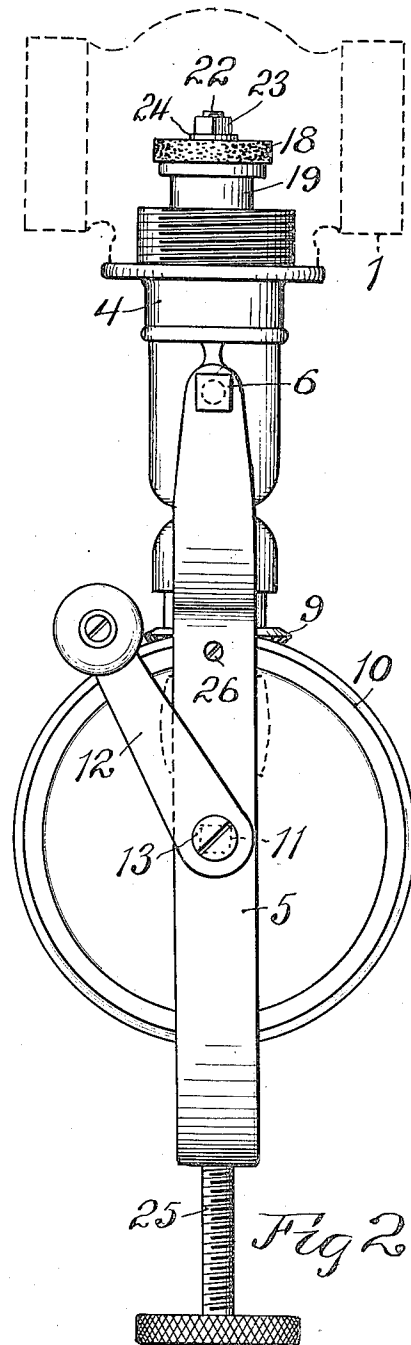


Fig 2

WITNESS:

R. Hamilton

INVENTOR.
John H. Chewning
BY
Warren D. House
His ATTORNEY.

UNITED STATES PATENT OFFICE.

JOHN H. CHEWNING, OF KANSAS CITY, MISSOURI.

VALVE-GRINDER.

1,283,467.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN H. CHEWNING, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented a certain new and useful Improvement in Valve-Grinders, of which the following is a specification.

My invention relates to improvements in valve grinders.

The object of my invention is to provide a device for grinding valves which is simple in construction, which is easily applied to and supported by the casing of a valve, which is economical to manufacture, durable, not liable to get out of order, and which is efficient in operation.

My invention provides further novel and secure means for releasably attaching the grinder to a valve casing.

My invention provides still further novel means for adjusting the valve grinder to a position in which it will be most convenient to operate.

Other novel features of my invention are hereinafter fully described and claimed.

In the accompanying drawings, which illustrate the preferred embodiment of my invention,

Figure 1 is a horizontal sectional view of my improved valve grinder shown attached to a valve casing.

Fig. 2 is a plan view of the same.

Similar reference characters designate similar parts in the different views.

1 designates the casing of an ordinary valve, 2 the valve seat therein, and 3 the threaded portion which encircles the axis of the valve, not shown, and which is adapted to have fitted therein the threaded member, not shown, through which the valve stem extends.

The grinder is provided with supporting means comprising a tubular screw-threaded member 4 which is adapted to be fitted in and supported by the threaded portion 3 of the valve casing, and a supporting member 5 having in one end a circular recess, in which the member 4 is fitted. The supporting member 5 is circumferentially adjustable on the tubular member 4, and may be releasably locked thereto by means of a set screw 6.

Rotatably mounted in the supporting member 5 is a sleeve 7, which is held from longitudinal movement, but which is rota-

table and has rigidly secured to it, as by a set screw 8, a bevel gear wheel 9 which meshes with a bevel gear wheel 10, which is slidably mounted on a transverse stem 11 of a crank which is provided with a handle 12 secured to one end of the stem 11 by means of a screw 13. The handle 12 may have a square hole fitted on a squared portion of the stem 11. The stem 11 is splined to the gear wheel 10 by means of a key 14.

Extending longitudinally through the sleeve 7 and through the member 4 and a portion of the member 5 is a shaft 15 which is longitudinally slidable in the sleeve 7, and which is held from rotation relatively thereto by means of a key 16, which is mounted in a longitudinal groove 17, which extends lengthwise from one end of the shaft. The other end of the shaft carries a support for a grinding device, such as an emery wheel 18, the latter being adapted to rotate against the valve seat 2.

The support for the grinding device is rotatable with the shaft 15, and, preferably, has a connection therewith which constitutes a universal joint, which permits the support to swing laterally with respect to the axis of the shaft 15, so that the grinding device 18 will properly grind the valve seat, although the shaft 15 may not be disposed exactly perpendicular to said seat.

The support for the grinding device 18 comprises preferably a cap 19, in which the adjacent tapered end of the shaft 15 is loosely fitted, and which is secured to the shaft by means of a transverse pin 20 mounted in the cap 19 and extending through a transverse hole 21, which is larger in diameter than the diameter of the pin 20, so as to permit the cap 19 to swing laterally in any direction. The adjacent end of the shaft is rounded and fits against a central rounded seat provided in the cap 19.

The inner end of the cap 19 is provided with a central screw-threaded projection, on which is fitted a nut 23 which bears against a collar 24 which encircles the projection 22 and bears against the inner side of the abrading or grinding device 18.

The shaft 15 and cap 19, and parts connected with the latter, constitute a valve grinding means, which is adapted for location and also for longitudinal adjustment. For effecting the longitudinal adjustment, any suitable means may be provided. In the drawings, I have shown for effecting

this function a screw 25 which is rotatably fitted in a longitudinal threaded hole provided in the member 5 in alinement with the shaft 15. By turning the screw 25 in the proper direction, the shaft 15 may be forced inwardly, so that the grinding device 18 will always be held tightly against the seat 2.

For holding the gear wheel 10 in mesh with the gear wheel 9, when the parts become worn through much use, there is provided a set screw 26, which is fitted in a transverse screw-threaded hole in the supporting member 5, and which bears against the outer side of the gear wheel 10, in case the latter through wear would tend to become disengaged from the gear wheel 9.

In the operation of my invention, the parts of the grinder having been assembled as above described, the tubular member 4 is screwed into the portion 3 of the valve casing 1, the valve and member carrying the same having been removed. The set screw 6 is then loosened and the supporting member 5 circumferentially adjusted on the tubular member 4 to a position in which the crank handle 12 may be most conveniently turned. The set screw 6 is then tightened, after which the crank handle 12 is turned thereby rotating the shaft 15 and sleeve 7 through the intermediacy of the gear wheels 9 and 10. As the grinding progresses, the thumb screw 25 is turned so as to keep the grinding device 18 tightly against the valve seat 2. If, when the grinder has been attached to the valve casing, the shaft 15 should not be exactly perpendicular to the seat 2, this will not interfere with the proper grinding of the seat, as the universal joint connection between the cap 19 and the shaft 15 will permit the grinding device 18 to always lie flat against the seat 2.

When the shaft 15 is slipped endwise out of the sleeve 7, for any purpose, the sleeve will retain the gear wheel 9 in its operative position.

As the tubular member 4 is fitted in the portion 3 of the valve casing and is concentric with the shaft 15, the latter will be accurately positioned for operative purposes, when the tubular member 4 has been screwed tightly into its operative position, providing the threaded portion 3 has been accurately machined with respect to the valve seat 2. This means of supporting the grinder makes it easily and quickly applicable in proper operative position relatively to the valve seat which is being ground.

If the threaded portion 3, in its manu-

facture, has not been machined accurately with respect to the valve seat 2, as sometimes occurs, the loose connection between the cap 19 and the shaft 15 will, nevertheless, permit the grinder to be quickly applied and operated to accurately grind the seat.

The valve grinder is adapted to be mounted on the valve casing when the latter is in a horizontal, vertical or any other position.

If desired, the gear wheel 10 may, when loosely fitted on the stem 11, be secured thereto by means of a screw 27 extending centrally through the wheel 10 and fitted in a longitudinal threaded hole in the inner end of the stem 11.

I do not limit my invention to the structure shown and described, as modifications within the scope of the appended claims, may be made without departing from the spirit of my invention.

What I claim is:

1. In a valve grinder, supporting means having provision for engaging and being supported by a valve casing, a sleeve rotatable in said supporting means and held from longitudinal movement therein, a shaft rotatable with and longitudinally slidable in said sleeve, a support for a grinding device carried by said shaft, and means for rotating said sleeve.

2. In a valve grinder, supporting means including a tubular screw-threaded member adapted to be fitted to and supported by a threaded portion of a valve casing, a sleeve rotatable in said supporting means, a shaft rotatable with and longitudinally movable in said sleeve, a support for a grinding device carried by said shaft, and means for rotating said sleeve.

3. In a valve grinder, supporting means having provision for engaging and being supported by a valve casing, a sleeve rotatable in said supporting means, a shaft rotatable with and longitudinally movable in said sleeve, a screw-threaded member fitted to and rotatably mounted on said supporting means and having provision for moving said shaft lengthwise in said sleeve, a support for a grinding device carried by said shaft, a crank rotatable on said supporting means, and gearing connecting said crank and said sleeve for transmitting rotation to the latter.

In testimony whereof I have signed my name to this specification.

JOHN H. CHEWNING.