

S. A. BOSTWICK.
VALVE GRINDING DEVICE.
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1,154,605.

Patented Sept. 28, 1915.

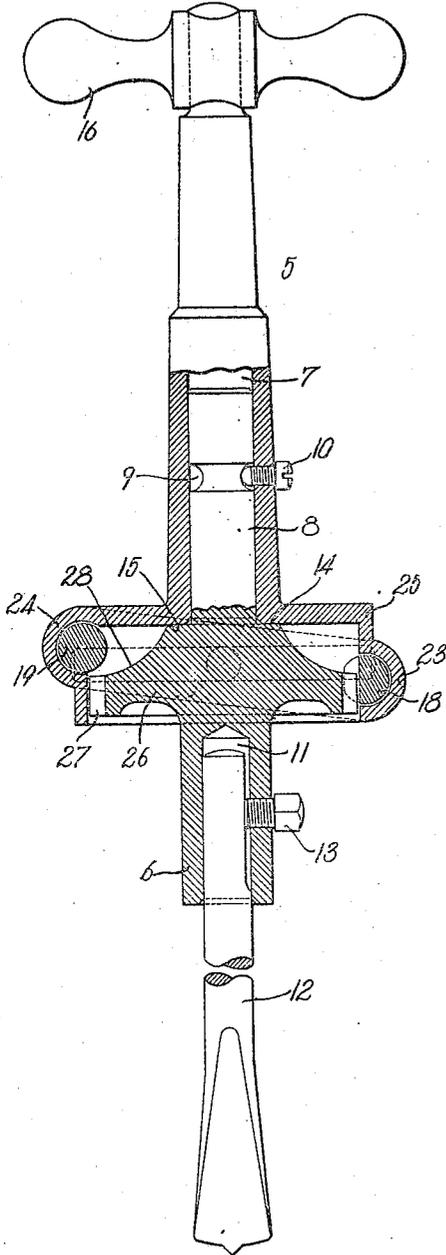


FIG. 1.

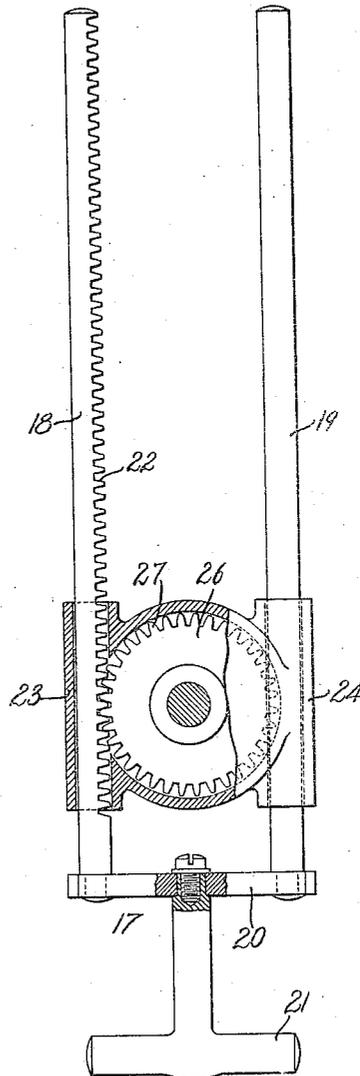


FIG. 2.

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by his attorney, Charles J. Gooding.

UNITED STATES PATENT OFFICE.

SEYMOUR A. BOSTWICK, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-THIRD TO CLARENCE A. GLENTWORTH AND ONE-THIRD TO HAROLD M. BATER, BOTH OF BOSTON, MASSACHUSETTS.

VALVE-GRINDING DEVICE.

1,154,605.

Specification of Letters Patent. Patented Sept. 28, 1915.

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To all whom it may concern:

Be it known that I, SEYMOUR A. BOSTWICK, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Valve-Grinding Devices, of which the following is a specification.

This invention relates to improvements in valve grinding devices and has for its object to provide a strong, durable and easily operated device which may be taken apart, when not in use, to occupy very little space.

The invention consists in the combination and arrangement of parts whereby the above object and certain other objects hereinafter appearing may be attained, as set forth in the following specification and particularly pointed out in the claims.

Referring to the drawings: Figure 1 is a vertical section partly in elevation of a device embodying my invention. Fig. 2 is a plan view partly in section of the same.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 5 is the stock and 6 the tool holder of the device which is mounted to rotate relatively to said stock. The stock 5 is preferably made of metal with a cylindrical chamber formed therein and adapted to receive a cylindrical stem 8 which constitutes a part of the tool holder 6. An annular groove 9 is formed in the stem 8 and receives the end of a screw 10 having screw-threaded engagement with the stock 5, which screw retains said stem within the chamber 7 and permits the same to be rotated therein.

The lower end of the tool holder 6 is recessed at 11 to contain one end of a tool 12 which tool is secured in said recess preferably by means of a screw 13. The outer end of the tool 12 may be formed in numerous ways according to the character and nature of the work to be performed. An annular shoulder 14 is formed upon the tool holder 6 and engages a corresponding shoulder 15 formed upon the stock 5, said shoulders 14 and 15 being formed and arranged to receive the thrust due to the pressure which is applied to the tool during the operation thereof.

A grip 16 is arranged adjacent the upper end of the stock 5 in order to facilitate the

control of the device during the operations thereof. When the device is to be used as a valve grinder, which is the preferred function thereof, the tool holder must be oscillated first gradually and then through increasing arcs in order to uniformly grind the surfaces of the valve and valve seat. To accomplish the oscillatory movements of said tool holder a slide 17 has been provided which is mounted to move transversely of said tool holder and stock, means on said slide engaging said tool holder whereby motion may be imparted to said tool holder from said slide. The preferred method of carrying out this feature of the invention is to provide a pair of rods 18 and 19 which are arranged parallel to each other upon opposite sides of the axis of said tool holder.

The rod 18 is connected at one end to the adjacent end of the rod 19 preferably by a cross bar 20, said rods being preferably riveted to said cross bar. A T-shaped handle 21 is preferably rotatably secured to the cross bar 20 substantially midway between the bars 18 and 19 permitting said handle to be rotated to a position best suited to the operator of the device.

One of the parallel rods, preferably the rod 18, is provided with a series of teeth 22 lengthwise thereof and upon the side adjacent the other rod. Said rods are furthermore arranged to slide in guides 23 and 24 respectively formed in an enlarged portion 25 of the stock 5.

The tool holder 6 is also provided with an enlargement 26 about the periphery of which are formed gear teeth 27, which teeth are adapted to mesh with the teeth 22 of the rod 18. Said rod constitutes a rack. The enlargement 26 and the gear teeth 27 constitute a gear which is arranged with the enlargement 25 of said stock, said enlargement being substantially cylindrical in shape and hollow to inclose said gear.

As hereinbefore stated, the rods 18 and 19 are arranged upon opposite sides of the axis of the tool holder 6 and in order that said rods may be placed as near-together as possible and yet constitute suitable guides to control the movements of said slide transversely of said tool holder and to prevent cramping thereof said rods are placed in different transverse planes, which are arranged substantially parallel with each other and at

right angles to the median axial line of said tool holder.

The rod 18 is, as hereinbefore stated, arranged in a position so that its teeth 22 will mesh with the teeth 27 of said gear, while the rod 19 is arranged above said rod 18 and the upper face of said gear is cut away at 28 in order to clear said rod 19, permitting said rod to move freely through its guide 24 without interfering with the movements of said gear.

To operate the device the proper tool is inserted therein and the rods 18 and 19 of the slide 17 inserted in their respective guides 23 and 24, this being the only manner in which said rods may be inserted owing to the absence of the teeth on the rod 19. The grip 16 is held by the operator and the desired pressure applied thereto. The handle 21 is then grasped by said operator and reciprocated the proper distance through the guides 23 and 24, thus transmitting an oscillatory movement to the tool 12 through the tool holder 6.

It will be seen that the guides 23 and 24 are quite long and entirely surround the rods 18 and 19 which are preferably formed cylindrical, thus said rods will be properly controlled and guided during the reciprocations thereof and any tendency of cramping, due to improper alinement between the rod 18 and the teeth of the gear, will be entirely eliminated.

Having thus described my invention what I claim and desire by Letters Patent to secure is:

1. A valve grinding device having, in combination, a stock, a tool holder mounted to rotate relatively to said stock, teeth on said tool holder, a pair of rods constructed and arranged to reciprocate transversely of said tool holder, and teeth formed upon one of said rods adapted to mesh with the teeth upon said holder.

2. A valve grinding device having, in combination, a stock, a tool holder rotatably mounted in said stock, teeth on said tool holder, a rack constructed and arranged to reciprocate in said stock transversely of said holder and at one side thereof, the teeth of said rack being adapted to mesh with the teeth

of said holder, a guide rod arranged upon the opposite side of the axis of said tool holder from said rack, means for connecting one end of said rack with the adjacent end of said rod, and means to reciprocate said rod and said rack.

3. A valve grinding device having, in combination, a rotatable tool holder, a gear on said tool holder adapted to rotate therewith, a stock adapted to receive portions of said tool holder, said stock having a casing adapted to surround and inclose said gear, a pair of rods slidably mounted in said casing transversely of said tool holder, teeth formed upon the inner face of one of said rods adapted to mesh with the teeth of said gear, and means to reciprocate said rods transversely of said holder whereby an oscillatory motion may be imparted to said tool holder.

4. A valve grinding device having, in combination, a stock having a cylindrical chamber formed therein and open at one end, a cylindrical casing formed integral with said stock adjacent the open end of said cylindrical chamber, a grip secured adjacent to the closed end of said stock, a tool holder having a cylindrical stem adapted to fit the cylindrical chamber in said stock, a gear on said tool holder adapted to rotate within said cylindrical casing, said cylindrical stem having an annular recess formed therein, a screw in said stock adapted to project into said annular recess and retain said holder within said stock, a rack constructed and arranged to reciprocate transversely of said cylindrical casing, the teeth of said rack engaging the teeth of said gear, a rod constructed and arranged to reciprocate in said cylindrical casing in parallel relation to said rack, and means operatively connecting said rod to said rack adapted to simultaneously reciprocate said rod and said rack transversely of said tool holder.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SEYMOUR A. BOSTWICK.

Witnesses:

CHARLES S. GOODING,
SYDNEY E. TAFT.