UNITED STATES PATENT OFFICE.

ALBERT S. NOONAN, OF ROME, NEW YORK.

VALVE-TRUING TOOL.


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To all whom it may concern:

Be it known that I, ALBERT S. NOONAN, a citizen of the United States, and a resident of Rome, in the county of Oneida and State of New York, have invented an Improvement in Valve-Truing Tools, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

This invention relates to devices primarily intended for truing valves, although it is apparent that the device may be employed in other relations as, for example, in truing valve seats or other parts that become worn in use.

In the present embodiment of the device, it is represented as a tool or implement though it is understood that I am not to be limited thereto, save as expressly so stated in the claims.

In order that the principles of the invention may be made clearly apparent, I have illustrated a single type or embodiment of the invention in the accompanying drawings, wherein—

Figure 1 is a side elevation of one form of tool or implement adapted to support a valve seat true in use; Fig. 2 is a vertical longitudinal section through the tool, parts thereof being shown in section and the valve being represented as positioned for truing; Fig. 3 is a vertical transverse section upon the irregular line 3-3 of Fig. 1 looking to the left, the blade being shown in elevation; Fig. 4 is a vertical section upon the line 4-4 of Fig. 1 looking to the left, the valve head being shown in elevation; Fig. 5 is a vertical transverse section upon the line 5-5 of Fig. 1 looking to the left; and Fig. 6 is a vertical transverse section upon the line 6-6 of Fig. 1 looking to the left.

Great difficulty has been heretofore experienced in truing valves that in action have become worn as by being circumferentially scored upon a face thereof by reason of impact against the valve seat. While this difficulty has been experienced in many different types of valves operating in different relations, it is well known that the admission and exhaust valves of a gas engine, used in an automobile or elsewhere, become worn because of their rapid and constant movement against their seats. If the type of valve be one having a beveled face adapted to coat with a correspondingly shaped seat terminating at a sharp edge, the repeated reciprocations of the valve score the latter circumferentially of the beveled face, so that the valve is no longer truly seated and the operation of the engine is seriously impaired.

Valves having flat faces adapted to co-act with a correspondingly shaped seat become worn in use. Not only in the forms of valves enumerated but in many other types of valves of varying shapes, the valve or the valve seat becomes worn and out of true. Moreover, the valve or its seat frequently becomes pitted by the action of the hot gases of a gas engine, or such pitting may originally have existed in the metal owing to defective material or workmanship. Attempts have heretofore been made to repair valves that have become worn in this manner as, for example, by filing the valve or by grinding the valve in its seat, using for the latter purpose an emery paste or the like, or by turning the valve in a lathe while holding the file against the same. Each of these methods is open to serious objections. In filing a valve, it is extremely difficult if not impossible to operate upon it evenly, and in grinding the valve in its seat, using an emery paste, such paste works serious injury if it finds its way into the mechanism of the engine.

It is the object of my invention to provide a means, herein embodied as an implement or tool whereby a valve or an analogous part may be readily and easily trued. By my invention the valve is ground or turned evenly or symmetrically as will be readily understood from the detailed description thereof.

Referring to the specific embodiment of the invention herein selected for illustration, the bed or frame of the tool is represented at 1. It is apparent that the frame may be formed in any suitable manner. Inasmuch as the device may be conveniently handled when embodied in a tool or implement, I have herein shown the bed or frame as an elongated metallic member formed as a tool transporting and work supporting bar having thereon a bracket 2 that may be longitudinally adjusted upon the frame and secured in the desired position of adjustment by a clamp screw 3. Preferably fast upon
the frame as at one end thereof is a bracket 4 herein shown as aiding to support the valve that is to be operated upon and the blade or cutting tool herein represented at 5 as pivotally mounted upon a pin 6 in the bracket 4, the latter having a set screw 7 serving as a stop to maintain the blade or cutting tool in determined position.

It is apparent that a blade or cutting tool of any desired formation may be supported in any suitable manner, but preferably so as to be adjustable with respect to the head of the valve or other part that is to be operated upon thereby.

If desired, a bracket 8 may be secured to the body or frame, it being represented as adjustably secured thereto by means of a clamp screw 9.

Preferably, the brackets 2 and 4 are provided with V-shaped seats 10 and 11 as represented in Figs. 3 and 5 respectively, and with suitable means, herein represented as screw threaded openings, whereby holding members 12 and 13 may be positioned against the stem of the valve when the screws 14 and 15 are sufficiently tightened. It is apparent that any suitable means may be employed to co-operate with a suitably formed face upon the brackets 2 and 4 to hold the valve stem in position, the construction herein represented being found simple and effective for the purpose.

The bracket 8 is herein represented as having a screw threaded opening extending therethrough, in which is disposed a screw threaded bolt or screw 16 herein shown as disposed parallel with the axis of the body or frame and acting as an adjustable stop to determine the position of the valve that is to be operated upon.

In Figs. 1 and 2, the valve stem is represented at 17 as positioned in the brackets 2 and 4 and held therein by the holding members 12 and 13, the valve head 18 being represented as beveled and as contacting with the blade 5 which may have a slight beveled edge as represented in Figs. 3 and 4.

Relative movement may be imparted to the valve and the blade or cutting tool in any suitable manner. Herein such movement is one of rotation and the relative movement is obtained by rotation of the valve, the blade being held stationary.

It is apparent that within the scope of my invention, various modifications and alterations may be made, so as to present a relatively movable blade and valve or surface to be operated upon.

The valve stem 17 is not so tightly held in the brackets 2 and 4 as to prevent rotation thereof, the screws 14 and 15 being merely tightened sufficiently to prevent loose motion between the valve head and the blade or cutting tool 5.

The valve may be rotated in any suitable manner as by means of a screw driver indicated at 19 in Fig. 1 engaging a slot 20 in the head of the valve, or if the valve be shaped for that purpose it may be rotated by a wrench or the like.

The body or frame 1, however armed, may be supported when the device is operated, in any suitable manner. It may conveniently be held in a vise or may be held in one hand while the other is employed in rotating the valve. If in rotating the valve it be evenly pressed against the blade 5, it is apparent that a symmetrical truing of the valve results. By adjustment of the set screw 16, the valve head may be made to press more or less firmly against the cutting blade 5. Moreover by the employment of a stop as 16, each of a series of valves may be ground equally so that they may properly work in unison.

While the blade 5 is herein represented as having a straight edge, it is apparent that it may be shaped or formed as desired to conform to one or more faces of the valve or other part that is to be trued or ground.

It is apparent that modifications may be made within the scope of the invention in order to suit it to the requirements of the work which is herein typified as a valve.

Having thus described one type or embodiment of my invention, I desire it to be understood that although specific terms are employed, they are used in a descriptive and generic sense and not for purposes of limitation, the scope of the invention being set forth in the following claims.

Claims—

1. A readily portable tool for truing valves or the like, comprising a work-supporting bar 1, a plurality of brackets mounted upon and carried by said bar and having free ends provided with valve-stem seats and a cutter supported by one of said brackets.

2. A readily portable tool for truing valves or the like, comprising a work-supporting bar 1, a plurality of brackets mounted upon and carried by said bar and having free ends provided with valve stem seats, and a cutter positioned and supported by said bar adjacent one end thereof.

3. A tool for truing valves or the like comprising a tool transporting and work supporting bar 1, a plurality of spaced valve stem-supporting brackets attached to said bar, a cutter supported by said bar to act upon the valve or other device, a stem whereof is supported by said brackets, and an abutment supported by the bar to receive the end thrust of the device acted upon.

4. A readily portable tool for truing valves or the like, comprising a work-supporting bar 1, a plurality of brackets mounted upon and carried by said bar and having free ends provided with valve-stem seats.
and a cutter pivotally supported upon the forward bracket, and having means to adjust its angle of inclination.

5. A tool for truing valves or the like, comprising an elongated, readily portable frame or body, a plurality of brackets secured thereon, a blade mounted upon one of said brackets, said bracket having a seat to receive a valve stem parallel with the axis of said frame, a second bracket being adjustably secured to the frame and having a valve stem seat aligned with that of the first bracket, adjustable members carried by said brackets and movable toward and from the valve stem seats, and adapted to contact with said valve stem thereby to maintain the valve in operative relation to said blade but permitting manual rotation of said valve, whereby truing thereof is effected.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ALBERT S. NOONAN.

Witnesses:
Edward E. Smith,
Robert J. Noonan.