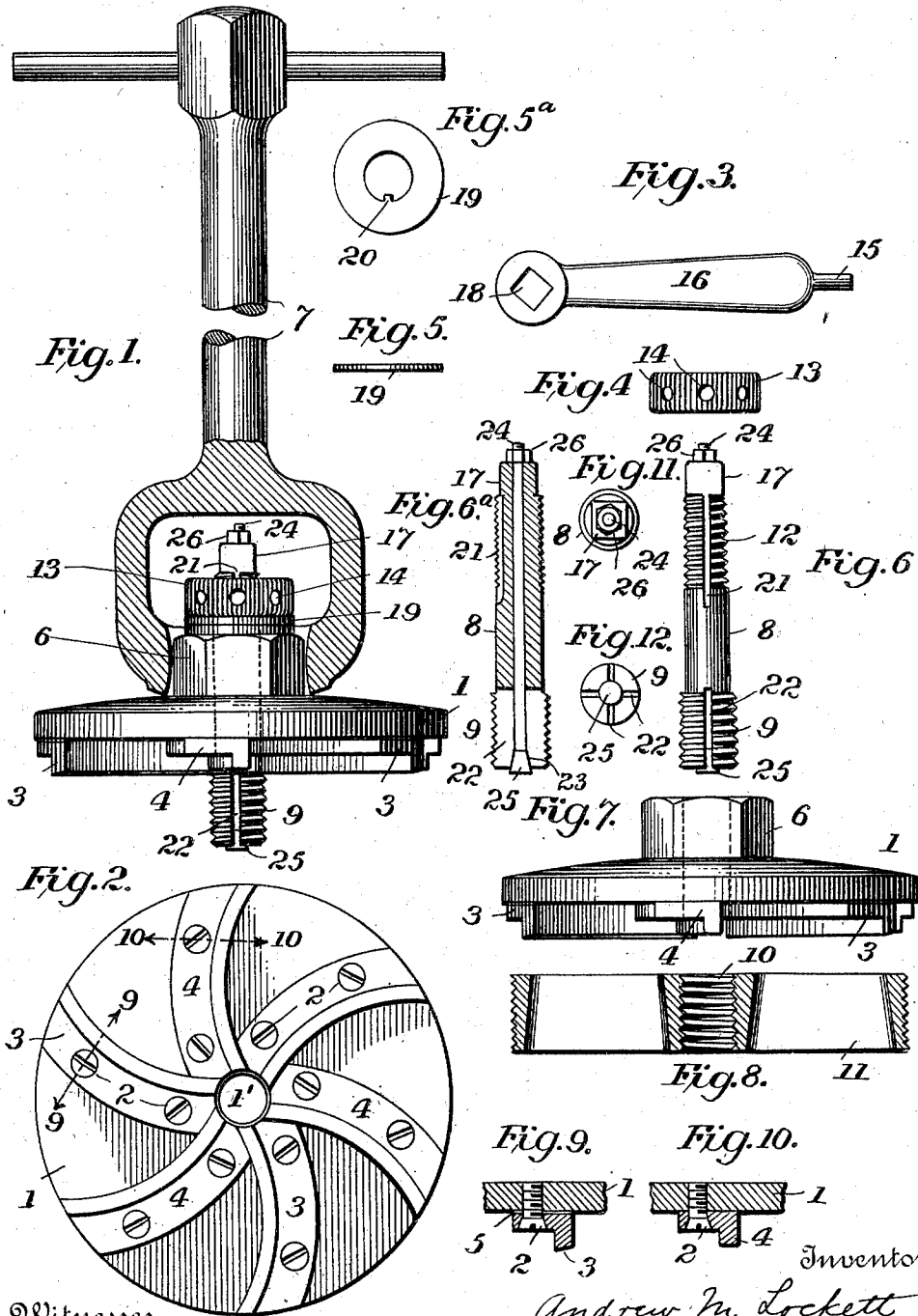


A. M. LOCKETT.
VALVE RESEATING DEVICE.
APPLICATION FILED JUNE 19, 1909.

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Patented Aug. 16, 1910.



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UNITED STATES PATENT OFFICE.

ANDREW M. LOCKETT, OF NEW ORLEANS, LOUISIANA.

VALVE-RESEATING DEVICE.

967,532.

Specification of Letters Patent. Patented Aug. 16, 1910.

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To all whom it may concern:

Be it known that I, ANDREW M. LOCKETT, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Valve-Re-seating Devices, of which the following is a specification.

My invention relates to an improvement in machines or tools for refacing pump valve-seats or the like surfaces which are employed in the construction of the suction or force chambers of steam, electric and hydraulic pumps or motors.

The object of my invention is to so construct a cheap, compact, reliable and efficient device which is capable of being applied to the valve seats to be refaced or ground without the necessity of taking off and replacing the force or suction chambers.

A further object is to so construct the cutter portion of the tool that the same will not chatter, make a true face and the blades comprising the cutter being easily removed, renewed or resharpened with little trouble and additional expense.

The invention consists of parts which will be hereinafter more fully and clearly described and particularly pointed out in the appended claims.

Similar numerals represent the same parts in the different figures of the drawings in which:—

Figure 1 shows a side elevation of the tool and showing the operating socket wrench in position. Fig. 2 is a bottom plan view of the cutter plate with blades attached. Fig. 3 is a wrench used for assembling and feeding the cutter. Fig. 4 is a side view of the feed nut. Fig. 5 is a washer used with the tool. Fig. 5^a is a plan view of the washer. Fig. 6 is the stud having its lower end threaded same as valve seat. Fig. 6^a is a central longitudinal section of Fig. 6. Fig. 7 is a side view of the cutter plate with blades attached. Fig. 8 is a sectional view of a pump valve seat. Fig. 9 is a sectional view taken on line 9—9 of Fig. 2 showing the blades with cutting edges. Fig. 10 is a similar section on line 10—10 showing the blades with no cutting edges. Fig. 11 is a top, and Fig. 12 is a bottom plan view of the stud.

In the drawings 1 represents a hardened steel circular plate with a circular opening 1¹ which is ground on one face to a true

plane, said face having fastened thereto by screws 2, 2, curved cutting blades 3 and gaging members 4 which are L shaped in cross section. Three of these blades, 3, are ground to a cutting edge and the other blades 4 are flat as shown, see Figs. 9 and 10. The cutting blades have under them thin shims 5 (see Fig. 9) for the purpose of raising their cutting edges slightly above the flat blades 4 which do no cutting. The thickness of this shim plate 5 determines the depth of the cut, of the blades 3, 3, the non-cutting gages 4, 4, preventing the cutters 3 from "hogging" the metal thereby insuring a perfectly true surface most essential for a valve seat.

While I have shown a cutter with three blades and three gages their number or contour may be varied in many ways without departing from the spirit of my invention. The cutter plate 1 is also provided with a hexagon top 6 which is adapted to be engaged by an ordinary wrench, or a socket wrench 7 as shown in Fig. 1.

8 is a steel stud having threads 9 at its lower end to engage the threaded opening 10 of the valve guard 11, shown in Fig. 8. At the upper end of the stud 8 are provided finer threads 12, adapted to be engaged by feed nut 13, having lateral openings 14 to receive the pointed end 15, of the wrench 16 shown in Fig. 3.

17 is a squared nut end of the stud 8 which can be engaged by the socket end 18 of the wrench 16.

19 is one of several washers which may be interposed between hexagon top of the plate 1 and the feed nut 13 to take up the distance due to the recutting of the seat on the valve guard.

It will readily be seen that if an ordinary washer is used, the friction between the hexagon head 6 and this washer 19 would cause the washer to turn and probably also turn the feeding nut 13 shown in Fig. 4, jamming the cutter 1 so tight that it could not be operated. I have found this to be the case and in order to prevent it, have devised a special washer as shown in Fig. 5^a with a little lug 20 which travels in the slot 21, of the stud 8, (see Fig. 6), which thereby prevents the same from turning so that the feeding of the cutters is absolutely under control. It has been also found that the valve seats are not tapped out uniformly, so that the steel stud 8 in some of the seats

would have to be screwed down very much below the surface of the seat, before it would become tight enough to operate the tool. In order to overcome this difficulty, the steel stud 8 is drilled through and through, (see Fig. 6^a), and the lower end of this stud is split in two directions by slots 22, 22, and the extreme lower end of the stud being bored to a taper 23. Inserted in this hole is a bolt 24 with a taper head 25 extending entirely through the stud and having at the upper end a small hexagon nut 26. The threads on the lower end of the steel stud are made to freely enter the valve seat although considerable variation in the sizes of the holes may exist and by screwing down on the small hexagon nut 26, I expand the lower end of the steel stud 8 so that it becomes perfectly tight and remains in the position desired.

The manner of using the invention is as follows:—The threaded end 9 of the stud 8 after being adjusted as above explained is secured into the threaded opening 10 of the valve seat 11, whose seat is to be refaced by means of the wrench socket 18 engaging the head 17. Then cutter plate 1 is slipped by means of its central opening 1¹ over the stud 8, so that the cutter blades 3 and gages 4 rest on the valve seat, when the washer 19 having its lug 20 in the slot 21 of the stud 8, and feed nut 13 are placed in position and screwed up to cause the cutting blades to bear sufficiently to have a scraping or cutting effect. The cutter plate 1 and its blades 3 and 4 are rotated about the fixed stud 8 by means of the wrench 7 as shown in Fig. 1. After a cut has been made and the blades 3 have lost their biting effect and it is desired to cut deeper, the feed nut 13 is tightened up by means of the end 15 of wrench 16 engaging the nut opening 14, and the turning operation of the plate is repeated.

It will be seen from the above described construction of cutter plate with removable blades and gages, a form of valve reseating device is shown in which it is not necessary to renew a large section or part of the tool when worn out or dull, but all that is necessary is to detach the dull cutting blades, resharpen the same or quickly adjust and fasten a reserve blade kept in stock without keeping the appliance idle. Furthermore, by having the cutter plate provided with gages it is not necessary to have highly skilled labor to operate the same, as any apprentice boy could use the tool without doing damage, the cutting element taking care of itself and being practically fool proof.

What I claim as new and desire to secure by Letters Patent is as follows:—

1. An apparatus for cutting or grinding

valves and valve seats comprising a stud having screw threads at its ends and adapted to be attached to a valve seat, a flat rotatable plate having an opening receiving the stud and contiguous thereto, said plate provided on its underside with alternate sets of cutting blades and gaging members respectively, and on its upper side with an integral projection capable of engaging a wrench for rotating said plate and blades about the stud, and a feed nut engaging the screw threads at the upper end of the stud.

2. An apparatus for cutting or grinding valves and valve seats comprising a stud having screw threads at its ends and adapted to be attached to a valve seat, a rotatable plate having a central opening receiving the stud and contiguous thereto, said plate provided on its underside with alternating sets of cutting blades and gaging members respectively, and the upper side of the plate having an integral projection capable of engaging a wrench for rotating said plate and blades about the stud, and a feed nut engaging the screw threads at the upper end of the stud.

3. An apparatus for cutting or grinding valves and valve seats comprising a stud having screw threads at its ends and adapted to be attached to a valve seat, a flat rotatable plate having a central opening receiving the stud and contiguous thereto, said plate provided on its underside with alternating sets of removable cutting blades and gaging members respectively, and the upper side of the plate having an integral projection capable of engaging a wrench for rotating said plate and blades about the stud, and a feed nut engaging the screw threads at the upper end of the stud.

4. An apparatus for cutting or grinding valves and valve seats comprising a hollow stud having external screw threads at its ends and adapted to be attached to a valve seat, means within said stud for expanding the threads engaging the valve seat, a flat rotatable plate having a central opening receiving the stud and contiguous thereto, said plate provided on its underside with alternating sets of cutting blades and gaging members respectively, and the upper side of the plate having an integral projection capable of engaging a wrench for rotating said plate and blades about the stud, and a feed nut engaging the screw threads at the upper end of the stud.

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

ANDREW M. LOCKETT.

Witnesses:

W. W. YOUNG,
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