Dec. 20, 1949 P. G. PIRWITZ 2,491,578

CRANK PIN HONE

Filed Nov. 24, 1947

Fig. 1.

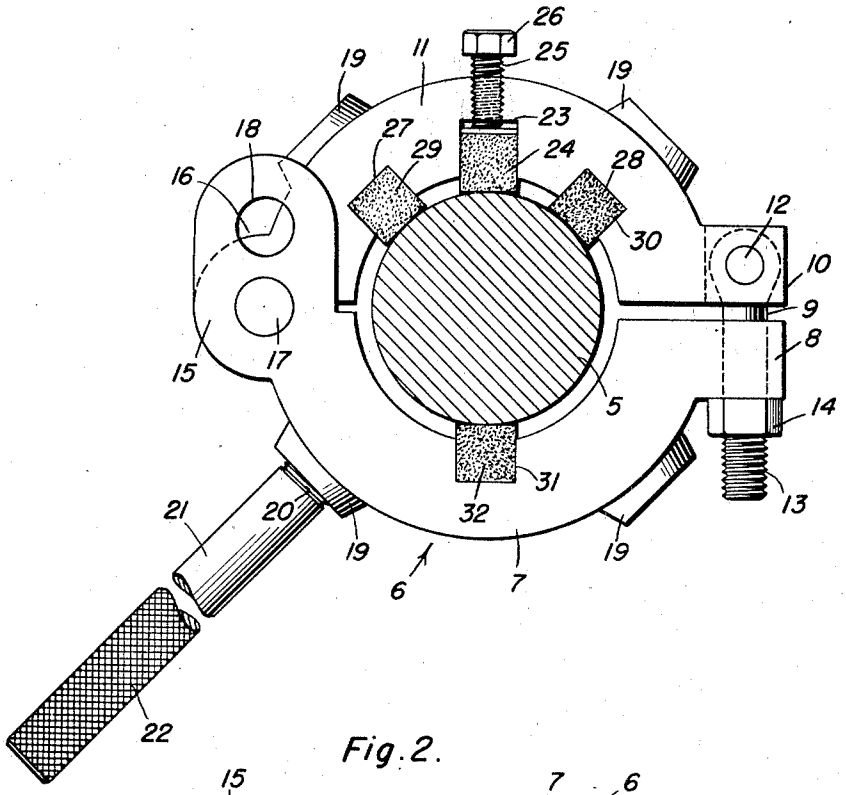
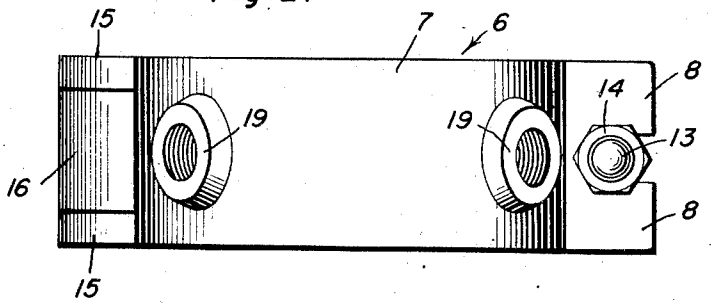


Fig. 2.



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Patented Dec. 20, 1949

2,491,578

UNITED STATES PATENT OFFICE

2,491,578

CRANKPIN HONE

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Application November 24, 1947, Serial No. 787,810

1 Claim. (Cl. 51—205)

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The present invention relates to automotive tools for use in garages and similar establishments and has more particular reference to a novel hand-operated hone for truing unduly worn and out-of-round crank pins.

It is a matter of common knowledge that automobile mechanics are called upon to recondition and restore irregularly worn crank pins in order to provide a smooth and reliable operating connection between the same and coacting connecting rods. Ordinarily, in setting out to abrade or otherwise resurface a distorted crank pin, the entire crankshaft is removed by the mechanic. Manifestly, when it becomes necessary to dismantle the motor in order to remove and replace a damaged crankshaft, considerable time, labor and monetary expense is involved. Because of these and other objectionable circumstances I have evolved and constructed a simple and practical manually operable tool for cutting and honing the bearing accommodation surface of a crank pin, said tool being novel in that it may be applied and used without necessitating removal of the crankshaft from its bearings.

More specifically, my invention appertains to a simple sectional clamp, the sections of which are adapted to embrace a crank pin, said sections being provided with circumferentially spaced abrading stones for contact with the crank pin, and handle means being provided for oscillating and working the clamp back and forth until the damaged surface is restored to its original form and shape.

Another object of the invention is to provide a readily applicable and removable clamping head which has effectively functioning coarse and fine surfacing stones and which is constructed to accommodate a shiftably usable handle permitting desired results to be achieved with ease and satisfaction.

Other objects and advantages will become more readily apparent from the following description and the accompanying illustrative drawings.

In the drawings:

Figure 1 is a view in elevation of the crank pin hone showing the same applied and ready for use on the crank pin, the latter appearing in section.

Figure 2 is a bottom plan view of the structure seen in Figure 1 with the handle removed.

Referring now to the drawings by distinguishing reference numerals, it will be seen that the crank pin in Figure 1 is denoted by the numeral 5 and this is a conventional part of an automobile crankshaft. The sectional clamp-type head is denoted by the numeral 6 and this is of two-part

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annular form and is adapted to be removably "collared" around the crank pin. Said head is made up of a lower half-section 7 with spaced clamping lugs 8 at one end to accommodate a bolt 9 carried by complemental lugs 10 on the corresponding end of the upper half-section 11. The bolt is pivoted swingably, as at 12, between the ears or lugs 10 and its shank is movable between the jaws 8, the threaded end 13 serving to accommodate a clamping nut 14. The opposite or left hand end of the lower half-section 7 is provided with spaced parallel ears 15 to accommodate a hinge knuckle 16 and a hinge pin 17 carried by the coacting left-hand end of the upper half-section 11. This end portion of the half-section is suitably recessed to accommodate the upper projecting portions of said ears, which portions are provided with holes 18 to permit the pin and knuckle to be shifted to change the pivot point and to adjust the positions of the half-sections to accommodate work of varying diameters. The pivoted bolt and nut means at the opposite end of the structure, the bolt 9 and nut 14, compensates for adjustments made at the left-hand ends of said half-sections 7 and 11.

The respective sections are provided with sockets 19, there being four such sockets and these being at circumferentially spaced equidistant points. The sockets are adapted to accommodate the screw-threaded end portion 20 of a detachable operating handle 21. The latter has a knurled surface 22 to facilitate gripping and operating same. Obviously, by providing handle attaching facilities around the complete circumference of the head, leverage can be applied to most advantageous points depending on the position of the mechanic while oscillating and working the hone back and forth.

There is a relatively deep notch 23 provided in the inner peripheral portion of the half-section 11 and this serves to accommodate a coarse grained cutting stone 24 operable by a feed screw 25 having a tool accommodating head 26. Additional notches 27 and 28 serve to accommodate circumferentially spaced fine finishing stones 29 and 30. There is a similar notch 31 which is diametrically opposite to the first notch 23 and this is provided with a permanently mounted medium stone 32. The coarse fast cutting stone placed between the two fine stones makes it possible to cut only on the high spots, thereby making the crank pin perfectly round.

As previously stated the tool disclosed is for truing and resurfacing worn and damaged crank

pins in automobile crank shafts and the primary purpose is to put a smooth surface on the crank pin that has had its surface damaged by a burned out rod or foreign substances which had become lodged in the bearing.

To use the device, simply loosen the bolt and nut means, open up the half-sections of the clamp and place the clamp around the crank pin in an obvious fashion and then retighten the bolt. Next, the coarse stone **24** is tightened down until it comes into contact with the crank pin. Then the handle is inserted in the most conveniently available socket and the tool is oscillated or worked back and forth in a well known manner. The coarse stone coming between the two fine stones will cut only on the high spots and it is desirable to go all the way around the surface of the crank pin until all high spots are removed. Then the coarse stone is backed away and the fine stones are brought into play and the finishing job is accomplished.

I desire to stress the variable and selective positions of the handle and means whereby the handle may be attached to desired points for best leverage. This feature makes it unnecessary to remove the connecting rod from the motor.

A careful consideration of the foregoing description in conjunction with the invention as illustrated in the drawings will enable the reader to obtain a clear understanding and impression of the alleged features of merit and novelty sufficient to clarify the construction of the invention as hereinafter claimed.

Minor changes in shape, size, materials and rearrangement of parts may be resorted to in actual practice so long as no departure is made from the invention as claimed.

Having described the invention, what is claimed as new is:

A crank pin abrading and truing hand tool of the class shown and described comprising an annular collar-like head embodying a pair of complemental, substantially semi-circular half-sections adjustably and hingedly connected to one another at corresponding ends, a swingable nut-equipped adjusting and clamping bolt carried by the free end of one of said sections at the end opposite to said hingedly connected ends, the remaining section at the last-named end having lugs with which the nut-equipped swingable end of the bolt is releasably and adjustably connectible, a coarse abrading stone mounted in a recess therefor on the central inner peripheral portion of one of said half-sections, said stone being radially projectable and retractable, a set-screw on said one half-section for adjusting said coarse stone, a pair of duplicate fine finishing stones rigidly mounted on the latter half-section and situated at equidistant points on opposite sides of the coarse stone, and a single medium coarse finishing stone rigidly mounted on the central inner peripheral portion of the remaining half-section and located diametrically opposite to said coarse stone, said sections being externally provided with circumferentially spaced, handle accommodation sockets, and a detachable handle cooperable with said sockets, said sockets being circumferentially spaced at equidistant points.

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