July 17, 1951 J. KEISER 2,560,727

GLAZE BREAKING TOOL FOR INTERNAL-COMBUSTION ENGINES

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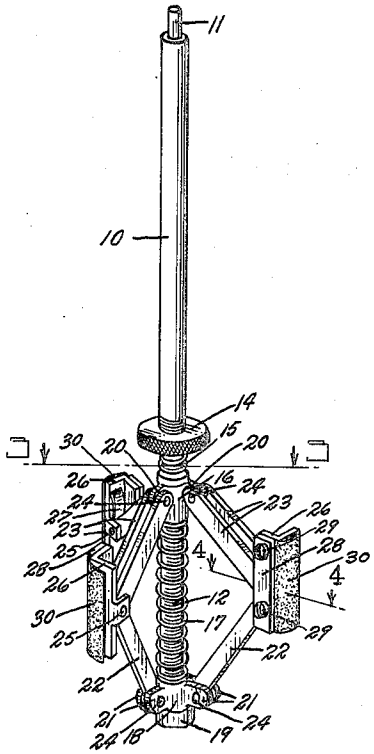


Fig 1

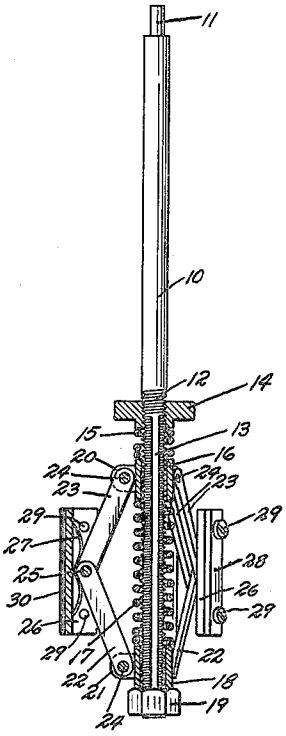


Fig 2

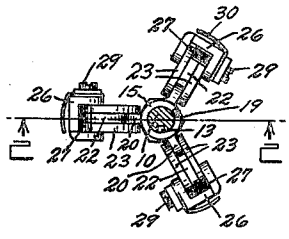


Fig 3

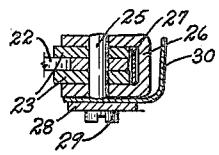


Fig 4

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GLAZE BREAKING TOOL FOR INTERNAL-COMBUSTION ENGINES

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1 Claim. (Cl. 51—184.2)

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This invention relates to what might be termed a glaze breaking tool for internal combustion engines. The inner walls of the cylinders of internal combustion engines often polish or burnish down in spots to a mirror-like surface known to the trade as "glaze." It is exceedingly difficult to accurately lap in new piston rings and pistons when the walls of the cylinders are glazed. This is due to the fact that the rings wear away the unglazed portions and simply slide over the glazed portions without wear.

The principal object of this invention is to provide a simple, rapid and highly efficient shop tool with which the glaze can be quickly and easily removed from the cylinder walls.

Another object of the invention is to so construct the device that it can be mounted in the chuck of a conventional electric drill with which most shops are provided and to provide a device of this character in which the abrasive portions can be quickly and economically renewed.

A further object is to so construct the device so that the amount of pressure applied to the cylinder walls during the glaze removing operation can be accurately regulated so as to prevent damage to the walls.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention, reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

Fig. 1 is a perspective view of the improved glaze breaking tool;

Fig. 2 is a vertical section therethrough, taken on the line 2—2, Fig. 3;

Fig. 3 is a cross section taken on the line 3—3, Fig. 1; and

Fig. 4 is an enlarged detail section taken on the line 4—4, Fig. 1.

The improved tool is mounted on a vertical shaft 10, the upper extremity of which is designed to be mounted in the chuck of a conventional electric drill. The latter extremity has a reduced diameter portion 11 which adapts it to smaller chucks and also acts to center it in the drill chuck. The lower portion, approximately the lower half, of the shaft 10 is threaded throughout its length, as indicated at 12. The threaded portion 12 is grooved throughout its

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entire length to provide a longitudinal key way 13.

A knurled adjusting nut 14 is threaded onto the portion 12 up to the upper extremity of the latter. A relatively short compression spring 15 is then fitted over the threaded portion 12 to a position against the adjusting nut 14. A first sliding collar 16 contacts the spring 13 and a relatively long compression spring 17 is fitted thereagainst. A second sliding collar 18 is then slipped over the threaded portion 12 against the spring 17 and is held in place by means of a terminal retaining nut 19.

The two collars 16 and 18 are slideable on the threaded portion 12 and each is provided with a key 31 which travels in the keyway 13 to prevent rotation of the collars on the shaft 10. The upper collar 16 is provided with three uniformly-spaced, radially projecting, perforated ears 20. The lower collar 18 is provided with three uniformly-spaced pairs of perforated ears 21.

A single toggle link 22 extends upwardly and outwardly from between each pair of ears 21. A pair of toggle links 23 extend downwardly and outwardly from each side and each of the ears 20. The links 22 and 23 are similar in size and shape and are hingedly mounted on the respective ears by means of toggle pins 24. The lower extremities of the links of each pair of links 23 are positioned on opposite sides of the single links 22 and are hinged together by means of a hinge screw 25.

The hinge screws 25, also act to hingedly mount channel-shaped foot members 26 at the hinge point of each set of three links 22 and 23. The foot members 26 are constantly urged to a position parallel to the axis of the shaft 10 by means of indented leaf springs 27. The springs 27 bear at their extremities against the foot members 26 and bear against the hinged extremities of the links 22 and 23 at their indented middles.

A clamping plate 28 is secured to one side of each of the foot members 26 by means of a pair of clamp screws 29. The plates 28 clamp flexible strips of emery cloth 30 in place. The emery cloth strips 30 extend outwardly between the strips 28 and the foot members 26 and bend sidewardly over the outer faces of the foot members. The outer edges of the emery cloth strips are unattached.

In use, the adjusting nut 14 is rotated to expand the toggle links 22 and 23 to bring the foot members 26 to a diameter slightly in excess of the diameter of the cylinder upon which the device is to be used. The device is then inserted in the cylinder by compressing the foot mem-

bers 26 toward each other against the action of the short spring 15. The upper extremity of the shaft 10 is then mounted in the drill chuck and the entire device is rotated by the electric drill mechanism while being moved along the length of the cylinder being worked upon.

The short springs 15 constantly urge the abrasive surfaces outwardly against the cylinder wall and the degree of outward pressure can be accurately regulated through the medium of the adjusting nut 14. The long spring 17 simply serves to contract the device as the adjusting nut 14 is moved upwardly.

While a specific form of the improvement has been described and illustrated herein, it is to be understood that the same may be varied, within the scope of the appended claim, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:

A glaze breaking tool for internal combustion engine cylinders, comprising: a shaft; a first nut threaded on one extremity of said shaft; a first collar slidable on said shaft and resting against said nut; a second collar slidable on said shaft and spaced from said first collar; a spring surrounding said shaft between said collars and acting to urge them apart; a plurality of toggle arms hingedly extending from each collar; hinge pins securing the extremities of the arms from one collar to the extremities of the arms from

the other collar; an elongated foot member tiltably mounted at its middle on each hinge pin; spring means urging each foot member to a position parallel to the axis of said shaft; a second nut threaded on said shaft adjacent said second collar; and a second spring compressed between said second collar and said second nut and urging the second collar toward the first collar, said second collar being biased between the two springs.

JOHN KEISER.

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