E. H. KIND.

TOOL FOR APPLYING AND REMOVING PISTON RINGS.

APPLICATION FILED JAN. 10, 1919.

1,319,007. Patented Oct. 14, 1919.

Fig. 1.

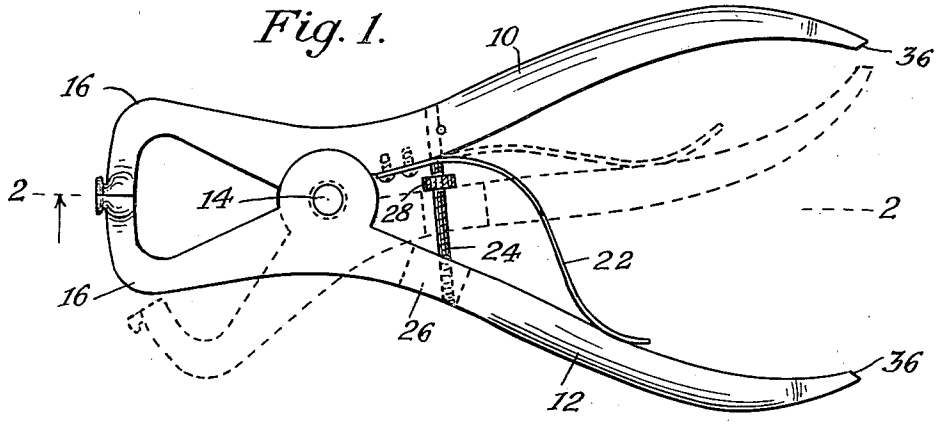


Fig. 2

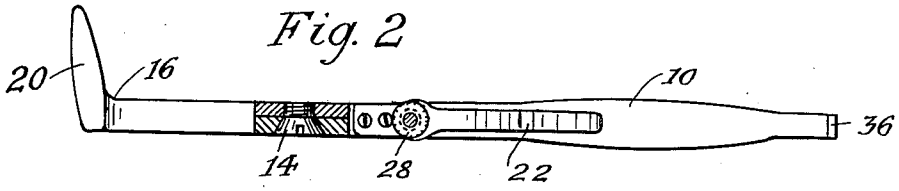


Fig. 3

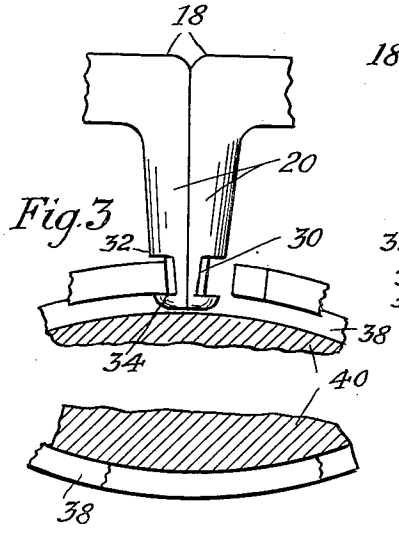


Fig. 4

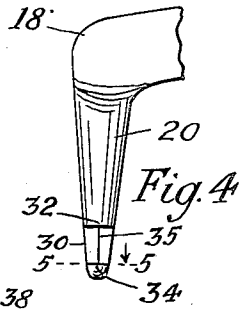


Fig. 5

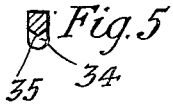


Fig. 6

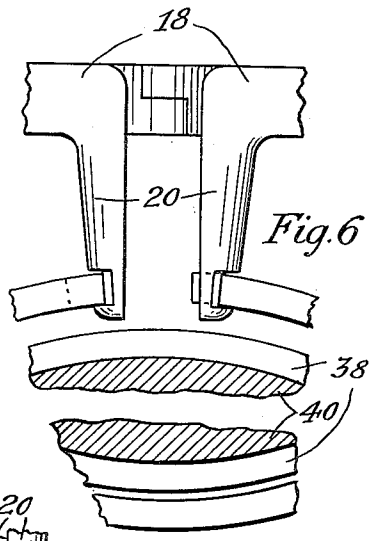


Fig. 7

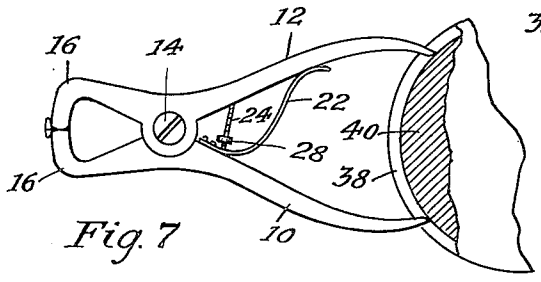
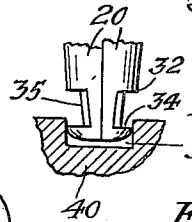


Fig. 8



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UNITED STATES PATENT OFFICE.

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TOOL FOR APPLYING AND REMOVING PISTON-RINGS.

1,319,007. Specification of Letters Patent. Patented Oct. 14, 1919.

Application filed January 10, 1919. Serial No. 270,513.

To all whom it may concern:

Be it known that I, EDWIN H. KIND, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Tools for Applying and Removing Piston-Rings, of which the following is a specification.

My invention relates to tools for applying and removing piston rings and the object in particular is to provide a hand-operated tool which may be used to conveniently and expeditiously apply and remove the customary piston rings which are used upon pistons of internal combustion engines.

The full objects and advantages of my invention will be understood from the detailed description thereof and the novel features embodied in my inventive idea will be particularly pointed out in the claims.

Referring to the accompanying drawings, which illustrate the application of my intion in one form,—

Figure 1 is a view of the device in side elevation showing in dotted lines the device as it appears when operated. Fig. 2 is a section on the line 2—2 of Fig. 1. Fig. 3 is a detail view showing the device in position to remove a piston ring. Fig. 4 is a side view of one of the jaws as it appears looking toward the left in Fig. 3. Fig. 5 is a view in section on the line 5—5 of Fig. 4. Fig. 6 is a detail view looking at the front of the jaws and showing the device operated to expand a piston ring. Fig. 7 is a view of the device in side elevation showing the rear end used for removing carbon or soot from a groove in the piston. Fig. 8 is a detail view showing the jaws positioned transversely of the groove for removing carbon.

Referring to the particular construction illustrated in the drawings, the tool comprises a pair of hand members 10 and 12 pivoted together by means of a screw or bolt 14. The forward ends of the members 10 and 12 are each provided with similar jaws constructed as follows. Each member is bent inwardly toward the other member at 16 and then bent downwardly at 18 to provide the jaw members 20, adapted to be held together except when forced apart as shown in Fig. 6. In order to normally hold the jaws in closed position, a curved spring 22 is secured at one end in suitable manner to the hand member 10 and the other end, which is free, rests upon the inner surface of the hand member 12 whereby the rear ends of the members which are gripped by the hand are held normally separated from each other. In order to limit the extent to which the jaws can be opened so as not to place too much strain on the ring, the member 10 has secured to it, a screw-threaded rod 24 having a free end which passes through a slot 26 in the member 12. A nut 28 of greater diameter than the width of the slot 26 is threaded upon the rod 24 and constitutes an adjustable stop to limit the opening movement of the jaws in opposition to the tension of the spring 22. In order that the piston rings may be properly engaged to expand them, the jaws 20 are provided with notches 30 on their oppositely-facing edges. The limiting top and bottom walls 32 and 34 of these notches constitute square shoulders and each side of the vertical wall of the notch is beveled to form a sharp edge 35 at the middle line of the wall. The bottom of the jaws may be curved to correspond with the curvature of the piston as indicated in Fig. 3. In this manner the ends of the split ring may be securely engaged by the jaws without liability of the jaws slipping off. The rear ends of the members 10 and 12 are beveled at 36 to provide sharp edges in order that the two may be employed as shown in Fig. 7 for scraping carbon or soot out of the groove in the piston 40. As shown particularly in Fig. 2, the jaws 20 are preferably slightly inclined outwardly in order to facilitate the use of the tool in applying and removing piston rings.

The operation and advantages of my invention will be readily understood from the foregoing description. In order to remove a piston ring from its groove, the tool is placed so that the jaws engage the ends of the split ring, as shown in Fig. 3. Upon applying pressure by the hand to the rear ends of the members 10 and 12 the jaws are opened and the piston ring is expanded, as shown in Fig. 6, so that it may be readily removed from the groove in the piston. In order to apply a piston ring, the ring is first expanded by the tool in the manner indicated, and it may then be readily slid over the piston into position and then released so as to fit into the groove. Before applying a ring, any deposit of carbon in the groove may be removed in the manner shown in

Fig. 7, and carbon may also be removed from the groove by placing the jaws transversely of the groove, as shown in Fig. 8, and moving the tool around the circumference.

I claim:

1. A tool for applying and removing piston rings comprising a pair of hand members pivoted together, the front ends of said members being bent toward each other and then being bent downwardly to constitute jaws, said jaws being provided with notches on their oppositely facing edges, and the vertical walls of said notches being sharpened to provide teeth for engagement with the ends of a split ring for expanding the latter when said jaws are separated.

2. A tool for applying and removing piston rings comprising a pair of hand members pivoted together, the front ends of said members being bent toward each other and then being bent downwardly and slightly inclined outwardly with relation to the length of the tool to constitute jaws, said jaws being provided with notches on their oppositely facing edges, and the vertical walls of said notches being sharpened to provide teeth for engagement with the ends of a split ring for expanding the latter when said edges are separated.

3. A tool for applying and removing piston rings comprising a pair of hand members pivoted together, the front ends of said members being bent toward each other and then being bent downwardly and slightly inclined outwardly with relation to the length of the tool to constitute jaws, said jaws being provided with notches on their oppositely facing edges for engagement with the ends of a split ring for expanding the latter when said jaws are separated, and an adjustable stop connected with said hand members for limiting the amount of the separation of said jaws.

In testimony whereof I hereunto affix my signature.

EDWIN H. KIND.