G. W. TROUTMAN.

PISTON RING SPREADER.

APPLICATION FILED JULY 1, 1921.

1,430,702. Patented Oct. 3, 1922.

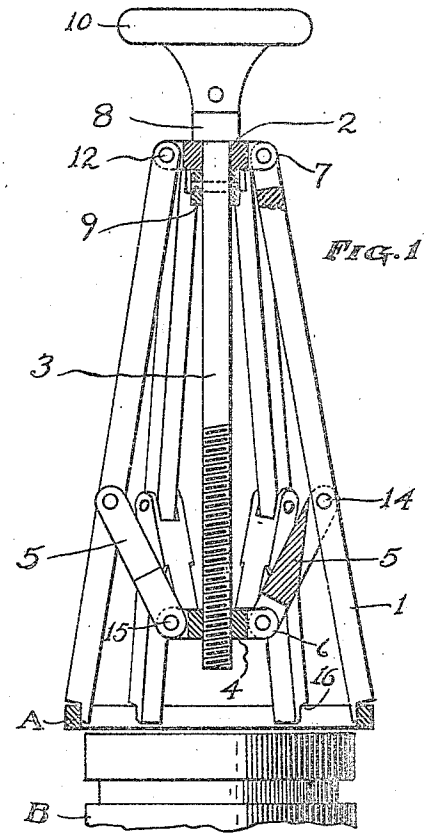


FIG. 1

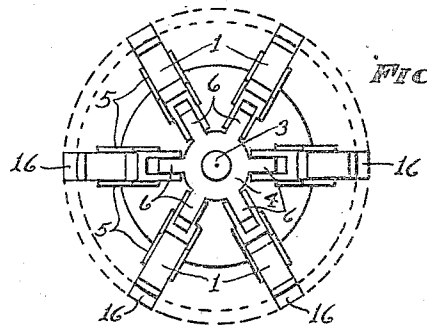


FIG. 2

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UNITED STATES PATENT OFFICE.

GEORGE W. TROUTMAN, OF WICHITA, KANSAS.

PISTON-RING SPREADER.

Application filed July 1, 1921. Serial No. 481,905.

To all whom it may concern:

Be it known that I, GEORGE W. TROUTMAN, a citizen of the United States, and resident of Wichita, in the county of Sedgwick and State of Kansas, have invented certain new and useful Improvements in Piston-Ring Spreaders, of which the following is a specification.

My invention relates to a tool intended for use in placing piston-rings on pistons of internal-combustion motors.

In the motors of heavy trucks and "tractors," and in many stationary gas-engines, the pistons are of such large diameters and the rings so stiff, that it requires more force to spread such rings than can well be exerted by the fingers of a mechanic. In placing piston-rings upon a piston of a motor of the size mentioned, it has been the usual practice for a mechanic to spread the ring with his fingers or by the aid of a prying lever until it can be forced over the end of the piston. This often results in springing the ring permanently out of true, with the consequence that the rings will cause leakage of oil and gas within the cylinder, and will wear the cylinder wall irregularly.

All of such trouble is obviated by the use of my invention, by which any piston-ring may be easily and evenly expanded for placing the same over a piston, and this without any such strain upon the ring as would permanently distort it.

The preferred embodiment of my invention is represented in the accompanying drawing, in which—

Fig. 1 shows the tool in elevation but partly in section, a piston-ring in section as held thereby, and the end of a piston on which the ring is to be placed;

Fig. 2 is an end elevation of the tool.

In the construction shown, the tool comprises a series of spreader-bars as 1, a pivot-piece as 2 to which all of said bars are connected, an actuating-screw 3, a star-shaped nut 4 on the screw, and struts 5, each pivoted at one end to a bar 1 and at the other end to the nut 4.

The star-nut 4 is shown complete in Fig. 2, it being formed with as many integral lugs 6 as there are spreader-bars 1.

The pivot-piece 2 is made in the same shape as the nut 4, it being provided with the radial integral lugs 7. This piece has a smooth bore, in which the screw-shaft 3 is rotatable. Longitudinal motion of the screw is prevented by two collars 8 and 9, both pinned on the screw-shaft. The outer collar 8 may, however, be integral with the knob 10 by which the shaft 3 is turned.

The spreader-bars 1 are attached by means of pins 12 to the lugs 7, for radial movement. At a suitable distance from pin 12, each bar 1 is drilled to receive a pin 14 having projecting ends on which is pivoted the slotted end of a strut 5, the inner end of which is sloted to embrace a lug 6, and is pivotally secured thereto by a pin 15.

The free end of each bar 1 is formed with a shouldered recess 16 in the outer face, the vertical depth of each recess being less than the width of a piston-ring (as shown). Said recesses provide a seat for a piston-ring, as A.

To use the tool, the operator draws the bars 1 inward by turing the knob 10 until the ends of said bars can be inserted within the ring; the knob is turned reversely, thereby forcing the bars outward and spreading the ring to a degree sufficient to permit the edge of the ring to be passed over the end of a piston (B). The knob is then turned reversely in order to disengage the bars 1 while leaving the ring started upon the piston.

Such modifications may be employed as lie within the scope of the appended claims.

Having described my invention, I claim as new and desire to secure by Letters Patent:

1. In a spreader of the kind described, a pivot-piece, a screw-shaft passing rotatably through said piece, a plurality of spreader-bars each pivoted on said piece for radial movement, a nut on the threaded portion of the screw-shaft, means to prevent longitudinal motion of said shaft in said pivot-piece, and struts pivotally connected at one end to the spreader-bars and at the other to suitable pivots on said nut.

2. In a spreader of the kind described, a plurality of spreader-bars, and means for spreading and reversely moving said bars; the operative end of each spreader-bar being formed with a shouldered recess in the outer face, and said shoulder being positioned to hold a piston-ring partly projecting beyond the end of the bar when such ring is seated against said shoulder.

GEORGE W. TROUTMAN.

Witnesses:
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