May 5, 1931. J. R. BISHOP 1,803,311

PISTON GAUGE

Filed May 14, 1928

Fig. 1.

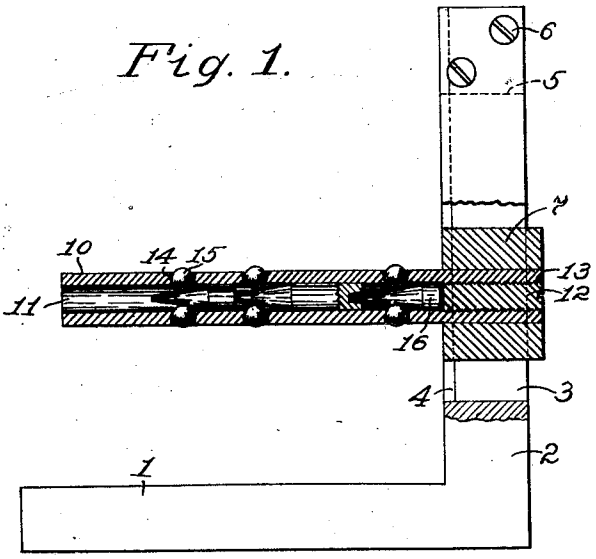
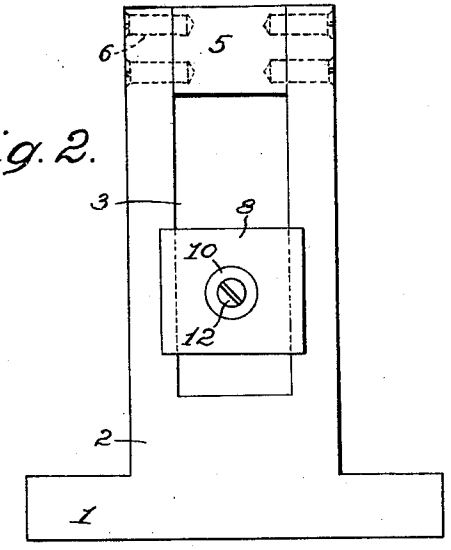


Fig. 2.



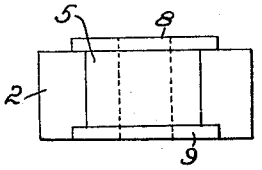


Fig. 3.

Inventor

John R. Bishop

By G. C. Kennedy,

Attorney

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UNITED STATES PATENT OFFICE

JOHN R. BISHOP, OF WATERLOO, IOWA

PISTON GAUGE

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My invention relates to improvements in piston gauges, and the object of my improvement is to supply a device of this class which is adapted to have a piston, such as that of an internal combustion engine, mounted thereon, whereby the relations of the gauge to the piston are such as to disclose any unevenness of peripheral wear thereof or formal aberrations which may require correction, and whereby the amount of the aberrations may be quickly determined.

This object I have accomplished by the means which are hereinafter described and claimed, and which are illustrated in the accompanying drawings, in which Fig. 1 is a side elevation of my improved gauge, with elements thereof in longitudinal central section or broken away. Fig. 2 is a front elevation of the device, and Fig. 3 is a top plan of the upper end of the standard part only of the device.

It is to be understood that slight modifications of my device are nevertheless covered by the scope of my invention and of the appended claims.

The pistons of internal combustion engines, because of their somewhat unbalanced actions and other causes, are subject to uneven peripheral wear which from time to time makes it requisite that they be demounted, and the degree of aberration from correct shape determined, before the correction of the same.

This determination has been heretofore difficult and requiring much manipulation and measuring and it is therefore my object to simplify the gauging of the piston for rapid and correct measurements of the aberration.

The numeral 1 denotes the relatively wide and rectangular base of the device from one end of which spaced standards 2 project upwardly in parallel and at a right angle to the base integrally to terminate at the same height therefrom, the intermediate slideway space 3 being closed at the top by a fitted block 5 secured by means of end screws 6. The inner faces of the standards 2 have at the left vertical rectangular facing grooves 4. The terms right or left used herein are to indicate either the right or the left hand sides respectively of Fig. 1, as seen by an observer.

The interspace 3 serves as a vertically disposed slideway for a head block 7 whose right to left parts 8 and 9 are widened by oppositely projecting flanges, the flanges of the part 8 contacting with the right-hand faces of the standards 2, the flanges 9 being slidingly seated in said facing grooves 4, whereby the block 5 is retained against displacements in any position of vertical adjustment in the space 3.

The block 7 has a central cylindrical aperture from right to left within which is fitted fixedly the right end of a hollow cylinder 10, the latter thus being maintained securely in a horizontal and parallel position relative to the base block 1 and the upper plane surface of the latter. Apertures or ball seats 14 are placed in space longitudinal relations along the cylinder or tube 10 and balls 15 are mounted therein loosely so as to be movable radially more or less partially without the tube.

The numeral 16 denotes one of a plurality of alined elements being adjusting pressure bodies for seating within the inner bore 11 of the tube 10 and which have respectively coned end parts which fit terminally into central end sockets in the other bodies 16 to the rear to aline the bodies while transmitting pressure displacements within the tube to the bodies simultaneously. An adjusted pressure is supplied upon the right-hand body 16 by means of a headless screw 12 mounted in interior threads 13 in the right-hand part of said tube to contact at the rear with the right-hand body 16. The longitudinal displacements of the bodies 16 simultaneously will cause their coned ends to more or less displace the balls 15 outwardly as may be necessary.

When the wrist-pin has been removed from its bushing in a piston to be gauged, the gauge standing erect as shown in Fig. 1, the tube 10 is seated in the wrist-pin bushing by sliding the piston toward the standards 2 resting upon the plane surface of the base 1, and as the block 7 is freely slidable between the standards, the block becomes positioned at

the right height in the interspace 3. The screw 12 may be then turned sufficiently to cause the balls 15 to be shifted outwardly by the pressure members 16 to engage the inner wall of the bushing.

The outer circumferential periphery of the piston being thus in close juxtaposition to the left-hand vertical wall of the standards 2, and in fact when the piston wall is perfectly cylindrical it will contact throughout along the flush parts of the standards and the block 7—9, in case of any divergence of the piston wall from the said gauge parts the extent of such divergence may be readily and rapidly measured by any suitable interposed appliance preliminary to truing up such wall.

This gauge thus becomes of importance in garage and repair shops as well as other places where ease and speed of gauging is required in the handling of the day's work.

It will be seen, that the balls 15 are so relatively arranged that two pairs in alinement and differently spaced longitudinally may be separately used in contacts with the bushings of pistons of different diameters.

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

1. In a gauge, a base member, a longitudinally slotted standard fixed perpendicularly upon said base member, a tubular member having a rectangular head mounted slidably in the slot of said standard, said tubular member having opposite laterally opening apertures, and clutch-devices mounted in the apertures in said member for movements to project without said tubular member.

2. In a gauge, a base member, a longitudinally slotted standard fixed perpendicularly on one end of said base-member, a tubular member positioned in parallel relation with respect to and above said base member and having a rectangular head slidably mounted in the slot of said standard, said head being grooved on opposite sides to fit the slot in said standard to lock it thereon against other than sliding displacements, said tubular member having lateral apertures, clutch balls mounted to move laterally of said tubular member in said apertures, and means in said tubular member to engage said balls to propel them partially outwardly to engage the inner wall of a wrist pin bushing of a piston removably seated on the tubular member.

3. In a gauge, a base member, a longitudinally slotted standard integral with and perpendicular to one end of said base member, said slot extending through the outer end of said standard, an end-closure removably secured in the outer end of the slot, an apertured head-block mounted in said slot to slide lengthwise thereof without other displacement therefrom, an apertured tubular member having one end fixed in the aperture of said head-block to project in parallel relation with respect to and over the base member, and clutch-devices mounted movably and lockingly in the apertures of the tubular member to releasably secure it coaxially in a piston aperture, and adjustably movable means mounted in said tubular member to engagingly displace said clutch-devices laterally relatively to the tubular member.

In testimony whereof I affix my signature.

JOHN R. BISHOP.