Oct. 7, 1930. E. NIETHAMER 1,777,501

MEANS FOR LOCATING PISTON RINGS

Filed Feb. 24, 1930

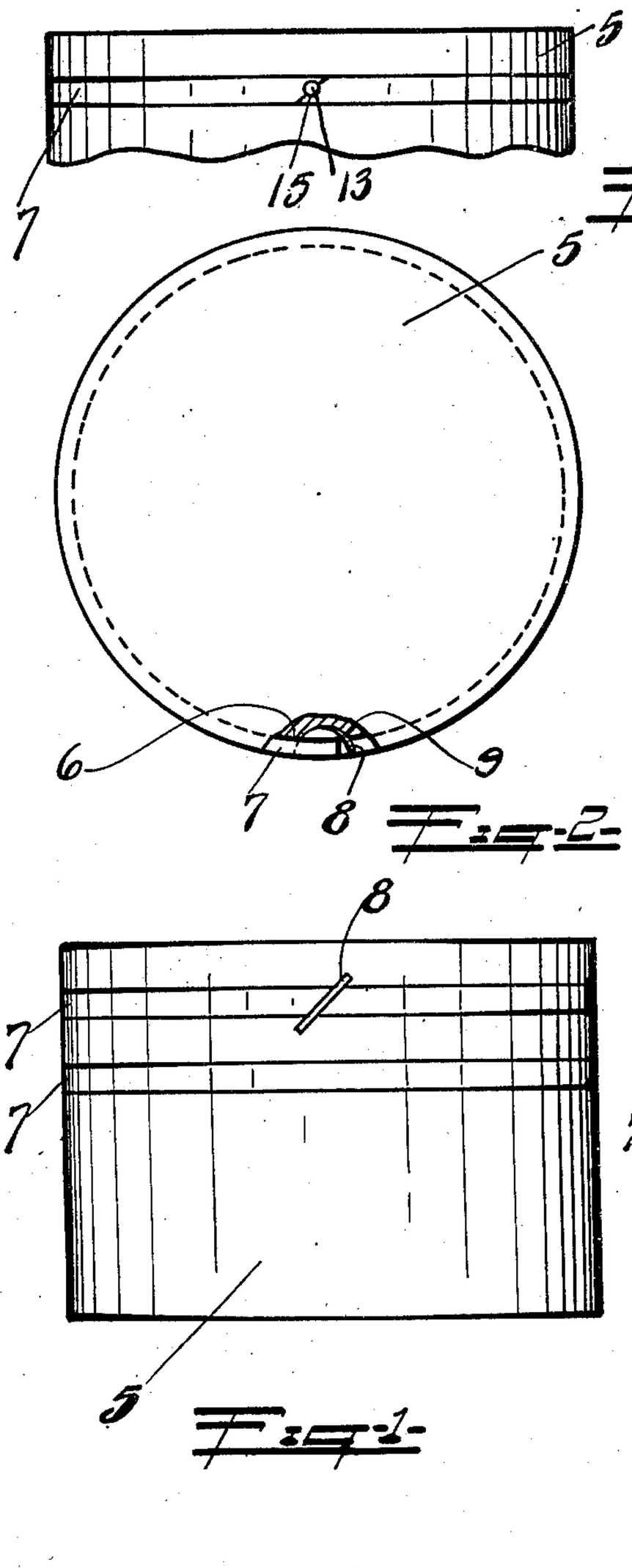

Fig. 1.

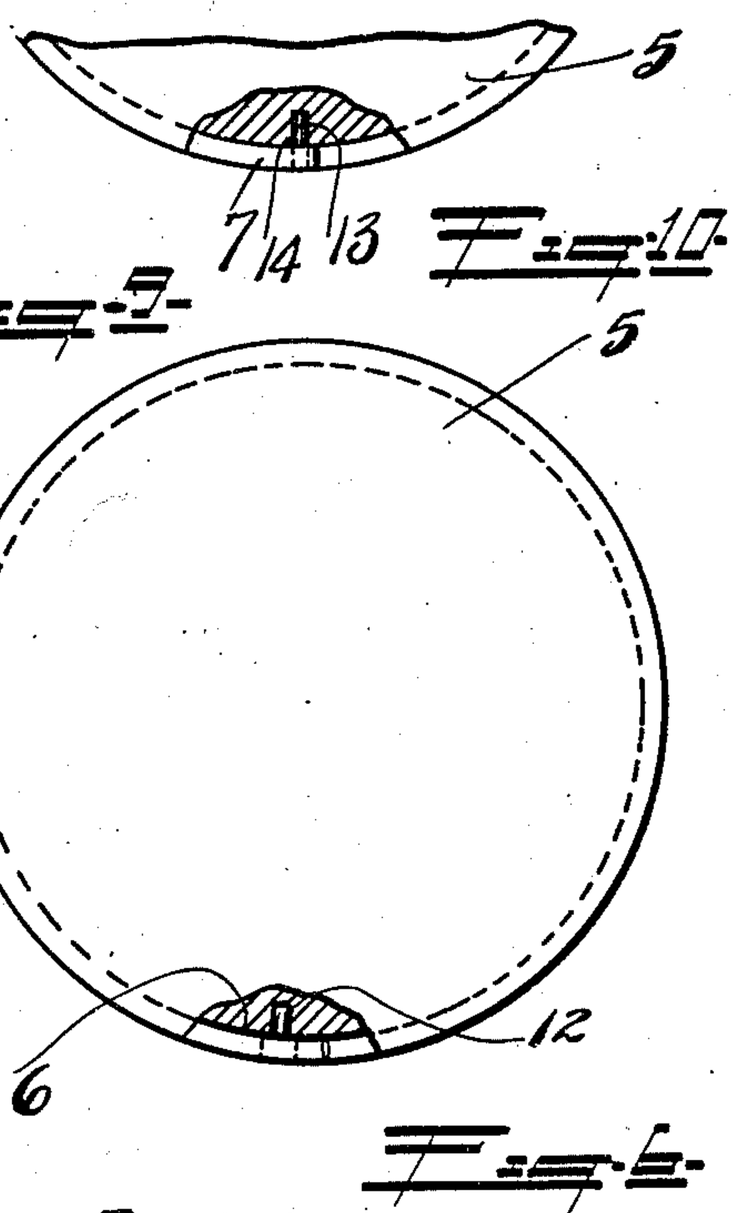

Fig. 9.

Fig. 10.

Fig. 2.

Fig. 6.

Fig. 1.

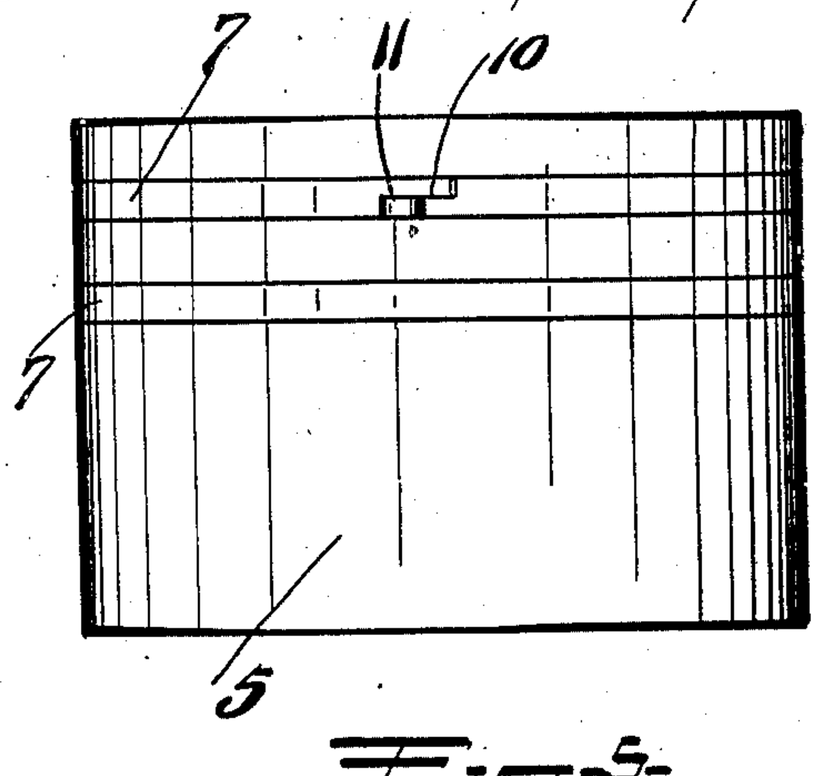

Fig. 5.

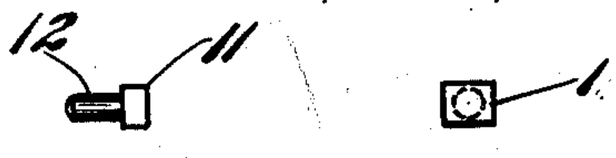

Fig. 7. Fig. 8.

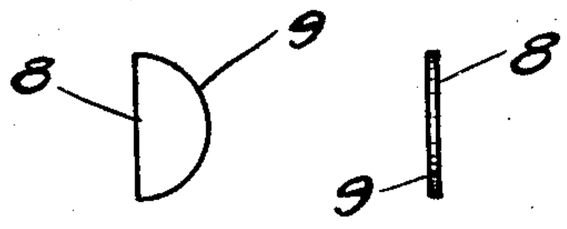

Fig. 3. Fig. 4.

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UNITED STATES PATENT OFFICE

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MEANS FOR LOCATING PISTON RINGS

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This invention relates to means for locating piston rings such as used in internal combustion engines and the like, and more particularly to a means to insure the piston rings being set in exactly the same position, no matter how many times the pistons and rings are removed from the engine.

The prime object of the invention is to design a very simple, practical and inexpensive key or stop, which is mounted in the piston, and which has detachable engagement with the piston rings.

Another object is to provide a key which is easy to place in position, and which cannot become displaced excepting when the pistons are removed from the cylinders.

A further object is to provide a key which is very inexpensive to manufacture, which requires no change in the function of the piston rings, and which can be shaped to suit rings of various designs and makes.

The above and other objects will appear as the specification progresses, reference being had to the accompanying drawing in which I have shown the preferred embodiment of my invention, and in which like reference numerals indicate like parts throughout the several views thereof.

In the drawing:

Fig. 1 is a side view of a piston showing a key in position thereon.

Fig. 2 is a top plan view, a part being broken away to show the mounting of the key.

Fig. 3 is a detail side view of the key proper.

Fig. 4 is an edge view thereof.

Fig. 5 is a view similar to Fig. 1, showing the key designed to be used with a step piston ring.

Fig. 6 is a view similar to Fig. 2.

Fig. 7 is a detail side view of the key last described.

Fig. 8 is an end view thereof.

Fig. 9 is a fragmentary side view of a piston showing a modified key design.

Fig. 10 is a fragmentary part sectional plan view.

After a motor has been operated for a comparatively short period of time the cylinder walls are worn out of round, this is due to the angle or position of the connecting rods with relation to the piston after the fuel charge in the cylinder is fired, which sets up a side thrust forcing the pistons against the side of the cylinder walls, and consequently wears them out of round, naturally the rings accommodate themselves to this shape, and when a motor has been overhauled or reconditioned, it very often pumps oil, has a very low compression, and consequently little power, and this is due to the fact that the piston rings have not been replaced in exactly the same position, and these disadvantages I have overcome by keying the rings so that no matter how many times the pistons and rings are removed, they will always be replaced in identically the same position.

Referring now particularly to the drawing, the numeral 5 indicates a piston such as used in a conventional internal combustion motor, this is provided with the ring grooves 6 as usual, and rings 7 are adapted to be seated in said grooves, the rings as shown in Figs. 1 and 2 of the drawing being cut on an angle as shown.

A key member 8 is adapted to be mounted in the piston in position as shown, a narrow slot being milled or otherwise provided in the piston so that the key can be mounted therein, the key being made of brass, so that it will not wear or mar the cylinder walls of the motor in which it is used.

The key is set in the piston at an angle to conform to the angle of the split in the piston ring, the one edge being rounded as shown at 9, so that it can readily be inserted, and so that the proper slot for mounting can be readily cut.

In Figs. 5 to 8 of the drawing I have shown a key of different shape, and such as used with a step ring, in this construction either the upper or lower step 10 in the ring is lengthened a distance to accommodate the head 11 of the key, a shank 12 being formed integral with the head, and is drilled into the piston as clearly shown in Fig. 6 of the drawing, this is also formed of brass, and

the head 11 is rounded to conform to the diameter of the cylinder.

Figs. 9 and 10 of the drawing show another simple modification tube used with the piston ring shown in Figs. 1 and 2, this comprises a straight pin member 13, mounted in an opening 14 provided in the piston, the ring being bored as shown at 15 to accommodate said pin, said bore being slightly larger than the pin diameter, this construction is cheaper than that shown in Figs. 1 and 2, and is equally effective.

This key in no manner interferes with the expansion of the rings, it is cheap to manufacture and simple and easy to install. it insures the rings being replaced in identically the same position, thereby insuring against loss of compression and power, and pumping of the oil.

From the foregoing description it will be obvious that I have perfected a very simple, practical, and effective key for positioning piston rings.

What I claim is:—

1. The combination with a piston provided with piston ring grooves therein, a slot milled in said piston and at an angle with relation to the groove, and a semi-circular key mounted in said piston and adapted to fit the milled slot in said piston.

2. The combination with a piston provided with a piston ring groove, a piston ring mounted therein, a semi-circular slot milled in said piston and at an angle with relation to the groove, and a relatively thin semi-circular disk key interposed between the ends of the piston ring and adapted to be mounted in said slot.

In testimony whereof I hereunto affix my signature.

EDWARD NIETHAMER.