Sept. 4, 1928. 1,682,886

S. J. COCKS ET AL

PISTON RING

Filed May 17, 1926

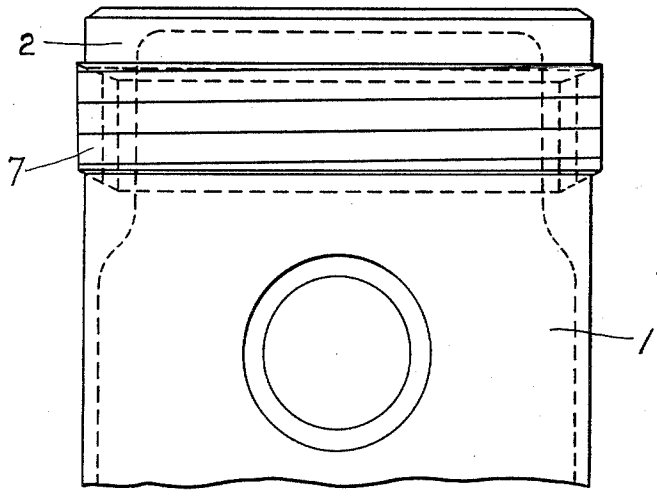

Fig. 1

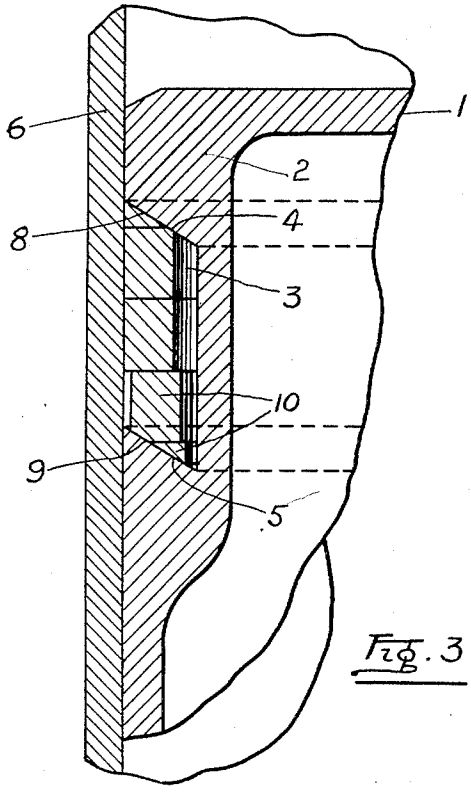

Fig. 3

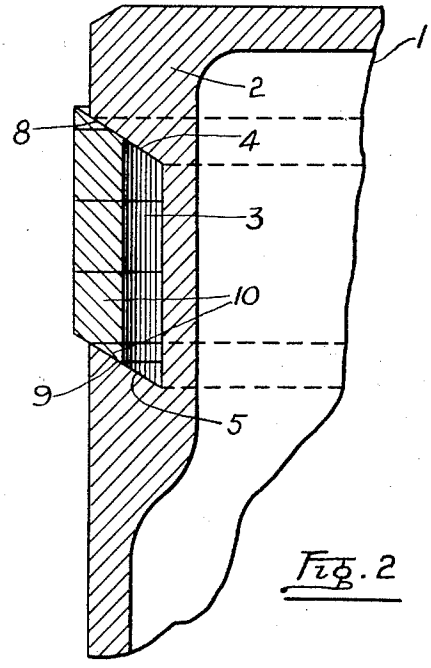

Fig. 2

INVENTORS
SIDNEY JOHN COCKS
RAYMOND EDWIN BROWNING

BY Fetherstonhaugh & Co

ATTORNEYS

Patented Sept. 4, 1928. 1,682,886

UNITED STATES PATENT OFFICE.

SIDNEY JOHN COCKS AND RAYMOND EDWIN BROWNING, OF VANCOUVER, BRITISH COLUMBIA, CANADA.

PISTON RING.

Application filed May 17, 1926. Serial No. 109,773.

Our invention relates to improvements in piston rings, the objects of which are to provide means whereby the periphery of the ring is in resilient contact with the cylinder walls, and the upper and lower faces of the ring are in permanent contact with the sides of the groove in which the ring is fitted to the piston, whereby the said surface contacts are unimpaired by wear throughout the life of the ring.

The invention consists essentially of a spiral forming a cylindrical body of larger diameter than the piston to which it is fitted, in which the end faces are parallel to each other and at a tangent to the longitudinal axis of the cylinder in which it is fitted, as will be more fully described in the following specification, in which:—

Fig. 1 is a general view of the ring fitted to a piston.

Fig. 2 is a fractionated sectional view of the ring and the piston to which it is fitted.

Fig. 3 is a fractionated sectional view of the piston in the cylinder showing the position assumed by the ring when fitted in working position.

In the drawings like characters of reference indicate corresponding parts in each figure.

The numeral 1 indicates a piston having side walls 2 which are provided with a peripheral groove 3 of a suitable depth. The groove is provided with parallel upper and lower faces 4 and 5 which are disposed at a tangent to the longitudinal axis of the piston 1. The numeral 6 indicates one of the side walls of the cylinder into which the piston is fitted.

The numeral 7 indicates a cylindrical piston ring preferably formed from a cast iron sleeve which is cut in spiral form as shown in Figure 1 and is of such a size as to require it to be compressed or wound to a smaller diameter when inserting it into the cylinder. The upper and lower faces 8 and 9 of the ring are turned parallel to each other and at an angle coinciding with that of the upper and lower faces 4 and 5 of the groove 3 in the piston. The total peripheral face length of the ring 7 is equal to or slightly in excess of the length of the groove 3, so that it is necessary after the ring has been passed over the piston head and as the ring is worked into the cylinder to tighten up the spiral to increase its number of turns beyond the normal. In this process of tightening the spiral, which will naturally be effected to a greater extent at one end thereof than at the other, such as is shown in Figure 3, the tightly compressed lower end coils of the spiral will be disposed closer to the axis of the piston as at 10, than the upper coils thereof. This tightening of the spiral and consequent increase in the total length of the ring will cause the lower end 9 to move downwardly of the angle 5 towards the axis of the piston maintaining at all positions a gas tight contact between the periphery of the ring 7 and the side walls 6 of the cylinder and also between the faces 8 and 9 of the ring and the faces 4 and 5 of the groove 3.

As wear takes place between the ring and the cylinder side walls the inherent resilience of the metal of the ring will cause the spiral to gradually expand, correspondingly reducing the number of turns therein and its total compressed length. This expansion will cause the lower end coils 10 to expand more rapidly than the others and in so doing will cause the lower face 9 of the ring to move upwards along the lower face 5 of the groove while still maintaining the parts in gas tight contact.

What we claim as our invention is:

1. A piston assembly comprising a piston having a peripheral groove, said groove having opposing end faces parallel to each other and inclined with respect to the longitudinal axis of the piston, a spiral ring to the piston having inclined end faces parallel to each other and adapted to make gas tight contact with the end faces of the groove.

2. A piston ring comprising a cylindrical body formed of a plurality of spiral coils adapted to be pressed into intimate contact with each other, the end faces of the body being parallel to each other and inclined with respect to the longitudinal axis of the body.

3. The combination with a piston formed with an annular groove having the side walls

thereof disposed in parallel relation to one another and inclined with respect to the longitudinal axis of the piston, of a spring metal strip coiled spirally into cylindrical form and affording a longitudinally and circumferentially expansive piston ring seated in said groove and provided with inclined end faces adapted to make gas tight contact with the side walls of the groove.

Dated at Vancouver, B. C. this 4th day of May, 1926.

SIDNEY JOHN COCKS.
RAYMOND EDWIN BROWNING.