Feb. 6, 1923. 1,444,072

K. D. HOLLAND.

DEVICE FOR COMPRESSING PISTON RINGS.

FILED JAN. 8, 1920.

Fig. 1.

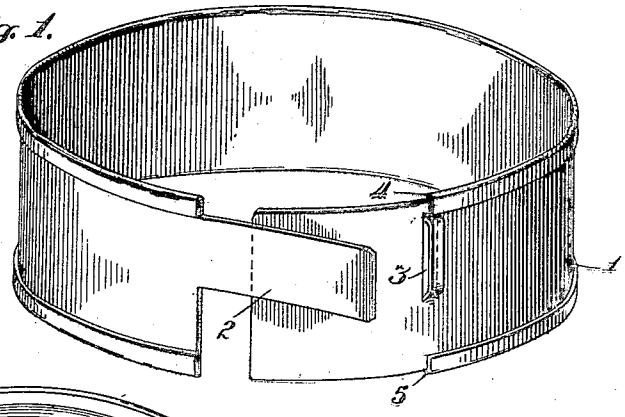


Fig. 2

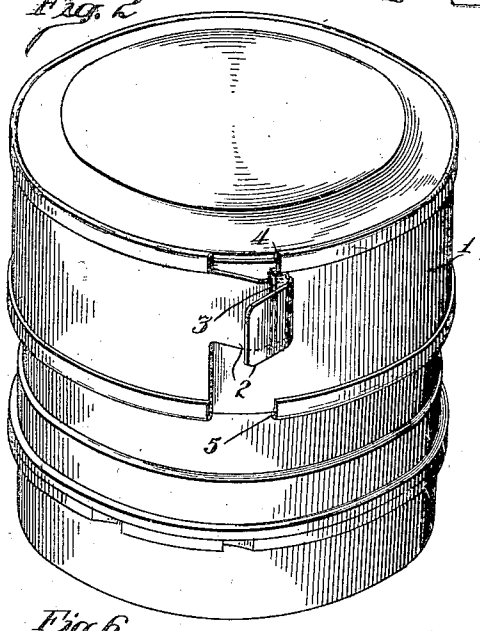


Fig. 3.

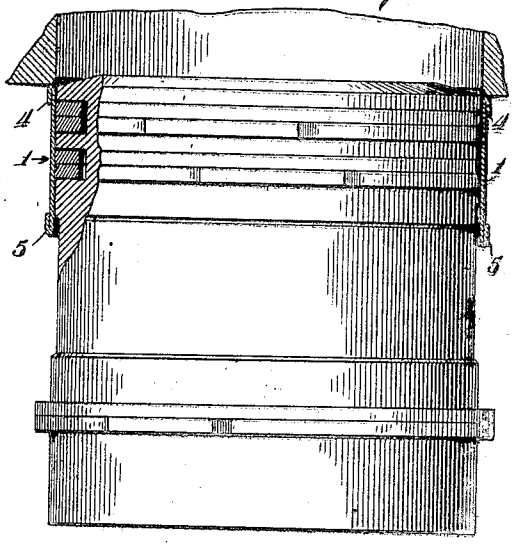


Fig. 6.

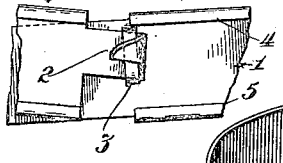


Fig. 5.

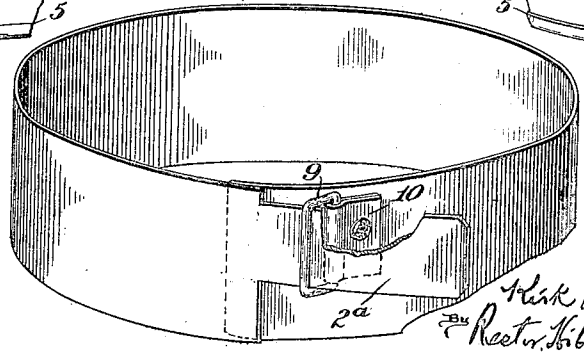
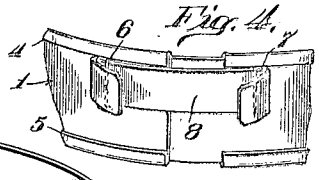


Fig. 4.



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UNITED STATES PATENT OFFICE.

KIRK D. HOLLAND, OF CHICAGO, ILLINOIS.

DEVICE FOR COMPRESSING PISTON RINGS.

Application filed January 8, 1920. Serial No. 350,144.

To all whom it may concern:

Be it known that I, KIRK D. HOLLAND, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Devices for Compressing Piston Rings, of which the following is a specification.

My present invention relates to a device which is designed to facilitate the insertion of a piston equipped with peripheral spring metal packing rings, such as used in gas and steam engines, air compressors and other apparatus, into the cylinder in which it is intended to operate. The object of my invention is the production of an extremely simple, yet effective and desirable device of this character, which can be very economically manufactured. To this end I have designed and invented the piston ring compressor hereinafter described and which is illustrated in the accompanying drawings forming part of this specification, the essential elements of my invention being more particularly pointed out in the appended claims.

Of the drawing Figure 1 is a perspective of a compressing device embodying my invention in a preferred form; Figure 2 is perspective of the same applied to a piston and ready for use in inserting the piston in a cylinder; Figure 3 is a side elevation, partly in section, of a piston with the device applied and showing the relation of parts when the top of the piston is just ready to enter the engine cylinder; Figure 4 is a fragmentary front view illustrating a modified form of the invention, Figure 5 is a perspective of a different modified form of my device; and Fig. 6 a fragmentary detail showing a distorted position of the parts occupied when applying the ring to the piston.

The same reference characters indicate the same parts in all the figures of the drawings.

In its preferred form, as illustrated in Figures 1, 2 and 3, my device consists of a strip of pliable sheet metal 1, one end of which is formed, adjacent one side, with a continuous tongue portion 2 about half the width of the main portion of the strip. Adjacent the other end the metal is bent up between a couple of short transverse slits to form an eye 3 of proper size to receive the tongue 2. The edge of the strip along the side upon which the tongue and eye are formed is provided with an outwardly and downwardly rolled flange 4 which terminates at the base of the tongue and opposite to the eye. In the present instance, though not necessarily, the opposite edge of the device is formed with a similar flange 5 to provide a smooth edge, and the base of the tongue is arranged to overlap the flat unflanged portion of the strip beyond the end of the flanges 4 and 5.

My compressing ring is designed and intended to be used in the following manner. The strip is first strapped snugly and accurately around the cylindrical skirt of the piston, below the lowermost piston ring, by means of the tongue 2 threaded into the eye 3 and bent backwardly to the position shown in Figure 2, and is then slipped off the lower end of the skirt, and placed over and upon the top end of the piston and slipped downwardly over the adjacent piston rings. The attachment of the tongue and eye at one side of the device permits it to be distorted and the lower edge of the device to be sprung slightly outwardly, the eye and bent tongue rocking as shown in Fig. 6, thus enabling the device to be readily fitted over the rings. As it is passed downwardly it reassumes a cylindrical form, and holds the rings snugly within their grooves, as shown in Fig. 3. The flange 4 at the top of the device abuts against the lower edge of the cylinder wall as the piston is inserted, and the device is therefore forced downwardly on the piston as the latter enters the cylinder and is finally stripped off from the lower edge of the skirt as the piston clears the lower edge of the cylinder. Since the skirt of the piston is in practice always made a few thousandths of an inch larger than the head and therefore fits the cylinder so much the more closely, the method described will produce a slightly looser fit of the device at the top of the piston, enabling it to be easily manipulated, yet always sufficiently close to cause the piston rings to enter the cylinder easily.

In the modified form of my invention shown in Figure 4, the ends of the strip which are arranged to overlap, are both formed with pairs of transverse slits and intermediate bent-up eyes or fastening strips marked 6 and 7 respectively, and a detached clamping strip 8 is provided which may be threaded through both eyes and its ends bent back upon themselves when sizing the device upon the skirt of the piston.

In the modification shown in Figure 5, the

eye member of the fastening consists of a wire loop 9 which is secured to the device by means of a folded clip 10 riveted to it near its adjacent end. This loop 9 is engaged by a tongue 2^a formed on the opposite end of the device, and which may be identical in construction with the tongue 2 before mentioned.

While the formation of the fastening tongue and eye at one side of the device exhibits the particular advantages above described and I regard such construction as the most desirable, yet it will be understood that they may be located centrally or intermediately of the strip, if preferred, and some measure of the advantages of my invention still be realized.

I claim:

1. A piston ring clamping device formed of a strip of pliable sheet metal and comprising a main portion and a tongue portion narrower than said main portion and at one side of and continuous with said main portion, the end of the strip opposite said tongue being formed with a transverse eye arranged to interlock with said tongue and provide for rocking movement.

2. A piston ring clamping device formed of pliable sheet metal and comprising a main portion outwardly flanged along its top side, a tongue portion, and an unflanged terminal portion provided with an eye adapted to engage said tongue.

3. A piston ring clamping device formed of a strip of pliable sheet metal and comprising a main portion outwardly flanged along its top side, a tongue portion narrower than said main portion and in alignment with the flanged side of such main portion, and an unflanged terminal portion arranged to underlap said tongue, the body of the strip adjacent said terminal portion being formed with transverse slits and bent between said slits to form an eye adapted to engage said tongue.

4. A piston ring clamping device formed of a strip of pliable sheet metal and comprising an outwardly flanged main portion, the end portions of said strip being arranged to overlap and one end portion being equipped with an eye, and engaging means including a pliable sheet metal tongue arranged to engage said eye and anchored to the other end portion of the strip.

5. A piston ring clamping device formed of a strip of pliable sheet metal and comprising a main portion outwardly flanged along its top side, a tongue portion narrower than said main portion and extending in alignment with the flanged side of such main portion, the end of the strip opposite said tongue being provided with an eye arranged to interlock with said tongue and provide for rocking movement.

KIRK D. HOLLAND.