

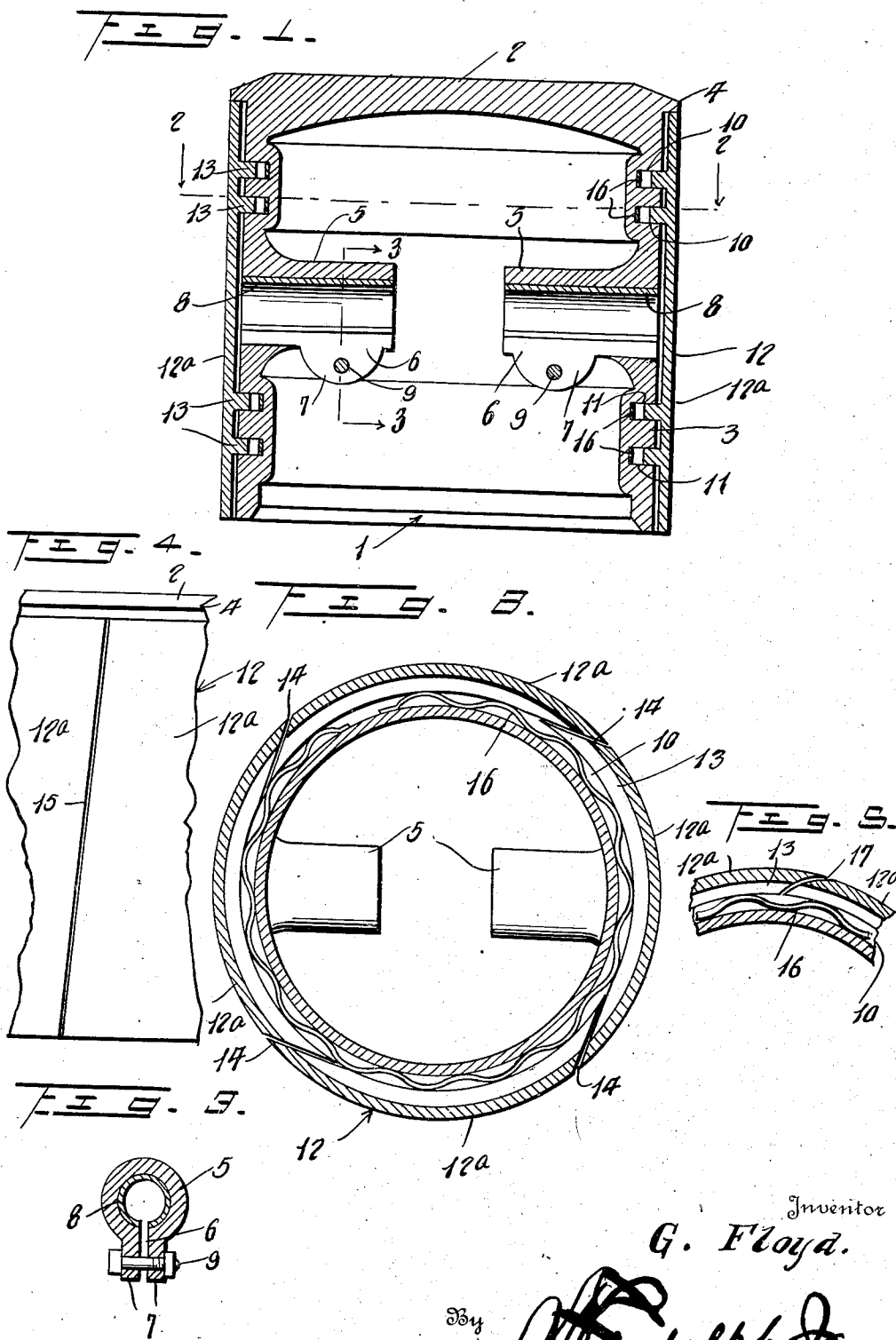
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RINGLESS SELF EXPANDING PISTON

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RINGLESS SELF-EXPANDING PISTON

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This invention relates to improvements in pistons for hydrocarbon engines, and has for one of its objects to provide a novel, simple and highly efficient device of this character that will preserve a tight sliding fit with the cylinder wall without the aid of the rings now used for this purpose.

With the foregoing and other objects in view, the nature of which will become apparent as the description proceeds, the invention consists of the construction, combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawing, wherein:

Figure 1 is a sectional view taken on a plane extending vertically and centrally through a piston constructed in accordance with my invention,

Figure 2 is a sectional view taken on the plane indicated by the line 2—2 of Figure 1,

Figure 3 is a detail sectional view taken on the plane indicated by the line 3—3 of Figure 1,

Figure 4 is a view in side elevation of a fragmentary portion of the piston, and

Figure 5 is a detail sectional view illustrating a slightly modified construction of the piston.

Corresponding and like parts are referred to in the following description, and designated in the several views of the accompanying drawing, by similar reference characters.

The piston comprises a hollow cylindrical body 1 of which the upper or end wall 2 is made larger diametrically than the side or lateral wall 3 in order to provide an annular flange or shoulder 4. The body 1 is provided on opposite inner sides of its lateral wall 3 with bearing bosses 5 for the reception of a wrist pin. Each bearing boss 5 is provided in its lower side with a longitudinally extending slot 6, and at opposite sides of the slot with apertured lugs 7. Split bushings 8 are mounted in the bearing bosses 5, and bolts 9 carried by the lugs 7 permit the bearing bosses and bushings to be adjusted to take up wear in the latter. The body 1 is provided in its side 3 with outer circumferential grooves 10 and 11. The grooves 10 are located adjacent the upper end of the body 1

and the grooves 11 are located adjacent the lower end of the body.

A sleeve 12 surrounds the body 1 and extends from the lower end thereof to the flange or shoulder 4. The sleeve 12 is of sectional formation, and the sections 12^a thereof are provided with ribs 13 which fit in the grooves 10 and 11 and, together with the flange or shoulder 4, support the sleeve sections against casual movement with respect to the body 1 in the direction of the axis thereof. The sleeve sections 12^a are similar, and the adjacent edges thereof and the adjacent ends of the ribs 13 are beveled and arranged in overlapping relation, as shown at 14 in Figure 2, the meeting edges of the sections 12^a being tangential of the body 1. The adjacent edges of the sleeve sections 12^a are arranged diagonally, as shown at 15 in Figure 4. Elastic rings 16 of the split type are positioned in the grooves 10 and 11 between the bottom walls of the grooves and the ribs 13 and function to hold the sleeve sections 12^a under constant urge in the direction of the lateral wall of the cylinder. While they may be of any appropriate construction, the rings 16 are preferably made as shown in the drawing, that is they are corrugated transversely or in the direction of their width so as to present elastic portions of arcuate formation contacting alternately with the bottom walls of the grooves 10 and 11 and the ribs 13. The adjacent edges of the sleeve sections 12^a and the ends of the ribs 13, may be curved, as shown at 17 in Figure 5, instead of being straight as shown at 14 in Figure 2.

Due to its length, its sectional formation, and as its sections are under constant urge in the direction of the wall of the cylinder, the sleeve 12 will have such a tight sliding connection with the cylinder as to prevent gas and oil from leaking past the piston. Furthermore, the cylinder wall and sleeve cannot wear unevenly, and the sleeve will prevent side slap of the piston. The flange or shoulder 4 and the ribs 13 prevent gas and oil from leaking past the cylinder between the body 1 and sleeve.

It should be understood that the drawing is merely illustrative and does not pretend to

give exact proportions. Furthermore, the said drawing is illustrative of a preferred construction, it being my expectation that various changes and modifications may be made without departing from the spirit and scope of my invention.

What is claimed is:

1. A piston comprising a hollow cylindrical body provided with circumferential grooves in its lateral wall, a sleeve mounted on said wall of the body and being of more than two sections, the side edges of the sleeve sections overlapping and being tangential of said body said sections being provided with ribs fitting in said grooves, the ends of the ribs being arranged in overlapping relation, and corrugated spring elements positioned in said grooves between the bottom walls thereof and said ribs and exerting an outward pressure on the sleeve sections.
2. A piston comprising a hollow cylindrical body provided at its upper end with an annular shoulder and provided in its lateral wall and adjacent each of its ends with a plurality of circumferential grooves, a sleeve equal in length to and mounted on said wall of the body with its upper end in contact with said shoulder, said sleeve being of more than two sections and the side edges of the sections thereof being arranged diagonally and tangentially and in overlapping relation, ribs carried by the sleeve sections and fitting in said grooves and having their ends arranged in overlapping relation, and spring elements positioned in said grooves between the bottom walls thereof and said ribs and exerting an outward pressure on the sleeve sections.

In testimony whereof I affix my signature.

GEORGE FLOYD.