Jan. 19, 1960 G. KESTLER 2,921,823

PISTONS

Filed Dec. 4, 1957

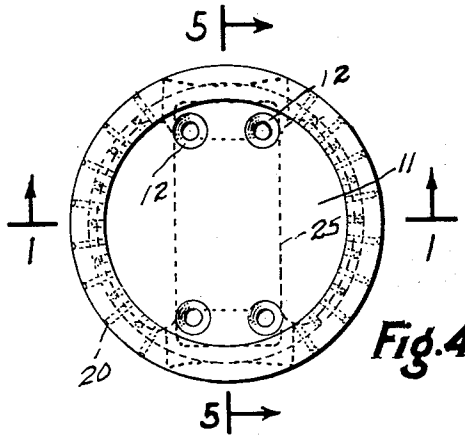


Fig.4.

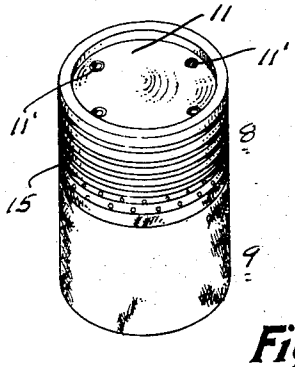


Fig.8.



Fig.3.



Fig.7.

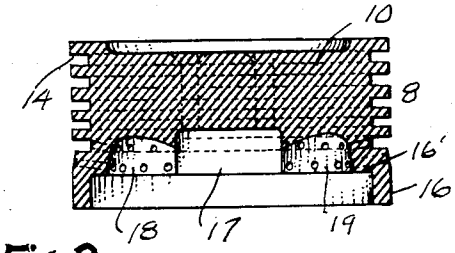


Fig.2.

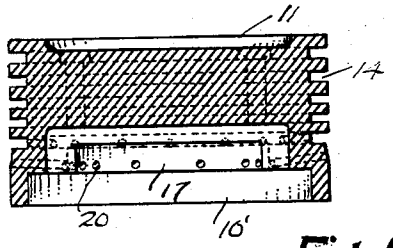


Fig.6.

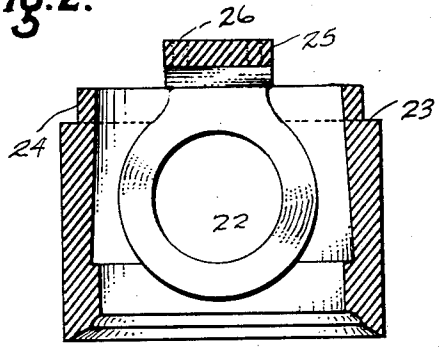


Fig.1.

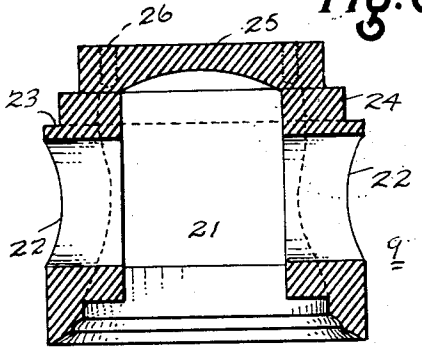


Fig.5.

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2,921,823

PISTONS

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Application December 4, 1957, Serial No. 700,647

1 Claim. (Cl. 309—15)

This invention relates to improvements in pistons for internal combustion engines and has particular reference to a sectional piston embodying a cap or head portion that is readily detachable from a skirt or bottom portion, and wherein the dividing point of the portions is above the wrist pin that is positioned transversely in the skirt portion.

It is a well known fact that approximately ninety percent of replacement and repair trouble occurs in that portion of the piston above the wrist pin connection and only a minimum amount of trouble occurs in the bottom portion of the piston. Accordingly, to overcome or cut down piston difficulties such as carbon, burnt pistons, sticky rings and replacement of piston rings, and to eliminate the cost of oil consumption, overcome faulty combustion and faulty compression, as experienced in the present piston constructions, I propose to make a piston of a two part construction, whereby the cap portion can be removed without disturbing the bottom portion, by the simple expediency of removing the cylinder head of the engine to obtain access to the piston cap for overcoming difficulties in the same.

An additional object of the invention is the production of a piston that is simple in construction, economical to manufacture, strong, durable, and is highly efficient and serviceable in use.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings wherein for the purpose of illustration like numerals refer to like parts throughout the same,

Fig. 1 is a transverse vertical sectional view of the lower portion of the piston, the view being taken on the line 1—1 of Fig. 4.

Fig. 2 is a cross sectional view of the upper or cap portion of the piston,

Fig. 3 is a side elevational view of a flat headed screw that may be employed to secure the piston portions together,

Fig. 4 is a top plan view of the piston constructed in accordance with my invention,

Fig. 5 is a longitudinal sectional view of the lower portion of the piston, the view being taken on the line 5—5 of Fig. 4,

Fig. 6 is a longitudinal sectional view of the upper portion of the piston,

Fig. 7 is a modified form of fastening element employed, and

Fig. 8 is a perspective view of the complete piston assembly.

Referring to the drawings the numerals 8 and 9 designate, respectively, as a whole, the cap portion and the skirt or bottom portion of a piston constructed in accordance with my invention. Referring to the cap portion, the same is of general cylindrical form and includes a casing equipped with an inner solid body 10 that is provided with a concave upper surface 11 having a plurality of spaced vertical screw threaded openings 11' provided therein adapted to receive or to be threadedly engaged by the bolts 12 and 13, illustrated in Figs. 3 and 7 of the drawing.

Spaced circular grooves 14 are formed in the outer periphery of the cap portion and receive therein piston

rings 15. The lower portion of the casing terminates at its lower end in flange 16.

The numeral 17 indicates a pocket or compartment of substantially rectangular shape that is formed centrally and transversally in the base of the solid body 10. The base is hollowed out at 10', the latter communicating with the pocket 17, and defines shoulders 16'. The numerals 18 and 19 designate a pair of side recesses or pockets provided on each side of the compartment or pocket 17. Oil ports 20 lead from the pistons and return the oil from the cylinder to the crank case of the engine in the process of lubricating the outer periphery of the piston.

The bottom portion 9 of the piston, that is adapted to be detachably secured to the cap portion, comprises a cylindrical body equipped with a hollow compartment 21 in communication with reinforced side openings 22 for a wrist pin connection. A seat 23 is provided by the metal material that defines the top portion of the material forming the openings, and is it on this seat that the flange 16 rests or is seated. Mounted on said top portion is a collar 24 that has integrally formed therewith a solid cross-piece or bridge 25 that conforms in shape to the rectangular shape of the pocket 17. The pocket serves as a seat for the bridge when the piston sections are inter-connected. Spaced threaded bolt holes 26 are provided in said bridge 25 and are adapted to retain therein the threaded ends of the bolts 12 or 13. Thus the cap portion and the bottom portion of the piston (see Fig. 8) can be firmly yet detachably secured together without danger of accidental displacement of these parts one from the other. Since generated force, power and heat are always directed, and as in this instance, will be directed on top of my improved piston, the piston parts will be pushed down rather than pulled down. Accordingly, there will be no danger of the piston coming apart when it is assembled in an operative position.

The present method of assembling a sectional piston can be adapted to any type of piston regardless of shape or size.

It is to be understood that the form of my invention herewith shown and described is to be taken as the preferred example of the same and that various changes relative to the shape, size, material and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claim.

Having thus described my invention, I claim:

A piston comprising a cap portion and a hollow bottom portion, said cap portion comprising a substantially solid body having spaced peripheral piston rings receiving recesses therein, the bottom area of the cap portion having a central pocket therein in communication with a pair of side recesses, oil ports leading from the periphery of the body for conveying oil to the side recesses for lubricating the piston during its reciprocatory movement, said hollow bottom portion being equipped with a collar and a seat for the cap portion, a bridge member integrally formed with the collar and extending upwardly therefrom and adapted to be seated in the central pocket of the cap portion and fastening means interposed between said cap portion and the bridge member for detachably securing the two portions together.

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