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1,658,403

A. BOYER

VALVE SPRING RETAINER

Filed June 1, 1927

Fig. 1.

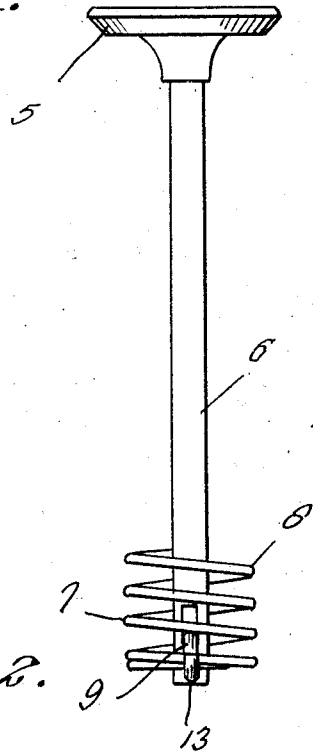


Fig. 3.

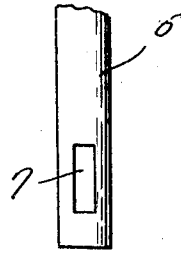


Fig. 2.

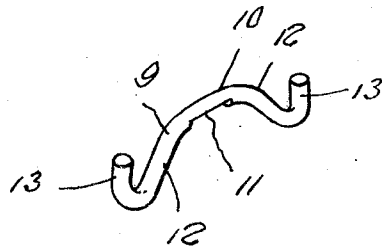
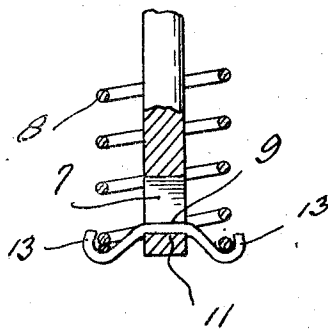


Fig. 4.

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UNITED STATES PATENT OFFICE.

ASBERRY BOYER, OF CANTON, MISSOURI.

VALVE-SPRING RETAINER.

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This invention relates to new and useful improvements in combustion engine valves of the poppet type and has more particular reference to a retainer for the usual compression springs thereof. In carrying out the present invention there is provided a highly novel, simple, and extremely inexpensive retainer that is so constructed as to permit of its ready association with or removal from the valve stem, and that will not prevent the passage of the oil up the stem which is the great disadvantage of the cup and washer retainers now in use. It is well known that such cups and washers now provided for retaining valve springs will positively prevent the free flow of oil up the valve stems resulting in the same sticking within the usual guides.

In the drawing wherein like reference characters indicate corresponding parts throughout the several views:

Figure 1 is a side elevation of a poppet valve over the lower end of which is disposed the conventional spring which spring is retained at its lower end by my improved retainer.

Figure 2 is a section through the lower end of the valve stem disclosing my retainer in side elevation.

Figure 3 is an elevation of the lower end of the stem constructed in accordance with the present invention, and

Figure 4 is a perspective of the retainer per se.

Now having particular reference to the drawing, 5 designates a conventional poppet valve having the usual elongated stem 6. In carrying out my invention the lower end of this stem is provided with a somewhat elongated cross slot 7. The retainer for the spring 8 that is arranged over the lower end thereof to serve as an automatic means for maintaining the valve 5 normally closed is designated by the reference character 9 and consists of a single length of steel wire so bent as to provide a horizontal central portion 10, the bottom surface of which is

channeled to provide a plano surface 11. At the opposite ends of this horizontal portion the wire is then bent downwardly as at 12—12 and thence upwardly at direct right angles to provide hooks 13—13. In actual practice this retainer 9 is arranged through the slot 7 in the valve stem 6 after the spring 8 has been compressed. The plano surface 11 of the horizontal central portion 10 of this pin 9 is then seated upon the lower end of the valve stem slot 7, the particular formation of the slot in the pin forming said plano surface 11 providing shoulders at opposite ends thereof to engage the opposite ends of the lower edge of the slot to prevent the movement of the pin therein. Furthermore the hooks 13—13 serve as means for supporting the lower end of the spring 8 in an obvious manner.

It will thus be seen that I have provided a highly novel, simple, and useful valve spring retainer that is well adapted for all the purposes heretofore designated, even though I have herein shown and described the invention as consisting of a certain detail structural element it is nevertheless to be understood that some changes may be made therein without affecting the spirit and scope of the appended claim.

Having thus described my invention, what I claim as new is:—

In a valve spring retainer wherein the stem of the valve is formed adjacent its lower end with a cross slot, an elongated wire pin bent to provide a horizontal central portion for disposition through the slot, the bottom surface of the horizontal portion being cut out to form shoulders for engagement with the opposite sides of the slots at the lower edge thereof, the outer ends of the wire pin being bent downwardly and thence upwardly to form opposed hooks for engaging the opposite sides of the lower end of a valve spring surrounding the stem.

In testimony whereof I affix my signature.

ASBERRY BOYER.