Aug. 27, 1929. F. JOHNSON 1,726,513

VALVE LIFTER

Filed May 28, 1926

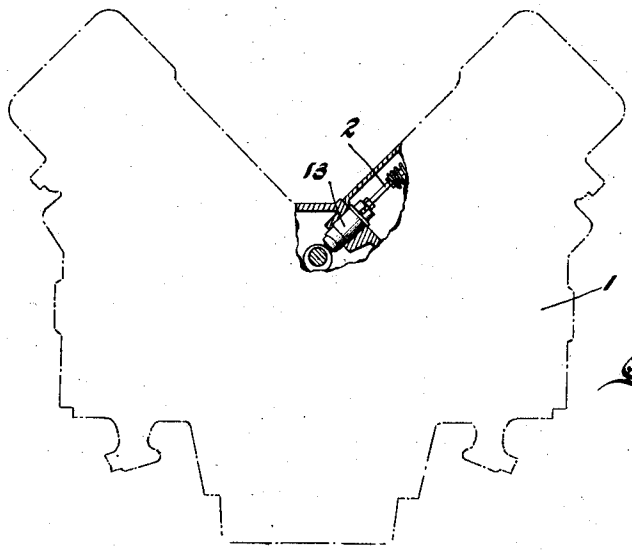


Fig. 1

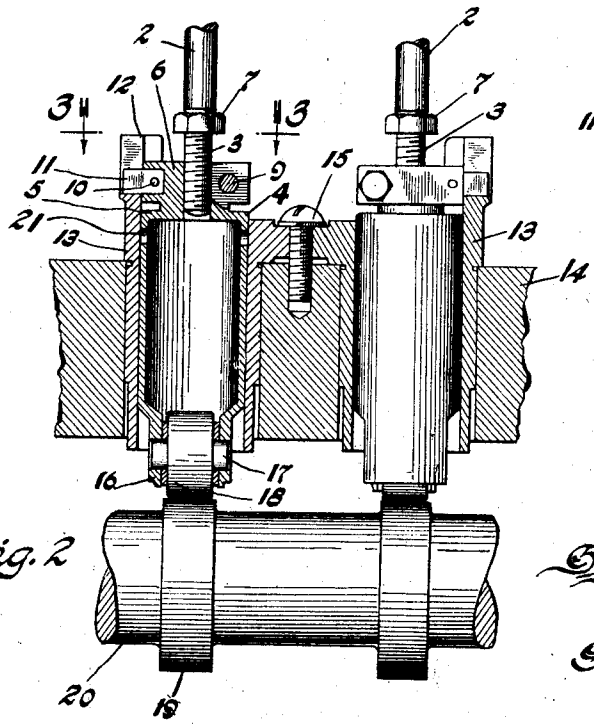


Fig. 2

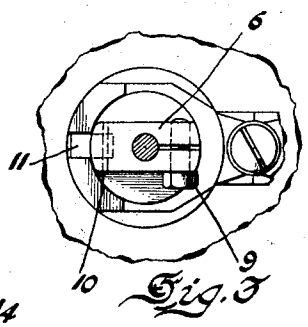


Fig. 3

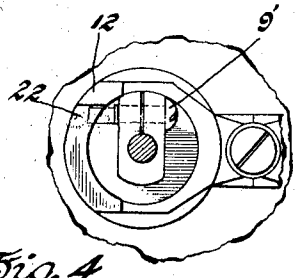


Fig. 4

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UNITED STATES PATENT OFFICE.

FRANK JOHNSON, OF DETROIT, MICHIGAN, ASSIGNOR TO GENERAL MOTORS CORPORATION, OF DETROIT, MICHIGAN, A CORPORATION OF DELAWARE.

VALVE LIFTER.

Application filed May 28, 1926. Serial No. 112,306.

This invention relates to valve operating means for internal combustion engines. More specifically it aims to provide an improvement in the tappet and guide used for actuating the intake and exhaust valves.

An object of the invention is to produce an improved tappet for carrying the cam engaging roller.

A further object consists in making such a tappet of as light construction as possible.

Another object consists in providing parts on the tappet and the guide to facilitate tappet adjustment.

Still another object is to so construct the tappet as to render the removal of the cam shaft possible without removing the tappets.

Included within the scope of the invention also, is the process by which the novel tappet is made.

With the above and other objects in view the invention is embodied in certain novel structure herein described and shown in the accompanying drawing.

In the drawing:

Figure 1 is an end elevation of an internal combustion engine, a V type engine being shown.

Figure 2 is a longitudinal section through a pair of tappets.

Figure 3 is a transverse section on line 3—3 of Figure 2.

Figure 4 is a similar section of a modified form.

Referring by reference characters to the drawing, numeral 1 represents an internal combustion engine. 2, 2 are the ends of valve stems actuated by tappets 4. Adjusting screws 3 are threaded into tappets 4, which are of special construction.

The tappet is a tubular member having one end closed as at 5. The closed end is provided with an extension in the form of a split collar 6 through which and into the closed head is threaded the adjusting screw 3. The adjusting screw has a head 7 to engage the valve stem 2. A fastening means 9 is provided to clamp the split collar about the screws. The purpose of the split collar and clamp is obviously to permit vertical adjustment of the screws relative to its tappet in order to secure the desired clearance. A pin 10 secures a radial lug 11 projecting from the tappet. This lug slides in a vertical slot provided in an upwardly extended arm 12 of the tappet guide 13. In the particular construction shown two tappet guides are located side by side and are secured to the crank case 14 by fastening means 15.

At the lower open end of the tubular tappet is a flattened portion 16 in which is journalled by pivot 17 a roller 18. This roller 18 engages cam 19 on cam shaft 20 in the operation of the valves in a manner which is well understood.

In the tappet there may be formed holes 21 just beneath the closed head 5 and below the lug 11. If the tappet is raised sufficiently to bring these holes opposite the bottom of the slot in the guide, a pin may be inserted therethrough which will engage the bottom of the slot and hold the tappet roller off the cam. The purpose of this construction is to permit the removal of the cam shaft without first removing the tappet.

In a modified construction illustrated in Figure 4 the fastening means for the split clamp, designated as 9′, may be made to perform the function of the lug 11 of the form already described. To this end the slot 22 is located in the arm 12 preferably in alignment with an extended end of the fastening means 9′ for the split clamp. In other respects this form differs not at all from the other.

From an inspection of the drawing it will be seen that the cylindrical walls of the tappet are quite thin, much thinner than the parallel walls of the flattened ends which carry the cam engaging roller. The tappet is thus made very light and yet it affords a substantial support for the adjusting screw and for the roller. For the production of such a tappet the following process has been adopted. A cylindrical piece of steel of suitable size is first drilled out to a desired inner dimension. It is then heated and formed in a die at the lower end to obtain the parallel surfaces for the roller pin bearing. It is then turned and its outside surface ground to obtain the relatively thin wall throughout its cylindrical portion.

I claim:

1. A valve tappet consisting of a tubular member having a solid adjusting screw carrying end, the walls of said tube at the open end being diametrically reduced and flattened to make a roller carrying slot, the walls of the tappet on the sides of the slot being thicker than the side walls of the tubular member.

2. A valve tappet and guide therefor, the side wall of the tappet being apertured whereby a pin may be entered in the tappet to engage the guide to hold the tappet off the cam.

3. A tappet together with an adjusting screw vertically adjustable therein, the tappet having an integral split clamping sleeve surrounding said adjusting screw, and fastening means to secure said clamping sleeve about said screw, together with a lug laterally directed from the head of said tappet and a guide for said tappet having a vertical slot for engagement with said lug.

In testimony whereof I affix my signature.

FRANK JOHNSON.