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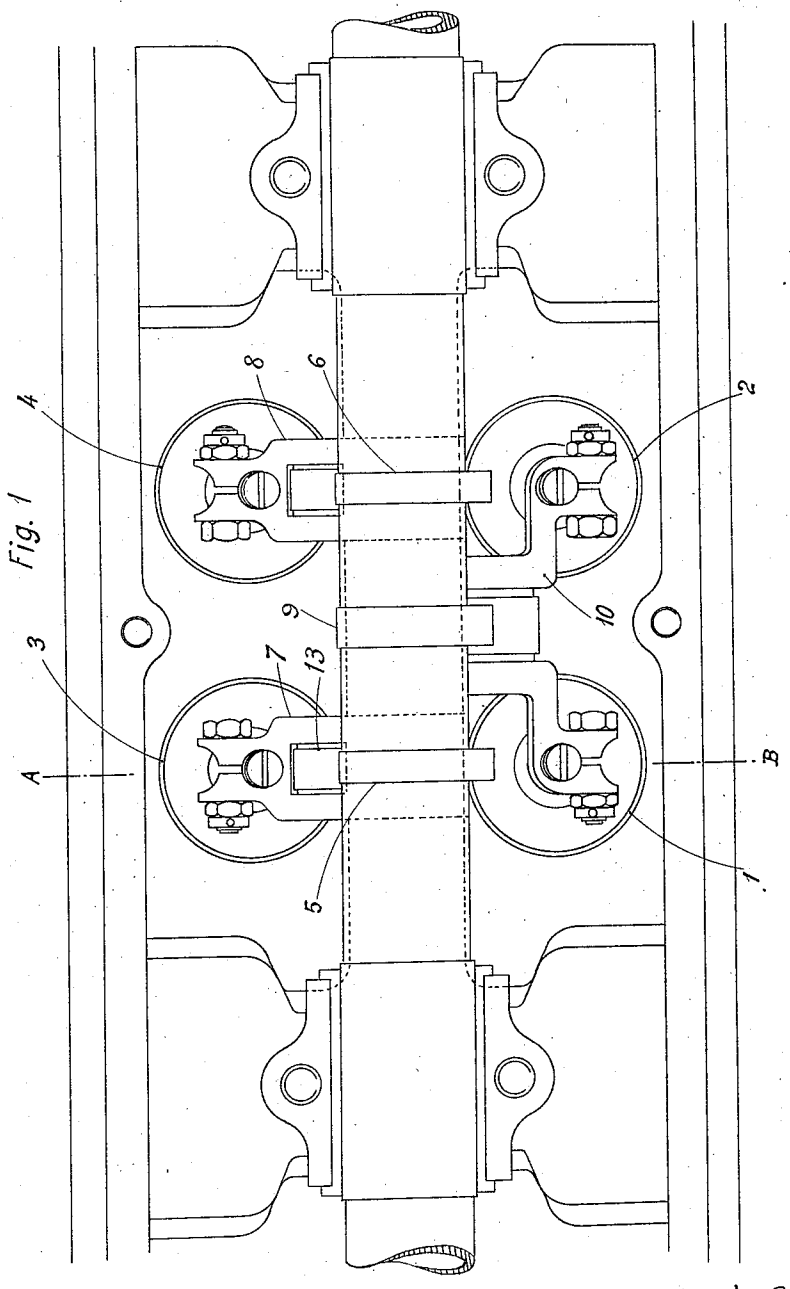
VALVE MECHANISM FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED MAR. 31, 1919.

1,415,167.

Patented May 9, 1922.

4 SHEETS—SHEET 1.



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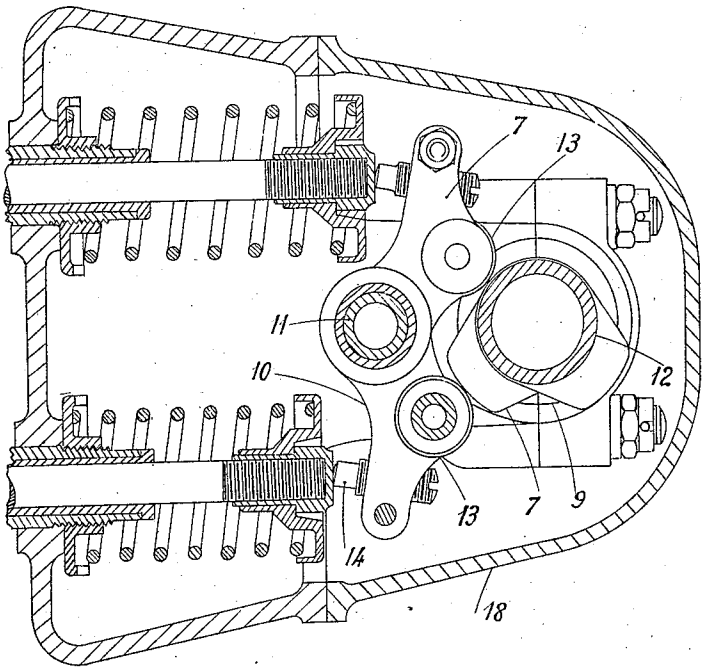
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4 SHEETS—SHEET 2.

Fig. 2



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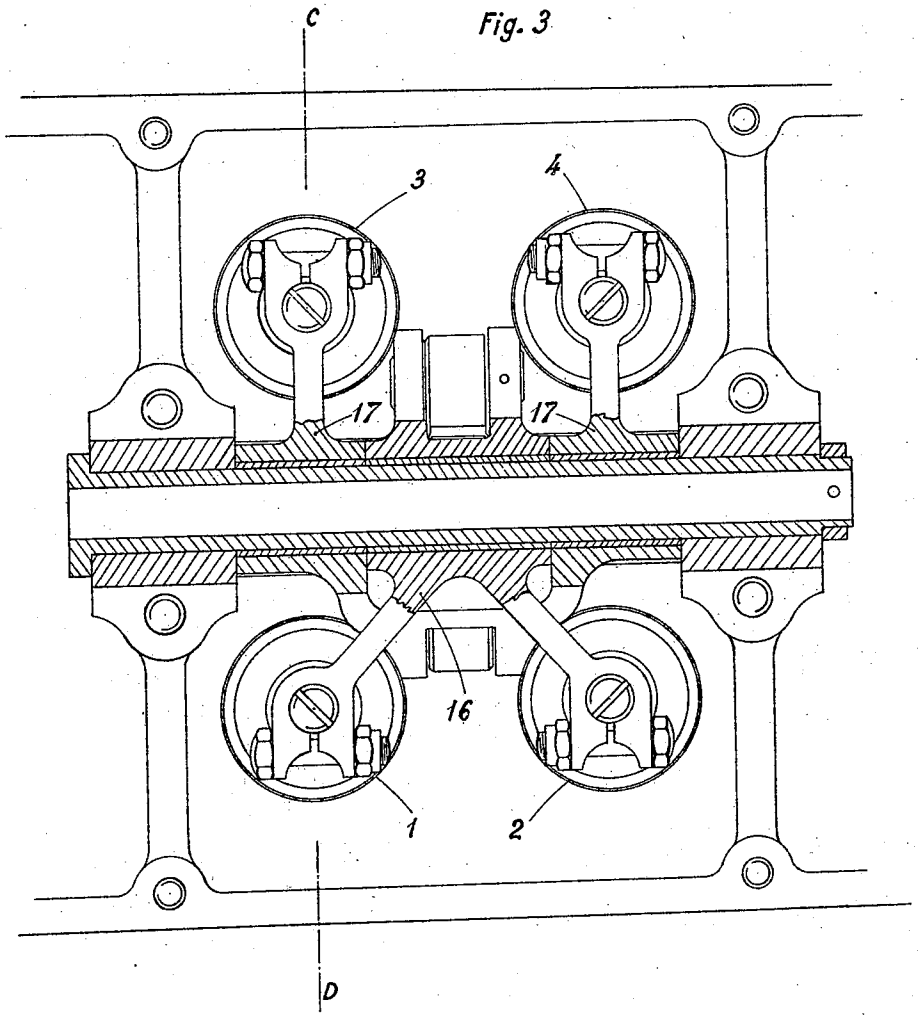
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4 SHEETS—SHEET 3.

Fig. 3



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4 SHEETS—SHEET 4.

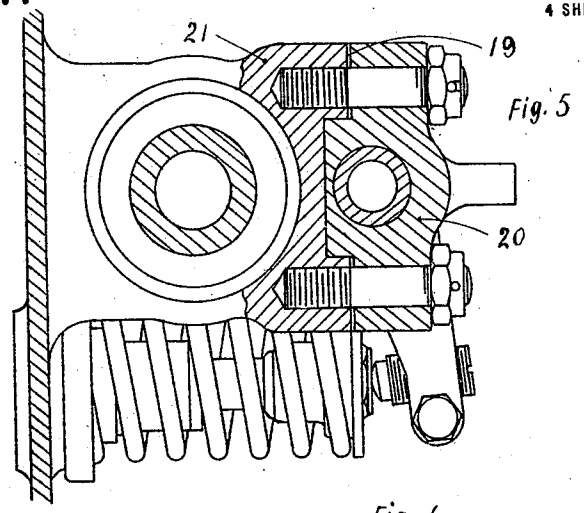
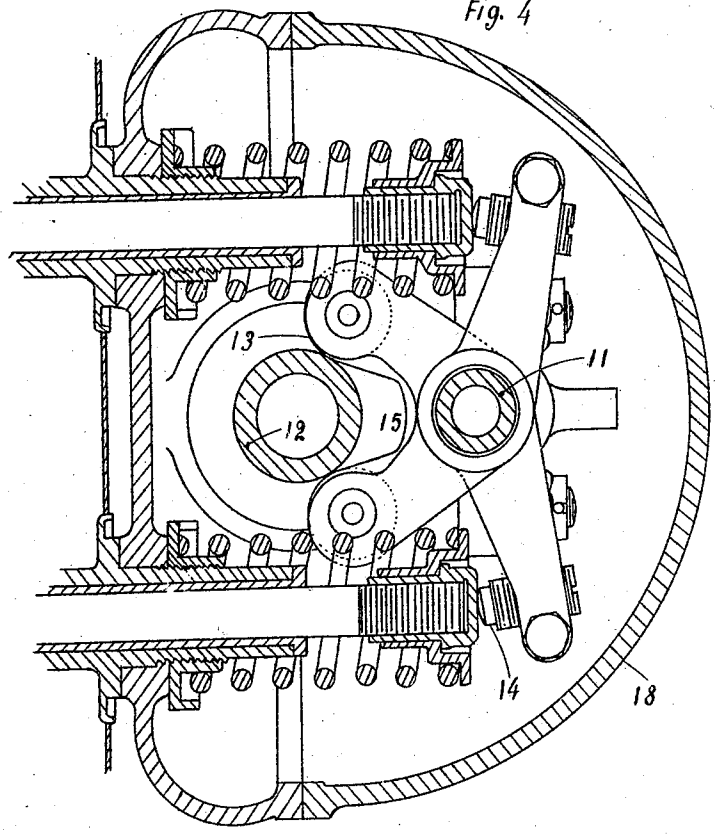


Fig. 5

Fig. 4



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UNITED STATES PATENT OFFICE.

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VALVE MECHANISM FOR INTERNAL-COMBUSTION ENGINES.

1,415,167. Specification of Letters Patent. Patented May 9, 1922.

Application filed March 31, 1919. Serial No. 286,563.

To all whom it may concern:

Be it known that I, ERNEST FUCHS, citizen of the French Republic, residing at Paris, Department of the Seine, in France, and whose post-office address is 111 Boulevard Exelmans, in the said city, have invented certain new and useful Improvements in or Relating to Valve Mechanism for Internal-Combustion Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has for its object an arrangement of valve control mechanism for internal combustion engines and consists principally in placing the shaft on which the valve tappet mechanism for controlling the fuel admission and the exhaust oscillates, and the rotating cam shaft which controls the said valve tappet mechanism, parallel and in a vertical plane passing the axes of the cylinders, these shafts being situated one above the other and the tappet levers carrying friction rollers being permanently in contact with cams controlling the fuel admission and exhaust.

The invention is described hereinafter in detail with reference to the accompanying drawings, which show diagrammatically and by way of example, two constructional forms of valve control mechanism for internal combustion engines with the cam shaft above the cylinder.

Figure 1 is a plan view of an arrangement controlling four valves and employing two cams for the exhaust with two separate tappet levers and a single cam for the admission and one double tappet lever.

Figure 2 is a vertical cross section on the line A. B., Figure 1.

Figure 3 shows a modification partly in section of an arrangement for controlling four valves but employing one cam for fuel admission and exhaust and a double tappet lever for the fuel admission and a double tappet lever for the escape.

Figure 4 is a vertical cross section on the line C. D., Fig. 3, and Fig. 5 is a sectional detail view of the tappet lever bearings.

The arrangement Figures 1 and 2 is shown as applied to the control of four valves; two, 1 and 2, serving for the admission of fuel, and two, 3 and 4, acting as exhaust valves, two cams 5 and 6 being employed for the exhaust with two separate tappet levers 7 and 8 and a single cam 9 for the admission with a double tappet lever 10.

The shaft 11 on which the fuel admission and the exhaust tappet levers oscillate and the rotating cam shaft 12 are arranged parallel and are situated in a vertical plane passing through the axes of the cylinders.

The cam shaft 12 is situated above the shaft 11 on which the tappet levers carrying the friction rollers 13 in permanent contact with the cams oscillate, and said rollers are situated between the pivotal axis of the tappet lever and the valve tappet rod 14.

The modified constructional form shown in Figures 3 and 4 is also arranged to control four valves, two 1, 2 acting as admission valves and two, 3, 4 as escape valves by utilizing only one cam for the admission of fuel and the exhaust with one double tappet lever 16 for the admission and a double tappet lever 17 for the exhaust.

The shaft 11 on which the fuel admission and exhaust tappet levers oscillate and the cam shaft 12 are parallel and they are situated in the vertical plane passing through the axes of the cylinders and placed between the ends of the tappet rods.

The tappet levers carry friction rollers 13 which are permanently in contact with the cam and the said friction rollers are one end, the other end bearing on the valve tappet rod 14.

Further, the height of the tappet lever shaft above the cam shaft is adjustable by means of the keys blocks or wedges 19 or in any other convenient manner, the journals 20 for the shaft 11 carrying the tappet levers being guided in the bearings 21 rigid with the cam shaft bearings.

The arrangement hereinbefore described permits of the space occupied by the valve controlling mechanism being reduced to a minimum, of being able to easily dismount the tappet levers and even the cam, of modifying the regulation of the distribution by varying the distance between the tappet lever shaft and the cam shaft, and finally of easily enclosing the distributing or controlling mechanism in a casing 18 thereby avoiding all projection of oil above the cylinders.

I claim:

An overhead valve operating mechanism for internal combustion engines, comprising

a pair of tappet levers of U-shape adapted to control one pair of valves, a pair of tappet levers of inverted V-shape for controlling another pair of valves oppositely arranged to said first mentioned pair of valves, a common shaft for pivotally supporting said tappet levers, a cam shaft for operating said tappet levers, the open ends of the U-shape and V-shape levers comprising the valve-engaging ends extending to opposite sides of the supporting shaft, and the closed ends thereof being pivotally mounted on said supporting shaft, a portion of the closed end of each pair of said levers extending beyond said shaft, cam-engaging rollers carried by said extensions, and means for mounting said levers on their supporting shaft in such relation to each other that said rollers can be engaged by the same cam on the cam shaft, the tappet lever shaft and the cam lever shaft being positioned in a plane passing vertically through the axis of the engine cylinders.

In testimony whereof I affix my signature, in presence of two witnesses.

ERNEST FUCHS.

Witnesses:
JOHN F. SIMONS,
EMILE KLOTZ.