

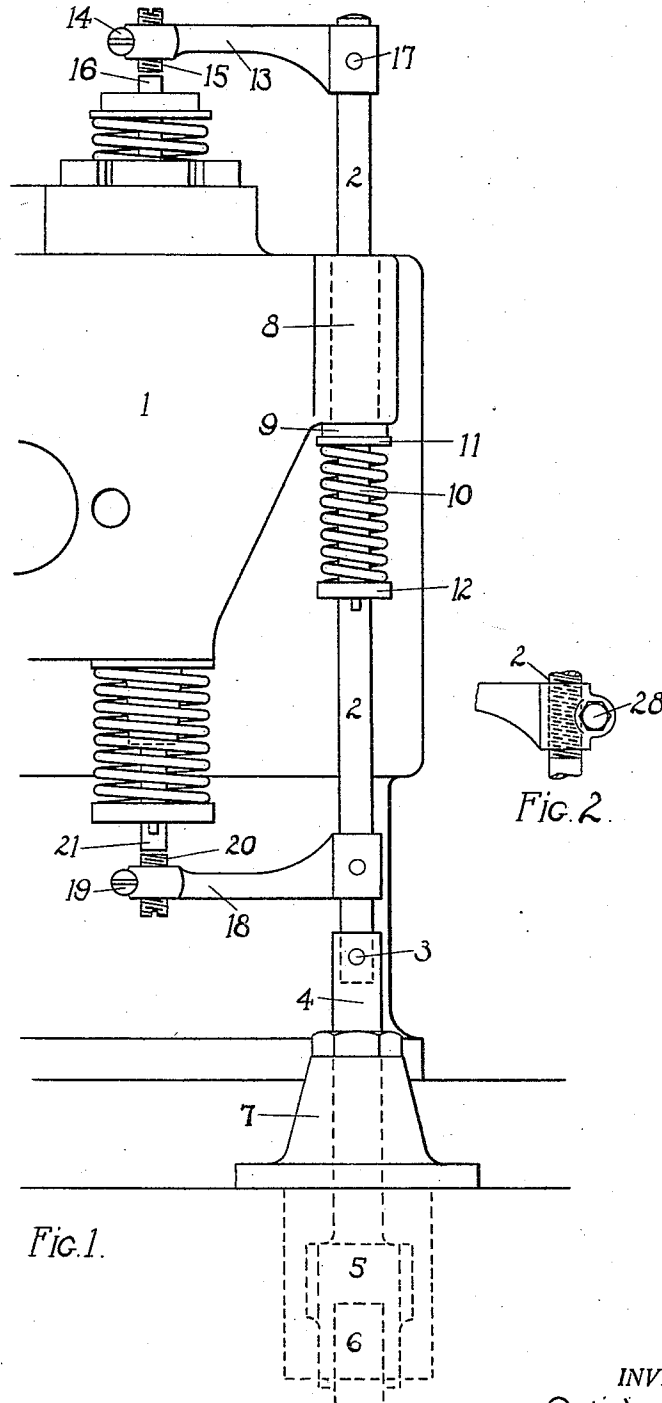
A. M. WOLF.
VALVE GEAR.

APPLICATION FILED JAN. 9, 1909.

938,360.

Patented Oct. 26, 1909.

2 SHEETS—SHEET 1.



WITNESSES:

Edmund P. Smith
Matthew Leacy

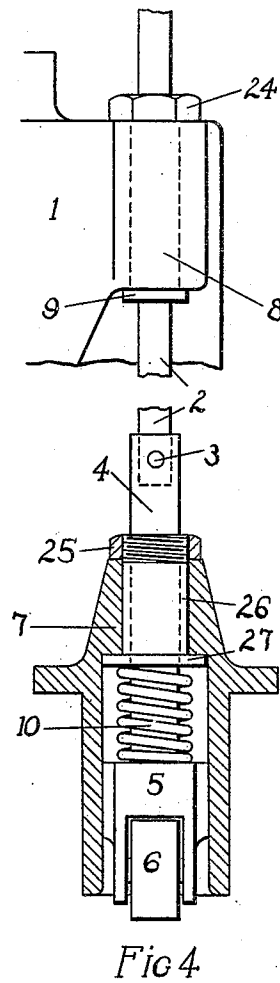
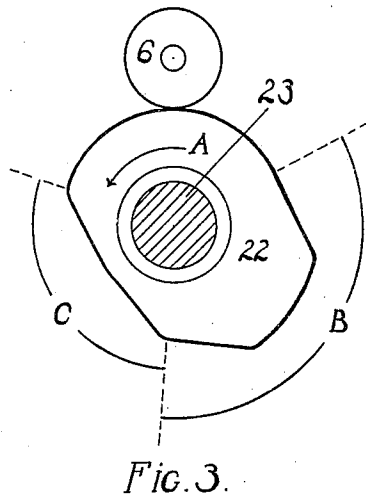
INVENTOR.

Austin M. Wolf

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WITNESSES:
Edward P. Mather
Matthew Carey.

INVENTOR.
Austin M. Wolf

UNITED STATES PATENT OFFICE.

AUSTIN M. WOLF, OF NEW YORK, N. Y.

VALVE-GEAR.

938,360.

Specification of Letters Patent.

Patented Oct. 26, 1909.

Application filed January 9, 1909. Serial No. 471,474.

To all whom it may concern:

Be it known that I, AUSTIN M. WOLF, a citizen of the United States, residing at New York, in the borough of Manhattan, county and State of New York, have invented a new and useful Valve-Gear, of which the following is a specification.

My invention relates to valve actuating mechanisms, such as are employed on internal combustion engines.

The object of the invention is to provide a simple, efficient and non-costly mechanism for the above named purpose. These and other advantages will be more clearly set forth with reference to the accompanying drawings in which:—

Figure 1 is a front elevation of my valve gear; Fig. 2 is a detail view of a part of the same; Fig. 3 is an elevation of the cam and roller employed; and Fig. 4 is a slightly modified form of the mechanism shown in Fig. 1.

Similar numerals have reference to corresponding parts throughout the several views presented.

In the desirable form of construction shown, the cylinder 1 has the inlet valve 16 placed over the exhaust valve 21. Valve plunger 4 receives the lower end of the actuating rod 2. The other extremity of the valve plunger 4 terminates in the fork 5 which supports the valve plunger roller 6. The plunger 4 is located within the guide 7 and a bushing 26, held in position by a collar 27 turned on its one end and the nut 25 at the other end, supports the plunger 4. The pin 3 unites both the actuating rod 2 and the plunger 4. Its object will be explained later.

Above the center of rod 2, the same is supported by the bushing 8, placed within a projecting portion of the cylinder 1 as shown. A collar 9 is turned on the lower end of the bushing 8 which bears against the projecting portion of the cylinder. In Fig. 1 the spring 10, which bears against the washer 11, keeps the bushing 8 in position. The other end of the spring 10 bears against the washer 12, which is held in place by a cotter pin passing through the rod 2. In Fig. 4 a nut 24 screws on to the upper part of the bushing 8, thus holding it in position.

At the upper end of the rod 2 the arm 13

projects perpendicularly from the same, being held in position by the pin 17. Similarly the arm 18 is pinned to the lower end of rod 2. At the extremities of each arm means are provided for timing each valve independently of the other. A screw 15, in the arm 13, allows a space between the inlet valve stem 16 and itself to be adjusted, after which the lock screw 14 is tightened. Similarly in the arm 18, the adjusting screw 20 is locked by the screw 19, after the proper clearance has been provided between the exhaust valve stem 21 and the screw 20. Fig. 2 shows one of the many ways in which the arms may be screwed to the actuating rod 2 by means of screw threads upon the latter. A lock nut 28 keeps the arm in position.

Fig. 3 shows the type of cam employed. The roller 6 bears upon the cam 22 which is integral with or keyed upon the cam shaft 23. The arrow A indicates the direction of rotation of the cam shaft. Assuming the cam 22 to be in the position shown in Fig. 3, the roller 6 will be in its normal position and the mechanism above it will be as shown in Fig. 1. As the cam 22 rotates the roller 6 will reach the portion of the cam indicated in Fig. 3 by B. The roller will be lifted, thus raising both the valve plunger 4 and the actuating rod 2. The screw 20 striking the valve stem 21 will raise the latter until the roller reaches the highest portion of the cam. The arm 13 with the screw 15 will recede from the inlet valve stem 16. The exhaust valve is thus opened and as the roller travels back to its normal position, the exhaust valve will close. Now the roller 6 is at the end of the portion indicated as B and is about to traverse the portion C. As the cam revolves still further the roller will, due to the force of the spring 10, drop into the portion C and in so doing the rod 2 will, by means of arm 13 and screw 15, open the inlet valve 16. The arm 18 is away from the exhaust valve while this action takes place. At the close of the suction or inlet stroke the uniform part of the cam—almost half of it and corresponding to the compression and explosion strokes—keeps the mechanism in its normal position, permitting both inlet and exhaust valves to remain closed. By this system one cam suffices for both valves.

The valves often need to be removed for

various purposes. In order to allow this to be done so that the mechanism is hardly disturbed and in no way deranged, I have employed the pin 3 which makes the rod 2 independent or integral with the plunger 4. The latter is prevented from rotating, being limited solely to an up and down movement. This is necessary so that the axes of the roller 6 and the cam 22 are always parallel. The rod 2 fits into the plunger 4 and the pin 3 locks both together. Means are provided to keep the pin in position. When the pin is withdrawn and the mechanism is in its normal position, the rod 2 can be rotated axially, thus bringing the arms 13 and 18 away from the valves giving thereby full access to them. All this can be done by the simple removal of a pin.

The construction shown in Fig. 1 differs from that shown in Fig. 4 only in the fact that in the former the spring 10 is placed below the bushing 8 encircling the rod 2, while in Fig. 4 it surrounds the plunger 4 and is not exposed. The operation of both constructions are exactly the same.

Having thus described my invention with reference to a desirable form thereof, but without limiting myself thereto because parts may be added, omitted, modified and substituted without departing from the

spirit or losing any of the advantages of the invention, what I claim is—

1. The combination with an internal combustion engine having inlet and exhaust valves, of an actuating rod having arms projecting therefrom and adapted to engage the stems of both the said valves, a cam imparting the necessary motion to said actuating rod in order to effect an opening of each valve at the proper time, and means whereby said arms can be simultaneously swung out of position, as described.

2. The combination with an internal combustion engine having inlet and exhaust valves, of an actuating rod having arms projecting therefrom and adapted to engage the stems of both the said valves, said actuating rod being rotatably mounted in a valve plunger, a cam imparting the necessary motion to said valve plunger in order to effect an opening of each valve at the proper time, and means for allowing or preventing axial rotation of said actuating rod, as described.

Signed at the city of, county of, and State of New York, this 7th day of January, 1909.

AUSTIN M. WOLF.

Witnesses:

EDWARD P. MARTHA,
MATTHEW CASEY.